

## ON THE IDENTITY OF POLYPORUS SCHULZERI FR.

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(With three Text-figures)

The existing collection of *Polyporus schulzeri* Fr. ( $\equiv$  *P. irpex* Schulzer) in the Natural History Museum at Vienna (W) agrees microscopically with Schulzer's unpublished observations and is therefore considered to represent the type specimen. A comparison of this material with specimens of *Piptoporus soloniensis* (Dub. ex Fr.) Pilát showed that both fungi are identical in structure and represent, in fact, the same species. A detailed study of fresh material and a thorough revision of the genus *Piptoporus* is needed before it can be decided if a new genus should be described for this species. In *Piptoporus* the correct name is *P. soloniensis* with *P. schulzeri* as a synonym.

Many of the species described by Schulzer still remain a mystery for present-day mycologists, since very few of his exsiccates exist. *Polyporus schulzeri*, however, remained so for exactly one hundred years in spite of an extant specimen, perhaps even because of it! It was considered to be either identical with a rare species named later *Spongipellis litschaueri*, or to represent a separate species, known only from a single locality, but neither interpretation could be proved to everyone's satisfaction.

The whole trouble started with Fries' incorrect diagnosis. In his first manuscript, now in Budapest, Schulzer described a new species, *Polyporus irpex*, with a tomentose upper surface and large, toothed, yellow pores, and published it, only as nomen nudum (Schulzer, Kanitz & Knapp, 1866). Kalchbrenner sent a copy of the drawing and surely also of the description from the manuscript to Fries, who renamed the species *Polyporus schulzeri*, characterizing it as: 'Pileo sessili, e carnoso suberoso, pulvinato, glabro, azono, pellicula albida tecto; poris rotundis, majusculis, hydroideo-dentatis, albis...' and placing it in *Placodermei*, *Suberosi*, near *Polyporus officinalis*, *P. betulinus* etc. (1874: 556). A more extensive description was published by Kalchbrenner (1877: 53, pl. 32 fig. 1) together with a part of the original drawing, but the pellicle was emphasized here too. Both authors cite *Polyporus irpex* as a synonym.

Naturally, Schulzer was indignant because of the misrepresentation of his species, its placing in the *Placodermei* and its being given a new name without a particular reason, and he protested four times in print, giving even a Latin diagnosis (1880) in which he stressed that the fungus was 'valde tomentosolanas, quod vero tomentum senio non-nihil disparet, sed superficies pilei semper inequalis impolita sine pellicula.'

However, his protests were later forgotten and, when recently rediscovered, even added to the confusion.

In spite of Fries' mentioning the presence of the pellicle as one of the chief characters, the name *Polyporus schulzeri* was applied by Bresadola to some collections of Kmet' in Czechoslovakia for a polypore with a distinctly tomentose surface, and also to a similar collection of Linhart in Roumania (both Kmet's and Linhart's localities belonged then to Hungary). As I suppose, the reason for this interpretation was the little known, or perhaps unknown fact, that Bresadola had had the opportunity to see the duplicate description and drawing of *P. irpex* in Schulzer's second manuscript (now preserved in Zagreb). Schulzer sent this manuscript to both Bresadola and Quélet for review. Bresadola's interpretation was taken over by Bourdot & Galzin (1928), who renamed the fungus *Spongipellis schulzeri*.

A different solution was proposed by Lohwag (1931). He at first determined a specimen, collected in Austria, as *S. schulzeri* in the sense of Bourdot & Galzin, but it struck him that the tomentose upper surface, as stated by those authors, was in direct contradiction with Fries' diagnosis, which he of course assumed to be correct, not knowing about Schulzer's denials. Just at that time he was informed that there existed a specimen in the Natural History Museum in Vienna (W), collected and annotated by Schulzer himself in 1859 as *Polyporus irpex*, which he concluded to be the type. Although this specimen was old, sterile and in a poor condition, macroscopical and microscopical examination showed that its structure was widely different from Lohwag's specimen, and that these two collections represented two quite distinct species. Lohwag placed Schulzer's species in the genus *Ungulina*, as *U. schulzeri*, since he found a pellicle on the type specimen that apparently confirmed Fries' description. He examined also some of the above mentioned Kmet's and Linhart's material identified by Bresadola as *P. schulzeri*, and found it conspecific with the Austrian specimen. This taxon being now without a name, Lohwag described it as the new species *Spongipellis litschaueri*.

