Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Passiflora edulis*; **New South Wales**; Sydney, 3 Feb. 1948, R.J. Benton (DAR 4054); Coffs Harbour, Jan.1948 (DAR 4055); Roseville, Feb 1945, C.J. Magee (DAR 4056); in glasshouse, Sydney (artificial inoculation), June 1948, L.R. Fraser (DAR 4057); Toongabbie, 21 Jan. 1956, J. Walker (DAR 5689); Toronto, 11 Jan. 1961, L.R. Fraser (DAR 7307); Tumblegum, 3 June 1966, R. Allen (DAR 59325); Tweed District, 22 Sept. 1967, F. Chalker (DAR 59328); **Queensland**; Thornlake, 16 Apr. 1947, Tiffet (BRIP 5810); Noosa Heads, 12 Jan. 1971, I.F. Muirhead (BRIP 5841); Kallangur, 18 July 1969, R.A. Peterson (BRIP 5842); Tallebudgera, 23 Nov. 1995, D. Anderson (BRIP 22979);

on *Passiflora edulis* x *flavicarpa*; **Queensland**; in glasshouse, Indooroopilly, 25 June 1970, J.L. Alcorn (BRIP 5840);

on *Passiflora flavicarpa*; **Queensland**; Nambour, 6 Sept. 1989, D.G. Hutton (BRIP 16807);

on *Passiflora quadrangularis*; **Queensland**; Cairns, 12 July 1949, F.W. Blackford (BRIP 5812).

EXTRALIMITAL COLLECTIONS:

Septoria passifloricola; on *Passiflora edulis*, Franschhoek, **South Africa**, 15 Sept. 1938, A.J. Louw (PREM 34186 ex STE 1063) **? type** (as *S. passiflorae*).

PHYTOLACCACEAE

Septoria phytolaccae Cav., *Atti. Int. Bot. dell'Univ. di Pavia* (Ser. 2) **2**: 267 (1892)

This species was listed by Brittlebank (1937-1940) and Chambers (1982) as occurring on *Phytolacca americana* L. at Myrniong in Victoria in 1917. No herbarium material under this name has been located and the record remains unsubstantiated.

PLANTAGINACEAE

Septoria plantaginea Pass., *Atti. Soc. Critt. Ital.* **II**: 37 (1879)

Reported by Chambers (1982) as occurring on *P. varia* R.Br. at Jackson Creek, Victoria. This collection has been examined (VPRI 1900). The host is identified as *P. gaudichaudii* and the species of *Septoria* present has been shown to be *S. varia* McAlp. (see discussion under *S. varia*)

Septoria plantaginis (Ces.) Sacc., *Syll. Fung.* **III**: 554 (1884)

Reported by Brittlebank (1937-1940) and Chambers (1982) as occurring on *P. lanceolata* L. at Myrniong, Victoria in 1909. No herbarium collection has been located on this host and the record remains unverified. As yet, no species of *Septoria* as been found on the introduced *P. lanceolata* in Australia.

Septoria varia McAlp., *Proc. Linn. Soc. N.S.W.* **28**: 561 (1903)

(Fig. 94)

Leaf lesions hologenous, orbicular, separate, rarely confluent, 1-3mm diam., upper surface lesions mid-brown with a raised margin, older lesions becoming pale brown to grey-brown in the centre, lower surface lesions similar but paler in colour. *Conidiomata* mostly epigenous, scattered on lesions, separate, immersed becoming erumpent, globose, dark brown to black, 120-180µm diam., pycnidial. *Ostiole* apical, central, often papillate, 10-20µm, cells around the opening dark and thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, cylindrical, 5-6 x 2-3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 2-3(-4) septate, straight to slightly curved, 25-40 x 1.5(-2)µm, with a rounded base and tapering to a sub-acute apex.

Hosts: *Plantago debilis* R. Br., *P. gaudichaudii* Barneoud, *P. hispidus* R.Br., *P. varia* R.Br.

Distribution: New South Wales, Victoria (McAlpine 1903, Brittlebank 1937-1940, Chambers 1982).

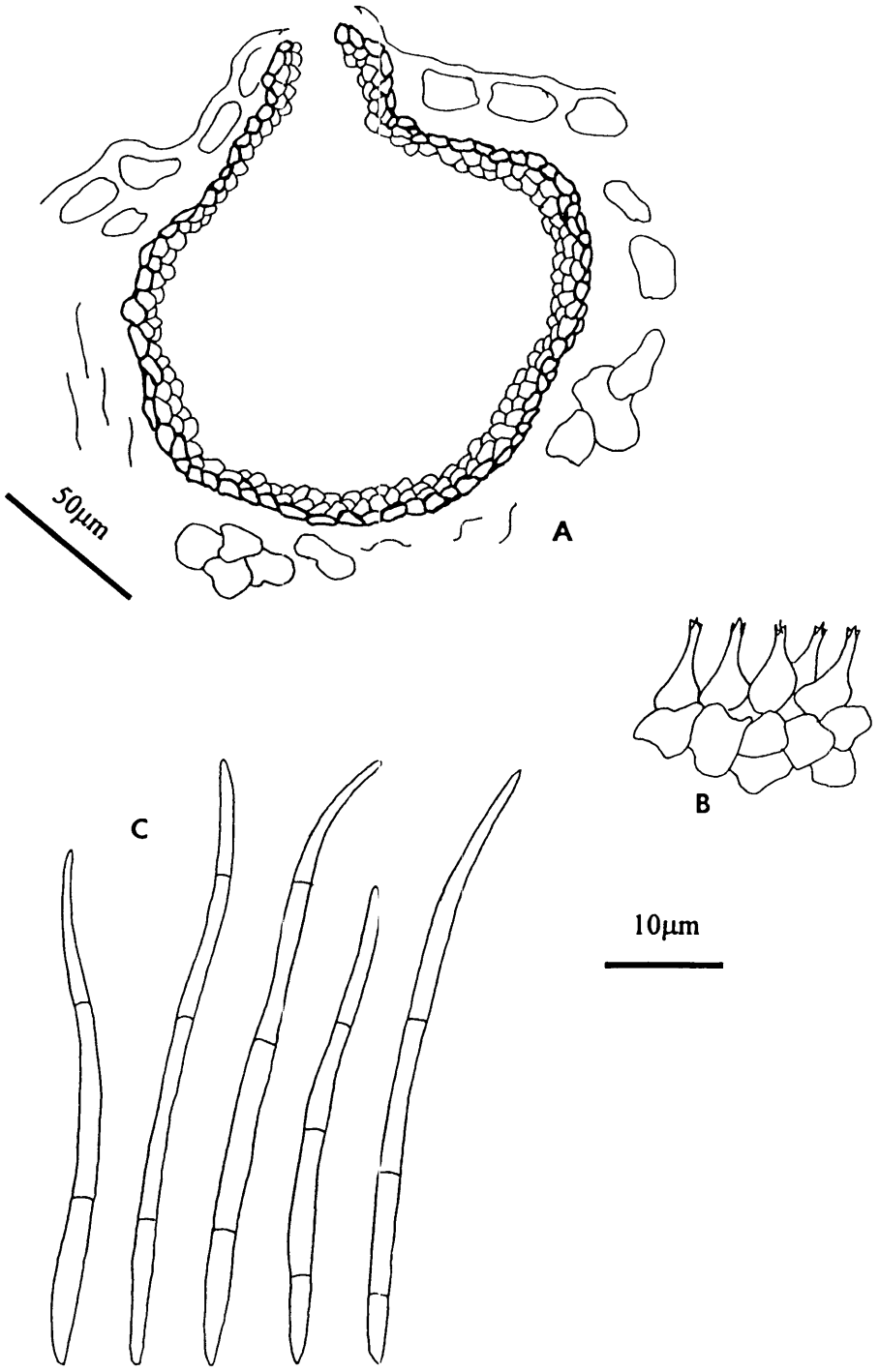

Fig.94. *Septoria varia* VPRI 8837 lectotype; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

Septoria varia was described by McAlpine as occurring on *Plantago varia* in Victoria and several collections were cited but no type selected. The Myrniong collection (VPRI 8837) is here selected as lectotype of *P. varia*. Examination of one of the cited collections from Jackson Creek has shown that the host is *P. gaudichaudii*. This collection was cited by Chambers (1982) as *Septoria plantaginea* Pass. but is recognised as *S. varia*. *Septoria varia* is distinct from several other taxa described from the host genus *Plantago* by its long narrow conidia. Taxa with short conidia are *S. plantaginis-majoris* Sacc. (conidia 30 x 1-1.25µm) and *S. inconspicua* Berk. & Curtis (conidia 20-28 x 1.5µm). Taxa with longer conidia are *S. plantaginea* Pass. (conidia 55 x 2.5µm) and *S. plantaginis* (Ces.) Sacc. which according to Grove (1935) has conidia 30-60 x 2.5-3.5µm although no conidial size was given in the original description. Examination of a single collection identified as *S. plantaginis* shows conidia 18-26 x 2.5µm, shorter than given by Grove (1935) but wider than those of *S. varia*. As yet there are no confirmed collections of *Septoria* on any of the introduced species of *Plantago* in Australia; *Septoria varia* appears to be confined to native hosts. On this basis it is kept as a separate taxon.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Plantago debilis*; **New South Wales**; "The Gap", Mulbring, May 1955, O.M. Dinning (DAR 71675 ex NE 2433);

on *Plantago gaudichaudii*; **Victoria**; Jackson Creek, 1 Oct. 1900, C.French Jnr. (VPRI 1900) host originally as *P. varia*; Tolmie-Mansfield Road, 22 Dec. 1985, H. Streimann (DAR 51868);

on *Plantago hispidus*; **New South Wales**; Arrawarra Headland, Sept. 1988, H.J. Wissmann (DAR 71674 ex NE 49583);

on *Plantago varia*; **New South Wales**; Orraral, A.C.T., 11 Nov. 1970, E.M. Canning (NE ex CBG 044741);**Victoria**; Myrniong, 8 Aug. 1900, D. McAlpine (VPRI 8837) **lectotype** here selected; Kiewa Valley, 3 Nov. 1902, G.H. Robinson (VPRI 1900); Kiewa, 13 Nov 1902, G.H. Robinson (VPRI 8838)

EXTRALIMITAL COLLECTIONS:

Septoria plantaginis on *Plantago arenaria*; Tulcea, **Roumania**, 1 July 1978, G. Negrean, *Herb. Mycol. Romanicum* No. 2989 (DAR 45864 ex BUCM).

PLUMBAGINACEAE

Septoria armeriae Allesch. in Allesch. & P. Henn., *Pilze aus dem Umanadistrikt. Kryptogamen* p.13 (1897)

(Fig. 95)

Leaf lesions hologenous, orbicular to elongated, 4-5mm diam., on both surfaces dark brown in the centre with a prominent dark purple-brown margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, becoming erumpent, 50-70µm diam., stromatic, acervular. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer mid-brown, inner layers pale brown to sub-hyaline. *Conidiogenous cells* arising form the inner wall layer, hyaline, discrete, cylindrical, 10-14 x 2.5-3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, cylindrical, 0-1 septate, 14-28 x 1-1.5µm, with truncate base and obtuse apex.

Host: *Armeria* sp. cv. " Isobel Burnett".

Distribution: Victoria.

Examination of the single available collection of this species has shown little or no evidence of the conidiomata having a preformed ostiole, all conidiomata examined being widely open although this might be a problem of maturity of the collection. The conidial size is consistent with the measurements given in the original description (8-30 x 1.5-2µm) and with those given by Ellis & Ellis (1985) as being 10-25 x 1.5µm and 1-septate. The question of the nature of the conidiomata which were described as pycnidial by Ellis & Ellis (1985) must await further collections.

Specimen examined: on *Armeria* sp. cv. "Isobel Burnett": **Victoria**; Little Acre Nursery, 1 Dec. 1986, C. Curtis (VPRI 15216).

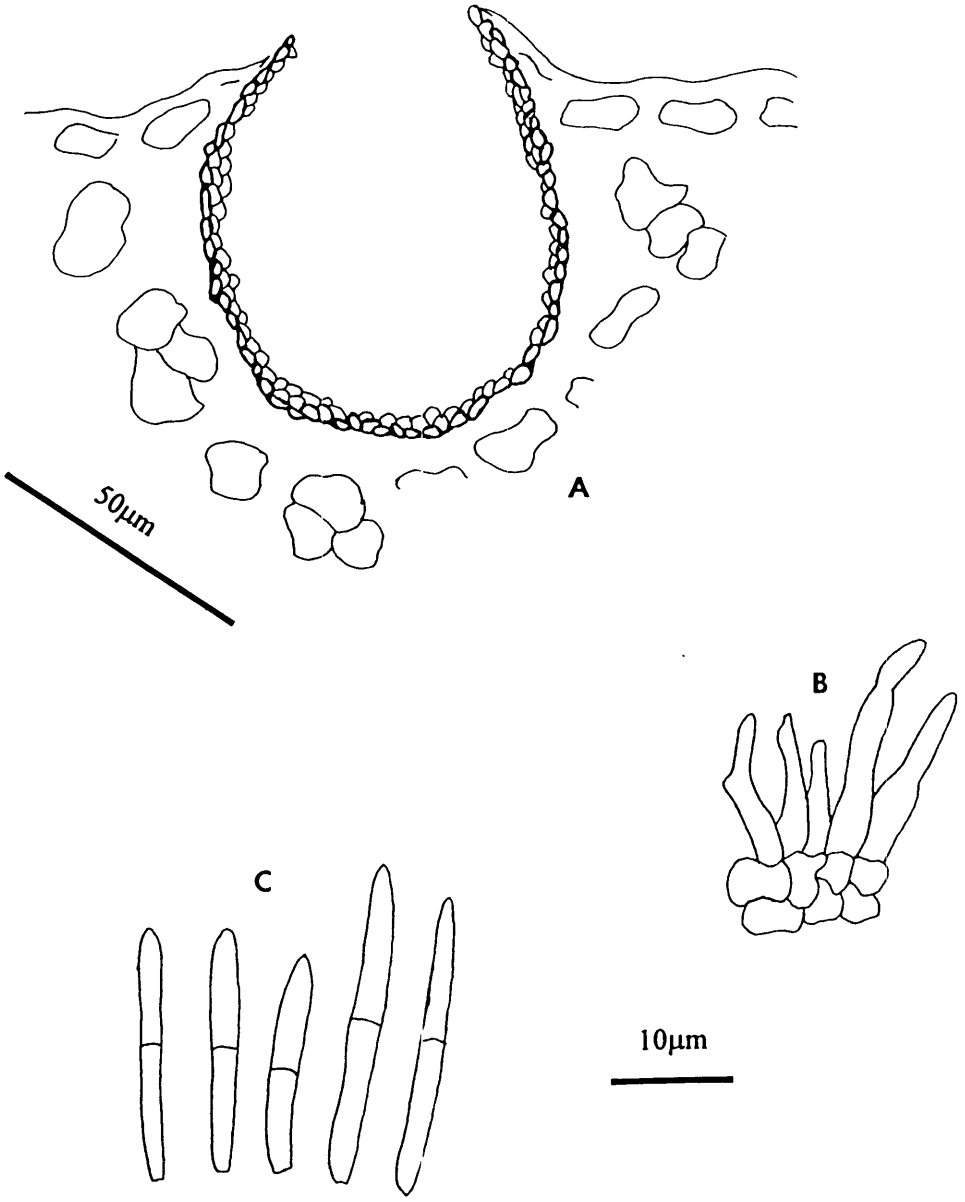

Fig.95. *Septoria armeriae* VPRI 15246; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

POACEAE

Twelve species of *Septoria* are distinguished on hosts in the Poaceae in Australia. *Septoria calamagrostidis* is recognised as occurring widely on *Avena* spp., most collections having been previously identified as *S. tritici* f.sp. *avenae*. *Septoria halophila*, originally described from *Hordeum* in South America, is also recognised as occurring widely across Australia on *Hordeum* and *Poa*. *Septoria passerinii* is currently only known from Western Australia. Three new species are described; *S. capillepedii* **sp. nov.** on *Capillepedium spicigerum, Digitaria ciliaris, Eulalia tricuspata* and *Paspalum distichum*, *S. cryptica* **sp. nov.** on *Phragmites australis* and *S. cymbopogonis* **sp. nov.** on *Cymbopogon refractus*. Descriptions of *Stagonospora avenae* and *S. nodorum* are included due to many records in the Australian literature under their older names in *Septoria*. Extensive use has been made of existing published accounts including Fransden (1943), Sprague (1950), Jørstad (1967) and Mäkelä (1977). The only Australian account available is Shaw (1953 unpub.).

Key to Australian species of *Septoria* on the Poaceae

1 Conidia more than 3µm wide.....2
1: Conidia mostly 2-3µm wide.....3
1: Conidia mostly 1-2µm wide.....4

2 Conidia more than 50µm long.....***S. cymbopogonis***
2: Conidia mostly 24-45µm long.....(***Stagonospora avenae***)
2: Conidia mostly 15-25µm long.....(***Stagonospora nodorum***)

3 Conidia 24-39µm long, on *Zea*.....***S. zeicola***
3: Conidia 28-55µm long, on *Elymus*.....***S. agropyrina*** *sensu* Sprague
3: Conidia 60-102µm long.....***S. capillepedii***

4 Conidia 1.5-2µm wide.....5
4: Conidia 1-1.5µm wide.....8

5 Conidia 3-4 septate.....6
5: Conidia 1-3 septate.....7

6 Conidia mostly more than 45μm long.....***S. tritici***

6: Conidia less than 45μm long, on *Phragmites*.....***S. cryptica***

7 Conidia 36-58μm long, conidia mostly 1-septate, septum often sub-median.....***S. halophila***

7: Conidia 35-55μm long, mostly 1-3 septate.....***S. passerinii***

8 Conidia mostly more than 40μm long..... 9

8: Conidia mostly less than 40μm long..... 10

9 Conidia mostly 2-septate.....***S. bromi***

9: Conidia mostly 3-4 septate.....***S. calamagrostidis***

10: Conidia 18-44μm long, cylindrical.....***S. elymi***

10: Conidia 24-42μm long, obclavate.....***S. triseti***

Septoria agropyrina Lobik, *Morbi Plantarum* **17**: 178 (1928) *sensu* Sprague

(Fig. 96)

Leaf lesions epigenous, elongated and sharply narrowed and "eyespot" in appearance, 2-3mm long and 0.5mm wide, dark brown at first, becoming grey-brown in the centre with a dark brown margin, occasionally coalescing to form long blotches up to 12mm in length. *Conidiomata* scattered on lesions, separate, immersed, becoming erumpent, globose, dark brown to black 150-290(-350)μm diam., pycnidial. *Ostiole* single, apical, 25-35μm, cells around the opening dark brown and thickened. *Conidiomatal wall* 3-5 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, aseptate, doliiform to ampulliform, 6-8 x 2.5μm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, 3-5 septate, cylindrical, straight to slightly curved, 28-55 x (1.5-) 2-2.5μm, with a truncate base and rounded apex.

Hosts: *Elymus scabrus* (R.Br.) P. Beauv., *E. scabrus* var. *pleurinervis* (Vickery) B. Simon.

Distribution: Queensland.

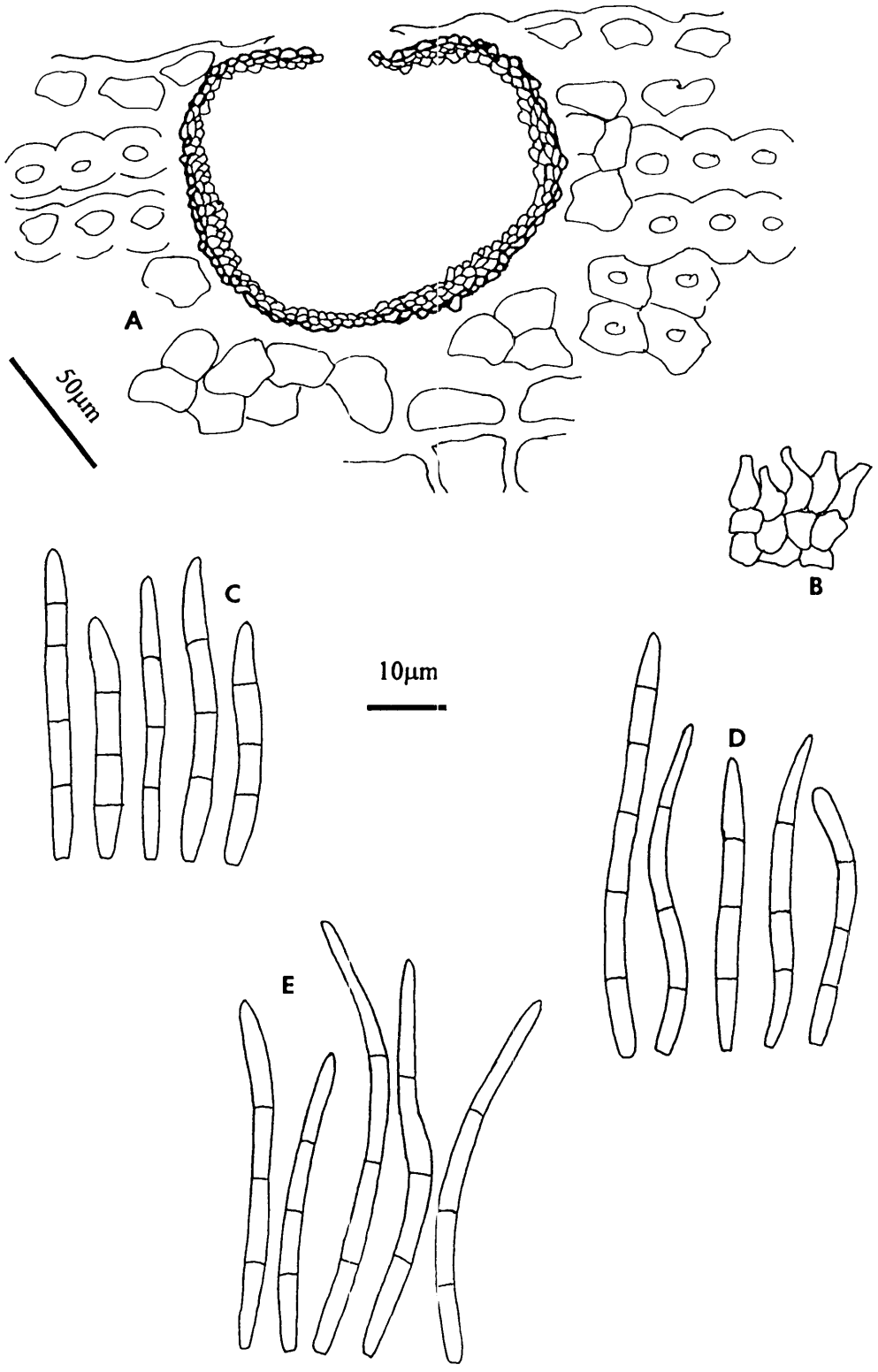

Fig.96. *Septoria agropyrina* sensu Sprague; (A) v.s. conidioma BRIP 11178; (B) conidiogenous cells BRIP 11178; C-E conidia (C) BRIP 11178; (D) BRIP 14225 ex culture; (E) BPI 81090

In Australia, *Septoria agropyrina* is mostly known from dried culture material. Only a single collection available had conidiomata present on the host (BRIP 11178). In the original description of *S. agropyrina* the conidia were given as 39.5-59.2 x 3-3.6μm and 4-5 septate, occurring on *Agropyron elongatum* (Lobik 1928) and these measurements were repeated by Teterivnikova-Babayan & Bokhjan (1970). Sprague (1950) gave conidia of *S. agropyrina* as being 30-65 x 2.5-4μm and figured conidia as narrowing near the apex, in contrast to the plate accompanying the original description which clearly depicts conidia tapering in the upper half of the conidium to an almost sub-acute apex. The Australian collections are in agreement with material identified by Sprague as *S. agropyrina* on various species of *Elymus* in the U.S.A. However, the conidia are narrower than given in the original description, do not taper near the apex but remain cylindrical. They appear to be much closer to *S. phyllachoroides* Pass., with conidia given in the original description as 25-35 x 2.5-3μm and 3-septate and occuring on *Agropyron repens*. Conidial measurements for *S. phyllachoroides* given by other authors include Jorstad (1967) as 25-43 x 2-3μm and 1-3 septate on *A. repens* and 18-48 x 2-3.5μm and 1-4 septate on *A. caninum*, and Fransden (1943) as 30-48 x 2.5-3μm and 3-septate on *A. repens*. Given the conidial size given by these authors and the figure of *S. phyllachoroides* given by Fransden (1943) the exact identity of the Australian material is in doubt. In addition, given the large number of taxa of *Septoria* described from species of *Agropyron*, *Elymus* and their segregates, type studies are obviously required to establish the identity of Australian collections and they are identified here as *S. agropyrina* sensu Sprague on the basis of examined collections.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Elymus scabrus*; **Queensland**; Moore, 13 Dec. 1972, J.L. Alcorn (BRIP 11180) host as *Agropyron scabrum*;

on *Elymus scabrus* var. *pleurinervis*; **Queensland**; Southbrook, 7 Mar. 1973, R.G. Rees (BRIP 11176); Harristown, 7 Mar. 1973, R.G. Rees (BRIP 11177); Toowoomba, 12 Mar. 1973, R.G. Rees (BRIP 11178); Moonie River, Leichhardt River, 23 Mar. 1984, R.G. Rees (BRIP 14225); Weier River, 23 Mar. 1984, R.G. Rees (BRIP 14226) hosts all given as *Agropyron scabrum* var. *pleurinerve*.

EXTRALIMITAL COLLECTIONS:

Septoria agropyrina on *Elymus virginicus*; Wildcat Creek, west of Manhattan, Riley County, Kansas, **U.S.A.**, 4 May 1952, C.T. Rogerson (BPI 367432); on *Elymus trachycaulum*; Mandon, North Dakota, **U.S.A.**, 22 June 1944, R. Sprague (BPI 81090).

Stagonospora avenae (Frank) Bissett, *Fungi Canadenses No. 239* (1982)

≡ *Septoria avenae* Frank, *Ber. Deutsch. Bot. Ges.* **13**: 64 (1895)

≡ *Hendersonia avenae* (Frank) Petrak, *Sydowia* **1**: 76 (1947)

(Fig. 97)

Leaf lesions hologenous, elliptical becoming elongated, 5-15 x 3mm, on both surfaces at first dark brown, later becoming pale grey-brown in the centre with a diffuse dark brown margin. *Conidiomata* epigenous, scattered on lesions, immersed rarely erumpent, dark brown to black, globose, 90-195µm diam., pycnidial. *Ostiole* single, apical, 20-45µm, cells around the opening thickened. *Conidiomatal wall* 3-5 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 8-9 x 3-5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous loci not observed. *Conidia* hyaline, filiform, cylindrical, straight to slightly curved, 1-3 septate, 24-35(-45) x 3-4µm, with a truncate base and rounded apex.

Hosts: *Anthoxanthum odoratum* L., *Avena barbata* L., *A. fatua* L. , *A. sativa* L., *A. sterilis* L., *Avena* sp., *Triticum aestivum* L.

Distribution: New South Wales (Noble *et al* 1935, Murray 1978; as *Septoria avenae*), Queensland, South Australia, Victoria (Woodcock & Clarke 1983 as *Septoria avenae*), Western Australia (Carne 1925 and Shivas 1989; as *Leptosphaeria avenaria,* Chambers 1962, Tweedie & Shipton 1969; as *Septoria avenae*).

