

New and interesting records of South African fungi. XIII. Follicolous microfungi

P.W. Crous

Department of Plant Pathology, University of Stellenbosch, Stellenbosch, 7600 Republic of South Africa

Received 16 June 1993; revised 11 August 1993

Ten follicolous fungi are described and illustrated. With the exception of *Chaetospermum chaetosporum* (Pat.) Smith & Ramsb., nine fungi are new records for South Africa, namely *Dictyosporium elegans* Corda, *Helicosporium phragmites* Hönel, *Mycotribulus mirabilis* Nag Raj & Kendrick, *Pestalosphaeria hansenii* Shoemaker & Simpson and its *Pestalotiopsis* Stey anamorph, *Phacidium eucalypti* Beaton & Weste and its anamorph *Cœthospora innumera* Masee, *Phyllosticta eucalyptorum* Crous, Wingfield, Ferreira & Alfenas, *Pseudocercospora handelii* (Bubák) Deighton, *Selenodriella fertilis* (Pirozynski & Hodges) Castañeda Ruis & Kendrick, and *Semifissispora rotundra* Swart. Furthermore, two teleomorphs are described for *Phyllosticta eucalyptorum* and *P. cussoniae* Cejp as *Guignardia eucalyptorum* Crous sp. nov. and *G. cussoniae* Crous sp. nov.

Tien verskillende swamme, geïsoleer vanaf blare, word beskryf en geïllustreer. Met die uitsondering van *Chaetospermum chaetosporum* (Pat.) Smith & Ramsb., is nege van hulle nuwe rekords vir Suid-Afrika: *Dictyosporium elegans* Corda, *Helicosporium phragmites* Hönel, *Mycotribulus mirabilis* Nag Raj & Kendrick, *Pestalosphaeria hansenii* Shoemaker & Simpson met sy *Pestalotiopsis* Stey anamorf, *Phacidium eucalypti* Beaton & Weste en sy anamorf *Cœthospora innumera* Masee, *Phyllosticta eucalyptorum* Crous, Wingfield, Ferreira & Alfenas, *Pseudocercospora handelii* (Bubák) Deighton, *Selenodriella fertilis* (Pirozynski & Hodges) Castañeda Ruis & Kendrick, en *Semifissispora rotundra* Swart. Die teleomorf van twee *Phyllosticta* spesies, *P. eucalyptorum* en *P. cussoniae* Cejp, word beskryf as *Guignardia eucalyptorum* Crous sp. nov. en *G. cussoniae* Crous sp. nov.

Keywords: Follicolous fungi, *Guignardia cussoniae*, *Guignardia eucalyptorum*, new species.

Introduction

Studying the Earth's biodiversity has become a central issue for scientists worldwide (Wicklow & Carrol 1981; Norton 1986). However, very little is presently known about the fungal biodiversity, and it is conservatively estimated that there could be more than 1.5 million fungi, of which only 4.6% have to date been recognized (Hawksworth 1991). Fungi are extremely valuable, with different taxa having the ability to degrade different substances (Blanchette 1991), or frequently to produce biologically active products with important commercial applications (Hawksworth 1991).

The fungi occurring on vascular plants are inadequately known. Of these, follicolous fungi play important roles in the ecosystem as either having a pathogenic or saprophytic role with their host. Several of these fungi have been recorded once only, and little or nothing is known about their habitats, cultural characteristics and possible teleomorph/anamorph connections. In dealing with follicolous fungi, several of these issues have been addressed (Crous *et al.* 1993a,c). The present study reports on a number of fungi inhabiting leaves of mainly Myrtaceous hosts. The aim of this study is to record these fungi for South Africa, to describe them in culture, and to report the undescribed states of some of these.

1. *Chaetospermum chaetosporum* (Patouillard) Smith & Ramsbottom, Trans. Br. mycol. Soc. 4: 328 (1914), Figures 1, 12.

Synonyms listed by Nag Raj (1993).

Conidiomata eustromatic, up to 500 µm in diam. in culture, subepidermal, becoming erumpent, separate, opening with

an irregular rupture of the epidermis, sporulating with a pale cream conidial mass; wall consisting of thin-walled cells of *textura angularis*. Conidiophores hyaline, smooth, sparingly septate at base. Conidiogenous cells hyaline, smooth, up to 15 µm in length and 3 µm in diam., bearing single, terminal conidia. Conidia hyaline, smooth, guttulate, 21 – 30 × 4 – 6 µm, with 5 – 9 hyaline, unbranched, tubular, straight appendages, up to 25 µm in length, and 2 µm in diam., tapering to acute apices, situated on the apical and basal regions of conidia.

Cultures are whitish on 2% malt-extract agar (MEA), and appear pale yellow when sporulating after 2 weeks at 25°C under near-ultraviolet light.

The presence of *C. chaetosporum* in South Africa was first reported by Roux (1985), who collected the fungus during a survey of the fungal flora occurring in the Karoo. The present collection, however, was obtained from *Syzygium*

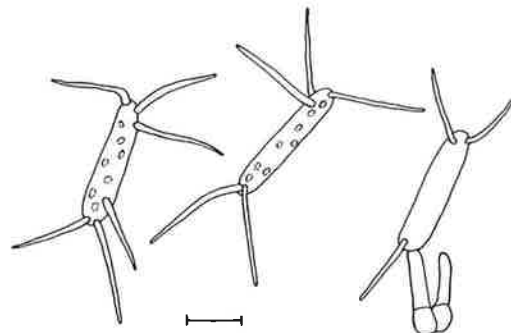


Figure 1 Conidia and conidiogenous cells of *Chaetospermum chaetosporum* (scale bar: 10 µm).

leaf litter collected in the Natal province, South Africa, indicating that the fungus occurs in dry as well as more humid climates. The isolate discussed above (PREM 51284) does not fall into the range of variation depicted by Sutton (1980) for *C. chaetosporum*. A revised key for *Chaetospermum* Sacc. by Nag Raj (1993), however, shows *C. chaetosporum* to be best suited for this collection because of its larger conidial dimensions and appendages. Furthermore, *C. chaetosporum* has also recently been reported by Muntañola-Cvetkovic and Gómez-Bolea (1993) from graminicolous plant litter in Spain. In their accompanying description they report conidia to be $15 - 45 \times 5 - 10 \mu\text{m}$, thereby including the variability observed in the South African isolate.

