Type material of some fungal taxa traced in C. Schubert's (1796–?) herbarium found in the Herbarium of the Dresden University of Technology – Technische Universität Dresden (DR)

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Abstract: Müller, F. & Braun, U. 2024: Type material of some fungal taxa traced in C. Schubert's (1796–?) herbarium found in the Herbarium of the Dresden University of Technology – Technische Universität Dresden (DR). Schlechtendalia **41**: 68–82.

In this paper, some types of fungal taxa traced in C. Schubert's recently detected herbarium, preserved at DR (Dresden University of Technology), are listed, and the nomenclature and taxonomy are discussed. *Myxotrichum murorum* and *Peziza arundinis* are lectotypified. *M. murorum* is an anamorphic species identical with the anamorph of *Ascotricha chartarum* (*Dicyma ampullifera*). *P. arundinis* resembles *Perrotia phragmiticola* and *Perrotia distincta*, but final conclusions regarding the synonymy require further examinations. The general term 'type' is used when the individual type category could not be clarified. The status of a few specimens is not quite clear, but they may probably be considered type collections ("typus probabiliter"). The type collections of DR are online available via the database Virtual Herbaria JACQ (http://www.jacq.org/).

Zusammenfassung: Müller, F. & Braun, U. 2024: Typusmaterial einiger Pilz-Taxa aufgespürt in C. Schuberts (1796–?) Herbarium, gefunden im Herbarium der Technischen Universität Dresden (DR). Schlechtendalia **41**: 68–82.

In der vorliegenden Arbeit werden einige unlängst im Herbarium von C. Schubert entdeckten Typen von Pilz-Taxa aufgeführt, die in DR (Technische Universität Dresden) aufbewahrt werden, und deren Nomenklatur und Taxonomie werden diskutiert. *Myxotrichum murorum* und *Peziza arundinis* werden lectotypisiert. *M. murorum* ist eine anamorphe Art, die identisch ist mit der Anamorphe von *Ascotricha chartarum* (*Dicyma ampullifera*). *P. arundinis* ähnelt *Perrotia phragmiticola* und *Perrotia distincta*, wobei jedoch endgültige Schlussfolgerungen zur Synonymie weitere Untersuchungen erfordern. Die allgemeine Bezeichnung ‚Typus' wird verwendet, wenn die spezifische Typuskategorie nicht geklärt werden konnte. Der Status einiger Belege blieb unklar, aber sie könnten Typus-Kollektionen sein ("typus probabiliter"). Eine Übersicht der DR-Typen kann auch online über die Datenbank Virtual Herbaria JACQ abgerufen werden (http://www.jacq.org/).

Key words: Fungi, typification, lectotype, new combination, type specimens, list.

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Introduction

Carl Friedrich Heinrich Schubert (1796–?) was a Saxonian botanist and mycologist. A brief biography has been published in Hardtke et al. (2004). He studied medicine in Leipzig, where he also earned his doctorate. He undertook a few journeys, including a travel to Scandinavia in 1821, where he met Fries [see Reichenbach & Schubert, Flora (Regensburg) **5**(1): 367–368, 1822 and Ficinus & Schubert 1823, introduction.] In 1827, Schubert travelled to Orel in Russia to work there as physician [see Flora (Regensburg) **11**(1): 95, 1828), where he later disappeared without trace. It remains unclear where and when he passed away. "Flora der Gegend um Dresden. 2. Abtheilung: Kryptogamie" (Ficinus & Schubert, 1823) was one of his main publications. Inter alia, Schubert dealt with fungi in this publication. His estate, including herbarium, was said to be untraceable for a long time (Hardtke et al. 2004). However, Rabenhorst (1863: V) stated that cryptogams from Schubert's herbarium (specimens collected up to 1822) were included in the collection of Schmalz (medical officer of health in Dresden), which he had acquired in 1847. It can be supposed that parts of Schubert's collections came to the herbarium in Dresden via Rabenhorst. Numerous specimens from Rabenhorst's herbarium are preserved at DR, but all of them, unfortunately, without any localities. The tracing of Schubert's herbarium was challenging, above all as the labels of his specimens do not contains any names of collectors and no indication that they stem from C. Schubert does exist. However, it was possible to identify his handwriting. Fortunately, the first author succeeded in tracing his handwriting in a dedication added to a copy of the book published by Bruns (1818) [see https://books.google.de/books?id=ntxLAQAAMAAJ&printsec=frontcover&redir_esc=y#v=onepage&q&f=false; digital reproduction, University of Chicago, Library], which was helpful in identifying Schubert's herbarium specimens deposited in DR. Some of the traced types and possible types are listed and discussed in the following chapter.

Type collections of some fungal taxa traced amongst specimens from C. Schubert's herbarium in DR

Excipula melanophaea Kunze ex Fr., Syst. mycol. (Lundae) **2**(1): 190, 1822, nom. sanct. Fig. 1

≡ *Pilidium melanophaeum* (Kunze ex Fr.) Höhn., Mitt. Bot. Inst. Tech. Hochsch. Wien **7**(1): 16, 1930.

Syntype: *Excipula melanophaea* Fr. (*Peziza melanophaea* Kunze), Germany, Saxony, Dresden ['Fl. Dres.'], on dead cones of *Abies* (DR 078303).

Notes: The present specimen is undoubtedly syntype material of *Excipula melanophaea*. The protologue reads: "Peziza melanophaea Kunze in lit." and "etiam Cel. Ficinus missit." so that the present material from C. Schubert's herbarium with the note 'Fl. Dres.' can be considered syntype material. A further syntype is deposited in the Herbarium of the Martin Luther University Halle [Germany, Saxony, Dresden, on fir cones, H. D. A. Ficinus (HAL 3100 F), see Braun (2016)].

Fig. 1. ***Excipula melanophaea***, syntype, DR 078303, label.

Helotium rufescens Ficinus & C. Schub., Fl. Geg. Dresd. **2**: XXI, 1823. Fig. 2

≡ *Calycina rufescens* (Ficinus & C. Schub.) Kuntze, Revis. gen. pl. (Leipzig) **3**(3): 448, 1898.

≡ *Peziza huebneriana* Rabenh. [as '*hübneriana*'], Deutschl. Krypt.-Fl. (Leipzig) **1**: 343, 1844, nom. nov. [non *Peziza rufescens* Saut., 1866].
≡ *Helotium huebnerianum* (Rabenh.) Sacc., Syll. fung. (Abellini) **8**: 212, 1889, nom. illeg. (Art. 52.1).
≡ *Ciboria huebneriana* (Rabenh.) Rehm, Rabenh. Krypt.-Fl., Edn 2 (Leipzig), **1**.3(Lief. 39): 763, 1893 [non *Ciboria rufescens* Kanouse, 1941].

Holotype: [Germany, Saxony, Dresden, Mordgrund, on decaying calms, summer, collected by Hübner,] a specimen from herb. C. Schubert with the annotation '*Helotium rufescens*, Fl Dresd. crypt.' (DR 078329).