Schulzer's specimen in W was later examined by Kotlaba & Pouzar, who declared (1965: 76): '...we consider it most probably *Tyromyces lacteus* (Fr.) Murrill (among other characters it is d i m i t i c with skeletal hyphae).'

Igmándy (1957) was the first to draw again the attention of the mycologists to Schulzer's protests against the mention of a pellicle in *P. irpex*. He studied Schulzer's original description in the first manuscript and moreover found a specimen in the Natural History Museum at Budapest (BP) under the name of *Polyporus irpex* from Hazslinszky's herbarium with the label (in Hungarian): 'During an excursion with Schulzer collected from a plum tree in a garden in Subanya at Szava, June [1] 868.' (The locality is Županja at the river Sava, about 25 km south of Vinkovci where Schulzer lived.) Both the description in Schulzer's manuscript and Hazslinszky's specimen seemed to agree well with *Spongipellis litschaueri*, and therefore Schulzer's name would have priority. Igmándy reintroduced the original name given by Schulzer, who never acknowledged Fries' renaming of his fungus, and placed the species in the genus *Leptoporus*, as *L. irpex*. Igmándy's article seems to have been

generally overlooked, as it is in Hungarian language, with short summaries in Russian and in French.

Recently Donk (1972) reexamined the whole problem. He cited most of Schulzer's published discussions on *P. irpex* (*P. schulzeri*) including the Latin diagnosis, and argued, like Igmándy, that Schulzer was in fact describing *S. litschaueri*. Donk believed that even Fries' diagnosis applied well to this species, excepting the pellicle. He consequently again proposed *Spongipellis schulzeri* (Fr.) Bourd. & Galz. as the correct name for *S. litschaueri*. However, he could not account for the specimen in W which, having a pellicle, could not be the type, and thought that some error had crept in.

Although Schulzer's Latin diagnosis is now easily accessible, being cited by Donk (1972), it lacks some details which are to be found in Schulzer's manuscripts. The description from the manuscript in Zagreb which I have studied in the original is almost word for word identical with that in the first manuscript, a copy of which I have seen now. The spaced words were underlined by Schulzer.

'No 1323. *Polyporus irpex* Schulzer. Ich begegnete dieser Pilzform erst zweimal: im Szabarer Walde bei Mohács und später nach Jahrzehenden in Črni gaj bei Vinkovce,.... Sie gehört somit zu s e l t e n s t e n V o r k o m m n i s s e n ...

Ich sah den Pilz vom Oktober bis zum Februar an Eichenklötzen und an kränkenden Eichen.

Der Hut ist gepolstert-halbkreisförmig, an der Basis etwas verengt, mit nicht scharfem Rande, weil das 1,2–2,5 cm dicke Fleisch daselbst zwar oft plötzlich abfällt, aber derselbe niedergebogen ist, 6,6–13,2 cm breit, oben weiss oder gelblich, am Grunde häufig aschgrau, sehr filzig-wollig, was im Alter verschwindet, zonenlos, auf der Unterseite sieht man anfangs kleine blässgelbe Löchlein, welche später durch Zerreißen der Ränder 0,5–1 mm breit, überaus zerschlitzt, förmlich gezähnt und im weitem Verfolge unregelmässig gewunden, lebhaft gelb, wohl auch gelb-zimmetbraun werden.