Stagonospora avenae is included in this study due to many of the earlier records from Australia being published under the name of *Septoria avenae*. Bissett (1982a) transferred *S. avenae* to *Stagonospora* on the basis of the *Leptosphaeria* teleomorph and the broadly cylindrical or fusiform conidia produced from non-proliferating conidiogenous cells. The collections on *Anthoxanthum* are morphologically indistinguishable from *S. avenae*. Shaw (1953, unpub.) inoculated a range of grasses

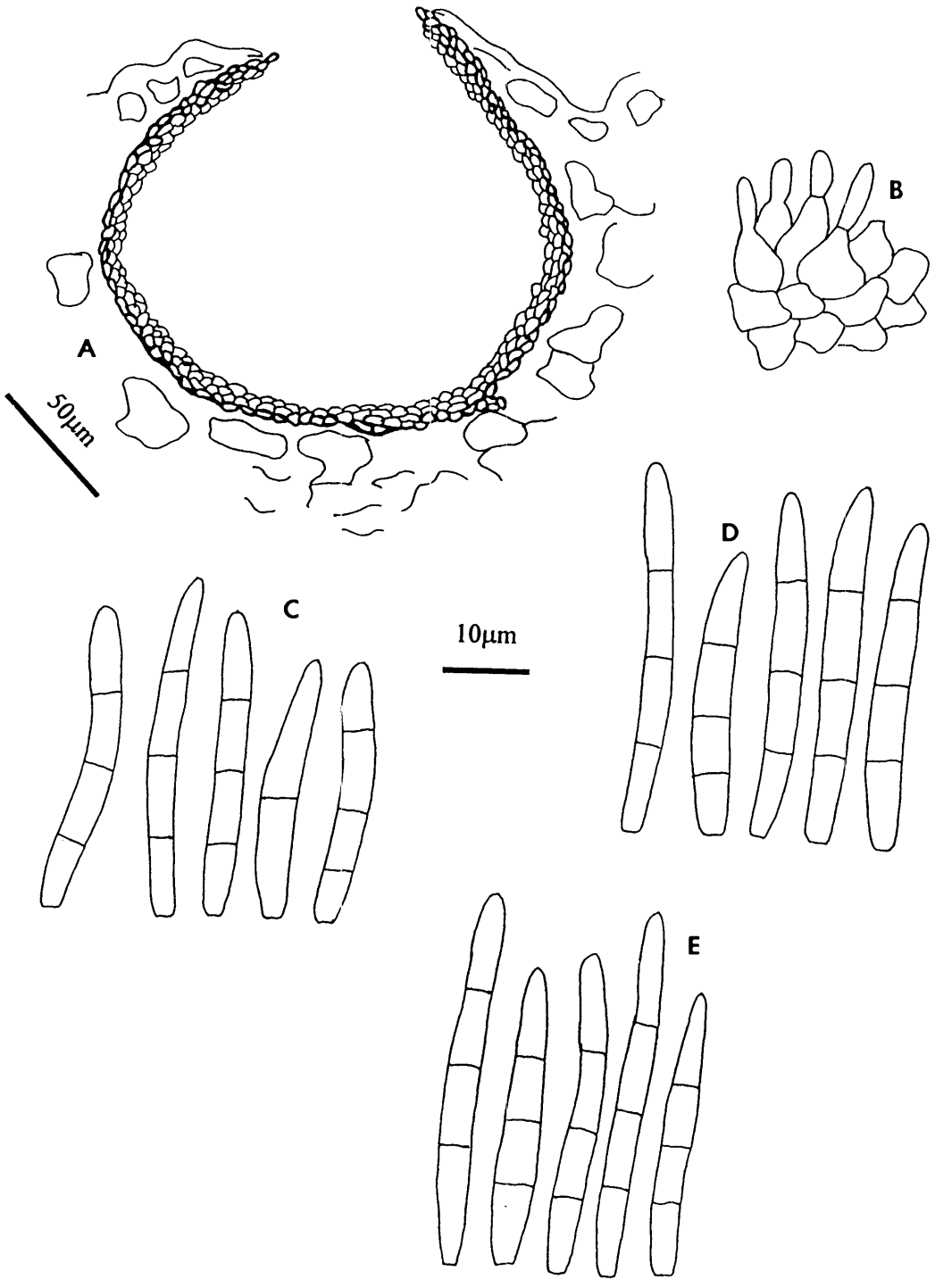

Fig.97. *Stagonospora avenae*; (A) v.s. conidioma VPRI 11211 ex *Avena*; (B) conidiogenous cells VPRI 11211; C-E conidia (C) VPRI 11211; (D) DAR 12040 ex *Anthoxanthum*; (E) DAR 29614 ex *Triticum*

with cultures of this species from *Anthoxanthum*, including *Agropyron* spp., *Avena sterilis*, *Lolium* spp. and *Triticum* but was able to produce lesions on *Anthoxanthum* only, suggesting at least another special form adapted to *Anthoxanthum* in Australia. *Septoria anthoxanthina* Gz. Frag. was described with conidia 25-30 x 1.2-1.5μm from *A. amarum* in Spain, the conidia being much narrower than seen in the Australian collections. Jorstad (1967) recorded *S. anthoxanthina* on *A. odoratum* in Norway but suggested it was indistinguishable from *S. macropoda* Pass., a species common on *Poa* throughout Europe. Australian collections of S. avenae agree with descriptions given by Sprague (1950), Jorstad (1967), Makela (1975), Sivanesan (1971) and Bissett (1982a). The teleomorph *Leptosphaeria avenaria* Weber was recorded in Australia by Shaw (1953, unpub.) on wheat from New South Wales where cultures of *S. avenae* produced both *Stagonospora* and *Leptosphaeria,* agreeing with the description of both states given by Weber (1922a). Spermatia were reported by Johnson (1952) for *S. avenae* but have not been observed in Australian collections. *Stagonospora avenae* is common throughout south-eastern Australia but rarely causes economic losses due to late season build-up of infection (Walkden Brown 1975)

Specimens examined:

on *Anthoxanthum odoratum*; **New South Wales**; Mount Wilson, Mar. 1952, P.G. Valder (DAR 4277); Mount Wilson,16 July 1952, P.G. Valder (DAR 12039); Mount Wilson, 20 Mar. 1952, P.G. Valder (DAR 12040);

on *Avena fatua*; **Queensland**; Formartin, 25 Oct. 1979, R.G. Rees (BRIP 13070);

on *Avena sativa*; **New South Wales**; Glen Innes, Feb. 1925, R.J. Noble (DAR 769a); Limestone Creek, Cowra, 7 Dec. 1975, J. Walker (DAR 27866a); Biological & Chemical Research Institute, Rydalmere, 25 Nov. 1965, O.M. Williams (DAR 29881); **South Australia**; Northfield, 6 Aug. 1993, H. Wallwork (DAR 69925);**Victoria**; Langi Logan, 16 Dec. 1980, T. Morgan (VPRI 11211); Longerong, 8 Nov. 1984, J.B. Brouwes (VPRI 12502);

on *Avena sterilis*; **New South Wales**; Kelso, 16 Dec. 1952, D. Shaw (DAR 12041); Merungle Hill, 10 July 1952, J.R. Morschel (DAR 12042);

on *Avena* sp; **Queensland**; Mount Tyson, 21 July 1983, R.G. Rees & G.J. Platz (BRIP 14016);

on *Triticum aestivum*; **New South Wales**; Tamworth, 30 June 1977, R. Hare, (DAR 29161); Tamworth, 1 Nov. 1977, R. Hare (DAR 29593); Tamworth, 4 Dec. 1984, K.J. Moore (DAR 51154a); **Western Australia**; Avondale, July 1990, R. Loughman (DAR 65702).

Septoria bromi Sacc., *Michelia* **1**: 194 (1878)

(Fig. 98)

Leaf lesions hologenous, elongated, 6-8 x 2mm, on both surfaces pale brown at first, becoming bleached in the centre with a diffuse margin. *Conidiomata* epigenous, scattered on lesions, separate, immersed, pale red-brown, globose, 120-170µm diam., pycnidial. *Ostiole* single, apical, 15-20µm, cells around the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer yellow-brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform to lageniform, 8-10 x 3-4µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 2(-3) septate, straight to curved, 40-63 x 1-1.5µm, with a rounded to truncate base and narrowing to an acute apex.

Hosts: *Bromus arenarius* Labill., *B. hordeaceus* L., *B. molliformis* F.E. Lloyd, *Bromus racemosus* L., *Deyeuxia quadriseta* (Labill.) Benth., *Glyceria* sp., ? *Koeleria* sp.

Distribution: New South Wales, South Australia (McAlpine 1895, Brittlebank 1937-1940 on *Bromus* and *Koeleria,* Warcup & Talbot 1981, Cooke & Dube 1989; report only), Tasmania (Sampson & Walker 1982 as *Septoria* sp, probably this species), Victoria (Cooke 1892, Cobb 1893, McAlpine 1895, Brittlebank 1937-1940, Woodcock & Clarke 1983 as *Septoria bromi* and *Septoria* sp. on *Glyceria*).

Septoria bromi is characterised by the mature conidia being mostly 2-septate. Shaw (1953 unpub.) was unable to transfer isolates of *S. bromi* to any hosts other than *Bromus molliformis* and *B. racemosus*. Single collections on *Deyeuxia quadriseta* and *Glyceria* sp. are morphologically indistinguishable from *S. bromi,* being mostly 2 septate. Shaw (1953 unpub.) was unable to transfer the isolate from *Deyeuxia* to *Bromus* but the absence of material of *D. quadriseta* prevented inoculation of the original host. Australian collections are identical with authentic material of Saccardo in PAD on *B. hordeaceus* (as *B. mollis*), the type host. The record of *S. bromi* on *Koeleria* in

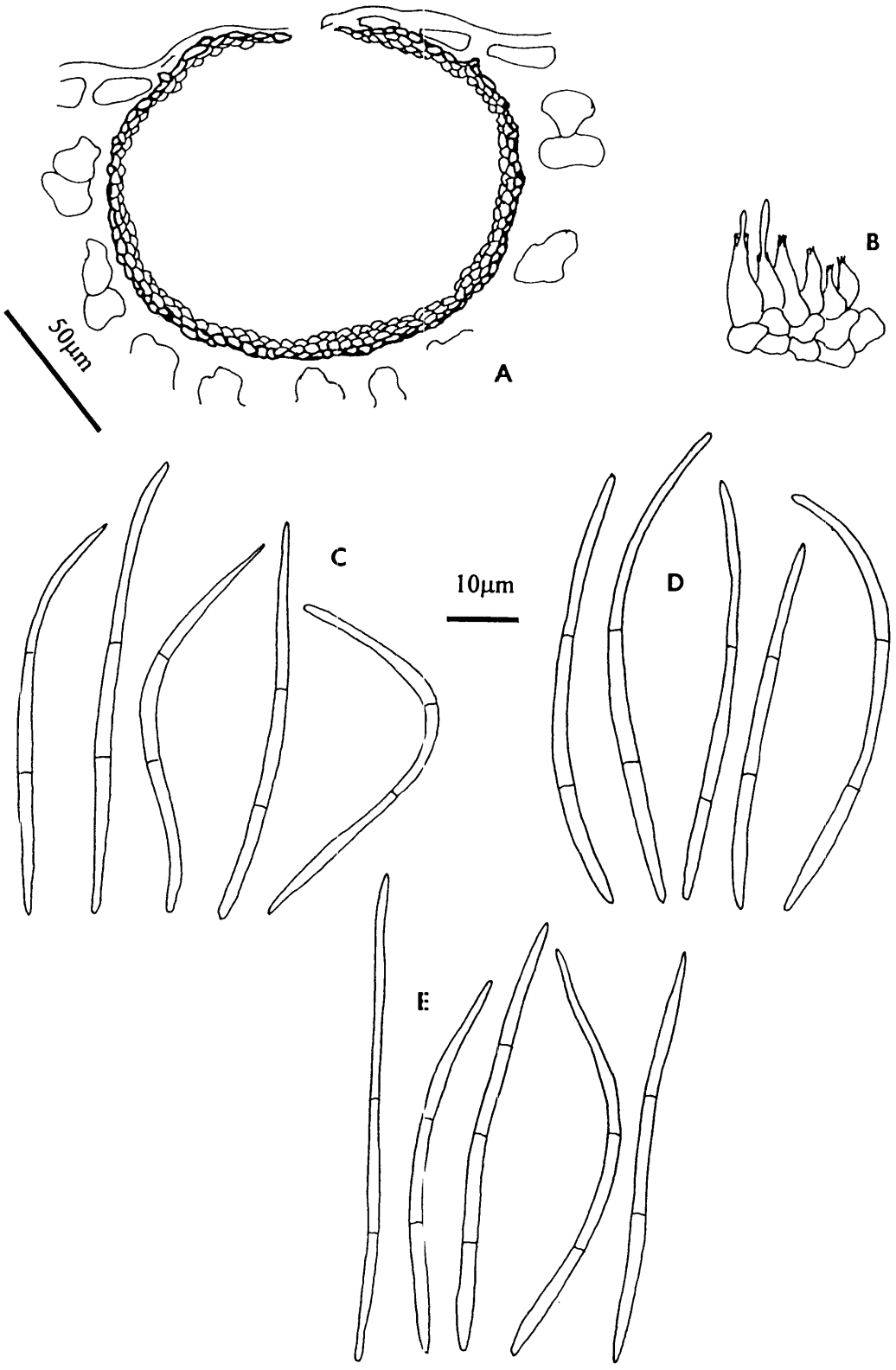

Fig.98. *Septoria bromi*; (A) v.s. conidioma VPRI 1759; (B) conidiogenous cells VPRI 1759; C-E conidia (C) VPRI 1759; (D) ex PAD; (E) DAR 12061 ex *Deyeuxia*

South Australia (Brittlebank 1937-1940) is unsubstantiated as no herbarium material has been located.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Bromus arenarius*; **Victoria**; Kiewa Valley, 13 Nov. 1902, G.H. Robinson (VPRI 1759); Myrniong, 29 Dec. 1902, D. McAlpine (VPRI 8820);

on *Bromus hordeaceus*; **New South Wales**; Holbrook, 14 Nov. 1975, G.E. Stovold (DAR 56732b);

on *Bromus molliformis*; **New South Wales**; Gunnedah, 8 Oct. 1952, E.P. Baker (DAR 12051); Coolamon, 18 Aug. 1950, D. Shaw 222 (DAR 12052); Tickbourne, 13 Nov. 1952, D. Shaw 848 (DAR 12053); Canberra, ACT, 7 Oct. 1952, B. Davis (DAR 12055); Temora, 24 Oct. 1952 D. Shaw (DAR 12056); Paradise Experimental Area, Hay, 2 Oct. 1981, W. Semple (DAR 35012);

on *Bromus racemosus*; **New South Wales**; Orange, 12 Nov. 1952, D. Shaw (DAR 12058); Kosciusko, 24 Jan. 1951, D. Shaw 457 (DAR 12059);

on *Deyeuxia quadriseta*; **New South Wales**; Goulburn, 17 Dec. 1952, G. Sullivan (DAR 12061);

on *Glyceria* sp.; **Victoria**; Mount Baw Baw, 20 Dec. 1904, A.G. Campbell (VPRI 1883).

EXTRALIMITAL COLLECTIONS:

Septoria bromi; on *Bromus hordeaceus*, locality, date and collector not given, No. 268 (PAD) host as *B. mollis*, **authentic** for name; **Austria**, C. de Kiessler, *Krypt. Exs. Vindobensis* No. 1469 (DAR 64407); Buenos Aires, **Argentina**, 20 Oct. 1950, J.C. Lindquist (DAR 31015 ex LPS 26667); on *Bromus secalinus* L.; London, **Canada**, July 1894, J. Dearness, Fungi Columbiani No. 579 (DAR 53726); Granton, Ontario, **Canada**, July 1889, J. Dearness, *Seymour & Earle Economic Fungi* No. 533a (DAR 51831) and 533b (DAR 51832).

Septoria calamagrostidis (Lib.) Sacc., *Malphigia* **2**: 22 (1888)

= *Ascochyta calamagrostidis* Lib., *Pl. Crypt. Ard.* **157** (1832)

(Fig. 99)

Leaf lesions hologenous, elongated, 10-15 x 2mm, on both surfaces reddish brown, occasionally with a purple-red halo, at length becoming pale straw-brown in the centre with a diffuse reddsh-brown margin. *Conidiomata* amphigenous, separate, occasionally linear, immersed, dark-brown to black, globose, 90-130µm diam., pycnidial. *Ostiole* single, apical, 20-25µm, cells around the opening slightly thickened. *Conidiomatal wall* 4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally septate, rarely integrated, ampulliform, 7-9(-14) x 2.5-3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, (1-)3-4 septate, straight to curved, often sinuous, (23-)36-70 x 1-1.5µm with a rounded to truncate base and narrowing to a sub-acute apex.

Hosts: *Avena fatua* L., *A. ludoviciana* Dur., *A. sativa* L., *A. sterilis* L., *Avena* sp., *Dichelachne sciurea* (R.Br.) Hook.f., *Echinopogon caespitosus* C.E. Hubbard.

Distribution: New South Wales, Victoria.

Septoria calamagrostidis is recognised as occurring in Australia for the first time here. Examination of type material of *Ascochyta calamagrostidis* has confirmed the identity of many collections on *Avena* spp. previously identified as *S. tritici* f.sp. *avenae* which, according to collections available, is not common in Australia. *Septoria calamagrostidis* is characterised by its long narrow conidia which are often sinuous, a feature noted by Shaw (1953 unpub.) who treated this species under *S. tritici* f.sp. *avenae*. Jorstad (1967) recorded *S. calamagrostidis* on *Agropyron repens*, *Avena sativa*, *Calamagrostis arundinacea*, *Holcus* and *Trisetum* and listed *S. agrostidis* Fransden as a synonym after Sprague (1950). Sprague (1950) recorded this species mainly on *Agrostis* and *Trisetum* in the U.S.A. The collections on *Dichelachne* and *Echinopogon* are referred to this species based on the narrow sinuous conidia. On one of the collections on *Dichelachne* (DAR 12064) both *S. calamagrostidis* and *S. tritici* are present.

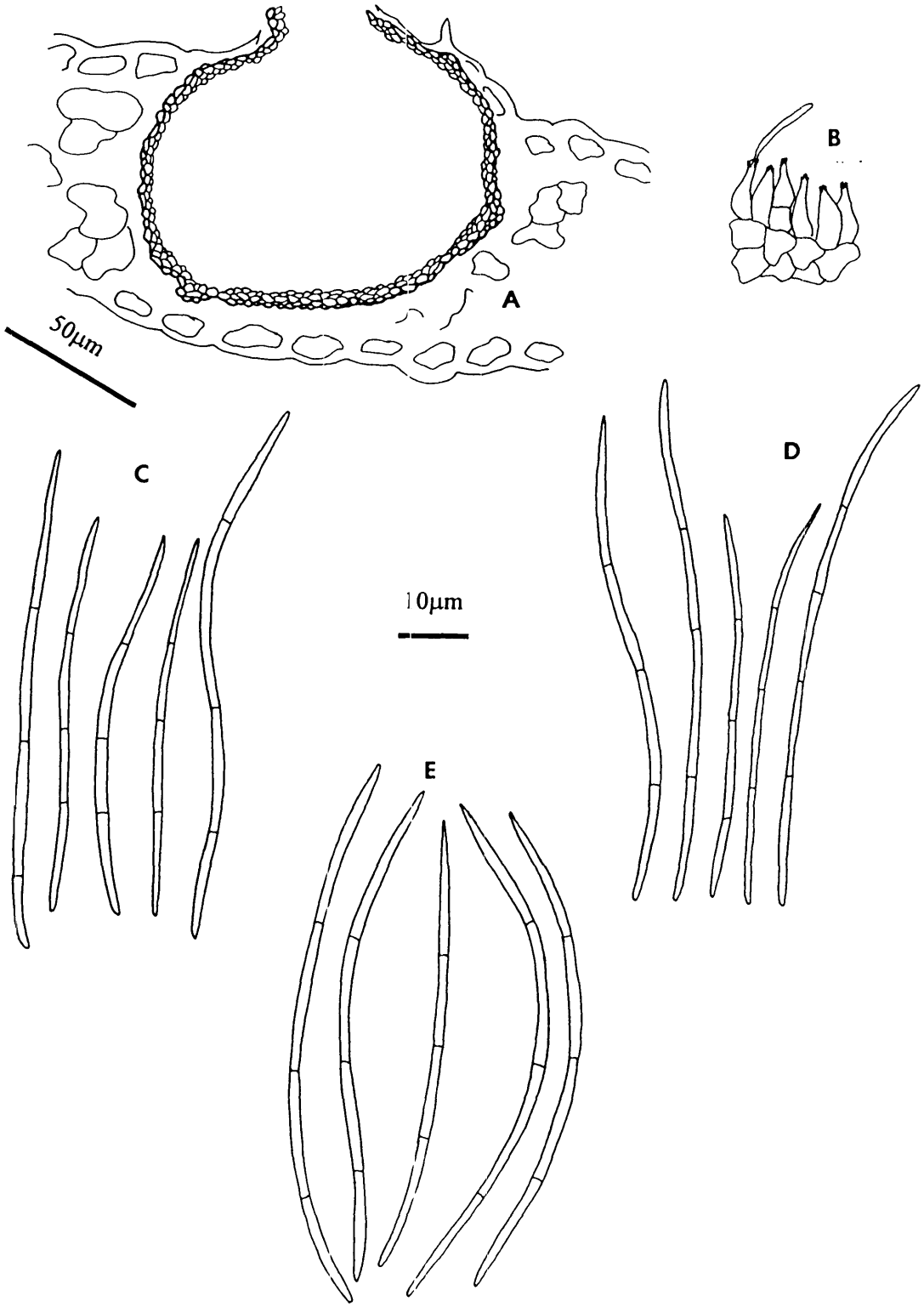

Fig.99. *Septoria calamagrostidis*; (A) v.s. conidioma DAR 12065 ex *Dichelachne*; (B) conidiogenous cells DAR 12065; C-E conidia (C) DAR 12065; (D) type ex MEL; (E) DAR 33022 ex *Avena*

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Avena fatua*; **New South Wales**;Tichbone, 13 Nov. 1952, D. Shaw 849 (DAR 12043); Parkes, 13 Nov. 1952, D. Shaw 853 (DAR 12048); Purlewagh, 10 Oct. 1978, C. Wellings (DAR 33022); Wagga Wagga, Sept. 1978, G.M. Murray (DAR 35456); Wagga Wagga, 7 Oct. 1981, B. Ballantyne (DAR 38031); Wagga Wagga, 21 Oct. 1981, B. Ballantyne (DAR 49384); Forbes, 4 Aug. 1983, G. Falconer (DAR 45706); Beecroft, 11 Nov. 1969, O.M. Williams (DAR 60550b); **Victoria**; Port Fairy, 16 Sept. 1904, D. McAlpine (VPRI 1884);

on *Avena ludoviciana*; **New South Wales**; Curlewis. 17 Oct. 1949, H.B. Kerr (DAR 12044);

on *Avena sativa*; **New South Wales**; Dubbo, Sept. 1926, R.J. Noble (DAR 770); Wagga Wagga, 20 July 1922 (DAR 942); Wagga Wagga, 11 Sept. 1985, M.J. Priest (DAR 54940);

on *Avena sterilis*; **New South Wales**; Carroll, 14 Oct. 1952, G. Dickson (DAR 12046);

on *Avena* sp.; **New South Wales**; Piallaway, 28 Aug. 1950, D. Shaw 243 (DAR 12047); Blue Vale, 29 Aug 1950, D. Shaw 247 (DAR 12050);

on *Dichelachne sciurea*; **New South Wales**; Springwood, 9 June 1952, D. Shaw 758 (DAR 12064b); Kosciusko, 28 Jan. 1951, D. Shaw 465 (DAR 12065);

on *Echinopogon caespitosus*; **New South Wales**; Springwood, 9 June 1952, D. Shaw 759 (DAR 12063).

EXTRALIMITAL COLLECTION:

Septoria calamagrostidis on *Calamagrostis sylvatica*, Pl. Crypt. Ard. No. 157 (MEL) **type** of *Ascochyta calamagrostidis* Lib.

Septoria capillepedii Priest **sp. nov.**

Etymology: from type host genus *Capillepedium*

(Figs. 100, 101)

Maculae hologenae, elongatae, 2-5 x 1-1.5mm, rubro-brunneae cum margine distincto. *Conidiomata* amphigenae, pycnidialia, immersa vel erumpenta, separata, globosa, 70-120µm diam., crassitudine 3-cellularum, parietes pseudoparenchymatici, textura angulari, brunnea compositi. *Ostiolum* singulum, apicale, 20-25µm, *Cellulae conidiogenae* e cellulis interioribus conidiomatum formatae, discretae, hyalinae, lageniformes, (6-) 10-12 x 3-3.5µm, holoblastica simplicia conidia producentes. *Conidia* hyalina, filiforma, (2-)5-8 septata, recta vel curvata, laevia, (32-)60-102 x 2-2.5µm, deminuta versus basim truncatum et apicem rotundatum vel sub-acutum.

Holotypus: in foliis *Capillepedium spicigerum* S.T. Blake, Moogerah Dam, Queenslandia, Australia, 17 March 1988, J.L. Alcorn (BRIP 16235).

Leaf lesions hologenous, elongated, 2-5 x 1-1.5mm, on both surfaces reddish-brown with a narrow dark red margin and pale red-brown necrotic halo, occasionally linear, bounded by leaf veins, on older leaves forming large coalescing blotches up to 30mm long and 3-4mm wide with a reddish-brown margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed becoming erumpent, black, globose to flattened, 70-120µm diam., pycnidial. *Ostiole* single, apical, 20-25µm, cells around the opening scarcely thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, lageniform, (6-)10-12 x 3-3.5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, cylindrical to slightly obclavate, *in vivo* (2-)5-8 septate, straight to sinuous, (32-)60-102 x 2-2.5µm, with a truncate to rounded base and tapering to a rounded or sub-acute apex, *in-vitro* up to 110µm long and 9-11 septate.

Hosts: *Capillepedium spicigerum* S.T. Blake, *Digitaria ciliaris* (Retz.) Koel., *Eulalia trispicata* (Schultz) Henrard, *Paspalum distichum* L.

Distribution: Queensland (Langdon & Parbery as *S. andropogonis* J.J. Davis var. *sorghastri* H.C. Greene & Sprague on *Eulalia*), Western Australia.