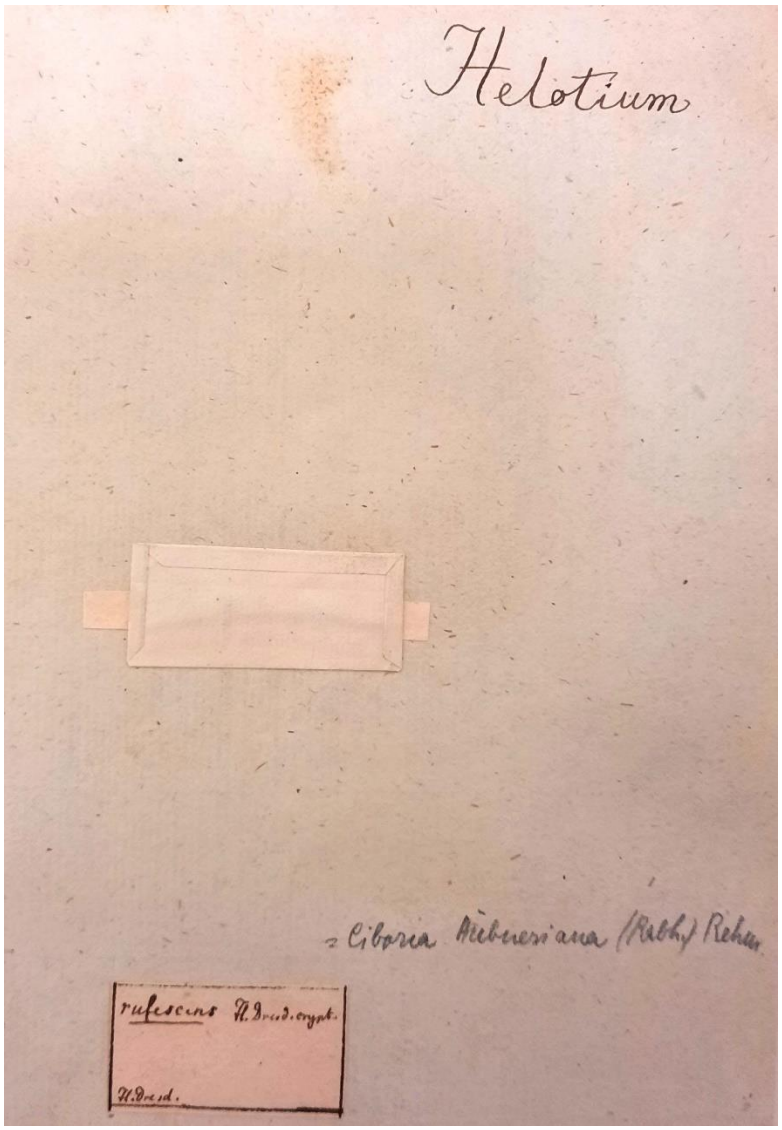

Fig. 2. ***Helotium rufescens***, holotype, DR 078329, label.

Notes: Rabenhorst (1844) introduced *Peziza huebneriana* as new name for *Helotium rufescens*. The latter name was cited as synonym. Since the name '*Peziza rufescens*' did not exist in that time, *P. huebneriana* was an illegitimate (superfluous) name when introduced, but the introduction of *P. rufescens* Saut., 1866, made the epithet of the name causing the illegitimacy unavailable (Art. 58.1, Note 1). In the original description of *Helotium rufescens* (Ficinus & Schubert 1823), a single collection was cited (Dresden, Mordgrund, on decaying calms, summer, Hübner). Rabenhorst (1844) cited "Auf Blättern von *Festuca fluitans* [*Glyceria fluitans*], im Sommer, im Mordgrund bei Dresden (Hübner)" [the source of the altered substrate details is unclear]. There is only a single specimens found in C. Schubert's herbarium under the name *Helotium rufescens*, and only a single location was cited in the protologue. Therefore, the traced specimen can be regarded as holotype (according to Art. 9.1, Note 1), although no location details are given on the label, as in general in Schubert's herbarium.

The name *Helotium rufescens* has previously been ascribed to Ficinus. However, an author name is lacking in the original publication, and there is no evidence in the book that only Ficinus coined this

name. Therefore, the name *Helotium rufescens* must the ascribed to the authors of the whole book, Ficinus and Schubert.

A modern taxonomic treatment of *H. rufescens* is not available but urgently needed.

Leptothyrium lunariae Kunze, in Kunze & Schmidt, Mykologische Hefte (Leipzig) **2**: 79, 1823. Fig. 3

≡ *Microthyrium lunariae* (Kunze) Fuckel, Fungi Rhen. Exs., Suppl. Fasc. **10**: no. 2471, 1872 [and Jahrb. Nassauischen Vereins Naturk. **27-28**: 53 (1873-74) 1874].

≡ *Calopeltis lunariae* (Kunze) Bat., Publicações Inst. Micol. Recife **260**: 39, 1960.

≡ *Leptopeltopsis lunariae* (Kunze) Arx, Acta Bot. Neerl. **13**: 187, 1964.

≡ ***Leptopeltis lunariae*** (Kunze) L. Holm, Bot. Notiser **130**(2): 226, 1977.

Syntype: Germany, Saxony, Dresden ('Fl. Dresd.), herb. C. Schubert (DR 086430). Further syntype: Switzerland, on dead stems of *Lunaria rediviva*, J. F. de Chaillet (HAL 3127 F).

Fig. 3. ***Leptothyrium lunariae***, syntype, DR 086430, label.

Notes: Kunze (in Kunze & Schmidt 1823) described *Leptothyrium lunariae*. The protologue contains references to different specimens that had been the basis for the original description: "Das Leptothyrium Lunariae ist bei Dresden von mehreren Pflanzenforschern, in der Schweiz von Hrn. Hauptmann Chaillet … aufgefunden worden." Kunze's herbarium in Leipzig (LZ) has been destroyed during World War II (Stafleu & Cowan 1979). However, Braun (2016) listed a specimen, collected by Chaillet in Switzerland (ex herb. Kunze), preserved in D.F.L. v. Schlechtendal's herbarium (HAL), as syntype. The specimen from Dresden in C. Schubert's herbarium is undoubtedly additional syntype material, which refers to the note in the protologue that *L. lunariae* had been collected near Dresden. Schubert and Kunze kept in close contact and used to exchange specimens, what is demonstrated by numerous specimens in Schubert's herbarium that had been provided by Kunze.

Arx (1964) provided a detailed taxonomic survey of *Leptothyrium lunariae*. He introduced the combination *Leptopeltopsis lunariae* "(Fuckel)" Arx, based on "*Microthyrium lunariae* Fuckel," following the practices of older Codes before 2012 which gave priority to teleomorph-typified names. Fuckel (Fungi Rhen. Exs., Suppl. Fasc. **10**: no. 2471, 1872) introduced the combination *Microthyrium lunariae* (Kunze) Fuckel, but added a description of the teleomorph, so that this name was later ascribed to Fuckel as new teleomorph-typified name. L. Holm (in Holm & Holm 1977) followed this practice and introduced the combination "*Leptopeltis lunariae* (Fuckel) L. Holm." However, based on the current Code (ICNafp), and since Fuckel (l.c.) published a new combination and did not intend to introduce a new teleomorph-typified name, all subsequent names are based on *Leptothyrium lunariae* Kunze, as correctly exhibited in Index fungorum.

Melanconium betulinum J.C. Schmidt & Kunze, Deutschl. Schwämme, Neunte Lieferung: 3, 1819. Fig. 4.

≡ *Didymosporium betulinum* (J.C. Schmidt & Kunze) Grev., Scott. crypt. fl. (Edinburgh) **5**: tab. 273, 1827.
≡ *Stilbospora betulina* (J.C. Schmidt & Kunze) Johnst., A Flora of Berwick upon Tweed **2**: 192, 1831.

Syntype: J. C. Schmidt & G. Kunze, Deutschl. Schwämme CCVIII (DR 078324).

= *Stilbospora spermatodes* Link, Mag. Ges. Naturf. Freunde, Berlin **7**: 30, [1815] 1816.
= *Sphaeria stilbostoma* Fr., K. Svenska Vetensk-Akad. Handl., Ser. 3, 39: 102, 1818, nom. sanct. (Fries, Syst. mycol. **2**(2): 403, 1823).
≡ *Melanconis stilbostoma* (Fr.) Tul., Ann. Sci. Nat., Bot., Sér. 4, **5**: 109, 1856, nom. inval. (Art. 35.1).
≡ ***Melanconis stilbostoma*** (Fr.) Tul. & C. Tul., Select. fung. carpol. (Paris) **2**: 115, 1863.
≡ *Wuestneia stilbostoma* (Fr.) Auersw., in Rabenhorst, Fungi Rhen. Exs., Fasc. 6: no. 590, 1863.

Fig. 4. ***Melanconium betulinum***, syntype, DR 078324, label.

