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THE GENERA *TRICHOTHYRINA* AND *ACTINOPELTIS* IN BRITAIN

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Nine species of *Trichothyrina* (five of which are new) and a new species of *Actinopeltis* are described from British collections.

In my paper entitled 'British *Microthyrium* species and similar fungi' (Ellis, 1977), genera which superficially resemble one another, and often occur together in similar microhabitats, are discussed and keyed out. This paper deals with two genera in the Trichothyriaceae. Many species of this family occur in the tropics, and they are nearly always hyperparasites of other leaf-inhabiting fungi. In Britain, although they often grow in close association with other microfungi, they may also be found alone on the non-fungal substrate. *Trichothyrina parasitica* is the only truly hyperparasitic species so far found in Britain.

TRICHOTHYRINA

Petrak (1940) erected the sub-genus *Trichothyrina* to separate from *Trichothyrium* some species which did not have a creeping thalloid type of mycelium parasitizing a fungal host. Later Petrak (1950) again reviewed many of the Trichothyriaceae and raised *Trichothyrina* to generic status with *T. alpestris* as the type species. The genus has the following characters:

The mycelium, when present, is inconspicuous and composed of very fine, colourless or pale yellow hyphae which are indistinctly septate. The thyriothecia, although often gregarious, are seldom fused together. They are orbicular and lenticular, and with a hand lens are seen to have a distinct central papilla and usually an entire margin. A thyriothecium always has an upper and lower wall. The upper wall is composed of ranks of brown quadrilateral cells which radiate from the central ostiole. The lower wall is similarly constructed, but is formed of paler brown, somewhat smaller cells, which radiate from a central disk. This basal wall is closely adpressed to the host tissue but no internal hypostroma has been seen. The ostiole has a well-differentiated collar, often raised, the structure of which varies from species to species. It is usually closed by a layer of thin-walled cells having the appearance of a plate of polygonal cells in surface view. These break apart when the asci are mature. The asci develop from peripheral tissue located between the two thyriothecial walls, and lie with their necks towards the ostiole. Interascal tissue is indistinctly fibrose and becomes mucose. The asci are bitunicate, obclavate to obpyriform with thick-walled necks. The number of ascospores varies from 4 to 8. Ascospores are hyaline, usually 1-septate, occasionally multiseptate, and may have a tuft of cilia attached to the larger upper cell.

Key to British *Trichothyrina* spp.

Thyriothecia parasitic on Diatrypaceous fungi — *parasitica*

Thyriothecia not parasitic on Diatrypaceous fungi — 2

2. Margin of thyriothecium extended to form a fringe — 3

   Margin of thyriothecium entire, or with only minute processes — 4

3. Fringe up to 8 µm long, on *Carex riparia* — *norfolciana*

   Fringe up to 20 µm long, on *Cupressus* spp. — *fimbriata*

4. Ostiolar collar composed of several rings of small, dark, thick-walled cells without holes, teeth or setae — 5

   Ostiolar collar terminating in small, obtuse or truncate teeth, on *Fagus sylvatica* cupules — *cupularum*

   Ostiolar collar with a ring of holes at the base, often surmounted by a number of acute convergent setae — *alpestris*

5. Thyriothecium large, above 90 µm diam — *salicis*

   Thyriothecium small, 90 µm or below — 6

6. Ascospores fusiform, mainly on grasses — *nigro-annulata*

   Ascospores slipper-shaped, on Coniferae — *pinophylla*

   Ascospores cylindrical, ciliate, on *Ammophila* — *ammophilae*

TRICHOTHYRINA ALPESTRIS (Sacc.) Petrak, *Sydowia* **4**:167 (1950). (Figs. 1, 11, 12)

Microthyrium alpestre Sacc., *Michelia* **2**:160 (1880).

Microthyrium culmigenum Syd., *Annls mycol.* **19**:140 (1921).

Mycelium abundant, superficial, composed of fine, yellowish-brown, indistinctly septate, anastomos-

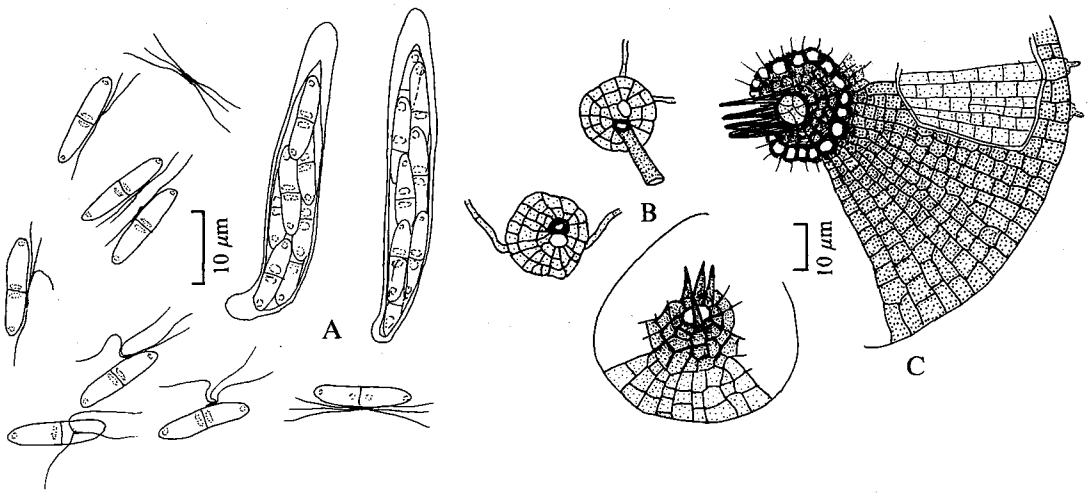


Fig. 1. *Trichothyrina alpestris.* A, asci and ascospores; B, developing thyriothecia; C, mature thyriothecium.

