

SKYTTEA, A NEW GENUS OF ODONTOTREMOID LICHENICOLOUS FUNGI

BY M. A. SHERWOOD

Department of Botany, University of Liverpool, Liverpool L69 3BX

D. L. HAWKSWORTH

Commonwealth Mycological Institute, Kew, Surrey TW9 3AF

AND B. J. COPPINS

Royal Botanic Garden, Inverleith Row, Edinburgh EH3 5LR

Skyttea, a genus of discomycetous lichenicolous fungi related to *Odontotrema*, is described, together with seven species; four of these are new (*S. buelliae*, *S. cruciata*, *S. fusispora*, *S. gregaria* spp. nov.) and three are transfers from other genera (*S. elachistophora* (Nyl.), *S. nitschkei* (Körber), *S. thalophila* (P. Karsten) combs. nov.). The nomenclatural history and relationships of odontotremoid discomycetes are briefly discussed.

Several years ago, one of us (Hawksworth, 1975), reported the occurrence of *Beloniella nitschkei* (Körber) Rehm on thalli of *Thelotrema lepadinum* (Ach.) Ach. in the British Isles. Since that time, while verifying records of British lichenicolous fungi for inclusion in a new checklist of British lichen-forming, lichenicolous and allied fungi (Hawksworth *et al.*, 1980), a second congeneric species, known in the literature only as *Verrucaria elachistophora* Nyl., was unearthed. In addition, *Pyrenopeziza thalophila* (P. Karsten) Sacc., a species only recently recognized in the British flora (Hawksworth, 1980) appears to belong to this same group of fungi. Several undescribed species have also been collected or discovered on herbarium specimens of their hosts in the last few years (Coppins & James, 1978, 1979).

The taxonomy of lichenicolous discomycetes is presently in a state of disorder, although an interest in relationships between lichenized and non-lichenized fungi has prompted renewed investigations of this biological group, which might reasonably be supposed to harbour intermediates. Existing treatments of lichenicolous discomycetes (Vouaux, 1912-14; Keissler, 1930) are now seriously out of date, since genera are characterized without reference to details of ascus or excipular structure, or developmental criteria. Classification on the basis of gross fruit-body morphology and ascospore type has inevitably lead to the juxtaposition within a single genus of totally unrelated species.

Beloniella nitschkei and its congeners bear a superficial similarity to members of the Derma-

teaceae Fr. (Helotiales), particularly erumpent genera such as *Pyrenopeziza* Fuckel which share with them a discomycetous growth form and a dark pseudoparenchymatous excipulum. The name *Beloniella* (Sacc.) Boud. has been used for phragmosporous species of *Pyrenopeziza*, but most of these have subsequently been referred to other genera (Nannfeldt, 1932), leaving only the type, *B. raphidospora* (Rehm) E. Müller & Défago, and a few other species of uncertain affinity, in the genus.

Beloniella (Sacc.) Boudier (1885) is, however, a later homonym of *Beloniella* Th. Fries (1877), a later synonym of *Belonia* Körber ex Nyl. (Hawksworth *et al.*, 1980). The type species of *Beloniella* (Sacc.) Boud. was redescribed by Müller & Défago (1968) and Sherwood (1977b); the latter author overlooked the former paper and published an unnecessary new epithet in *Ramonia* Stizenb. The correct name for *B. raphidospora* is *Odontura raphidospora* (Rehm) Clem.

Beloniella nitschkei, *Odontura raphidospora* and *Ramonia* species share some features in common. Although discomycetes, all are somewhat perithecioid in habit and are presumably cleistohymenial (angiocarpic) until rather late in development. The asci are functionally unitunicate, somewhat thick-walled, and lack a definite apical pore. Their mode of discharge is unknown, and is likely to remain so for some time as none of the species is frequently collected. Other genera with somewhat similar characteristics are *Bryodiscus* Hein *et al.*, *Lethariicola* Grumm., *Odontotrema* Nyl. and *Spilomela* Keissler. A further possible member is *Stromatothecia* D. Shaw & D. Hawksw.,