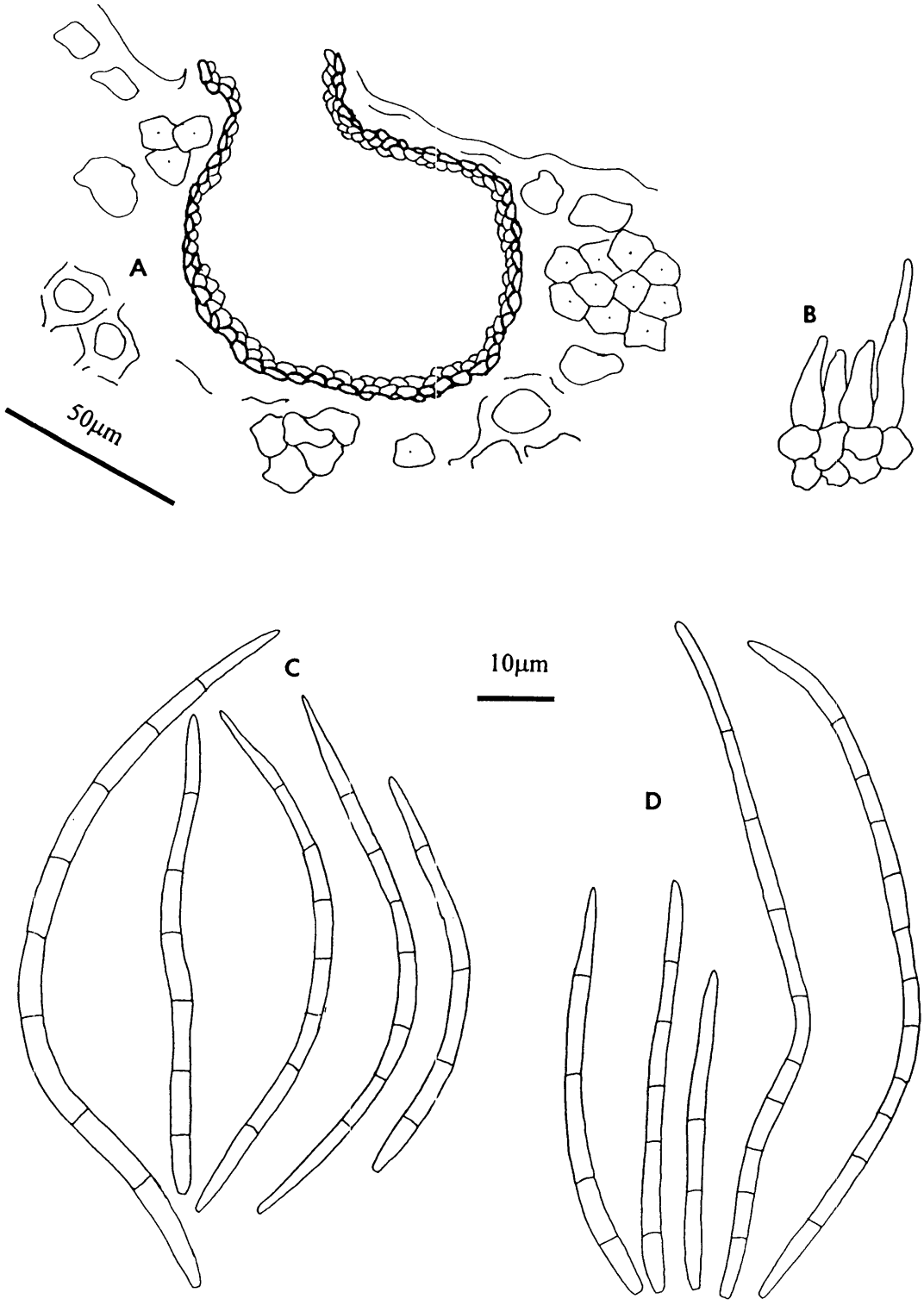

Fig.100. *Septoria capillepedii* BRIP 16235 holotype; (A) v.s conidioma; (B) conidiogenous cells; (C) conidia ex host; (D) conidia ex culture

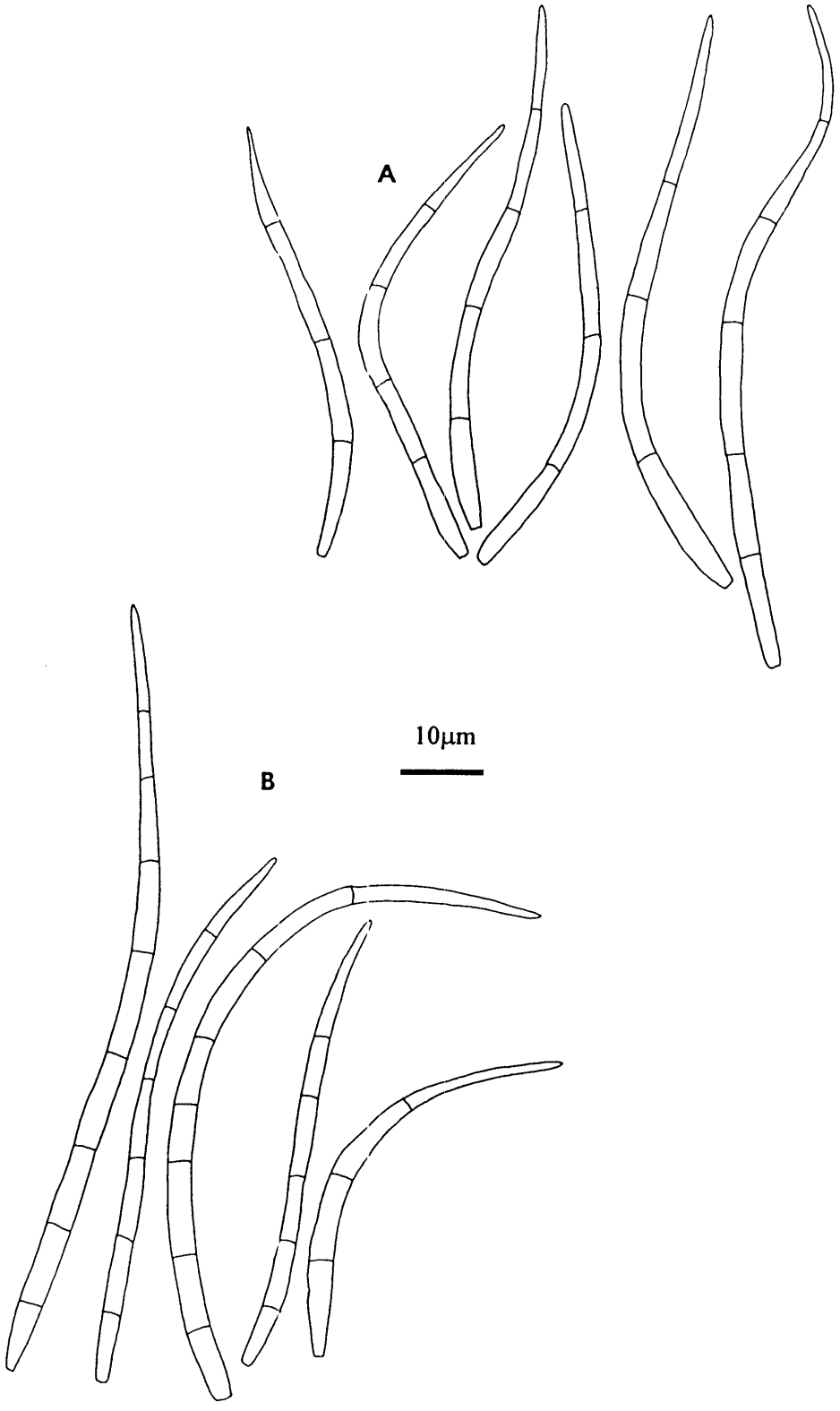

Fig.101. *Septoria capillepedii*; (A) conidia PERTH 3801942 ex *Digitaria*; (B) conidia BRIP 11957a ex *Paspalum*

Septoria capillepedii is described from several grass hosts in the Panicoideae. Morphologically all of the collections are difficult to distinguish from one another and are characterised by the 8-septate conidia that are up to 110µm long. Of other species described from hosts in the Panicoideae it is close to *S. tandilensis* Speg. which was originally described with conidia 40-60 x 1.1.5µm and considerably expanded by Sprague (1950) to include conidia up to 111 x 2.7µm (septation unknown). *Septoria digitarivora* Sprague (on *Digitaria*) has conidia 70-95 x 3.6-5.6µm, much wider than *S. capillepedii* and *S. arechavaletae* Wint. (on *Panicum*) has conidia 50-115 x 1-1.5µm according to Sprague (1946, 1950) although the original description gave conidia as 60-80 x 1.5-2µm. Langdon & Parbery reported the collection on *Eulalia* as *S. andropogonis* var. *sorghastri*, which has conidia given as 56-100 x 1.5-2.4µm, filiform at the base and tapering to a narrow yet rounded apex (Sprague 1950). The Australian collections examined are very similar but lack the filiform base. In addition *S. andropogonis* var. *sorghastri* is only known from the United States on *Sorghastrum*, a member of the Andropogoneae.

Specimens examined:

on *Capillepedium spicigerum*; **Queensland**; Mount Coot-tha, 16 Mar. 1988, J.L. Alcorn (BRIP 16213); Moogerah Dam, 17 Mar. 1988, J.L. Alcorn (BRIP 16235) **Holotype**;

on *Digitaria ciliaris*: **Western Australia**; Pantijon, Kimberley Region, 23 Mar. 1994, R.G. Shivas (PERTH 3801942);

on *Eulalia tricuspata*; **Queensland**; Glasshouse Mountains, 5 Apr. 1960, R.F. Langdon (BRIP 5831);

on *Paspalum distichum*; **Queensland**; Kenmore, 6 Apr. 1975, J.L. Alcorn (BRIP 11957).

Septoria cryptica Priest **sp. nov.**

Etymology: from the cryptic nature of the conidiomata

(Fig. 102)

Maculae hologenae, elongatae, 2-4 x 1mm vel 10 x 2mm, brunneae. *Conidiomata* amphigena, pycnidialia, immersa, separata, globosa, 50-90µm diam., crassitudine 3-cellularum, parietes pseudoparenchymatici, textura angulari, brunnea compositi. *Ostiolum* singulum, apicale, 10-15µm diam. *Cellulae conidiogenae* e cellulis interioribus conidiomatum formatae, discretae, hyalinae, doliiformes, 5-6 x 2.5-3µm, holoblastica simplicia

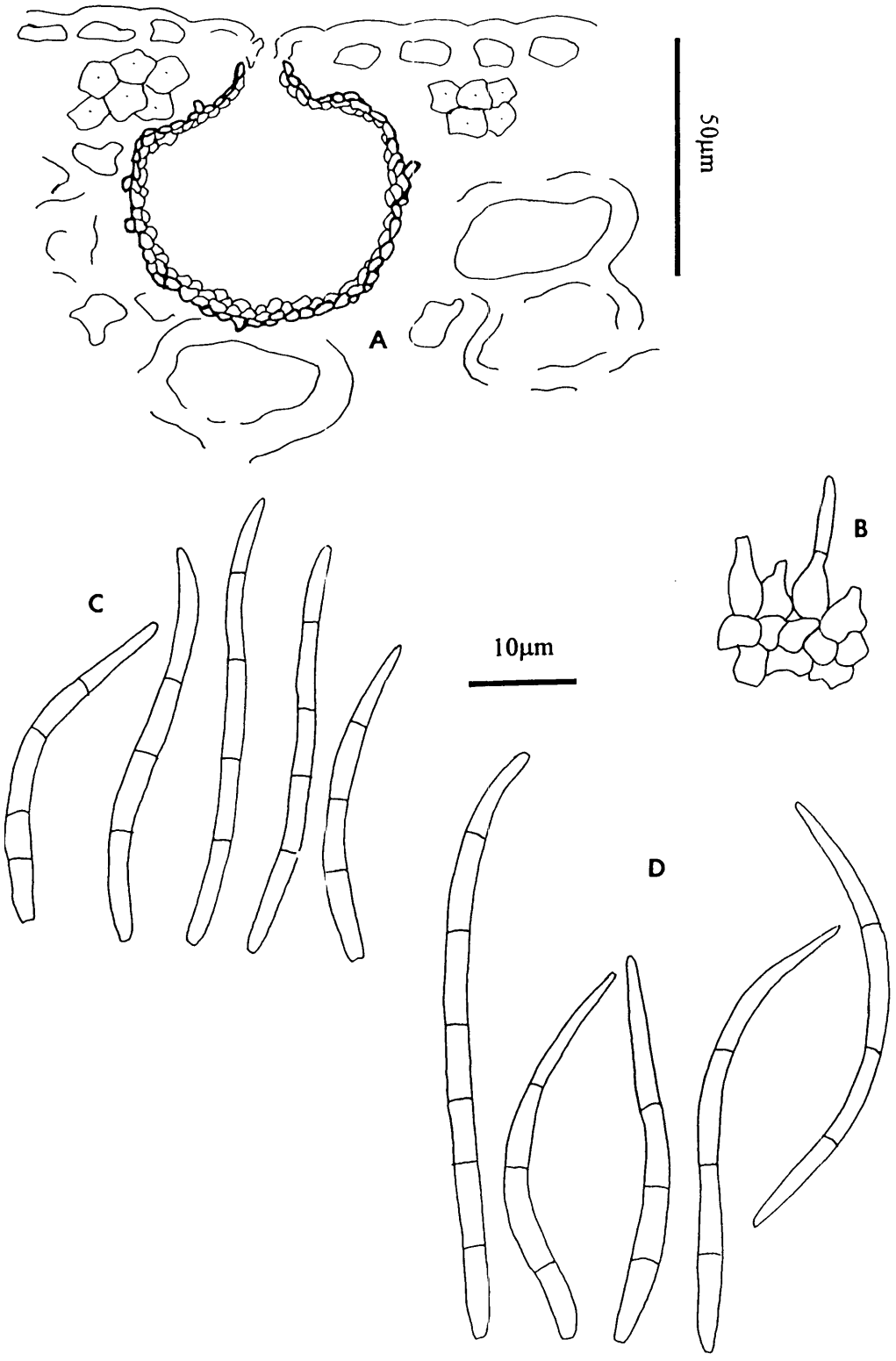

Fig.102. *Septoria cryptica*; (A) v.s. conidioma BRIP 12781 type; (B) conidiogenous cells BRIP 12781; (C) conidia BRIP 12781; (D) conidia BRIP 5844 ex culture

conidia producentes. *Conidia* hyalina, filiformia, (1-)3-4 septata, recta vel curvata, laevia, *in-vivo* 25-40 x 1.5-2μm, *in-vitro* 25-55 x 1.5-2μm, deminuta versus basim truncatum et apicem rotundatum vel sub-acutum.

Holotypus; in foliis *Phragmites australis* (Cav.) Trin. ex Steud., Sunnybank, Queenslandia, Australia, 1 December 1978, J.L. Alcorn (BRIP 12781).

Leaf lesions hologenous, linear, mostly 2-4 x 1mm but occasionally up to 10 x 2mm, on both surfaces dark brown, becoming pale creamy brown in the centre with a dark brown necrotic halo often coalescing into large elongated blotches. *Conidiomata* amphigenous but mostly hypogenous, linear, separate, sub-epidermal and sub-stomatal, globose, black, 50-90μm diam., pycnidial. *Ostiole* single, apical, 10-15μm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, 5-6 x 2.5-3μm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, (1-)3-4 septate, straight to slightly curved, *in vivo* (25-)35-45 x 1.5-2μm, with a truncate base and tapering to a rounded to sub-acute apex, *in-vitro* (25-)35-55 x 1.5-2μm.

Host: *Phragmites australis* (Cav.) Trin. ex Steud.

Distribution: New South Wales, Queensland.

Septoria cryptica is named for the cryptic nature of the conidiomata, which in most cases are only visible by transmitted light through the leaf. There have been many species of *Septoria* described from *Phragmites* including *S. arundinacea* Sacc. (conidia 60-70 x 5-6μm), *S. littoralis* Speg. (conidia 50-65 x 3.5-4μm) and *S. paludosa* Kabat & Bubak (conidia 40-70 x 4-4.5μ), all of which have conidia much wider than *S. cryptica*. The closest described species is *S. phragmitis* Sacc. described with conidia 20-30 x 1.5-2μm, However the conidia of *S. cryptica* are longer than given for *S. phragmitis*, being mostly more than 35μm long.

Specimens examined: all on *Phragmites australis*; **New South Wales**; Bungwahl, 11 June 1968, O.M. Williams (DAR 59048); Sackville, 20 May 1968, J. Walker (DAR 59409a); **Queensland**; Coolum, 25 Jan. 1974, J.L. Alcorn (BRIP 5844); Sunnybank, 1 Dec. 1978, J.L. Alcorn (BRIP 12781) **Holotype**; Habana, near Mackay, 24 Sept. 1996, P. Amiet (BRIP 23039).

Septoria cymbopogonis Priest **sp. nov.**

Etymology: from the type host genus *Cymbopogon*

(Fig. 103)

Maculae hologenae, elongatae, 3-4 x 1-1.5mm, rubro-brunneae cum margine distincto. *Conidiomata* amphigena, pycnidialia, immersa vel erumpenta, separata, globosa, 130-175µm diam., crassitudine 3-4 cellularum, parieties pseudoparenchymatici, textura angulari, brunnea compositi. *Ostiolum* singulum, apicale, 18-22µm, papillatum. *Cellulae conidiogenae* e cellulis interioribus conidiomatum formatum, discretae, hyalinae, doliiformes, 4-5 x 2-2.5µm, holoblastica simplicia conidia producentes. *Conidia* hyalina, filiforma, obclavata, 5-septata, recta vel curvata, laevia, 45-78 x 3-3.5µm, deminuta versus basim truncatum et apicem acutum.

Holotypus: in foliis *Cymbopogon refractus* (R.Br.) A. Camus, Mount Coot-tha, Queenslandia, Australia, 17 April 1974, J.L. Alcorn (BRIP 8928).

Leaf lesions hologenous, elongated, 3-4mm x 1-1.5mm, on both surfaces red-brown to straw coloured in the centre with a dark brown margin. *Conidiomata* amphigenous, scattered on lesions, separate, linear along leaf blade, immersed becoming erumpent, 130-175µm diam., dark brown to black, globose, pycnidial. *Ostiole* single, apical, occasionally papillate, 18-22µm, cells around the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layer pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, 4-5 x 2-2.5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, 5-septate, straight to curved, obclavate, 45-78 x 3-3.5µm, with a truncate base and tapering sharply to an acute whip-like apex.

Host: *Cymbopogon refractus* (R.Br.) A. Camus.

Distribution: Queensland.

Septoria cymbopogonis is a distinctive species with its extended whip-like apex to the conidium. The only fungus illustrated which appears similar morphologically is *S. arctica* Berk & Curt. described from *Dupontia fischeri* in the Bering Straits near Alaska. Sprague (1950) noted that the conidia from the type collection of *S. arctica* were 60-80 x 2.8-3.6µm and resembled those of *S. jaculella* Sprague on *Bromus* (in the original description the conidia were described as attenuate). *Septoria jaculella*

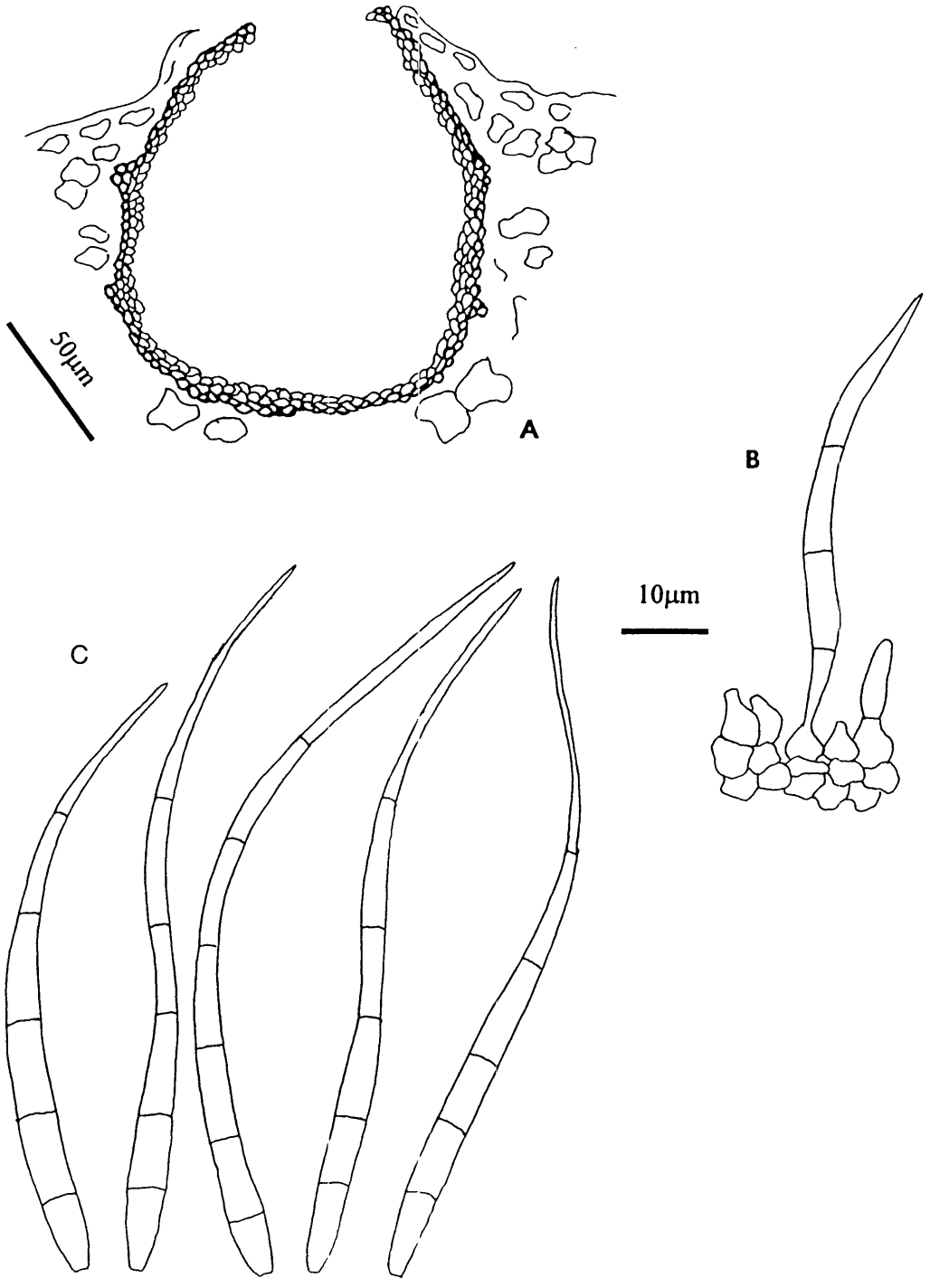

Fig.103. *Septoria cymbopogonis* BRIP 8926 holotype; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

does not have a whip-like apex to the conidium, however, the illustration in Sprague (1950) of *S. arctica* on *Calamagrostis* shows a narrowing of the apex quite different from *S. jaculella* and possibly represents a different taxon. It appears preferable to name the Australian collection on *Cymbopogon* as a new species.

Specimen examined: on *Cymbopogon refractus*; **Queensland**; Mount Coot-tha, 17 Apr. 1974, J.L. Alcorn (BRIP 8928) **Holotype**.

Septoria elymi Ellis & Everh., *J. Mycol.* 7: 132 (1892)

(Fig.104)

Leaf lesions hologenous, elliptical to elongated, 10-12 x 2-3mm, on both surfaces, pallid-brown at first, becoming pale straw-brown with a diffuse mid-dark brown margin. *Conidiomata* epigenous, scattered on lesions, separate, immersed, scarcely erumpent, dark brown to black, globose, 70-110µm diam., pycnidial. *Ostiole* single, apical, 10-22µm, cells around the opening thickened. *Conidiomatal wall* 4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and flattened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally integrated, cylindrical to lageniform, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 1-3 septate, straight to slightly curved, 18-44 x 1-1.5(-2)µm, with a rounded to truncate base and sub-acute apex.

Hosts: *Elymus scabrus* (R.Br.) P. Beauv., *Aira caryophylla* L., *Briza maxima* L.

Distribution: New South Wales, South Australia (Warcup & Talbot 1981, Cooke & Dube 1989; as *S. graminum* on *Aira caryophylla*, and *Septoria* sp. on *Briza maxima*), Western Australia (Shivas 1989 as *Septoria* sp. on *Briza maxima*).

Australian collections are identical to material examined from the U.S.A. under this name as well as descriptions given by Fransden (1943), Jørstad (1967), Mäkelä (1977) and Sprague (1950). *Septoria elymi* is currently restricted to species of *Agropyron* and *Elymus* throughout the world, however a single collection on *Aira caryophylla*, previously identified as *S. graminum* Desm. has been examined and appears to be this species. In the original description of *S. graminum* no conidial size was given

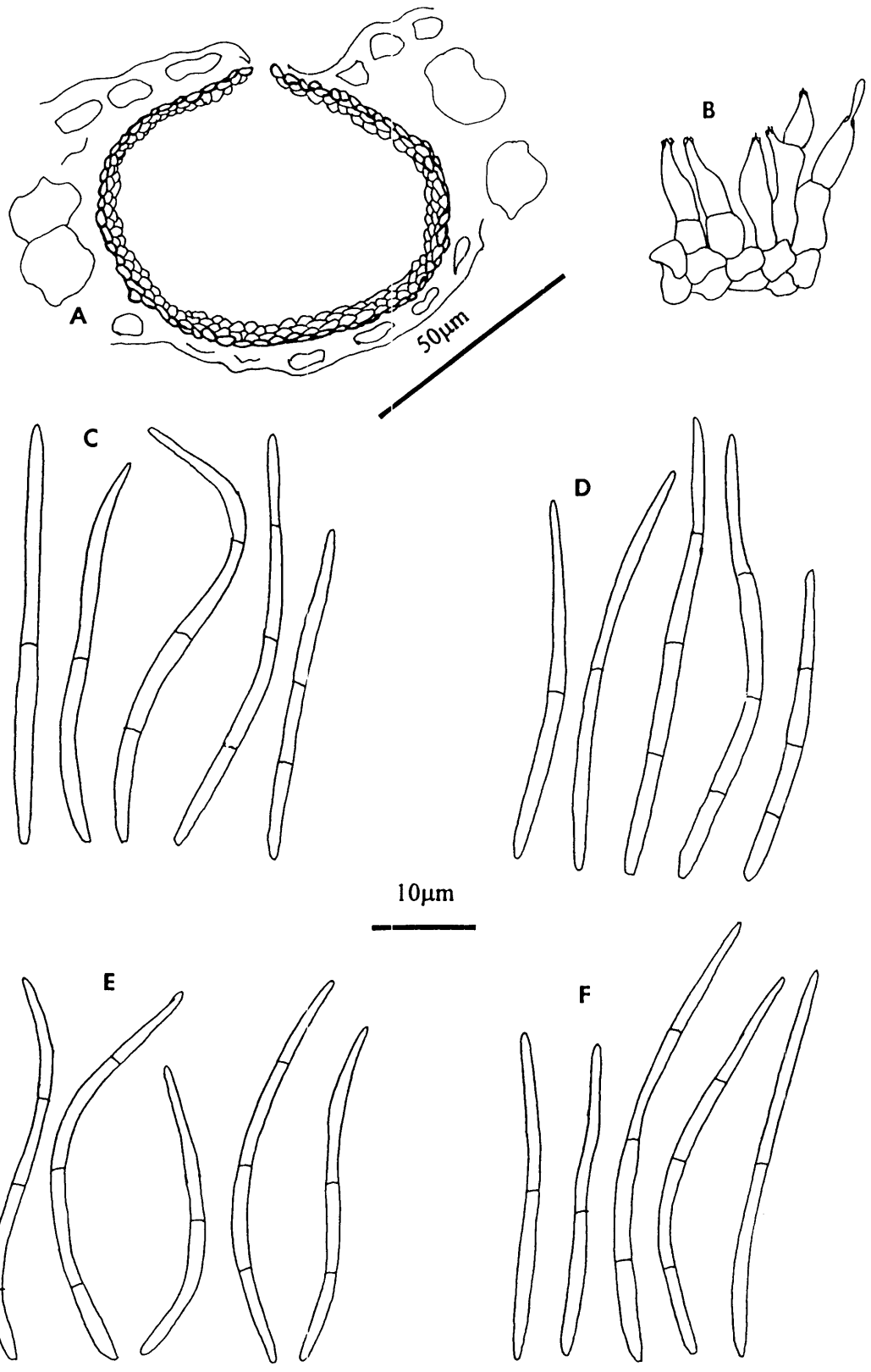

Fig.104. *Septoria elymi*; (A) v.s. conidioma DAR 12027; (B) conidiogenous cells DAR 12027; C-F conidia (C) DAR 12027; (D) BPI 81075; (E) DAR 30670b ex *Aira*; (F) DAR 14637b ex *Briza*

and the host was given as dry leaves of grasses. Weber (1922) examined a portion of the type material and gave the conidia as 30-50 x 1-1.5μm. However, the host was not identified. Weber (1923) gave further measurements of conidia from the type of *S. graminum* as 22-38 x 1μm and Sprague (1938), also from the type gave conidia as 15-42 x 0.8-1.2μm and gave the host as probably *Brachypodium sylvaticum* (Huds.) Beauv.. In addition Sprague (1938) gave an emended description of *S. graminum* and listed several synonyms restricting *S. graminum* to species of *Brachypodium*, a suggestion followed by both Fransden (1943) and Jørstad (1967). The only species of *Septoria* described from *Aira caryophylla* is *S. poliomela* Syd. (Sydow 1937) with conidia 15-30(-50) x 1.5-2.5μm and indistinctly septate. The Australian collection has conidia narrower than *S. poliomela* and slightly wider than those given for *S. graminum* and which are indistinguishable from those of *S. elymi*. Collections on *Briza maxima* are also included here as they are morphologically indistinguishable from the material on *Elymus*. In the original description of *S. brizae* Unamuno the conidia were given as 18-39 x 1.5-1.7μm which is well within the range given for *S. elymi*.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Aira caryophylla*; **South Australia**; Myponga, 11 Jan. 1929, J.B. Cleland (DAR 30670b ex ADW2000);

on *Briza maxima*; **New South Wales**; Albury, 23 Nov. 1964, R.J. Flynn (DAR 14637b); **South Australia**; Upper Sturt, Nov. 1923, T.G.B. Osborne (ADW 1779); **Western Australia**; Cardup, 13 Oct. 1923, J.G.C. Campbell (PERTH 822086);

on *Elymus scabrus*; **New South Wales**; Ariah Park, 17 Aug. 1950, D. Shaw 219 (DAR 12024); Parkes, 12 Nov. 1952, D. Shaw 845 (DAR 12025); Tichborne, 13 Nov. 1952, D. Shaw 847 (DAR 12026); Orange, 13 Nov. 1952, D. Shaw 857 (DAR 12027); Camden Park, 28 Nov. 1952, G. Sullivan (DAR 12028); Temora, 24 Oct. 1952 1952, D. Shaw 820 (DAR 12029).

