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A CONTRIBUTION TOWARDS A REVISION OF THE GENUS TULASNELLA *

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(With eleven Text-figures)

Redescriptions of nine species of *Tulasnella* are given, all based on the specimens of the Bourdot herbarium in Paris.

Although a revision of the Tulasnellaceae by Rogers (1932, 1933) and an important article by Olive (1957) have been published, there remain some problems with the specific delimitation, at least with regard to the European species. Therefore a revision of the material deposited in European herbaria has been started some time ago, with the intention to include later the extra-European species. Donk (1966) recognized thirty species for Europe, eleven of which were described by Bourdot & Galzin (1924). Since the Bourdot collection is especially rich in Tulasnellas it seemed to be particularly important to go through the whole collection (*Tulasnella*, inclusive of *Gloeotulasnella*) in order to get a better understanding of the morphological variation of the species. A part of the work could be done during a stay in Paris, while the rest of the collection will be studied at Leiden.

In order to facilitate the identification, redescriptions of some of the species are given together with the necessary figures of the microscopical characters. One great difficulty remains: the key to the species of *Tulasnella*, as given by Bourdot & Galzin (1928), does only work if one knows the colour of the fresh basidiocarp of the membranaceous species (whitish or reddish); dried specimens of this group are all whitish or cream-coloured. There seems to be no difference in the microstructure between some pairs of species (one being whitish, the other reddish when fresh). For the moment we incline to treat them as synonyms.

TULASNELLA ALBIDA Bourd. & Galz.—Fig. 1

Tulasnella albida Bourd. & Galz., Hym. de France: 59. 1928.

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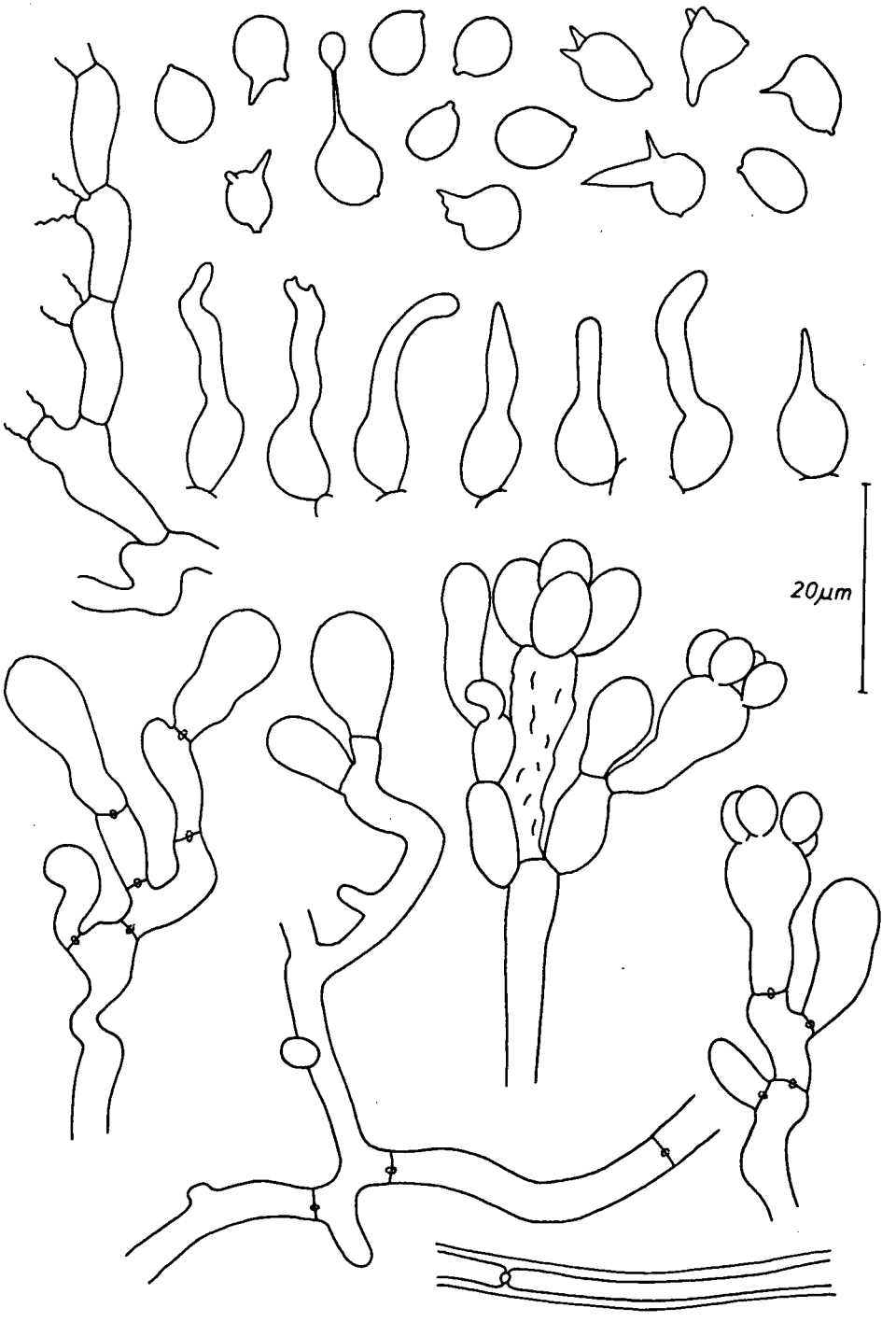


Fig. 1. *Tulasnella albida, Bourdot 6496.*

Basidiocarp resupinate, effused, several cm large, 20–60 μm thick, invisible to the naked eye when dry, ceraceous, adnate, homogeneous, hymenial surface whitish to pale greyish and pruinose when dry, even, in dry condition not cracked; margin indistinct, thinning out. Hyphae hyaline, cylindrical or slightly inflated, loosely arranged in subhymenium and trama, branching from all parts of the hyphae, 2–5.5 μm in diameter and thin-walled (0.2 μm) in the subhymenium, 2–4.5 μm in diameter and thin-walled to slightly thick-walled (up to 0.6 μm) in the trama, with smooth surface, clamps lacking, dolipore distinct, contents homogeneous. Cystidia or gloeocystidia lacking. Basidia hyaline, stalked-clavate when mature, clavate when young, 15–22 × 6.5–8 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four ellipsoid to clavate epibasidia (7–9.5 × 4.8–5.3 μm) on top of which one cylindrical, mostly unbranched, flexuous sterigma (*c.* 12–15 × 1.8 μm). Spores hyaline, subglobose to broadly ellipsoid, with small apiculus, 6.5–7.5 (–9) × 4.2–5.2 μm, thin-walled, smooth, not amyloid; germination with 1–3(–4) more or less subulate outgrowths up to 7 × 1.5 μm. — Saprophytic on wood of angiosperms (*Quercus*).

