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SCHULZER'S POLYPORES FROM SLAVONIA (CROATIA, YUGOSLAVIA)

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Introduction

In the University Library in Zagreb a manuscript by S. Schulzer von Müggenburg (1802—1892) is preserved under the title: »Pilze aus Slavonien« (Fungi from Slavonia) where macromycetes and micromycetes from Slavonia (eastern part of Croatia) are described. The localities named there are mainly from the vicinity of Vinkovci, where he spent some years during his military career and where he lived and studied fungi after his retirement in 1859 till his death in 1892. An earlier manuscript, »Schwämme und Pilze aus Ungarn und Slavonien« (Mushrooms and Fungi from Hungary and Slavonia) is deposited in the Hungarian Academy of Science in Budapest. In it are localities from Slavonia mentioned, but more from other parts of the then Austro-Hungarian empire.

Excerpts from both manuscripts were published by Schulzer from time to time (in over 100 articles) in various scientific journals. Many species from all groups of fungi were described as new in those papers, but it is very difficult to interpret a great part of them satisfactorily, and it is often not clear what they in fact represent.

In another paper (Tortić 1980) I have revised Schulzer's published polypores, mostly considered by him as new, irrespectively of localities. Here I have arranged the polypores alphabetically under modern names, published or not, which he found in the territory of Yugoslavia, predominantly in Slavonia, in the vicinity of Vinkovci, in order to obtain a list of species of this group occurring there, where, since Schulzer's time, the mycoflora of higher fungi has not been investigated systematically.

Materials and Methods

The data were taken in the first place from »Pilze aus Slavonien« (MS II for short) and Schulzer's published papers, mainly his two lists (1858, 1866). In the first list (1858) he does not name particular localities, but only regions (Slavonia, Hungary, Banat) or merely says that a species occurs everywhere. This list is accordingly cited in cases Slavonia or "everywhere" is mentioned. In the second list (Schulzer et al. 1866 — in further text only Schulzer will be cited for this paper, for short, since he alone wrote the part of the article concerning fungi), either various localities, mostly near Vinkovci are mentioned, or generally the vicinity of Vinkovci is understood. However, in »Schwämme und Pilze aus Ungarn und Slavonien« (MS I) localities from Slavonia are cited for some species which are not to be found in MS II or in the published lists. In such cases, or if there are some other important data missing in MS II, MS I is also cited. In MS I there are also some species of polypores described from localities in Slavonia, which were neither published, nor taken over in MS II; some more or less recognisable ones are discussed here, too.

Although I did not have the opportunity to see MS I in the original, I was able to study an earlier draft of it, preserved in the University Library in Zagreb, and also a typewritten copy and a microfilm of the part treating the polypores, obtained on loan from Prof. Z. Igmándy (Sopron).

The species from MS II are marked by numbers; this is not the case for MS I where pages are cited.

Schulzer did not usually preserve his specimens, but a few existing exsiccata of his polypores, deposited in the Museum of Natural History, Vienna (Naturhistorisches Museum, Wien — W), were examined.

In the following list main characters are given for some species, particularly for those described as new but not published; for details about the published ones see Tortić (1980). It must be pointed out that in a number of cases oildrops, fragments of hyphae etc. were apparently mistaken by Schulzer for spores, as their form and size as described are not right for the species he discusses. The manuscript was revised by Quélet and Bresadola; their comments were recorded by Schulzer in the text and are cited in some instances. The polypores published were discussed by Donk (1974).

The localities mentioned are situated mostly quite near Vinkovci, within a radius of about 5—6 km from the town. The altitude is less than 100 m (± 90 m) and the forests are those of *Quercus robur*, with other hardwoods admixed; conifers do not occur spontaneously there. The majority of those places are now under cultivation or built up and only the forest Kunjevci remains. Farther off are Bošnjaci and Županja; there still remain large tracts of forests to which Schulzer sometimes refers as »Waldungen des Broder Grenz Regiments" (forests of the border regiment of Brod); they are situated about 25 to 30 km to the south. Đakovo is a small town about 30 km to the west in a straight line. Kamenica near Petrovaradin, on the slopes of Fruška gora mountain, where he was also stationed at one time, is still farther, about 80—90 km toward the east, near Novi Sad in the autonomous province Vojvodina in the Republic of Serbia.

The identification of all the species of polypores described in both MSS was not always quite certain, as pointed out in the text when necessary. Some particularly doubtful species are added after the list proper, under Schulzer's names. Several species could not be interpreted at all and it was therefore no use even to mention them here; some published ones are discussed elsewhere (Tortić 1980).

List of species

Abortiporus biennis (Bull. ex Fr.) Sing. MS II Nr. 322 and 1009 as *Polyporus biennis* (Bull.)? var. *slavonicus* m., olim *Ceriomyces terrestris*, deinde *Daedalea polymorpha* (Schulzer 1874, 1880, Donk 1974, Tortić 1980). Nr. 422 and 515 as *Polyporus (Merisma) ambiguus* Schlzr. Not published under that name. The drawings are recognisable; in the first the specimens are rather brown, in the second whitish. Spores are described as globose, 2—6 μm. Schulzer mentions in the text that it looks like *P. biennis*, but also like *P. tomentosus*. Localities: Nuštar, Kunjevci, Ostrovo, all near Vinkovci, on or near the stumps of *Carpinus*, also on soil.

Bjerkandera adusta (Willd. ex Fr.) P. Karst. Schulzer 1866 as *Polyporus adustus* Fr. and *P. carpineus*, 1882 as *P. adustus* Willd. MS II Nr. 310 as *P. adustus* P., Nr. 405 as *P. carpineus* Sow., Nr. 1230 as *P. murinus* Rostk. var *carpineus* Schlzr. and Nr. 1411 as *P. murinus* var. *quercinus* Schlzr. These varieties were not published; both are resupinate forms of this very common and frequent species. The localities mentioned are Vinkovci and Crni gaj and Nuštar near the town, Slavir near Bošnjaci, park in Đakovo and wood Gaj nearby, and Fruška gora, the hosts being *Quercus, Fagus, Carpinus, Ulmus, Betula, Populus, Salix, Alnus* where the fungus occurs from spring till autumn on stumps, logs and also living trees.

Bjerkandera fumosa (Pers. ex Fr.) P. Karst. MS II Nr. 1003 and 1063 as *Polyporus imberbis* Bull. var. *indurabilis* m. Kunjevci near Vinkovci, on stumps of *Quercus* and *Carpinus*. Schulzer described it first as a new species *indurabilis*, but since Quélet was of the opinion that it represented *Polyporus fumosus* P., and Bresadola that it was *Boletus imberbis* Bull. (which is a synonym), Schulzer added the name *imberbis* and left his name as a variety. The description, the drawing and the spores (cylindric, 6 × 2 μm) fit quite well this species, which was not published by Schulzer under that name, but mentioned as *P. fumosus* (on willows in Hungary) in 1858, and described in MS I p 749 under the latter name.

Buglossoporus pulvinus (Pers.) Donk. MS II Nr. 544 as *Polyporus suberosus* Krmbh. vel *quercinus* (Schrdr.) Fr. var. *reniformis* m., olim *P. allochrous* Schlzr. (under the last name in MS I p. 783). Kunjevci, Crkvenac (a smaller wood inside Kunjevci), Crni gaj, all near Vinkovci, on stumps and logs of *Quercus*. A good and unmistakable description (including the spores: elongate, 8—10 μm long) and drawing of this rare species, which was, however, not published by Schulzer under that name. MS I p. 780 and MS II Nr. 1274 as *Polyporus phalliodorus* Schlzr. Fries 1874 and Kalchbrenner 1877 as *P cadaverinus*. Crni gaj near Vinkovci, on dead wood of *Quercus*. Interpreted as identical with *B. pulvinus*, but this interpretation is still rather uncertain (Donk 1974, Tortić 1980).