EXTRALIMITAL COLLECTIONS:

Septoria elymi on *Elymus virginicus*; San Saba County, Texas, **U.S.A.**, 1934, C.H. Rogers (BPI 376431); on *Elymus glaucus*; High Prarie, Washington, **U.S.A.**, Apr. 1938, R. Sprague (BPI 379392);

on *Elytrigia repens*; Montana, **U.S.A.**, 19 July 1941, G. Fischer (BPI 80082); Jamestown, North Dakota, **U.S.A.**, 30 July 1941, R. Sprague (BPI 80214); Mandon, North Dakota, **U.S.A.**, 25 Sept. 1943, R. Sprague (BPI 80997); New York Mills, Minnesota, **U.S.A.**, 18 June 1944, R. Sprague (BPI 81075) hosts all as *Agropyron repens*.

Septoria halophila Speg., *An. Mus. Nac. Buenos Aires* **20** (Ser.3, Vol.13): 382-383 (1910)

(Fig. 105)

Leaf lesions hologenous, at first elongated and elliptical, 8-10 x 2mm, mid-brown and lacking a margin, at length becoming straw coloured and forming large elongated blotches. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, brown to black, globose, 90-150µm diam., pycnidial. *Ostiole* single, apical, 10-20µm, cells around the ostiole dark and slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally septate and integrated, cylindrical to obpyriform, 8-10 x 2.5-3.5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, (0-)1(-2) septate, 36-58 x 1.5(-2)µm, with a rounded to truncate base and rounded to sub-acute apex.

Hosts: *Hordeum glaucum* Steud., *H. leporinum* Link, *H. murinum* L., *Poa annua* L., *Poa* sp.,

Distribution: New South Wales, South Australia, Victoria (Woodcock & Clarke 1983 as *Septoria passerinii* on *Poa* sp.), Western Australia (Shivas 1989).

Septoria halophila is distinguished from *S. passerinii* by its conidia being 0-1(rarely 2) septate (the single septum often being sub-median) and by the enteroblastic conidiogenesis. Originally described from *Hordeum halophilum* in Argentina, it appears to be much wider in its distribution than otherwise reported. Many collections examined from Australia on *Hordeum* and *Poa* in New South Wales and Victoria are identical with *S. halophila*. Examination of several collections from Western Australia on *Hordeum* spp. has shown that both *S. passerinii* and *S. halophila* occur there and several collections examined on *Hordeum* from Western Australia, previously identified as *S. halophila*, have proven to be *S. passerinii* Sacc. Only one collection identified as *S. halophila* from Western Australia (IMI 135487) is placed under this name. The conidia are mostly 1-septate (the septum being in the

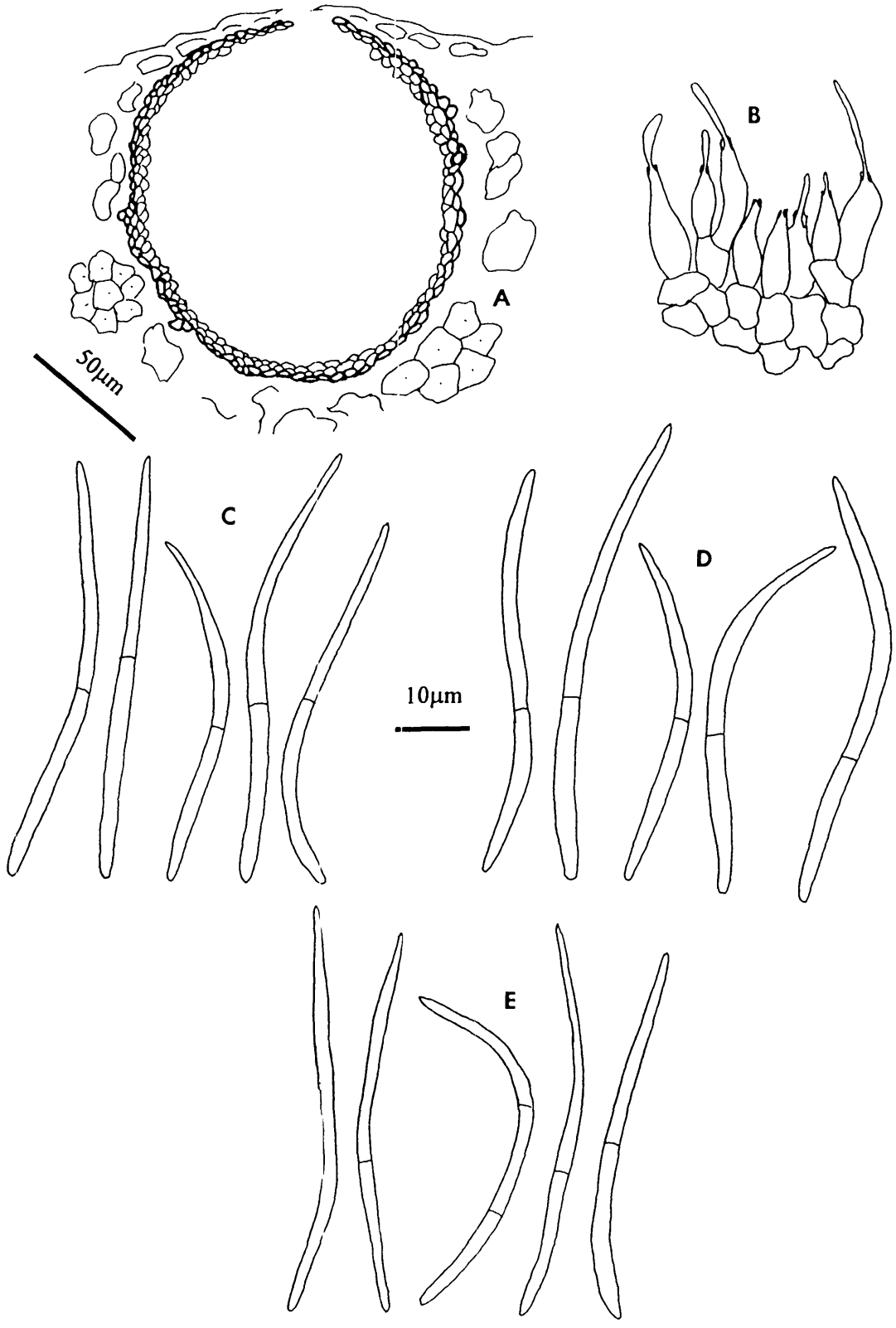

Fig.105.*Septoria halophila*; (A) v.s. conidioma DAR 12071; (B) conidiogenous cells DAR 12071; C-E conidia (C) DAR 12071; (D) type ex LPS; (E) DAR 12074 ex *Poa*

lower half of the conidium) with a few conidia becoming 2-septate. There is some difficulty differentiating *S. bromi* (conidia mostly 2-septate), *S. halophila* (conidia mostly 1-septate) and *S. passerinii* (conidia 0-3 septate), all having conidia of similar length and width. The collections on *Poa* in New South Wales were originally assigned to *S. macropoda* Pass., a widely recorded species on *Poa* spp. throughout the world (Sprague 1950, Jørstad 1967, Mäkelä 1977). There is considerable variation given by various authors for conidial size of *S. macropoda*. In the type description the conidia were given as 30-40 x 0.7µm, Sprague (1950) gave them as 30-40 x 1-1.5µm (on *Poa annua*) and Jørstad (1967) as 16-52 x 1-1.5µm (on *P. annua*). Jørstad (1967) noted that Sprague had examined the type and had given conidia as 27-36 x 1.4-1.8µm. Examination of authentic material of *S. macropoda* on the type host *Sclerochloa dura* has shown conidia to be (23-) 32-40 x 1.5(-2)µm and mostly 1-septate with occasional conidia 2-septate and the conidiogenesis holoblastic. In addition, examination of type material of *S. annua* Ellis & Everh. has shown conidia 40-55 x 1-1.5µm and 1-3 septate, which places it closer to *S. passerinii* than *S. macropoda* (see Fig.107). Obvious revision is required of the *Septoria* taxa on *Poa*. Australian collections on *Poa* are clearly referable to *S. halophila* on the basis of the 1-septate conidia and the enteroblastic conidiogenesis.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Hordeum glaucum*; **South Australia**; Minnipa Research Station, Eyre Peninsula, 7 Sept. 1994, H. Wallwork (DAR 73920);

on *Hordeum leporinum*; **New South Wales**; Blayney, 12 Nov. 1952, D. Shaw 850 (DAR 12066); Gunnedah, 12 Aug. 1952, D. Shaw 772 (DAR 12067); Wagga Wagga, 24 July 1951, P.G. Valder (DAR 12068); Wagga Wagga, 11 Apr. 1949, F.C. Butler (DAR 12069); Ardlethan, 18 Aug. 1950, D. Shaw 220 (DAR 12070); Blue Vale, 30 Aug. 1950, D. Shaw 235 (DAR 12071); Lake Emdale near Wilcannia, Sept. 1983, P. Fahy (DAR 49597b); **Victoria**; Mallee Research Station, Walpeup, 24 July 1979, J. Brown (DAR 70066 ex VPRI 10773); **Western Australia**; no locality, 3 Sept. 1968, B. Shearer (IMI 135487);

on *Hordeum murinum*; **South Australia**; Adelaide, 1954, J.B. Cleland (ADW 3982);

on *Poa annua*; **New South Wales**; Hurstville, 14 July 1950, D. Shaw 191 (DAR 12074); Allawah, 20 Dec. 1947, D. Shaw (DAR 12075); **South Australia**; Meningie, Aug. 1954, L.D. Williams (ADW 3918);

on *Poa* sp.; **Victoria**; Mallee Research Station, Walpeup, 24 July 1979, J. Brown (DAR 70065 ex VPRI 10777).

EXTRALIMITAL COLLECTIONS:

Septoria annua on *Poa annua*; Guelph, **Canada**, J. Dearness, *Fungi Columbiani* No. 1448 (DAR 54400) **type**;

Septoria halophila on *Hordeum halophilum*; Villa Maria, Cordoba, **Argentina**, Sept 1910, C. Spegazzini (LPS 10686) **holotype**;

Septoria macropoda on *Sclerochloa dura*; Parma, **Italy**, May 1881, G. Passerini, *Erb. Critt. Ital. Ser. II,* No. 1193 (BRIP 1462).

Stagonospora nodorum (Berk.) Castellani & Germano, *Annali Fac. Sci. Agr. Univ. Torino* **10**: 71 (1975-1976)

≡ *Depazea nodorum* Berk., *Gar. Chron.* 1845: 601 (1845)

≡ *Septoria nodorum* (Berk.) Berk. & Br., *Ann. Mag. Nat Hist.* (Ser. 2), **5**: 379 (1850)

≡ *Hendersonia nodorum* (Berk.) Petrak, *Sydowia* **1**: 76 (1947)

= *Septoria glumarum* Pass., *Atti. Soc. Critt. Ital.* **2**: 46 (1879)

(Fig. 106)

Lesions on nodes and glumes, epigenous, irregular, at first dark brown, later becoming pale straw-brown in the centre. *Conidiomata* scattered on lesions, separate, immersed, sub-globose, dark brown to black, 90-150µm diam., pycnidial. *Ostiole* single, apical, 10-15µm, cells around the opening dark and thickened. *Conidiomatal wall* 3-5 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer pale to mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, rarely ampulliform, 5-8 x 3.5-4.5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, cylindrical, 1-3 septate, straight to slightly curved, 15-24 x 3-3.5µm, with a truncate base and obtuse apex.

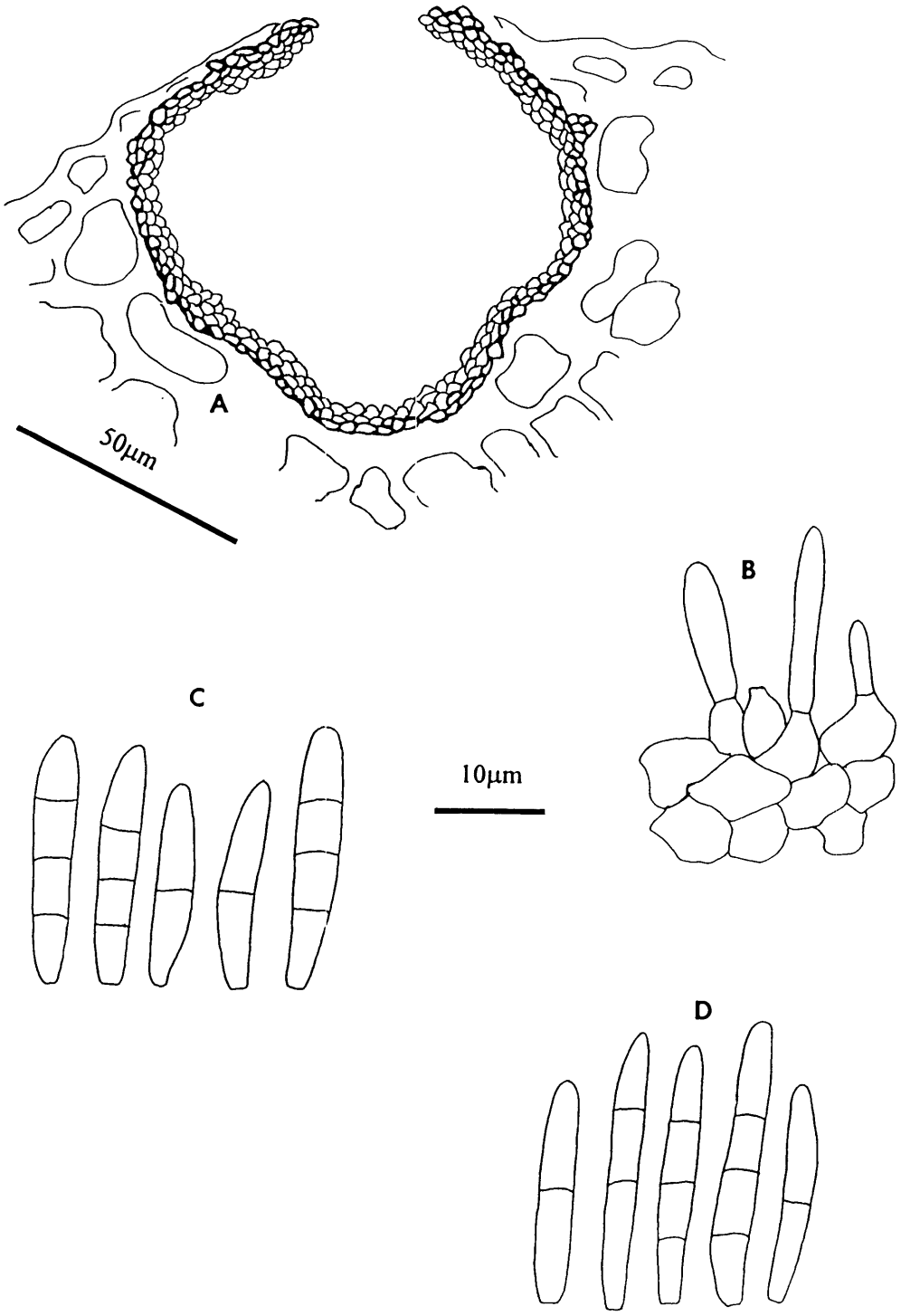

Fig.106. *Stagonospora nodorum*; (A) v.s. conidioma VPRI 1830; (B) conidiogenous cells VPRI 1830; (C) conidia VPRI 1830; (D) conidia DAR 12037 ex *Agropyron*

Hosts: *Agropyron* x hybrid, *Secale cereale* L., *Triticum aestivum* L.

Distribution: New South Wales (McAlpine 1898 as *S. glumarum* Pass., Noble *et al* 1935, Brittlebank 1937-1940, Magee 1951, Murray 1978; as *Septoria nodorum*), Queensland (Simmonds 1952, Simmonds 1966; as *Septoria nodorum*), South Australia (Warcup & Talbot 1981, Cooke & Dube 1989; on *Avena fatua,Cynodon dactylon* (L.) Pers, *Hordeum leporinum, Lolium perenne* L.; all report only; *Triticum aestivum*; all as *Septoria nodorum*), Tasmania (Sampson & Walker 1982, *Triticum* as *Septoria nodorum* report only), Victoria (Brittlebank 1937-1940, Freeman 1964, Woodcock & Clarke 1983; as *Septoria nodorum*), Western Australia (Carne 1925, Brittlebank 1937-1940, Shivas 1989 on *Bromus diandrus, Secale cereale* and *Triticum aestivum*; reports only, all as *Septoria nodorum*).

Stagonospora nodorum is included here due to many of the early Australian records being under the name *Septoria nodorum*. Australian collections agree morphologically with exsiccatus material examined and descriptions given by various authors including Sprague (1950), Sutton & Waterston (1966a), Jørstad (1967), Mäkelä (1977) and Bissett (1982b). All collections examined were of *Stagonospora* only: the teleomorph *Phaeosphaeria nodorum* (E. Müll.) Hedjaroude (syn. *Leptosphaeria nodorum* E. Müell.) has not been reported from Australia. Spermatia were reported for *S. nodorum* by Harrower (1976a) but were not observed in any of the collections studied. Examination of the collection (ADW 1764) on wheat cited by Cook & Dube (1989) failed to reveal any evidence of *S. nodorum* and only *Pseudoseptoria stomaticola* (Bauml.) Sutton could be found on some of the affected glumes. In addition, the author has been unable to locate the collection cited by Cooke & Dube (1989) on *Cynodon dactylon*.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Agropyron* x hybrid; **New South Wales**; Royal Botanic Gardens, Sydney, 10 Jan. 1951, D. Shaw 427 (DAR 12037)

on *Secale cereale*; **New South Wales**; Coolbaggie, 27 Nov. 1970, G. Stovold & K. J. Moore (DAR 20667); **Tasmania**; Research Station, Cressy, 23 Nov. 1979, D. Munro (DAR 37032b);

on *Triticum aestivum*; **New South Wales**; Experiment Farm, Cowra, Nov. 1930, E.T. Edwars (DAR 1161); Mendooran, 8 Nov. 1950, R.J. Conroy (DAR 3746); Narrabri, 11 Nov. 1964, F. Cutting (DAR 13733); Stockingbingal, 2 Dec. 1970, R. Scott (DAR 20704); Plant Breeding Institute, Castle Hill, Dec 1976, B. Ballantyne (DAR 28638); Finley, 16 Oct. 1986, J. Lacey (DAR 57403); **Queensland**; Wheat Research Institute, Toowoomba, 9 Nov. 1972, R.G. Rees (BRIP 5805); **Victoria**; Murrayville, 31 Oct. 1930 (VPRI 1830).

EXTRALIMITAL COLLECTIONS:
on *Triticum aestivum*, Maryland, **U.S.A.**, June 1910, N. Schnitz (DAR 10100 ex BPI 60193); on *Triticum dicoccum*, Maryland, **U.S.A.**, June 1910, N. Schnitz (DAR 10110 ex BPI 60192); on *Triticum* sp., Breezewood, Pennsylvania, **U.S.A.**, 1 July 1942, A.G. Johnson (DAR 10128) all as *Septoria nodorum*.

Septoria oxyspora Penz. & Sacc., *Syll. Fung.* **3**: 565 (1884)

This species was recorded in South Australia on *Phragmites australis* (Cav.) Steud. (Warcup & Talbot 1981, Cooke & Dube 1989). Examination of the single collection cited reveals conidia are falcate, fusiform, aseptate, measure 14-18 x 2-2.5μm and are produced from percurrently proliferating conidiogenous cells. The fungus is referrable to *Pseudoseptoria stomaticola* (Bauml.) Sutton.

Specimen examined: on *Phragmites australis*; **South Australia**; Meningie, Nov. 1956, L.D. Williams (ADW 6677)

Septoria passerinii Sacc. *Syll. Fung.* **3**: 560 (1884)
= *Septoria murina* Pass. *Atti. Soc. Critt. Ital.* **2**: 46 (1879) non Thüm.

(Fig. 107)

Leaf lesions hologenous, indefinite, elongated, mostly 6-7 x 3mm, occasionally up to 15mm long, on both surfaces pale brown, scarcely discoloured, lacking margin. *Conidiomata* amphigenous, scattered on lesions, separate, becoming crowded, immersed becoming erumpent, dark brown to black, globose, 90-130μm, pycnidial. *Ostiole* single, apical, 10-15μm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner

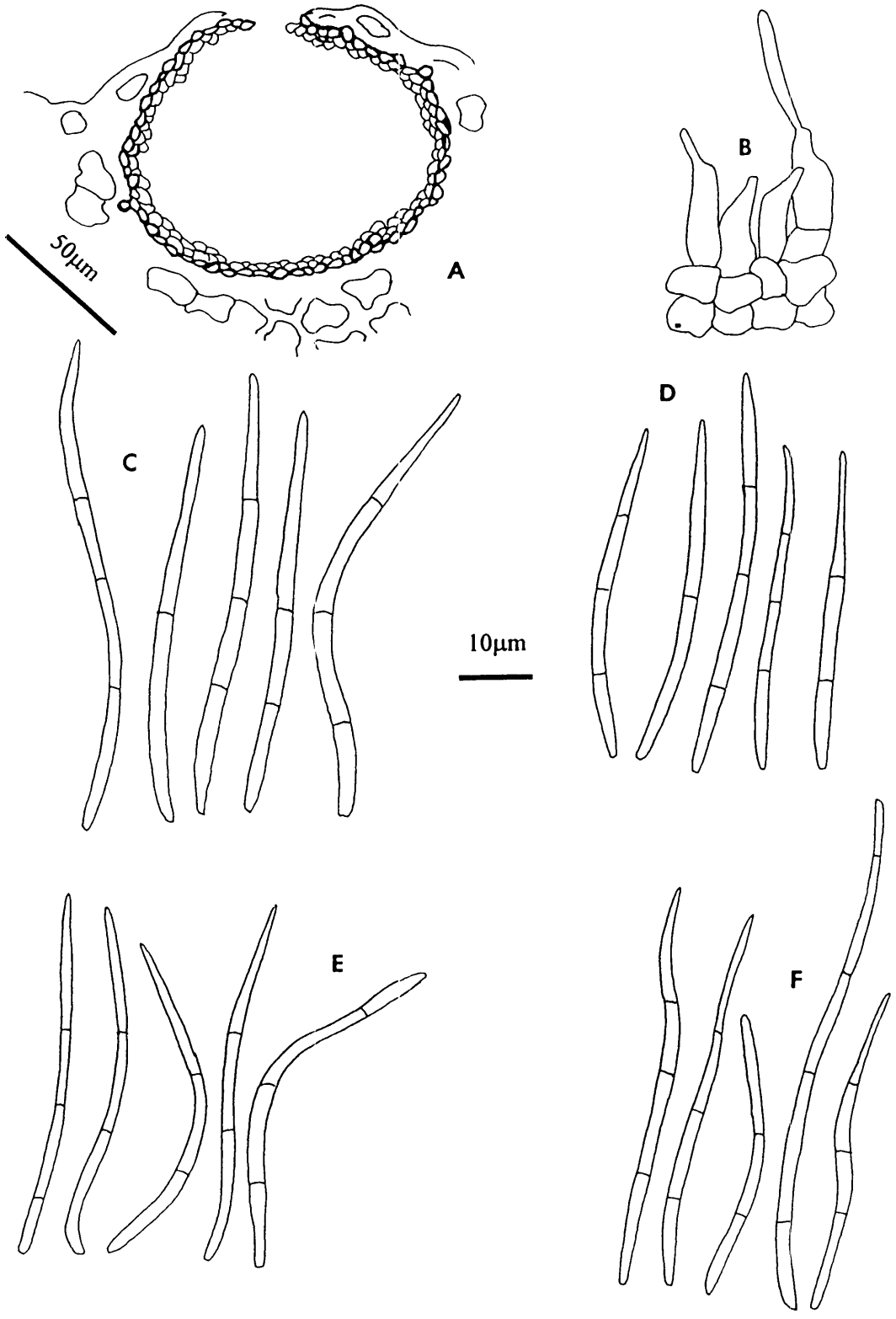

Fig.107. *Septoria passerinii*; (A) v.s. conidioma PERTH 823074; (B) conidiogenous cells PERTH 823074; C-F conidia (C) PERTH 823074; (D) type ex MEL; (E) *S. annua* type; (F) IMI 137378

wall layer, hyaline, discrete, often integrated and septate, ampulliform to lageniform, 6-9 x 2.5-3μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 1-3 septate, straight to slightly curved, 35-55 x 1.5-2μm, with a truncate to slightly rounded base and a rounded apex.

Hosts: *Hordeum glaucum* Steud., *H. leporinum* Link, *H. murinum* L., *H. vulgare* L.

Distribution: New South Wales (Noble *et al.* 1935, Brittlebank 1937-1940, Anon. 1969; all report only), Victoria (Brittlebank 1937-1940, Woodcock & Clarke 1983, report only on *H. murinum*), Western Australia (Carne 1925 on *H. vulgare*, 1927 on *H. murinum*, Brittlebank 1937-1940, Shivas 1989).

Septoria passerinii appears to be confined to Western Australia and is present there with *S. halophila* which is found on *Hordeum* spp. in other states of Australia. The collection cited by Shivas (1989) on *Hordeum vulgare* could not be located and was not available for examination. All collections are morphologically identical with type material examined. The available collections on *H. glaucum* and *H. leporinum* were previously assigned to *S. halophila* (Shivas 1989) but examination of the material available (dried cultures only) showed conidia with 1-3 septa and identical with *S. passerinii*. Reports of *S. passerinii* from New South Wales and Victoria remain unsubstantiated as herbarium material under this name from those states has not been located.

Specimens examined:

AUSTRALIAN COLLECTIONS:
on *Hordeum glaucum*; **Western Australia**; Kattanning, 29 Jan. 1969, H.L. Harvey (IMI 137377) host as *H. hystrix*;

on *Hordeum leporinum*; **Western Australia**; Mukinbredin, 7 Oct. 1968, H.L. Harvey (IMI 135481); no locality, 7 Oct. 1968, H.L. Harvey (IMI 135482, IMI 135483, IMI 135484, IMI 135485); Lake Grace, 29 Jan. 1969, H.L. Harvey (IMI 137378); Mukinbredin, 29 Jan. 1969, H.L. Harvey (IMI 137379);

on *Hordeum murinum*; **Western Australia**; Nungarin, 12 Oct. 1926, G.H. Herbert (PERTH 823074).

EXTRALIMITAL COLLECTION:

Septoria passerinii on *Hordeum murinum*; Parma, **Italy**, June 1879, G. Passerini, *Thüm. Mycotheca Universalis* No. 1997 (MEL) **type** of *S. murina* Pass.

Septoria triseti Speg., *Bol. Acad. Nac. Cienc. Cordoba* **11**: 296-297 (1888)

(Fig. 108)

Leaf lesions hologenous, elongated, 5-7 x 2-3mm, on both surfaces pale brown to creamy-brown, margin mostly absent, but when present, reddish-brown. *Conidiomata* amphigenous, mostly epigenous, scattered on lesions, separate, immersed, dark brown, flattened in cross-section, 90-150 x 70-90µm, pycnidial. *Ostiole* single, apical, 25-35µm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 7-10 x 2-3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 0-4 septate, straight to curved, basal cell often slightly swollen and the conidium appearing obclavate, (18-) 24-42 x 1-1.5µm, with a truncate to rounded base and often tapering to a rounded or sub-acute apex.

Hosts: *Agrostis capillaris* L., *Ehrharta longiflora* Smith, *Lophochloa pumila* (Desf.) Bor.

Distribution: Victoria, Western Australia (Shivas 1989 as *Septoria* sp. on both *Ehrharta longiflora* and *Lophochloa pumila*).

Septoria triseti was originally described from *Trisetum* and *Agrostis* with conidia as 20-30 x 1-1.3µm. According to Sprague (1950) the type collection is missing and he restricted *S. triseti* to *Agrostis* spp. only. Morphologically the Australian collection on *Lophochloa* is identical to the material on *Agrostis* in having obclavate conidia. *Lophochloa pumila* has previously been placed in the genus *Trisetum* and both *Agrostis* and *Lophochloa* are in the tribe Aveneae of the sub-family Pooidae. The collection on *Ehrharta* appears to be anomalous in that the host is currently placed in the tribe Ehrhartae of the Bambusoideae, however the conidia are indistinguishable from those seen in the collections on *Agrostis* and *Lophochloa*.