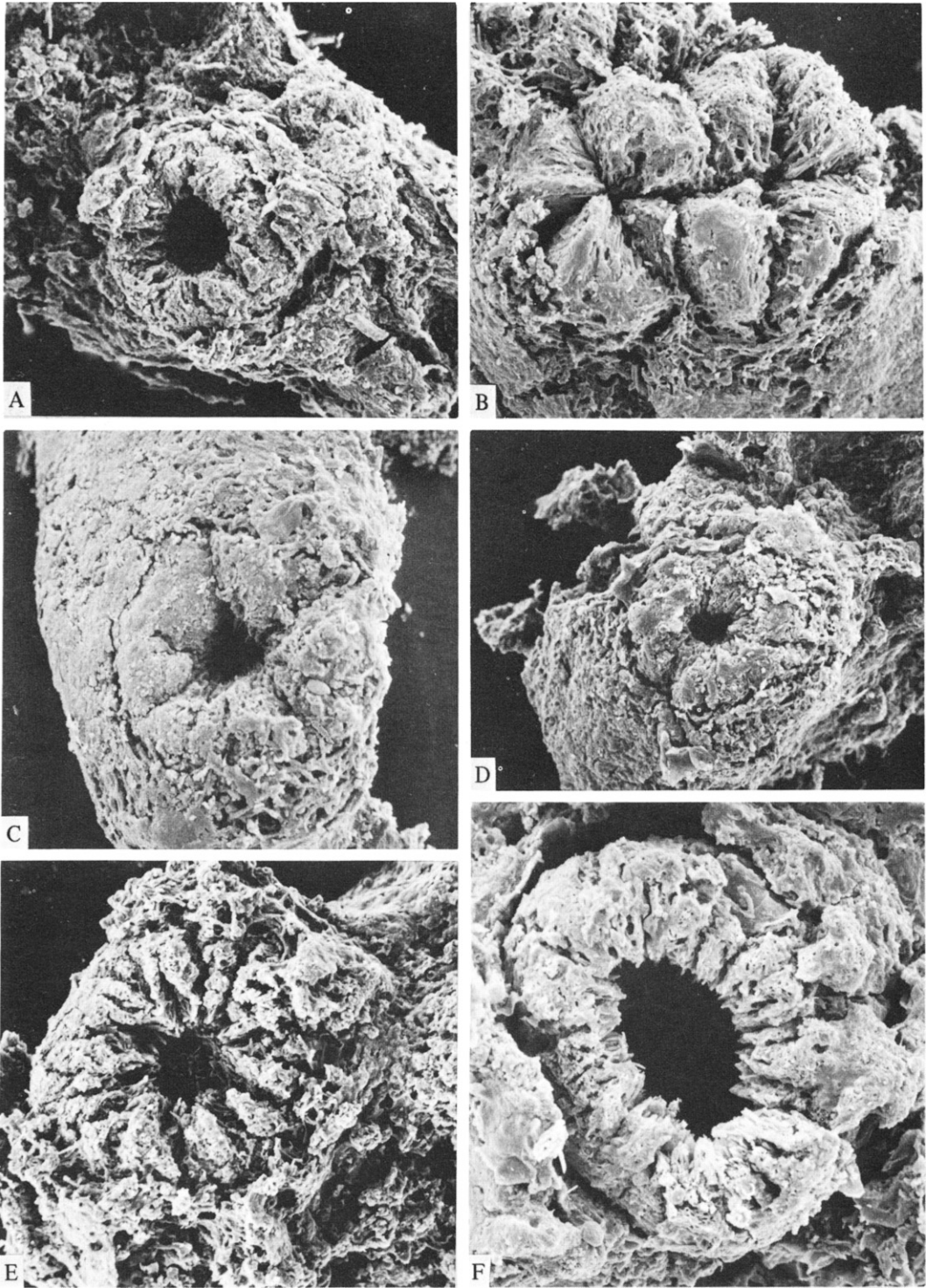


Fig. 1. Scanning electron micrographs of ascocarps of *Skyttea* species. A, *S. buelliae* (holotype); B, *S. cruciata* (holotype); C, *S. elachistophora* (lectotype); D, *S. fusispora* (holotype); E, *S. gregaria* (holotype); F, *S. nitschkei* (IMI 238650). (A-F) $\times 250$.

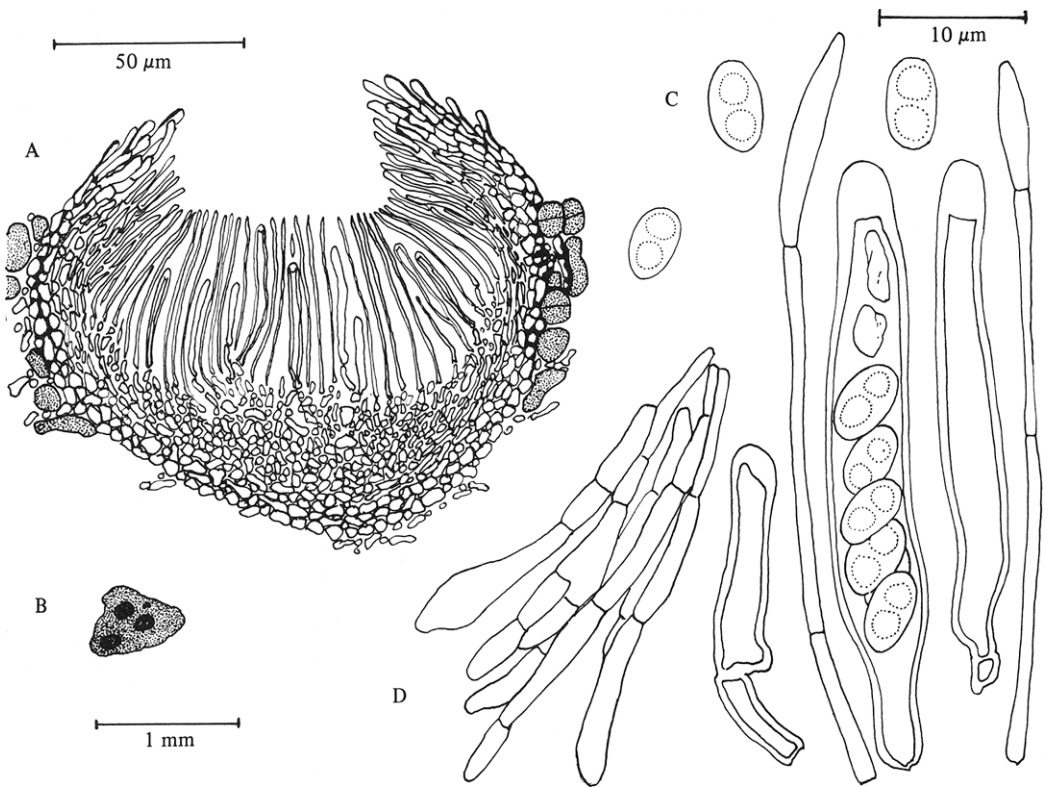


Fig. 2. *Skyttea buelliae* (holotype). (A) Vertical section of margin; (B) habit sketch; (C) asci, paraphyses and ascospores; (D) marginal hairs (same scale as asci).

a genus originally tentatively regarded as belonging to the Pleosporales but which was inexplicably referred to the Cyttariaceae Lév. by von Arx & Müller (1975). *Stromatothecia* is utterly unlike *Cyttaria* Berk. in ascus and ascospore morphology: the marginal structure, thick-walled asci with pore reaction to iodine, and also the sigmoid 1-septate spores, all recall *Spilomela*; polysporous asci also occur in *Odontura*.

This group of fungi has been assigned to possibly the Helotiales, family uncertain, by most authors who have studied them (Nannfeldt, 1932; Hein *et al.*, 1971; Müller & Défago, 1968). Sherwood (1977a) suggested a possible relationship to the Stictidaceae Fr. via *Cryptodiscus* Corda. The group may well merit recognition as a distinct family for which there appears to be no previously published name, unless *Tryblidium* Rebert. ex Wallr. is considered related. As the

group is still poorly known and its precise circumscription is unclear it would be premature to formally propose a new family name for it here.

Beloniella nitschkei and its congeners differ from *Odontura raphidospora* in having 8-spored rather than polysporous asci, oval to fusiform rather than acicular spores, and distinct, well-differentiated, marginal hairs. They differ from *Bryodiscus* and *Odontotrema* in the possession of hairs and a non-carbonized excipulum, and from members of the Pyrenopezizae in having tough, reviving, small-celled ascocarps, and asci which are thick-walled and lack a differentiated apical pore. Their lichenicolous habit further serves to distinguish them biologically from allied genera, apart from *Spilomela* which is also lichenicolous (see Hawksworth, 1980).