Die Röhrrchen sind licht schwefel- oder ockergelb, am Hutrande sehr kurz, weiter davon 0,9–2,7 cm lang, an der Basis ausgegossen auf mehrere Centimeter verlängert, anfangs zwar fein, aber am Ende, durch Schwinden der Seitenwände und des Löcherwandes wirkliche, ungleichförmte, und dabei schlappe, weiche Zacken.

Das Fleisch ist erst lederartig-fasrig, dann korkartig, zuletzt mürbe und zerfallend; im Anfange weiss oder gelblich, am Ende röthlich. Die Grenze zwischen Fleisch und Röhrrchen ist scharf markirt, beide aber doch nicht leicht voneinander trennbar. Sie bestehen aus langen, dichtverwebten, unseptirten, knorrigen, wenig ästigen Fadenzellen, an denen man häufig knospenartige Ausstülpungen sieht. Eine davon abweichende Hymeniumschicht fand ich nicht, sondern die Enden der Fadenzellen bekleiden die Röhrrchenfläche. Geruchlos.'

In the second manuscript after the description proper, the following interesting remarks about Fries' treatment of his species are added. These remarks, hardly toned down, were published in several of Schulzer's papers:

'In seinem letzten Werke "Hymenomycetes europaei" nennt Fries diese Art *Polyporus Schulzeri*. Obschon die Widmung auf die schmeichelhafteste Weise mit den Worten folgte: "Hymenium ex icone magis *Hydnum* quam *Irpicum* refert, quare hanc speciem dicatam volui felicissimo fungorum investigatori," so muss ich doch die mir von dem grossen Mycologen zuge dachte Ehre d a n k e n d a b l e h n e n .

Erstens ... hoffentlich wird Niemand beim Anschauen der Abbildung eine Spur von den

die Gattung *Hydnum* charakterisirenden "Aculei subulati" finden, dagegen an *Irpex* lebhaft erinnernde Zähne (Dentes).

Zweitens ist es eine Artigkeit sehr, eigentlich weniger als, dubiosen Werthes, wenn Jemand eine meinerseits entdeckte und benamste Art umtauft, ihr meinen Namen beilegt und als Aufsteller den seinigen anhängt. ...

Drittens endlich, was die Hauptursache der Ablehnung ist, existirt zur Zeit kein Pilzgebilde, welches der Diagnose des Pol. Schulzeri entspräche, und da auch jene Kalchbrenners in den "Icones" Seite 53 unrichtig ist, so sah ich mich, wie erwähnt, genöthigt, in der Oest. bot. Zeitschrift die einzig wahre zu veröffentlichen....

Ich stand mit Fries nie in Verbindung; meine Arbeiten in erstem grossen Bildwerke kannte er, ohne mein Verlangen, bloss durch Kalchbrenner, und da er der deutschen Sprache, in welcher die Diagnosen gegeben sind, nicht mächtig war, musste sie ihm ein Anderer ins Lateinische übersetzen, was bei einigen Arten leider stümperhaft, bei dieser vollends ganz und gar unrichtig geschah. Welch' total falsche Vorstellung er hindurch von unserm Pilze gewann, sieht man daran, dass er ihn zu den mit einer festen Kruste bedeckten Placodermei stellte! ...'

Thus Schulzer explains Fries' error about the pellicle on the grounds of incorrect translation of the description by Kalchbrenner included with the drawing when he sent this to Fries. It is possible, however, that Kalchbrenner had already failed to copy Schulzer's work faithfully, since he too mentions the pellicle in this 'Icones' (1877), which led Schulzer to make the following comments (1880: 108): '...Mein Freund Kalchbrenner gibt die Abbildung richtig, aber im Widerspruche mit derselben spukt auch bei ihm in der Diagnose das verwirrende "glaber"....'