MATERIAL STUDIED.—FRANCE: '*Tulasnella albida* mihi', Allier, près de Mazeau, sur bois de chêne très pourri dans un fossé, 18.7.1909, *Bourdot 6496* (lectotype, PC); Aveyron, St. Estève, 23.7.1909, *Galzin 4321* (*Bourdot 8744*) (PC).

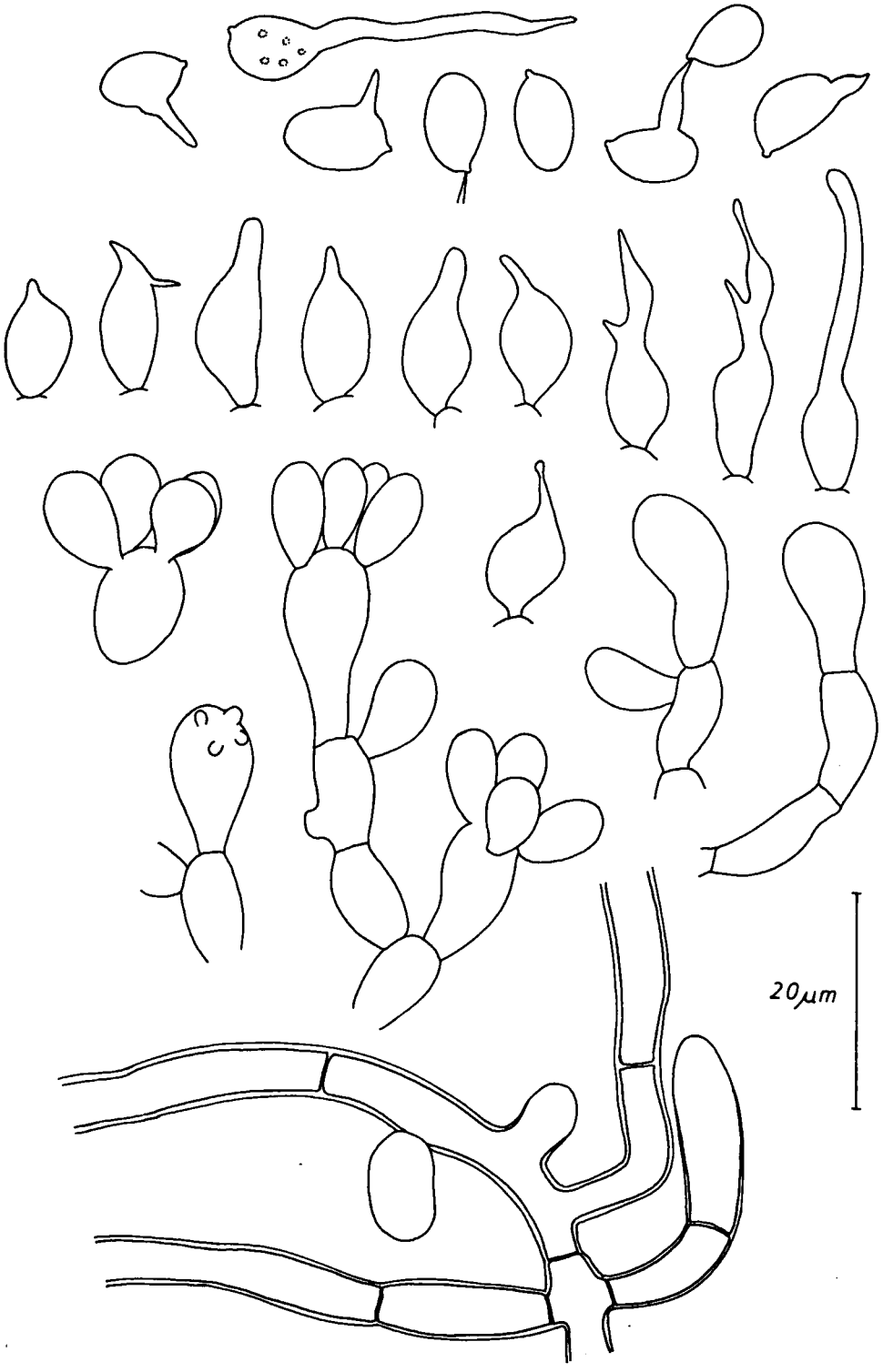
TULASNELLA ALBOLILACEA Bourd. & Galz.—Fig. 2

Tulasnella albolilacea Bourd. & Galz. *in* Bull trim. Soc. mycol. Fr. **39**: 264. 1924.

Basidiocarp resupinate, effused, several cm large, *c.* 50–80 μm thick, well visible, corticioid, consistency firm-membranaceous to somewhat ceraceous, adnate; hymenial surface whitish, even, not cracked when dry; margin indeterminate, thinning-out; rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical or slightly inflated, loosely arranged in subhymenium and trama, branching from all parts of the hyphae, 1.5–6 μm in diameter and thin-walled (*c.* 0.2 μm) in the subhymenium, 3.5–6 μm and thin- to thick-walled (up to 0.8 μm) in the trama, with smooth surface, clamps lacking, contents homogeneous. Cystidia or gloeocystidia lacking. Basidia hyaline, broadly clavate when mature, clavate when young, 11–17 × 7.5–8.5 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous, with four clavate to ellipsoid epibasidia (*c.* 12 × 6 μm), rather abruptly narrowed to a subulate or cylindrical, simple or branched sterigma (6–18 × 1.5–2.5 μm). Spores hyaline, ellipsoid, with distinct apiculus, 8–9 × 5–5.5(–6) μm, not glued together, smooth; germinating at first by forming subulate 'sterigmata' *c.* 6–9 μm long, later with cylindrical germ-tubus *c.* 2 μm in diameter. — Saprophytic on wood of angiosperms (*Quercus*).

MATERIAL STUDIED.—FRANCE: *Tulasnella albo-lilacea* nob', Aveyron, Boutaran, –.11.1917, *Galzin 23485* (*Bourdot 23559*) (lectotye, PC); —.12.1917, *Galzin 32486* (*Bourdot* 23560) (PC).

This species is according to Bourdot & Galzin pale reddish when fresh. For Rogers (1933) it is identical with *Tulasnella violacea*, but this is not accepted by Donk (1966).


20 µm

TULASNELLA ARANEOSA Bourd. & Galz.—Fig. 3

Tulasnella araneosa Bourd. & Galz. *in* Bull. trim. Soc. mycol. Fr. **39**: 265. 1924.