As *Beloniella nitschkei* and its closely related species form a distinct group united both in their

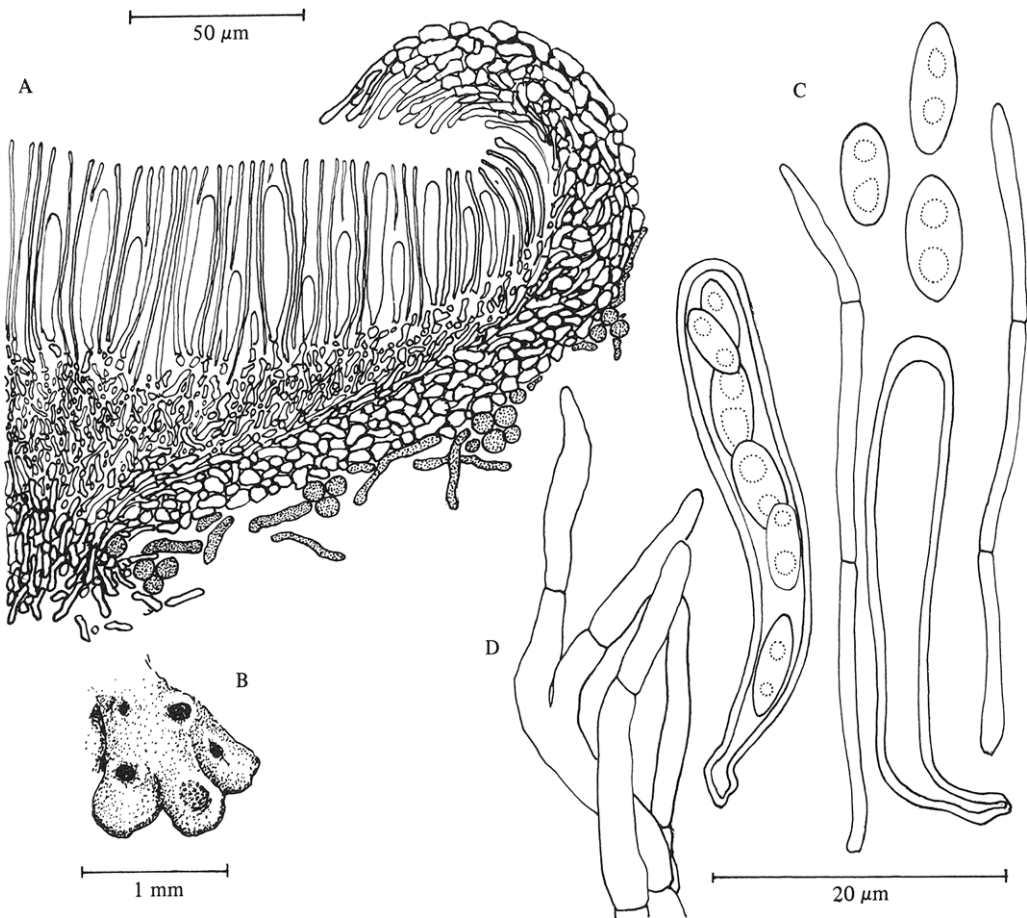


Fig. 3. *Skyttea cruciata* (holotype). (A) Vertical section of margin; (B) habit sketch; (C) asci, paraphyses and ascospores; (D) marginal hairs (same scale as asci).

morphological characters and in their host relationships, the new genus *Skyttea* is proposed to accommodate them.

To compare the external morphology of the apothecia, air-dried specimens were coated with gold and examined with an ISI-60 scanning electron microscope (SEM). These observations (Fig. 1) demonstrated dramatically the differences in external configuration of the minute apothecia and confirmed that the hairs of all species are unornamented even at $\times 7000$ – 10000 .

Skyttea gen.nov.

Etym. The genus is named in honour of Dr M. Skytte Christiansen in recognition of his contributions to our knowledge of lichenicolous fungi.

Ascocarpi lichenicola, primo immersi, erumpentes, primo clausi, poro lato aperientes, profunde urceolati, excipulo olivaceo vel brunneo, pseudoparenchymatico, pilis glabris superne praedito. Paraphyses filiformes, simplices vel ramosae, septatae. Asci crassitunicati, apice incrassati, in iodo non caerulescentes, 8-sporei. Ascosporeae hyalinae, ovaes vel anguste ellipsoideae, 0–3-septatae. Pycnidia ignota.

Species holotypica est *Beloniella nitschkei* Körber.

Ascocarps (apothecia) ascohymenial, lichenicolous, immersed, becoming erumpent, small, initially closed, opening by a pore, remaining deeply urceolate and perithecioid even when mature, excipulum dark brown or olive green, non-carbonized, composed of small-celled pseudoparenchyma, lined near the summit with hyaline to

brown thin-walled smooth hairs. *Paraphyses* filiform, simple to sparingly branched, septate, sometimes enlarged above. *Asci* thick-walled, functionally unitunicate, not reacting with iodine, apex thickened but lacking any obvious apical apparatus or pore, 8-spored. *Ascospores* colourless, smooth, oval to narrowly ellipsoid, 0-3-septate. *Anamorph* unknown.

All species colonize living lichen thalli. The hosts generally appear healthy even when supporting large numbers of *Skyttea* fruits, suggesting that the genus is parasymbiotic rather than parasitic. The distinctive hairs borne on the inner face of the margin of *Skyttea* ascocarps appear to function in opening and closing the fruitbody in response to changes in hydration. Similar structures are found in many genera of discomycetes with reviving ascocarps which are closed when dry.

All of the species, and all but six of the specimens examined, were collected in the British Isles where they have a southern and western distribution. The genus must surely be widely distributed, however, and should be sought in other

temperate oceanic areas. It is also possible that other species have been described in inappropriate genera, but an examination of material under selected generic names in K and a study of published descriptions in Vouaux (1912-14) and Keissler (1930) did not reveal any further probable members.

Species of *Skyttea* appear to be restricted to their host ranges; the two species whose distributions are best documented (*S. gregaria*, *S. nitschkei*) appear to be confined to single lichen species. Considering that the known species occur on lichens in widely separated families, it seems probable that more species remain to be discovered. There is at least one additional species found on *Pertusaria hymeneae* (Ach.) Schaerer in the British Isles (Scotland, Mid-Perth, Crieff, Drummond Park, Drummond Wood, on *Sorbus*, 9 Aug. 1978, B. J. Coppins 3624, E, IMI 238252) which unfortunately has not been encountered in a fertile condition. A species on *Lecanora atra* (Huds.) Ach. from Spain mentioned by Santesson (1960) as congeneric with *S. thallophila* may also belong here.