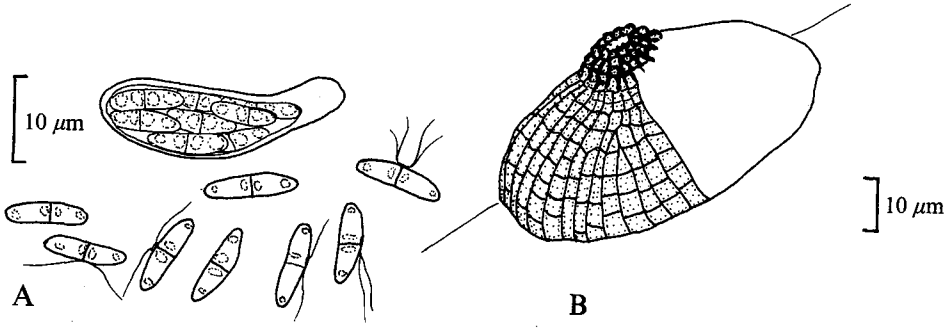


Fig. 2. *T. ammophilae.* A, asci and ascospores; B, thyriothecium.

ing hyphae 1·5–3 μm wide. *Thyriothecia* orbicular, clustered to crowded, up to 200 μm diam. Upper wall composed of dark chestnut-brown quadrilateral cells, 3–6 × 3–5 μm, strongly radiate. Basal plate paler brown, but of similar construction, cells 3–6 × 1·5–6 μm. *Ostiolar collar* 25–40 μm diam, the basal ring composed of cells which appear to be perforated. These are surmounted by 2–3 rings of smaller thick-walled cells; often some of the uppermost cells are extended to form a ring of setae converging above the ostiole. These setae, when present, are dark brown, acute, 6–12 μm long and 3–4 μm wide at the base. *Ostiole* 8 μm diam, closed by a few thin-walled pale brown polygonal cells. *Asci* bitunicate, cylindrical to obclavate, 28–40 × 7–9 μm, 4–8 spored. *Ascospores* 1-septate, hyaline, narrowly ellipsoidal 11–15 × 2·5–3·5 μm. Cilia in a cluster of 6, are attached just above the septum, as long as, or slightly longer than the spore. Guttules 2–6, eventually disappearing.

On dead stems of *Carex* spp. and various grasses.

This description is based on IMI 30690, collected and named by F. Petrak, on *Carex pilosa*, Niederdonau: Hundsheimerkogel bei Hainburg, VI 1939. The type specimen of *Microthyrium culmigenum* Syd., IMI 22215, has been examined, together with 8 fresh British collections from Warwicks and Yorks.

Trichothyrina ammophilae sp.nov. (Figs. 2, 13)

Mycelium superficiale, abundans, ex hyphis hyalinis 1–1·5 μm latae, passim tumidae ad 2 μm latae; haustoria minuta, subcuticularia ex tumoribus orienta. *Thyriothecia* orbicularia, 60–80 μm diam, margine integro. Paries superus ex cellulis brunneis oblongis 3–6 × 2–3 μm compositus. Paries basilaris similiter ex

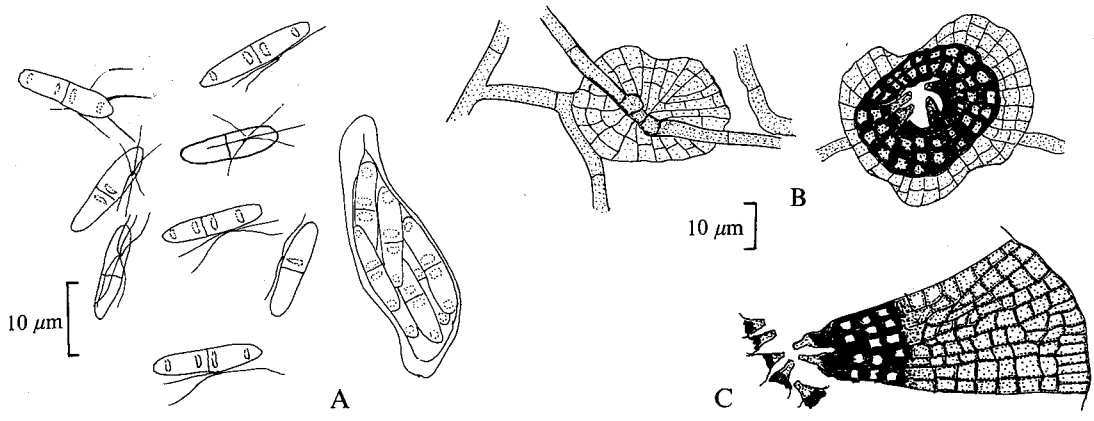


Fig. 3. *Trichothyrina cupularum*. A, asci and ascospores; B, developing thyriothecia; C, mature thyriothecium squashed to show ostiolar teeth.

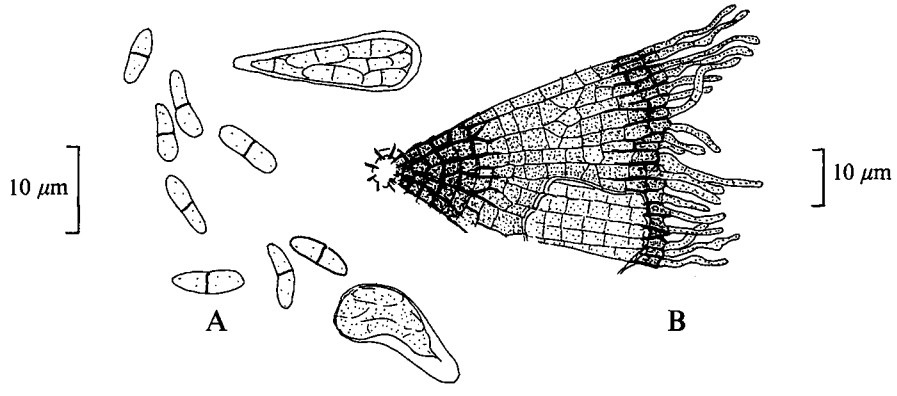


Fig. 4. *T. fimbriata*. A, asci and ascospores; B, mature thyriothecium.

cellulis nonnihil parvioribus et pallidioribus compositus. *Collum ostioli* 16–20 μm diam, ex cellulis fuscis crassitunicatis 1·5 × 1·5 μm compositum; cellulae in 3–4 annulos ordinatae. *Ostiolum* 6–8 μm diam. *Asci* bitunicati obclavati ad obpyriformes 22–28 × 7–9 μm, octospori. *Ascosporae* 1-septatae, hyalinae, anguste ellipsoidales 8–9·5 × 1·5–2·5 μm. Cilia 2–4 ad centrum sporae affixa, interdum absentia. Guttulae 4, persistentes.

In foliis et caulibus emortuis *Ammophilae arenariae*. Holotypus IMI 168873*b*, J. Webster, Braunton Burrows, Devon, 21 May 1972.

Mycelium superficial, abundant, composed of hyaline hyphae 1–1·5 μm wide, with small swellings up to 2 μm wide, attached to minute subcuticular haustoria. *Thyriothecia* orbicular, 60–80 μm diam, with an entire margin. Upper wall composed of brown quadrilateral cells 3–6 × 2–3 μm. Basal plate very similar but composed of slightly smaller and pale reddish brown cells. *Ostiolar collar* 16–20 μm diam, composed of 3–4 concentric rings of dark brown thick-walled cells 1·5 × 1·5 μm. *Ostiole* 6–8 μm diam. No ostiolar plate seen. *Asci* bitunicate, obclavate to obpyriform 22–28 × 7–9 μm, 8-spored. *Ascospores* hyaline, 1-septate, narrowly ellipsoidal 8–9·5 × 1·5–2·5 μm. Cilia 2–4, attached to the middle of the spore, but sometimes absent. Guttules 4, persisting.