≡ *Valsaria stilbostoma* (Fr.) Auersw., in Rabenhorst, Fungi Eur. Exs. (Klotzschii herbarii vivi mycologici continuatio, Edn nova. Series secunda), Cent. 10: no. 933, 1866.
≡ *Valsa stilbostoma* (Fr.) J. Kickx f., Fl. Crypt. Flandres (Paris) **1**: 323, 1867.
≡ *Diaporthe stilbostoma* (Fr.) Sacc., Syll. fung. (Abellini) **1**: 615, 1882.
≡ *Hyalomelanconis stilbostoma* (Fr.) Naumov, in Kursanov, Naumov, Krasil'nikov & Gorlenko, Opredelitel' nizshikh rastenii (Key to Lower Plants), 3, Griby (Fungi): 277, 1954.
? = *Melanconium bicolor* Nees, Syst. Pilze (Würzburg): 32, 1817.
= *Sphaeria papula* Fries, in Kunze & Schmidt, Mykologische Hefte (Leipzig) **2**: 48, 1823.
≡ *Sphaeria stilbostoma* var. *papula* (Fries) Fries, Syst. mycol. **2**(2): 404, 1823.
= *Didymosporium elevatum* Link, Sp. plant., Edn 4, **6**(2): 94, 1825.
≡ *Melanconium elevatum* Corda, Icon. fung. (Prague) **3**: 22, 1839.

Notes: The taxonomy, including synonymy, of *Melanconium betulinum* has recently been clarified by Jaklitsch & Voglmayr (2020). Additional synonyms are listed on the website: https://www.mycodb.fr/fiche.php?genre=Melanconis&espece=stilbostoma. Braun (2016) listed a syntype of *M. betulinum* (HAL 3069 F). The specimen found in C. Schubert's herbarium deposited at DR is undoubted a duplicate from J. C. Schmidt & G. Kunze, Deutschl. Schwämme CCVIII, a gift of Kunze to Schubert.

Myxotrichum murorum Kunze, in Kunze & Schmidt, Mykologische Hefte (Leipzig) **2**: 110, 1823, nom. sanct. (Fries, Syst. Mycol. 3: 349, 1832). Fig. 5

≡ *Sporodiniopsis murorum* (Kunze) Lindau, in Rabenh., Krypt.-Fl., Zweite Aufl., Band **1**(8): 268, 1907.

Lectotype (designated here, MycoBank, MBT10020831): [Germany, Saxony, Leipzig, stone wall in a cellar, winter, pharmacist Thamm.] 'Lips.' (Leipzig). Ex herb. Kunze (provided by Kunze), in herb. C. Schubert (DR 086419). Isolectotype: PH 64940 (ex herb. Kunze, in herb. Schweinitz).

= ***Ascotricha chartarum*** Berk., Ann. Nat. Hist., Mag. Zool. Bot. Geol. **1**: 257, 1838.
≡ *Chaetomium chartarum* (Berk.) G. Winter, Rabenh. Krypt.-Fl., Edn 2 (Leipzig) **1**.2: 157, 1885.
= *Dicyma ampullifera* Boulanger, Rev. Gén. Bot. **9**: 18, 1897.

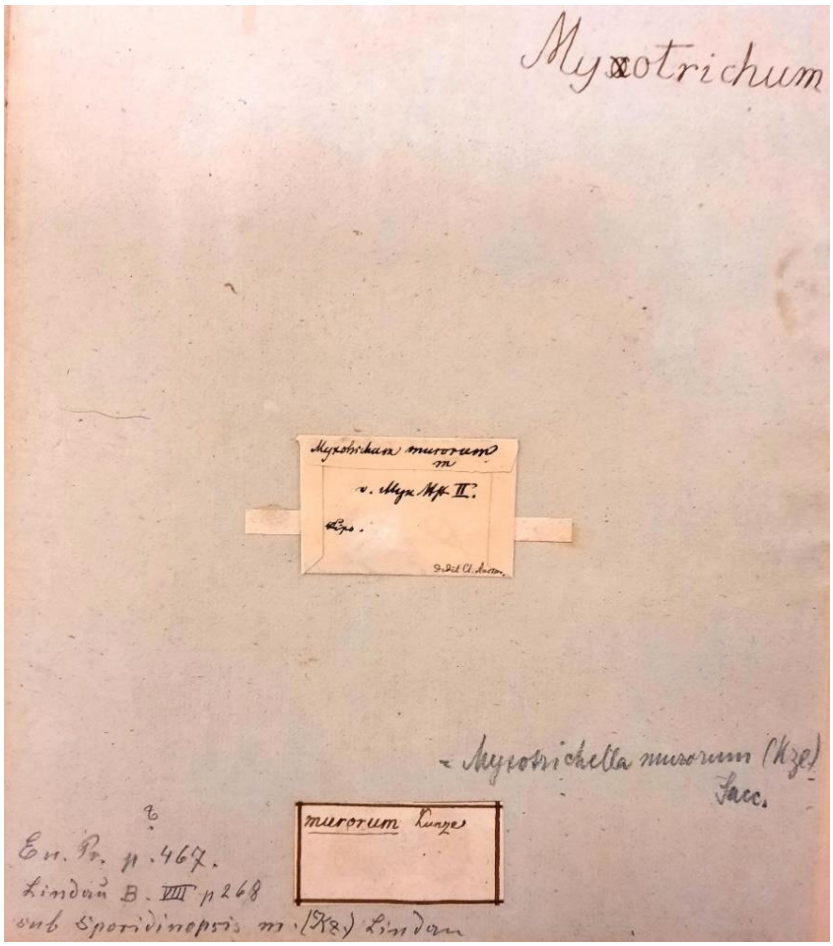

Fig. 5. ***Myxotrichum murorum***, lectotype, DR 086419, label.

Notes: The type material in Kunze's herbarium (LZ) has been destroyed during World War II (Stafleu & Cowan 1979). The specimen maintained at DR is a duplicate of the type material sent by Kunze to C. Schubert, which is suitable as lectotype. A discussion on the history of *M. murorum* is included in Kuehn (1959). Saccardo (1892) placed hyphomycetous species of *Myxotrichum* in the new subgenus *Myxotrichella* Sacc., which was later treated as genus *Myxotrichella* (Sacc.) Sacc. (Saccardo 1899), but *Myxotrichum murorum* has never been reallocated to *Myxotrichella*. Höhnel (1903) cited under *Sporodiniopsis* the name *Myxotrichum murorum* and emphasized that he did not have any doubt that this species pertains to his new genus, but he failed to associate the final epithet with his new genus name (Art. 35.2). Hence, he failed to introduce a valid combination. This was finally done by Lindau (1907).

"https:/www.fungaltaxonomy.org/nomenclator/ascomycetes/ contains under the entry *Myxotrichum murorum* the note that this name might refer to the anamorph of *Ascotricha chartarum* (Li & Yang 2004, Seifert et al. 2011), which could be confirmed based on the microscopical re-examination of the type material of *M. murorum* [conidiophores profusely branched at right and acute angles, also dichotomously or subdichotomously branched, 2–6 µm wide, pale to medium dark brown, wall to 1 µm wide, smooth to rough-walled, conidia arising from denticle-like conidiogenous loci, solitary, globose or subglobose, 4–6 µm diam., or broad ellipsoid (-ovoid), 5–7 × 3–6 µm, pale to medium dark brown, wall 0.4–0.8 µm wide, verruculose.]

The synonymy and taxonomic status of *Myxotrichum murorum* as older sanctioned name has consequences for the ascomycete commonly known as *Ascotricha chartarum*, i.e., *M. murorum* would have priority, so that the maintenance of the name *A. chartarum* requires a proposal to reject the former anamorph-typified name. In any case, it would make sense to keep the widely used name *A. chartarum*. There are numerou publications using the latter name, even with humane medicine relevance (Khan et al. 2019).

Peziza arundinis Fr., Syst. mycol. (Lundae) **2**(1): 105, 1822, nom. sanct. Fig. 6

≡ *Lachnea arundinis* (Fr.) Gillet, Champignons de France, Discom. (4): 90, 1881.

≡ *Trichopeziza arundinis* (Fr.) Sacc., Syll. fung. (Abellini) **8**: 431, 1889.

≡ *Lachnum arundinis* (Fr.) Rehm, Rabenh. Krypt.-Fl., Edn 2 (Leipzig) **1**.3(Lief. 41): 896, 1893.

≡ *Urceolella arundinis* (Fr.) Boud., Hist. Class. Discom. Eur. (Paris): 130, 1907.

Lectotype (designated here, MycoBank, MBT10020832): *Peziza arundinis*, Germany, Saxony, 'Lips.' (Leipzig), on a dead stalk of *Phragmites australis* (= *Phragmites arundinacea*), ex herb. Kunze, in herb. C. Schubert. (DR 086465).

