

NOTES ON INOCYBE

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(With 31 Text-figures)

Inocybe similis Bres. sensu Kühner is not conspecific with *I. similis* Bres. Both taxa are redescribed here; the former as a new species. An emended description is given of *Inocybe halophila* Heim.

***Inocybe brunneotomentosa* Huijism., sp. nov.**—Figs. 1-9

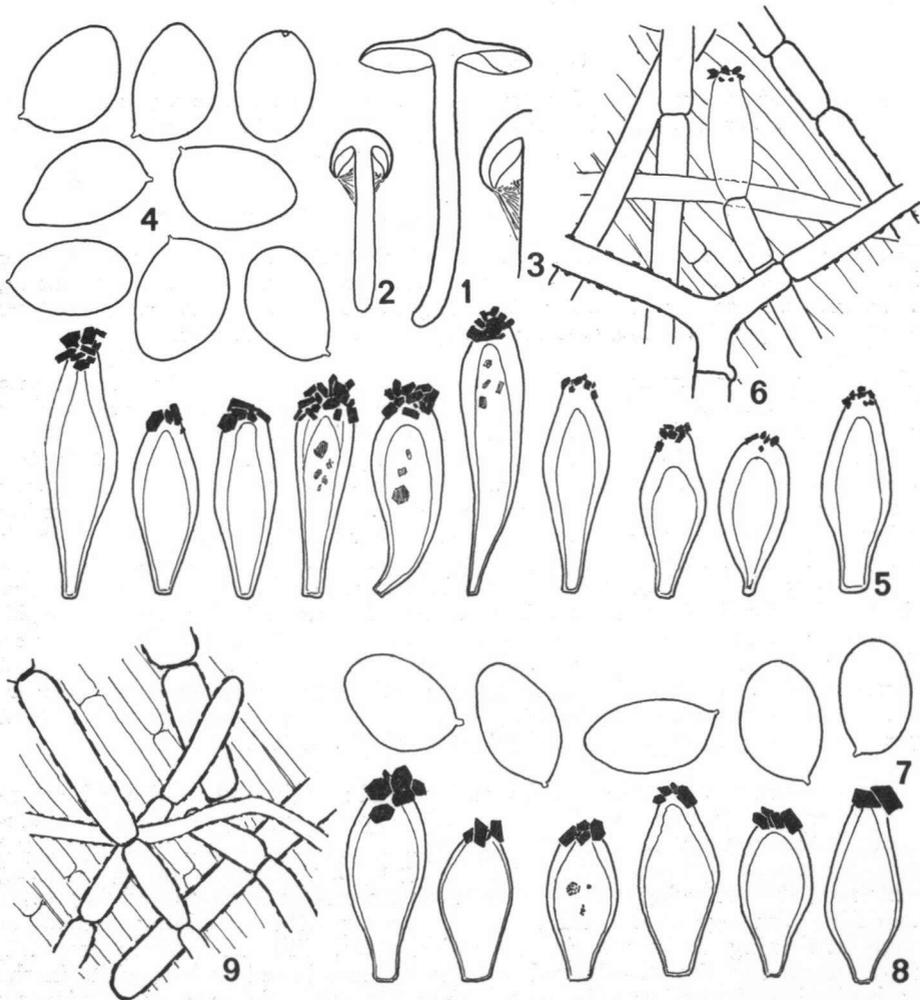
NAME MISAPPLIED TO THE PRESENT SPECIES. — *Inocybe similis* Bres. sensu Kühner *apud* Kühner & Romagnesi, Fl. anal. 221, fig. 332. 1953; in Bull. Soc. Natur. Oyonnax 9, Suppl.: 14, figs. 1, 2 and 4c. 1955; sensu J. Stangl in Z. Pilzk. 37: 22. 1971 and col. ill. *s.n.*; sensu Moser in Gams, Kl. Kryptog Fl. II b/2, 2. Aufl.: 157. 1955 & 3. Aufl.: 246. 1967.

Pileo 15-40 mm, campanulato vel plano-convexo, tomento primo pallide brunneo-alutaceo dein gradatim fusciscenti oblecto, mox - centro excluso - in pannulis partim evanescentibus diruto, de hac re fundo denudato, glabro, alutaceo, radialiter fibrilloso exhibenti. Lamellis mediocriter confertis, paulo adnexis, ventricosis, primo juventute albis, mox ocraceis, dein cinnamomeo-brunneis; acie albida, fimbriata. Stipite 25-35 × 2.5-5 mm, subaequali, apice solum pulverulento-pruinoso, primo deorsum sordide alutaceo, mox e basi sursum sordide cano-brunneo suffuso, sed apice albido remanenti. Carne pilei tenui, albida, stipitis superficie pallidiore; odore spermatico. Sporis 6.3-9.6 × 4.3-5.8 μm, late ellipsoideis vel ellipsoideis. Basidiis 25-28 × 7.5-8.2 μm, 4-sporis. Cystidiis lamellarum 34-56 × 10-20 μm, claviformibus vel fusiformibus. Cystidiolis praesentia dubiosa. Pileipelle crassitudine fere 40 μm, e hyphis 4-10 μm latis, pariete flavotincto. Tomento e hyphis singularibus fasciculisque laxè intertextis, 5-14(-18) μm latis, pariete flavobrunneo, pigmento extraparietali granuliformi (juventute), postea maculiformi. Stipitipelle apice solum extremo cystidiis typicis gerenti. Subcaespitosa in locis humosis in deciduis (sub quercubus, fagis, carpinis). Typus: 'H. S. C. Huijisman, 22 VIII 1953, Vorden, Gelderland, The Netherlands (L)'.