Igmándy's and Donk's very convincing arguments for the conspecificity of *Polyporus irpex* and *Spongipellis litschaueri* seem to be confirmed by Schulzer's original description, and also by the mentioned (but not cited here) similarity of his species with *Polyporus labyrinthicus* Schw. (= *Spongipellis unicolor* (Schw.) Murr.).

However, certain curious details, some of them not mentioned in the published Latin diagnosis, cannot be explained away. Schulzer was a most careful and painstaking observer, who would have noticed any duplex structure of the context, such as is characteristic for *S. litschaueri*. He never says a word about it, but describes the context as becoming friable ('mürbe und zerfallend') in old specimens. The tubes are flexible ('schlappe, weiche Zacken'). Also, his description of the hyphae — gnarled, non-septate, with bud-like swellings ('knorrig, unseptirt, mit knospenartigen Ausstülpungen') does not apply to the hyphae of *S. litschaueri*, even if 'Ausstülpungen' are taken to mean clamp-connections on septa which he could not notice with his lowpower microscope. There is a final problem concerning the specimens of *P. irpex*; one in W, collected and identified by Schulzer which according to those who have examined it, does not agree with the description made by its author; and the other from Hazslinszky's herbarium, collected during an excursion with Schulzer, which seemed to be identical with *Spongipellis litschaueri*.

Obviously, these doubts can only be resolved by the examination of the specimens.

Schulzer's original material, which was obtained on loan from the Natural History Museum, Vienna (W) consists of two envelopes. The larger is labelled in Schulzer's hand: '*Polyporus Irpex* Schulzer, Černí gaj zwischen Vinkovce und Jarmina, Novbr.

1859.' Underneath is added in another hand and in red ink: 'Slavonien, I. Schulzer.' In the smaller envelope, from the herbarium of V. Litschauer, the specimen is named *P. schulzeri*, but the date and locality are the same. This is obviously a duplicate taken from the original collection. The first specimen is described and shown on a photograph in Lohwag's paper (1931). Both specimens are in fragments, either context with tubes or only context or tubes; originally all fragments were glued to the paper, but now some of them are detached. They are of a uniformly dirty greyish-yellowish colour and very friable, partly even reduced to powder. It is therefore not possible to reconstruct the original shape of the specimens. The tubes are up to 1 cm long and the pores are rather large, irregular, about 1–2 per mm. Only the lower, free part of the tubes was apparently torn into teeth, and this part in the course of time has broken up. In the largest fragment with tubes, the pores are completely collapsed and only remains of the ipicoid teeth can be seen.

Microscopically, both the tubes and the context consist of sparsely branched, non-septate hyphae with up to 1  $\mu\text{m}$  thick walls. They are really very gnarled ('knorrig') and their diameter is 2–4(–5)  $\mu\text{m}$ , mostly 2–3.5  $\mu\text{m}$ . They stain metachromatically in cresyl blue, turning a wonderful deep magenta colour. Only rather short fragments of hyphae can be observed as if they fractured during drying, hence the friable consistency. No clamps were found. These hyphae are, without doubt, skeletal hyphae, as stated by Kotlaba & Pouzar (1965). The walls sometimes have irregular swellings, which would account for the 'knospentartige Ausstülpungen'. Schulzer has clearly described the hyphae exactly as he saw them, and as we can still see them now.

Lohwag (1931) declared that he had found clamps, although they were rare and not clearly visible; apart from that his description of the hyphae is very similar. However, neither he, nor others who examined the specimen, noticed that the hyphae dissolve immediately in alkaline solutions. This striking phenomenon is generally known only in *Poria cinerascens*, where it is given as a diagnostic character, but occurs also in some other species (personal communication by Dr. Z. Pouzar and my own observations).