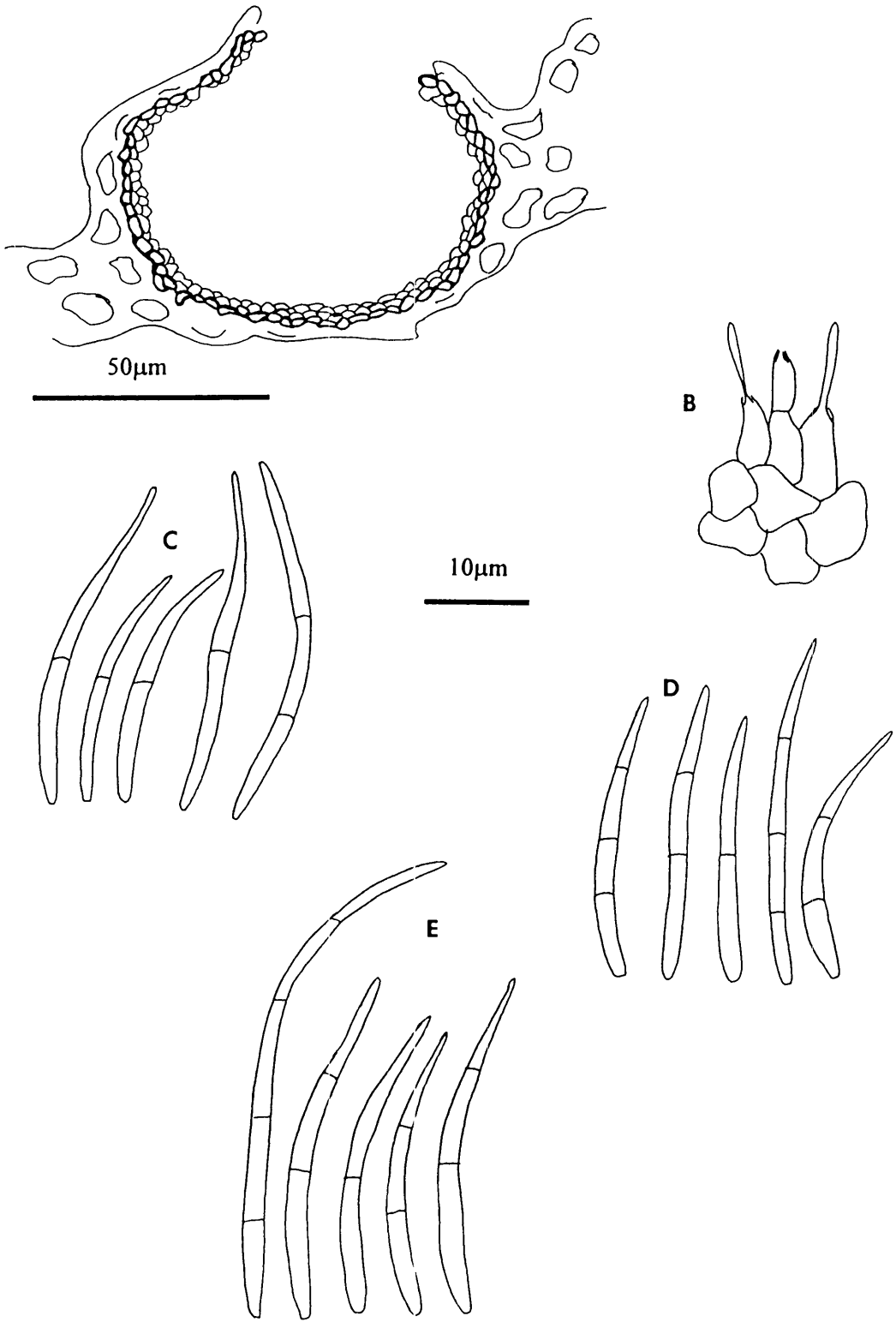

Fig.108. *Septoria triseti*; (A) v.s. conidioma PERTH 822590 ex *Ehrharta*; (B) conidiogenous cells PERTH 822590; C-E conidia (C) PERTH 822590; (D) VPRI 16534 ex *Agrostis*; (E) PERTH 727652 ex *Lophochloa*

Specimens examined:

on *Agrostis capillaris*; **Victoria**; Turf Research Institute, Frankston, 11 Sept. 1989, T. Woodcock (VPRI 16534);

on *Ehrharta longiflora*; **Western Australia**; Lesmurdie Falls, 11 Aug. 1923, J.G.C. Campbell (PERTH 822590);

on *Lophochloa pumila*; **Western Australia**; Eyre Bird Observatory, 9 Dec. 1986, K.R. Newbey (PERTH 727652).

Septoria tritici Rob. ex Desm., *Ann. Sci. Nat. Ser. 2,* **17**: 107 (1842)

(Fig. 109)

Leaf lesions hologenous, irregular to elliptical, 5 x 3mm diam., often coalescing into blotches up to 10mm in length, on both surfaces pale brown with a straw-brown centre, margin lacking. *Conidomata* amphigenous, scattered on lesions, often linear, immersed, rarely erumpent, dark brown to black, globose, 90-150μm diam., pycnidial. *Ostiole* single, apical, 10-30μm, cells around the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, often septate and integrated, ampulliform to lageniform, 8-12(-18) x 2-3.5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, (1-) 3 (-4) septate, straight to slightly curved, (30-)45-86 x 1.5-2μm, with a rounded to truncate base and narrowing slightly to a rounded or sub-acute apex. *Spermatia* occur in the same conidiomata with conidia measuring 7-12 x 0.75-1μm.

Hosts: *Avena* sp., *Danthonia caespitosa* Gaudich., *Dichelachne micrantha* , *D. rara* (R.Br.) Vickery, *D. sciurea* (R.Br.) Hook. f., *Holcus lanatus* L., *Lolium rigidum* Gaudin, *Triticum aestivum* L.

Distribution: New South Wales (McAlpine 1895, Noble *et al.* 1935, Murray 1978), Queensland (Simmonds 1951, Simmonds 1966), South Australia (Warcup & Talbot 1981, Cooke & Dube 1989), Tasmania (Sampson & Walker 1982), Victoria (McAlpine 1895, Freeman 1964, Woodcock & Clarke 1983), Western Australia (Carne 1925 as *S. graminum*, Carne 1927, Shivas 1989 on *Triticum* & *Secale* as *Mycosphaerella graminicola* and, on *Lolium* as *S. tritici* var. *lolicola* Sprague, report only).

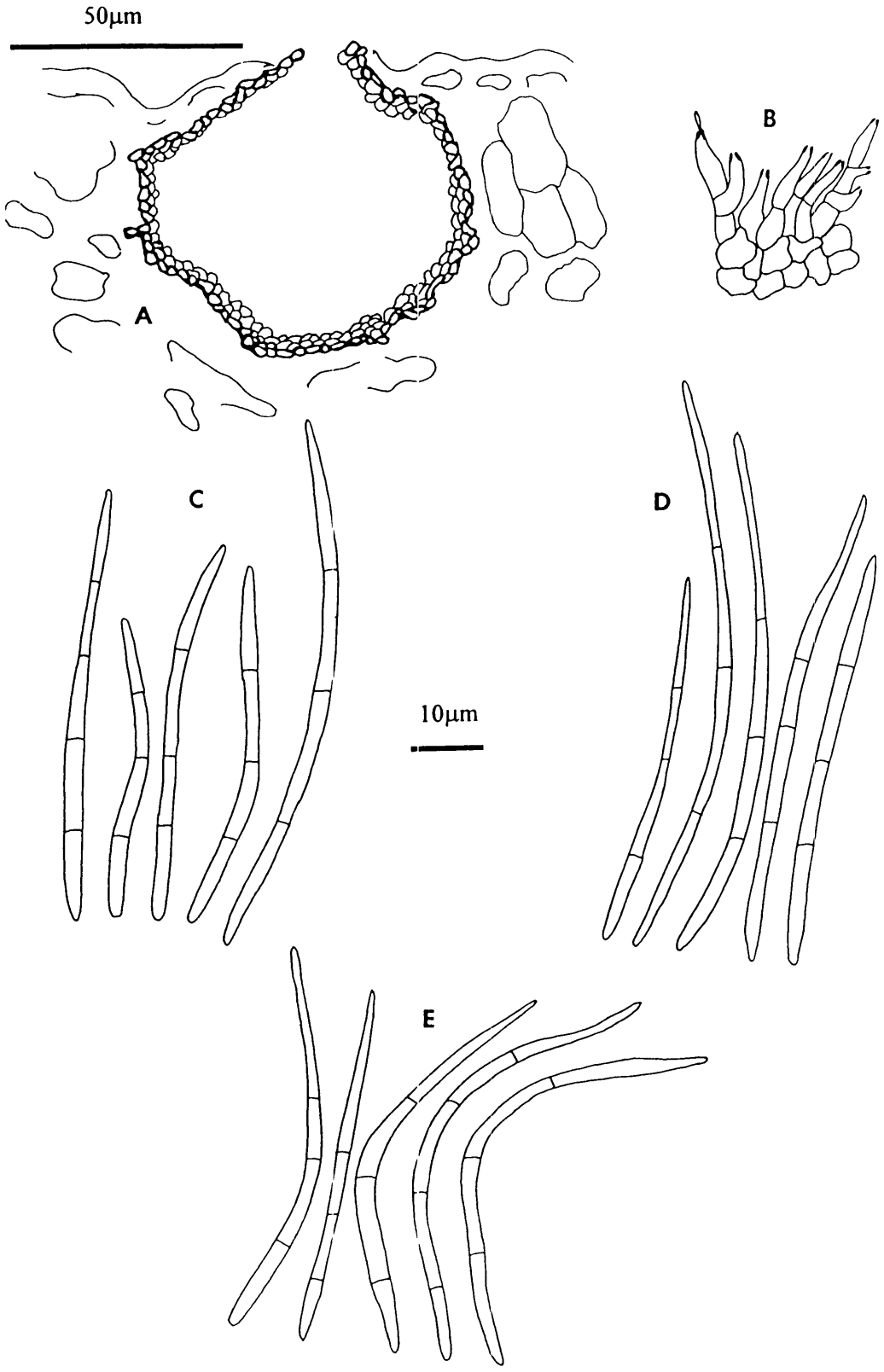

Fig.109. *Septoria tritici*; (A) v.s. conidioma VPRI 1787; (B) conidiogenous cells VPRI 1787; C-E conidia (C) VPRI 1787; (D) DAR 12060 ex *Danthonia*; (E) DAR 12064 ex *Dichelachne*

Septoria tritici is the cause of "speckled leaf blotch" of wheat and has been reported from throughout the world wherever wheat is grown (Sivanesan 1990). Several special forms have been recognised including *S. tritici* f.sp. *avenae* (Desm.) Sprague on *Avena sativa* and *S. tritici* f.sp. *holci* Sprague on *Holcus lanatus*. In addition Sprague (1950) recognised *S. tritici* var *lolicola* Sprague & A.G. Johnson as occurring on *Lolium*, but Australian collections on *Lolium* are indistinguishable from *S. tritici*. Shaw (1953, unpub.) placed her collections on *Lolium* in *S. tritici* var *lolicola* but both collections examined had conidia identical to *S. tritici*. The differences given by Sprague (1950) for distinguishing var. *lolicola* from *S. tritici* appear to be tenuous. All of the Australian collections examined do not differ from exsiccatus material available and descriptions of *S. tritici* given by many authors such as Weber (1922b), Fransden (1943), Sprague (1950), Jørstad (1967), Mäkelä (1975, 1977), Bissett (1983) and Sivanesan (1990). *Mycosphaerella graminicola* (Fuckel) Schroeter in Cohn, the teleomorph of *S. tritici*, was first reported in Australia by Brown (1975) in Victoria and subsquently by Harrower (1976b) in New South Wales. Descriptions given by both authors agree with those of Sanderson (1976) who examined type material of *Sphaerella graminicola* Fuckel, and subsequent descriptions by Sivanesan (1990) and Verreet *et al.* (1990). Two collections identified as *Mycosphaerella* on wheat from New South Wales have been examined and agree with the descriptions given by the above authors. A description is given below.

Mycosphaerella graminicola (Fuckel) J. Schröt. in Cohn, *Krypt.-Fl. Schles.* **3**: 340 (1894)
≡ *Sphaerella graminicola* Fuckel, *Jahrb. Nassau Ver. Nat.* **23-24**: 101 (1870)
≡ *Mycosphaerella graminicola* (Fuckel) Sanderson, *NZ. J. Bot.* **14**: 359 (1976)

(Fig. 110)

Ascomata on old leaves, dark brown to black, immersed, globose to oval, 90-120μm diam. with a single apical ostiole. *Ascomatal wall* 5-6 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer 3 layers dark brown and thickened, inner layers pale brown to sub-hyaline. Asci bitunicate, obclavate to ellipsoidal, 35-45 x 12-16μm, sessile, eight-spored. *Ascospores* hyaline, smooth-walled, 2-3 seriate, ellipsoidal, with rounded ends, 1-septate, septum median or just sub-median, the upper cell being longer and often slightly broader, 12-15 (-19) x 3-4μm.

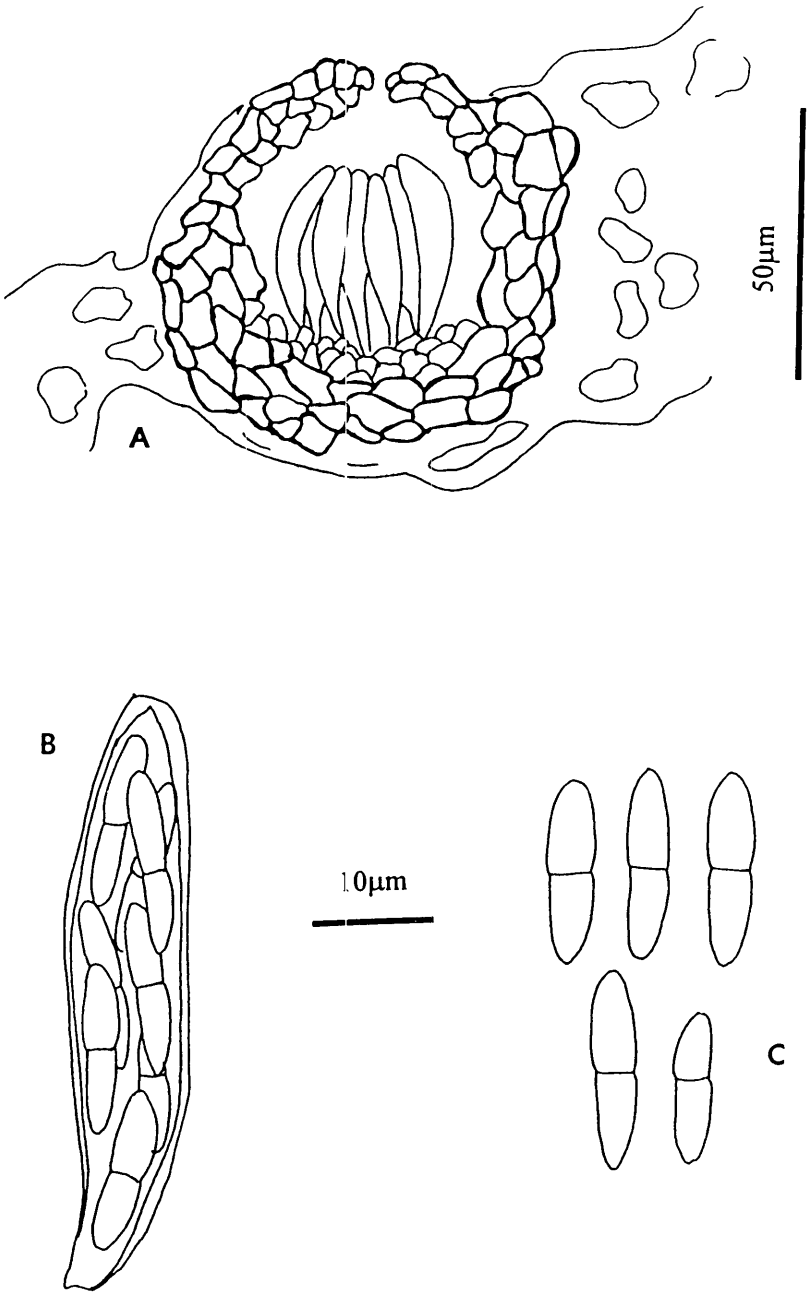

Fig.110. *Mycosphaerella graminicola* DAR 25968; (A) v.s. ascoma; (B) ascus; (C) ascospores

Specimens examined:

AUSTRALIAN COLLECTIONS:

Septoria tritici

on *Avena* sp.; **New South Wales**; Burbagate, 29 Aug, 1950, D. Shaw 245 (DAR 12049);

on *Danthonia caespitosa*; **New South Wales**; Gunnedah, 12 Aug. 1952, D. Shaw (DAR 12060);

on *Dichelachne micrantha*; **Queensland**; Mount Coot-tha, 26 Mar, 1974, J.L. Alcorn (BRIP 8915);

on *Dichelachne rara*; **Queensland**; Mount Coot-tha, 15 Oct. 1983, J.L. Alcorn (BRIP 14150); Brisbane Forest Park, Chapel Hill, Brisbane, 17 Dec. 1989, J.L. Alcorn (BRIP 16871, DAR 66083);

on *Dichelachne sciurea*; **New South Wales**; Springwood, 9 June 1952, D. Shaw (DAR 12064a);

on *Holcus lanatus*; **Victoria**; Eltham, 29 Aug. 1981, D. Williams (VPRI 11572);

on *Lolium rigidum*; **New South Wales**; Temora, 5 Oct. 1951, G. Ireland (DAR 12072); Orange, 12 Nov. 1952, D. Shaw 846 (DAR 12073);

on *Triticum aestivum*; **New South Wales**; Birrawa, Oct 1914 (DAR 112); Wallandbeen, 10 July 1913 (DAR 113a); Cootamundra, July 1921, W.A. Birmingham (DAR 1165); Orange, 21 July 1961, A.M. Smith (DAR 6231); Griffith, 25 Oct. 1961 (DAR 6567); Leeton, 25 Aug 1969, R.A. Done (DAR 17828); Wagga Wagga, Apr. 1975, J. Kuiper (DAR 25415); Wagga Wagga, Dec. 1976, G.M. Murray (DAR 28271); **South Australia**; Adelaide, 5 Aug. 1903, W.L. Summer (VPRI 1758); Urrbrae, Sept. 1906, Samuel (ADW 1765); Naracoorte, Nov. 1980, A. Mayfield (DAR 35863);**Tasmania**; Cressy, 23 Nov. 1979, D. Munro (DAR 33170); Exton, 9 Jan. 1986, P.J. Sampson (DAR 72791); Cressy Research Station, Cressy, 21 Sept. 1983, W. Ventigan (DAR 72649) **Victoria**; Joyces Creek, 9 Oct. 1912, A.E.V. Richardson (VPRI 1787); Molop, Oct. 1890 (VPRI 1789);Burnley, 9 Sept. 1892 (VPRI 1790); Netherby, 29 Sept. 1903, G.H. Robinson (VPRI 1792); Neilborough, 13 Oct. 1983, I. Smith (VPRI 12140); Warracknabeal, 21 Oct. 1987, R. Clarke (VPRI 15624); **Western Australia**; Wongan Hills Research Station, 30 Oct. 1951, W.A. Cass-Smith (DAR 71773).

Mycosphaerella graminicola

on *Triticum aestivum*; **New South Wales**; Ginninderra, Australian Capital Territory, 14 Jan. 1976, P.R. Dann (DAR 25968); Agricultural Research Centre, Wagga Wagga, 18 June 1973, J. Kuiper (DAR 59161).

EXTRALIMITAL COLLECTIONS:
on *Triticum aestivum*; Kansas, **U.S.A.**, 11 Dec. 1889, M. Varney (DAR 10109 ex BPI 66700); Kansas, **U.S.A.**, 14 Dec. 1889, M. Varney (DAR 10113 ex BPI 66699).

Septoria zeicola Stout, *Mycologia* **22**: 286 (1930)

(Fig. 111)

Leaf lesions hologenous, elliptical to iregular, 40 x 18mm, on both surfaces pale brown becoming straw-brown in the centre with a dark brown margin and yellow-brown necrotic halo. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, black, globose, 180-250μm diam., pycnidial. *Ostiole* single, apical, 20-25μm, opening very wide at maturity, slightly papillate, cells around the opening thickened. *Conidiomatal wall* 4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and slightly flattened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, 7-8 x 5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding from percurrently proliferating conidiogenous loci. *Conidia* hyaline, filiform, (2-)3-4 septate, straight to slightly curved, 24-39 x 2-2.5(-3), with a truncate base and tapering slightly to a rounded apex.

Host: *Zea mays* L. (Maize).

Distribution: New South Wales, Queensland (Simmonds 1966 as *Septoria* sp.).

The two collections available for examination agree morphologically with the original description of *S. zeicola* in which conidia were given as 18-38 x 2.5-3.5μm and 1-4 (usually 3) septate. The suggestion by Castellani & Germano (1975-76) that *S. zeicola* is probably referrable to *S. nodorum* is doubtful as the conidia of *S. nodorum* are generally shorter than seen in *S. zeicola*. Some similarity in conidial dimensions with *S. agropyrina* is noted, but no proliferation of the conidiogenous cells was

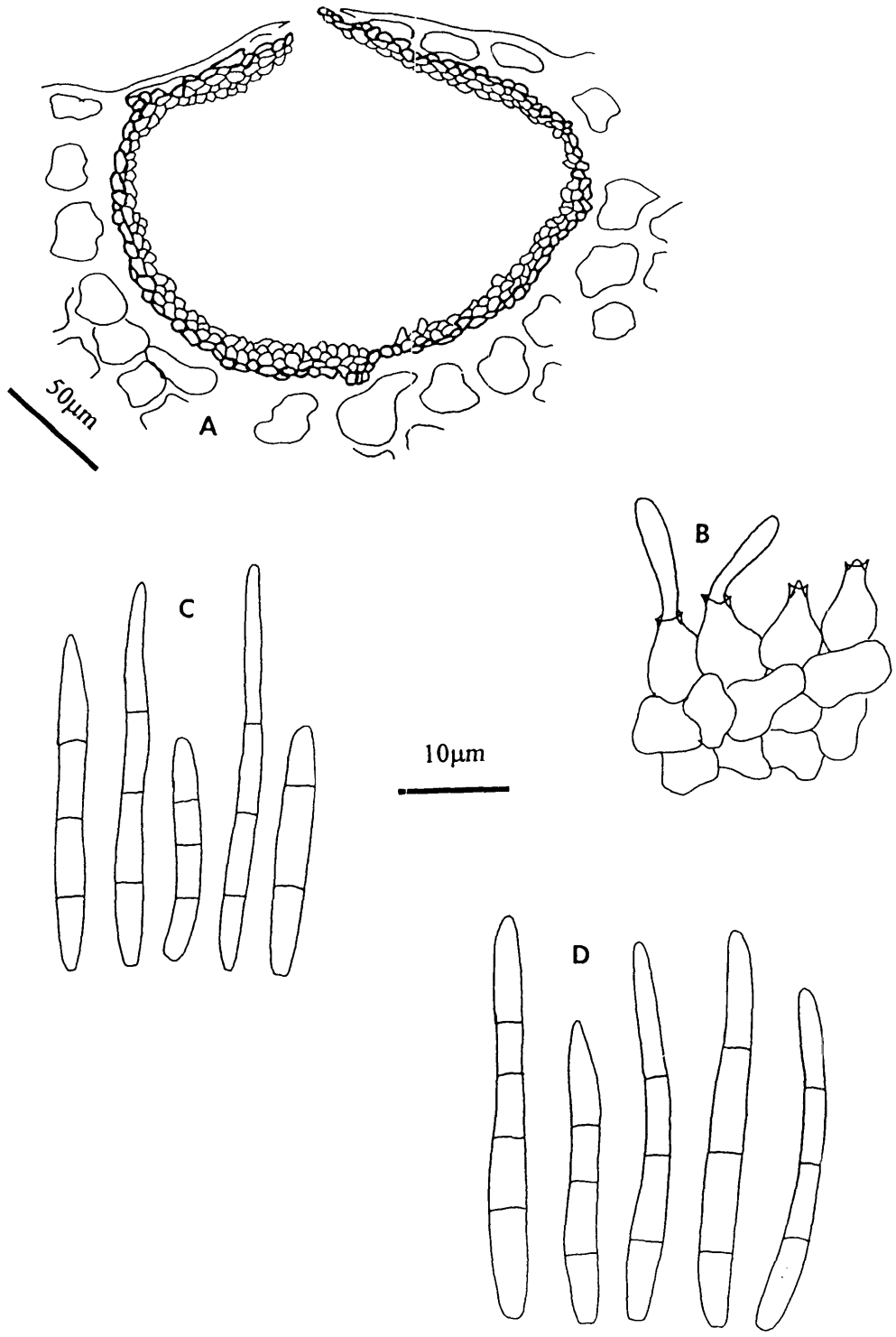

Fig.111. *Septoria zeicola*; (A) v.s conidioma BRIP 5848; (B) conidiogenous cells BRIP 5848; (C) conidia BRIP 5848; (D) conidia DAR 48931

observed in that species. *Septoria zeicola* is probably referable to *Stagonospora* but type material would have to be examined to confirm the generic affinity. *Septoria zeicola* would appear to be a leaf disease of minor importance since it has not been reported elsewhere following its original description from Illinois in the U.S.A.

Specimens examined: on *Zea mays*; **New South Wales**; Parkes, 15 Feb. 1971 (DAR 48931); **Queensland**; Tingoora, 13 Apr. 1956 (BRIP 5848).

Excluded records

In addition to the above recognised species there are a number of literature records of *Septoria* spp. occurring on hosts in the Poaceae for which there are no herbarium collections available or which have not been located and remain unsubstantiated. These are listed below in order of state:

New South Wales

Septoria sp. on *Avena fatua* at Henty and Wagga Wagga in New South Wales (Noble *et al.* 1935). Probably referrable to *S. calamagrostidis* (Lib.) Sacc.

Septoria sp. on *Cynodon dactylon* at Dubbo, New South Wales in 1924 (Noble *et al.* 1935). Listed by Brittlebank (1937-1940) as *S. cynodontis* Fuckel.

Septoria sp. on *Poa annua* in the metropolitan area of Sydney, New South Wales (Noble *et al.* 1941). Later collections on this host in the metropolitan area suggests that the record probably refers to *S. halophila* Speg.

South Australia

Septoria sp. on *Avena sativa* (Warcup & Talbot 1981, Cooke & Dube 1989).

Septoria sp. on *Stipa* sp. (Warcup & Talbot 1981, Cooke & Dube 1989). The specimen listed (ADW 7421) has not been located.

Tasmania

Septoria sp. on *Hordeum distichon* (Sampson & Walker 1982).

Victoria

Septoria bambusae Brun. on *Bambusa* sp. in 1915 (Brittlebank 1937-1940, Chambers 1982).

Septoria holci Pass. on *Holcus lanatus* (Brittlebank 1937-1940).

Septoria lolii (Cav.) Sacc. on *Lolium perenne* in 1892 (Garman & Stevens 1920, Brittlebank 1937-1940, Woodcock & Clarke 1983). Probably referrable to *S. tritici*. The listing by Garman & Stevens (1920) is curious as the reporting of this species in Australia does not appear in Saccardo nor is it listed by McAlpine (1895).

Septoria sp. on *Hordeum vulgare* at Weribee in 1948 (Woodcock & Clarke 1983).

POLEMONIACEAE

Septoria divaricata Ellis & Everh., *J. Mycol.* 5: 151 (1889)
= *Septoria drummondii* Ellis & Everh., *J. Mycol.* 7: 133 (1892)

(Fig. 112)

Leaf lesions hologenous, orbicular, 4-5mm diam, on both surfaces pale brown in the centre becoming pale creamy with age, margin raised, pale brown with a broad necrotic halo. *Conidiomata* amphigenous, mostly epigenous, scattered on lesions, separate, immersed, globose, dark brown 60-100μm, pycnidial. *Ostiole* single, apical, 15-25μm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer pale brown, inner layers sub-hyaline. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform to lageniform, 6-12 x 4-6μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 1-3 septate, straight to curved, (13-) 25-40 (-45) x 1-1.5μm, with a truncate base and obtuse apex.