Basidiocarp resupinate, effused, a few cm large, *c.* 50 μm thick, ceraceous, adnate, homogeneous; hymenial surface hyaline, even, not cracked when dry; margin hyaline, indistinct, rhizomorphs and hyphal strands lacking. Hyphae hyaline, cylindrical, loosely arranged in subhymenium and trama, 2–3 μm in diameter and thin-walled to slightly thick-walled in the subhymenium, 2–4 μm in diameter and slightly thick-walled up to 0.8 μm in the trama, surface smooth, clamps lacking, contents homogeneous. Cystidia and gloeocystidia lacking. Basidia hyaline, clavate when mature, 11–15 × 6–8 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four broadly ellipsoid epibasidia (*c.* 6–9 × 4.5–5.5 μm), rather abruptly narrowed to form subulate, sometimes bifurcate sterigmata (7–13 × 1–1.5 μm). Spores hyaline, ellipsoid to slightly allantoid, with rather large apiculus, 5.9–7.5 × 3.7–4.5 μm, thin-walled, smooth, not amyloid.

MATERIAL STUDIED.—FRANCE: '*Tulasnella araneosa* Nob'. Aveyron, Pojade, sur Cérisier, 22.10.1914, *Galzin 16477* (*Bourdot 14281 bis*) (lectotype, PC); Aveyron, Loubotis, 22.10.1914, *Galzin 16435* (*Bourdot 42731*); Aveyron, Estic, 10.11.1914, *Galzin 16565* (*Bourdot 14280*) (PC); 5.5.1915, *Galzin 17462* (*Bourdot 14919*) (PC); Aveyron, Violette, —.7.1915, *Galzin s.n.* (*Bourdot 18335*).

All specimens in Bourdot's herbarium show arachnoid small patches on the substrate. The hyphae of these patches probably do not belong to this species, of which the basidiocarp is distinctly ceraceous and invisible when dry. Among the specimens, some show subglobose to broadly ellipsoid spores and could be identified as Tulasnella albida.

TULASNELLA BRINKMANNII Bres.—Fig. 4

Tulasnella brinkmannii Bres. *in* Annls mycol. **18**: 50. 1920.

Basidiocarp resupinate, effused, several cm large, *c.* 100 μm thick, membranaceous, adnate, separable in small pieces, homogeneous; hymenial surface cream-coloured, even, not cracked when dry; margin concolorous or whitish, thinning out, rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical, with distinct doliporus, loosely arranged in subhymenium and trama, branching from all parts of the hyphae, 4–6 μm and thin-walled in subhymenium and trama, with smooth surface, clamps lacking, contents homogeneous or often strongly guttulate. Cystidia lacking. Basidia hyaline, clavate when mature, 16–22 × 8–10 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous or slightly guttulate; with four ellipsoid epibasidia (*c.* 12–13 × 5–6 μm) rather abruptly narrowed to single or sometimes bifurcate sterigmata (4–9 × 0.5–1 μm). Spores hyaline, narrowly ellipsoid to slightly allantoid, with small apiculus, 12–14 × 3.7–5.2 μm, thin-walled, smooth, contents homogeneous or slightly guttulate, not amyloid.

MATERIAL STUDIED.—GERMANY: '*Tulasnella Brinkmannii* Bres. n. sp., e violaceo rosea. Ad *Alnus*, Brinkmann, spec. orig.!' (*Bourdot 7701*) (PC).

EXPLANATION OF FIGURE 2

Fig. 2. *Tulasnella albolilacea, Bourdot 23559.*

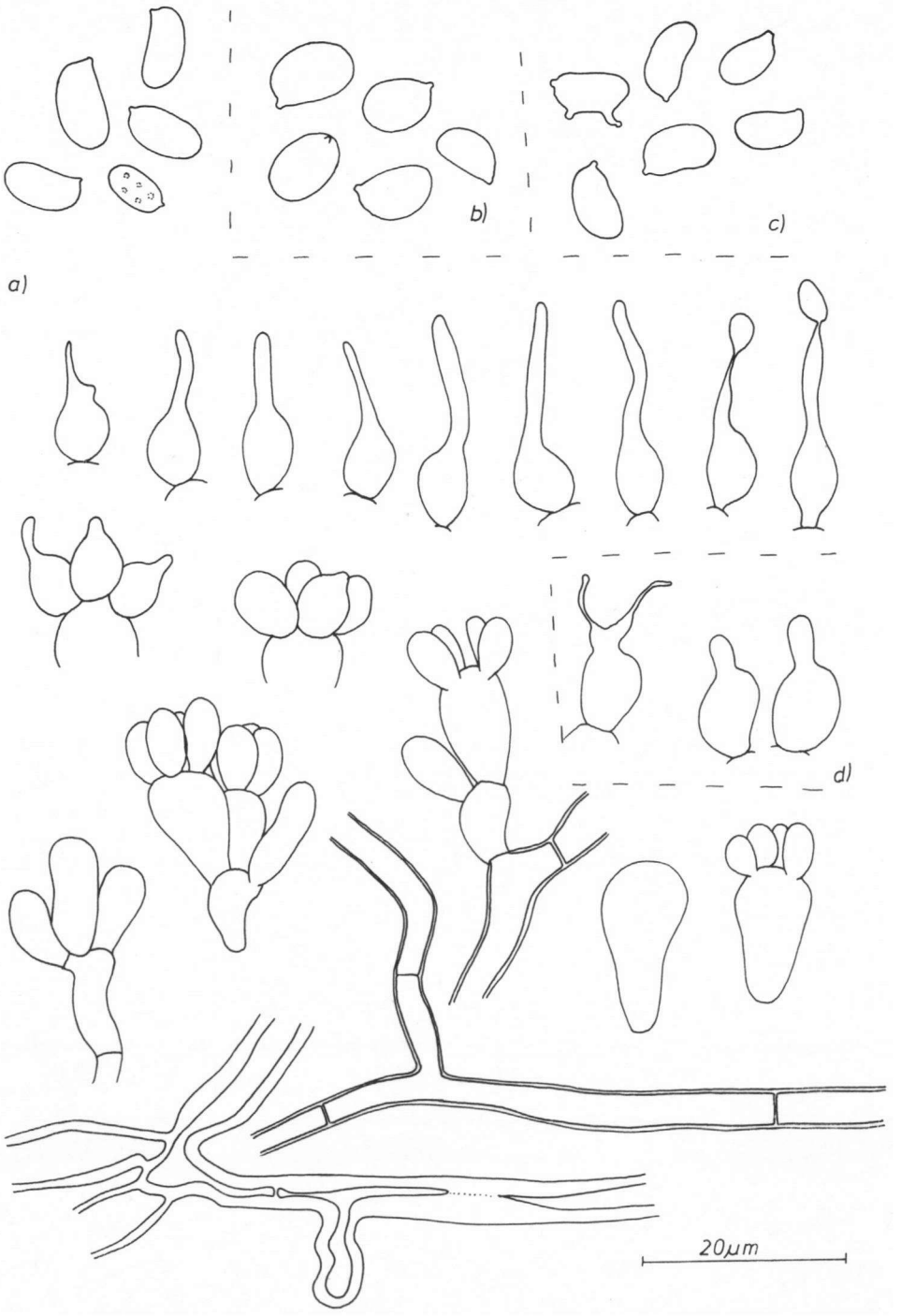


Fig. 3. *Tulasnella araneosa*. — a. lectotype (spores, epibasidia, basidia, basal hyphae). — — b. *Bourdot 14280* (spores). — c. *Bourdot 42731* (spores). — d. *Bourdot 17417* (epibasidia).