Parts of something like a brown (not white) easily detachable pellicle are still adhering in some places to the specimen. Lohwag described this pellicle as 'eine Zone gelblich-bräunlicher Hyphen' and measured its thickness as 20–40  $\mu\text{m}$ . He explained it (p. 310) as follows: 'Diese Haut ist jedenfalls nur die äusserste durch die Atmosphären veränderte Trama... Dass die Haut an unserem Exemplar gelbbräunlich ist, während sie in der Beschreibung als weisslich bezeichnet wird, ist bei dem Gilben und Bräunen vieler Hutoberflächen beim Trocknen sehr begreiflich. Ferner kann die Oberfläche des Pilzes tatsächlich in der Jugend flaumhaarig sein, da die Hyphen stellenweise hinausgerichtet sind.' This pellicle consists of an amorphous substance in which the hyphae of the same type as in the rest of the fruitbody are embedded or by which they are agglutinated.

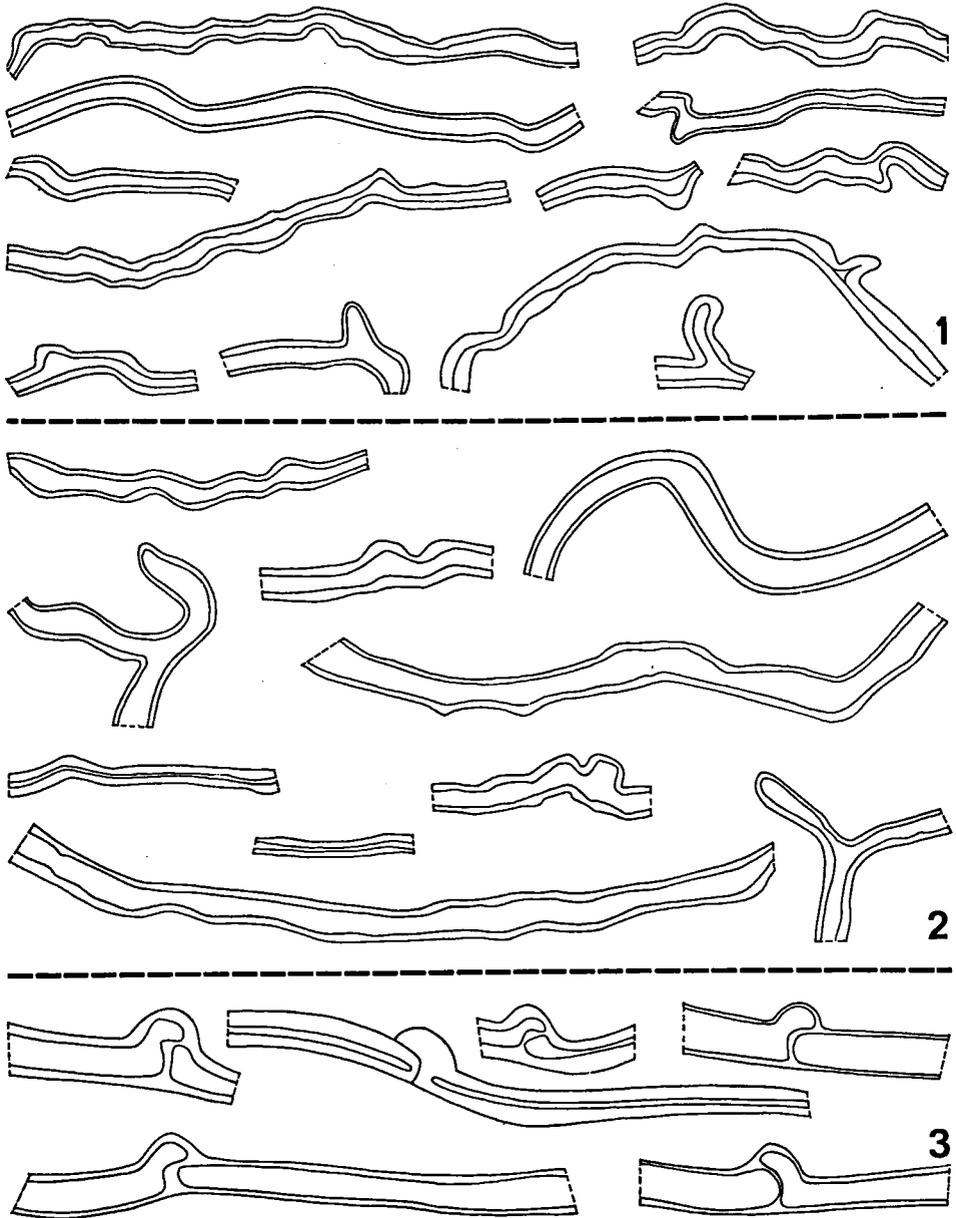
The specimens are sterile, as Schulzer observed, without traces of a hymenium or of generative hyphae.