Notes: *Peziza arundinis*, described from culms of *Phragmites australis*, is a little-known species without any modern description. Type material is not preserved in Fries's herbarium at Uppsala, UPS (see Dennis 1963). Type material has recently been traced at DR, deposited under the name *Peziza arundinis*. It is a specimen from Kunze's herbarium in Leipzig that has been destroyed during World War II. Kunze undoubtedly made this specimen available to C. Schubert. The protologue of *P. arundinis* refers to a collection made by Kunze which served as basis for the original description. Therefore, the collection found at DR is suitable as lectotype.

In the data base 'https://www.mycodb.fr/fiche.php?genre=Albotricha&espece=albotestacea' *Peziza arundinis* is listed as synonym of *Albotricha albotestacea*, which probably goes back to a note in Dennis (1963) that *Peziza arundinis* as represented by 'Jaap, Fungi Sel. Exs. 85' (on *Calamagrostis lanceolata*) is scarcely different from *Dasyscyphus albotestaceus*. However, Dennis (1963) also mentioned that the original description of *P. arundinis* rather suggests a darker haired species, more like *Dasyscyphus phragmiticola*. The examination of the type material of *P. arundinis* revealed that this species is quite distinct from *Albotricha albotestacea* (Höhnel 1918: 379; Raitviir 1970; Hosoya et al. 2010). The morphological similarity between *P. arundinis* and *Dasyscyphus phragmiticola* could be confirmed. Haines (1989) reduced *D. phragmiticola* to synonymy with *Perrotia distincta*. The type material of *P. arundinis* is characterised as follows: Apothecia on dead culms of *Phragmites australis*, sessile, at first cupulate, later discoid, small, 0.25–0.8 mm diam., margin rust brown, with abundant hairs, disc paler brown when dry; hairs up to 160 µm long and (3–)4–6(–7) µm wide throughout or apically somewhat swollen, 7–9 µm wide, wall 1–2 µm wide, lumen sometimes reduced, yellowish brown to medium dark brown, paler towards the tip, pale brown, yellowish or even subhyaline, smooth or somewhat rugose or with scattered verrucae, hairs pluriseptate, distance between two septa 8–28 µm; paraphyses abundant, dense, up to about 65 µm long, 1–2.5 µm wide at the base, 2–3 µm

wide towards the tip, which may be somewhat swollen, 4–5 µm, hyaline, thin-walled, smooth; asci immature, about 50–60 × 5–6 µm, ascospores not observed.

Final conclusions to the synonymy of *P. arundinis* are not yet possible and require further examinations. The morphology of the type material of *P. arundinis* largely coincides with the description of *Perrotia distincta* in Haines (1989), but the lacking ascospores complicate a comparison. Furthermore, it is not quite certain if the synonymy of *Perrotia* (*Dasyscyphus*) *phragmiticola* on *Phragmites australis* in Europe and *Perrotia distincta* on *Andropogon* and *Panicum* spp. in North America still holds true. Dennis (1963: 357) examined topotype material of *Dasyscyphus phragmiticola* (Rathenow am Puhlsee, Nov. 1899, Ploettner, Rehm, Ascomyceten 1309). He described colourless hairs and illustrated straight to somewhat curved ellipsoid-cylindrical ascospores with rounded ends. Haines (1989) examined type material of *D. phragmiticola*, deposited at K (Kew), and described golden brown hairs and described and illustrated ellipsoid-fusiform ascospores with attenuated ends. These discrepancies require re-examination of the types concerned and of additional specimens. Analyses of sequences retrieved from European and North American samples would be helpful to clarify the taxonomy of this complex.

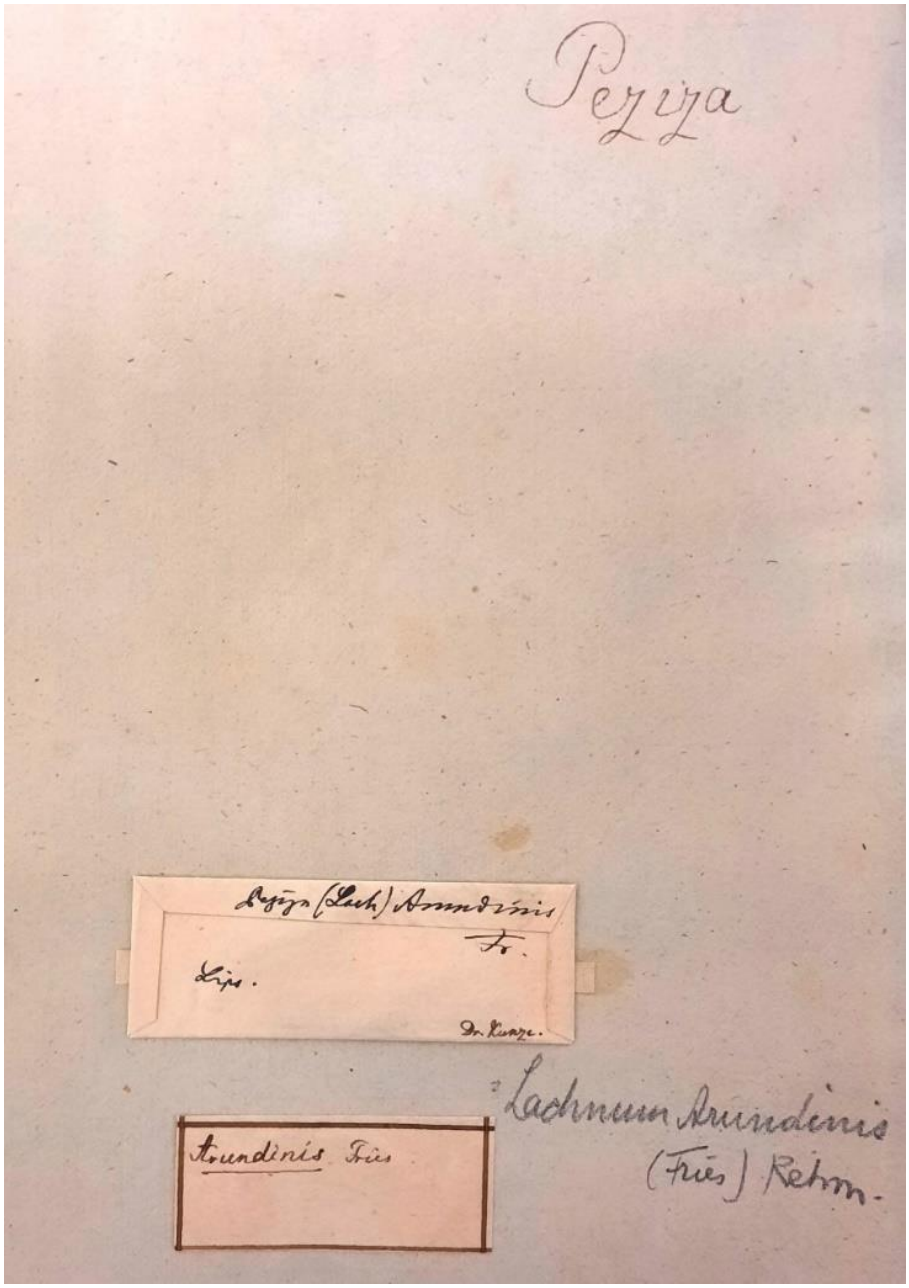

Fig. 6. ***Peziza arundinis***, lectotype, DR 086465, label.