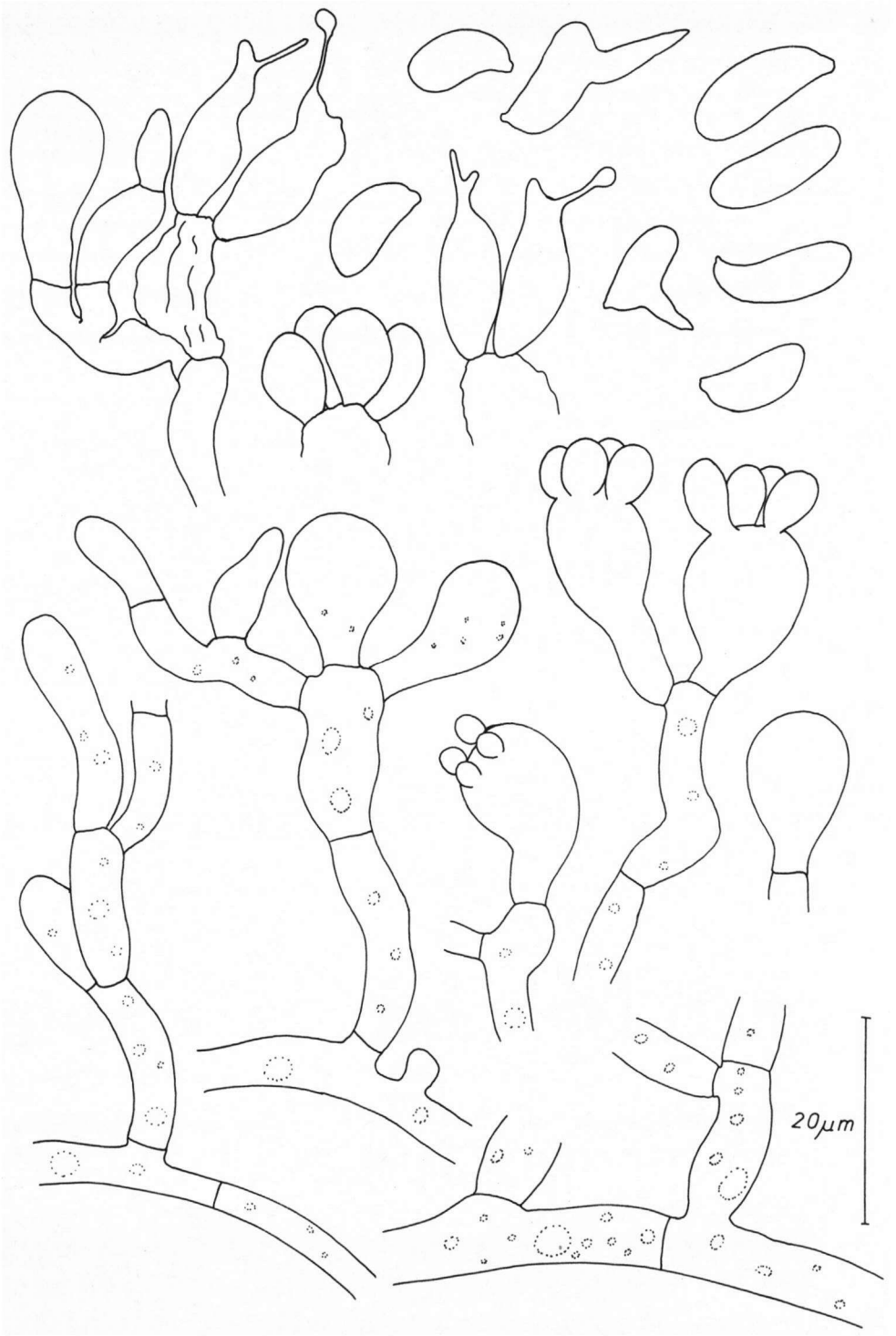
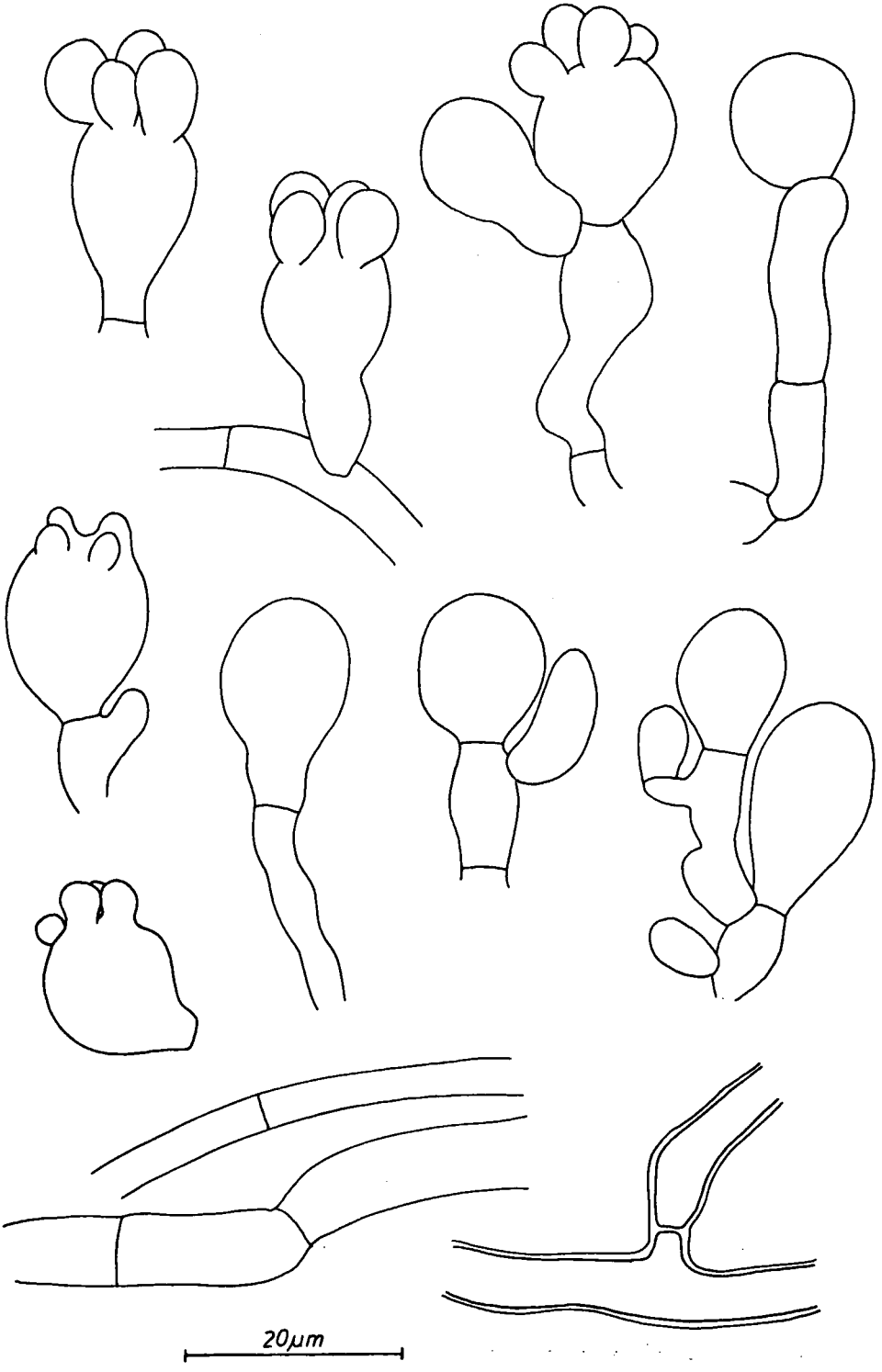