On dead leaves and stems of *Ammophila arenaria*. The colonies occur on old greying stems, lying in contact with the ground, and may be associated with *Microthyrium gramineum* and *M. ilicinum*. They can be seen with a hand lens as very small black shining thyriothecia with a well-defined margin and papillate ostiole. Collections examined from Devon, Dyfed, Glamorgan and Norfolk.

Trichothyrina cupularum sp.nov. (Figs. 3, 14, 15, 16)

Mycelium superficiale, abundans, ex hyphis pallide brunneis, ramosis, septatis, 2·5–3·5 μm latis composi-

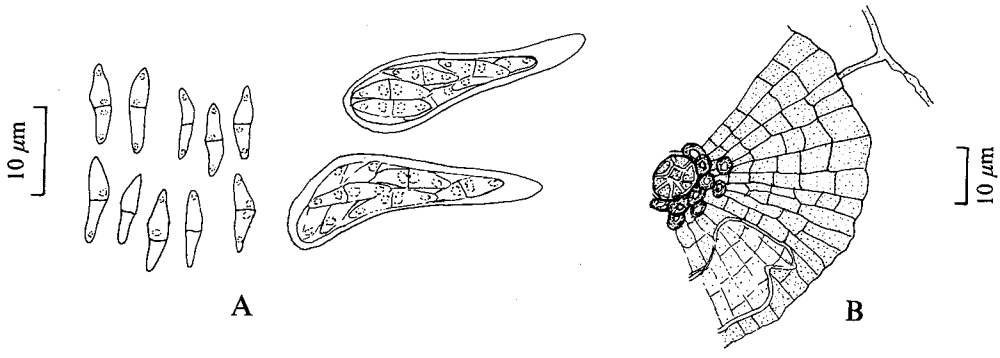


Fig. 5. *T. nigro-annulata.* A, asci and ascospores; B, mature thyriothecium.

tum; hyphae ad collum thyriothecii affixae interdum persistentes. *Thyriothecia* orbicularia, discreta, aggregata, ad 140 μm diam, 60 μm alta, margine integro. Paries superus ex cellulis castaneis, oblongis, 2–5 × 2–4 μm compositus. Paries basilaris similiter ex cellulis nonnihil parvioribus et pallidioribus compositus. *Collum ostioli* 20–24 μm diam, ex cellulis fuscis crassitunicatus compositum; cellulae in 3–4 annulos ordinatae; annulos intimus ex, plerumque 8, processibus dentiformibus 8 μm altis compositus; apices dentium obtusi vel truncati, 1·5 μm lati, supra ostiolum convergentes. *Ostiolum* 8 μm diam, paucis magnis cellulis tenuitunicatis clausum. *Asci* bitunicati, obclavati ad obpyriformes 36–50 × 8–11 μm, 4–8 spori. *Ascosporae* 1-septatae, hyalinae, anguste ellipsoidales ad calceiformes 13–16 × 3–4 μm. *Cilia* 6, ad centrum cellulae superae affixa, 10–12 μm longa. Guttulae plerumque 4–6 prsistentes.

In cupulis putrescentibus *Fagi sylvaticae*, Holotypus IMI 31600*h*, S. J. Hughes, Swinton Park, Masham, Yorks., 26 Nov. 1948.

Mycelium superficial, abundant, composed of pale brown, much branched, septate hyphae 2·5–3·5 μm wide; some hyphae often remain attached to the collar region of thyriothecium. *Thyriothecia* orbicular, discrete, crowded, up to 140 μm diam and 60 μm high, with an entire margin. Upper wall composed of radiating ranks of chestnut brown quadrilateral cells 2–5 × 2–4 μm. Basal plate of similar construction with cells slightly smaller and paler. *Ostiolar collar* 20–24 μm diam, composed of 3–4 rings of very thick-walled cells surmounted by a ring of (usually 8) small tooth-like processes, 8 μm high, with the tip obtuse, or truncate 1·5 μm wide, converging over the ostiole which is 8 μm diam. The ostiole is at first closed by a few large thin-walled cells. *Asci* bitunicate, obclavate to obpyriform 36–50 × 8–11 μm, 4–8 spored. *Ascospores* hyaline, 1-septate, ellipsoidal to slipper-shaped, 13–16 × 3–4 μm. *Cilia* 6 attached in a tuft to the mid-point of the upper cell, 10–12 μm long. Guttules 4 or more, persistent.

On both the inside and outside of decaying cupules of *Fagus sylvatica.* Three collections examined from Surrey and Yorks.

Trichothyrina fimbriata sp.nov. (Figs. 4, 17, 18)

Mycelium nullum, praeter hyphas fimbriae. *Thyriothecia* orbicularia, dispersa, 60–80 μm diam. Paries superus ex cellulis brunneis oblongis 3–4 × 2–3 μm compositus; cellulae marginales elongatae ad 20 μm, fimbria formantes. Paries basilaris similiter, ex cellulis 1·5–3 × 1·5–3 μm compositus, autem ferrugineus. *Collum ostioli* vix dissimile autem 3–6 annulis cellularum fuscatarum. *Ostiolum* 4–8 μm diam. *Asci* bitunicati, obclavati, ad obpyriformes, 18–27 × 6–7 μm, octospori. *Ascosporae* 1-septatae, anguste ellipsoidales, 6·5–8 × 1·5–3 μm, hyalinae ad subhyalinae, septum fuscum. *Cilia* non visa.

In foliis emortuis *Cupressi* et *Chamaecyparis*, Holotypus IMI 168865, J. P. Ellis, Arlington Court, N. Devon, 20 May 1972.

Mycelium absent except for the elongated hyphae of the fringe. *Thyriothecia* orbicular, scattered, 60–80 μm diam. Upper wall composed of radiately arranged, medium brown, quadrilateral cells 3–4 × 2–3 μm, with the outermost cell of each rank extended, at the margin, to form a fringe up to 20 μm long. Basal plate lighter brown but of similar construction with cells 1·5–3 × 1·5–3 μm. *Ostiolar collar* scarcely differentiated but 3–6 rings of cells are slightly darker than the rest of the upper wall. *Ostiole* 4–8 μm diam. *Asci* bitunicate, obclavate to obpyriform, 18–27 × 6–7 μm, 8-spored. *Ascospores* 1-septate, hyaline to pale yellow with a dark septum, narrowly ellipsoidal to slipper-shaped, 6·5–8 × 1·5–3 μm. No cilia seen.

On dead leaves of *Cupressus* and *Chamaecyparis* spp., five collections examined from Devon, Powys, Surrey and Warwicks.