Cerrena unicolor (Bull. ex Fr.) Murr. MS II Nr. 552 as *Daedalea unicolor* (Bull.) Fr. Lug and Kunjevci near Vinkovci, on *Carpinus betulus, Acer campestre, Robinia pseudacacia, Morus* sp., in various seasons, not very frequent. Nr. 410 as *Daedalea subunicolor* Schlzr. — first determined as unicolor, "sub" added later, but clearly the same species. Nuštar, prostrate trunk of *Acer sp.* Neither was published.

Coltricia perennis (L. ex Fr.) Murr. Schulzer 1866 and MS I p. 796 as *Polyporus perennis* Fr. Kamenica near Petrovaradin. MS II Nr. 834 as *Polyporus (Mesopus) carbonicola* Schlzr. *(perenniformis* Schlzr. crossed out). Kunjevci. Not published.

Daedalea quercina (L.) ex Fr. Schulzer 1858, 1866, 1882 as *Daedalea quercina* P. MS II Nr. 312. No particular localities are mentioned (only the park and the wood Gaj near Đakovo) since it is stated as growing everywhere and in all seasons on dead and living wood of *Quercus*. In the description in MS II Schulzer mentions *Xylostroma giganteum* as a mycelial form of this fungus. A specimen collected by Schulzer in 1859 in Crni gaj near Vinkovci is preserved at W.

Daedaleopsis confragosa (Bolt. ex Fr) Schroet. Schulzer 1866 as *Daedalea rubescens* Alb. et Schw. from Crni gaj near Vinkovci. MS II Nr. 1111 as *Trametes erubescens* Schlzr. Gaj near Đakovo, on *Corylus avellana* (Schulzer 1882, Donk 1974, Tortić 1980). Nr. 1311 as *Lenzites tricolor* Bull, olim *Daedalea cerasi*. Crni gaj, almost exclusively on fallen branches of *Prunus avium*, very exceptionally on logs and fallen branches of *Carpinus betulus*. The drawing is that of the typical form of *D. confragosa*, with pores (Tortić 1980).

Daedaleopsis confragosa var. *tricolor* (Bull. ex Fr.) Bond. [*D. tricolor* (Bull. ex Mérat) Bond. et Sing.]. Schulzer 1866 as *Lenzites subintegra*, Fries 1874 and Kalchbrenner 1875 as *Lenzites tricolor*, MS I p. 840 and 842 as *Lenzites angustata* and *L. subintegra*. MS II Nr. 928 as *Lenzites tricolor* Bull. (earlier name *cerasicola* crossed out). In the text it is stated that it was described in MS I as *L. subintegra*. Crni gaj, on *Prunus avium*. Nr. 1315 as *Lenzites bresadolae* Schlz. olim *angustata* Schlzr. Kunjevci, on a branch of *Quercus* sp. (Schulzer 1885). These names were discussed by Donk (1974) and Tortić (1980).

Fistulina hepatica (Schaeff.) ex Fr. Schulzer 1858, 1866 under the same name. MS II Nr. 354. Typical form. Nr. 230, 1202 and 1336 represent some abnormal forms, the last two »die Fructification von *Scleroderma* simulirend«. The species is stated to be frequent wherever oak occurs, growing in cavities on living trees and on stumps not yet rotten. As localities only the vicinity of Vinkovci and Vidor are mentioned.

Fomes fomentarius (L. ex Fr.) Kickx. Schulzer 1858, 1866 as *Polyporus fomentarius* Fr. Under the same name, but with "P." as author, it is described in MS II Nr. 283 and 294. Nr. 546 as *Polyporus inzengae* DN (earlier name, *P. cretaceus*, crossed out) (Donk 1974, Tortić 1980). Nr. 1085 as *Polyporus (Fomentarius) fraxineus* Bull.? (his question mark). Schulzer 1882 as *P. fraxinicolus* Schlzr. (Donk 1974, Tortić 1980). Schulzer says that this species is frequent everywhere and only few localities are mentioned: Fruška gora, forest region between Bošnjaci, Gradište and Otok, Vinkovci, Đakovo. As hosts are listed *Quercus, Ulmus, Salix, Fraxinus, Alnus, Tilia, Juglans, Carpinus* and particularly *Fagus*, both living trees and logs.

Fomitopsis cytisina (Berk.) Bond. et Sing. [*Haploporus cytisinus* (Berk.) Domań.] Distributed in Linhart, Fungi hungarici nr. 54 as *Polyporus sublinguaeformis* Schulzer (Donk 1974). MS II Nr. 1194 as *Polyporus (Placoderma, lignosi) fraxineus* Bull. var. *quercigenus* Schlzr. olim *sublinguaeformis* m. (Tortić 1980). Kunjevci near Vinkovci, on an apparently healthy oak tree, 1—1,5 dm above ground.

Fomitopsis pinicola (Sw. ex Fr.) P. Karst. Schulzer 1866 as *Polyporus pinicola* Fr., with varieties *cerasicola* and *ellipticus*. MS II Nr. 248, 251 and 491, all as *P. pinicola* Swartz. On *Picea, Fagus, Prunus avium* (on this host also in his garden), *Betula, Populus alba*, in and near Vinkovci.

Funalia gallica (Fr.) Bond. et Sing. Schulzer 1866 as *Trametes effusa*, 1883 as *Polyporus sarrazinii*. Kalchbrenner 1877 pl. 37 fig. 1a as *Polyporus schulzeri* Kalchbr. or *P. vulpinus* Fr. These names were discussed by Donk (1974). MS I p. 739 as *P. schulzeri* Kalchbr. from Retki and Crni gaj near Vinkovci, and from Županja, on oak branches, MS II Nr. 1368 as *Polyporus sarrazinii* Schlzr. A specimen from Retki gaj near Vinkovci, on oak stumps, collected in 1859 is preserved at W under the name of *Polyporus effusus* (Tortić 1980). This is surely the specimen which Schulzer mentions in MS I p. 739 as having sent years ago to »meinem edlen Freunde dem Herrn Ministerialrath Br. Hohenbühel.«

Ganoderma adspersum (S. Schulz.) Donk. Schulzer 1878, Donk 1974, Tortić 1980. MS II Nr. 725 as *Polyporus (Placederma) adspersus* Schlzr. Vidor near Vinkovci, on stumps of *Quercus* and *Carpinus*. It can be mentioned as a curiosity that this species was collected in 1966 by F. Kotlaba (Prague) from a birch growing on Schulzer's tomb. (Tortić 1971).

Ganoderma applanatum (Pers. ex Wallr.) Pat. Schulzer 1858, 1866 as *Polyporus applanatus* Rabh. MS II Nr. 305 and 1095 under the same name but with "P." as author. The second is described as producing only conidia on the upper surface (Schulzer 1880a) and on the drawing there are hyphae with spores attached to them which he interpreted as conidia. Nr. 998 as *Polyporus (Placoderma, Fomentarius) brevitubulatus* Schlzr. In the text Schulzer states that this species is identical with *P. brachytubus* described in MS I p. 760, but this is not quite certain (Tortić 1980). Nr. 285 as *Polyporus moricolus* m., Nr. 1091 as *Polyporus (Fomentarius) adspersoides* m, Nr. 494 as *Polyporus cydoniae* Schlzr. These four names were not published by Schulzer. The drawings show typical fruitbodies of *G. applanatum*, the spores have a form typical of that genus and their size agrees better with this species than with the preceeding one (*P. brevitubulatus* 6 × 4 μm, *P. adspersoides* 5—6 × 3 μm, *P. cydoniae* length 4—6 μm; *P. moricolus* was sterile). The only discrepancy is the very dark brown colour of the context in *P. cydoniae*, almost like that of *G. adspersum*, but other characters are nearer to *G. applanatum*. Quelét suggested that Nr. 285 and 494 were indeed *G. applanatum*.