Pileus 15-40 mm, when still closed with incurved margin and whitish veil extending from margin to upper part of stem, soon expanding, campanulate to plano-convex, distinctly umbonate, at first pale alutaceous-brown and tomentose, but with tomentum except at centre soon breaking up into patches and rags, tending to exfoliate, thus showing the ochraceous-alutaceous, smooth underlying layer (pileipellis) with age more and more contrasting with remaining patches of strongly darkening tomentum (velum universale?). Gills moderately crowded, slightly adnexed to sinuato-adnexed, convex, 3.5 mm broad or less, white in the very beginning, becoming ochraceous, then cinnamon brown; edge minutely fimbriate, whitish. Stem 25-35 × 2.5-5 mm, equal or slightly thickened downwards, solid, pulverulento-pruinose at whitish top, elsewhere dirty alutaceous, becoming dirty grey-brown from base upwards but remaining pale at top. Flesh thin, whitish in cap, in stem paler than surface of stem; smell spermatic.

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Spores $6.9-9.6 \times 4.3-5.8 \mu\text{m}$, broadly ellipsoid to ellipsoid, sometimes inaequilateral from side view. Basidia $25-28 \times 7.5 \times 8.2 \mu\text{m}$, mostly 4-spored. Cystidia of gills claviform to fusiform, thick-walled, yellowish, crested; pleurocystidia $34-50 \times 10-18 \mu\text{m}$; cheilocystidia on an average slightly longer, but exceptionally surpassing a length of $56 \mu\text{m}$. Cystidioles if present, unfrequent. Tomentum half-way cap made up of loosely interwoven, $5-10(-14) \mu\text{m}$ wide hyphae and of bundles of hyphae;



Figs. 1-9. *Inocybe brunneotomentosa*. — 1. Median section, expanded fruitbody ($\times 1$). — 2. Idem, closed fruitbody ($\times 1.5$). — 3. Part of 2 (higher magn.). — 4. Spores ($\times 2000$). — 5. Cystidia: at the left 6 cheilocystidia; the two longer ones are exceptional; at the right 4 pleurocystidia ($\times 600$). — 6. Surface of cap, about half-way radius ($\times 400$). — 7. Spores ($\times 2000$). — 8. Cystidia ($\times 600$). — 9. The same as 6 in an older specimen. (Figs. 1-6 from type; Figs. 7-9 from Stangl 366).

hyphal cells with yellowish brown walls and granules of an extraparietal brown pigment seemingly confluent into maculiform patches with age. Pileipellis half-way cap about 40 μm thick, consisting of closely pressed, parallel, 4–10 μm wide hyphae with yellowish walls; transition into paler flesh of cap rather abrupt. Stipitipellis only at extreme apex with typical cystidia, these soon downward passing into a narrow zone of rudimentary cystidia passing in their turn into ordinary end-cells of emerging hyphae. Clamp-connections present.

HABITAT.—In small groups on humus of deciduous trees (*Quercus*, *Fagus*, *Carpinus*).

COLLECTIONS EXAMINED.—NETHERLANDS: prov. Gelderland, Linde near Vorden, 22 Aug. 1953. *H. S. C. Huijsman* (holotype; L); prov. Zuid-Holland, Wassenaar, estate 'Hartekamp', 5 May 1957, *C. Bas 1265* (L); GERMANY, Bavaria: Augsburg, Siebentisch Park, 8–10 Aug. 1966, *J. Stangl* (M); Augsburg, Siebentisch Strasse, 22 Sept. 1966, *J. Stangl* (M).

When Kühner (1953: 224) attributed specimens of the present species to *Inocybe similis* Bres., he apparently underestimated the exactness of Bresadola's spore-measurements (Bres.: 10–15 \times 6.5–8.5 μm ; Kühn.: (5.7–)6–8.7(–10) \times (4.2–)4.5–5(–5.5) μm). Moreover the spores are said to be reniform by Bresadola (1908: 161), whereas those drawn by Kühner (1955, 18) are rather broadly ellipsoid.

Examination of the type of *I. similis* Bres. proves that Bresadola's measurements are correct, so that *I. similis* Bres. sensu Kühn., moreover differing from *I. similis* Bres. in many other respects, is in need of another name. As I have been unable to find an adequate description in literature, the specific epithet '*brunneotomentosa*', referring to the brown tomentum of the cap, is introduced for it here.

It is not impossible that the layer provisionally indicated as 'tomentum' in the diagnosis is a suprapellis, but the possibility that it represents a veil should certainly not be excluded. Facts pointing to the second possibility are:

I. The suprapellis in cystidiate species of *Inocybe* is essentially constituted of radial hyphae; rests of the universal veil on the cap on the contrary are generally made up of interwoven or entangled hyphae, like here.

II. A careful examination revealed that the tomentum on the cap and the cortina at the margin of the cap form a continuum, so that they seem to belong to one peripheral layer, i.e. the universal veil.

III. If the tomentum would represent a suprapellis it is strange that, even in young fruitbodies, no rudiments of a typical universal veil could be found. In most species of *Inocybe* the presence of some remnants of the veil over the cap, in the form of undifferentiated, thin-walled and colourless hyphae, can be observed, at least in still closed specimens.

So the possibility cannot be excluded that the primitive universal veil, in *Inocybe* ordinarily destroyed in an early primordial stage by hyphae emanating from the pileipellis, persists in *I. brunneotomentosa*. Future collections and above all embryological investigations are needed for confirmation or rejection of this hypothesis. Unfortunately *I. brunneotomentosa* is a rare and inconspicuous species.