This fungus occurs on bleached or browned leaves, usually fallen to the ground. With a hand

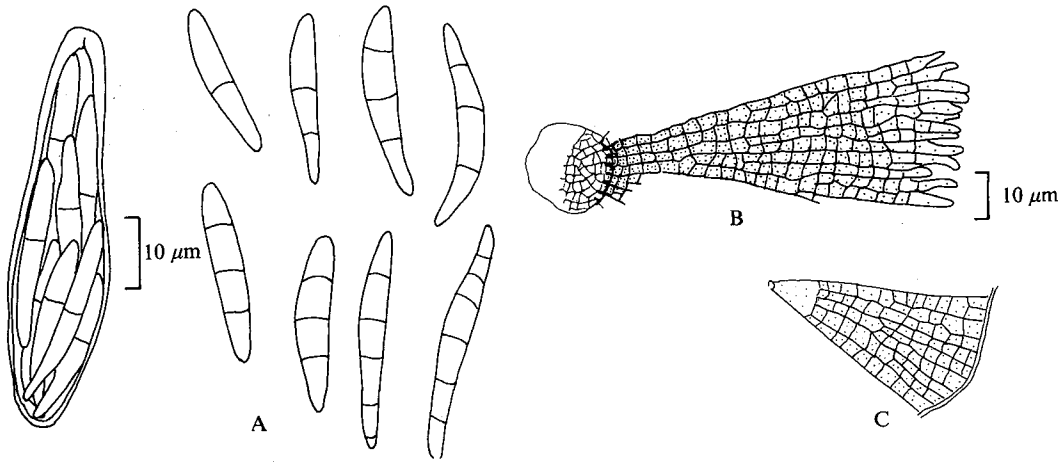


Fig. 6. *Trichothyrina norfolciana.* A, asci and ascospores; B, thyriothecium; C. basal plate.

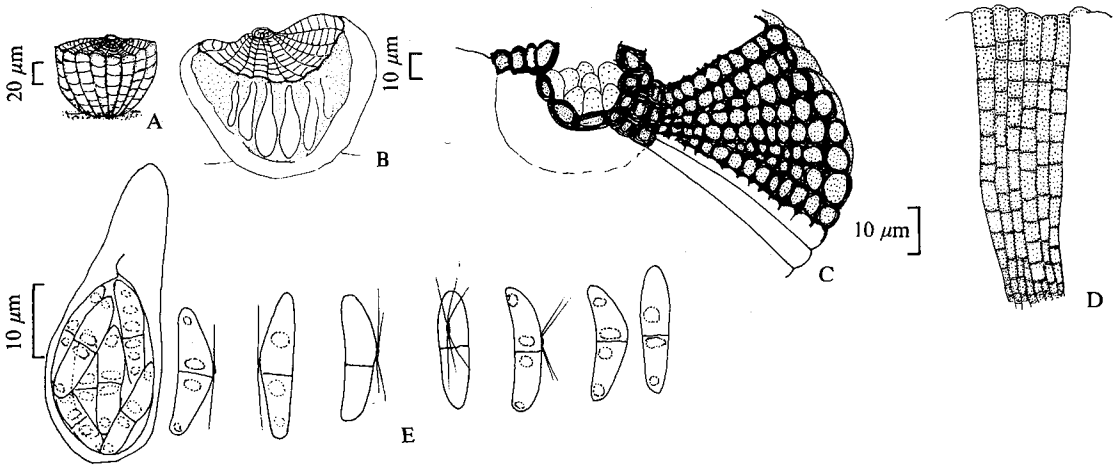


Fig. 7. *T. parasitica.* A, habit sketch; B, diagrammatic section through young thyriothecium; C, mature thyriothecium, upper wall and ostiole; D, lower wall. E, asci and ascospores.

lens it can be seen as tiny black shining spots at the tips of the leaves. If often occurs with *Microthyrium pinophyllum* and *T. pinophylla*, but its fringe makes it very distinctive.

Trichothyrina nigro-annulata (Webster) J. P. Ellis comb.nov. (Figs. 5, 19)

Microthyrium nigro-annulatum Webster, *Trans. Brit. mycol. Soc.* **35**:208 (1952).

Mycelium, when visible, superficial, composed of hyaline septate hyphae up to 2 μm wide, disappearing in older colonies. *Thyriothecia* orbicular, discrete, scattered, 60–90 μm diam, margin entire. Upper wall composed of light brown quadrilateral cells 3–6 × 2–4 μm, arranged in radiating rows. Basal plate of similar construction but with paler brown cells 2–5 × 1·5–3·5 μm. *Ostiolar collar* 12–16 μm diam, composed of 1–3 concentric rings of dark brown, thick-walled cells, 2 × 2 μm. In the innermost ring the cells are often oval and spread outwards to form a turned over rim. *Ostiole* 6–8 μm diam, closed by a plate of pale brown polygonal cells. *Asci* bitunicate, obclavate 20–26 × 6–8 μm, 8-spored. *Ascospores* hyaline, 1-septate fusiform with pointed ends, 7·5–10·5 × 1·5–3 μm. No cilia seen. Guttules 2–4, often disappearing.

On dead grass stems and leaves, on dead fronds of *Pteridium aquilinum*, and rotting leaves of *Betula* and *Salix* spp.

This description is based on the type specimen from Herb K (slide IMI 84679). Nine other collections examined from Norfolk, Notts, Warwicks, Worcs and Yorks.

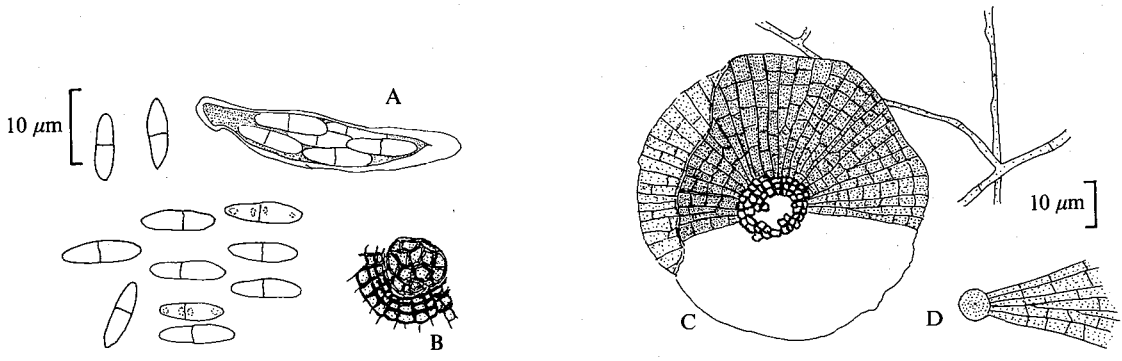


Fig. 8. *Tricothyrina pinophylla.* A, asci and ascospores; B, ostiolar collar and plate; C, mature thyriothecium; D, basal plate.