This species is stated by Schulzer to be frequent, occurring in various forests. As localities only Vinkovci and Kunjevci are named in MS II, but in MS I p. 754 also Nuštar, Gradište, Bošnjaci, Belje. The host is given as *Pinus, Fagus, Alnus, Tilia, Populus, Aesculus, Acer, Cydonia*, and particularly *Quercus;* the fungus grew on stumps and also on living trees.

Ganoderma lucidum (Curt. ex Fr.) P. Karst. Schulzer 1858, 1866, 1882 as *Polyporus lucidus* Fr. In MS II the same name is used but the authors are cited either as Leyss. or P. Nr. 314 and 720. In the first drawing there is also a specimen without stipe which belongs rather to *G. resinaceum* (see there). The fungus grows everywhere on living trees of *Quercus, Carpinus, Tilia, Alnus*, also on stumps and apparently on soil. As localities only Vidor and Đakovo are mentioned.

Ganoderma resinaceum (Boud.) ex Pat. Without any doubt included in *G. lucidum* in published papers. MS II Nr. 314 part of the drawing, Nr. 751 and Nr. 1344, all as *P. lucidus* P. [or (Leyss.) P.]. The drawings show large fruitbodies without a stipe, covered with a shining red crust. Spores in Nr. 1344 are given as 10—15 × 7—8 μm. Kunjevci and Lug near Vinkovci, on stumps of *Alnus* and *Carpinus*. Not published as a different species from *G. lucidum*. Of course, absolute certainty about this interpretation is impossible without an exsiccate.

Gloeophyllum abietinum (Bull. ex Fr.) P. Karst. MS II Nr. 979 as *Lenzites abietinus* (Bull.) Fr. In Schulzer's courtyard in Vinkovci, on a pail made of coniferous wood. The description and drawing, as well as the spores (cylindric, 8—10 × 3 μm) fit this species well. Not published; not even in MS I.

Gloeophyllum sepiarium (Wulf. ex Fr.) P. Karst. Schulzer 1858, 1866 as *Lenzites sepiaria* Fr. MS II Nr. 997 under the same name, but the authors (Pers.) Fr. On worked coniferous wood without bark in a timber-yard in Osijek. Here too, the species is easily recognisable from all the data, including dimensions of spores, 7—10 × 4 μm.

Grifola frondosa (Dicks. ex Fr.) S. F. Gray. Schulzer 1858, 1866 as *Polyporus frondosus* Fr. MS II Nr. 240 (here the author is cited as Schrank). From September to November at the roots of old living oaks, rarely at the base of old oak stumps, almost directly on wood. No particular locality is mentioned here, but is MS I p. 776 the species is said to occur in forests of the border regiment of Brod (south of Vinkovci, extending to the river Sava) and that it is named »zec-gljiva« in this region.

Hapalopilus croceus (Pers. ex Fr.) Donk. MS II Nr. 1189 as *Polyporus croceus* P. Kunjevci near Vinkovci in August, in the cavity of an old oak stump. The description and drawing agree very well with this rare species, except that the spores are described as globose, 2 μm! Not published.

Hapalopilus nidulans (Fr.) P. Karst. Schulzer 1858 as *Polyporus nidulans* Fr. occurring in Slavonia, Schulzer 1866 as *Daedalea Bulliardii* Fr. in Retki and Crni gaj, Kunjevci, Fruška gora. MS I p. 717 as *D.? Bulliardi* Fr., in all forests with oak and beech. The description and synonyms cited (*Boletus suberosus* Bull., *Polyporus nidulans* Fr. etc.) are those of *H. nidulans*. MS II Nr. 718 as *Polyporus nidulans* Fr. Not rare on fallen branches of *Quercus* and *Fagus* in the vicinity of Vinkovci. Here too, the description and drawing are very good and recognisable, except the spores, which Schulzer found, as in the preceeding species, globose, about 2 μm in diameter. In both cases he probably mistook oil drops for spores.

Hirschioporus abietinus (Dicks. ex Fr.) Donk. Schulzer 1858 as *Polyporus abietinus* Fr., growing everywhere on living and felled *Pinus, Quercus, Fagus, Carpinus, Alnus, Betula, Salix*. He must have confused *H. abietinus*, occurring on conifers, with another species, probably *H. pargamenus* growing on hardwoods (see the latter). MS II Nr. 1176 as *Polyporus incertus* Schlzr. (first determined as *P. abietinus* but this name deleted). Crni gaj near Vinkovci, in a group of planted pines, on wood of *Pinus*. Schulzer says that it is frequent elsewhere on conifers, but rare near Vinkovci where autochthonous conifers do not occur. Spores are again described as globose, 2 μm, but the drawing and description represent this species.

Hirschioporus pargamenus (Fr.) Bond. et Sing. Very probably included in *P. abietinus* published 1858 occuring on hardwoods mentioned as hosts of that species (see *H. abietinus*), also as *Irpex fusco-violaceus* Fr. from Županja, Vinkovci and Kamenica (Schulzer 1866 and MS I p. 696) on logs and living trees of *Quercus, Salix* and *Fagus*. MS II Nr. 255 as *Irpex lilacinus* Schlzr. and Nr. 1000 as *I. subimbricatus* Schlzr. The first in Ostrovo, on logs and living trees of Quercus, the second in Crni gaj on a branch of Carpinus. Both near Vinkovci. The descriptions fit *H. pargamenus* well in both cases, as do also the dimensions of spores in Nr. 1000 (cylindric, 5—6 × 2—2.5 μm). In Nr. 255 the spores are somewhat too long, 6—10 μm.

These names by Schulzer were never published. According to Donk (1974) *Irpex pavichii*, described by Kalchbrenner (1877) from Croatia (no locality given), belongs probably here, too.

Inonotus dryadeus (Pers. ex Fr.) Murr. Schulzer 1858, 1866 as *Polyporus dryadeus* Fr. In MS I p. 765 as occuring on stumps and living trees of oaks in Kunjevci, Vidor, Slavir near Bošnjaci and other forests extending south from Vinkovci to the river Sava. In MS II Nr. 309 the author is cited as "P.", not "Fr." and only Kunjevci is mentioned as locality, where the fungus grows from June till September on old living oaks, particularly quite at the base (on roots), also on oak stumps. A very good drawing. In Schulzer's time many old oak forests still stood and the species was apparently more common than it is now, when it is accounted as rare.

Inonotus hispidus (Bull. ex Fr.) P. Karst. Schulzer 1866 as *Polyporus hispidus* Fr. MS I p. 768 and MS II Nr. 239 and Nr. 1419 as *Polyporus hispidus* Bull. Nr. 121 partly as *P. hispidus* Bull. olim *P. mori*, partly as *P. bresadolae* (Schulzer 1885, Donk 1974, Tortić 1980). Draganovci and Borinci near Vinkovci are cited as localities and *Pyrus malus* and *Morus* sp. as hosts.

Inonotus radiatus (Sow. ex Fr.) P. Karst. MS II Nr. 289 as *Polyporus alneus* P. on *Populus nigra* in Nuštar near Vinkovci. *Alnus* and *Fagus* are also mentioned as hosts. The identification is not quite certain, but most probable. It was published by Schulzer in 1858 as *Polyporus radiatus* Fr. (*Bol. alneus* P.) from east Hungary.