Schulzer wrote, in a discussion on mycological herbaria (1866), that particularly during his active service he did not have the opportunity to make a collection of specimens. Also, he was of the opinion that, particularly in the case of fleshy fungi, it is far better to make a detailed description and drawing of a species than to preserve a specimen which loses its colour, shape, and other macroscopic characters (which were at that time more important for determination than the microscopical ones). Therefore, apparently he did not attach any importance to specimens which he sent to other mycologists and nowhere he mentioned the existence of a specimen of *P. irpex*. However, after repeated study of his description and of the specimen in Vienna, I came to the conclusion that the latter represents, in fact, the type material of *Polyporus irpex* (*P. schulzeri*). The most important fact supporting this view is the close correspondence of the structure of the hyphae of the specimen with the description of this structure in both manuscripts and with the drawing of it in the first manuscript, which I saw only recently (this particular figure is omitted in the second manuscript and in Kalchbrenner's work). As to the upper surface, Schulzer has repeatedly emphasized that it was 'tomentoso-lanatus' or 'sehr filzig-wollig' and I see no reason to doubt his word. The so-called pellicle can be explained as having originated from collapsing and agglutinating of the surface hairs; this can only just be guessed in one or two places. This explanation is supported by the fact that the hyphae in the tubes are also agglutinated by an amorphous hyaline substance — probably the remains of the hymenium, or, at least, of the generative hyphae. A confirmation of this supposition will be given later.

As to the specimen of *P. irpex* from Hazslinszky's herbarium, which consists of one small, thin segment: it proved to be *Laetiporus sulphureus* (Bull. ex Fr.) Murrill. The numerous spores are similar to those in *S. litschaueri*, although smaller, but the thin-walled, very broad and branched hyphae were conclusive. I do not believe that Schulzer for a moment mistook this collection for *P. irpex*. In his second manuscript he plainly says that he found this species, except near Mohács, only once near Vinkovci; moreover he denies in rather strong terms that Hazslinszky ever saw it.

So it appears that the collection in Vienna under the name *Polyporus irpex* is the only authentic collection available of Schulzer's species. Its microscopic characters prove that *Polyporus irpex* is wholly different from *Spongipellis litschaueri*. The latter name is the correct one for the species it designates.

Here must be mentioned also the specimens of *Polyporus schulzeri* collected by Kmet' and Linhart. A small part of Kmet's specimens is preserved in the Natural History Museum, Budapest (BP), whilst the majority is in the Slovakian National Museum, Bratislava (BRA). They are all identified as *S. litschaueri*, the material from BP by Lohwag and the material from BRA by Kotlaba & Pouzar. I examined these collections also and agree completely. Linhart's material (in BP) from Baie Herculane (Herkulesbad, Roumania), mentioned by Schulzer in his manuscript, and determined by Lohwag as *S. litschaueri*, consists of three envelopes, apparently one specimen cut into several thin segments. Donk (1972) suggested that it might represent, in fact, *Climacocystis borealis* (Fr.) Kotl. & Pouz. I have examined two of these specimens, one