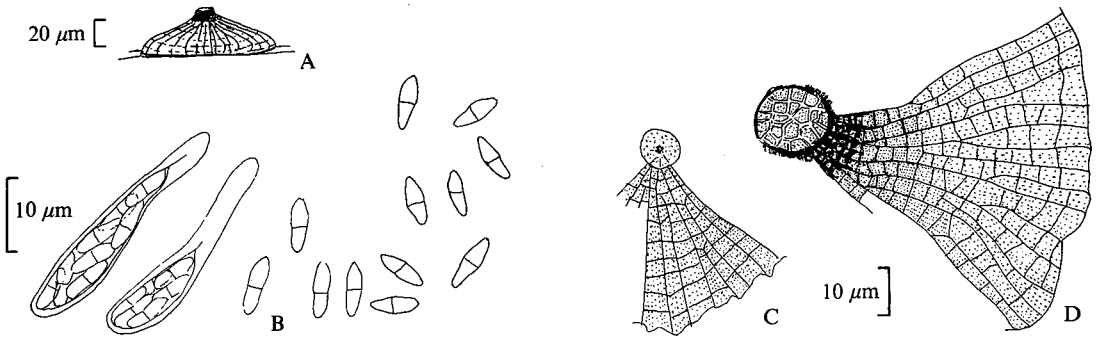


Fig. 9. *T. salicis.* A, habit sketch; B, asci and ascospores; C, basal plate; D, upper wall of thyriothecium with ostiolar plate.

Trichothyrina norfolciana sp.nov. (Figs. 6, 21)

Mycelium, si visibile, superficiale, ex hyphis hyalinis, ramosis, reticulatis, 1–1·5 μm latis compositum. *Thyriothecia* orbicularia, dispersa, 200–270 μm diam, margine breviter fimbriato. Paries superus ex cellulis pallide castaneis oblongis 3–4 × 3–5 μm compositus; cellulae marginales elongatae ad 8 μm, fimbria formantes. Paries basilaris similiter ex cellulis nonnihil parvioribus et pallidioribus compositus. *Collum ostioli* nil. *Ostiolum* 22–25 μm diam, primo cellulis subhyalinis tenuitunicatis clausum. *Asci* bitunicati, cylindrici ad obclavati 48–56 × 11–16 μm, 8-spori. *Ascosporae* hyalinae, fusiformes in extremis rotundatis, basim versus attenuatae, primo 1-septatae dein usque ad 6-septatae, 23–27 × 3·5–5 μm. *Cilia* non visa.

In foliis emortuis et emorientibus *Caricis riparii*, Holotypus IMI 42039, M. B. Ellis, Wheatfen Broad, Norfolk, 29 May 1950.

Mycelium when visible, superficial, composed of hyaline hyphae 1–1·5 μm wide, much branched and reticulate. *Thyriothecia* orbicular, scattered, 200–270 μm diam, with a shortly fimbriate margin. Upper wall composed of pale chestnut brown quadrilateral cells 3–4 × 3–5 μm, with the outermost cell of each rank elongated to 8 μm, forming a short fringe. Basal plate formed of slightly smaller and paler brown cells. *Ostiolar collar* none. *Ostiole* 22–25 μm diam, at first closed by a plate of thin-walled, subhyaline cells. *Asci* bitunicate, cylindrical to obclavate 48–56 × 11–16 μm, 8-spored. *Ascospores* hyaline, fusiform with rounded ends, tapering towards the base, at first 1-septate but often more septa develop and up to 6 have been observed in mature collections, 23–27 × 3·5–5 μm. No cilia seen.

On dead and dying leaves of *Carex riparia*, seven collections have been examined from Norfolk and Oxfordshire.

TRICHOTHYRINA PARASITICA (Fabre) von Arx, *Beitr. Kryptogamenfl. Schweiz* **11** (2):559 (1962). (Figs. 7, 22, 23, 24, 25)

Mycelium not seen. *Thyriothecia* orbicular, crowded, 80–130 μm diam. Upper wall composed of radiating rows of dark brown, thick-walled quadrilateral cells 2·5 × 3 μm but up to 5 μm wide at the margin where they are much redder-brown in transmitted light. Basal wall is bowl-shaped and

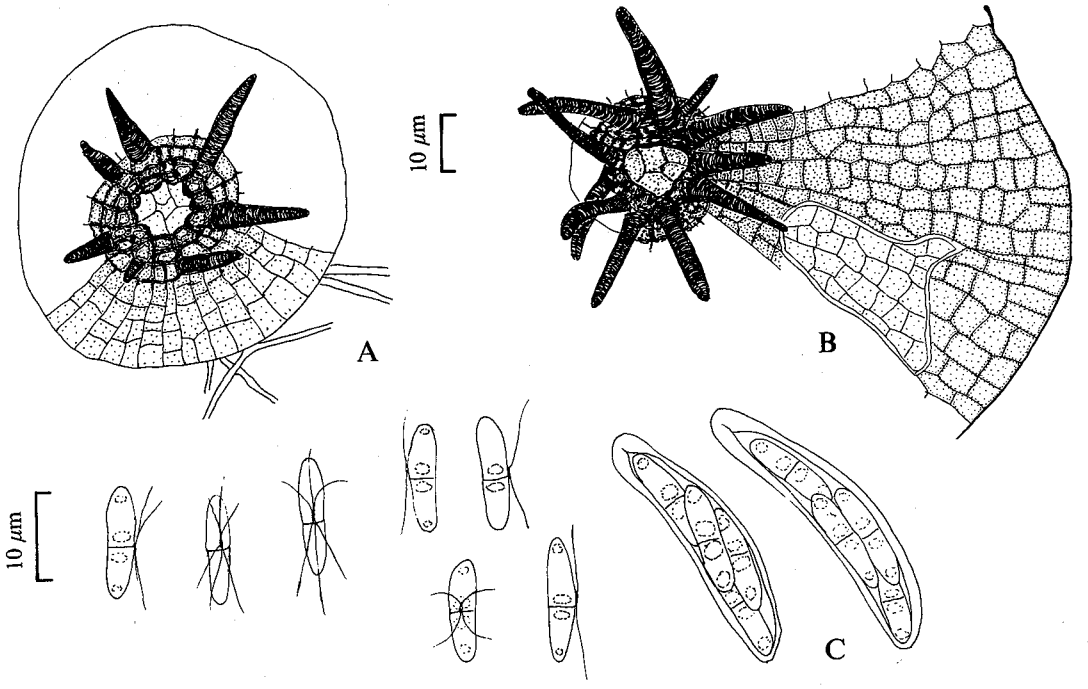


Fig. 10. *Actinopeltis palustris*. A, developing thyriothecium; B, mature thyriothecium; C, asci and ascospores.