Natal, Kwambonambi, *Syzygium cordatum* Hochst. leaf litter, M.J. Wingfield, June 1992, PREM 51284.

2. *Dictyosporium elegans* Corda, Weitenweber's Beiträge 87 (1836), Figures 2, 14.

Sporodochia scattered, superficial to slightly immersed, ellipsoidal to globose. Conidiophores micronematous, smooth, simple or branched. Conidiogenous cells integrated, smooth, hyaline or light brown, doliiform; $3 - 15 \mu\text{m}$ long, $3 - 6 \mu\text{m}$ in diam. Conidia solitary, dry, holoblastic, cheiroid, golden to red-brown, smooth-walled, $35 - 55 \mu\text{m}$ long, $15 - 28 \mu\text{m}$ in diam.; basal cell $5 - 7 \mu\text{m}$ wide, giving rise to $4 - 6$ parallel, tightly appressed arms in one plane, each being $8 - 11$ -septate.

Colonies are black on MEA, and sporulate well after 2 - 3 weeks at 25°C under near-ultraviolet light.

Ellis (1971) reported *D. elegans* to have been collected from Europe, America and Africa. Chen *et al.* (1991) stated that there are presently more than twenty species described in *Dictyosporium* Corda.

Western Cape, Riviersonderend, Tygerhoek, leaves and stubble of *Hordeum vulgare*, J.P.J. Louw, July 1990, PREM 51286.

3. *Helicosporium phragmites* Hönel, Anns mycol. 3: 338 (1905), Figures 3, 15, 16.

Holomorph: *Tubeufia heliomyces* Hönel, Sber. Akad. Wiss. Wien 118: 1477 (1909) (*vide* Ellis 1971).

Synonyms listed by Barr (1980).

Conidiophores mostly unbranched, sometimes forked at the base, hyaline, but base frequently light brown, $4 - 5 \mu\text{m}$ in diam., tapering to an apex $1 - 1.5 \mu\text{m}$ diam., $150 - 300 \mu\text{m}$ in length. Conidia attached to denticles in the lower half of the conidiophore, $1 - 2 \mu\text{m}$ in length; conidia hyaline, coiled $3 - 4$ times in one plane, filaments $1.5 - 2 \mu\text{m}$ thick, $6 - 12$ -septate, $15 - 20 \mu\text{m}$ in diam.

Colonies are pale brown to orange and sterile on MEA.

The present collection was made from wheat litter, which is not uncommon, as Warcup (1957) also reported isolates of *Helicosporium* Nees from soil in a wheatfield in England. Talbot (1951) reported three *Helicosporium* spp. from woody hosts in South Africa, *H. gracile* (Morgan) Linder, *H. lumbricoides* Sacc. *emend* Matruchot and a new species, *H. ramosum* Talbot. A fourth species, *H. aureum* (Corda) Linder was also later reported from wood (Talbot 1958).

Webster (1951) proved the teleomorph-anamorph connection between *H. phragmites* and *T. heliomyces* in culture. In the same year, Ellis and Ellis (1951) also reported *H. phragmites* from various hosts where it occurred in association with *T. heliomyces*.

In a treatment of *Tubeufia* Penz. & Sacc., Rossman (1977) reduced *T. heliomyces* to synonymy with the earlier described *T. paludosa* (Crouan & Crouan) Rossman.

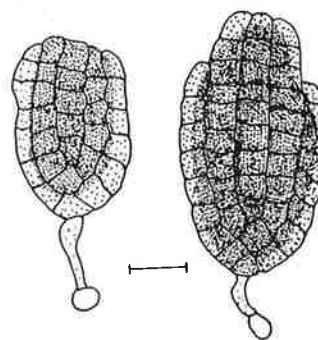


Figure 2 Conidia and conidiogenous cells of *Dictyosporium elegans* (scale bar: $10 \mu\text{m}$).

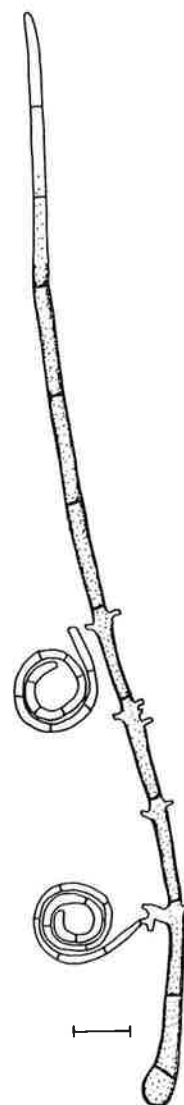


Figure 3 Setous conidiophore and conidia of *Helicosporium phragmites* (scale bar: $10 \mu\text{m}$).

Samuels *et al.* (1979) accepted this synonymy (based on observations of the teleomorph), but stated that there were at least two species whose ascomata were morphologically similar to that of *T. paludosa*, and that they could only be distinguished on the basis of their anamorphs. Furthermore, their illustration of the anamorph, which they reported as *Helicomyces*-like, is distinctly different from that illustrated by others (Ellis & Ellis 1951; Webster 1951; Ellis 1971). The illustration of Samuels *et al.* (1979) showed conidia to have less coils, a smaller diameter, and wider filaments than found by other workers for *H. phragmites*. Conidiophores were also illustrated as being pigmented throughout, with sporulation also occurring at their tips. This is in contrast with the conidiophores described and illustrated by Webster (1951) and Ellis (1971) as hyaline, or with a light basal pigmentation, and a sterile apical elongation. In her treatment of *Tubeufia* (Barr 1980), *T. helicomyces* was placed in *Tubeufia* section *Tubeufia*, but not listed as a synonym of *T. paludosa*. It would seem that species of *Tubeufia* are morphologically conserved, and that only a detailed study of their respective anamorphs would eventually solve the delimitation of taxa in this group.

Western Cape, Philadelphia, leaves and stubble of *Triticum aestivum* L., P.W. Crous, Sept. 1992, PREM 51287.

4. *Mycotribulus mirabilis* Nag Raj & Kendrick, Can. J. Bot. 48: 2219 (1970), Figures 4, 17.