There is some variation in the shape of the spores. In collections of Kühner ($Q=1.47$) and myself ($Q=1.47$) they are broadly ellipsoid; in that of Bas ($Q=1.61$) and those of Stangl ($Q=1.55$) they are simply ellipsoid. (Q =length-breadth ratio).

It will not escape attention that in Fig. 6, showing the surface of the cap at a

magnification of 400×, a cystidium is drawn. Actually the presence of cystidia in the circumdiscal zone of the pileus is not rare in cystidiate species of *Inocybe*. I suspect that these pileocystidia are little known because the examination of the superficial layers of the cap is much neglected in this genus. Perhaps their presence is a response of the cap to a stimulus exerted on it when it is piercing the soil.

Inocybe brunneotomentosa can only be confused with *I. tenebrosa* Quélet. (= *I. atripes* Atk.)¹ But there the nature of the pileipellis is not aberrant. Moreover the stipe of *I. tenebrosa* is covered with cystidia from top to base. Kühner stated that in *I. similis* sensu Kühn. the extreme base of the stem is sometimes slightly roseate to vinaceous. Neither Stangl (1971: 22), nor Bas, nor myself were able to repeat this observation, which possibly induced Hennig (1967: 202) to synonymize *I. similis* sensu Kühn. with *I. atripes*. It is a well-known fact that the tomentum at the base of the stem of *I. tenebrosa* often shows a reddish tint persisting in herbarium-specimens.

INOCYBE SIMILIS Bres.—Figs. 10–22

Inocybe similis Bres. in *Ann. mycol.* 3: 161. 1908.

MISAPPLICATIONS. — *Inocybe similis* sensu Kühner *apud* Kühner & Romagnesi, *Fl. anal.* 221. 1953 and in *Bull. Soc. Nat. Oyonnax* 9, suppl. (Compl. *Fl. anal.* 5): 14. 1955, and sensu J. Stangl in *Z. Pilzk.* 37: 22. 1971 (= *I. brunneotomentosa*); sensu Hennig in *Michael-Hennig, Handb. Pilzfr.* 4: 202. 1967 (= *I. haemacta*, spor. excl.).

ILLUSTRATION. — Bres., *Iconogr. mycol.*: pl. 730 fig. 2. 1931.

Cap 20–35 mm, conico-campanulate to campanulate-convex, broadly umbonate, with incurved or abruptly deflexed margin, coarsely radially fibrillose, with concentric rows of laterally confluent, quadrangular, fringed squamulae around ± canescent, smooth to fissurate centre, with from centre outwards squamulae more and more separate, but often squamulae little developed, unicolorous cinnamon brown, with flesh nowhere showing, with a circle of greyish velar remnants on margin and, particularly in young specimens, with numerous greyish patches of same origin elsewhere. Gills moderately crowded, 37–44, with 1–2 tiers of short gills, adnexed to emarginate-adnexed, rather broad, from ochraceous to cinnamon brown; edge fimbriate, whitish. Stem 20–50 × 2.5–5 mm, cylindrical, equal, but subbulbous at base, submarginate, pruinoso-pulverulent at apex, with fading pruinosity downward to half-way length, faintly streaked with whitish fibrils on lower half, paler than the cap, brownish in median zone, occasionally slightly darkening with age, but apex and base remaining whitish. Flesh whitish. Smell not noted, probably insignificant.

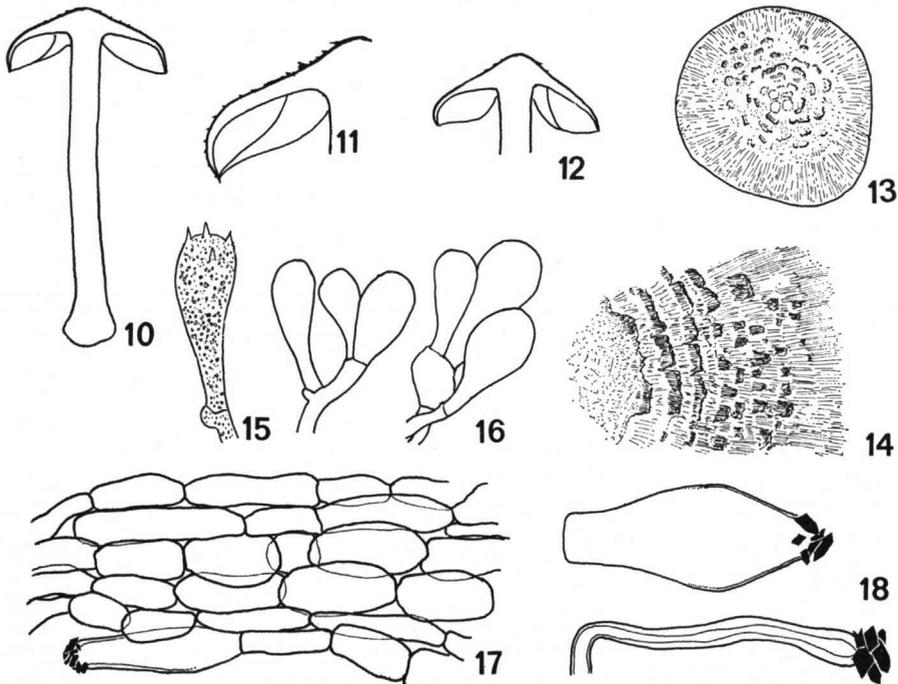
Spores 10–15.8 × 6.3–8 μm, in lateral view mostly subphaseoliform with distinct,