composed of radially-arranged rectangular cells 3–6 × 1·5–3 μm, deep red-brown, smallest in the basal region where they are embedded in the host stroma. *Ostiolar collar* 20–30 μm diam, composed of 2–3 concentric rings of small thick-walled cells surmounted by a ring of rather elongate oval-shaped cells, giving a scalloped appearance to the ostiole. *Ostiole* 12 μm diam, at first closed by 10–20 thin-walled cells attached to the inside of the collar 4 × 4 × 8 μm. *Asci* bitunicate, obclavate, 36–48 × 11–14 μm, arise mainly in the basal area of the thyriothecium and are arranged vertically among pseudoparaphyses, 8-spored. *Ascospores* hyaline, 1-septate, broadly fusiform to cylindrical with rounded ends, sometimes slightly curved, widest just above the septum, 14–18 × 4–6 μm. At this widest point a tuft of cilia, 2–6 in number is attached to the spore. Cilia up to 20 μm long. Guttules 4–6, disappearing at maturity.

On *Diatrype stigma* on *Ilex aquifolium*, IMI 4107*b* Nr Boxhill Station, Dorking, Surrey, S. J. Hughes, Feb. 1946.

This fungus seems to occur much more commonly in Europe, and has been reported on several different Diatrypaceous fungi. The colonies are not visible with the naked eye, but with a hand lens can be seen as a crowd of small, black, shining, bowl-shaped thyriothecia with a raised central papilla embedded in the host stroma. There is only the one British collection, from Surrey.

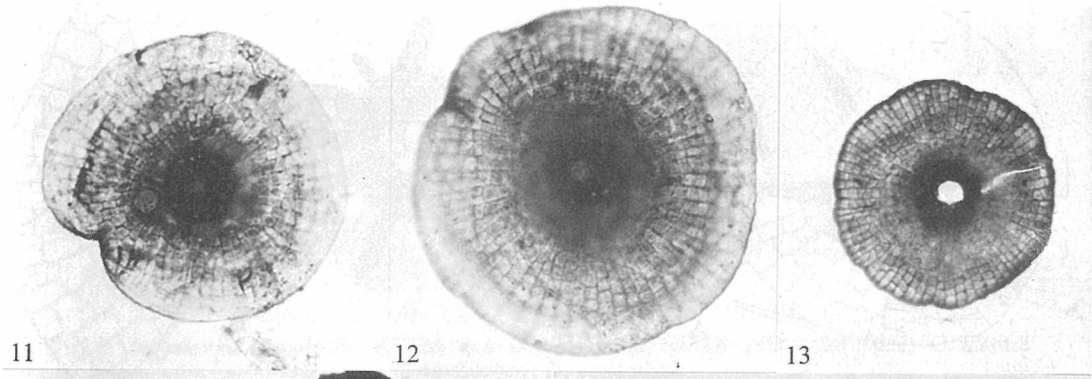
T. parasitica (Fabre) von Arx has had many names in the past and for its synonymy see Müller & von Arx (1962).

TRICHOTHYRINA PINOPHYLLA (von Höhn.) Petrak, *Sydowia* **4**:168 (1950). (Figs. 8, 20)

Leptopeltella pinophylla von Höhn., *Annls mycol.* **15**:305 (1917).

Trichothyrium austriacum Petrak, *Annls mycol.* **38**:365 (1940).

Mycelium, when visible, superficial, composed of pale yellow septate hyphae, up to 2 μm wide, branching at right angles; often absent in older colonies. *Thyriothecia* orbicular, discrete, scattered 80–90 μm diam, with an entire margin. Upper wall composed of brown quadrilateral cells 3–5 × 2–4 μm, arranged in radiating rows. Basal wall of similar construction but cells lighter brown and slightly smaller. *Ostiolar collar* 20 μm diam, composed of 3–4 concentric rings of thick-walled, dark brown cells 1·5–2 × 1·5–2 μm. *Ostiole* 8–10 μm diam, at first closed by a plate of polygonal cells, pale brown with paler walls, which break apart at maturity. *Asci* bitunicate, obclavate to obpyriform, 25–32 × 6·5–8 μm, 4–8 spored. *Ascospores* hyaline,



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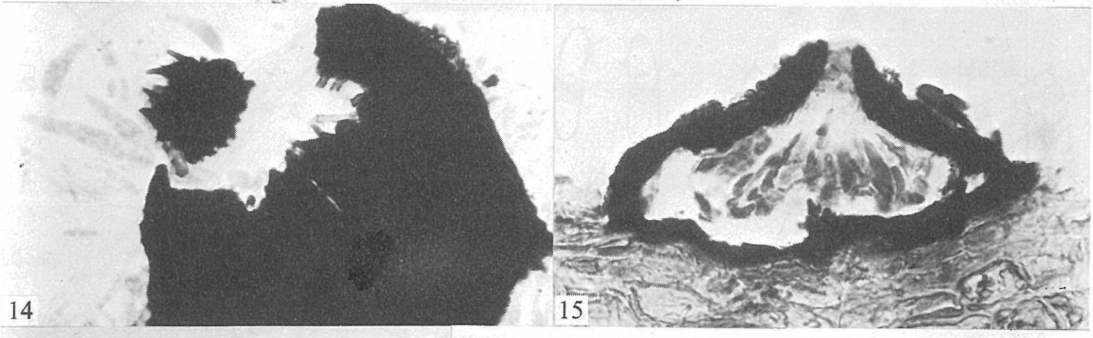

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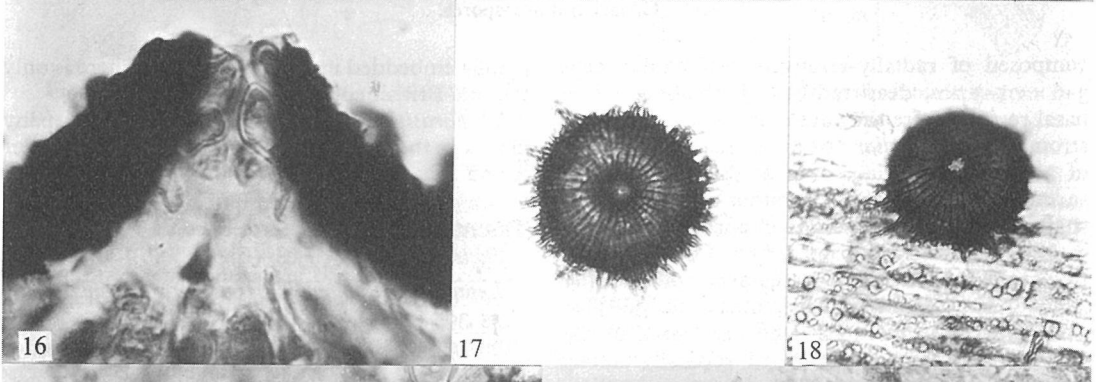