KEY TO SKYTTEA SPECIES

- | | |
|--|--------------------------|
| 1 Ascospores narrowly ellipsoid, more than twice as long as broad, more than 10 μm long, becoming septate | 2 |
| 1 Ascospores oval, less than 10 μm long, non-septate | 3 |
| 2 Ascospores 0-1-septate, (8-10-13 \times 2-3(-4) μm ; on <i>Thelotrema lepadinum</i> | <i>S. nitschkei</i> |
| 2 Ascospores 0-3-septate, 20-28(?-38) \times 2-3 μm ; on <i>Ochrolechia rosella</i> and possibly also <i>Haematomma caesium</i> | <i>S. fusispora</i> |
| 3 Ascocarps regularly divided by 3-4 cruciately arranged fissures; ascospores 7-8.5(-9.5) \times 3-3.5 μm ; on <i>Diploicia canescens</i> | <i>S. cruciata</i> |
| 3 Ascocarp margins entire, or marked with fine radial striations | 4 |
| 4 Ascospores 5-7 \times 2.5-3.5 μm ; on <i>Buellia punctata</i> | <i>S. buelliae</i> |
| 4 Ascospores 7-9 μm long | 5 |
| 5 Ascocarp margin olive green; hairs short and blunt, 15-20 \times 3-3.5 (-4) μm ; ascospores 7-8.5 \times 3-3.5 μm ; on <i>Mycoblastus sterilis</i> | <i>S. gregaria</i> |
| 5 Ascocarp margin brown, without olivaceous tints; hairs longer and more slender | 6 |
| 6 Ascocarps 100-200 μm diam, remaining immersed; ascospores 7-8 \times 3.5 μm ; on? <i>Lecidea</i> sp. | <i>S. elachistophora</i> |
| 6 Ascocarps 200-400 μm diam, becoming almost superficial; ascospores 7-8.5(-9) \times (2-)2.5-3.5 μm ; on <i>Lecanora chlorotera</i> s. lat. | <i>S. thallophila</i> |

***Skyttea buelliae* sp. nov.** (Figs 1 A, 2)

Ascocarpi lichenicola, in thallis *Buelliae* crescentes, primo immersi, non erumpescentes, primo clausi, poro lato aperientes, profunde ucreolati, excipulo olivaceo, pseudoparenchymatico, cellulis 4-6 μm diam, pilis glabris brunneis 20-30 μm longis superne praedito. Paraphyses filiformes, septatae, apice leniter incrassatae. Asci crassitunicati, 25-42 \times 6 μm , apice ad 4 μm incrassati, in iodo non caerulescentes, 8-spori. Ascospores hyalinae, ovales, biguttulatae, non septatae, 4-7 \times 2.5-3.5 μm .

In *Buellia punctata* (Hoffm.) Massal. (thalli). Holotypus: Magna Britannica, Anglia, N. Lincolnshire, proximi Wold Newton, ad *Ulm*i, 10 July 1976, M.R.D. Seaward, E.

Ascocarps (apothecia) immersed, not becoming erumpent, 0.1-0.2 μm diam, black, not visibly hairy, nearly smooth, at first closed, opening by a small pore; disc deeply urceolate; excipulum dark olivaceous, not carbonized below, barely carbonized above, 15-25 μm thick, cells globose, 4-6 μm

diam; hairs uniformly dark brown, septate, sometimes slightly enlarged at the tip, $20-30 \times 1.5-2 \mu\text{m}$, not aeruginose in potassium hydroxide. *Paraphyses* filiform, colourless, septate, $1.5 \mu\text{m}$ thick, slightly enlarged at the apex; epithecium hyaline. *Asci* \pm cylindrical, $25-42 \mu\text{m} \times 6 \mu\text{m}$, thick-walled, the cap $4 \mu\text{m}$ thick, not reacting with iodine, 8-spored. *Ascospores* colourless, oval, biguttulate, non-septate, $4-7 \times 2.5-3.5 \mu\text{m}$.

On *Buellia punctata*, thalli.

Additional specimens examined: British Isles, England, West Lancashire, Aughton, edge of Burton Wood on *Fraxinus*, 17 Oct. 1976, P. M. Earland-Bennett, E, HFX; South-east Yorkshire, Falkton, on *Ulmus*, 8 Mar. 1969, B. J. Coppins, E. Scotland, Angus, Kirriemuir, Inverquarity Castle, on *Acer*, Mar. 1941, U. K. Duncan, E.

Skyttea cruciata sp.nov. (Figs 1 B, 3)

Ascocarpi lichenicola, in thallis *Diploiciae* crescentes, primo immersi, erumpescentes, primo clausi, poro lato aperientes, profunde urceolati, excipulo brunneo, pseudoparenchymatico, cellulis $4-6 \mu\text{m}$ diam, pilis glabris pallide brunneis $20 \mu\text{m}$ longis superne praedito. *Paraphyses* filiformes, simplices, septatae, apice leniter incrassatae. *Asci* crassitunicati, $25-40 \times 5.5-6 \mu\text{m}$, apice non incrassati, in iodo non caerulescentes, 8-sporei. *Ascospores* hyalinae, ovaes, biguttulatae, non-septatae, $7-8.5 \times 3-3.5 \mu\text{m}$.

In *Diploicia canescens* (Dickson) Massal. (thalli). Holotypus: Hibernia, Co. Kerry, Dingle Peninsula, proxime Ballyoughteragh, N. e Ballyferriter, ad saxa, 9 Aug. 1978, J. Poelt, GZU.

Ascocarps (apothecia) at first immersed, becoming somewhat erumpent, $0.1-0.25 \text{ mm}$ diam, black, tending to be quadrate in outline, the margin divided by 3-4 deep cruciately arranged fissures; hairs not visible, ectal excipulum $15-20 \mu\text{m}$ thick, dark brown, pseudoparenchymatous, prolonged into a small stipe-like base below, the cells $4-6 \mu\text{m}$ diam; hairs light brown, smooth, septate, to $20 \times 2.5 \mu\text{m}$. *Paraphyses* filiform, colourless, septate, $2-2.5 \mu\text{m}$ thick. *Asci* cylindrical, $25-40 \times 5.5-6 \mu\text{m}$, uniformly thick-walled, without an apical cap, not reacting with iodine, 8-spored. *Ascospores* colourless, oval, biguttulate, non-septate, $7-8.5 (-9.5) \times 3-3.5 \mu\text{m}$.

On *Diploicia canescens*, thalli.

Additional specimens examined: British Isles, England, Isles of Scilly, St Mary's, Old Town Bay, on *Ulmus*, 4 May 1979, P. W. James, IMI 239740; South Devon, Slapton, Southgrounds, on wall, 24 Aug. 1972, D. L. Hawksworth 3057, IMI 168572. Ireland, Co. Mayo, Louisburgh, on rocks, June 1909, M. C. Knowles, K. Scotland, E. Perth, Kinnoul Hill, Apr. 1856, W. L. Lindsay, E.

This species was given the herbarium name

'*Nesolechia knowlseyi*' by A. L. Smith, but this name does not appear to have ever been validly published.

Skyttea elachistophora (Nyl.) Sherw. & D. Hawksw. comb.nov. (Figs 1 C, 4)

Verrucaria elachistophora Nyl., *Flora, Jena* 61: 246 (1878).