Conidiomata pycnidial, separate, globose, unilocular, up to 300 μm in diam.; wall up to 20 μm in diam., consisting of brown cells of *textura angularis*. Ostiole present. Conidiophores hyaline, straight, cylindrical, branched at base, septate, up to 17 μm in length, and 2 μm in diam. Conidiogenous cells cylindrical with slight apical taper, hyaline, smooth, up to 10 μm in length, and 2 μm in width, giving rise to apical conidia. Conidia hyaline, aseptate, navicular, with acute apex and truncate base, 12 – 18 \times 2 – 3 μm ; apical appendage simple, tubular, smooth, cylindrical, up to 12 μm in length; basal appendages tubular, 2 – 4, hyaline, smooth, simple, cylindrical, up to 14 μm in length.

Colonies whitish on MEA, appearing pale brown owing to sporulation after 2 – 3 weeks at 25°C under near-ultraviolet light.

Natal, Kwambonambi, *Syzygium cordatum* leaf litter, M.J. Wingfield, June 1992, PREM 51288.

5. *Pestalosphaeria hansenii* Shoemaker & Simpson, Can. J. Bot. 59: 986 (1981), Figures 5, 18, 19.

Ascomata hypophyllous, scattered, immersed in host mesophyll, becoming slightly erumpent, globose, up to 200 μm in diam. and 160 μm high, unilocular; wall 15 μm thick, composed of 4 – 5 layers of light brown, thick-walled angular cells in the outer layer, with thin-walled cells in the inner layer; periphyses present, ostiole up to 30 μm in diam. Asci unitunicate, cylindrical with a short stipe, apical apparatus with an amyloid annulus, 8-spored, 60 – 80 \times 6 – 7 μm ; intermixed with simple, hyaline, 1 – 2-septate paraphyses, 3 – 4 μm wide. Ascospores uniseriate, ellipsoidal, 2

(– 3)-septate with unequal cells, grey brown, constricted at septa, 12 – 14 \times 6 – 7 μm .

Single-ascospore isolates produced a *Pestalotiopsis* Stey. anamorph in culture. Cultures sporulated readily on MEA after 2 weeks at 25°C under near-ultraviolet light.

Conidiomata pycnidial, becoming acervular, up to 160 μm in diam.; basal stroma 15 – 20 μm in diam. of *textura angularis*. Conidiogenous cells holoblastic, proliferating 1 – 3 times percurrently, cylindrical, hyaline, smooth, 8 – 13 \times 2 – 3 μm . Conidia fusiform, straight, 4-septate, 22 – 36 \times 6 – 7 μm ; central cell dark brown, adjacent cells brown, apical cell hyaline with 2 – 3 filiform, flexuous appendages, 8 – 20 \times 0.5 – 1 μm ; basal cell hyaline with a central filiform appendage, 4 – 9 \times 0.5 – 1 μm .

P. hansenii was originally described from diseased pine needles of *Pinus caribaea* Morelet var. *hondurensis* Barrett & Golfari collected in Papua New Guinea (Shoemaker & Simpson 1981).

Eastern Transvaal, Nelspruit, *Syzygium cordatum* leaf litter, M.J. Wingfield, Sept. 1992, PREM 51289.

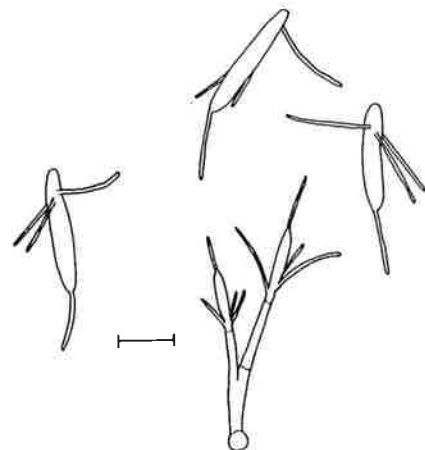


Figure 4 Conidia and conidiogenous cells of *Mycotribulus mirabilis* (scale bar: 10 μm).

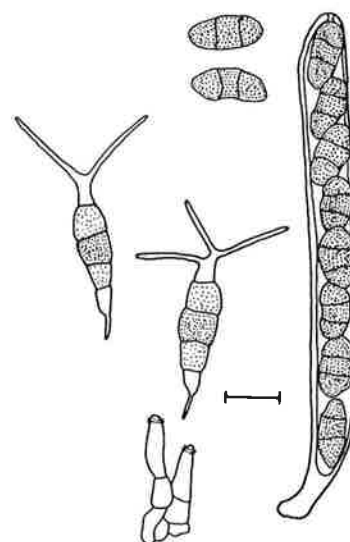


Figure 5 Ascus, ascospores, conidia and conidiogenous cells of *Pestalosphaeria hansenii* (scale bar: 10 μm).

6. *Phacidium eucalypti* Beaton & Weste, Trans. Br. mycol. Soc. 68: 76 (1977), Figures 6, 20 – 22.

Apothecia black when moist, subcuticular, becoming erumpent, scattered to gregarious, up to 500 μm in diam.; rupturing by 3 – 7 teeth to expose hymenium. Asci unitunicate, cylindrical-clavate, 8-spored, apical mechanism blueing in Melzer's reagent, 50 – 75 \times 7 – 9 μm . Ascospores hyaline, ellipsoidal-fusiform, non-septate, biseriate, 10 – 17 \times 3 – 4.5 μm . Paraphyses hyaline, 1 – 4-septate, cylindrical, 1.5 – 2 μm in diam., with clavate apices up to 3 μm in diam., embedded in mucilage.

P. eucalypti is the only member of *Phacidium* Fr. that occurs on hosts in the Myrtaceae. Furthermore, it is the only member of the Phacidiaceae that is known to occur below 34° S (DiCosmo *et al.* 1984). Because this species is saprophytic, DiCosmo *et al.* (1984) predicted that the anamorph, when found, would be a *Ceuthospora* Grev. species. Single-ascospore isolations made in this study showed a *Ceuthospora* species to be produced in culture, thus confirming the prediction and generic concept of *Phacidium* Fr. as defined by DiCosmo *et al.* (1984). The morphology of the *Ceuthospora* anamorph of *P. eucalypti* closely matched the description of *C. innumera* Masseo, which Swart (1988) redescribed and illustrated from *Eucalyptus* collections in Australia. *C. innumera* is characterized by having conidiophores reduced to simple, discrete conidiogenous cells, and conidia that are 16 – 20 \times 2.5 – 3 μm (Swart 1988). The possibility that *C. innumera* is the anamorph of *P. eucalypti* has recently been proposed by Nag Raj (1993), and is subsequently confirmed in the present study.