¹ To my mind Quélet's description (1885: 279) and especially his figure of *I. tenebrosa* (1885: 279; pl. 8, fig. 8) can hardly be misinterpreted. *I. tenebrosa* Quélet. (1885) and *I. atripes* Atk. (1918) are synonyms. In 1931 the name *I. tenebrosa* became obsolete when Heim (1931: 162) lodged Quélet's species with its stipe 'bistre-noirâtre ou olivâtre' and its cap 'finement excorié, grivelé' (=speckled like a song thrush) in his sect. *Dulcamarae*, solely because Quélet described the spores as 'pruniformes ou en forme de rein'. At present one knows that there are also cystidiate *Inocybe*, not belonging to sect. *Dulcamarae* sensu Heim, that have reniform spores. Atkinson (1918: 211) did not take up the name *I. tenebrosa* for his *I. atripes* 'as it (*atripes*) differs in the velvety [read: cystidiate] non-striate stem' and as he had 'no knowledge of the cystidia in *I. tenebrosa*'.

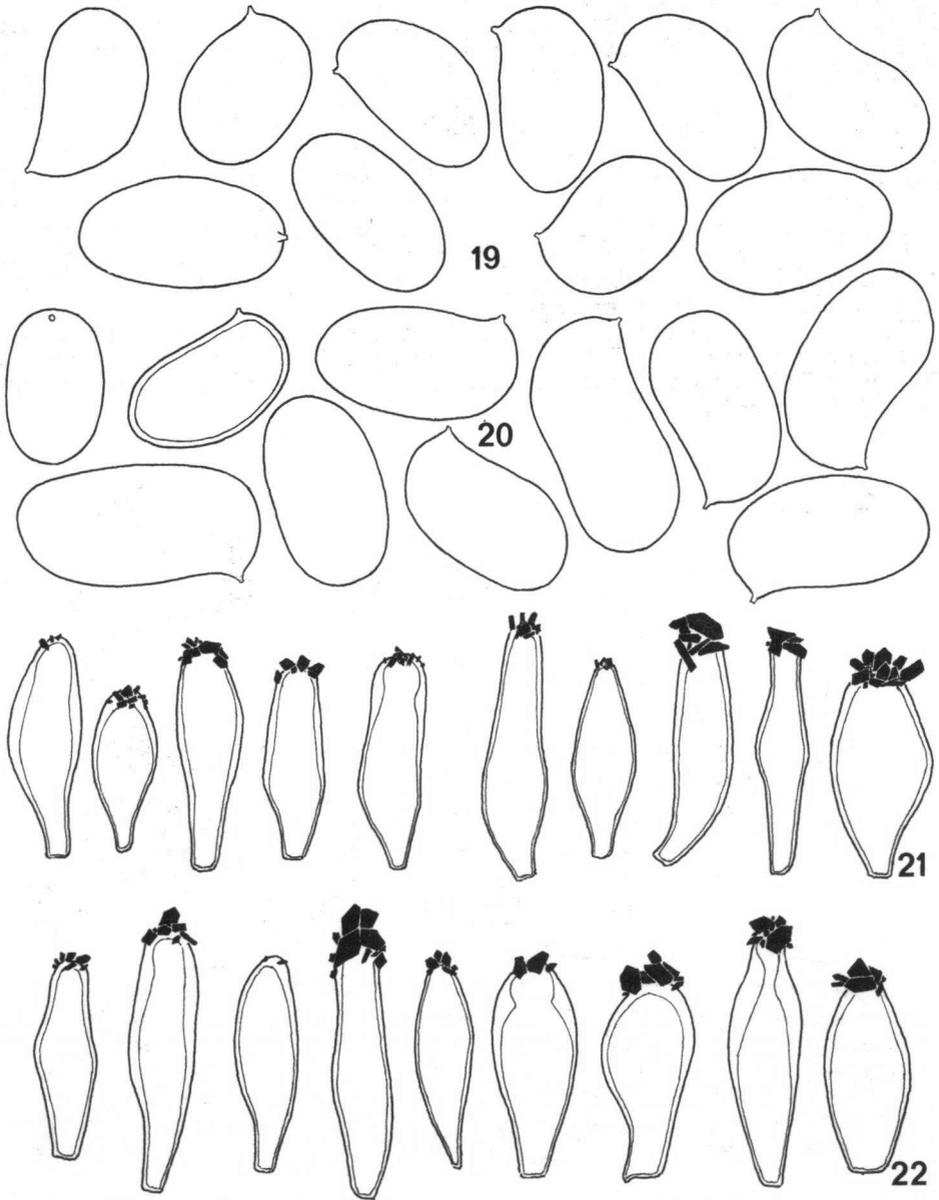
often extensive, supra-apical concavity, in face view subcylindrical, subtruncate at both ends. Basidia $33-42 \times 10-12 \mu\text{m}$, 4-spored. Cystidia moderately thick-walled, pale yellowish; pleurocystidia $40-62 \times 11-18 \mu\text{m}$, mostly subfusiform to subcylindrical, cheilocystidia similar but on an average slightly more ventricose, $36-60 \times 14-22 \mu\text{m}$, sometimes subclaviform; cystidioles obpiriform, optically empty, numerous. Pileipellis consisting of two rather indistinct layers: a suprapellis of $5-12 \mu\text{m}$ wide hyphae interspersed with intercellular brown granules; cells rather thick-walled, $20-200 \times 5-12 \mu\text{m}$, with rounded ends, with brown parietal pigment and dispersed granules of extraparietal pigment; 'subpellis' made up of slightly narrower and less pigmented hyphae, rather abruptly passing into flesh. Remnants of universal veil on cap, up to $35 \mu\text{m}$ thick at centre of cap, consisting of laxly interwoven, thin-walled, hyaline or poorly pigmented $3-7 \mu\text{m}$ wide hyphae. Caulocystidia typical and in crowded tufts at apex of stem, downwards rapidly scarcer, half-way stem still scattered but often rudimentary (Fig. 18), practically lacking from lower half of stem. Clamp-connections present.