Ascocarps (apothecia) gregarious, at first immersed, then somewhat erumpent, $0.1-0.2 \text{ mm}$ diam, black, opening by a pore, the margin irregularly fissured; marginal hairs not visible from above; ectal excipulum pseudoparenchymatous, *c.* $50 \mu\text{m}$ thick, brown, without any greenish tint, the cells globose, $5-10 \mu\text{m}$ diam, prolonged into a small stipe-like base below; hairs septate, $40-50 \times 2.5-3 \mu\text{m}$, brown with almost colourless apices adjacent to the hymenium, shorter, broader and dark brown towards the outside, smooth, not aeruginose in potassium hydroxide. *Paraphyses* filiform, septate, colourless throughout, *c.* $1.5 \mu\text{m}$ thick, slightly enlarged at the apex. *Asci* subcylindrical, $40-50 \times 6-8 \mu\text{m}$, the cap $2-2.5 \mu\text{m}$ thick, not reacting with iodine, 8-spored. *Ascospores* colourless, oval, biguttulate, non-septate, $7-8 \times 3.5 \mu\text{m}$.

On the thallus of an unidentified brownish lichen, probably a *Lecidea* species, 'in a stream'. The host is sterile but contains atranorin and confluent acid by thin-layer chromatography which suggest it belongs to *Lecidea* s. lat.

Specimen examined: British Isles, Ireland, Co. Galway, Kylemore, 'in a stream', 1876, C. du Bois Larbalestier 88, H-NYL 452 (lectotype of *Verrucaria elachistophora*).

This species is rather similar to *Skyttea cruciata* in some respects but differs in having capitate asci and more regular apothecia which are not cruciately divided. These two species and *S. thallophila* are rather isolated within the genus in also having large excipular cells which lack greenish tints.

Nylander's description of *Verrucaria elachistophora* was based on the ascocarps of the lichenicolous fungus and the thallus of the host lichen. We here designate the lichenicolous fungus element as lectotype of Nylander's epithet in accordance with Art. 9.2 of the Code as it was this which provided the diagnostic features of the taxon.

Skyttea fusispora sp.nov. (Figs 1 D, 5)

Ascocarpi lichenicola, in thallis et apotheciis *Ochrolechia* crescentes, primo immersi, non erumpescentes, primo clausi, poro lato aperientes, profunde urceolati, excipulo olivaceo, pseudoparenchymatico, cellulis $6 \times 2-3 \mu\text{m}$, pilis glabris pallide brunneis $10-15 \mu\text{m}$

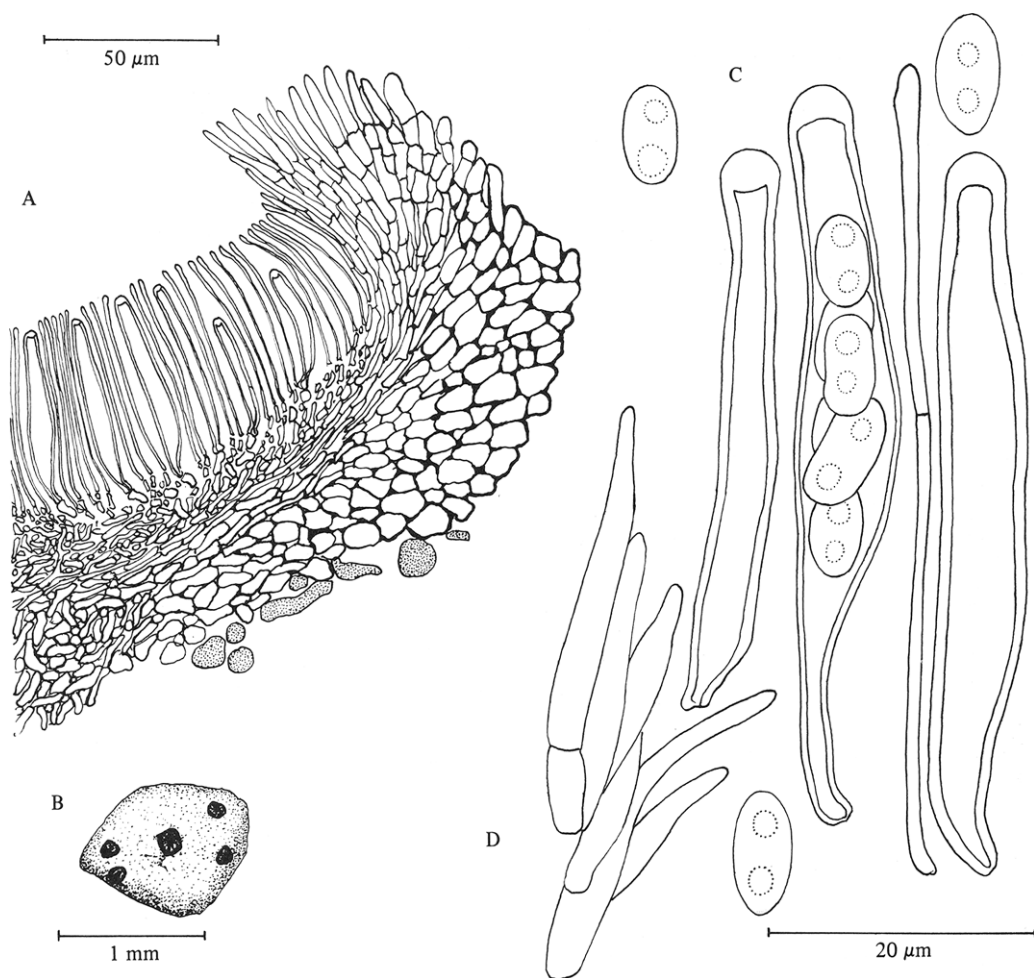


Fig. 4. *Skyttea elachistophora* (lectotype). (A) Vertical section of margin; (B) habit sketch; (C) asci, paraphyses and ascospores; (D) marginal hairs (same magnification as asci).

longis superne praedito. Paraphyses filiformes, simplices, septatae, apice leniter incrassatae. Asci crassitunicati, $60-70 \times 6-8 \mu\text{m}$, apice ad $3 \mu\text{m}$ incrassatae, in iodo non caerulescentes, 8-sporei. Ascospores hyalinae, anguste ellipsoideae, 0-3-septatae, $20-28 \times 2.5-3.5 \mu\text{m}$.

In *Ochrolechia rosella* (Müll. Arg.) Vainio (thallus). Holotypus: India, Assam, Bashahr State, Muniapur, Sechi-Sirpara Forest I. Pandrabis, alt. 8000 ft, 3 May 1891, G. Watt, E.

Ascocarps (apothecia) immersed, not becoming erumpent, black, shining, 0.1-0.2 mm diam, at first closed, opening by a pore, not radially striate or fissured, not visibly hairy; ectal excipulum dark

olivaceous brown, pseudoparenchymatous, the cells somewhat flattened, $6 \times 2-3 \mu\text{m}$ in vertical section, not carbonised; hairs pale brown, short and obtuse, $10-15 \times 2.5-3 \mu\text{m}$, not aeruginose in potassium hydroxide. *Paraphyses* filiform, septate, colourless, $1.5-2 \mu\text{m}$ thick. *Asci* cylindrical, $60-70 \times 6-8 \mu\text{m}$, the cap $3 \mu\text{m}$ thick, slightly indented in the centre, 8-spored, not reacting with iodine. *Ascospores* colourless, narrowly ellipsoid, non-septate (on *Ochrolechia*) to 3-septate (on *Haematomma*), $20-28$ (?-38) $\times 2.5-3.5 \mu\text{m}$.