Conidiomata pycnidial, stromatic, gregarious, erumpent, subglobose, irregularly multilocular, each locule having a separate ostiole, up to 400 μm in diam.; individual locules 100 – 200 μm in diam.; outer wall of *textura globulosa*, 25 – 30 μm in diam. Conidiophores reduced to conidiogenous cells. Conidiogenous cell phialides with minute collarettes, discrete, subcylindrical with apical taper, smooth, 10 – 15 \times 3 – 5 μm , embedded in mucilage. Conidia blastic-phialidic, subcylindrical, slightly irregular, with apical taper and rounded base with a flat dehiscence scar, hyaline, smooth-

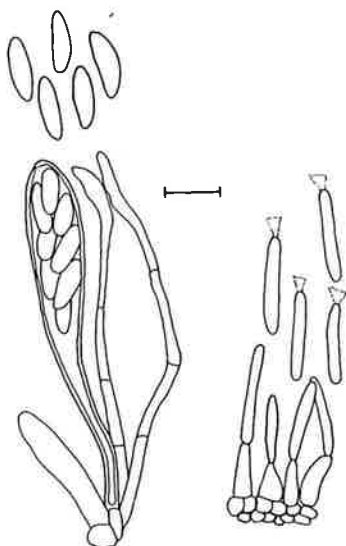


Figure 6 Ascus, ascospores, paraphyses, conidia and conidiogenous cells of *Phacidium eucalypti* (scale bar: 10 μm).

walled, 15 – 22 \times 2 – 2.5 μm ; invested in a mucilaginous sheath that becomes everted to form an irregular funnel-shaped, hyaline apical appendage, that can be up to 20 μm in length.

Cultures sporulated well on MEA after 3 weeks at 25°C under near-ultraviolet light.

Western Cape, Stellenbosch, Stellenbosch Mountain, *Eucalyptus* leaf litter, P.W. Crous, 18 Oct. 1992, PREM 51290.

7. *Phyllosticta eucalyptorum* Crous, Wingfield, Ferreira & Alfenas, Mycol. Res. 97: 582 (1993), Figures 7, 23.

Conidiomata pycnidoid, immersed, amphigenous, up to 250 μm in diam., wall consisting of 6 – 9 layers of brown cells. Conidiophores reduced to conidiogenous cells. Conidiogenous cells hyaline, smooth, lageniform to ampulliform, frequently covered in mucous, 5 – 15 \times 2 – 3 μm . Conidia unicellular, ellipsoid, 10 – 15 \times 5 – 6.5 μm *in vitro*, guttulate, with persistent mucous sheaths, apical appendages 5 – 8 μm long, *ca.* 1 – 1.5 μm diam. at base, tapering to a blunt apex.

P. eucalyptorum was recently described from Brazil (Crous *et al.* 1993b), where it was found to be associated with prominent leaf spots of *E. grandis* seedlings. In this study, cultures were obtained from a fresh local collection. When incubated on CLA, a previously undescribed *Guignardia* Viala & Ravaz teleomorph developed, with pseudothecia intermixed with pycnidia of *P. eucalyptorum*. The teleomorph is subsequently described below.

Guignardia eucalyptorum Crous, sp. nov. *Teleom.*

Ascocarpi abundantes, obpyriformes, usque ad 150 μm diam., et 200 μm alti, interspersi inter pycnidia, nigri, solitarii vel aggregati, paries 3 – 6-stratosus cellulis texturæ angularis, brunneis, extra abscuris. Asci subclavati ad cylindrici, bitunicati, stipitati, octospori, 55 – 75 \times 10 – 13 μm . Ascosporeae biseriatae, hyalinae, unicellulares, 14 – 18 \times 4 – 6 μm , fusiformi-ellipsoideae, in medio latiores, guttulae, apicibus rotundatis, obturamentis gelatinosis. Spermagonia absentia.

Ascocarps abundant, obpyriform, up to 150 μm in diam. and 200 μm in height, intermixed amongst pycnidia, black, solitary or in groups forming extensive stromata, unilocular

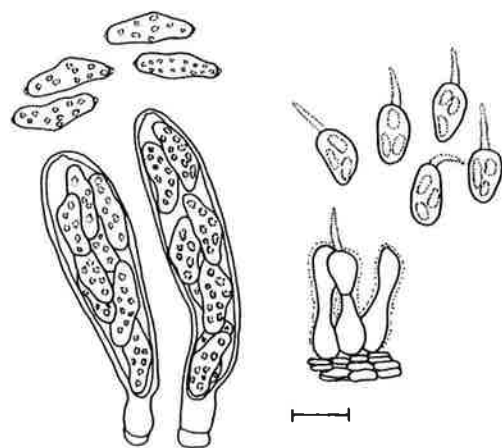


Figure 7 Asci, ascospores, conidia and conidiogenous cells of *Guignardia eucalyptum* (scale bar: 10 μm).

with prominent long necks; ascocarp wall consisting of 3 – 6 cell layers of *textura angularis*, brown, heavily pigmented. Asci subclavate to cylindrical, bitunicate, stipitate, 8-spored, $55 - 75 \times 10 - 13 \mu\text{m}$. Ascospores biseriate, hyaline, unicellular, $14 - 18 \times 4 - 6 \mu\text{m}$, fusiform-ellipsoidal, wider in mid-region, guttulate, ends rounded with gelatinous plugs. Spermagonia absent.

Northern Transvaal, Tzaneen, *E. dives* leaves, P.W. Crous, 27 March 1991, PREM 51291 (holotype of teleomorph), PREM 51292 (anamorph).

8. *Phyllosticta cussoniae* Cejp, Bothalia 10: 342 (1971), Figures 8, 24 – 26.

Pycnidia separate, black, immersed, becoming erumpent, amphigenous, globose, up to $200 \mu\text{m}$ in diam. and $160 \mu\text{m}$ high; wall composed of 6 – 8 layers of brown cells of *textura angularis*. Conidiogenous cells lageniform to ampulliform, $5 - 11 \times 3 - 5 \mu\text{m}$. Conidia unicellular, ellipsoid, $8 - 13 \times 4 - 6 \mu\text{m}$, guttulate, with persistent mucous coats, ca. $1 \mu\text{m}$ thick; apical appendages 6 – $8 \mu\text{m}$ long, ca. $1 - 1.5 \mu\text{m}$ diam. at base, tapering to a blunt tip.