Fig. 4. *Tulasnella brinkmannii*, holotype.


20µm

According to Rogers (1933) this is identical with *Tulasnella violacea* (J.-Ols. apud Bref.) Juel.

TULASNELLA CALOSPORA (Boud.) Juel—Fig. 5, 6

Tulasnella calospora (Boud.) Juel *in* Bih. K. svenska Vet-Akad. Handl. (III) **23**[12]: 23. 1897.

Basidiocarp resupinate, effused, several cm large, *c.* 50–100 μm thick, firm-membranaceous to slightly ceraceous, adnate, separable in small pieces, contents homogeneous; hymenial surface whitish to cream-coloured, even, not cracked when dry; margin whitish, indistinct, thinning out, rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical, loosely arranged in subhymenium and trama, branching from all parts of the hyphae, 3–6 μm in diameter, thin-walled in the subhymenium, thin-walled to somewhat thick-walled in the trama, with smooth surface, clamps lacking, contents homogeneous. Cystidia lacking, Basidia hyaline, clavate when mature, sometimes stalked, broadly ellipsoid when young, 14–20–27 × 10–13 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four broadly ellipsoid epibasidia (*c.* 12–13 × 8–9 μm), rather abruptly narrowed to subulate, sometimes branched sterigmata (up to 11 × 3.5 μm). Spores hyaline, long-sinuous, with small apiculus, 19–24 × 4.4–5.3 μm, thin-walled, smooth, contents homogeneous, not amyloid.

Material studied.—France: 'Corticium (Prototremella) calospora Boud., ad telas putridos, St. Denis, dedit D. Hétier' (in herb. Boudier – PC, sub Prototremella, holotype) (part of type in herb. Bourdot 7338 – PC).

According to the specimens studied, Tulasnella calospora f. media Bourd. & Galz. is identical with Sebacina calospora Bourd. & Galz.

TULASNELLA EICHLERIANA Bres.—Fig. 7

Tulasnella eichleriana Bres. *in* Annls mycol. **1**: 113. 1903.

Basidiocarp resupinate, effused, several cm large, *c.* 50–100 μm thick, firm-membranaceous to slightly ceraceous, adnate, separable in small pieces, context homogeneous; hymenial surface cream-coloured to pale greyish, even, not cracked when dry; margin concolorous or paler, thinning out, rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical or somewhat torulose in the subhymenium, with distinct dolipore, loosely arranged, branching from all parts of the hyphae, 2–5 μm in diameter, thin-walled, smooth, clamps lacking, contents homogeneous. Cystidia lacking. Basidia hyaline, clavate when mature, 7–10 × 4.5–5.5 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four broadly ellipsoid epibasidia (*c.* 6–7.5 × 4.5–5 μm), rather abruptly narrowed to flexuous-cylindrical or subulate sterigmata (*c.* 3.5–4 × 2–2.5 μm). Spores hyaline, broadly ellipsoid, with small apiculus, 3.5–4.5 × 3–4 μm, thin-walled, smooth, contents homogeneous, not amyloid; forming secondary spores.

MATERIAL STUDIED.—FRANCE: Aveyron, Barthe, 10.11.1914, *Galzin 16529* (*Bourdot 35630*) (PC); Allier, Forêt de Dreuille, 1.8.1908, *Bourdot 5919* (PC).

EXPLANATION OF FIGURE 5

Fig. 5. *Tulasnella calospora*, holotype.