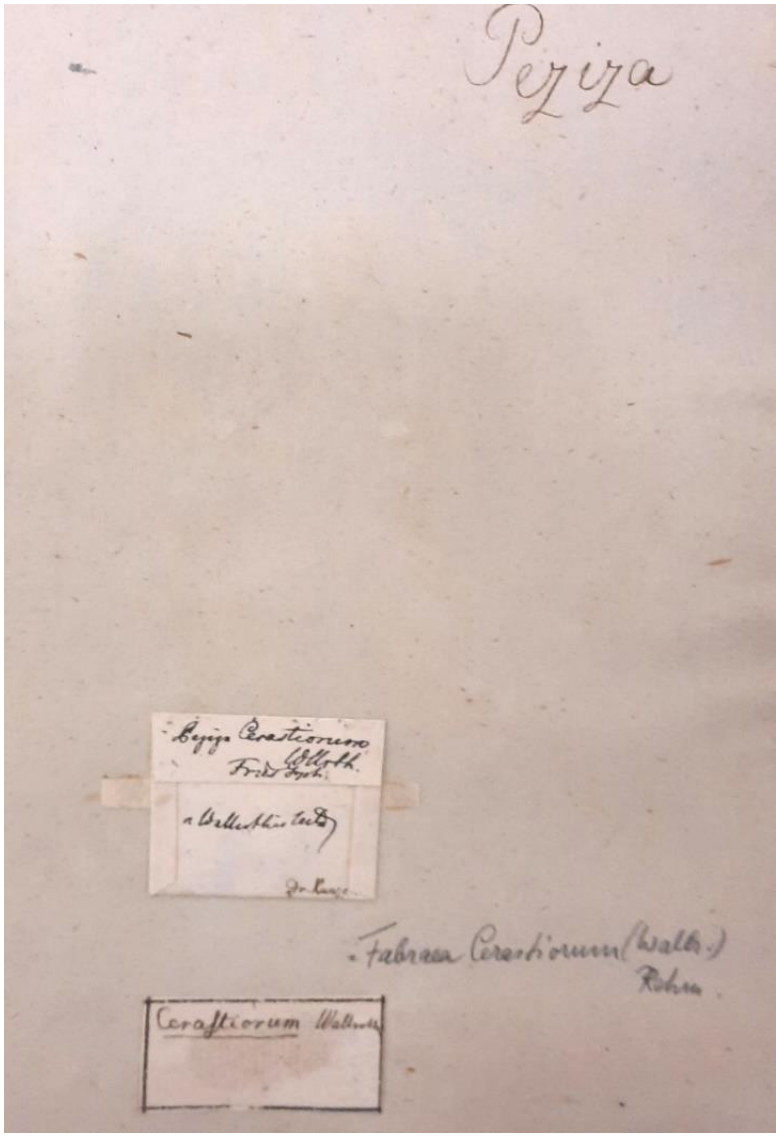

Fig. 7. ***Peziza cerastiorum***, possible type, DR 086405, label.

Peziza cerastiorum Wallr. ex Fr., Syst. mycol. (Lundae) **2**(1): 153, 1822, nom. sanct. Fig. 7

≡ *Trochila cerastiorum* (Wallr. ex Fr.) De Not., Comm. Soc. Crittog. Ital. **1**(Fasc. 5): 320, 1863.
≡ *Pseudopeziza cerastiorum* (Wallr. ex Fr.) Fuckel, Jahrb. Nassau. Ver. Naturk. **23-24**: 291, 1870.
≡ *Phacidium cerastiorum* (Wallr. ex Fr.) Gillet, Champignons de France, Discom. (7): 169, 1885.
≡ *Mollisia cerastiorum* (Wallr. ex Fr.) W. Phillips, Man. Brit. Discomyc. (London): 199, 1887.
≡ *Fabraea cerastiorum* (Wallr. ex Fr.) Rehm, Rabenh. Krypt.-Fl., Edn 2 (Leipzig) **1**.3(Lief. 36): 600, 1891.
≡ ***Leptotrochila cerastiorum*** (Wallr. ex Fr.) Schüepp, Phytopath. Z. **36**: 261, 1959.

Type (?): *Peziza cerastiorum*, ex herb. Kunze, in herb. C. Schubert [probably original material from Wallroth] (DR 086405).

Notes: This material was a gift of Kunze to C. Schubert. It probably represents original material from Wallroth's herbarium.

Peziza leucostigma Fr., Observ. mycol. (Havniae) **1**: 165, 1815. Fig. 8

≡ ***Orbilia leucostigma*** (Fr.) Fr., Summa veg. Scand., Sectio Post. (Stockholm): 357, 1849.
≡ *Mollisia leucostigma* (Fr.) Gillet, Champignons de France, Discom. (5): 131, 1882.
≡ *Cistella leucostigma* (Fr.) Quél., Enchir. fung. (Paris): 320, 1886.
≡ *Calloria leucostigma* (Fr.) W. Phillips, Man. Brit. Discomyc. (London): 330, 1887.
≡ *Hyalinia leucostigma* (Fr.) Boud., Hist. Class. Discom. Eur. (Paris): 104, 1907.

Probable type material: *Peziza leucostigma* Fr., 'Suecia' (Sweden), 'ab ipso' [in herb. C. Schubert] (DR 086406).

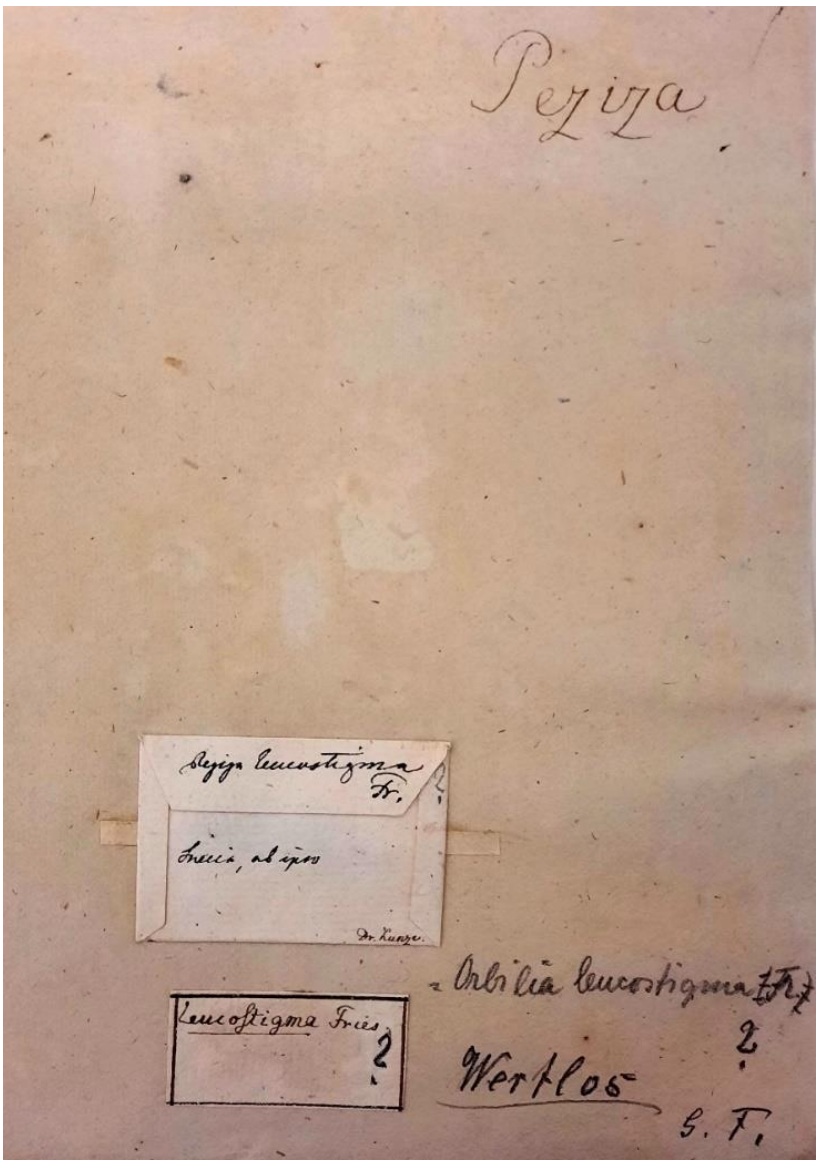

Fig. 8. ***Peziza leucostigma***, possible type, DR 086406, label (pencil notes and the question marks added by G. Feurich).

Notes: Baral et al. (2020: 1394) failed to trace type material of *P. leucostigma* and designated a neotype. The specimen traced in C. Schubert's herbarium is probably type material. The notes on the label, including 'Suecia' and 'ad ipso' support that this material was a gift provided by Fries. The labelling goes back to Kunze (later supplemented by Schubert), suggesting that this specimen was sent by Fries to Kunze, who forwarded a duplicate to C. Schubert.

Peziza spadicea Pers., Mycol. eur. (Erlanga) **1**: 252, 1822, nom. illeg. (Art. 53.1), non Batsch, 1789.

Fig. 9

≡ *Lachnea spadicea* Gillet [as '(Pers.) Gillet'], Champignons de France, Discom. (3): 77, [1879] 1880 (replacement name).