Cejp (1971) did not mention the presence of the hyaline conidial appendages in the original description, which, according to Van der Aa (1973) and Punithalingam (1974), is characteristic for the genus. A re-examination of the holotype specimen (PREM 32831) showed these conidial appendages to be present, thus confirming it to be a true species of *Phyllosticta sensu* Van der Aa (1973). Furthermore, immature asci and ascospores of a *Guignardia* sp. were also observed. In additional collections mature material of the teleomorph was obtained, and the *Guignardia* state can therefore be described below.

Guignardia cussonia Crous, sp. nov. *Teleo*

Ascocarpi separati, erumpenti, interspersa inter pycnidia, nigri, uniloculares; paries ascocarpi 3 – 6-stratosus cellulis texturae angularis, brunnei pigmentosi. Asci pyriformi, bitunicati, stipitati, octospori, $50 - 65 \times 13 - 18 \mu\text{m}$. Ascospori bi- ad triseriati, hyalini, unicellularis, $13 - 17 \times 5 - 8 \mu\text{m}$, fusiformi-ellipsoidei,

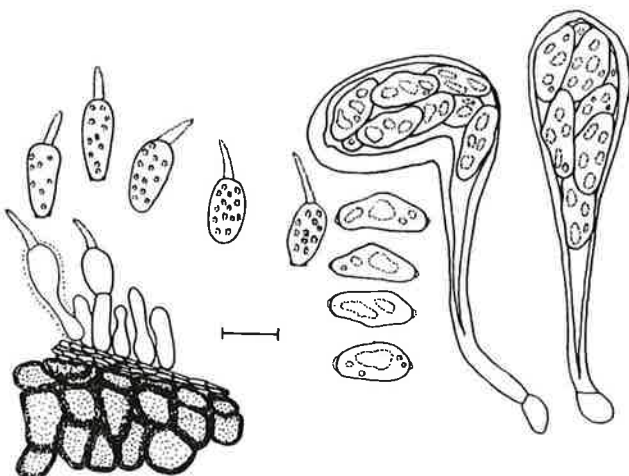


Figure 8 Asci, ascospores, conidia and conidiogenous cells of *Guignardia cussonia* (scale bar: $10 \mu\text{m}$).

in medio lati, guttulate, apicibus rotundatis, obturamentis gelatinosis. Spermagonia absentia.

Ascocarps separate, erumpent, intermixed amongst pycnidia, black, unilocular; ascocarp wall consisting of 3 – 6 layers of *textura angularis*, brown, heavily pigmented. Asci pyriform, bitunicate, stipitate, 8-spored, $50 - 65 \times 13 - 18 \mu\text{m}$. Ascospores bi- to triseriate, hyaline, unicellular, $13 - 17 \times 5 - 8 \mu\text{m}$, fusiform-ellipsoidal, wider in mid-region, guttulate, ends rounded with gelatinous plugs. Spermagonia absent.

Eastern Transvaal, Nelspruit, Schagen, *Cussonia umbellifera* Sond., L.C.C. Liebenberg 3063, 25. Dec. 1933, PREM 32821 (holotype of anamorph); Orange Free State, Bloemfontein, Botanical Garden, *Cussonia paniculata* Ecklon & Zeyher, P.W. Crous & W.J. Swart, 10 Feb. 1991, PREM 51293 (holotype of teleomorph), PREM 51294 (anamorph).

9. *Pseudocercospora handelii* (Bubák) Deighton, Trans. Br. mycol Soc. 88: 390 (1987) Figures 9, 27, 28.

Synonyms listed by Deighton (1987).

Fructifications amphigenous, grey in colour. Mycelium mostly internal, stroma present. Conidiophores smooth, aggregated in fascicles, subhyaline to pale olivaceous, apex rounded or irregular at point of attachment, branched or simple, $20 - 50 \times 2.5 - 4 \mu\text{m}$, 0 – 4-septate, 0 – 1-geniculate with integrated conidiogenous cells. Conidia holoblastic, smooth, hyaline to pale olivaceous, narrowly cylindrical, straight or slightly curved, base tapering slightly and gradually towards hilum, which is narrower than the widest part at the basal septum, tip narrowly rounded, subacute, conidial scars inconspicuous, indistinctly 5 – 16-septate, $90 - 160 \times 2 - 2.5 \mu\text{m}$.

Cultures sporulate well on CLA after 7 days at 25°C

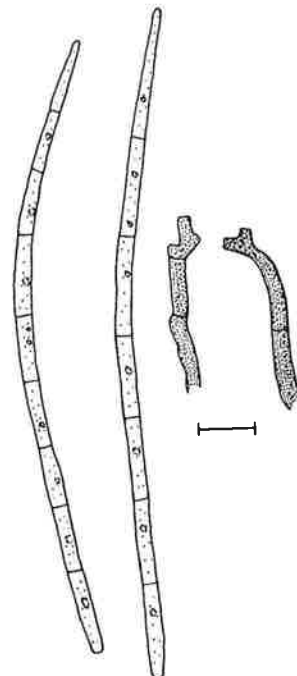


Figure 9 Conidia and conidiophores of *Pseudocercospora handelii* (scale bar: $10 \mu\text{m}$).

under near-ultraviolet light.

Deighton (1976) placed *Cercospora handelii* Bubák in *Cercoseptoria* Petr., but redispersed it in 1987 to *Pseudocercospora* Deighton due to the slightly olivaceous conidia, inconspicuous conidial scars, and the visible taper in the basal conidium cell.

Eastern Transvaal, White River, *Rhododendron* hybrid, P.W. Crous, July 1990, PREM 51295.

10. *Selenodriella fertilis* (Pirozynski & Hodges) Castañeda Ruís & Kendrick, Univ. Waterloo Biol. Ser. 33: 34 (1990). *Circinotrichum fertile* Pirozynski & Hodges, Can. J. Bot. 51: 160 (1973), Figures 10, 13.

Setae scattered, separate or in fascicles, simple, erect, straight, 80 – 200 μm long, up to 8-septate, thick-walled, dark brown at base, 6 – 12 μm diam., becoming lighter at apex, 2 – 3 μm diam. Conidiogenous cells lageniform, arranged in clusters on cells around the base of setae, or formed as extensions of setal apices; light brown at base, becoming hyaline towards apex, 9 – 14 \times 3 – 5 μm ; proliferating sympodially, and reaching 20 μm in length with further development. Conidia falcate, hyaline, non-septate, with rounded apex and blunt base, 11 – 16 \times 1.5 – 2 μm .