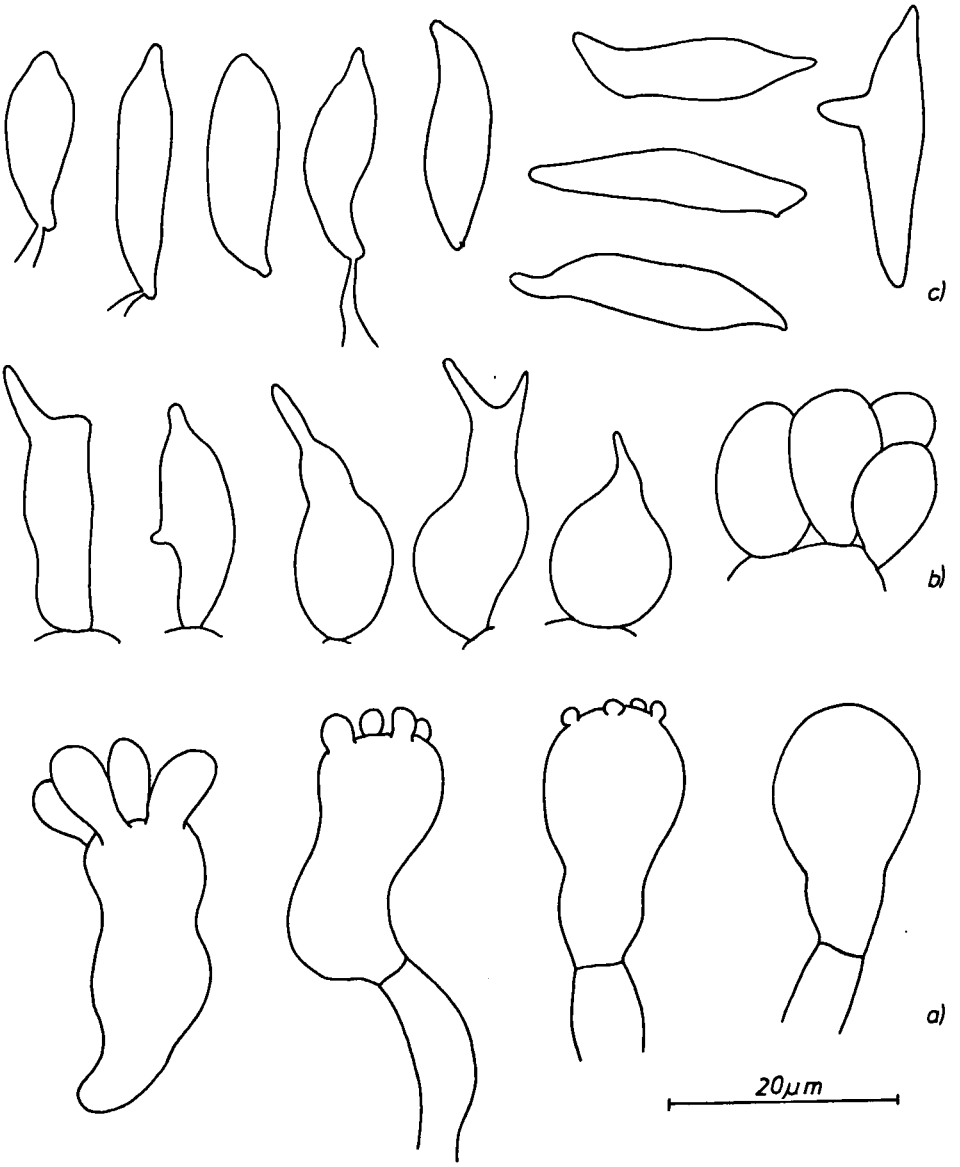


Fig. 6. *Tulasnella calospora*, holotype. — a. basidia. — b. epibasidia. — c. spores.

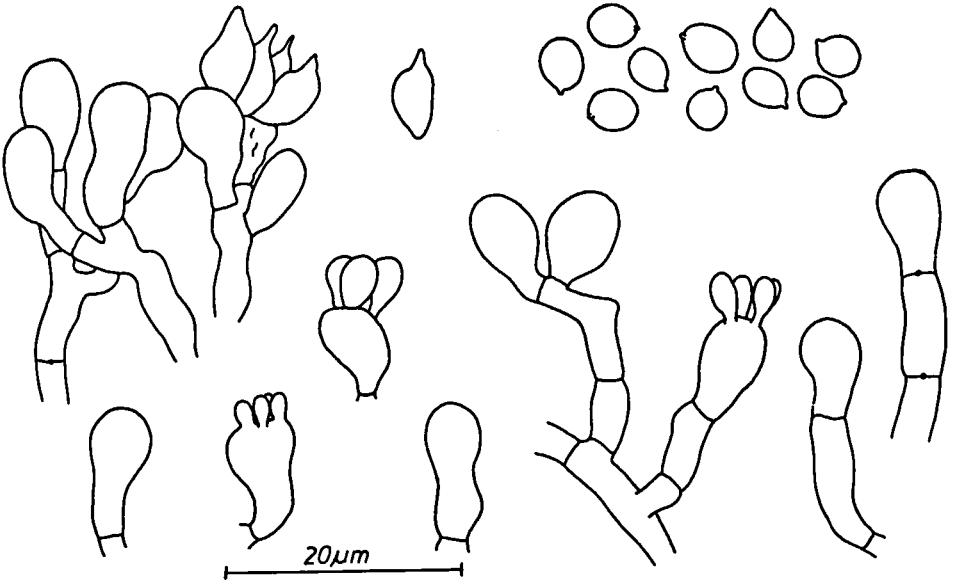


Fig. 7. *Tulasnella eichleriana, Bourdot 5919.*

This species shows a reddish basidiocarp when fresh. It has often been regarded as a synonym of *Tulasnella violea* (Quél.) Bourd. & Galz. but can be separated by its rather small spores. The delimitation of *T. violea* itself is an unsolved question. There are forms (taxa?) with globose or ellipsoid spores and also some forms with medium-sized spores, situated exactly between *T. violea* and *T. eichleriana.*

TULASNELLA FUSCOVIOLACEA Bres.—Fig. 8, 9

Tulasnella fuscoviolacea Bres., Fungi trident. **2**: 98. 1900.

Basidiocarp resupinate, effused, several cm large, *c.* 50–100 μm thick, membranaceous, adnate, separable in small pieces, context homogeneous; hymenial surface cream-coloured, even, not cracked when dry; margin whitish, thinning-out, rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical, with distinct dolipore, loosely arranged, 3–4.5 μm in diameter, thin-walled, smooth, clamps lacking, contents homogeneous. Cystidia lacking. Basidia hyaline, clavate when mature, 9.5–15 × 7.5–9 μm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four clavate epibasidia (*c.* 10–12 × 4.5–5 μm), rather abruptly narrowed to flexuous-cylindrical sterigmata (*c.* 6 × 1.5 μm). Spores hyaline, slightly allantoid, with small apiculus, 8–12.5 × 3.7–4.5 μm, thin-walled, smooth, contents homogeneous, not amyloid; germination by means of secondary spores.