Specimens examined on *Haematomma caesium*: British Isles, Scotland, West Inverness, Sunart, F.

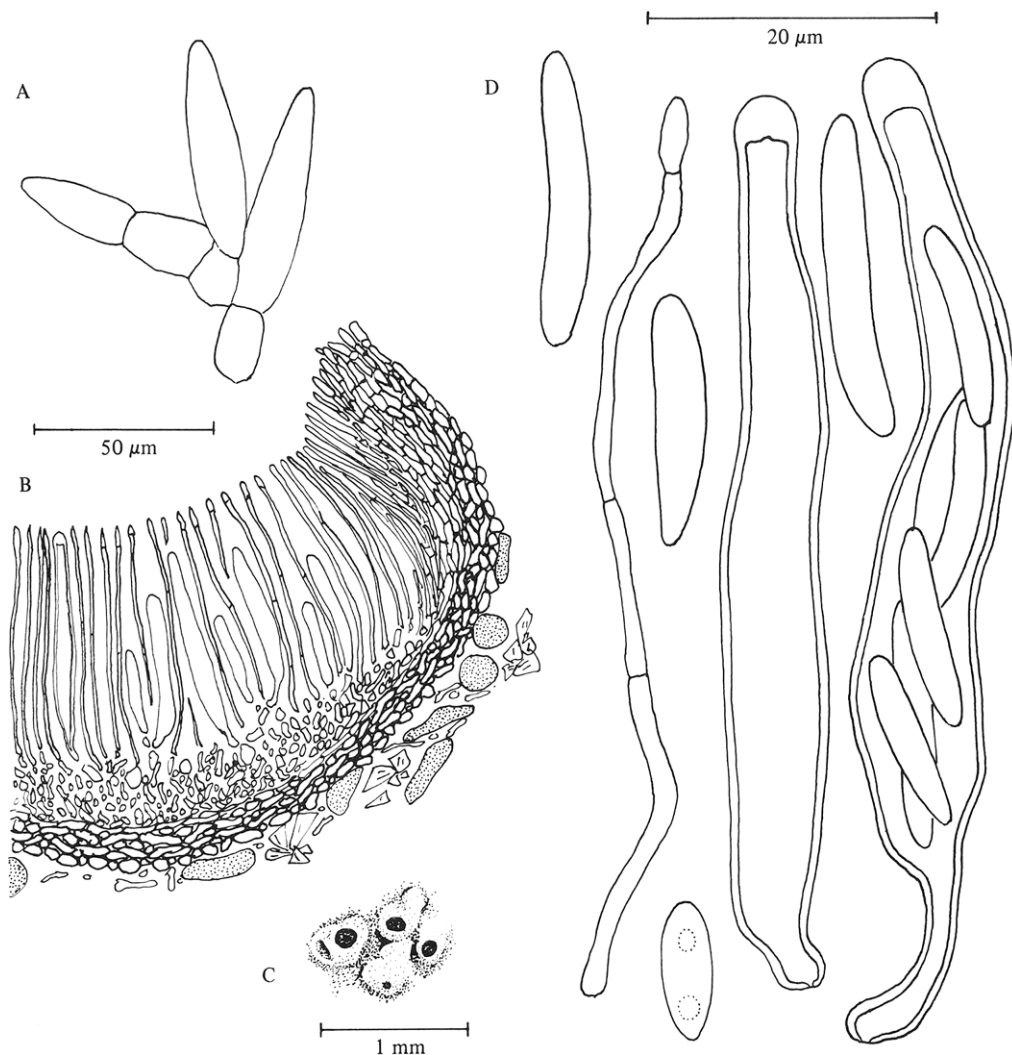


Fig. 5. *Skyttea fuispora* (holotype). (A) Marginal hairs (same magnification as asci); (B) vertical section of margin; (C) habit sketch; (D) asci, paraphyses and ascospores.

Rose, E; Kintyre, Ellary Woods S. of Loch Meadonach, 2 July 1976, B. J. Coppins 2361, E.

On the thallus of *Ochrolechia rosella* in India, and possibly also *Haematomma caesium* Coppins & P. James in Scotland. The Scottish specimens were too scanty to investigate critically but agreed well with the Indian collection in having fusiform spores and short hairs; the spores do, however, become 3-septate and up to $38\ \mu\text{m}$ in length. The taxa may eventually prove to be distinct but until further material is available must be provisionally

regarded as conspecific. The generic position of *Haematomma caesium* is a matter for conjecture as its ascocarps are unknown, but its chemistry is not that of an *Ochrolechia* (Coppins & James, 1978).

***Skyttea gregaria* sp.nov.** (Figs 1 E, 6)

Ascocarpi lichenicola, in thallis *Mycoblasti* crescentes, primo immersi, erumpescentes, primo clausi, poro lato aperientes, profunde urceolati, excipulo olivaceo, pseudoparenchymatico, cellulis $3\text{--}6\ \mu\text{m}$ diam, pilis glabris olivaceis $20\ \mu\text{m}$ longis superno praedito.