Irpex lacteus (Fr. ex Fr.) Fr. MS II Nr. 1348 as *Irpex bresadolae* Schlzr. growing on *Amygdalus communis*(?) in Schulzer's garden at Vinkovci (Schulzer 1885, Maas Geesteranus 1974, Donk 1974). Nr. 1402 as *I. spathulatus* Schrdr. var. *pomicola* Quél. (Schulzer 1885, Donk 1974), on an apple tree at Vinkovci. Nr. 22 and 144 as *I. prunorum*, the former as var. *totus albus*, the latter as var. *armeniacae* — this was growing on a dead apricot tree in Schulzer's garden (Schulzer 1872). Nr. 1347 as *I. membranaceus* Schlzr. (not published). Lug or Šopot near Vinkovci, on prostrate branches of *Carpinus*. Pores labyrinthic, tubes split. Spores hyaline, cylindric, 4—5 × 2 μm. Schulzer himself says that it is nearest to a white *I. lacteus*. In MS I p. 695 *I. cerasicolus* is described from the forest Leskovac near Vinkovci, occurring on logs of wild cherry and apparently belonging here (Schulzer 1866, Donk 1974). All names published have been discussed by Tortić (1980).

Laetiporus sulphureus (Bull. ex Fr.) Murr. Schulzer 1858, 1866 as *Polyporus sulphureus* Fr. MS II Nr. 284 as *P. sulphureus* Bull. Vidor near Vinkovci, on old living *Salix, Alnus, Populus, Quercus,* wild *Prunus avium* and *Prunus domestica,* not rare from April till October. Nr. 740 as *P. sulphureus* var. *obconicus* Schlzr., on a prostrate trunk of *Quercus* in Vidor. Somewhat curious looking, but probably belongs here. Nr. 514 as *Polyporus xylophilus* Schlzr. (first determined as *P. giganteus*). Some specimens in the drawing are yellow, others brown. Spores are described as obovate, 6 μm long. Smell unpleasant. On *Quercus* logs everywhere near Vinkovci. Quélet and Bresadola thought that this was *Polyporus sulphureus,* but Schulzer found some differences. Nr. 677 as *Polyporus gigantellus* Schlzr. It has the form of *L. sulphureus,* but is brown, flesh lighter brown, tubes and pores are yellow. The spores are described as cylindric, somewhat curved, 5—6 × 2 μm! It grew at the base of a diseased *Morus* sp. near Vinkovci. Schulzer thought that it was similar to the preceding.

These two species have never been published. According to the descriptions they belong best in *L. sulphureus*, but show some similarity also to *Meripilus giganteus*, therefore the identification is not quite certain.

Lenzites betulina (L. ex Fr.) Fr. Schulzer 1858 as *Lenzites betulina* or *Daedalea betulina* Fr., 1866 as *Lenzites variegata* Fr. MS I p. 841 as *Lenzites ochracea* (unpublished). MS II Nr. 320 as *Lenzites ambigua* m. Although Quélet thought that this might be *Lenzites tricolor*, it is clearly *L. betulina*. The name was not published. Nr. 496 as *L. flaccida* Fr. and Nr. 943 as *L. flaccida* Fr. var. *intricata* Schlzr. (earlier name "*sublabyrinthiformis*" crossed out). Nr. 1078 as *L. betulina* (L.) var. *umbrina* m. ("*variegata*" crossed out). The varieties were not published. Nr. 927 as *L. queletii* Schlzr., 402 as *L. queletii* var. *populina* Schlzr. (in MS I p. 840 as *L. variegata* Fr. var. *populina*) and Nr. 1316 as *L. queletii* var. *crassior* Schlzr. (Schulzer 1885, Donk 1974, Tortić 1980). Nr. 1425 as *Lenzites vukasovićiana* Schlzr. (Schulzer 1887, Donk 1974, Tortić 1980).

Kamenica, Nuštar, Kunjevci, Crni gaj, Lug are named as localities and also generally the vicinity of Vinkovci, where the species is frequent, occurring on stumps mostly of *Quercus* and *Carpinus*. *Fagus, Salix* and *Populus* are also cited as hosts.

Lenzites warnieri Dur. et Mont. ap. Mont. Thüm. *Mycotheca universalis* Nr. 1501 as *Lenzites reichardtii* Schulzer. MS II Nr. 210 as *Lenzites reichardtii* Schlzr., Nr. 307 as *Lenzites candidula* Schlzr. (not published, but there is a specimen in W as *Lenzites albida*), Nr. 1371 as *Lenzites labyrinthica* Quél. et Schulzer (Schulzer 1885). Schulzer's names were discussed by Donk (1974), Tortić (1971, 1980). The localities cited by Schulzer are Vidor, Lug, Leskovac, Kunjevci and the bank of the river Bosut near Vinkovci. The fungus grew on dead wood of *Quercus, Ulmus, Populus tremula, Acer campestre.*

Meripilus giganteus (Pers. ex Fr.) P. Karst. Schulzer 1858, 1866 as *Polyporus giganteus* Fr. In MS I he mentions it on p. 771 under that name from Retki Gaj near Vinkovci, and from the vicinity of Vinkovci also as *Polyporus elegans, Boletus elegans* Bolt., which is a synonym of *M. giganteus*. MS II Nr. 1004 as *Polyporus giganteus* P., Nr. 645 as *Polyporus (Merisma) flabellatus* Schlzr. et Bres. (Schulzer 1885, Donk 1974, Tortić 1980). Localities: Retki Gaj and Kunjevci near Vinkovci, Fruška Gora. On stumps of *Quercus, Fagus, Carpinus.*

Phellinus ferruginosus (Schrad. ex Fr.) Pat. Schulzer 1858 as *Polyporus ferruginosus* Fr. MS II Nr. 550 under the same name. Nuštar, Kunjevci, on rotten branches of *Quercus*. Probably this species, but could also be *Ph. contiguus*.

Phellinus igniarius (L. ex Fr.) Quél. s. l. Schulzer 1858 as *Polyporus igniarius* a) Fr., *Boletus ungulatus* Schff., 1866 as *Polyporus igniarius* Fr. MS II Nr. 545 under the last name. On *Salix*, more rarely *Alnus, Juglans*. No localities given.

Phellinus pomaceus (Pers.) Maire. Schulzer 1858 as *Polyporus igniarius* b) Fr., *Boletus pomaceus* P., 1866 as *P. igniarius* b *pomaceus* Fr. MS II Nr. 559 as *Polyporus igniarius* var. *pomaceus* P. Everywhere on *Drupaceae:* plums, peaches, cherries etc.

Phellinus ribis (Schum. ex Fr.) Quél. Schulzer 1858, 1866 as *Polyporus ribis* Fr. MS II Nr. 483 as *Polyporus ribis* Schum. Everywhere on *Ribes rubrum* and *grossularia, Rosa* sp., *Ligustrum vulgare, Euonymus europaeus, Rhamnus frangula, Fraxinus, Quercus, Ulmus.*

Piptoporus soloniensis (Dub. ex Fr.) Pil. Schulzer 1866 as *Polyporus irpex*, Fries 1874 and Kalchbrenner 1877 as *Polyporus schulzeri* Fr. MS I p. 748 and MS II Nr. 1323 as *Polyporus irpex*. On logs and diseased trees of *Quercus* in Crni Gaj near Vinkovci. A specimen is preserved at W. (Donk 1974, Tortić 1975, 1980).