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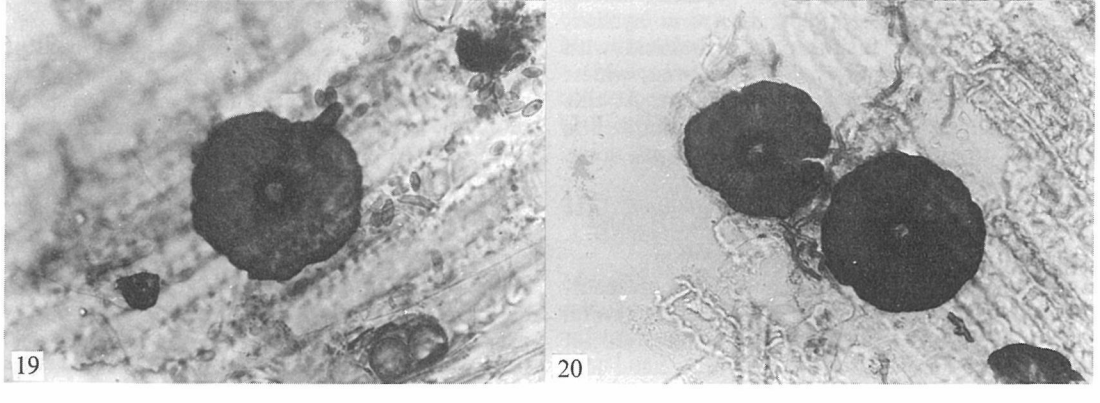

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1-septate, cylindrical to slightly slipper-shaped, 8–11 × 1·5–3 μm (mostly 8–9 × 2 μm). No cilia seen. Small guttules disappear at maturity.

On dead needles on many *Pinus* spp., also on dead leaves of *Picea*, *Cupressus* and *Juniperus* species.

This description is based on IMI 34022*a* on *Pinus austriaca* collected and named by F. Petrak, 2089, Neiderdonau, Giesshübel bei Mödling, IV 1939. Two other specimens of F. Petrak, no. 791 and no. 2089 have been examined and 7 British collections from Argyll, Glamorgan, Gwyned, Powys, Somerset and Surrey. This fungus commonly occurs with *Microthyrium pinophyllum* and *Stomiopeltis pinastri*.

Trichothyrina salicis sp.nov. (Figs. 9, 26)

Mycelium superficiale, abundans, ex hyphis flavidis, septatis, ramosis 1·5–2 μm latis compositum. *Thyriothecia* orbicularia, discreta, dispersa, 90–120 μm diam, margine integro autem interdum sinuato. Paries superus ex cellulis brunneis oblongis 3–8 × 3–6 μm compositus. Paries basilaris similiter ex cellulis nonnihil parvioribus et pallidioribus compositus. *Collum ostioli* 25–30 μm diam, ex cellulis fuscis crassitunicatis 2–3 × 2–3 μm compositum; cellulae in 3–6 annulos ordinatae. *Ostiolum* 12–16 μm diam, strato cellularum brunnearum polygoniarum 3 μm latarum clausum. *Asci* bitunicati, numerosi, cylindrici ad obclavati 30–38 × 6–8 μm, 8-spori. *Ascosporae* hyalinae, 1-septatae, fusiformes ad ellipsoidales, 6·5–9 × 1·5–2 μm. Cilia non visa.

In foliis emortuis *Salicis atrocinereae*, Holotypus IMI 177018*a*, M. C. Clark MC 1402, Weethley Wood, Warwicks., 2 July 1973.

Mycelium superficial, abundant, composed of pale yellow, septate, branched hyphae 1·5–2 μ wide. *Thyriothecia* orbicular, discrete, scattered, 90–120 μm diam, with an entire margin which may be wavy. Upper wall composed of brown quadrilateral cells 3–8 × 3–6 μm. Basal plate of similar construction but cells somewhat smaller and paler brown. *Ostiolar collar* 25–30 μm diam, composed of 3–6 concentric rings of dark brown thick-walled cells 2–3 × 2–3 μm. *Ostiole* 12–16 μm diam, closed at the top by a plate of brown polygonal cells mostly 3 μm wide. *Asci* bitunicate, numerous, cylindrical to obclavate, 30–38 × 6–8 μm, 8-spored. *Ascospores* hyaline, 1-septate, fusiform to ellipsoidal 6·5–9 × 1·5–2 μm. No cilia seen.

On dead leaves of *Salix atrocinerea*. All three collections examined have been from Warwickshire. This fungus seems to mature in the summer.

ACTINOPELTIS

The genus *Actinopeltis* was erected by von Höhnel (1907) for species which are very similar to *Trichothyrina* but have phragmoseptate ascospores and setae around the ostiole. Müller & von Arx (1962) do not consider the septation of the ascospores to be a character of generic significance in this case, and separate the two genera on the presence or absence of setae around the ostiole. The type species of *Trichothyrina*, *T. alpestris*, however, often has setae which converge above the ostiole, and this may lead to confusion. All *Actinopeltis* species that I have examined, have setae which splay out horizontally from the ostiolar collar, as clearly described and illustrated by von Höhnel (1907) in the type *A. peristomalis*, and it is on this basis that I am attributing a British species to this genus. In other ways the genus resembles *Trichothyrina*.

Actinopeltis palustris sp.nov. (Figs. 10, 27)

Mycelium superficiale, abundans, ex hyphis hyalinis, indistincte septatis, 1–1·5 μm latis compositum. *Thyriothecia* orbicularia, discreta, aggregata, 100–160 μm diam; margine integro. Paries superus ex cellulis castaneis, oblongis 3–6 × 3–5 μm compositus. Paries basilaris similiter ex cellulis nonnihil parvioribus et pallidioribus 2–5 × 1·5–5 μm compositus. *Collum ostioli* 25 μm diam, ex cellulis parvis fuscis crassitunicatis compositum; cellulae in 3–5 annulos ordinatae; 3–10 setae ad basim vel medium colli affixae; setae brunneae, acutae, horizontaliter divergentes 16–20 μm longae, ad basim 3–4 μm latae, interdum absentes. *Ostiolum* 8 μm diam, cellulis paucis tenuitunicatis clausum. *Asci* bitunicati, cylindrici ad obclavati 26–36 × 7–8 μm, 4-spori. *Ascosporae* 1-septatae, hyalinae, anguste ellipsoidales ad calceiformes 11–14·5 × 2·5–3·5 μm.

Figs. 11, 12. *Trichothyrina alpestris*, thyriothecia (× 400) with, and without, ostiolar setae.