≡ *Lachnella spadicea* (Gillet) W. Phillips [as '(Pers.) W. Phillips'], Man. Brit. Discomyc. (London): 258, 1887 (replacement name).

≡ ***Dasyscyphus spadiceus*** (Gillet) Massee [as '(Pers.) Massee'], Brit. Fung.-Fl. (London) **4**: 363, 1895.

Type: *Peziza spadicea*, Helvetia (Switzerland) [Chaillet], ex herb. Kunze, in herb. C. Schubert (DR 086460).

Notes: The protologue of *Peziza spadicea* Pers. refers to 'Chaillet' [branch of *Populus tremula*, April] as type material. The present specimen from Switzerland in C. Schubert's herbarium, under the name *P. spadicea*, came from Kunze's herbarium, which contained numerous samples that he had obtained from Chaillet in Switzerland (see Braun 2016). Therefore, this material undoubtedly represents type material of *P. spadicea*.

Peziza spadicea Pers. is an illegitimate name (Art. 53.1), so that *Lachnea spadicea*, published as combination based on Persoon's name, represents a replacement name (Art. 58.1). *Lachnella spadicea* is a combination, based on *Lachnea spadicea*, since Gillet's name was cited as synonym in the protologue. Therefore, *Lachnea spadicea* being the basionym of *Dasyscyphus spadiceus*. Hence, *Dasyscyphus spadiceus* (Gillet) Massee is the correct name for this species and not '*Dasyscyphus spadiceus* (W. Phillips) Massee' as cited in Index fungorum.

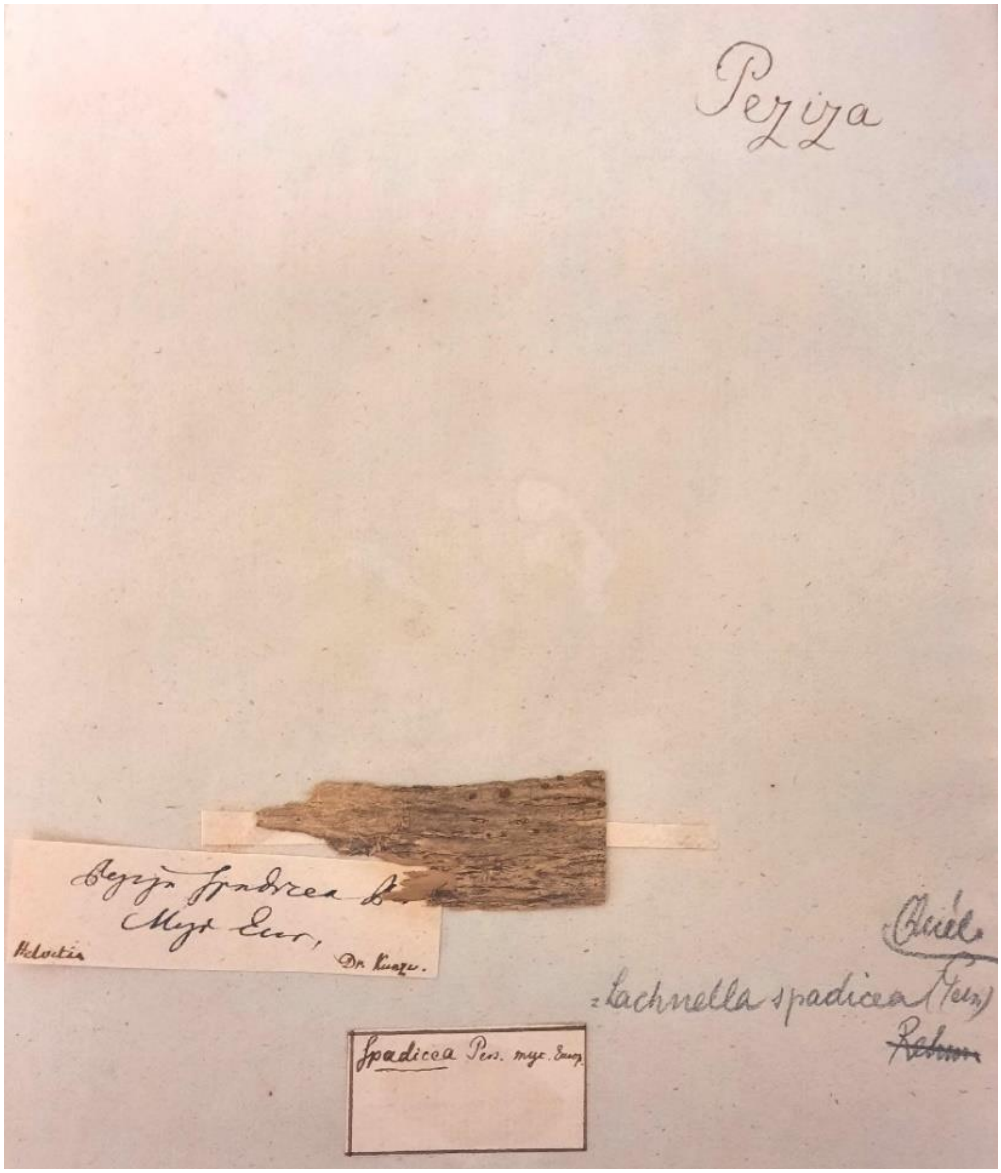

Fig. 9. ***Lachnea spadicea*** (*Peziza spadicea* Pers., non Batsch), type, DR 086460, label.

Puccinia pyrethri C. Schub., in Ficinus & Schubert, Fl. Geg. Dresd. **2**: 251, 1823. Fig. 10

Holotype: [Dresden, on leaves of *Pyrethrum corymbosum*,] a specimen from herb. C. Schubert with the annotation '*Puccinia pyrethri* m. [mihi]' (DR 086467).

= *Puccinia discoidearum* var. *pyrethri* Wallr., Fl. crypt. Germ. (Norimbergae) **2**: 222, 1833.

= *Puccinia pyrethri* A. Br., in Rabenh., Klotzschii Herb. Viv. Mycol., Cent. 16: no. 1589, 1851 [and Bot. Zeitung **9**: 669, 1851; Flora **34**: 571, 1851], nom. nud. (Art. 38.1, a).

= *Puccinia pyrethri* Rabenh., Klotzschii Herb. Viv. Mycol., Cent. 20: no. 1990, 1855, nom. nud. (Art. 38.1, a).

≡ *Puccinia pyrethri* Rabenh. ex Jacky, Centralbl. Bakteriol., 2. Abth., **10**: 379, 1903, nom. illeg. (Art. 53.1).

Notes: *Puccinia pyrethri* C. Schub. is a neglected name. There is a single specimen in C. Schubert's herbarium that can be considered the holotype (Art. 9.1, Note 1). Braun (2018) discussed the nomenclature and taxonomy of *Puccinia pyrethri* A. Br., in Rabenh. (nom. nud.), and *P. pyrethri* Rabenh. (nom. nud.), two invalid names, and cited Jacky (1907: 87) as validating author. However, *Puccinia pyrethri* Rabenh. ex Jacky is an illegitimate homonym of *Puccinia pyrethri* C. Schub.

Previously, *P. pyrethri* had been considered a synonym of *P. tanaceti* DC. (Saccardo 1888: 637) and *P. chrysanthemi-chinensis* Henn. (Sydow & Sydow 1902: 123), respectively. Gäumann (1959: 1138) recognized *P. pyrethri* as a species of its own, but cited it as '*Puccinia pyrethri* (Wallr.) Rabenh.,' indirectly referring to *Puccinia discoidearum* var. *pyrethri* Wallr. However, the name of this variety was not cited under *Puccinia pyrethri* in Klotzschii Herb. Viv. Mycol. 1589 and 1990, i.e., *P. pyrethri* cannot be considered a combination based on Wallroth's variety. In any case, based on a narrower species concept, *P. pyrethri* is nowadays recognize as a separate species (Klenke & Scholler 2015).