Figs. 1-3. Hyphae (all  $\times 1,100$ ). — Fig. 1. *Polyporus irpex* (after Schulzer's specimen). — Fig. 2. *Piptoporus soloniensis* (after specimen collected in France in 1969). — Fig. 3. *Spongipellis litschaueri* (after collection from Jugoslavia).

of them revised by both Lohwag and Donk, and I am of the same opinion. The cystidia, characteristic of *C. borealis*, are not always abundant, but they are present all the same. They mostly have a typical fusoid form and are thin- or thick-walled, but there also exist cystidia which are rounded at the top, with thin walls. All forms often have incrustations at the top. The spores are somewhat larger than is usually cited, 6–7, 7 × 3,5–4,2(–4,9)  $\mu\text{m}$ . This specimen was supposed to have been collected from beech, but no trace of the substrate remained for checking — and an error in determining the substrate is frequent. Linhart's specimens therefore do not only differ completely from the specimen of *P. schulzeri*, as Lohwag pointed out, but neither are they identical with *S. litschaueri*. Therefore, as the occurrence in Roumania of *S. litschaueri* was apparently based only on Linhart's collection, this species will have to be deleted from the lists of fungi for that country, although, of course, it is probable that it will be found there sometime.

It remains now to establish whether *Polyporus schulzeri* (*P. irpex*) has ever been described under another name. After a prolonged search in the literature, I noticed in the description of another very rare polypore, *Piptoporus soloniensis* (Dub. ex Fr.) Pilát, several characters reminding one of *Polyporus irpex*. Bourdot & Galzin (1928: 607) say: 'Chapeau 8–40 cm... parfois sillonné zoné, velouté tomenteux ou strigieux hispide dans les sillons... tubes... flasques; pores assez grands, 0,5–1,5 mm, irréguliers.... Hyphes flexueuses... à parois assez épaisses... gonflées et presque solubles (sol. KOH)....' Although some other features did not agree, those cited seemed promising, and it was necessary to compare both species.

The exsiccata of *P. soloniensis* were obtained on loan from the National Museum, Prague (PRM). This material consists of two envelopes, duplicates from the herbarium of H. Bourdot, *No. 9213 bis*, collected at Massalas on 5 VIII 1911 (PRM 603632) and *No. 27907*, collected at Frégère on 5 IX 1912 (PRM 603631). The collector in both cases was A. Galzin and the specimens grew on chestnut.

In addition, a specimen of this species, collected in 1969 in France (unfortunately, the locality is unknown) was kindly sent for examination by Mme A. David (Lyon).

The specimen collected in 1912 was immature ("agé de 15 jours") and had almost non-existent tubes with only very small pores being visible in part. The surface was covered by dark brown, almost black, short tufts, incrustated with a resinous substance. The tufts merged gradually into the greyish-yellowish friable context, but, in a few places, something like a cuticle could be noted. The specimen collected in 1911 had well developed tubes, and was covered partly by fragments of a thin, brown cuticle. The context was still more friable, and the specimen presented an almost identical appearance to that of *P. schulzeri* from W. In the specimen collected in 1969 the context and tubes were white. A very thin, yellowish-brownish cuticle partly covered the surface; the tufts were missing.

Microscopically, *P. soloniensis* is made up of the same type of hyphae as *P. irpex*, with a diameter, on average, very slightly larger, 3–4  $\mu\text{m}$ , but varying from 2,5 to 5  $\mu\text{m}$ , whilst the walls are up to 1,5  $\mu\text{m}$  thick. The hyphae were examined in water and, just as in *Polyporus irpex*, they dissolve immediately in alkaline solutions, and in