Polyporus arcularius (Batsch) ex Fr. and *P. brumalis* (Pers ex Fr.) Fr. are here treated together since various species described by Schulzer belong without doubt to this group, but could not be attached with certainty to either of those species; it seems, however, that the majority fits *P. arcularius* better than *P. brumalis*. Both *Polyporus arcularius* Fr. and *P. brumalis* Fr. were published by Schulzer (1866). They are described in MS I. On p. 794 under *P. arcularius* both species seem to be confused, since the cap is described as being from very pale yellow to dark chestnut brown, fruitbodies occurring in all seasons, caps often almost squamose, sometimes ciliate at the margin, pores dentate when old etc. *P. brumalis* (p. 793) occurs from autumn till spring, the cap is again from light to rather dark brown, always squamulose, at the margin hairy (»zottigfilzig«), and the pores are rather large, with dentate edges. On p. 794 *Polyporus vernus* is also described (published in 1866 as *P. macroporus*) which occurs from April till June. Pores are also large here, with dentate edges. Schulzer considered all the three species only as forms of a single one. According to the descriptions in MS I partly cited here *P. brumalis* and *P. vernus* seem to represent *P. arcularius*. However, *P. vernus* var. *fasciculatus* Schrader (Schulzer 1870), described as having the cap umber brown, at first with very fine squamae, later glabrous, might be true *P. brumalis*. *Polyporus atripes* p. 792 (Schulzer 1866) seems to belong also to *P. arcularius* (Tortić 1980). MS II Nr. 951 as *Polyporus arcularius* (Batsch) P., *P. rhombiporus* P. and some other synonyms. Pores very large, up to 6 mm, spores cylindric, 8—10 × 3 μm. Nr. 712 and Nr. 1362 as *Polyporus brumalis* P. In the first, some caps are dark brown, some whitish; margin with hirsute hairs, almost like spines. Large pores, up to 2 mm long, spores cylindric, 4—10 μm long. Nr. 1239 as *Polyporus intermedius* Rostk. Cap brownish yellow, margin very hirsute, spores cylindric, 4—7 × 1.5 μm. Looks somewhat like *Polyporus lentus* but belongs probably here. As localities for these species Kamenica, Vinkovci, Kunjevci, Vidor, Šopot (the last three near Vinkovci) are cited. The specimens were found on stumps or twigs, even chips, of *Quercus, Fagus, Carpinus*.

Polyporus ciliatus Fr. ex Fr. MS II Nr. 1033 as *Polyporus brumalis* P. var. *fasciatus* Schlzr., Nr. 1237 as *P. cognatus* Schlzr. and Nr. 950 as *P. microporus* Schlzr. All with very small pores. The spores in the last named are described as cylindric, 8 × 3 μm. All were found in the forest Kunjevci near Vinkovci on fallen branches or roots of *Crataegus oxyacantha;* the identification of the host was, however, not quite certain in Nr. 950. The drawings, particularly of *P. microporus*, show typical *P. ciliatus* (here taken in a broader sense, including *P. lepideus*). The names cited have never been published and, curiously, there are no species described in MS I corresponding to *P. ciliatus*.

Polyporus lentus Berk. MS II Nr. 1280 as *Polyporus tiliae* (Schulzer 1866, Kalchbrenner 1877, Donk 1974, Tortić 1980). Nr. 945 as *Polyporus (Merisma) inflexus* Schlzr. According to Donk (1974) published by Quélet in 1888 as *Cerioporus inflexus* (Tortić 1980). Nr. 1292 as *Polyporus macrospermus* m. Pores angular round, not very small. Cap whitish, margin with bristles. Spores oblong, uncommonly large,

12—18 × 2 μm. Belongs here rather than to *P. arcularius*. Nr. 839 as *Polyporus (Mesopus) versiformis* Schlzr. (*solidus* Schlzr. crossed out). Spores are too small for *P. lentus*, up to 10 μm long, but macroscopically it is very similar to that species, also to Nr. 945, *P. inflexus*. The names under Nr. 839 and Nr. 1292 were not published. Localities cited are Kamenica near Petrovaradin (*P. tiliae*) and Vidor, Ostrovo, Crkvenac, all near Vinkovci. *Tilia* and *Quercus*, mostly fallen branches are named as hosts.

Polyporus squamosus (Huds.) ex Fr. Schulzer 1858, 1866, 1882, under that name, 1866 as *P. pallidus*. MS II Nr. 531 as *P. squamosus* Hudson, Nr. 729 as *P. neglectus* Schlzr. Deformed, sterile, but recognisable. Schulzer himself says that it is similar to *P. squamosus*. Not published. Nr. 1264 as *Polyporus (Pleuropus) pallidus* Schlzr. (Fries 1874, Kalchbrenner 1877, Donk 1974, Tortić 1980). *P. squamosus*, according to Schulzer, grows everywhere, but is more frequent in mountain forests. Crni gaj and Vidor are cited as localities, and as substrate, stumps and also living trees of *Fagus, Ulmus, Fraxinus, Acer, Salix, Sambucus, Juglans, Morus, Populus, Tilia, Carpinus*.

Pycnoporus cinnabarinus (Jacq. ex Fr.) P. Karst. Schulzer 1858, 1866 as *Polyporus cinnabarinus* Fr. Curiously, this species is described and drawn only in MS I, p. 750, from Crni Gaj near Vinkovci, but not in MS II. Schulzer cites it in published lists from this locality, growing on fallen branches of *Quercus* and *Prunus avium* (wild), and generally in Slavonia on branches of *Betula*.

Trametes gibbosa (Pers. ex Fr.) Fr. Schulzer 1858, 1866, 1882, under the same name. MS II Nr. 313, 952 as *Trametes gibbosa* P., Nr. 1279 as *Trametes viburni* Schlzr. This name was not published. Schulzer says in the text: Ich bin sehr geneigt zu glauben dass die Spore des *Tr. gibbosus*, an *Viburnum*-Stöcken keimend, diese Pilzform erzeugt. Auch Quélet scheint dieser Ansicht zu sein, denn er fragt "An forma *Tram. gibbosae*?«. The drawing is really that of *T. gibbosa*, with a narrow reddish zone on the upper surface.

T. gibbosa is cited by Schulzer as very common on stumps of *Carpinus;* Fruška Gora, vicinity of Vinkovci, particularly Crni Gaj and Nuštar, and Gaj near Đakovo are named as localities. Nr. 1279 was collected in Crni Gaj on a stump of *Viburnum opulus*.

Trametes hirsuta (Wulf. ex Fr.) Pilát. Schulzer 1858 as *Polyporus velutinus albus* Fr., *P. velutinus lutescens* Fr., 1866 as *P. velutinus* a *albus* Fr., *P. pellitus* (in 1867 renamed *P. pelliculatus)* and *P. annulatus* Schäff. MS I p. 744 as *Polyporus pelliculatus*, p. 743 as *P. annulatus* Schäff (Tortić1980). MS II Nr. 143 as *Polyporus hirsutus* var. *armeniacae* (Schulzer 1872), Nr. 254 as *P. hirsutus* (Wulfen) Schrader, Fr., v. *marginatus* Bres. (Schulzer 1885), Nr. 403 as *P. velutinus* Persoon als *Boletus*. Fruitbody whitish, looks somewhat similar also to *T. pubescens*. Nr. 1334 as *P. carpineus* Sow. ("*velutinus P*". crossed out). Schulzer refers this to Nr. 403. The description is very scant and the identification is not quite certain; an alternative would be another common species, *Bjerkandera adusta*. Nr. 1283 as *P. lutescens* P. Yellow zones on the upper surface and greyish pores. Spores cylindric, 4—6 × 2 μm. Nr. 497 as *P. pendulus* Schlzr. Typical *T. hirsuta* attached in the middle of the upper surface. Nr. 947 as *P. sublutescens* Schlzr. Upper surface hirsute, tubes brownish greyish, spores globose, 3 μm! The names under Nr. 497 and 947 were not published. Nr.