Colonies are white on MEA, becoming olivaceous. Good sporulation occurs after 2 – 3 weeks at 25°C under near-ultraviolet light.

Castañeda Ruís & Kendrick (1990) erected the genus *Selenodriella* to separate those species with a mode of conidiogenesis from those of *Selensporella* Arnaud ex Mac Garvie and *Idariella* Nelson & Wilhelm. The South African collection differs from that of the type (Pirozynski & Hodges 1973) in having slightly smaller conidia and shorter stipes. Given that the primary morphology is identical, this variation is seen as acceptable within the taxon.

Western Cape, Grabouw, *Eucalyptus* leaf litter, P.W. Crous, Feb. 1990, PREM 51285.

11. *Semifissispora rotundra* Swart, Trans. Br. mycol. Soc. 78: 259 – 260 (1982), Figures 11, 29 – 31.

Ascocarps subglobose, up to 300 μm in diam. and 250 μm high; wall up to 40 μm thick, consisting of 4 – 6 layers of dark brown cells of *textura angularis*. Asci cylindrical-clavate, 90 – 140 \times 16 – 20 μm , surrounded by septate paraphysoids with cells 22 – 12 \times 3 – 4 μm . Ascospores bi- to triseriate, hyaline, splitting and bending at median septum, apical cells 15 – 19 \times 7 – 11 μm , basal cells 17 – 20 \times 5 – 7 μm .

Cultures sporulated on MEA and CLA after 4 weeks at 25°C under near-ultraviolet light.

This is the second species of *Semifissispora* Swart reported from South Africa (Crous & Van der Linde 1993), and the second record of *S. rotundra* worldwide, the other being the type collection from Australia. Dimensions of asci and ascospores closely fit those of the type collection (Swart 1982).

Western Cape, Stellenbosch, Stellenbosch Mountain,

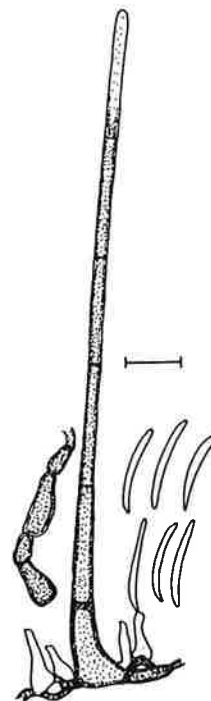


Figure 10 Seta, conidia, conidiogenous cells and chlamydospores of *Selenodriella fertilis* (scale bar: 10 μm).

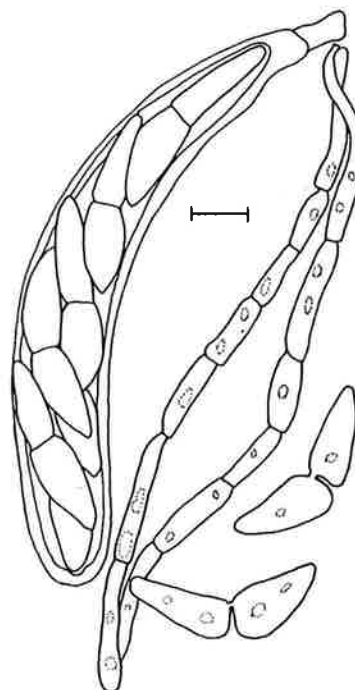
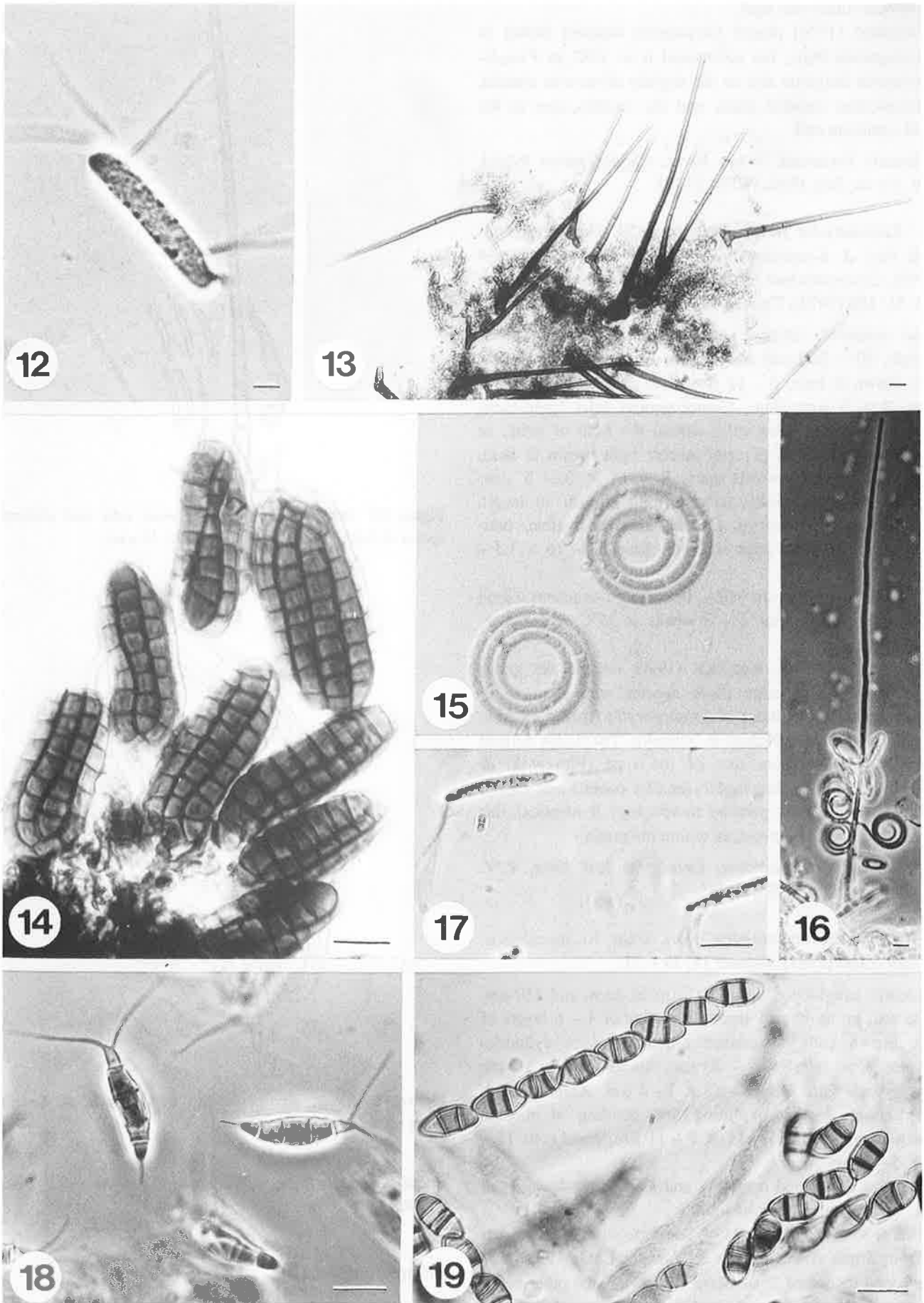


Figure 11 Ascus, ascospores and paraphysoids of *Semifissispora rotundra* (scale bar: 10 μm).