HABITAT.—On humid sandy to loamy soil with scanty herbaceous vegetation.

COLLECTIONS EXAMINED.—ITALY, Desert near Trient, May 1900, *G. Bresadola* (holotype; S); NETHERLANDS, prov. Gelderland, loam-pit near Buren, 9 Aug. 1971, *J. de Klewer* (L).



Figs. 10–18. *Inocybe similis*. — 10. Median section of fruitbody ($\times 1$). — 11. Idem of part of cap ($\times 2$). — 12. Idem of another cap ($\times 1$). — 13. Aspect of surface of cap ($\times 1$). — 14. Part of 13 magnified. — 15. Fresh basidium ($\times 600$). — 16. Cystidioles ($\times 600$). — 17. Surface of cap about half-way radius ($\times 400$). — 18. Caulocystidia ($\times 600$). (Fig. 17 from type; all other Figs. from *de Klewer* 9 VIII 1971.)



Figs. 19–22. *Inocybe similis*. — 19, 20. Spores ($\times 2000$). — 21. Cystidia: at the left five pleurocystidia; at the right five cheilocystidia ($\times 600$). — 22. Idem, but at the left four cheilocystidia. (Figs. 19, 22 from type; Figs. 20, 21 from *de Klewer 9 VIII 1971*.)

Among the middle-sized cystidiate species of *Inocybe*, *I. similis* is perhaps unique in having at the same time large spores with the average length notably exceeding 10 μm , and a spore shape that can best be described with the terms reniform or phaseoliform. In fact the spores have an extensive supra-apical depression.

Still another character demands our attention. In the majority of species of *Inocybe* with superficial squamules on the cap, these are essentially triangular. This is brought about by a tendency to converge of the radial fibrils, thus forming pointed squamules. Later on these may detach themselves from the surface of the cap at their tips and sides in consequence of growth tensions in the cap. In *I. similis*, however, the squamules on the cap have in principle a quadrangular shape, because the hyphae have no tendency to converge. Here the shape of the squamules is mainly determined by parallel radial hyphae. In the circumdiscal zone the squamules are usually sideways connected, forming concentric rows or bands.

In *I. similis* the formation of superficial squamules by the suprapellis does not affect the only slightly paler subpellis, so that the squamules hardly stand out against this underlying layer and are easily overlooked when the cap is cursorily examined. Sometimes, however, squamulae are virtually lacking.

Inocybe similis is fully characterized by large and phaseoliform spores in combination with cystidia that only exceptionally have a distinct neck, \pm quadrangular squamulae on the cap and a somewhat bulbous stem that is not cystidiate on its lower half.

Macroscopically *I. similis* can easily be confused with old specimens of *I. halophila* emend. which may grow in the same habitat; in the loam-pit near Buren they occur both.

INOCTYBE HALOPHILA Heim emend. Huijsm.—Figs. 23–31

Inocybe halophila Heim, Genre *Inocybe*: 242. 1931.

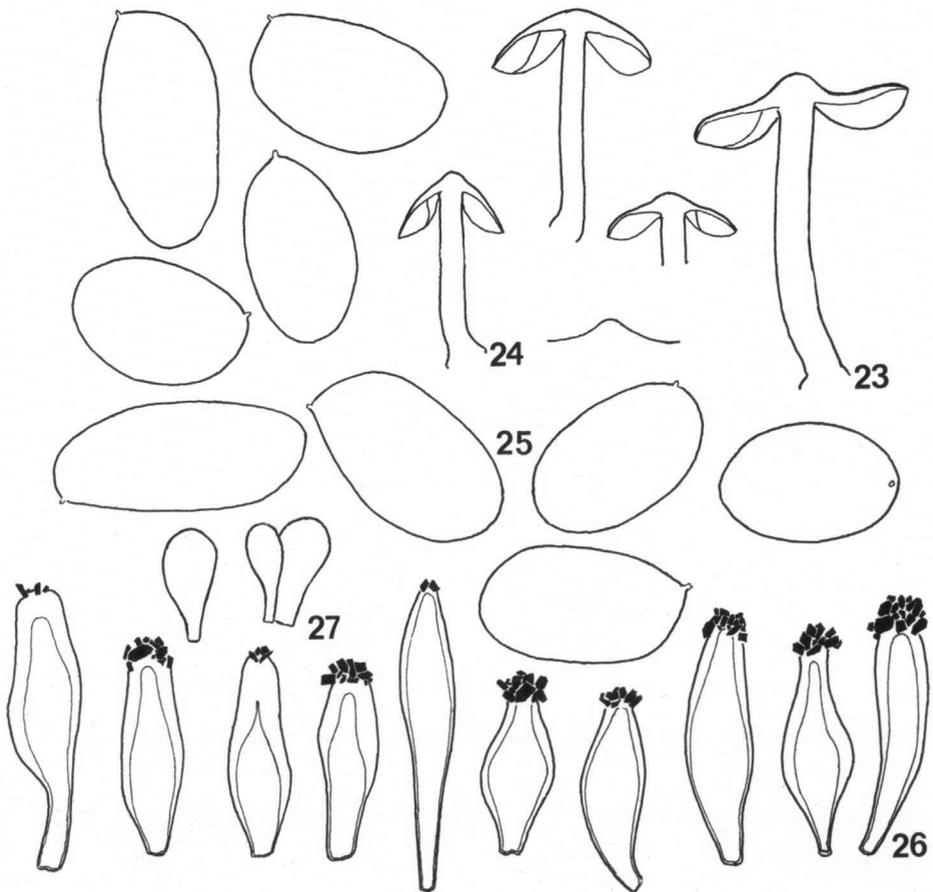
Inocybe vulpinella Bruylants in Bull. trimest. Soc. mycol. Fr. 85: 341. '1969' [1970].