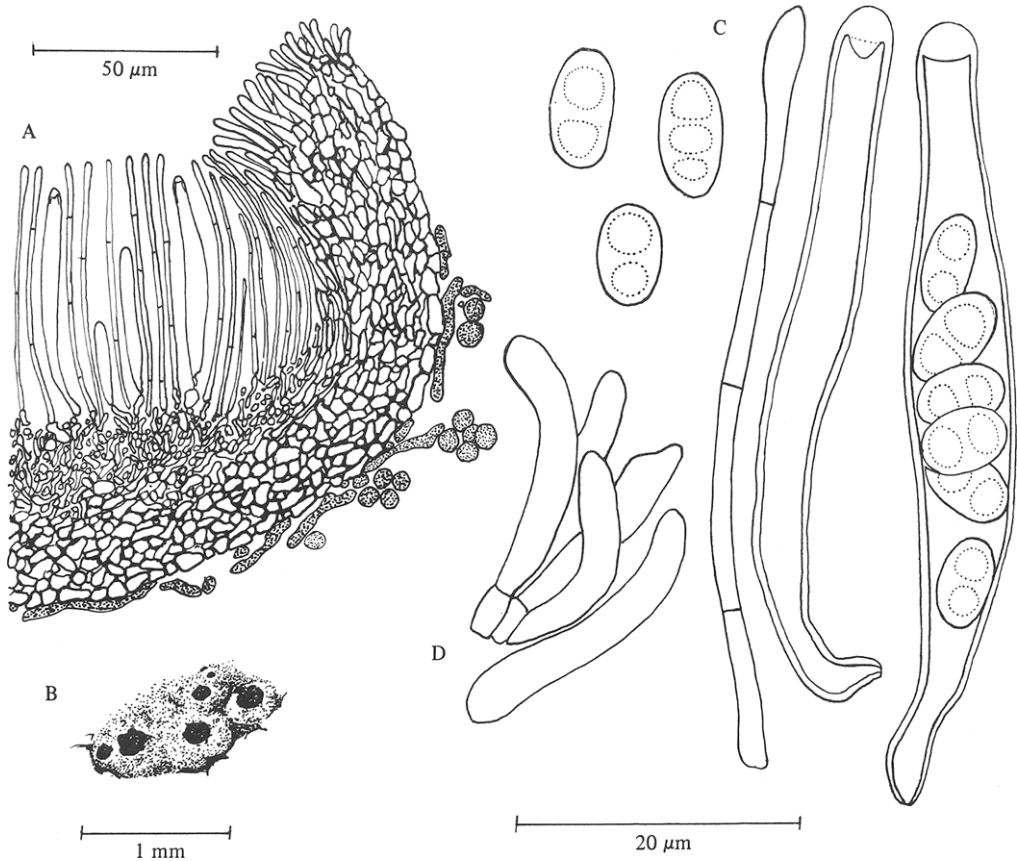


Fig. 6. *Skyttea gregaria* (holotype). (A) Vertical section of margin; (B) habit sketch; (C) asci, paraphyses and ascospores; (D) marginal hairs (same magnification as asci).

Paraphyses filiformes, simplices, septatae, apice leniter incrassatae. Asci crassitunicati, $40\text{--}55 \times 6\text{--}8 \mu\text{m}$, apice ad $2\text{--}3 \mu\text{m}$ incrassati, in iodo non caerulescentes, 8-sporei. Ascosporeae hyalinae, ovaes, biguttulatae, non septatae, $7\text{--}8.5 \times 3\text{--}3.5 \mu\text{m}$.

In *Mycoblastus sterilis* Coppins & P. James (thalli). Holotypus: Magna Britannica, Anglia, Yorkshire, Swaledale, Downholm Park, 20 Aug. 1969, B. J. Coppins, E.

Ascocarps (apothecia) at first immersed, becoming erumpent, $0.1\text{--}0.2 \text{ mm}$ diam, black, the margin inrolled when dry, delicately striate, not visibly hairy, disc deeply urceolate; ectal excipulum dark olivaceous, not carbonized, $40\text{--}50 \mu\text{m}$ thick, pseudoparenchymatous, cells $3\text{--}6 \mu\text{m}$ diam; subhymenium hyaline, *c.* $20 \mu\text{m}$ thick; medullary excipulum *c.* $20 \mu\text{m}$ thick, constructed like the ectal excipulum; hairs uniformly olive brown, not aeruginose in potassium hydroxide, *c.* $20 \times 3\text{--}$

$3.5 \mu\text{m}$, not septate, smooth, tending to adhere in fascicles. *Paraphyses* filiform, septate, colourless, $1.5\text{--}2 \mu\text{m}$ thick, slightly enlarged above. *Asci* subcylindrical, $40\text{--}55 \times 6\text{--}8 \mu\text{m}$, thick-walled when young, the apex $2\text{--}3 \mu\text{m}$ thick, tending to extend into the ascus cytoplasm as an inverted cone, not reacting with iodine, 8-spored. *Ascospores* oval, colourless, biguttulate, non-septate, $7\text{--}8.5 \times 3\text{--}3.5 (-4) \mu\text{m}$.

Frequent on thalli of *Mycoblastus sterilis* in the British Isles and also discovered in Denmark.

Additional specimens examined: British Isles, Scotland, Stirling, Loch Lomond National Nature Reserve, Clairinsh, 22 Oct. 1979, B. J. Coppins, E; Midlothian, Carlops, Hebbie's Howe Wood, 29 Mar. 1977, B. J. Coppins 2725, E; East Inverness, Abernathy Forest by River Nethy, 24 May 1976, B. J. Coppins, & L. Tibell 3165, E; East Inverness, Rothiemurchus Forest, by Allt Druidh, 23 May 1976, B. J. Coppins & L. Tibell