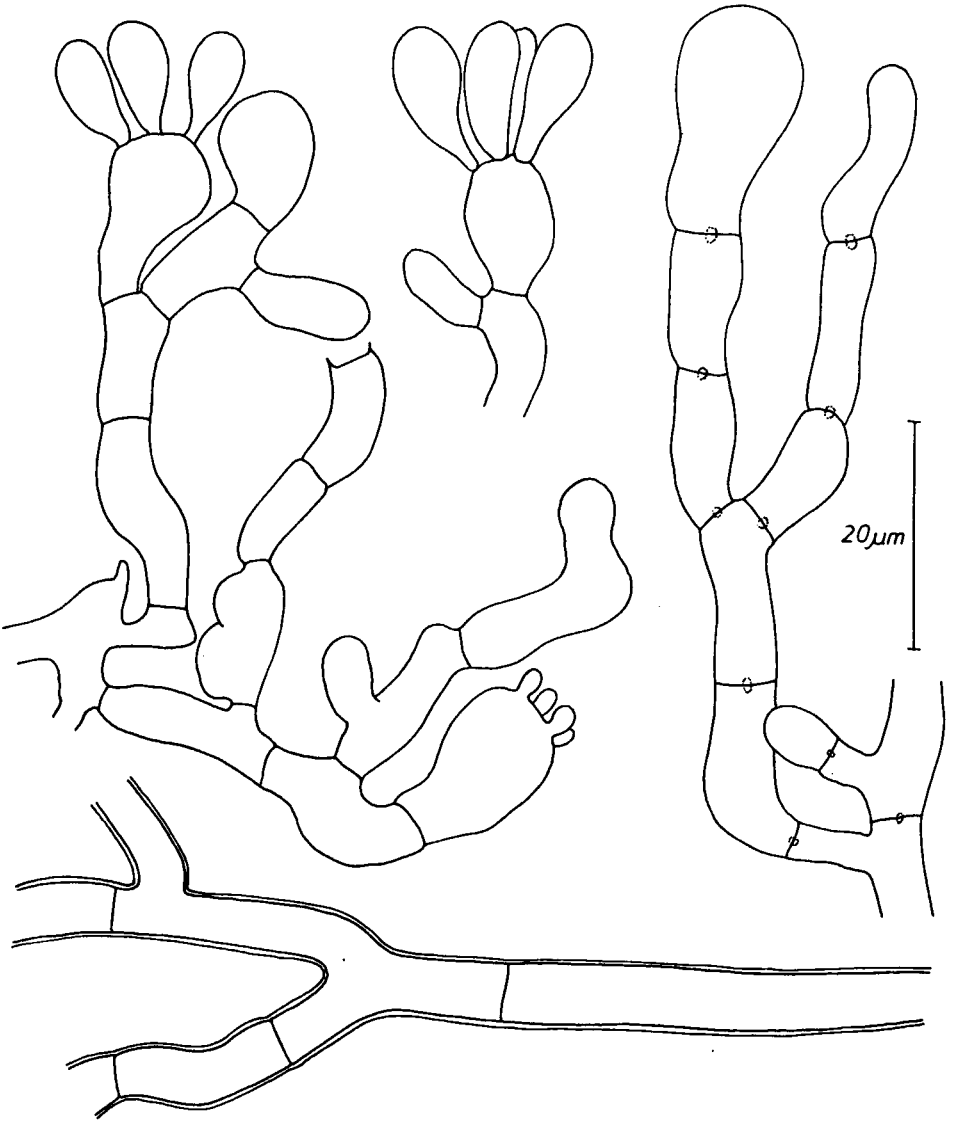


Fig. 8. *Tulasnella fuscoviolacea, Bourdot 25030.*

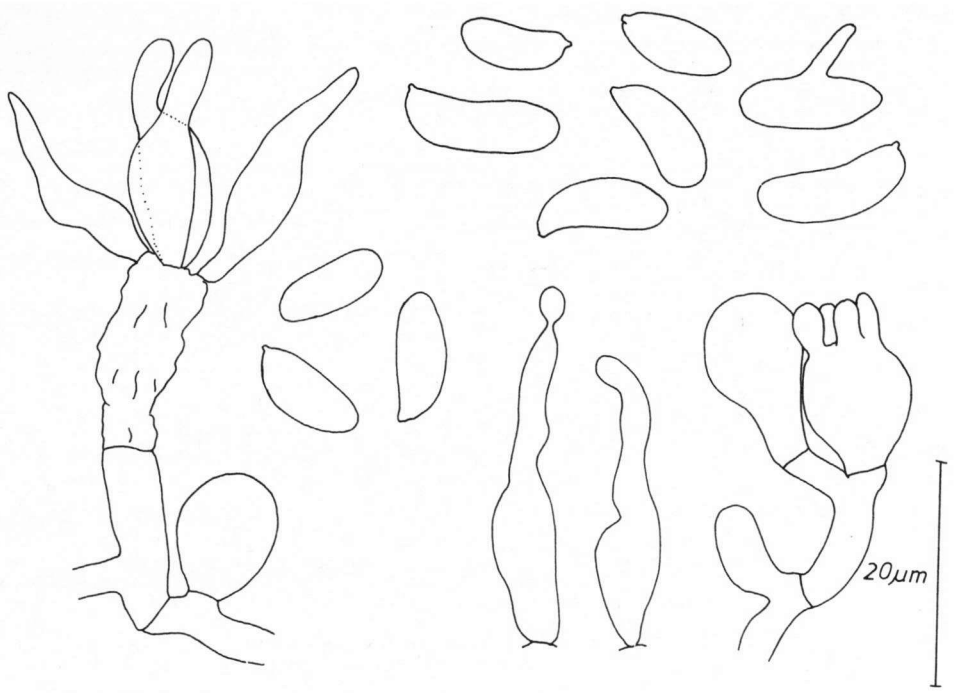


Fig. 9. *Tulasnella fuscoviolacea*. — a. *Bourdot 25030* (basidia, epibasidia, spores). — b. *Bourdot 3512* (spores above).

MATERIAL STUDIED.—FRANCE: Belfort, —.9.1918, *E. Gilbert 200* (*Bourdot 25030* — PC); Vosges, 25.4.1904, *Galzin s.n.* (*Bourdot 3512*–PC).

TULASNELLA OBSCURA Bourd. & Galz.—Fig. 10

Tulasnella obscura Bourd. & Galz. *in* Bull. trim. Soc. mycol. Fr. **39**: 265. 1924.

Basidiocarp resupinate, effused, a few cm large, *c.* 50–100 µm thick, ceraceous, adnate, not easily separable, context homogeneous; hymenial surface hyaline to brownish or blackish, even, not cracked when dry; margin concolorous, indistinct, thinning-out, rhizomorphs or hyphal strands lacking. Hyphae hyaline, cylindrical or torulose in the subhymenium, compactly arranged, 2–3 µm in diameter, thin-walled, smooth, clamps lacking, contents homogeneous. Cystidia lacking. Basidia hyaline, clavate when mature, flexuous-cylindrical to narrowly clavate when young, 10–12.5 × 5–6.5 µm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four flexuous-subulate epibasidia (12–16 × 2.5–3 µm). Spores hyaline, broadly ellipsoid, with distinct apiculus, 3.7–5.2 × 3–4.2 µm, thin-walled, smooth, contents homogeneous, not amyloid; germination by means of secondary spores, the 'sterigmata' subulate, *c.* 6 × 1.5 µm.