MISAPPLICATIONS. — *Inocybe halophila* sensu Pearson in Trans. Br. mycol. Soc. 26: 45. 1943 (? *I. lacera*); sensu Kühner apud Kühner & Romagnesi, Fl. anal. 224. 1953 (*et auct. post. plur.*; ? *I. lacera*); *Inocybe lacera* var. *halophila* sensu O. Andersson in Bot. Notiser 2 (2) Suppl.: 27. 1950 (? *I. lacera*).

SELECTED ILLUSTRATION. — R. Heim, Genre *Inocybe*: pl. 17 fig. 2. 1931.

Cap 10–32(–40) mm, at first hemispherical to conical, expanding to convex or campanulate-convex, mostly with broad and obtuse umbo, finally rarely with upturned margin, more or less roughly radially fibrillose, often squamulose, at centre sometimes with a tomentose canescence, smooth or more or less rimulose, at limb with disseminated appressed greyish patches of universal veil, sordid ochraceous brown, fulvous brown or becoming rather dark brown, especially at centre, when young and fresh mostly with orange tinge sometimes persisting for a long time. Gills not crowded, rather broad, lanceolate, attenuate-adnexed to nearly free, clay brown to brown; edge whitish. Stem 15–40(–60) \times 3–6 mm, subequal, solid, with a subbulbous, submarginate base, distinctly pulverulent-pruinose from top to bulb when young but in old specimens pruinosity less conspicuous in lower 2/3 to 4/5 of length, sparsely streaked with appressed fibrils, sordid whitish at top, at middle zone first like top but with orange or pinkish tint and later gradually invaded by colour of cap but remaining paler, white at base. Flesh whitish in cap and bulb, in stem colour of surface but paler. Smell faint or absent.

Spores $10-18 \times 6.5-9.3 \mu\text{m}$ but in some collections hardly longer than $14.5 \mu\text{m}$; ellipsoid to elongate-ellipsoid or subcylindrical, with an orange tinged endospore of varying thickness. Basidia $29-35 \times 12-17 \mu\text{m}$, normally 4-spored but often many 2-spored. Cystidia on gills mostly thick-walled, yellow and copiously crested, variously shaped; pleurocystidia $40-66 \times 12.5-25 \mu\text{m}$, fusiform, broadly fusiform, sublageniform with a short and very broad neck, etc.; cheilocystidia $32-68 \times 15-25 \mu\text{m}$, like pleurocystidia but on an average more ventricose; paracystidia frequent, clavate. Pileipellis made up of two distinct layers: suprapellis built up of radially arranged $7-28 \mu\text{m}$ wide hyphae consisting of rows of rather thick-walled cells with a yellowish brown parietal pigment, abundantly banded with belts of a slightly darker extraparietal pigment (most conspicuous at low magnification, e.g. $200\times$),



Figs. 23-27. *Inocybe halophila*. — 23. Median sections of fruitbodies ($\times 1$). — 24. Idem of young fruitbody ($\times 2$). — 25. Spores ($\times 2000$). — 26. Cystidia: at the left five pleurocystidia; at the right five cheilocystidia ($\times 600$). — 27. Cystidioles ($\times 600$). (Figs. 23, 25-27 from *Tjallingii 16 VI 1975*; Fig. 24 from *Daams 25 VI 1972*.)

subpellis about 40 μm thick, constituted of radially disposed up to c. 12 μm wide, less pigmented hyphae not constricted at septa. Stipitipellis with a smaller or greater number of salmon coloured lacticiferous hyphae, but intensity of salmon colour widely varying in specimens from different origin; caulocystidia resembling cheilocystidia, mostly in bundles, present from top to bulb of stem but downwards decreasing in number, just above bulb however still isolated ones with thick walls and crested apex. Clamp-connections present.

HABITAT.—On calcareous sandy or loamy soil.

COLLECTIONS EXAMINED.—NETHERLANDS: prov. Friesland, Isl. of Terschelling, Kroonpolders, 28 July 1958, *C. Bas 1495* (L); prov. Gelderland, Buren, loam-pit, 11 Aug. 1972, *J. de Kleuver* (L); IJsselmeerpolders, Oostelijk Flevoland, Roggebotzand, 16 June 1975, *F. Tjallingii & G. J. M. G. Tjallingii-Beukers* (L); prov. Noord-Holland, Nederhorst den Berg, 25 June 1972, *J. Daams* (L); prov. Zuid-Holland, Rockanje, near little lake in dunes, 22 Sept. 1957, *A. F. M. Reijnders* (L); Oostvoorne, humid valley behind outer dunes, 11 Nov. 1957, *C. Bas & H. S. C. Huijsman* (L); Oostvoorne, outer dunes, 4 Nov. 1958, *C. Bas 1670* (L); Oostvoorne, bank of Tenellaplas, 6 Nov. 1958, *C. Bas 1688* (L); Oostvoorne, dunes, 11 Aug. 1972, *J. de Kleuver* (L); Oostvoorne, Kruijninger Gors, humid sandy plain, 19 Oct. 1972, *H. S. C. Huijsman* (L).