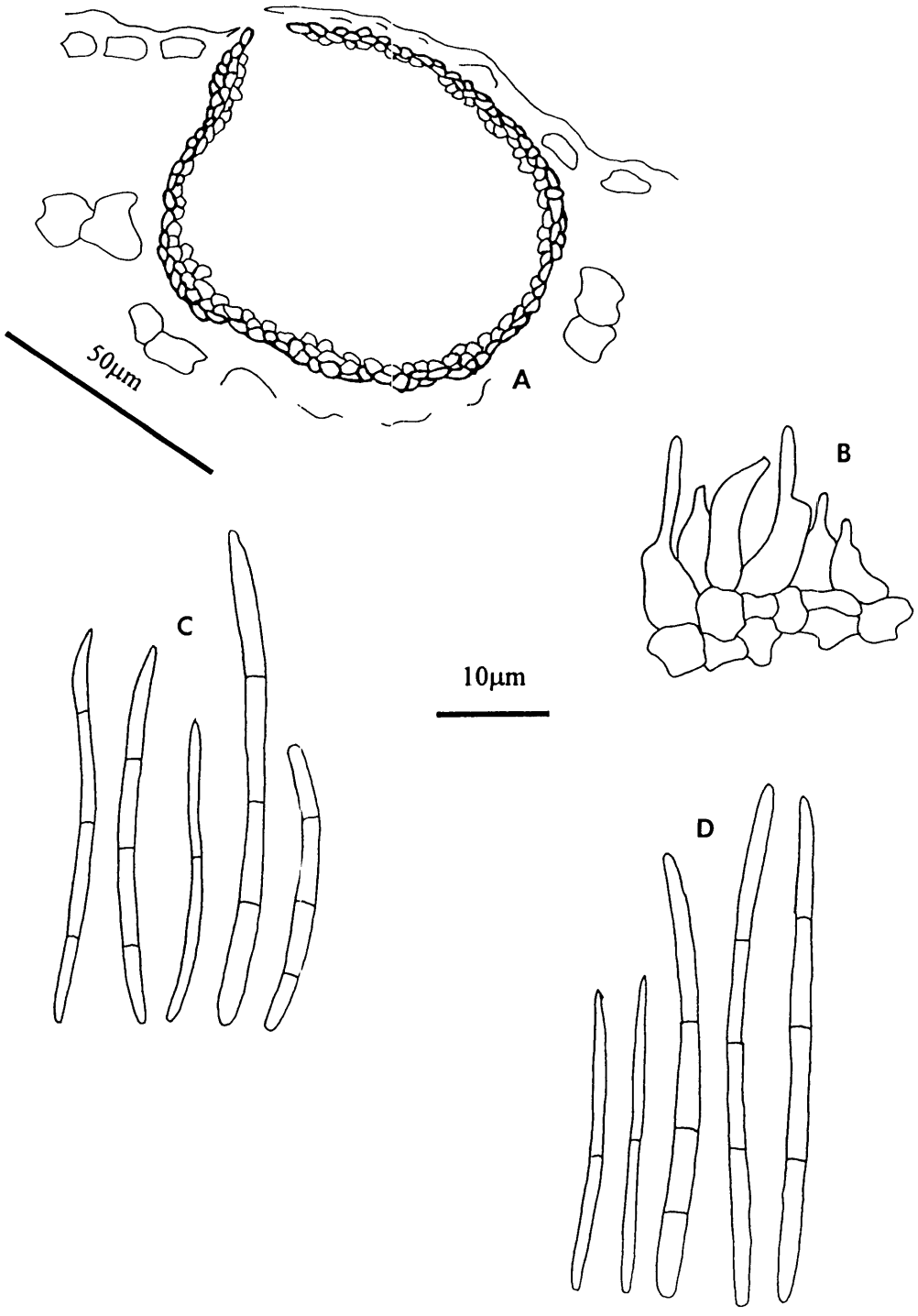

Fig.112. *Septoria divaricata*; (A) v.s. conidioma DAR 5225; (B) conidiogenous cells DAR 5225; (C) conidia DAR 5225; (D) conidia DAR 54273 (Fungi Columbiani No. 1256)

Host: *Phlox drummondii* Hook.

Distribution: New South Wales (Hynes *et al.* 1935), Queensland (Simmonds 1966), Victoria (Brittlebank 1940 and Chambers 1982 as *S. drummondii*), Western Australia (Goss 1964 as ? *S. phlogis* on *P. paniculata*, Shivas 1989)

The separation of the species described from *Phlox* spp. has proven to be difficult. *Septoria divaricata* was described with conidia 15-35 x 1μm from *P. divaricata* and shortly thereafter *S. drummondii* was described with conidia 35-50 x 1.5-2μm. Examination of material of *S. drummondii* shows conidia varying in size from 15-45 x 1-1.5μm, clearly encompassing both described species and I consequently regard them as conspecific. *Septoria phlogis* Sacc. & Speg. was described from *P. paniculata* with conidia 40-60 x 1-2μm, slightly longer than those seen in *S. divaricata* and examination of material on *Phlox paniculata* has shown conidia (35-) 50-65 (-73) x (1-)1.5-2μm. Jørstad (1965) regarded all three taxa as conspecific and synonymised all under *S. phlogis*. However I have chosen to keep *S. divaricata* (syn. *S. drummondii*) and *S. phlogis* as separate taxa. There does not appear to be any restriction to host demonstrated; Anon (1946) reported that isolates from both hosts were cross-infective and examination of two collections on *P. drummondii* from New Zealand and Western Australia has shown that both are *S. phlogis*. On the host there are some minor morphological differences in that *S. phlogis* generally has small epigenous leaf lesions with a raised purple-brown margin, compared with *S. divaricata* which has larger hologenous lesions and no raised purple-brown margin.

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Phlox drummondii*; **New South Wales**; Sydney, Nov. 1937, R.J. Noble (DAR 1664); Parramatta, Mar 1941, L.R. Fraser (DAR 3955); Sydney, Dec. 1959, F. Bagshaw (DAR 5225); Botanic Gardens, Sydney, Dec. 1910, J.H. Camfield (DAR 8503); Epping, 5 Dec. 1963, A.M. Smith (DAR 12280); Shortland, 4 Nov. 1964, K. Fishpool (DAR 13591); **Victoria**; Armadale, 6 Oct. 1901, G.H. Robinson (VPRI 1782); Camberwell, 1 Nov. 1903, C. French Jnr. (VPRI 8828); **Western Australia**; South Perth, 13 June 1923, Mrs. Hewison (PERTH 788805).

EXTRALIMITAL COLLECTION:

Septoria drummondii on *Phlox drummondii*; London, *Canada*, Sept. 1897, J. Dearness, *Fungi Columbiani* No. 1256 (DAR 54273).

Septoria phlogis Sacc. & Speg., *Michelia* **1**: 184 (1878) as "*phlocis*"

(Fig. 113)

Leaf lesions epigenous, orbicular to irregular, 1-3mm diam., pale brown in the centre, at length becoming creamy brown to white with a raised purple-brown margin. *Conidiomata* epigenous, scattered on lesions, separate, immersed, globose, dark brown to black, 90-150µm diam., pycnidial. *Ostiole* single, apical, 20-30µm, cells around the opening slightly thickened. *Conidiomata wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer pale brown, inner layers very pale brown to sub-hyaline. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, 5-7 x 3.5-4.5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 1-4 septate, straight to curved, (35-)50-73 x (1-)1.5-2µm, with a truncate base and obtuse apex.

Hosts: *Phlox drummondii* Hook, *P. paniculata* L.

Distribution: New South Wales, Western Australia (Brittlebank 1937-1940, Goss 1964, Shivas 1989)

Separated from *S. divaricata* by the longer conidia and epigenous lesions with a raised purple-brown margin (see discussion under *S. divaricata*).

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Phlox drummondii*; **Western Australia**; Claremont, 21 Oct. 1924, L.J. Newman (PERTH 785679);

on *Phlox paniculata*; **New South Wales**; Sydney, May 1936 (DAR 1644); Queanbeyan, 1961 (DAR 6268); Dural, 17 Mar. 1986 (DAR 55498).

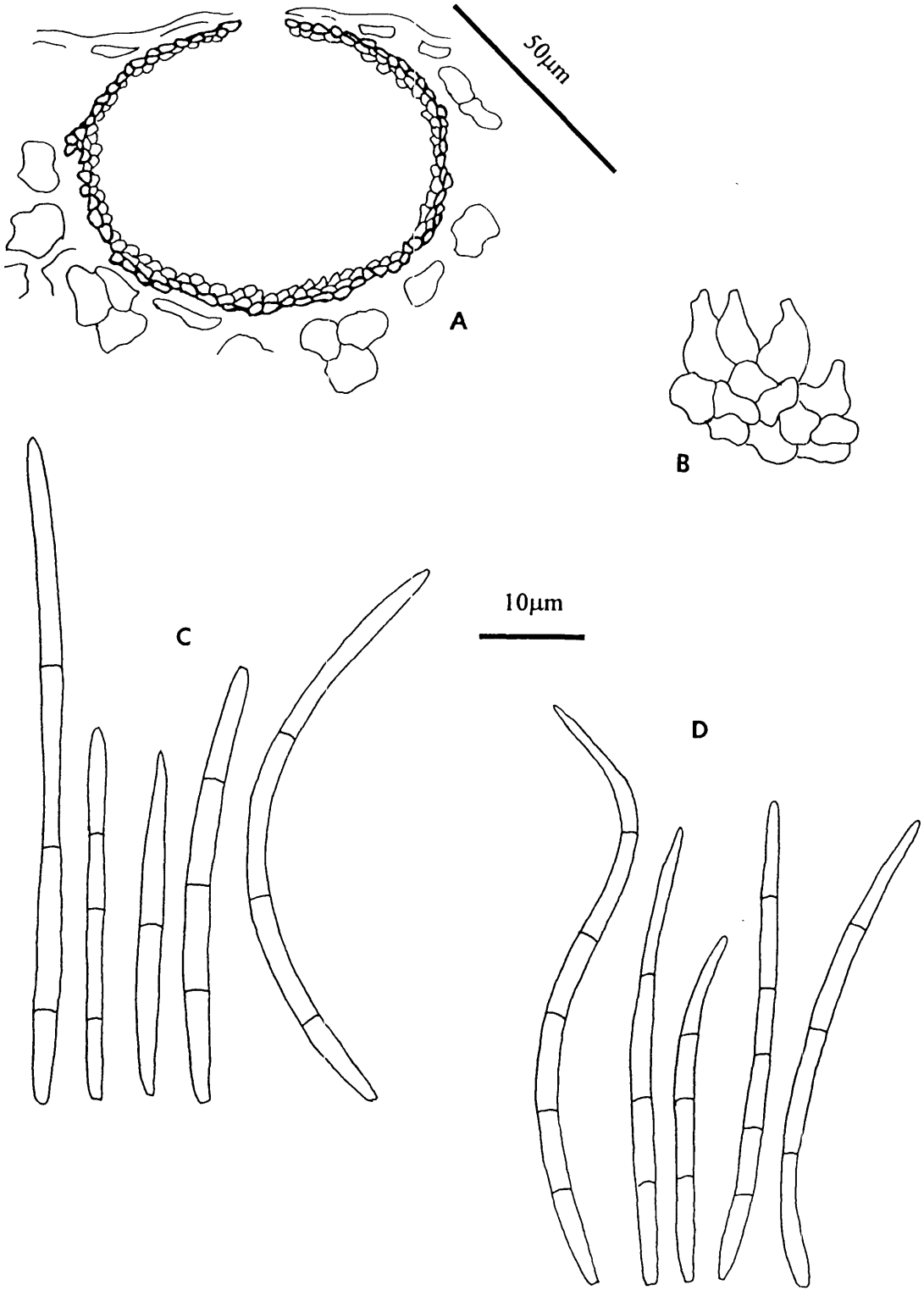

Fig.113. *Septoria phlogis*; (A) v.s. conidioma DAR 1644; (B) conidiogenous cells DAR 1644; (C) conidia DAR 1644; (D) conidia DAR 51782 (Econ. Fungi No. 491)

EXTRALIMITAL COLLECTIONS:

Septoria phlogis; on *Phlox perennis*; London, **Canada**, 21 Oct. 1896, J. Dearness, *Seymour & Earle Economic Fungi* No. 491 (DAR 51782); on *Phlox paniculata*; Cluj, **Roumania**, 17 Oct. 1953, A. Crijan, *Flora Romaniae Exs.* No. 3035 (DAR 21082).

Septoria sp. on *Phlox drummondii*

Reported by Sampson & Walker (1982). No herbarium material has been located and the identity of the species of *Septoria* is not known.

POLYGONACEAE

Septoria polygonorum Desm., *Ann. Sci. Nat. Ser.2*, **17**: 108 (1842)

(Fig. 114)

Leaf lesions hologenous, orbicular, 2-4mm diam., on both surfaces pale to mid-brown in the centre with a dark red-brown margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, mid-brown to black, globose, 50-110µm diam., pycnidial. *Ostiole* single, apical, 20-40µm, cells around the opening dark and thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally integrated, ampulliform to cylindrical, 9-15 x 3-5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 1-4 septate, straight to slightly curved, 25-45(-58) x 1.5-2µm, with a truncate to rounded base and tapering to a sub-acute apex.

Hosts: *Polygonum lapathifolium* L., *Polygonum* sp. (? *P. minus*).

Distribution: New South Wales, Victoria (Brittlebank 1937-1940, Chambers 1982).

Australian collections do not differ from descriptions of this species given by Grove (1935) and Jørstad (1965). Examination of available exsiccatus material also confirms the identity of this species.

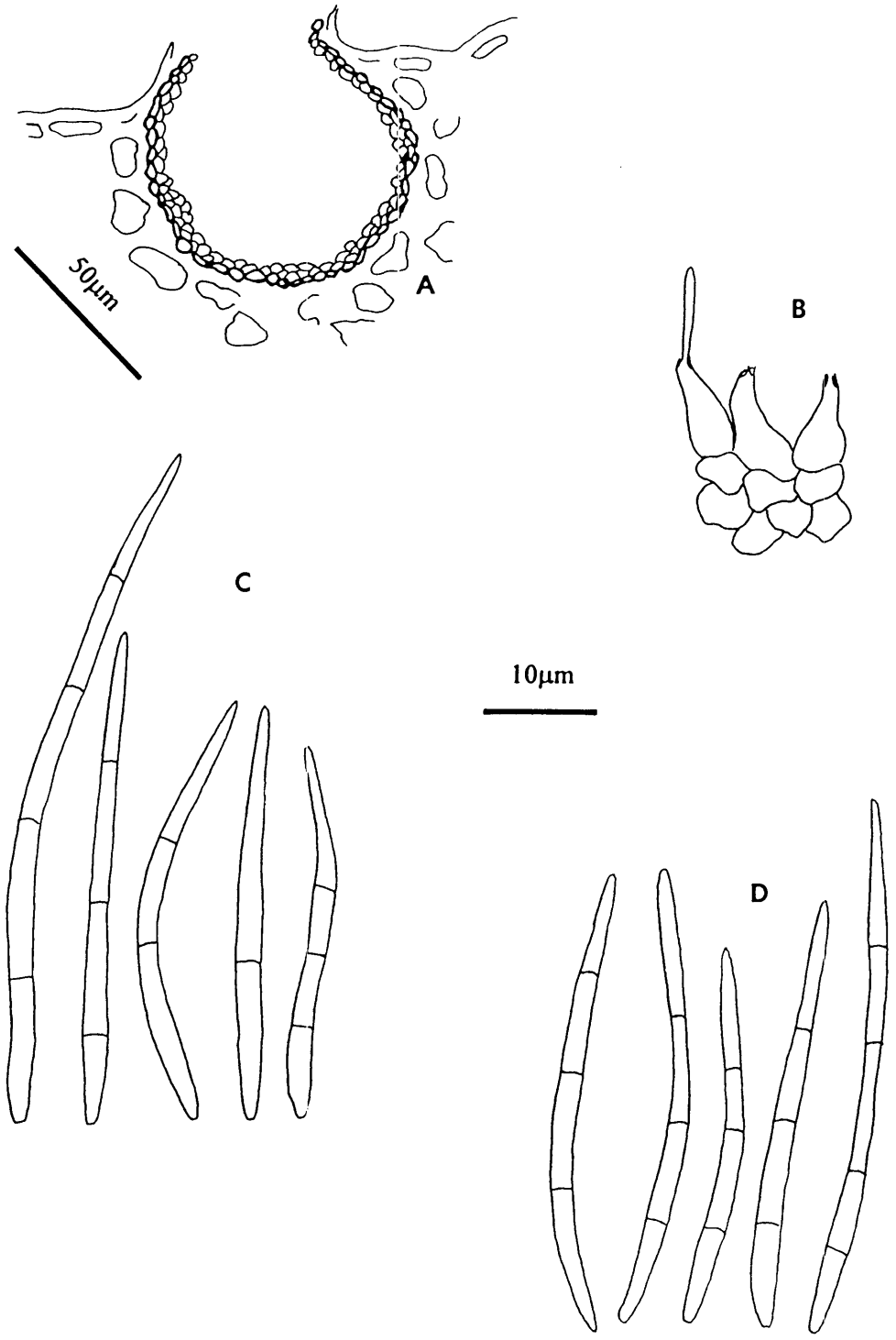

Fig.114. *Septoria polygonorum*; (A) v.s. conidioma DAR 25532; (B) conidiogenous cells DAR 25532; (C) conidia DAR 25532; (D) conidia DAR 9537 (Myc. Saximontensis No. 687)

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Polygonum lapathifolium*; **New South Wales**; Bega, 10 Jan. 1956, J. Walker (DAR 7326); Jingellic, 9 Dec. 1974, J. & S. Walker (DAR 25532); Dorrigo, 10 Apr. 1971, O.M. Williams (DAR 57195);

on *Polygonum* sp.; **Victoria**; Kergunyah Hills, Nov. 1902, G.H. Robinson (VPRI 1887) host as ? *P. minus*.

EXTRALIMITAL COLLECTIONS:

Septoria polygonorum; on *Polygonum nodosum*; California, **U.S.A.**, Oct. 1893, A.J. McClatchie, *Fungi Columbiani* No. 280 (DAR 53428); on *Polygonum pennsylvanica*; Montana, **U.S.A.**, E. T. & E. Bartholomew, *Fungi Columbiani* No. 4386 (DAR 62882); on *Polygonum persicaria*; Wyoming. **U.S.A.**, 17 July 1934, R.C. Rollins, *Mycoflora Saximontanensis* Exs. No. 687 (DAR 9537); Auckland, **New Zealand**, 2 Jan. 1965, S. Daveson (DAR 62686); on *Polygonum* sp.; East Suffolk, **England**, 21 Aug 1962, B.C. Sutton (DAR 13315 ex IMI 95332).

Septoria rhapontici Thüm., ? *Bull. Soc. Imper. de natural de Moscou* **53**: 206-252 (1888)

Listed by Brittlebank (1937-1940) on *Rheum rhaponticum* L. in Victoria. No herbarium material under this name has been located and the record is unsubstantiated.

PRIMULACEAE

Septoria cyclaminis Dur. & Mont., *Flore d'Algerie*, 595 (1849)

≡ *Rhabdospora cyclaminis* (Dur. & Mont.) Mont., *Syll. Crypt.*, 279 (1856)

(Fig. 115)

Leaf lesions hologenous, irregular, marginal, 15 x 10mm diam., on the upper surface pale grey in the centre with a thin dark brown margin and pale to mid-brown necrotic halo, lower surface lesions pale brown, lacking margin and halo. *Conidiomata* amphigenous, scattered on lesions, separate, rarely

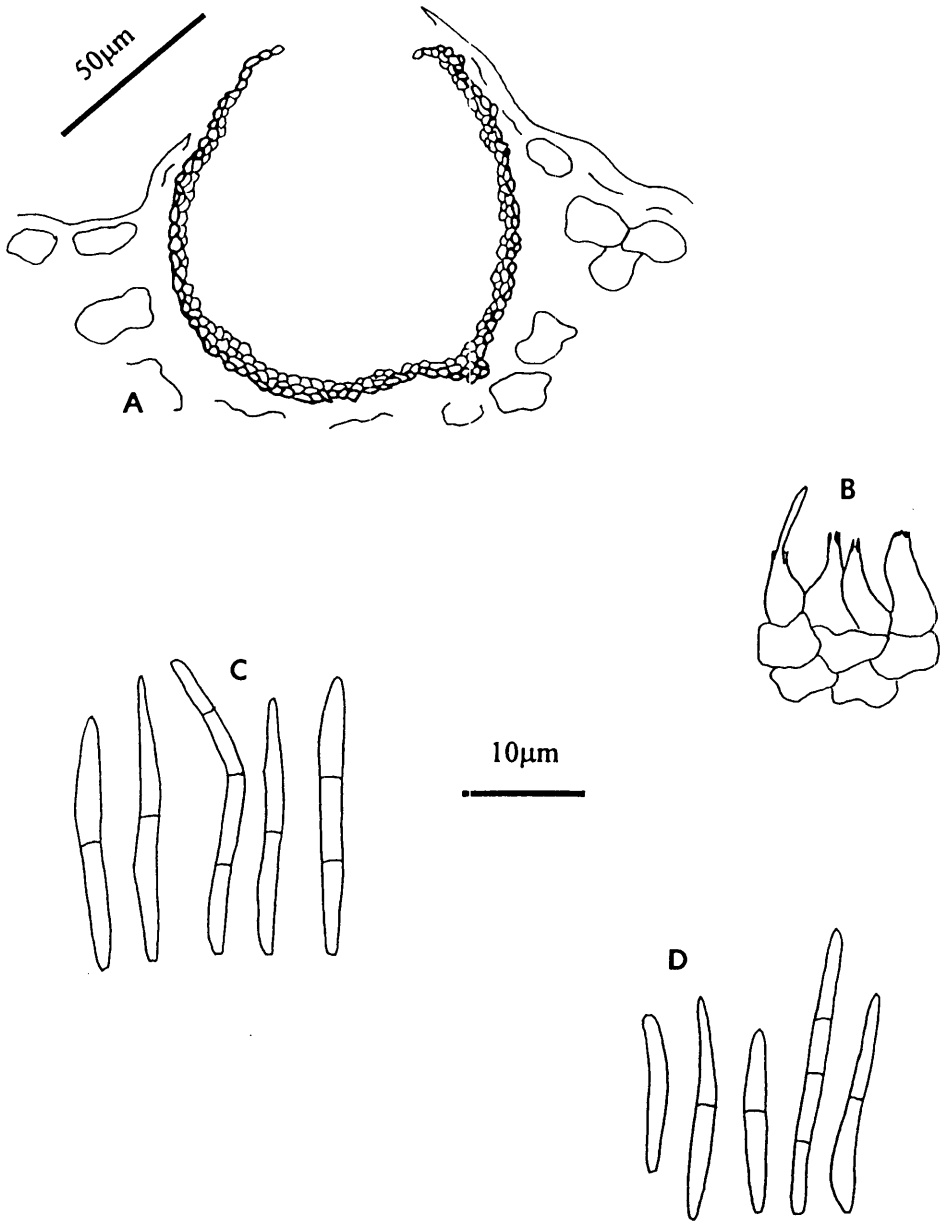

Fig.115. *Septoria cyclaminis*; (A) v.s. conidioma DAR 1576; (B) conidiogenous cells DAR 1576; (C) conidia DAR 1576; (D) conidia BRIP 17622 (I. Funghi Parassiti No. 92)

aggregated, immersed becoming erumpent, dark brown to black, globose, 90-150µm diam., pycnidial. *Ostiole* single, apical, 25-30µm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, lageniform, 5-8 x 2-2.5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 1-3 septate, straight to slightly curved, 14-22(-30) x 1-1.5µm, with a rounded to truncate base and rounded apex.

Host: *Cyclamen* sp.

Distribution: New South Wales (Noble *et al.* 1935 as *Septoria* sp.), Victoria (Brittlebank 1937-1940 and Chambers 1982 as *Septoria cyclaminis* Sacc., report only).

Septoria cyclaminis is only known from a single collection from New South Wales, the record for Victoria being unsubstantiated by herbarium material. In the original description the conidia were given as 25-30 x 1µm and the available collection agrees with it and a single exsiccatus collection identified as *S. cyclaminis*. The conidial dimensions for *S. cyclaminis* given by Sameva (1987) were 25-44 x 1-1.5µm on *Cyclamen hederifolium* Ait. in Bulgaria which are slightly longer than given in the original description.

Specimens examined:

AUSTRALIAN COLLECTION:
on *Cyclamen* sp.; **New South Wales**; Albury, July 1929 (DAR 1576).

EXTRALIMITAL COLLECTION:
on *Cyclamen europaeum* L.; Orto Botanico, Pavia, **Italy**, 1889, Briosi & Cavara, *I. Funghi Parassiti* No.92 (BRIP 17672).

Septoria primulae Bucknall, *Grevillea* **14**: 40 (1885)

Listed as occurring in 1914 on a *Primula* sp. in Victoria (Brittlebank 1937-1940 and Chambers 1982). No herbarium material under this name has been located and the record remains unsubstantiated.

Septoria sp. on *Samolus repens*

A *Septoria* sp. was reported by Chambers (1982) as occurring on *Samolus repens* (Forst. & Forst.f.) Pers. at Warnambool in Victoria in 1914. No herbarium material has been located and the identity of the species of *Septoria* is unknown.

RANUNCULACEAE

Septoria anenomes Desm., *Ann. Sci. Nat.* (Ser. 2), **10**: 310 (1838)

(Fig. 116)

Leaf lesions hologenous, orbicular, separate, 1-2mm diam., on both surfaces, pale brown in the centre later becoming grey-brown, with a raised brown to black margin and narrow purple-brown halo. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, globose, 50-90µm diam., pycnidial. *Ostiole* single, apical, 10-20µm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform, 4-5 x 4µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, 0-1 septate, straight to slightly curved, 13-24 x 0.5-1µm, with a truncate base and rounded apex.

Host: *Anenome nemorosa* L.

Distribution: Tasmania.

In the original description of *S. anenomes*, the conidia were given as 20-22 x 1-1.3µm and occurring on *A. nemorosa* and *A. trifoliata*. On the host *A. nemorosa*, Jørstad (1965) gave conidia as 16-35 x 1(-1.5)µm and also considered it to be possibly conspecific with *S. hepaticicola* (Duby) Jørstad with conidia 14-36 x 0.7-1µm. Examination of a single available exsiccatus collection identified as *S. anenomes* has shown that the Australian collection is identical with it. Conidia of *S. anenomes* are shorter and narrower than those of *S. ficariae* Desm. on *Ranunculus* (see discussion under that species)

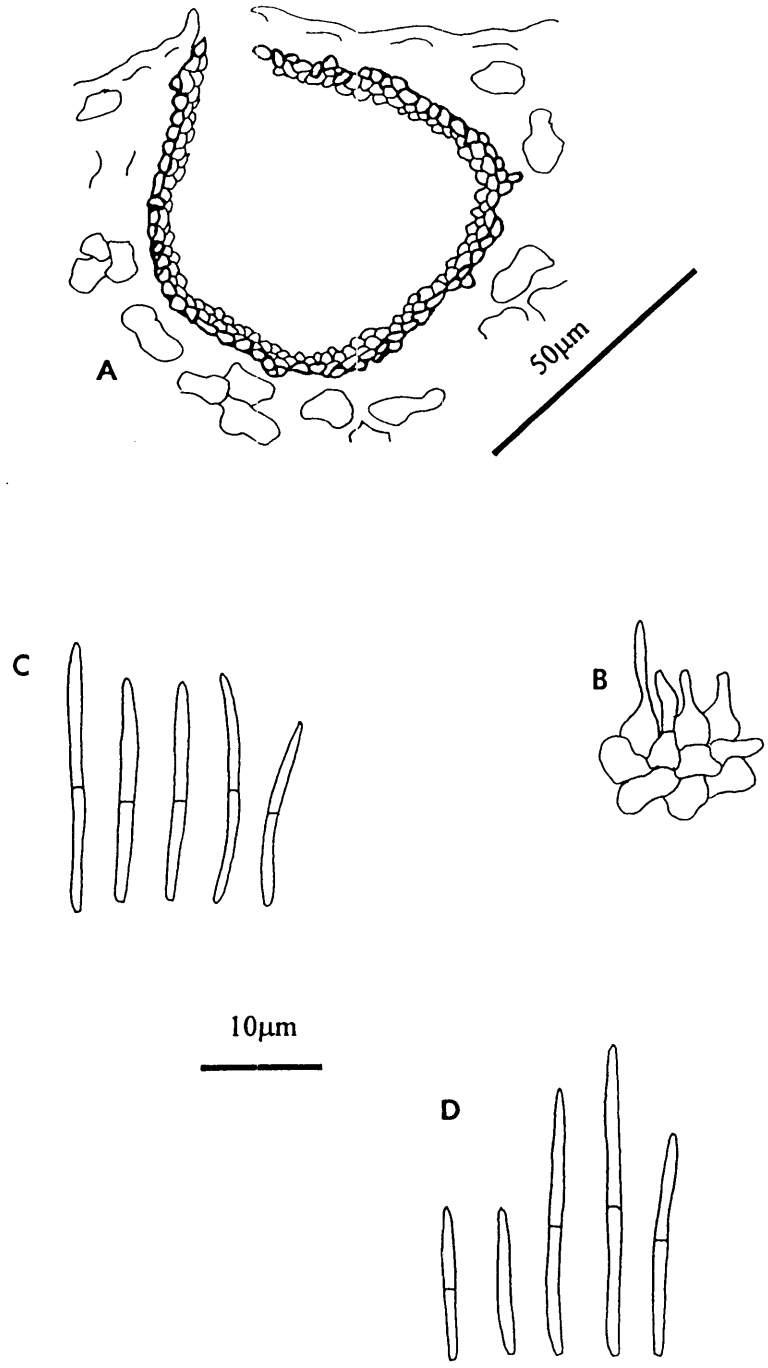

Fig.116. *Septoria anenomes*; (A) v.s conidioma DAR 71776; (B) conidiogenous cells DAR 71776; (C) conidia DAR 71776; (D) conidia DAR 62789 ex S

Specimens examined:

AUSTRALIAN COLLECTION:

on *Anenome nemorosa*; Tasmania; Longley, 1976, D.I. Morris (DAR 71776).