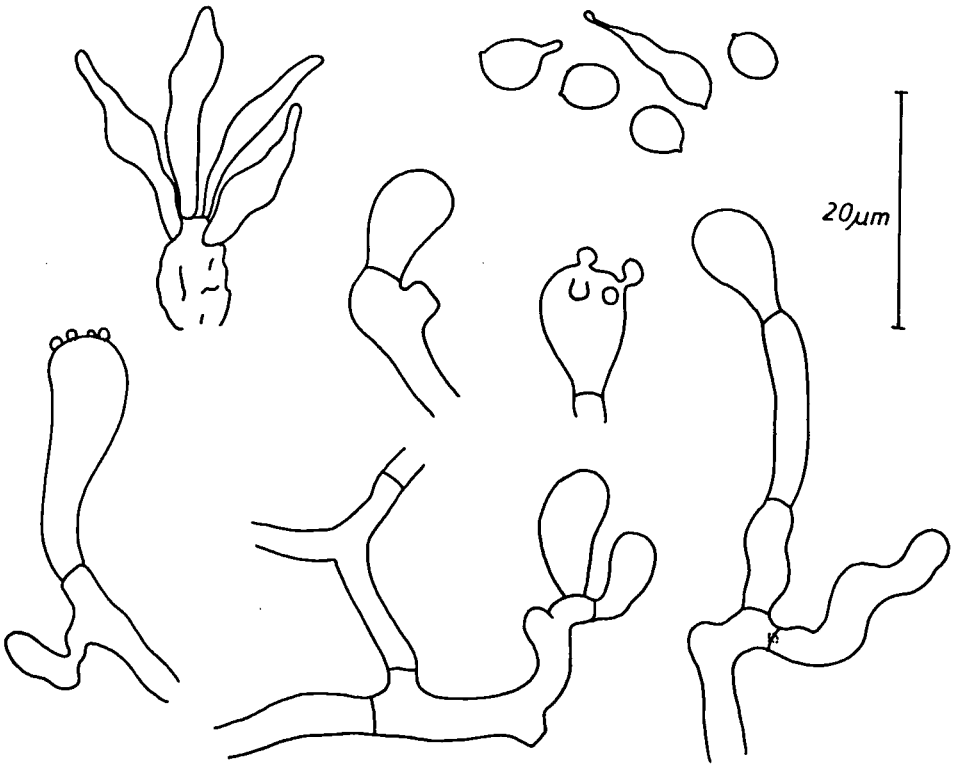


Fig. 10. *Tulasnella obscura, Bourdot 17376.*

MATERIAL STUDIED.—FRANCE: '*Tulasnella obscura*, sur noyer, Aveyron, Le Rec, 25.7.1914, *Galzin 15813*' (*Bourdot 17375*) (lectotype, PC) Aveyron, 26.12.1915, *Galzin 19123* (*Bourdot 17376*) (PC).

TULASNELLA PRUINOSA Bourd. & Galz.—Fig. 11

Tulasnella pruinosa Bourd. & Galz. *in* Bull. trim. Soc. mycol. Fr. **39**: 264. 1924.

Basidiocarp resupinate, effused, several cm large, *c.* 20–50 µm thick, visible to the naked eye, ceraceous, adnate, context homogeneous; hymenial surface pale greyish, pruinose, even, not cracked when dry; margin concolorous, indistinct, thinning out, rhizomorphs or hyphal strand lacking. Hyphae hyaline, flexuous-cylindrical, loosely arranged throughout, branching from all parts of the hyphae, 2–4 µm in diameter, thin-walled, smooth, clamps lacking, contents homogeneous. Cystidia lacking. Basidia hyaline, clavate when mature, ellipsoid when young, 9–12 × 6–7 µm, thin-walled, smooth, a basal clamp lacking, contents homogeneous; with four more or less ellipsoid, guttulate epibasidia, rather abruptly narrowed to

the subulate sterigmata (*c.* 5–6 × 1–1.5 μm). Spores hyaline, ellipsoid, some slightly curved, with distinct apiculus, 6–7.5 × 3.3–3.7 μm, thin-walled, smooth, contents slightly guttulate, not amyloid; germination by repetition, sterigma-like outgrowth *c.* 3.5 × 0.7 μm.

MATERIAL STUDIED.—FRANCE: '*Tulasnella pruinosa*, sur châtaignier, Aveyron, Clavelau (St. Sernin), 19.3.1912, *Galzin 11012*' (*Bourdot 8745*) (lectotype, PC); Aveyron, Bois Dufabre 20.4.1912, *Galzin 11292* (*Bourdot 8750*); Aveyron, Violette, 25.7.1914, *Galzin 15859* (*Bourdot 35620*); Aveyron, les Vives, 24.4.1912, *Galzin 11163* (*Bourdot 14073*).

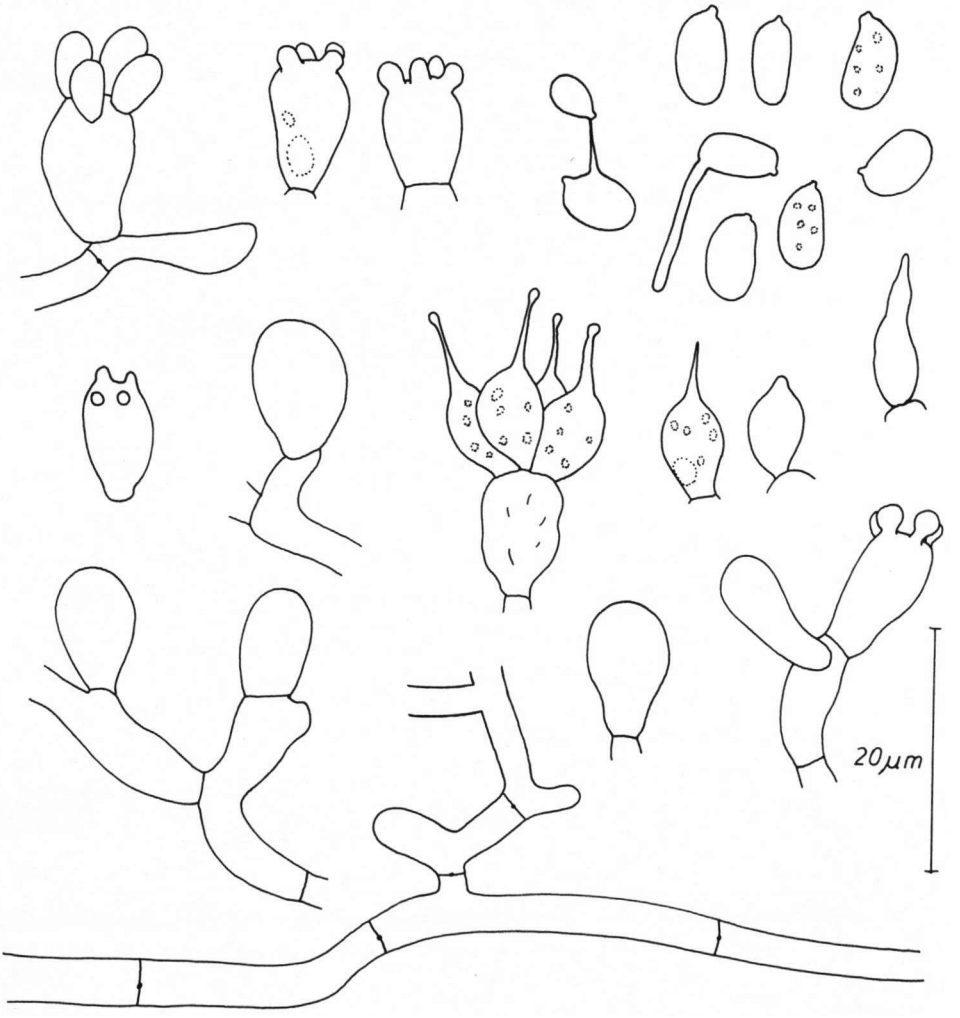


Fig. 11. *Tulasnella pruinosa, Bourdot 8745.*

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