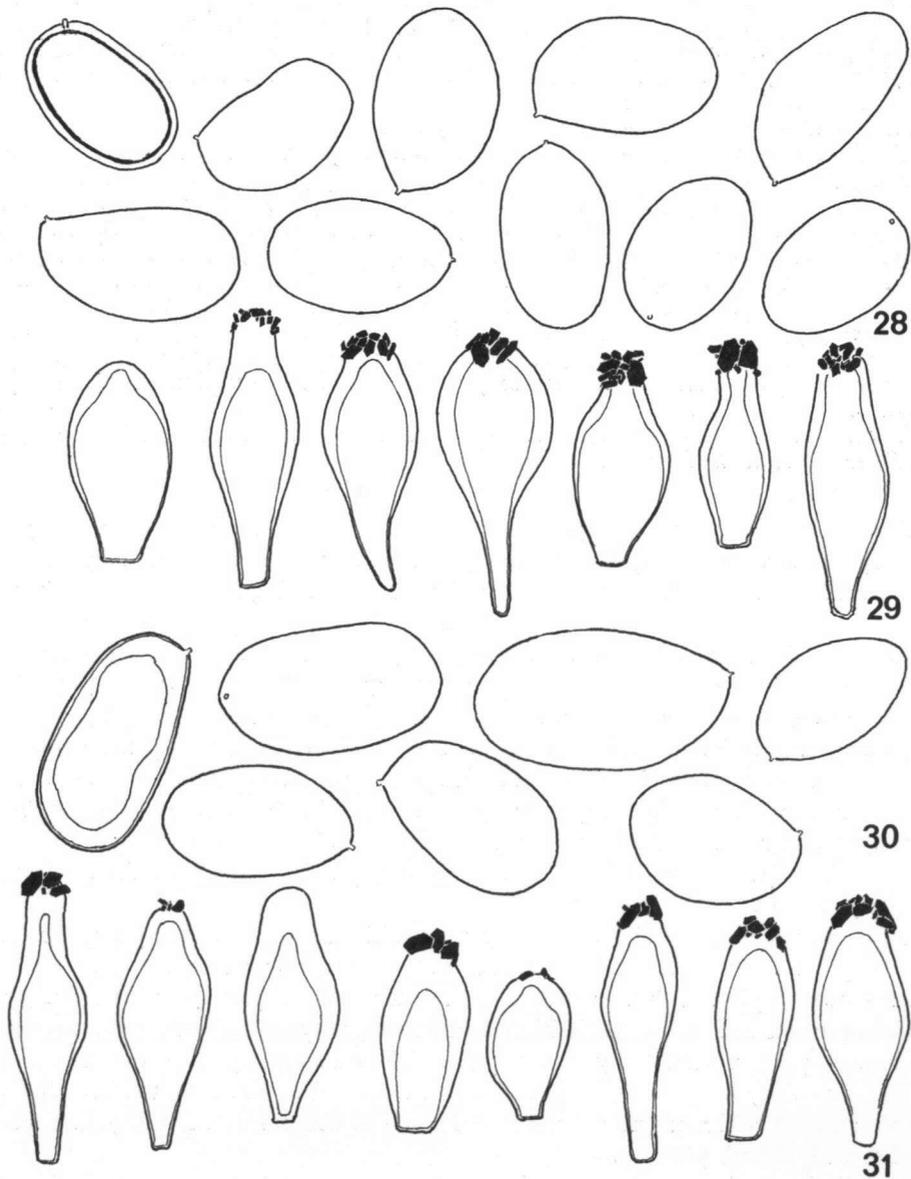
SWEDEN: Upland, north of Rånäs, on unused railroad-track, 16 Aug. 1975, *N. Suber & H. S. C. Huijsman*.

Inocybe halophila Heim has given rise to much confusion, because the original description covers certainly two, perhaps even three species. Unfortunately no type is extant. However, as the coloured illustration accompanying the original description is an excellent representation of a predominantly coastal *Inocybe* well-known to me and several Netherlands' and Belgian mycologists, I deem it wise to designate as a lectotype of *Inocybe halophila* Heim plate 17 figure 2 in Heim's monograph 'Le genre *Inocybe*', with exclusion of parts of the description and of the text-figures.

Heim's description of the macroscopical characters could partly bear upon a species unknown to me with greenish flesh in the cap. The microscopical characters in his description refer for a great part to a taxon in the *I. lacera*-complex. The young Heim must have mixed up a number of collections of this taxon with collections of *I. halophila* sensu stricto. Thus it is not surprising that he put *I. halophila* in his stirps *Lacera*.

In Heim's plate the special colours of young fruitbodies are excellently reproduced. The caps show a mixture of brown and orange and the middle part of the stem is flushed with a pinkish tint. Furthermore the shape of the young caps, the bulbous base encrusted with sand, the habitat and the majority of the other macroscopical characters point undoubtedly to the species I found so many times on the coastal dunes, especially between 1932 and 1940, when I lived on the Island of Walcheren. At that time I had more than once the occasion to compare fresh and young fruitbodies with Heim's pictures.

Heim's description of the stipe 'd'abord couvert d'une pruine blanc rosé, persistante au sommet' might suggest that the pruina is only persistent at the top. This is not the case. Microscopically the stem is from the top down to the bulb covered with yellow to salmon coloured cystidioles and cystidia. In young fruitbodies this is already evident with a hand-lens; in older ones, however, it often occurs that the



Figs. 28–31. *Inocybe halophila*. — 28. Spores ($\times 2000$). — 29. Cystidia: at the left four pleurocystidia; at the right three cheilocystidia ($\times 600$). — 30. Spores ($\times 2000$). — 31. Cystidia: at the left four pleurocystidia; at the right four cheilocystidia ($\times 600$). (Figs. 28, 29 from Daams 25 VI 1972; Figs. 30, 31 from Suber & Huijsman 16 VIII 1975.)

pruina seems limited to the top, but then microscopical examination reveals the contrary.