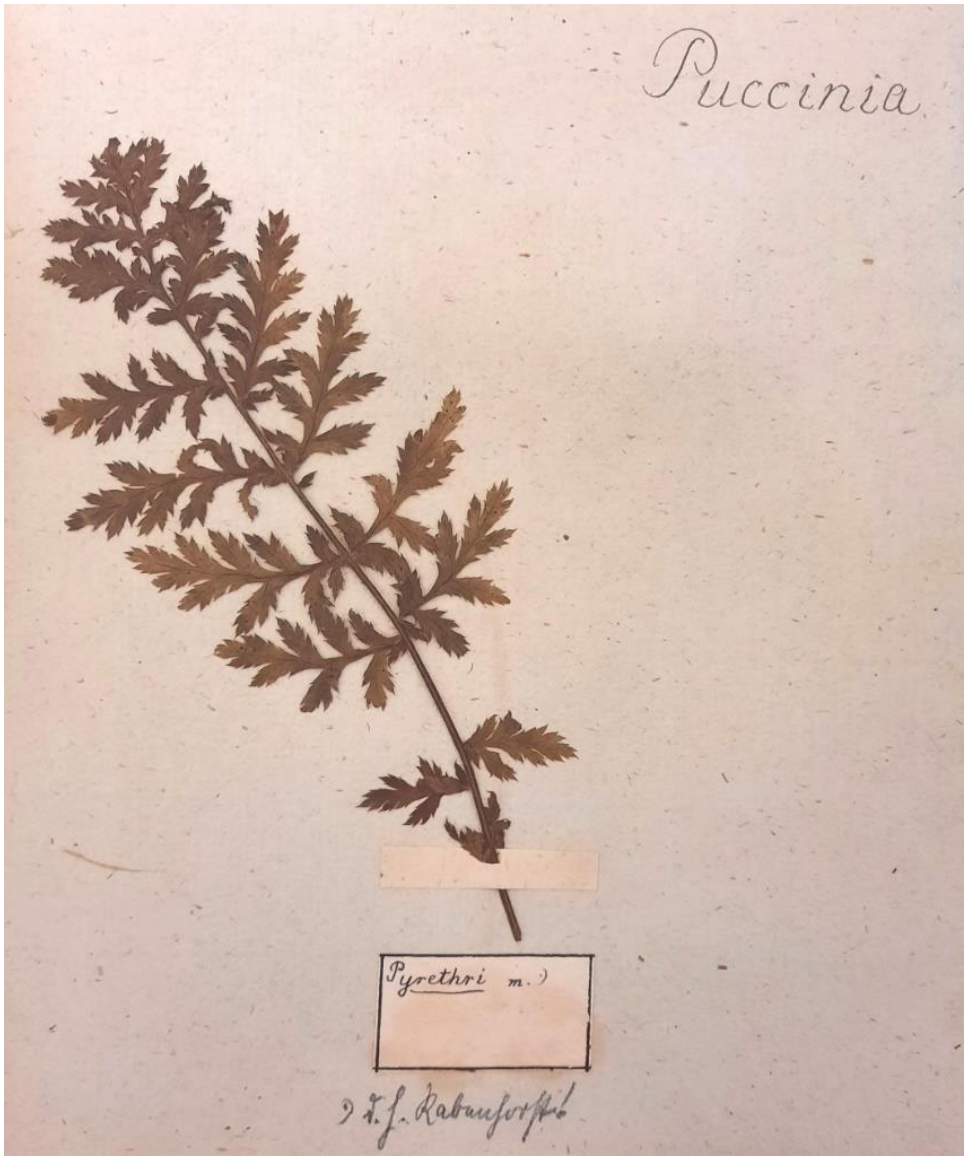

Fig. 10. ***Puccinia pyrethri***, holotype, DR 086467, label.

Sclerotium compactum var. ***cucurbitae*** DC., Fl. franç., Edn 3 (Paris) **5/6**: 112, 1815. Fig. 11

Syntype: 'Helv.' (Switzerland), [Jura], M. Chaillet, ex herb. Kunze, in herb. C. Schubert (DR 078293).

Note: Kunze obtained numerous specimens from Switzerland collected by Chaillet (Braun 2016). The present specimen is undoubtedly syntype material.

Uredo candida f. *cnici* Ficinus & C. Schub., Fl. Geg. Dresd. **2**: 237, 1823. Fig. 12

Holotype: Germany, Saxony, 'Fl. Dresd.' (Dresden), on leaves of *Cirsium oleraceum* (*Cnicus oleraceus*), in herb. C. Schubert (DR 086427).

= ***Pustula spinulosa*** (de Bary) Thines, Mycotaxon **92**: 455, 2005.

Notes: There is only a single specimen in DR under the name *Uredo candida* f. *cnici*. Therefore, this sample can be considered holotype material (Art. 9.1, Note 1).

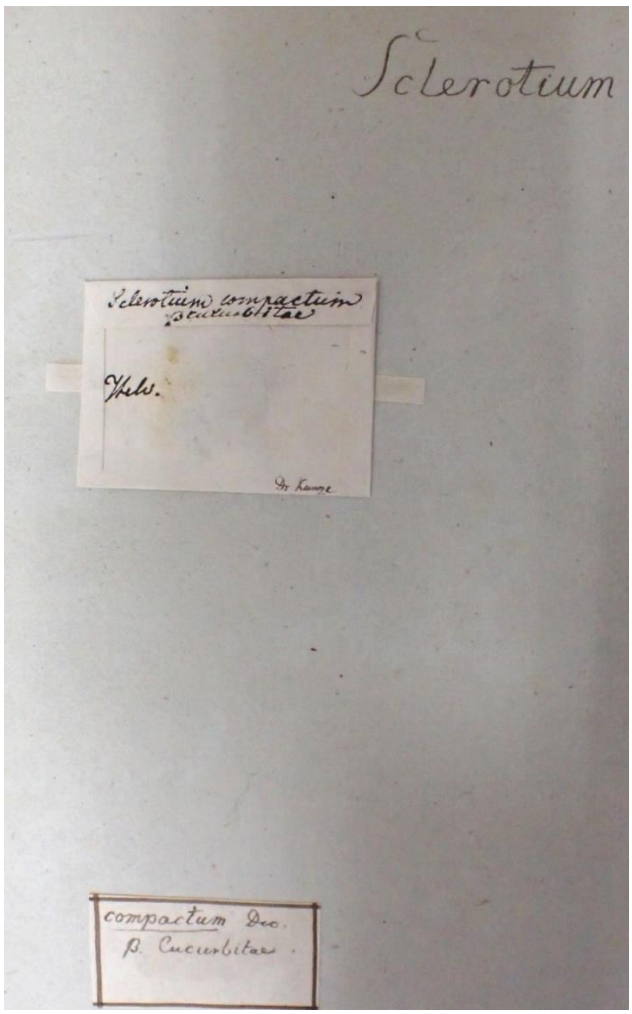

Fig. 11. ***Sclerotium compactum*** var. ***cucurbitae***, syntype, DR 078293, label.

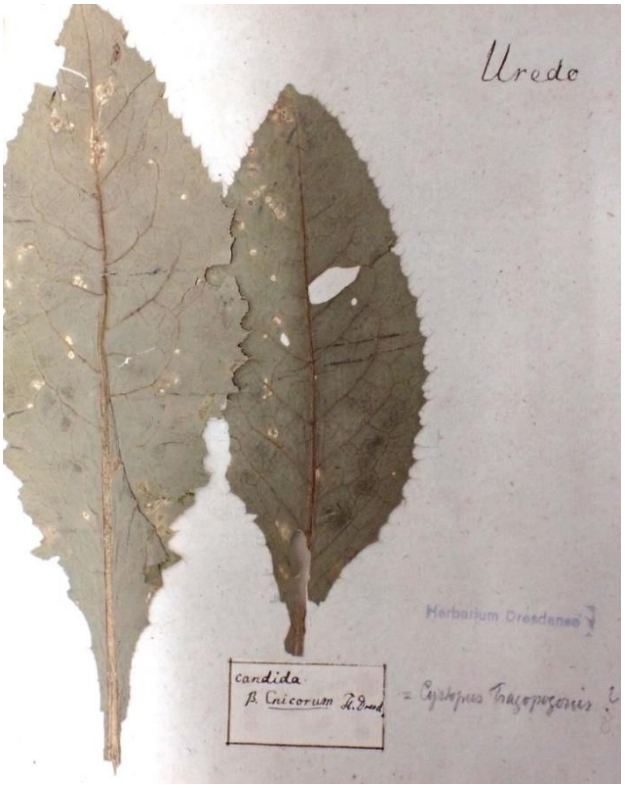

Fig. 12. ***Uredo candida*** **f.** ***cnici***, holotype, DR 086427, label.