the tubes were found to be agglutinated by an amorphous hyaline substance. They too stain metachromatically in cresyl blue. The tufts from the surface of the juvenile specimen were first examined in water, but hardly anything could be seen owing to incrustations. On adding ammonia, the preparation was cleared and the tufts shown to be made up of thin-walled, clamped, agglutinated, parallel, generative hyphae, c. 3–7  $\mu\text{m}$  in diameter, with brown contents. The contents of these hyphae turn blue in cresyl blue, but the walls do not seem to stain metachromatically. In the older specimen of Bourdot the brown cuticle, when examined in water, is seen as an amorphous brown substance in which thick-walled hyphae are embedded (as in *P. irpex*), but, after ammonia is added and these hyphae have dissolved, it can be observed, although only locally and with difficulty, that the substance is made up of collapsed brownish hyphae resembling those found in the immature specimen. This fact makes it probable that the cuticle in *P. schulzeri* also originated from such thin-walled hyphae. Bourdot & Galzin (1928: 608) give the measurements of basidia and spores as: ‘...basides 18–21  $\times$  5–6  $\mu$ ; spores oblongues ellipsoïdes... 4,5–6–7,5  $\times$  2,5–3–4  $\mu$ , lisses ou lâchement et obscurément grênelées.’

In juvenile material, clamped, thin-walled generative hyphae, c. 2–4,5  $\mu\text{m}$  broad, were observed in some places in context and tubes. In the tubes some deformed basidia were seen. Deformed particles, resembling spores, were also noticed.

If one compares only the descriptions of *Polyporus irpex* and *Piptoporus soloniensis* one may be inclined to consider them to be two different species, especially in regard to the descriptions of the pores. On comparing the specimens, however, I have little doubt about their conspecificity. The discrepancy between the descriptions may be explained either by the variability of the species, e.g. it probably can have entire or torn pores, or by different characters emphasized by the few observers who had the opportunity to study this fungus in the fresh state. The different substrata present no difficulties, since other lignicolous species with a preference for oak and chestnut but very rarely occurring on other trees are well known, e.g. *Fistulina hepatica*.

The names *Polyporus soloniensis* and *P. schulzeri* were both published by Fries in 1874. However, the basionym of the first name was published much earlier by Dubois as *Agaricus soloniensis*, and later De Candolle (1815) published the recombination *Boletus soloniensis*. Although the descriptions of species of older authors are often very scanty, giving only a few macroscopic characters, the description by De Candolle (a copy of which I obtained through courtesy of Mme A. David, Lyon) seems to me recognizable, and ‘soloniensis’ is therefore the oldest epithet for this species.

The question is now whether this species really belongs to the genus *Piptoporus*, which includes now also *P. betulinus* (Bull. ex Fr.) P. Karst. and *P. pseudobetulinus* (Murashk.) Pilát. In his ‘Check list of European polypores’ (1974) Donk includes *P. soloniensis* in the genus *Piptoporus*, but with a question mark. Indeed it differs from the other two in several respects: in hyphae which dissolve readily in alkaline solutions and stain clearly metachromatically in cresyl blue; in the form and diameter of the pores, and in the form and size of the spores. However, the spores of *P. betulinus* and

*P. pseudobetulinus* are also different in form and size. The dissolving of the hyphae of *P. betulinus* in alkaline solution has been recorded by Z. Pouzar, but these hyphae remain hyaline in cresyl blue, whereas those of *P. pseudobetulinus* turn violet-blue. A thorough revision of this genus is needed, but will be difficult since two of the species are very rare, and only a few herbarium specimens are available. Fresh material would be indispensable, particularly in the case of *P. soloniensis*, as its descriptions and those of *P. irpex* differ in several points.

For the moment, nothing else can be done but to leave this species where it is now, and here the correct name is *Piptoporus soloniensis* (Dubois ex Fr.) Pilát, with *P. schulzeri* Fr. as a synonym.

This temporary solution leaves *P. schulzeri* exactly where Fries put it, together with *P. betulinus*, the position in the system against which Schulzer protested so strongly! However, he would probably have consoled himself by citing his favourite maxim: 'Einen Irrthum zu berichtigen, ist weit förderlicher für die Wissenschaft als das zufällige Auffinden einer neuen Art.'

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