EXTRALIMITAL COLLECTION:

on *Anenome nemorosa*; Vanersborg, **Sweden**, June 1933, A.G. Eliasson (DAR 62789 ex S).

Septoria aquilegiae Penz. & Sacc., *Fl. Monte Generoso* No. 120 (1884)

Reported by Brittlebank (1937-1940) and Chambers (1982) as occurring on *Aquilegia vulgaris* in the Botanic Gardens, Melbourne in Victoria in 1925. No herbarium material under this name has been located and the record remains unsubstantiated.

Septoria ficariae Desm., *Ann. Sci. Nat.* (Ser.2), **15**: 135 (1841)

(Fig. 117)

Leaf lesions hologenous, orbicular to mostly irregular and elongated, bounded by leaf veins, mostly 2-5mm diam., occasionally up to 8mm, on both surfaces at first green-brown later becoming pale brown and eventually grey-brown with age, margin lacking. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, globose to slightly ovoid, dark brown, 50-70µm diam., pycnidial. *Ostiole* single, apical, 20-28µm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 6-8 x 2-2.5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, (1-)3 septate, straight to slightly curved, 23-40 x 1-1.5(-2)µm, with a truncate base and often slightly tapering to a sub-acute apex.

Host: *Ranunculus lappaceus* Sm., *Ranunculus* sp.

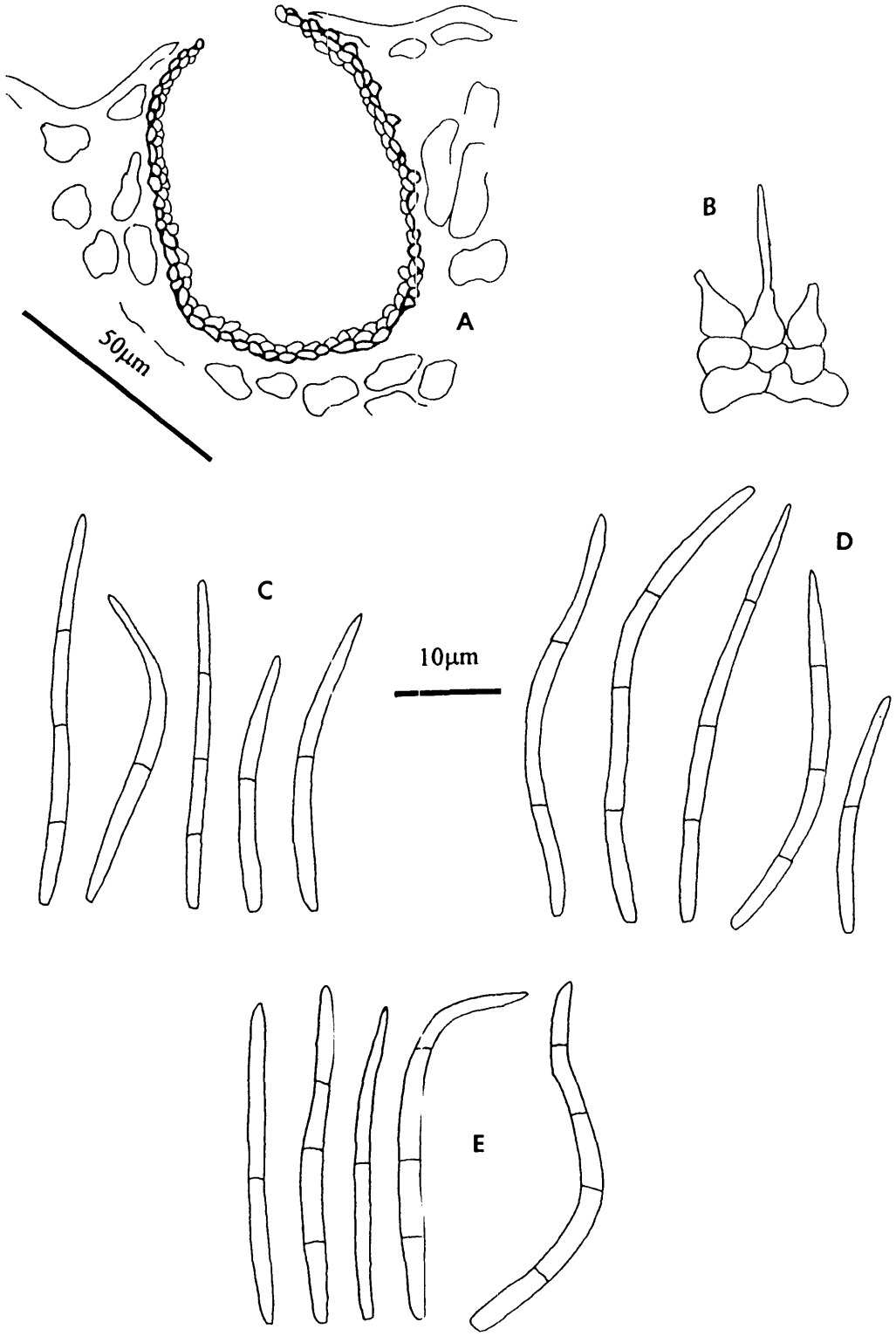

Fig.117. *Septoria ficariae*; (A) V.s. conidioma PERTH 785571; (B) conidiogenous cells PERTH 785571; C-E conidia (C) PERTH 785571; (D) VPRI 1891; (E) DAR 64371 (Krypt. Exs. No. 1734)

Distribution: New South Wales (Anon. 1970 as *Septoria* sp.), Victoria (Chambers 1982 as *Septoria ranunculacearum* and *Septoria* sp. on *R. asiaticus*), Western Australia (Goss 1964, Shivas 1989 both as *Septoria* sp.).

Septoria ficariae was originally described from *Ficaria ranunculoides* with conidia given as 25-35 x 1-1.25µm. *Septoria ficariaecola* Sacc. with conidia given as 18-20 x 1.5µm and associated with *Aecidium ficariae* on *F. ranunculoides* is obviously a hyperparasite. *Septoria cymbalariae* Thuem. with conidia 20-24 x 1.5µm on *Ranunculus cymbalaria* is shorter than *S. ficariae* and similar to *S. ficariaecola* but no mention of an association with any rust is noted. Jørstad (1965) gave conidia for *S. ficariae* as 16-37 x 1-1.5µm. Australian collections are identical with those descriptions and available exsiccatus material identified as this species, which has conidia longer and wider than seen in *S. anenomes* and narrower than those described for *S. williamsiae* on *Clematis* in Australia (see below)

Specimens examined:

AUSTRALIAN COLLECTIONS:
on *Ranunculus lappaceus*; **New South Wales**; Gloucester River, 13 Apr. 1968, O.M. Williams (DAR 19005); **Western Australia**; Cardup, 13 Oct. 1923, J.G.C. Campbell (PERTH 785571);

on *Ranunculus* sp; **Victoria**; Trafalgar, 15 Oct. 1909, D. McAlpine (VPRI 1891); North Brighton, no date or collector (VPRI 4462).

EXTRALIMITAL COLLECTIONS:
Septoria ficariae; on *Ranunculus ficaria*; **Austria**, F. von Hoehnel, *Krypt. Exs. Vindobensis* No. 1734 (DAR 64371); on *Ficaria verna*; near Stein, **Switzerland**, May 1882, B. Schenck, *Rabenhorst-Winter Fungi Europaei* No. 2791 (VPRI 6304).

Septoria ranunculacearum Lev., *Voyage dans la Russie meridionale et la Crimee par la Hongrie, la Valachie et la Moldavia*, 114 (1842)

Listed by Brittlebank (1937-1940) as occurring on *Ranunculus* sp. cult. in Victoria. No herbarium material under this name has been located and the record is unsubstantiated.

Septoria williamsiae Priest **sp. nov.**

Etymology: from the collector Mrs. O.M. Williams who contributed many collections to DAR

(Fig. 118)

Maculae hologenae, irregularae, 5-10mm diam., pallide brunneae cum margine distincto. *Conidiomata* amphigena, pycnidialia, immersa, separata, globosa, 80-120µm diam., crassitudine 2-3 cellularum, parietes pseudoparenchymatici, textura angulari, brunnea compositi. *Ostiolum* singulum, apicale, 25-40µm. *Cellulae conidiogenae* e cellulis interioribus conidiomatum formatae, discretae, hyalinae, lageniformes, 8-10 x 5-6µm, holoblastica simplicia conidia producentes. *Conidia* hyalina, filiformia, (1-)3(-4) septata, recta, laevia, 20-45(-55) x (1.5-)2µm, cum basim truncatum et apicem rotundatum

Holotypus: in foliis *Clematis aristata* R.Br. ex DC., Laughtondale, Nova Wallia Australis, Australia, 12 June 1972, O.M. Williams (DAR 56982).

Leaf lesions hologenous, irregular, bounded by leaf veins, 5-10mm diam., on the upper surface pale to dark brown with a slightly raised thin dark brown margin, lower surface lesions pale brown and lacking margin. *Conidiomata* amphigenous, scattered on lesions, immersed, globose, 80-120µm diam., pycnidial. *Ostiole* single, apical, 25-40µm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, lageniform, 8-10 x 5-6µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, (1-)3(-4) septate, mostly straight, 20-45(-55) x (1.5-)2µm, with a truncate base and rounded apex.

Host: *Clematis aristata* R.Br. ex DC.

Distribution: New South Wales, Victoria.

Septoria williamsiae can be separated from other taxa described on *Clematis* by the narrow conidia. *Septoria clematidis* Rob. & Desm. (conidia 70-80 x 4µm and 4-6 septate), *S. jenissensis* Sacc. (conidia 30-40 x 3µm and 1-septate) and *S.clematidis-rectae* Sacc. (conidia 38-40 x 3-3.5µm and 3-septate) all have conidia much wider than *S. williamsiae*. *Septoria cirrosae* Sacc. (conidia 36-45 x 2-

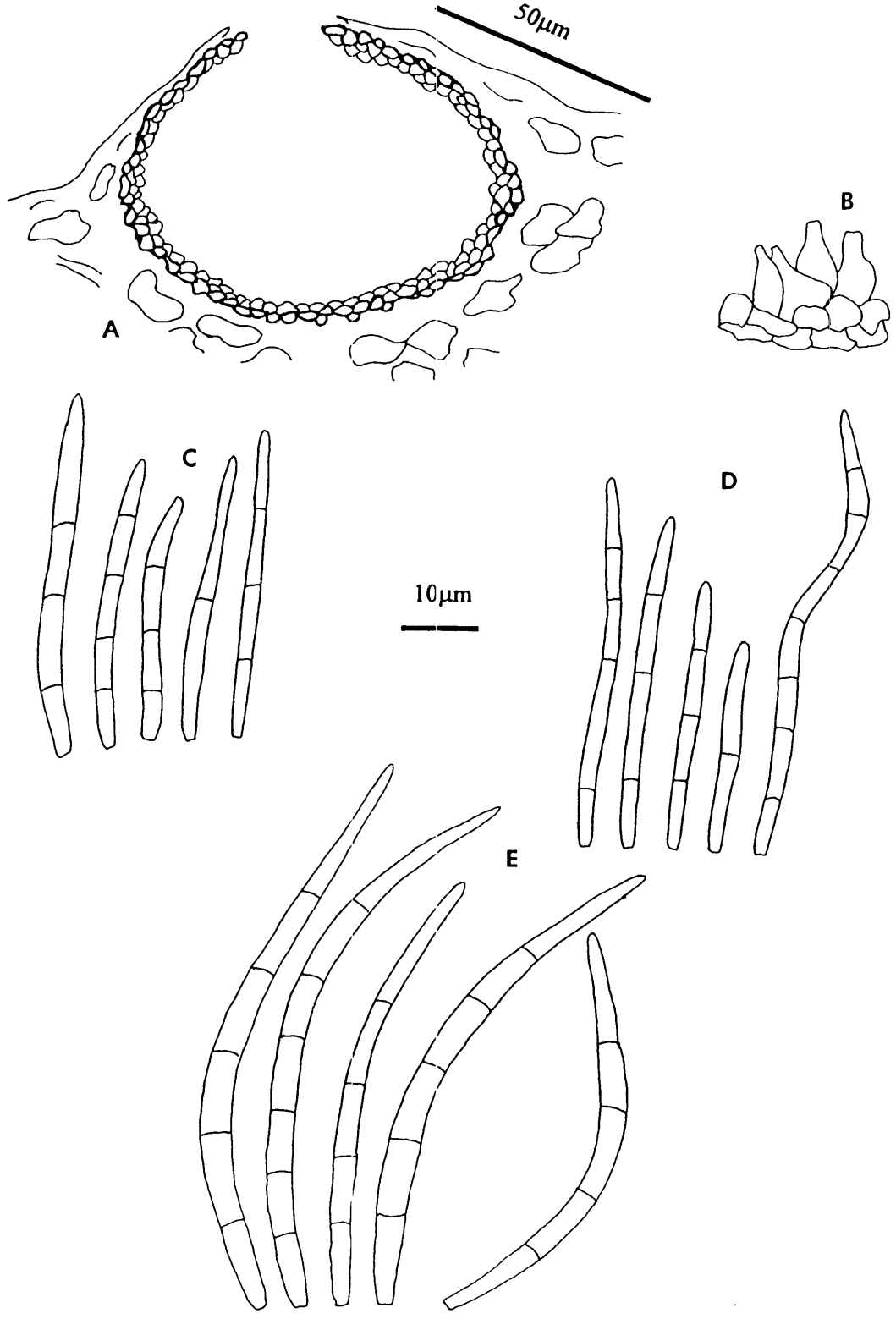

Fig.118. *Septoria williamsiae*; (A) v.s conidioma DAR 56982 type; (B) conidiogenous cells DAR 56982; C-E conidia (C) DAR 56982; (D) VPRI 12974; (E) *S. clematidis* DAR 14987 ex WIS

2.5µm and 4-5 septate) and *S. clematidis-flammulae* Roum. (conidia 30-35 x 2-2.5µm and 3-5 septate) are similar in conidia length to *S. williamsiae* but are generally slightly wider and more septate.

Specimens examined: on *Clematis aristata*; **New South Wales**; Laughtondale, 12 June 1972, O.M. Williams (DAR 56982) **holotype**; **Victoria**; Mount Disappointment State Forest, 24 Oct. 1985, I.G. Pascoe (VPRI 12974).

ROSACEAE

Septoria aciculosa Ell. & Everh., *Bull. Torrey Bot. Club* **11**: 73 (1884)

(Fig. 119)

Leaf lesions hologenous, angular and bounded by leaf veins, 2-3mm diam., often coalescing to form large blotches up to 5 x 4mm, on both surfaces mid-brown with a thin dark brown margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, becoming erumpent, globose, dark brown to black, 50-85µm diam., pycnidial. *Ostiole* single, apical, 10-15µm, cells around the opening thickened. *Conidiomatal wall* 3 cells thick around the base and sides, up to 5 cells thick at ostiole, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform to ampulliform, 4-5 x 2µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 1-3 septate, mostly straight, 12-26 x 1(-1.5)µm, with a truncate to rounded base and obtuse apex.

Host: *Fragaria* x *ananassa* Duch. (Strawberry).

Distribution: New South Wales, ? Queensland, Victoria (Brittlebank 1937-1940, Fisher & Freeman 1959, Washington & Nancarrow 1983 all as *S. fragariae*).

Septoria aciculosa was originally described with conidia 15-20 x 0.75µm. Two other species of *Septoria* described from *Fragaria* are *S. fragariicola* Lobik (as *fragariaecola*) with conidia 25.6-84 x 2.6µm and 1-3 septate on *Fragaria vesca,* and *S. fragariae* (Lib.) Desm. with conidia 20-30 x 3-4µm

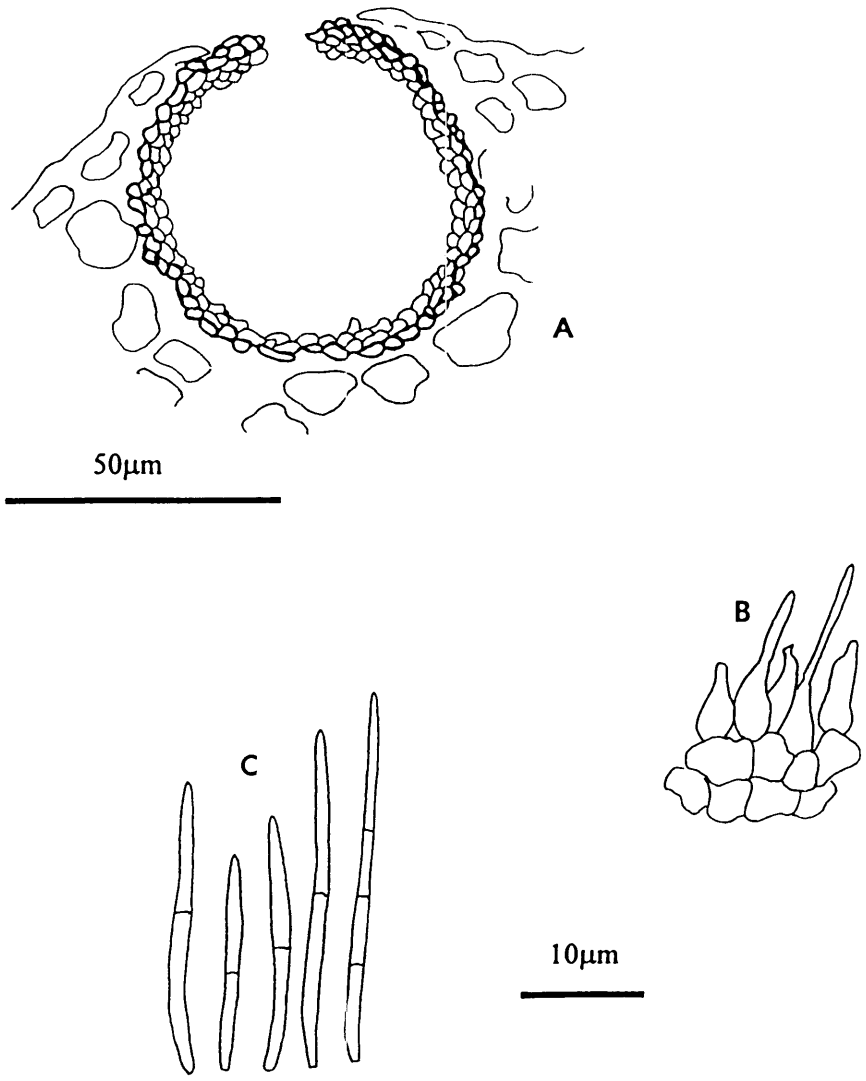

Fig.119. *Septoria aciculosa* DAR 7929; (A) v.s conidioma; (B) conidiogenous cells; (C) conidia

and 3-septate (Grove 1935). The collections from New South Wales agree with the original description of *S. aciculosa* and are placed there. A single collection from Queensland identified as *S. fragariae* has been examined but no conidia were found on the material and the identity of the fungus is uncertain. The record of *S. fragariae* in Victoria (Fisher & Freeman 1959, Washington & Nancarrow 1983) is based on a collection from 1911. Examination of the collection (VPRI 1784) has revealed only *Ramularia brunnea* Peck present on the collection and no *Septoria* could be found. *Rhabdospora fragariae* Atkins with conidia given as 25-30 x 1-1.5μm is probably conspecific with *S. aciculosa.*

Specimens examined: on *Fragaria* x *ananassa*; **New South Wales**; Narara, 1 Apr. 1963, J. McGechan (DAR 7929); West Pennant Hills, 25 June 1962, J. McGechan (DAR 71780) microscope slides only; **Queensland**; Cleveland, 2 Sept. 1966, R.B. Morwood (BRIP 5769) as *S. fragariae*; **Victoria**; no locality, 9 Jan. 1911, J. Calander (VPRI 1784) as *S. fragariae*.

Septoria amygdali McAlp.

This species was listed by McAlpine (1901) as one of several fungi associated with shot-hole of stone-fruit. The name was never published and was later changed to *S. effusa* and discussed under that name by McAlpine (1902b). The name was never formally published probably due to the existence of *S. amygdali* Woronichin (see discussion under *Septoria* sp. on *Prunus dulcis*). Listed by Brittlebank (1937-1940) under both names.

Septoria crataegi Desm. ex Kickx., *Fl. Crypt. Fland.* 433 (1867)

(Fig.120)

Leaf lesions hologenous, irregular, bounded by leaf veins, 2-3mm diam., on both surfaces brown becoming pale in the centre with a dark brown to fuscous brown raised margin. *Conidiomata* epigenous, scattered on lesions, immersed, separate, globose to ovoid, dark brown to black, 50-95μm diam., pycnidial. *Ostiole* single, apical, 20-25μm, opening widely at maturity up to 50μm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform 4-7 x 5μm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, (3-)5-7 septate, straight to curved, (27-)35-50(-70) x (1.5-)2μm, with a truncate base often with an excentric projection and tapering to a sub-acute apex.

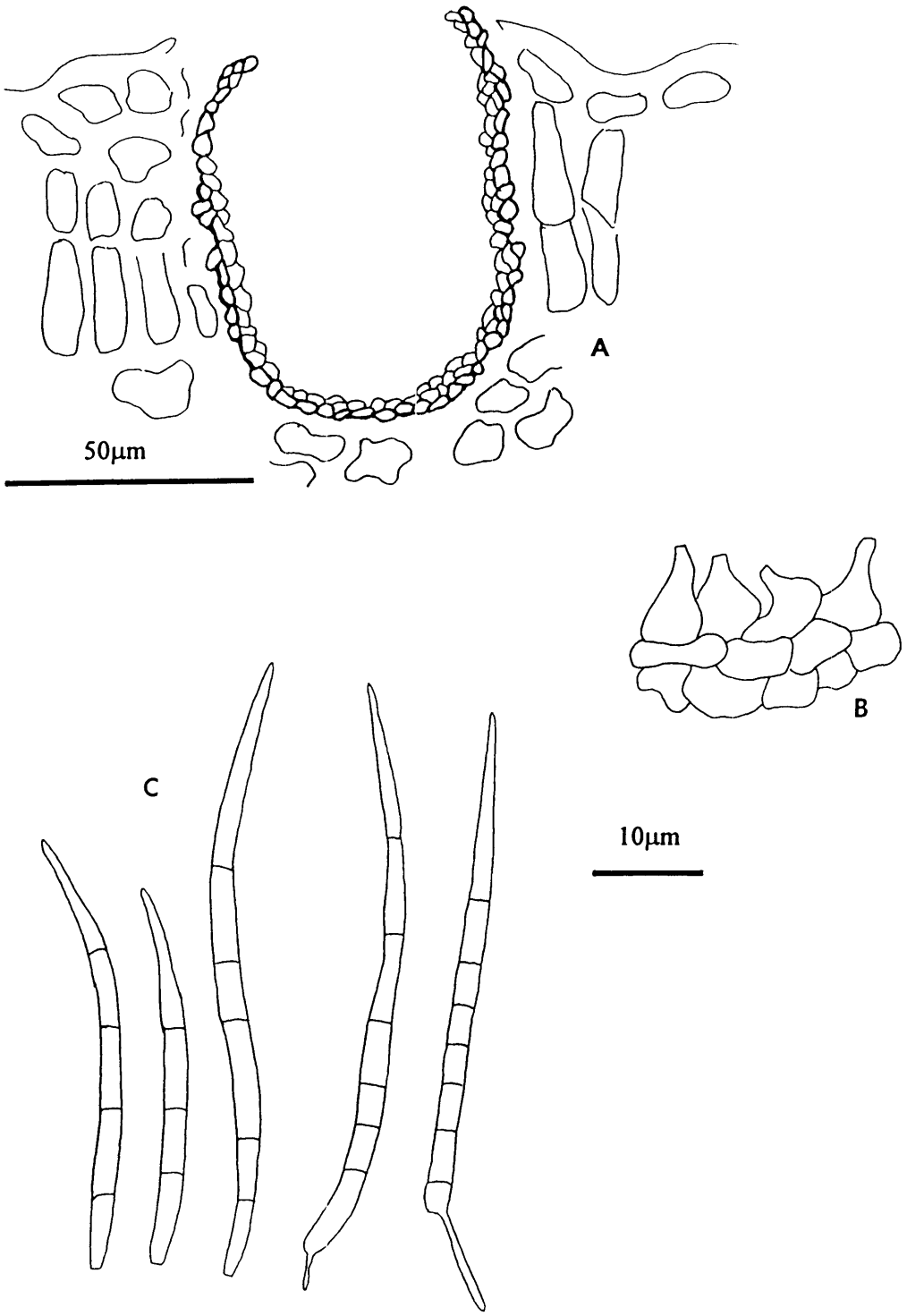

Fig.120. *Septoria cratagei* DAR 71781a; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

Host: *Crataegus monogyna* Jacq.

Distribution: New South Wales, Victoria (Brittlebank 1937-40 as *S. crataegi* Desm., report only)

Australian collections agree morphologically with the description of *S. crataegi* given by Saccardo (1884), and a single exsiccatus collection identified as *S. crataegei* on *C. monogyna*. On one of the collections (DAR 71781), *Phloeospora oxyacanthae* (Kze. & Schm.) Wallr. is also present on the lower surface of the leaves. Listed by Brittlebank (1937-1940) as *S. crataegi* Desm. and occurring in Victoria. No herbarium collection has been located and the record is unconfirmed. *Septoria cratagei* Desm. ex Kickx. is used by several authors including Jørstad (1965) as the name often applied as *S. cratagei* Kickx.

Specimens examined:

AUSTRALIAN COLLECTIONS:
on *Crataegus monogyna*; **New South Wales**; Tumut, 7 Jan. 1972, O.M. Williams (DAR 57001); University of New England, Armidale, 15 June 1993, M.J. Priest (DAR 71781a).

EXTRALIMITAL COLLECTION:
Septoria crataegi; on *Crataegus monogyna*; Riga, **Latvia,** 29 Aug.1931, K. Stenz (DAR 62786 ex S)

Septoria pruni Ellis, *American Naturalist 1882* : 811 (1882)

This species was listed by Brittlebank (1937-1940) and Fisher & Freeman (1959) on *Prunus armeniaca* in Victoria, however no herbarium material under this name has been located and the record is unsubstantiated.