Neither Dr. Bas nor myself ever observed any greenish colour in the flesh of the cap. This seems surprising since after Heim several authors mentioned this colour. It must however be stressed that all of them also attributed to *I. halophila* narrow spores, up to 6 or 6.5 μm broad, while the spores of *I. halophila* emend. are much broader. Also Bruylants (1970: 340) did not mention greenish flesh in her description of the same species under the name *I. vulpinella* Bruylants. It must be emphasized that Bruylants subordinated Netherlands' collections of *I. halophila* emend. under her *I. vulpinella*. From her point of view this was fully correct, as *I. halophila* Heim emend. and *I. vulpinella* are certainly conspecific. In this connection it is significant that Heim's coloured illustration of his *I. halophila* does not show a trace of green.

The greater part of the spore-measurements for *I. halophila* given by Heim in his monograph (p. 245) seem to apply to *I. lacera*, but not those under 'd', which on the contrary fully agree with *I. halophila* emend.

I think that the proposed lectotypification, fully in accordance with the rules of nomenclature (Art. 70), clarifies the existing muddle around *I. halophila*. The possibility to select a satisfactory lectotype out of the discordant elements in the protologue is here amply extant. It would be unwise and contrary to Heim's intention to select *I. lacera*, a species that was not in need of a name then, and that is not typical for coastal habitats.

When Bruylants (1970: 344) rejected the name *I. halophila* Heim for the species she described as new under the name *I. vulpinella*, she did not try to disentangle the different elements in Heim's description, but merely stressed the characters in that description apparently referring to the *I. lacera*-component. She did not, however, lecto-typify *I. halophila* in that sense.

In the outer coastal dunes and the humid valleys in between, particularly on the islands, *I. halophila* is far from rare in the Netherlands. It ventures also, though rarely, into the inland at localities where soil and vegetation remind of the coastal dunes. But I do not know of any locality farther from the coast than about 60 km. It must be said that at most of the inland localities, but not at all, *I. halophila* has to be considered an adventive, brought there with coastal sand used for heightening the level of the soil.

Inocybe halophila is very variable in two respects, namely in the colour of the cap and in the length of its spores. When comparing descriptions accompanying the dried samples, one encounters a wide range of brown tones such as orange-brown, fulvous, maroon, umber, sienna and even potato-coloured. The colour of the cap partly depends on the varying number of salmon coloured lacticifers in the flesh, partly on the varying degree in which the cap is covered with remnants of the universal veil, and in part also on the quantity of brown pigment of the hyphae of the suprapellis, which are richly banded by an extraparietal pigment, in a zebra-like manner.

In some specimens the spores scarcely exceed a length of 14.5 μm , in many others a great number of them reach or even surpass a length of 18 μm . Fruitbodies pro-

ducing many large spores have a high percentage of 2-spored basidia. Very large spores tend to a quadrangular form.

Under oil-immersion a most uncommon character of the spores comes to the light, viz. an orange coloured endosporium, in most spores equally thin, but in some extremely thickened and irregularly shaped (see the left spore in Fig. 30). In such spores the coloured endosporium is neatly marked off from the colourless interior.

It is highly probable that the dubiously marginate bulb, which remains white when the flesh of the stem has become distinctly coloured, will prove to be truly marginate in primordia. Therefore I think that *I. halophila*, with its cystidiate stem and its tendency to exhibit orange hues, might be placed next to *I. godeyi*.

The most striking characters immediately separating *I. halophila* from *I. similis* are the stipe, cystidiate downward to the bulb, and the shape of the spores, subellipsoid to subcylindrical and absolutely without an extensive supra-apicular depression.

Unfortunately the coloured plate published by Miss Bruylants under the name *I. vulpinella* does not give a good idea of *I. halophila* emend. Among other things, the colours are aberrant and rather different from those in the colour code of Séguy she refers to in the description.

Because of the great variability of the spores and the cystidia, I have outlined these of three different collections.

REFERENCES

- ATKINSON, G. F. (1918). Some new species of *Inocybe*. *In* Am. J. Bot. 5: 210–218.
- BRESADOLA, G. (1908). Hymenomycetes novi vel minus cogniti. *In* Ann. mycol. 3: 159–164.
- BRUYLANTS, J. (1956). *Inocybe atripes* Atkinson. *In* Bull. trim. Soc. mycol. Fr. 71: Atlas pl. 105 '1955'.
- (1970). *Inocybe vulpinella* nov. spec. *In* Bull. trim. Soc. mycol. Fr. 85: 340–344 '1969'.
- HEIM, R. (1931). Le genre *Inocybe*. Paris.
- HENNIG, B. in Michael-Hennig (1967). Handbuch für Pilzfreunde 4: 202.
- KÜHNER, R. apud R. Kühner & H. Romagnesi (1953). Flore analytique des champignons supérieurs. Paris.
- (1955). *Inocybe* leiosporés cystidiés. *In* Bull. Soc. Natur. Oyonnax 9, Suppl. 1: 3–95.
- QUÉLET, L. (1885). Quelques espèces critiques ou nouvelles de la flore mycologique de France. *In* Ass. fr. Avanc. Sci. 13: 277–286 '1884'.
- SÉGUY, E. (1936). Code universel des couleurs. Paris.
- STANGL, J. (1971). Ueber einige Risspilze Südbayerns. *In* Z. Pilzk. 37: 19–32.