964 as *Polyporus obversus* (Schulzer 1880b, Donk 1974). Although Quélet thought, as noted by Schulzer in the text, that this might be a "lusus« of *Polyporus versicolor,* it looks rather like *T. hirsuta* (Tortić 1980).

The localities named by Schulzer are the vicinity of Vinkovci generally and particularly Trbušanci, Nuštar, Kunjevci, Retki Gaj, Ostrovo. The species grew on dead wood, stumps, branches etc. of *Quercus, Carpinus, Prunus armeniaca, Rosa* sp., *Prunus avium, Prunus domestica, Prunus spinosa.*

Trametes suaveolens (L. ex Fr.) Fr. Schulzer 1858, 1866 under that name as growing everywhere on *Salix.* It is interesting to note that in MS I he describes on p. 724 *Trametes suaveolens,* but on p. 746 *Polyporus suaveolens* Fr. which he considers a different species, and mentions it also in the list of 1858 as a rare species, occurring in the North on *Salix.* MS II Nr. 311 as *Polyporus ulmarius* (Sow.) with "*suaveolens*" crossed out. Nr. 1014 as *Polyporus albus* (Huds.) Fr. The drawings and descriptions of both are those of *T. suaveolens;* in the former the anise smell was weaker than usual and in the latter it was lacking and the spores were described as ovate, 4—5 μm long. They were found respectively in Vinkovci and at the bank of river Bosut on *Salix* sp. Nr. 1367 as *P. populinus* Schum, Kalchbrenner 1877 tab. 37 fig. 1b as *P. vulpinus* probably also belongs here (Tortić 1980). It was collected in Crni Gaj on a branch of *Populus alba.* In MS I p. 732 is described *Polyporus subpileatus* (Schulzer 1867) on *Salix,* at the bank of the river Bosut; it seems to represent *T. suaveolens,* but reminds also of *T. hirsuta* (Tortić 1980).

Trametes trogii Berk. Schulzer 1885 as *Daedalea queletii.* MS II Nr. 1016 under that name, with "*azonaria*" crossed out. It grew on a stump of *Salix* at the bank of the river Bosut near Vinkovci. It is very probably this species, although there are some differences (Tortić 1980).

Trametes versicolor (L. ex Fr.) Quél. Schulzer 1858, 1866, 1882 as *Polyporus versicolor* Fr. MS I p. 738 also as *Polyporus ramealis* (Schulzer 1866. Tortić 1980), p. 738 as *P. luteo-fuscus.* A yellowbrown form of this common species, judging from the description and drawing, which was not published. MS II Nr. 414 as *Polyporus versicolor* P., Nr. 995 as *Polyporus (Merisma) brusinae* Schlzr. (Schulzer 1886, Donk 1974, Tortić 1980). Nr. 904 as *Polyporus (Inoderma) exilis* Schlzr. (*"velutinoides"* crossed out). White, with yellowish pores, spores cylindric, somewhat curved, 6—8 μm long. According to the drawing probably belongs here. Not published.

This very frequent species is stated by Schulzer to occur everywhere on old stumps of various trees. Only *Carpinus* is cited expressly as host for *P. versicolor* but *Populus* for *P. ramealis* and *Prunus persica* for *P. luteo-fuscus.* As localities, Kamenica *(P. luteo-fuscus),* Crni Gaj near Vinkovci, Županja (*P. ramealis*) and Gaj near Đakovo are mentioned.

Trametes zonata (Nees ex Fr.) Pil. MS II Nr. 409 as *Polyporus ochraceus* P. This is now considered a synonym of *T. zonata,* but Bresadola was of the opinion that it represented a different species. Nuštar near Vinkovci, on *Populus* sp. According to the drawing it is very probably really *T. zonata.* Spores are described as 7—9 μm long, and the smell as unpleasantly aromatic. Schulzer published in 1858 *Polyporus zonatus* Fr, with the synonym *Boletus ochraceus P.,* but only from south Hungary (which may have included a part of Slavonia, too).

Doubtful species

Irpex canescens Fr. var. *tenuis* Schlzr. MS II Nr. 926. Kunjevci near Vinkovci, on a stump of *Carpinus*. Looks like *Cerrena unicolor* (Bull. ex Fr.) Murr. with upper surface thickly tomentose, without zones, and rather toothed hymenophore. Context yellowish, whitish greyish or ochre yellow. No spores found. Not published.

Irpex deformis Fr. Schulzer 1866, MS I p. 693. Trbušnice and Crni Gaj near Vinkovci. This is a synonym of *Schizopora paradoxa* (Schrad. ex Fr.) Donk and according to the description in MS I it might be this species, but is similar also to some *Hyphodontia* sp. or to *Hyphoderma radula*. Spores are not mentioned.

Irpex obliquus Schrdr. MS II Nr. 288 Ostrovo near Vinkovci, on stumps of *Quercus*. One specimen in the drawing is white, the other brown. They look like *Schizopora paradoxa* again, but the spores are described as cylindric, 6—9 μm long. Not published.

Irpex velutinus Schlzr. MS II Nr. 1010. Vidor near Vinkovci, on a living *Acer campestre*. It has a rather toothed hymenophore and looks very much like *Cerrena unicolor*; this was also the opinion of Bresadola. Spores are described as ovate, 3.7—4.6 μm long and half as broad. Not published.

Polyporus (Boletus) albidus Schäff. Schulzer 1866. MS I p. 745 as *P. albidus* Fr. *Bol. albidus* Schff., MS II Nr. 366 as *Polyporus albidus* Trog, Schffr. The descriptions in both MSS show some small discrepancies: both state that the fruitbodies are white, but in MS I as having sometimes a violet grey tinge and in MS as turning yellow later. Upper surface is in MS I described as almost glabrous or with long bristles at the base, in MS II tomentose. According to both the pores are hardly visible with naked eye. Spores are described in MS II as cylindric, 5 μm long. Schulzer says that it occurs in forests in Slavonia, but as localities only Vinkovci and Retki Gaj are named, and as substrate the wood of *Quercus* and *Prunus avium*. The description fits *Tyromyces chioneus* (Fr. ex Fr.) P. Karst. rather well, but perhaps some other macroscopically similar species were involved, too, such as *T. subcaesius* David, and even *Incrustoporia nivea* (Jungh.) Ryv. (Tortić 1980).

Polyporus borealis Fr.? MS I p. 770 Schulzer 1866 as *Polyporus subsuberosus*. Županja, on stumps of *Ulmus*. It is possible that the description and drawing really represent this species. (Tortić 1980).

Polyporus gibbus. MS I p. 772. Igmándy (1968) considers it to represent *Ischnoderma resinosum* (Fr.) P. Karst., although with some doubt. It was found on stumps of *Quercus* in Crni Gaj in November and December. The short description and drawing, as well as the season of the find, allow us to agree, but also with doubt, with this interpretation as, for the moment, the best possible. (Tortić, 1980).

Polyporus heufleri. Schulzer 1866, 1879. MS I p. 790. The description of this species, found in August near Kamenica on wood of *Tilia*, fits *Polyporus varius* (Pers. ex Fr.) var. *nummularius Bull.* ex Fr., not badly, except that the spores are somewhat too large, up to 12 μm long (Tortić 1980).