Uredo flosculorum f. *cnici* Ficinus & C. Schub., Fl. Geg. Dresd. **2**: 247, 1823. Fig. 13

Holotype: Germany, Saxony, 'Fl. Dresd.' (Dresden), on leaves of *Cirsium vulgare* (*Cnicus lanceolatus*), herb. C. Schubert (DR 086474).

= ***Puccinia cnici*** H. Mart., Prodr. Fl. Mosq., Edn 2: 226, 1817.

Notes: This specimen can be regarded as holotype material. It is the only sample under the name *Uredo flosculorum* f. *cnici* in DR, in C. Schubert's herbarium (Art. 9.1, Note 1).

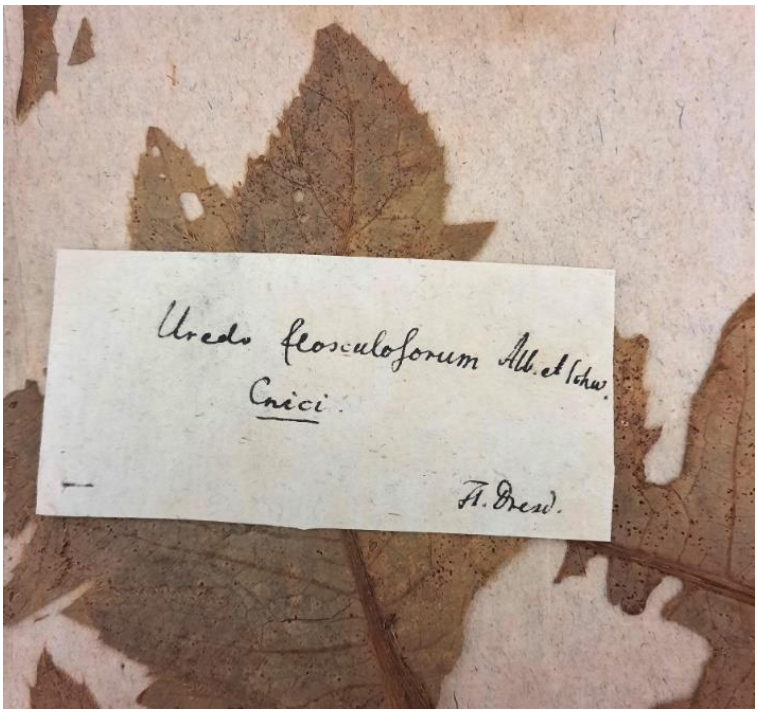

Fig. 13. ***Uredo flosculorum* f. *cnici***, holotype, DR 086474, label.

Literature

Arx, J. A. von 1964: Über die Ascomycetenfamilie der *Leptothyriaceae*. Acta Botanica Neerlandica **13**: 182–188.

Baral, H. O., Weber, E. & Marson, G. 2020: Monograph of Orbiliomycetes (Ascomycota) based on vital taxonomy. Part II. National Museum of Natural History Luxembourg.

Braun, U. 2016: Type material of fungi in D. F. L. von Schlechtendal's herbarium including nomenclatural comments on species published by G. Kunze and J.C. Schmidt in "Deutschlands Schwämme" and other exsiccatae. Schlechtendalia **30**: 9–34.

Braun, U. 2018: Annotated list of taxonomic novelties published in "Herbarium Vivum Mycologicum" issued by J. F. Klotzsch and G. L. Rabenhorst between 1832 and 1855. Schlechtendalia **34**: 3–90.

Bruns, J. N. 1818: Mindre digite. Christianiae.

Dennis, R. W. G. 1963: A redisposition of some fungi ascribed to the Hyaloscyphaceae. Kew Bulletin **17**(2): 319–379.

Ficinus, H. & Schubert, C. 1823: Flora der Gegend um Dresden. 2. Abtheilung: Kryptogamie. Dresden.

Gäumann, E. 1959: Die Rostpilze Mitteleuropas mit besonderer Berücksichtigung der Schweiz. Beiträge zur Kryptogamenflora der Schweiz, Band **XII**. Bern.

Haines, J. H. 1989: Studies in the Hyaloscyphaceae V: Species described by C. H. Peck. Mycotaxon **35**(2): 317–352.

Hardtke, H.-J., Klenke, J. & Ranft, M. 2004: Biographien sächsischer Botaniker. Berichte der Arbeitsgemeinschaft Sächsischer Botaniker **19**: 1−477.

Höhnel, F. von 1903: Mycologische Fragmente (Fortsetzung). Annales Mycologici **1**(6): 522–534.

Höhnel, F. von 1918: Fragmente zur Mykologie (XXI. Mitteilung, Nr. 1058–1091). Sitzungsberichte der Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse, **127**: 329–393.

Holm, L. & Holm, K. 1977: A study of the Leptopeltidaceae. Botaniska Notiser **130**(2): 215–229.

Hosoya, T., Sasagawa, R., Hosaka, K., Sung, G. H., Hirayama, Y., Yamaguchi, K., Toyama, K. & Kakishima, M. 2010: Molecular phylogenetic studies of *Lachnum* and its allies based on the Japanese material. Mycoscience **51**(3): 170–181.

Jacky, E. 1907: Beitrag zur Kenntnis der Rostpilze II. Centralblatt Bakteriologie, 2. Abtheilung, **18**: 78–93.

Jaklitsch, W. M. & Voglmayr, H. 2020: The genus *Melanconis* (Diaporthales). MycoKeys **63**: 69–117.

Khan, Z., Ahmad, S., Jeragh, A., Alfouzan, W., Al Foudri, H., Hassan, N., Asadzadeh, M., Joseph, L. & S. Varghese, S. 2019: First isolation of *Ascotricha chartarum* from bronchoalveolar lavage of two patients with pulmonary infections. New Microbes and New Infections **28**: 11–16.
Klenke, F. & Scholler, M. 2015: Pflanzenparasitische Kleinpilze. Bestimmungsbuch für Brand-, Rost-, Mehltau-, Flagellatenpilze und. Wucherlingsverwandte in Deutschland, Österreich, der Schweiz und Südtirol. Berlin, Heideberg.
Kuehn, H. H. 1959: A preliminary survey of the Gymnoascaceae. II. Mycologia **51**(5): 665–692.
Kunze, G. & Schmidt, J. C. 1823: Mykologische Hefte **2**: 1–176.
Li, D.-W. & Yang, C. S. 2004: Notes on indoor fungi I: New records and noteworthy fungi from indoor environments. Mycotaxon **89**(2): 473–488.
Lindau, G. 1907: Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz. Zweite Auflage. Vol. **1**. 8. Abth: Fungi Imperfecti: Hyphomycetes (Erste Hälfte). Leipzig.
Rabenhorst, G. L. 1844: Deutschlands Kryptogamen-Flora 1 (Pilze). Leipzig.
Rabenhorst, L. 1863: Kryptogamen-Flora von Sachsen, Ober-Lausitz, Thüringen und Nord-Böhmen, mit Berücksichtigung der benachbarten Länder: erste Abtheilung: Algen im weitesten Sinne, Leber und Laubmoose. Leipzig.
Raitviir, A. 1970: Synopsis of the Hyaloscyphaceae. Scripta Mycologica **1**: 1–115.
Saccardo, P. A. 1888: Sylloge fungorum omnium hucusque cognitum, Vol. 7(2). Patavii.
Saccardo, P. A. 1892: Sylloge fungorum omnium hucusque cognitum, Vol. 10. Patavii.
Saccardo, P. A. 1899: Sylloge fungorum omnium hucusque cognitum, Vol. 14(1). Patavii.
Seifert, K., Morgan-Jones, G., Gams, W. & Kendrick, B. 2011: The Genera of Hyphomycetes. CBS Biodiversity Series **9**: 1–997.
Stafleu, F. A. & Cowan, R. S. 1979: Taxonomic literature. Volume II: H-Le. The Hague.
Sydow, P. & Sydow, H. 1902: Monographia Uredinearum. **1** (Genus *Puccinia*), Heft 1. Leipzig.

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