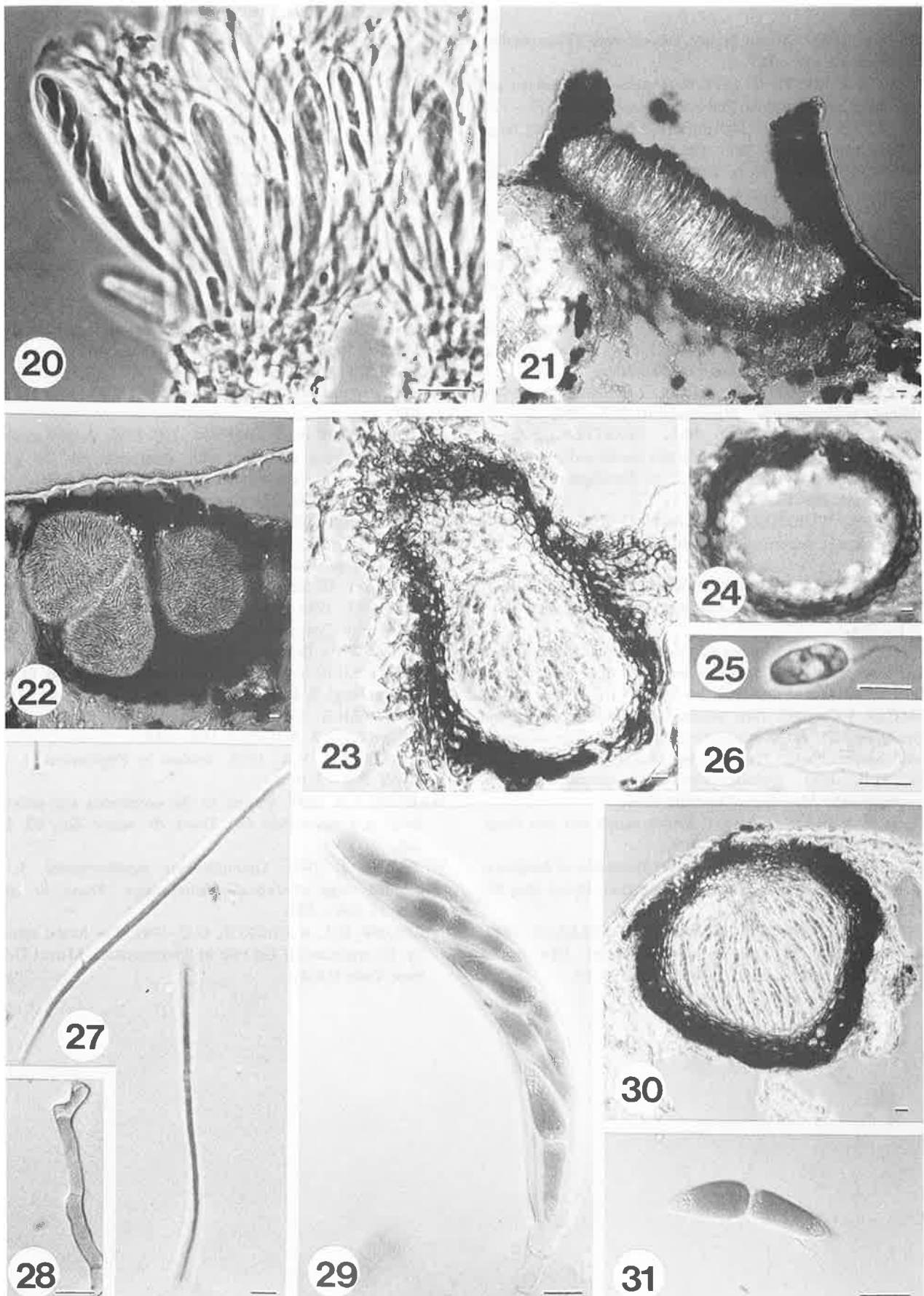
Eucalyptus leaf litter, P.W. Crous, 18 Oct. 1992, PREM 51296.

Acknowledgement

The author gratefully acknowledges the assistance of Prof. Mike Wingfield (Department of Microbiology and Biochemistry, University of the Orange Free State, Bloemfontein) with the collection of material examined in this study.



Figures 12 – 19 Scale bars: 10 μ m. 12. Conidium of *Chaetospermum chaetosporum*. 13. Setae of *Selenodriella fertilis*. 14. Cheiroid conidia of *Dictyosporium elegans*. 15. Coiled conidia of *Helicosporium phragmites*. 16. Setous conidiophore and conidia of *H. phragmites*. 17. Navicular conidia of *Mycotribulus mirabilis*. 18. Fusiform conidia of *Pestalospaeria hansenii*. 19. Asci and ascospores of *P. hansenii*.



Figures 20 – 31 Scale bars: 10 μ m. 20. Asci, ascospores and paraphyses of *Phacidium eucalypti*. 21. Vertical section through an erumpent, subepidermal ascoma of *P. eucalypti*. 22. Vertical section through a pseudothecium of *Guignardia eucalyptorum* formed on carnation-leaf agar. 23. Vertical section through a subepidermal pycnidium of *Guignardia cussonia*. 24. Vertical section through a subepidermal pycnidium of *Guignardia cussonia*. 25. Appendaged conidium of *G. cussonia*. 26. Ascospore of *G. cussonia*. 27. Conidiophore of *Pseudocercospora handelii*. 28. Narrowly cylindrical conidia of *P. handelii*. 29. Bitunicate ascus of *Semifissispora rotunda*. 30. Vertical section through a subepidermal pseudothecium of *S. rotunda*. 31. Ascospore of *S. rotunda* splitting at the median septum.