Polyporus magnificus Schlzr. MS II Nr. 308. Schulzer found it once near Bošnjaci on *Ulmus*, but could not take it down as it was too high up. About 15 years later he collected it, again from a living *Ulmus*, at the bank of the river Bosut near Vinkovci. Spores were not found. The drawing shows a large dark brown fruitbody of, very probably, *Inonotus* sp. (*I. cuticularis*?). Not published.

Polyporus radula P. MS II Nr. 530. Ostrovo near Vinkovci, on a branch of *Carpinus*. Spores scarce, 2—3 μm. Looks like *Schizopora paradoxa*. Not published.

Polyporus (Pleuropus) rhizomorphosus Schlzr. MS II Nr. 994. Vidor near Vinkovci, on fallen branches of *Quercus*. Looks quite like *Polyporus various* (Pers. ex Fr.) var. *nummularius* Bull. ex Fr. with rather long black stipe attached excentrically near the margin of the cap and arising out of a small branch where rhizomorphs belonging to this or some other species are present (Schulzer says arising out of the rhizomorphs). Quélet and Bresadola thought also that it might be *P. nummularius*. The name *rhizomorphosus* was not published.

Polyporus slavonicus Schlzr. MS II Nr. 1370. Crkvenac near Vinkovci, on *Acer campestre*. Upper surface hirsute, brown, context dark brown pores whitish. According to the description and drawing the nearest would be *Funalia gallica* (Fr.) Bond. et Sing., but it shows some similarity also to an *Inonotus (cuticularis*?, *hispidus*?). Spores are described as 15—20 × 4 μm, which is surely a mistake. Not published.

Polyporus (Polystictus) stereoides Fr. MS II Nr. 1127. Lug near Vinkovci, on twigs of *Quercus*. Looks like a thin, whitish *Trametes hirsuta*. Spores were not found. Not published.

Polyporus triqueter Fr., *Bol. triqueter* P. Schulzer 1858 as occurring from July till September on diseased trees of *Acer* and *Ulmus*, and stumps of *Quercus* in Slavonia and other regions investigated by him. In MS I p. 768 it is described as having hirsute ("zottig-wollig") upper surface, brown context and tubes, at first the context almost succulent, later corky. Pores glancing ("schillernd"). In the text Schulzer mentions *Polyporus alneus* and *P. cuticularis* as related. It could be *Inonotus cuticularis* (Bull. ex Fr.) P. Karst, particularly since *Boletus triqueter* Pers. is cited by Donk (1974) as a synonym. It cannot be *Polyporus triqueter* Fr., which is a synonym of *Onnia triqueter* (Lentz.) Imaz. in Ito, growing on conifers.

Polyporus (Anoderma) Vinkovcensis Schlzr. MS II Nr. 1185. On an apple tree in a garden near Vinkovci. Upper surface brownish, margin whitish, rounded, almost inflate, pores white, toward the margin brownish, context whitish. Spores hyaline, first globose then ovate, 3—4 × 2 μm. The nearest to the description and drawing is *Tyromyces fissilis* (Berk. et Curt.) Donk. The host fits well, too. Not published.

Trametes macropora. Schulzer 1867. In Schulzer 1866 as *macrospora*, which is a printing error. MS I p. 724 under that name. Schulzer collected it in Crni Gaj, on *Quercus* branch. The description and drawing seem to represent *Coriolellus albidus* (Fr. ex Fr.) Bond. (Tortić 1980).

Discussion

The majority of polypores listed here belong to more or less common and frequent species on hardwoods, which one would expect to occur in the region investigated. Only very few characteristic of conifers were noted here by Schulzer, these trees being not autochthonous in the lowlands near Vinkovci, in the eastern part of Slavonia.

The number of species described as new is considerable, but they usually turn out to be identical with some already known, even common fungi. In Schulzer's time the attention was paid mostly to macroscopical characters and even small differences or only deformations were supposed to justify the description of a new species. The more frequent a species is, the more often one finds specimens differing from those typically developed. So, for instance, *Ganoderma applanatum, Irpex lacteus, Lenzites betulina, Trametes hirsuta* and others were described each under several new names in addition to the already existing ones. Sometimes Schulzer himself points out that his new species is similar to an already described one, or expresses his opinion that the different substrate caused the difference.

Several rare fungi characteristic of oak were apparently rare even in Schulzer's time, when forests with many old oak trees covered much larger areas than they do now. *Hapalopilus croceus* and *Piptoporus soloniensis,* were, for instance, found by Schulzer only once each near Vinkovci; the locality of the latter is even now the only one known in Yugoslavia. The vicinity of Vinkovci was cited as one of the localities of *Buglossoporus pulvinus* (Tortić and Jelić 1969) on the basis of Schulzer's *Polyporus cadaverinus,* although the interpretation is doubtful. This locality has now been confirmed by the drawing and description of a typical and beautifully developed specimen of this species in MS II (see the list). It was found by Schulzer in several places and probably several times. It is interesting to note that *Inonotus dryadeus* is cited by Schulzer as growing in all oak forests, whilst it is now rather rare.

Some species are conspicuous by their absence from MS II although published earlier as occurring in Slavonia or at least "everywhere". One of these, *Pycnoporus cinnabarinus,* is cited in the list, since it is described in MS I from Crni Gaj and also published from this locality. This species is rather spread in Yugoslavia, but is apparently not frequent in lowlands and was probably not refound later by Schulzer near Vinkovci. *Polyporus badius* (Pers. ex S. F. Gray) Schw. is cited by Schulzer (1858) under the name of *Polyporus varius* Fr. a and b, *Bol. badius* P., as growing everywhere on old willows — probably including Slavonia. It is very likely to occur near Vinkovci but was later not mentioned from there. Similarly, *Piptoporus betulinus* (Bull. ex Fr.) P. Karst. was published by Schulzer (1858) as *Polyporus betulinus* Fr., but only from Hungary, although it is not rare in Yugoslavia, either, on its exclusive host, *Betula.* Very curiously, *Polyporus nummularius* Fr. was published by Schulzer, also in 1858, as growing everywhere, but it is not mentioned under this name either in MS I or in MS II. It is probable, however, that both *Polyporus heufleri* and *P. rhizomorphosus* (see among doubtful species) are identical with this taxon, considered usually as a subspecies of *Polyporus varius.*

Although in most of Schulzer's localities woods do not exist any more, polypores found by him grow without any doubt still in the vicinity of Vinkovci, and particularly farther toward the south, in the large forest tract of Spačva (east of Županja), where even rare species probably occur.

Among the species which could not be inerpreted there were surely some not belonging to any mentioned in the present list. This is particularly the case with resupinate polypores, which cannot be determined correctly without exsiccata, as a thorough microscopical analysis would be necessary. Further investigations would therefore establish still more species of polypores in this region.

Summary

Polypores recorded by Schulzer from Slavonia, for the most part in the vicinity of Vinkovci, many of them described as new and either published or not, were revised on the basis of descriptions and drawings in his manuscript works; a few exsiccata which exist were examined, too. In all, about 50 species were established (but some are not quite certain), many of them frequent. They are listed under modern names. Localities and hosts, and when necessary main characters, are added.

*

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References

Donk, M. A., 1974: Check list of European polypores. Amsterdam—London.

Fries, E., 1874: Hymenomycetes Europaei sive Epicriseos Systematis Mycologici. Reprint Leipzig 1937.

Igmándy, Z., 1968: Die Porlinge Ungarns und ihre phytopathologische Bedeutung III. Acta Phytopathologica *3*, 349—359.

Kalchbrenner, K., 1873, 1874, 1875, 1877: Icones selectae Hymenomycetum Hungariae I—IV. Budapest.