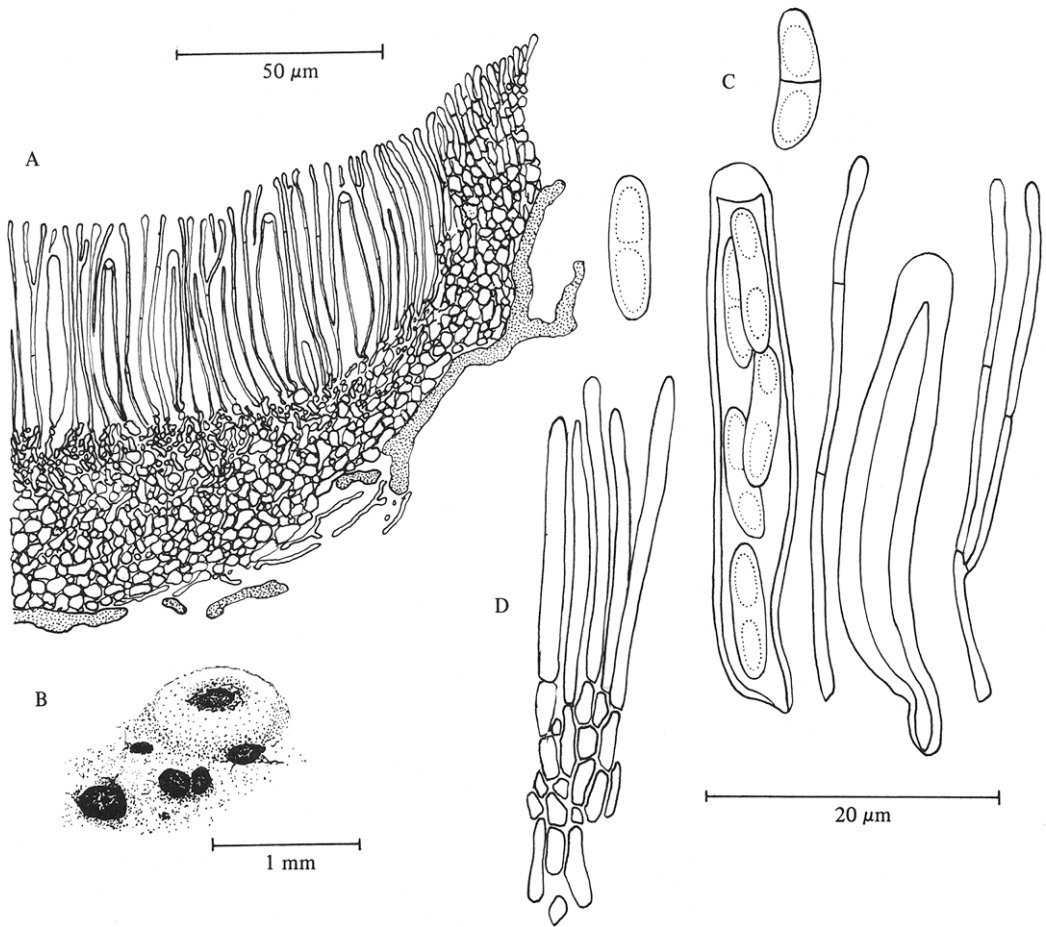


Fig. 7. *Skyttea nitschkei* (IMI 238560). (A) Vertical section of margin; (B) habit sketch; (C) asci, paraphyses and ascospores; (D) marginal hairs (same magnification as asci).

3089, 3098, E; Mid-Perth, Black Wood of Rannoch, 23 Mar. 1974, B. J. Coppins 261, E; West Perth, Trossachs, path by Loch Katrine, 17 Aug. 1974, B. J. Coppins 508, E. Ireland, South Kerry, Brandon Lodge, 4 Oct. 1977, P. B. Topham, IMI 238251. Denmark, Jylland, c. 16 km N. of Hobro, Rold Skov, Tordstedlund Skov, on *Alnus*, 8 Aug. 1979, B. J. Coppins 4651, E.

***Skyttea nitschkei* (Körber) comb.nov.** (Figs 1 F, 7)

Nesolechia nitschkei Körber, *Parerg. Lich.*: 462 (1865).

Niptera nitschkei (Körber) Rehm, *Rabenh. Krypt.-Fl.* 1(3): 561 (1892).

Beloniella nitschkei (Körber) Rehm, *Ber. Bayer bot. Ges.* 13: 182 (1912).

Ascocarps (apothecia) at first immersed, becoming erumpent, 0.1–0.25 mm diam, opening by a central pore fringed by pale hairs (visible with a hand lens or dissecting microscope), otherwise black and smooth; ectal excipulum pseudoparenchymatous, dark brown, c. 20 µm thick, not carbonized, the cells 2–5 µm diam, lower part of the excipulum and the subhymenium turning deep purple in potassium hydroxide, lined near the summit with obtuse hairs 20–30 × 2–3 µm, hairs smooth, non-septate, brown at the base and hyaline at the tip, turning aeruginose green in

potassium hydroxide; subhymenium *c.* 20 μm thick, hyaline except in potassium hydroxide (see above); medullary excipulum *c.* 20 μm thick, composed of pale brown pseudoparenchymatous cells. *Paraphyses* filiform, numerous, septate, occasionally branched, enlarged to 3 μm thick at the apex, forming a rudimentary pale brown epithecium. *Asci* subcylindrical, thick-walled, 25–50 \times 8–10 μm , the apex 2–3 μm thick, without an apical pore, tending to extend slightly into the ascus cytoplasm, not reacting with iodine, 8-spored. *Ascospores* ellipsoid, colourless, biguttulate, becoming 1-septate, 8–13 \times 2–3(–4) μm .

Specimens examined (additional to those listed by Hawksworth, 1975): British Isles, England, Hampshire, New Forest, Stubbs Wood, 13 May 1979, D. L. Hawksworth 4934, IMI 238650; Hampshire, New Forest, Shepherds Gutter, April 1979, V. J. Giavarini, hb. Giavarini. Scotland, Argyll, Glen Nant, 28 May 1976, B. J. Coppins, & L. Tibell 2632, E; Argyll, Glasdrum National Nature Reserve, 27 May 1976, B. J. Coppins & L. Tibell 1827, E. Denmark, South Jutland, Lögumkloster, Draved Skov, 24 Aug. 1975, M. S. Christiansen 75.299, hb. Christiansen 1107; *loc. cit.*, 26 Aug. 1975, M. S. Christiansen 75.370, hb. Christiansen 1106. France, Brittany, Allt Saïlean na Cornu, 1 mile E of Salen, 1970, F. Rose, hb. Rose. Germany, Schleswig-Holstein, Krs Tannenberg, Sachsenwald, 28 Sept. 1919, C. F. E. Erichsen, C; Münster, 'auf *Thelotrema lepadinum*. Wolbecker Thiergarten', Aug. 1864, T. R. J. Nitschke, L 910.195–559 (holotype of *Nesolechia nitschkei*), L 910.195–556 (isotype).

On *Thelotrema lepadinum* (Ach.) Ach., thalli. We have seen material from the British Isles, Denmark France and Germany. Its occurrence in Ireland was reported first by Mitchell (1964). The host of this species is widely distributed and *Skyttea nitschkei* is to be expected to have a wide distribution also. In the British Isles it is most frequent in forests with an exceptionally long history of ecological continuity (e.g. New Forest, Hampshire). Santesson (*in litt.*) reports that the species also occurs in Argentina and Chile.

Skyttea thallophila (P. Karsten) Sherw. & D. Hawksw. comb. nov.

Trochila thallophila P. Karsten, *Fungi fenn. exs.*, cent. 9, no. 823 (1869).

Pyrenopeziza thallophila (P. Karsten) Sacc., *Syll. Fung.* 8: 370 (1889).

Mollisia thallophila (P. Karsten). P. Karsten, *Bidr. Känn. Finl. Natur. Folk* 19: 205 (1871).

As a redescription and illustrations of this species have recently been presented elsewhere (Hawksworth, 1980), this species is not discussed

in detail here. Its diagnostic features are adequately indicated in the key above.

Santesson (1960) previously stated that this species required a new generic name and the reasons why *Pyrenopeziza* Fuckel is unsuitable are summarized by Hawksworth (1980). This species is not made the holotype of *Skyttea*, however, as it differs in some important respects from *S. nitschkei* and most other species accepted in the genus here. The ascocarps become more or less superficial at maturity, and have rudimentary hairs on the outer surface of the excipulum and not merely the summit of the incurved margin. In common with *S. cruciata*, the asci have a thick homogeneous wall without a distinct apical cap and the excipular structure and paraphyses also strongly recall that species. In *S. cruciata* and *S. thallophila* greenish pigments are also lacking in the excipulum and hairs. In view of these fundamental differences, we at first hesitated to include these species within *Skyttea*, but at our present level of knowledge of the lichenicolous discomycetes the significance that should be attributed to these characters is unclear and it seems most prudent to retain these species here for the time being.

Specimens examined: See Hawksworth (1980).

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