References

- BARR, M.E. 1980. On the family Tubeufiaceae (Pleosporales). *Mycotaxon* 12: 137 – 167.
- BEATON, G. & WESTE, G. 1977. New species of Helotiales and Phacidiales from Australia. *Trans. Br. mycol. Soc.* 68: 73 – 77.
- BLANCHETTE, R.A. 1991. Delignification by wood-decay fungi. *A. Rev. Phytopathol.* 29: 381 – 398.
- CASTAÑEDA RUÍ, R.F. & KENDRICK, B. 1990. Conidial fungi from Cuba: 2. *Univ. Waterloo Biol. Ser.* 33: 1 – 61.
- CEJP, K. 1971. Some members of the Sphaeropsidales from South Africa. *Bothalia* 10: 341 – 345.
- CHEN, J.L., HWANG, C.H. & TZEAN, S.S. 1991. *Dictyosporium digitatum*, a new hyphomycete from Taiwan. *Mycol. Res.* 95: 1145 – 1149.
- CROUS, P.W. & VAN DER LINDE, E. 1993. New and interesting records of South African fungi. XI. New records of *Eucalyptus* leaf fungi. *S. Afr. J. Bot.* 59: 300 – 304.
- CROUS, P.W., WINGFIELD, M.J., & ALFENAS, A. 1993a. Additions to *Calonectria*. *Mycotaxon* 46: 217 – 234.
- CROUS, P.W., WINGFIELD, M.J., FERREIRA, F.A. & ALFENAS, A. 1993b. *Mycosphaerella parkii* and *Phyllosticta eucalyptorum*, two new species from *Eucalyptus* leaves in Brazil. *Mycol. Res.* 97: 582 – 584.
- CROUS, P.W., WINGFIELD, M.J. & NAG RAJ, T.R. 1993c. *Harknessia* spp. occurring in South Africa. *Mycologia* 85: 108 – 118.
- DICOSMO, F., NAG RAJ, T.R. & KENDRICK, W.B. 1984. A revision of the Phacidiaceae and related anamorphs. *Mycotaxon* 21: 1 – 234.
- DEIGHTON, F.C. 1976. Studies on *Cercospora* and allied genera. 6. *Pseudocercospora* Speg., *Pantospora* Cif. and *Cercoseptoria* Petr. *Mycol. Pap.* 140: 1 – 168.
- DEIGHTON, F.C. 1987. New species of *Pseudocercospora* and *Mycovellosiella*, and new combinations into *Pseudocercospora* and *Phaeoramularia*. *Trans. Br. mycol. Soc.* 88: 365 – 391.
- ELLIS, M.B. 1971. Dematiaceous Hyphomycetes, 206 pp. Commonwealth Mycological Institute, Kew.
- ELLIS, M.B. & ELLIS, J.P. 1951. British marsh and fern fungi. *Trans. Br. mycol. Soc.* 34: 147 – 169.
- HAWKSWORTH, D.L. 1991. The fungal dimension of biodiversity: magnitude, significance, and conservation. *Mycol. Res.* 95: 641 – 655.
- MUNTAÑOLA-CVETKOVIC, M. & GÓMEZ-BOLEA, A. 1993. *Chaetospermum chaetosporum* (Coelomycetes). First record from the Iberian Peninsula. *Mycotaxon* 47: 59 – 65.
- NAG RAJ, T.R. 1993. Coelomycetous anamorphs with appendage bearing conidia. Mycologue Publications, Waterloo, Ontario, Canada.
- NAG RAJ, T.R. & KENDRICK, W.B. 1970. *Mycotribulus*, a new genus of Sphaeropsidales. *Can. J. Bot.* 48: 2219 – 2221.
- NORTON, B.G. 1986. The preservation of species: the value of biological diversity. Princeton University Press: Princeton, U.S.A.
- PIROZYNSKI, K.A. & HODGES, C.S. 1973. New Hyphomycetes from South Carolina. *Can. J. Bot.* 51: 157 – 173.
- PUNITHALINGAM, E. 1974. Studies on Sphaeropsidales in culture. 2. *Mycol. Pap.* 136: 1 – 63.
- ROSSMAN, A.Y. 1977. The genus *Ophionectria* (Euascomycetes, Hypocreales). *Mycologia* 69: 355 – 391.
- ROUX, C. 1985. The morphology and taxonomy of some fungi selected from a survey of a natural Karoo pasture. Ph.D. dissertation, Rand Afrikaans University, Johannesburg.
- SAMUELS, G.J., ROSSMAN, A.Y. & MÜLLER, E. 1979. Life-history studies of Brazilian ascomycetes. 6. *Sydowia* 31: 180 – 193.
- SHOEMAKER, R.A. & SIMPSON, J.A. 1981. A new species of *Pestalotia* on pine with comments on the generic placement of the anamorph. *Can. J. Bot.* 59: 986 – 991.
- SUTTON, B.C. 1980. The Coelomycetes. Commonwealth Mycological Institute, Kew, Surrey, England.
- SWART, H.J. 1982. Australian leaf-inhabiting fungi. 12. *Semifissispora* gen. nov. on dead *Eucalyptus* leaves. *Trans. Br. mycol. Soc.* 78: 259 – 264.
- SWART, H.J. 1988. Australian leaf-inhabiting fungi. 26. Some noteworthy Coelomycetes on *Eucalyptus*. *Trans. Br. mycol. Soc.* 90: 279 – 291.
- TALBOT, P.H.B. 1951. New and interesting records of South African fungi. 2. *Bothalia* 6: 489 – 504.
- TALBOT, P.H.B. 1958. New and interesting records of South African fungi. 3. *Bothalia* 7: 109 – 115.
- VAN DER AA, H.A. 1973. Studies in *Phyllosticta*. 1. *Stud. Mycol.* 5: 1 – 110.
- WARCUP, J.H. 1957. Studies on the occurrence and activity of fungi in a wheat-field soil. *Trans. Br. mycol. Soc.* 40: 237 – 262.
- WEBSTER, J. 1951. Graminicolous pyrenomycetes. 1. The conidial stage of *Tubeufia helicomyces*. *Trans. Br. mycol. Soc.* 34: 304 – 305.
- WICKLOW, D.T. & CARROL, G.C. 1981. The fungal community. Its organization and role in the ecosystem. Marcel Dekker, New York, U.S.A.