Fig. 13. *T. ammophilae*, thyriothecium (× 400).

Fig. 14. *T. cupularum*, thyriothecium (× 400), squashed to show ostiolar teeth.

Fig. 15. *T. cupularum*, vertical section of a thyriothecium (× 400).

Fig. 16. *T. cupularum*, vertical section of ostiole (× 1000), showing ostiolar plate cells.

Figs. 17, 18. *T. fimbriata*, thyriothecia (× 250).

Fig. 19. *T. nigro-annulata*, thyriothecium (× 400).

Fig. 20. *T. pinophylla*, thyriothecia (× 250).

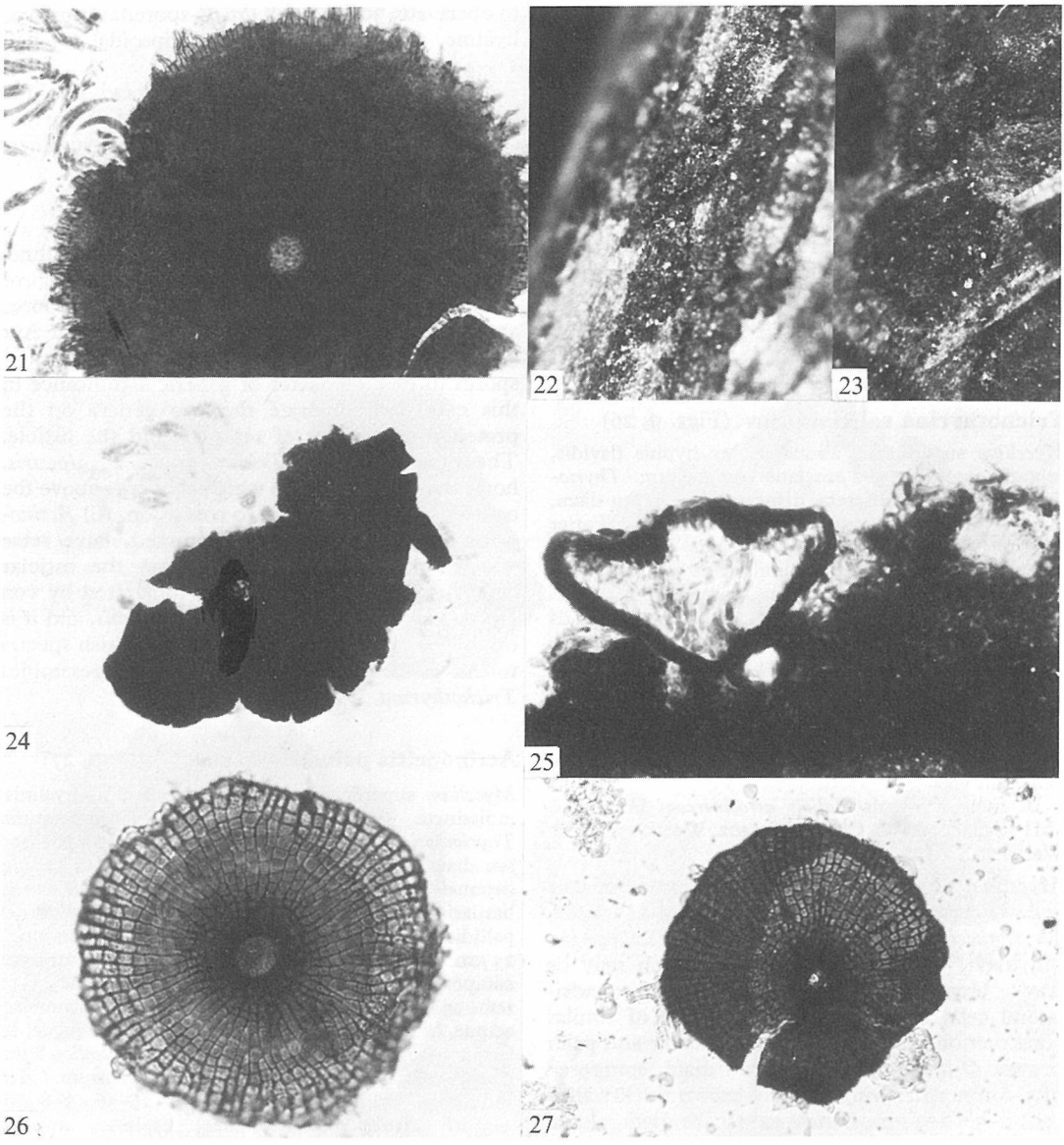

Fig. 21. *Trichothyrina norfolciana*, thyriothecium (×250).
Figs. 22, 23. *T. parasitica*, surface view of colonies on host (×16).
Fig. 24. *T. parasitica*, squashed thyriothecium (×250).
Fig. 25. *T. parasitica*, vertical section of thyriothecium (×400).
Fig. 26. *T. salicis*, thyriothecium (×400), showing ostiolar plate.
Fig. 27. *Actinopeltis palustris*, thyriothecium (×250).

Cilia 6, supra septum affixa 12–16 μm longa. Guttulae 4–6 non persistentes.

In caulibus emortuis *Phalaridis arundinaceae*, nec non in *Filipendulae ulmariae* et *Thalictri flavi*, Holotypus IMI 167597, J. Webster, Arlington Court, N. Devon, 20 May 1972.

Mycelium abundant, superficial, composed of very fine, colourless, indistinctly septate hyphae 1–1·5 μm wide. *Thyriothecia* orbicular, discrete, crowded, 100–160 μm diam. Margin entire. Upper wall composed of dark red-brown quadrilateral cells 3–6 × 3–5 μm, arranged in radiating rows. Basal plate paler brown but of similar construction, cells 2–5 × 1·5–5 μm. *Ostiolar collar* 25 μm diam, composed of 3–5 concentric rings of very dark brown, small thick-walled cells; 3–10 setae arise from the base or middle of the collar, 16–20 μm long, 3–4 μm wide at the base, acute, diverging horizontally. The setae may be missing. The *ostiole*, 8 μm diam, is closed by a few thin-walled polygonal cells. *Asci* bitunicate, cylindrical to obclavate 26–36 × 7–8 μm, 4-spored. *Ascospores* hyaline, 1-septate, narrowly ellipsoidal to slipper-shaped 11–14·5 × 2·5–3 μm. A cluster of 6 cilia are attached just above the septum, the same length or slightly longer than the spore. Guttules 4–6, disappearing eventually.

On dead stems of *Phalaris arundinacea*, *Filipendula ulmaria*, and *Thalictrum flavum*.

In the type collection this fungus occurs with *Trichothyrina alpestris* but they are easily distinguished under the microscope by their different ostiolar collars. Collections examined from Devon, Norfolk and Yorkshire.

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