Maas Geesteranus, R. A., 1974: Studies in the genera *Irpex* and *Steccherinum*. Persoonia *7*, 443—581.

Schulzer, S., 1858: Systematische Aufzählung der Schwämme Ungarns, Slavonien und des Banates, welche diese Länder mit anderen gemein haben. Verh. zool. bot. Ges. Wien *7*, 127—152.

Schulzer, S., 1867: Mykologische Miscellen. Verh. zool. bot. Ges. Wien *17*, 709—730 (9. Berichtigungen 723—730).

Schulzer, S., 1872: Mykologische Beobachtungen. Verh. zool. bot. Ges. Wien *22*, 405—424.

Schulzer, S., 1874: Mykologischer Beitrag. Verh. zool. bot. Ges. Wien *24*, 451—452.

Schulzer, S., 1878: Mykologisches. Flora *61*, 11—15.

Schulzer, S., 1880: Mykologisches. Berichtigungen. Öst. bot. Z. *30*, 144—148.

Schulzer, S., 1880 a: Mykologisches. Die Doppeltfructification des *Polyporus applanatus* P. Öst. bot. Z. *30*, 321—323.

Schulzer, S., 1880 b: Mykologisches. Flora *63*, 79—80.

Schulzer, S., 1882: Deset dana u Đakovu. Rad. Jug. Akad. *64*, 173—183.

Schulzer, S., 1883: *Le Morchella rimosipes* DC et le *Polyporus Sarrazinii* nov. sp. Revue mycol. *5*, 256—257.

Schulzer, S., 1885: Einige neue Pilz-Species und Varietäten aus Slavonien. Hedwigia *24*, 129—151.

Schulzer, S., 1886: Weiterer Beitrag zu neuen Pilzformen aus Slavonien. Hedwigia *25*, 9—10.
Schulzer, S., 1887: Vier neue Arten aus den Fungi Slavonici adhuc ined. Hedwigia *26*, 191—193.
Schulzer, S., A. Kanitz, J. A. Knapp, 1866: Die bisher bekannten Pflanzen Slavoniens. Ein Versuch. Verh. zool. bot. Ges. Wien *16*, 1—172 (Fungi 30—65).
Schulzer, S.: Schwämme und Pilze aus Ungarn und Slavonien (manuscript deposited in the Hungarian Academy of Science, Budapest; the draft in the University Library, Zagreb).
Schulzer, S.: Pilze aus Slavonien (manuscript deposited in the University Library, Zagreb).
Tortić, M., 1971: *Ganoderma adspersum* (S. Schulz.) Donk (= *G. europaeum* Steyaert) and its distribution in Jugoslavia. Acta Bot. Croat. *30*, 113—118.
Tortić, M., 1972: *Lenzites reichardtii* Schulzer. Acta Bot. Croat. *31*, 191—198.
Tortić, M., 1975: On the identity of *Polyporus schulzeri* Fr. Persoonia *8*, 249—258.
Tortić, M., 1980: Revision of Schulzer's new polypores. Biosistematika *6*, 135—159.
Tortić, M., M. Jelić, 1969: Some interesting macromycetes and their distribution in Jugoslavia. Acta Bot. Croat. *28*, 379—386.

SAŽETAK

SCHULZEROVE POLIPOROIDNE GLJIVE IZ SLAVONIJE

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U svom rukopisu »Pilze aus Slavonien«, koji se čuva u Sveučilišnoj biblioteci u Zagrebu, S. Schulzer von Müggenburg (1802—1892)) opisao je i nacrtao makromicete i mikromicete što je nalazio u Slavoniji, uglavnom u okolici Vinkovaca, gdje je živio i radio preko trideset godina do svoje smrti. Izvatke iz ovog rukopisa, a također i jednog ranijeg koji se nalazi u Akademiji znanosti u Budimpešti i gdje su opisane gljive i iz drugih dijelova tadašnje Austro-Ugarske, objavio je u preko 100 radova. Prilično mnogo vrsta, od kojih je mnoge smatrao novima, objavio je u tim radovima, no poprilično ih je ostalo neobjavljenih u rukopisima.

Autorica je u predašnjem članku (T o r t i ć 1980) revidirala Schulzerove objavljene poliporoidne gljive, većinom opisane kao nove, nastojeći da ustanovi njihov identitet. Ovdje je pod sadašnjim imenima dana lista vrstâ te grupe koje su navedene u rukopisima, bez obzira na to jesu li bile objavljene ili nisu, a koje je Schulzer zabilježio za Slavoniju, gdje od njegovih vremena flora viših gljiva nije bila sistematski istraživana. Nešto je malo nalaza i s obronaka Fruške gore blizu Kamenice kod Novog Sada.

Osim zagrebačkog rukopisa (u tekstu MS II) poslužili su kao izvor podataka Schulzerovi objavljeni radovi, u prvom redu dvije liste, iz 1858. i 1866, a vrlo mnogo i prijepis onog dijela budimpeštanskog rukopisa koji se odnosi na poliporoidne gljive (citiran kao MS I). Prijašnji koncept toga rukopisa nalazi se u Zagrebu zajedno s MS II, pa je mogao biti uspoređen. Schulzer je, nažalost, ostavio vrlo malo eksikata; revidirano je nekoliko što se nalaze u Naturhistorisches Museum, Wien (W).

Schulzerove nove vrste ispostavile su se najčešće kao već otprije opisane, a u mnogo slučajeva i dosta obične. Kako se u ono doba pazilo najviše na vanjske makroskopske oznake, smatrano je naime da i mala od-

stupanja opravdavaju postavljanje novih vrsta, iako Schulzer katkad ističe da je gljiva koju opisuje kao novu vrlo srodna i slična nekoj već poznatoj. Najpoznatiji tadanji mikolozi Quélet i Bresadola, koji su pregledali rukopis, katkad bi upozorili Schulzera da je njegova vrsta identična s nekom drugog autora, ali su se često suglasili s njime da je nova. Pojedine, naročito češće gljive, opisao je kadgod i po nekoliko puta pod dva ili više imena: pod već uvriježenim a također i kao jednu, dvije pa i više novih vrsta.

Interpretacija Schulzerovih poliporoidnih gljiva, prikazana ovdje, nije uvijek mogla biti sasvim sigurna; neki sumnjivi slučajevi dodani su u posebnoj kratkoj listi pod njegovim imenima. Bilo je i takvih za koje se nije moglo zaključiti kojoj bi vrsti, pa ni kojem rodu mogle pripadati, pa nisu ovdje ni spomenute. Ipak je s većom ili manjom sigurnošću identificirano oko pedesetak vrsta. Osim mnogih čestih opisane su neke koje su bile rijetke i u njegovo doba, a pogotovu su sada kad stare hrastove šume jedva da i postoje. Interesantno je da ne spominje u MS II nekoliko prilično upadljivih, koje vrlo vjerojatno dolaze u okolici Vinkovaca, a koje opisuje u MS I, iz drugih krajeva, npr. *Polyporus badius, Piptoporus betulinus. Pycnoporus cinnabarinus* je u MS I naveden iz Crnog gaja kod Vinkovaca, no u MS II ga nema.

Neke od vrsta koje nisu mogle biti determinirane nisu identične ni s jednom ovdje navedenom; također ima sigurno više resupinatnih nego je Schulzer zabilježio, jer se takve gljive ne mogu odrediti niti razlučiti od drugih sličnih bez temeljite mikroskopske analize kakva nije bila uobičajena niti moguća u njegovo doba. Svakako bi se dakle daljim istraživanjima ovaj popis znano nadopunio.

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