Septoria rosae Desm. *Pl. Crypt.* **1**: 535 (1931)

Reported by Brittlebank (1937-1940) as occurring on *Rosa* sp. in Queensland and Chambers (1982) as occurring on *Rosa* sp. in Victoria in 1924. Examination of a single collection from Queensland (BRIP 256) collected by F.M. Bailey at Toowong in Jan 1905 and identified as *S. rosae* has shown no evidence of *Septoria* to be present. No herbarium material under this name from Victoria has been located and the record is unsubstantiated.

Septoria rubi Westend., *Herb. Crypt. Belg.* No. 938 (1854)

(Fig. 121)

Leaf lesions hologenous, orbicular to irregular, 1-3mm diam., often coalescing to form large blotches, on the upper surface pale brown becoming white in the centre with a narrow dark brown margin and purple-brown necrotic halo, on the lower surface pale green-grey to grey, lacking margin and halo. *Conidiomata* epigenous, scattered on lesions, separate, immersed to slightly erumpent, globose, pale to dark brown, 60-95μm diam., pycnidial. *Ostiole* single, apical, 25-35μm, at maturity up to 60μm, cells around the opening thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, cylindrical to lageniform, 14-23 x 3.5-5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 2-5 septate, straight to curved, (25-)35-60 x (1.5-)2μm, with a truncate base and often tapering to a sub-acute apex.

Hosts: *Rubus fruticosus* L. (Blackberry), *R. hillii* F. Muell., *R. idaeus* L. (Raspberry), *R. loganobaccus* L.H. Bailey (Loganberry), *R. moluccanus* L., *R. parvifolius* L., *R. rosifolius* Sm., *R. vulgaris* Weihe & Nees (Blackberry), *R. ulmifolius* Schott (European Blackberry), *R. ursinus* Cham. & Schlechtend., *Rubus* x cult. (Youngberry)

Distribution: New South Wales (Noble *et al.* 1935 as *Septoria* sp. on *R. idaeus*, Anon. 1962), Queensland (Simmonds 1966), South Australia (Brittlebank 1937-1940, Warcup & Talbot 1981, Cooke & Dube 1989), Tasmania (Sampson & Walker 1982), Victoria (Brittlebank 1937-1940, Fisher & Freeman 1959, Washington & Nancarrow 1983), Western Australia (Shivas 1989).

Demaree & Wilcox (1943) summarised the known information about *S. rubi* in a study of the leaf-spot disease of raspberry in the U.S.A., concluding that the cause of the disease was *Cylindrosporium rubi* Ell. & Morgan with a teleomorph *Sphaerulina rubi* Demaree & Wicox, leaving *Septoria rubi* and its supposed teleomorph *Mycosphaerella rubi* Roark as the cause of a similar leaf-spot disease of other *Rubus* spp. Previously, Zeller (1937) had recognised two species of *Septoria* on *Rubus*, *S. rubi* Westend. and *S. brevispora* (Sacc.) Zeller (syn. *S. rubi* Westend. var *brevispora* Sacc.) based on shorter conidia. Zeller (1938) renamed *S. brevispora* as *S. darrowii* Zeller due to the existence of an earlier *S. brevispora* Ell. & Davis. All Australian collections on both introduced and native hosts are indistinguishable from exsiccatus material identified as *S. rubi* on a number of *Rubus*

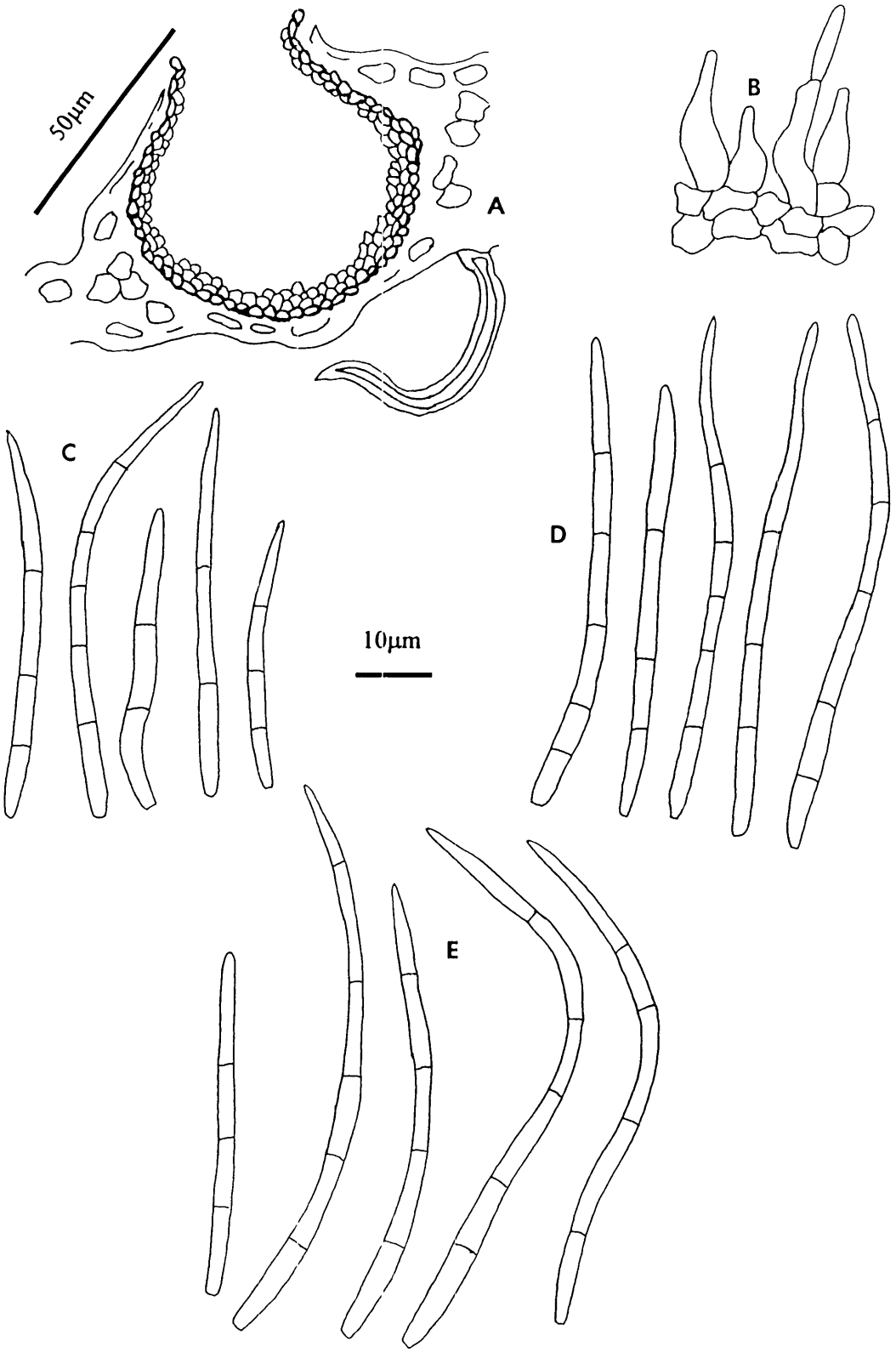

Fig.121. *Septoria rubi*; (A) v.s conidioma DAR 63969; (B) conidiogenous cells DAR 63969; C-E conidia (C) DAR 63969; (D) DAR 4061; (E) Migula Crypt. No. 315

spp. In New South Wales reports of *S. rubi* were given as *Septoria* sp. until 1962.

Specimens examined:

AUSTRALIAN COLLECTIONS:
on *Rubus fruticosus*; **South Australia**; Hermitage, 8 Oct. 1912, T.G.B. Osborne (ADW 1773);

on *Rubus hillii*; **New South Wales**; Pembroke, 1 May 1986, M.J. Priest & J. Walker (DAR 56093); Bruxner Highway, Ballina, 21 June 1968, J. McGechan (DAR 60067); near Mount Gibraltar, 9 June 1968, O.M. Williams (DAR 60081);

on *Rubus idaeus*; **New South Wales**; Dorrigo, Jan. 1913 (DAR 415); Robertson, 15 May 1945, L.R. Fraser (DAR 4061); Mount Wilson, June 1962, P.G. Valder (DAR 7102); Mount Tomah, 26 Apr. 1975, C. Nuzum (DAR 25309); Cobargo, 19 Jan. 1989, H. Kemp (DAR 63969); Tullong, 10 Apr. 1989, C. Simson (DAR 65222); **Queensland**; Crows Nest, 31 Jan. 1987, N.T. Vock (BRIP 15539);

on *Rubus loganobaccus*; **New South Wales**; Bega, 24 Dec. 1987, H. Kemp (DAR 61132); **Tasmania**; Franklin, 30 May 1979, J.A.L. Wong (DAR 33112); **Victoria**; Horticultural Institute, Knoxfield, 8 July 1977, E. Bruzzese (DAR 33509a); Mandurang, 1979, W. Washington (VPRI 10798);

on *Rubus moluccanus*; **New South Wales**; no locality, Apr. 1952, L.R. Fraser (DAR 4405); Bulga, 11 Apr. 1953, L.R. Fraser (DAR 4785);

on *Rubus parvifolius*; **New South Wales**; Thredbo, 18 Feb. 1976, J. Walker (DAR 44474); Hanging Rock, 19 Feb. 1986, J. Cherry (DAR 55368);

on *Rubus rosifolius*; **New South Wales**; Barrington Tops National Park, 6 July 1985, M.J. Priest (DAR 52517a);

on *Rubus ulmifolius*; **Victoria**; Lake Buffalo, 14 Nov. 1977, E. Bruzzese (DAR 33522);

on *Rubus ursinus*; **Victoria**; Running Creek, 6 Nov. 1984, A. Allen (VPRI 12582);

on *Rubus vulgaris*; **Tasmania**; Taranna, 12 Sept. 1975, I.D. Geard (DAR 28587); Glen Huon, 30 May 1979, J.A.L. Wong (DAR 33113a);

on *Rubus* x cult.; **New South Wales**; Nyangala, 2 May 1988, L. James (DAR 62135); **Western Australia**; Manjimup, 17 Dec. 1974 (PERTH 792446).

EXTRALIMITAL COLLECTIONS:
on *Rubus caesius*; Thuringen, **Germany**, 16 July 1927, W. Migula, *Crypt. Germaniae, Austriae et Helvaticae* No. 315 (DAR); on *Rubus saxitalis*; **Finland**, 23 Aug. 1934, L.E. Kari (DAR 76730 ex TUR); on *Rubus procumbens*; Illinois, **U.S.A.**, 17 June 1883, F.S. Earle, *Seymour & Earle Economic Fungi* No. 24 (DAR 50660); Newfield, Jersey, **U.S.A.**, Sept. 1893, *Fungi Columbiani* No. 279 (DAR 53427); on *Rubus vitifolius*; Stanford University, California, **U.S.A.**, 19 Nov. 1902, E.B. Copeland, *Pacific Slope Fungi* No. 2713 (DAR 62905).

Septoria sp. on *Prunus dulcis*

as ***Septoria effusa*** (Lib.) Desm., *Ann. Sci. Nat.* **8**: 23 (1847)
≡ *Ascochyta effusa* Lib., *Pl. Crypt. Ard,* No. 355 (1837)

(Fig.122)

A species of *Septoria* identified as *Septoria effusa* was recorded by McAlpine (1902b) and again by Brittlebank (1940), Fisher & Freeman (1959) and Washington & Nancarrow (1983) as occurring on *Prunus dulcis* (Almond) in Victoria. A single collection (VPRI 1783) identified as *S. effusa* has been examined and shows a species of *Septoria* to be present. The collection consists of two packets and accompanying microscope slides labelled "*Septoria amygdali*" crossed over with " *S. effusa* McAlp." on almond leaves from Phillip Island, collected in 1900. In one packet, three leaves are present showing large blighted areas heavily overgrown with *Alternaria* and few conidiomata were seen. The second packet is marked "*Septoria effusa*, Shot-hole, 359/19.9.00, almond" and shows several small leaf lesions up to 2mm diam. with typical shot-holes, and appears to be the collection from which the microscope slides were made. Examination of the slides shows pycnidial conidiomata approximately 90μm diam., and a few 0-2 septate conidia measuring 15-28 x 1-1.5(-2)μm. McAlpine (1902b) described the conidia as being up to 5-septate but no conidia more than 2-septate could be found on the material examined. *Septoria effusa* is listed as a synonym of *Phomopsis stipitata* (Lib.) Sutton by Sutton (1980), and the identity of the species of *Septoria* here is uncertain.

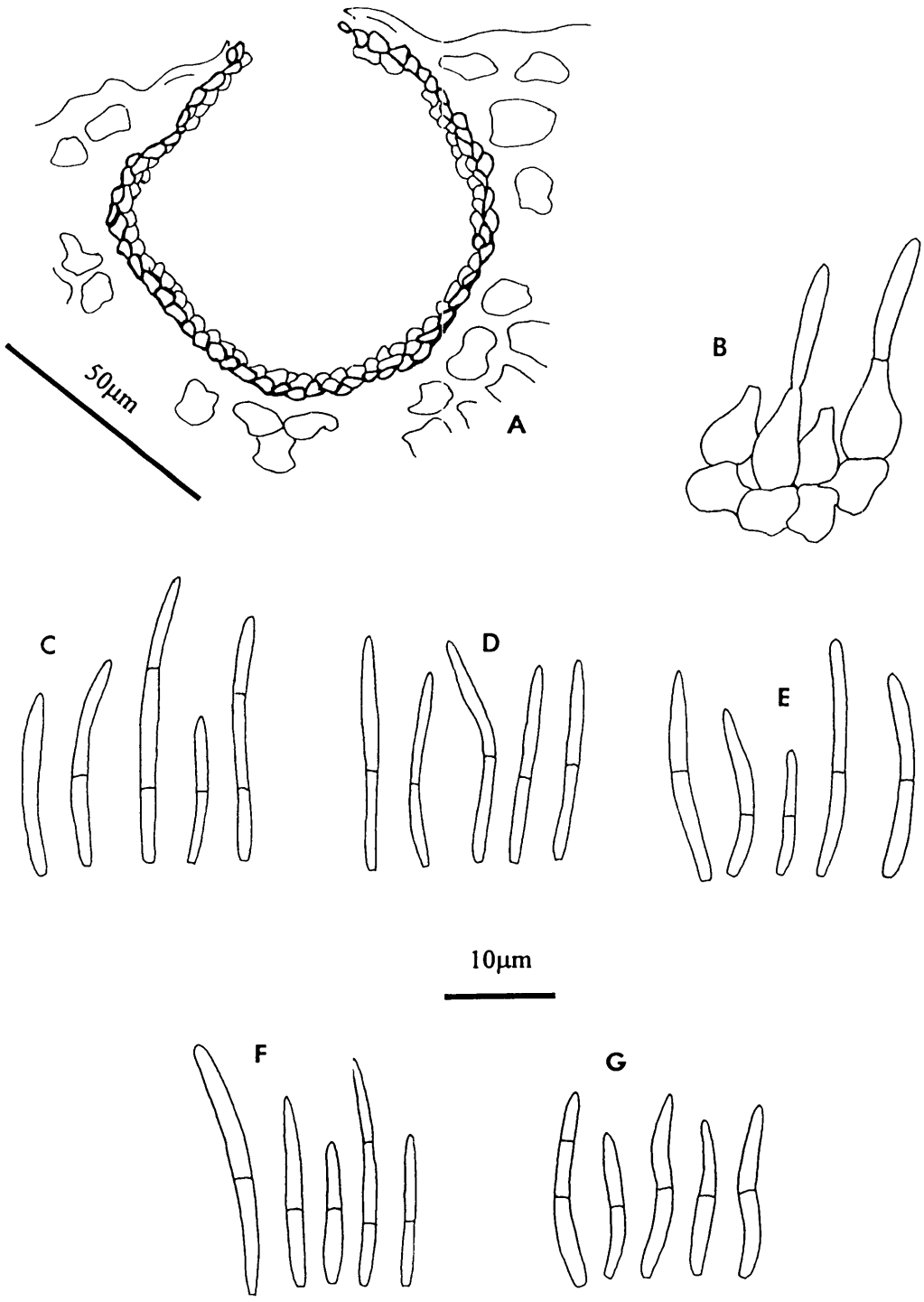

Fig.122 *Septoria* sp.; (A) v.s conidioma VPRI 1787 ex *Prunus*; (B) conidiogenous cells VPRI 1787; C-G conidia (C) VPRI 1787; (D) *S. disseminata* BRIP 17670 (I. Funghi Parassiti No.344); (E) VPRI 18266 ex *Rosa*; (F) VPRI 18409 ex *Boronia*; (G) VPRI 14440 ex *Coleonema*

A single exsiccatus collection identified as *S. disseminata* Desm. has been examined and shows conidia very similar to the Australian collection. This collection also shows typical shot-holes with very few pycnidia present and conidia 12-20 x 1.5μm and 1-septate. In the original description, conidia of *S. disseminata* were given as 15-20 x 1.5μm, and occurring on dried leaves of *Prunus lauro-cerasus* in France, the exsiccatus collection being morphologically in agreement with this species. However, the occurrence of this species on shot-holed leaves and its being indistinguishable morphologically from several other collections on diverse hosts such as *Lonicera, Hedera, Ligustrum* and *Rosa*, again suggests the existence of a widespread saprophytic species of *Septoria*.

Host: *Prunus dulcis* L. (Almond).

Distribution: Victoria (McAlpine 1902b, Brittlebank 1940, Fisher & Freeman 1959, Washington & Nancarrow 1983).

Specimens examined:

AUSTRALIAN COLLECTION:
on *Prunus dulcis*; **Victoria**; Phillip Island, 1900, D. McAlpine (VPRI 1783).

EXTRALIMITAL COLLECTION:
Septoria disseminata; on *Prunus lauro-cerasus*; **Italy**, Briosi & Cavara, I. Funghi Parassiti No. 344 (BRIP 17670).

Septoria sp. on *Rosa* sp. cult.

(Fig. 122 E)

Leaf lesions absent. *Conidiomata* scattered over surface of incubated leaves, erumpent, separate, globose, pale brown, 40-80μm diam., pycnidial. *Ostiole* single, apical, 10-15μm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 7-8 x 2-2.5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, (0-)1 septate, straight to slightly curved, 10-21 x 1-1.5μm, with a truncate to obtuse base and rounded to sub-acute apex.

Host: *Rosa* sp. cult.

Distribution: Victoria.

This species is morphologically indistinguishable from the taxon distinguished on other collections such as *Hedera*, *Ligustrum* and *Lonicera* and is associated with incubated leaves without evidence of pathogenicity. Species described from *Rosa* include *S. rosae* Desm. (conidia 70-90 x 3.5-4μm), *S. rosae* var. *sempivirentis* Dur. & Mont. (conidia 30-50 x 2.5μm, 3-4 septate). *S. rosae* Thüm. (conidia 50-60 x 2.5-3μm, 4-5 septate) and *S. rosarum* Wetsend. var. *leptosperma* Speg. (conidia 30-50 x 1μm). The Australian collections do not match any of these.

Specimens examined: on *Rosa* sp. cult.; **Victoria**; Narre Warren, 11 Sept. 1992, I. Smith (VPRI 18266a); Tesselaars Bulb Nursery, Silvan, 15 Dec. 1992, I. Smith (VPRI 18610).

RUBIACEAE

Septoria coprosmae Cooke, *Grevillea* **14**: 129 (1886)

Listed by Garman & Stevens (1920) as occurring on *Coprosma* in New Zealand and Australia. In the original description the only locality cited is New Zealand. However in Saccardo the citation is given as "New Zealand Austral.", an obvious error in transcription for southern New Zealand unfortunately followed by Garman & Stevens (1920). No species of *Septoria* on *Coprosma* is known from Australia.

Septoria urens Pass., *Hedwigia* **30**: 46 (1881)

(Fig. 123)

Leaf lesions absent, large areas of the leaf show diffuse, hologenous brown patches. *Conidiomata* amphigenous, scattered on leaf, immersed, separate, globose, dark brown, 100-200μm diam., pycnidial. *Ostiole* single, apical, 15-25μm, cells around the opening darkened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 8-15 x 4-5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci.

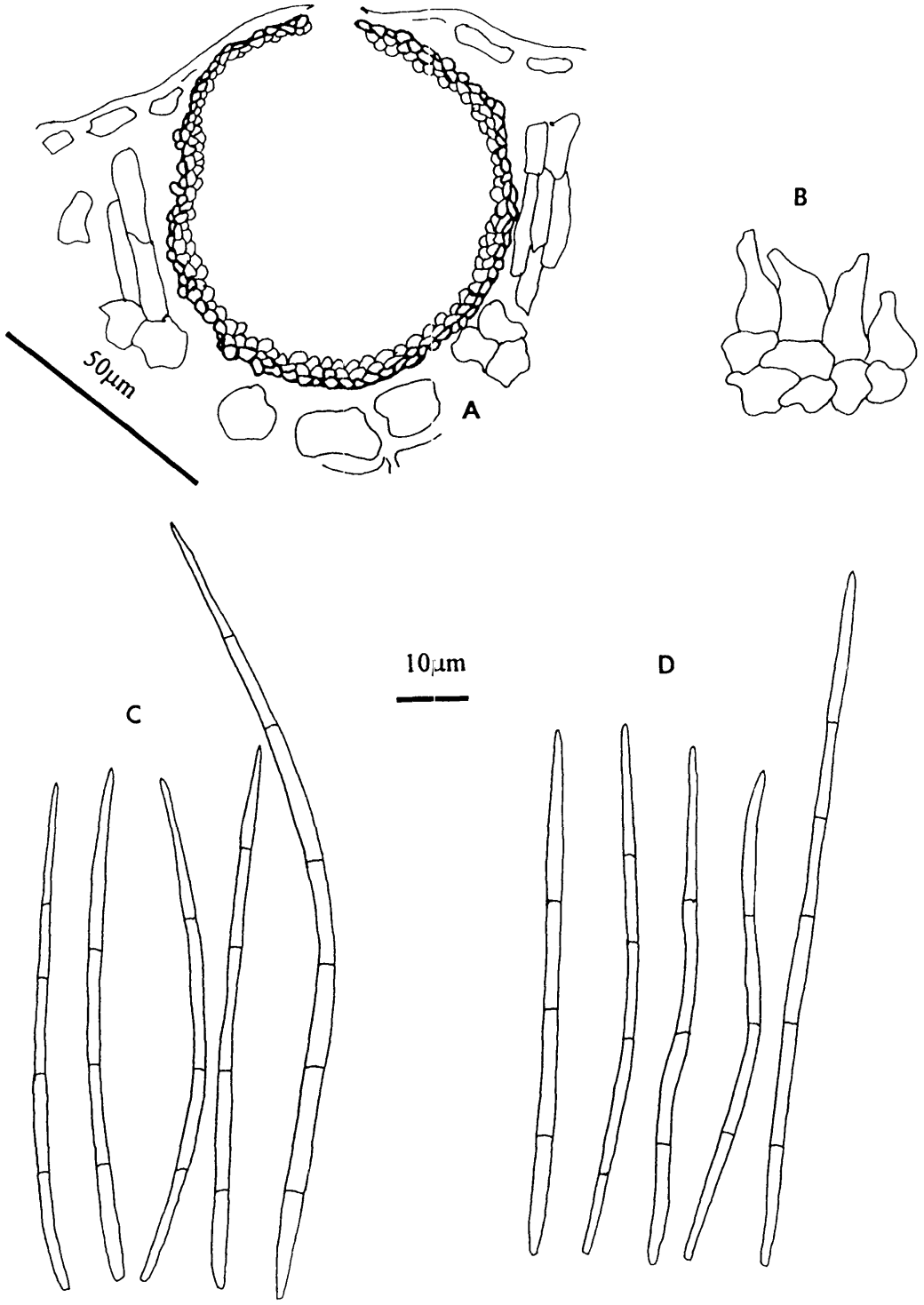

Fig.123. *Septoria urens*; (A) v.s conidioma DAR 65707; (B) conidiogenous cells DAR 65707; (C) conidia DAR 65707; (D) conidia ex type (Mycotheca Universalis No.1389)

Conidia hyaline, filiform, 3-6 septate, straight to slightly curved, 72-102(-115) x 1.5-2μm, with a truncate base and sub-acute apex.

Host: *Galium* sp. (? *G. aparine* L.).

Distribution: South Australia.

Examination of available exsiccatus material has shown that two species of *Septoria* can be distinguished on species of *Galium*: one taxon with long conidia measuring mostly 70-105 x 1.5-2μm and the other with shorter, wider conidia mostly 40-50 x 2-2.5μm. The shorter spored taxon appears to be *S. cruciatae* Rob. ex Desm., and the long-spored taxon is identical to *S. urens* Pass. The single Australian collection is long-spored and is identical with type material of *S. urens*. Jørstad (1965) synonymised both taxa under *S. cruciatae*, but I prefer to keep them separate on the basis of collections examined.

Specimens examined:

AUSTRALIAN COLLECTION:
on *Galium* sp; **South Australia**; Maitland, 17 Sept. 1990, D. McQuinn (DAR 65707).

EXTRALIMTAL COLLECTIONS:
Septoria cruciatae; on *Galium mollugo* L.; Vilcea, **Roumania**, 27 Aug. 1975, G. Negrean, *Herb. Mycol. Romanicum* No. 2476 (DAR 48047); on *Galium pedemontanum*; **Hungary**, J.A. Baumler, *Krypt. Exs. Vindobensis* No. 1462 (DAR 62944) as *S. urens*;

Septoria urens; on *Galium bailloni* Brandza; Bucarest, **Roumania**, 4 Oct. 1974, G. Negrean, *Herb Mycol. Romanicum* No. 2744 (DAR 48317) as *S. cruciatae*; on *Galium tricorne*; Parma, **Italy**, May 1878, G. Passerini, *Thüm. Mycotheca Universalis* No. 1389 (MEL) **type**; same locality, date and collector, *Erb. Critt. Ital. Ser.2,* No. 813 (BRIP 1471) **type**.

RUTACEAE

Septoria citri Pass. in Thuem., *Mycotheca Universalis* No. 495 (1876)

= *Septoria depressa* McAlp., *Fungus Diseases of Citrus Trees In Australia,* 83 (1899)

= *Septoria flaccescens* McAlp., *Fungus Diseases of Citrus Trees in Australia,*100 (1899)

(Fig. 124)

Lesions on leaves and fruit. On leaves hologenous, orbicular, 4-5(-10)mm diam., pale brown, becoming creamy-brown in the centre with a dark brown raised margin and yellow-green chlorotic halo. On fruit, lesions are sunken, dark brown and 6-10mm diam. *Conidiomata* amphigenous on leaves, scattered on lesions, immersed becoming erumpent, separate, globose, dark brown to black, 70-120µm diam., pycnidial. *Ostiole* single, apical, 10-15µm, opening widely at maturity to 40µm, cells around the opening slightly thickened. Conidiomatal wall 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 5-7 x 3-4µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, occasionally fusiform, straight to slightly curved, *in vivo* (8-) 12-26 x 1-1.5(-2)µm and 0-2 septate, *in-vitro* 10-25(-35) x 1-1.5 and 0-3 septate, with a truncate base and rounded apex.

Hosts: *Citrus aurantium* L., *C. limon* Burm.f. (Lemon), *C. sinensis* (L.) Osbeck (Sweet Orange), *C. paradisi* Macfad. (Grapefruit), *C. limonia* (Rangpur Lime), *Citrus* sp. (Sweet Lime), *Correa* sp.

Distribution: New South Wales (Noble *et al.* 1935, Kiely & Long 1960; as *S. depressa*, Anon. 1940 as *S. citricola* Ruggieri, Bertus 1982), Queensland (Bonde *et al* 1991), South Australia (Osborn & Samuel 1922 as *S. depressa*, Warcup & Talbot 1981, Cooke & Dube 1989), Tasmania, Victoria (McAlpine 1899, Brittlebank 1940, Fisher & Freeman 1959, and Washington & Nancarrow 1983 variously as *S. citri*, *S. citricola*, *S. depressa* and *S. flaccescens*).

Examination of part of the type collection of *S. citri* confirms the identity of this species in Australia. Three other taxa of *Septoria* have been described from *Citrus* in Australia, these being *S. depressa*, *S. flaccescens* and *S. westraliensis* McAlp. The type collection of *S. depressa* (VPRI 5938) consists of two microscope slides and several dried pieces of fruit showing brown depressed orbicular lesions, measuring about 6-8mm diam. No evidence of *Septoria* could be found on the fruit pieces, a situation

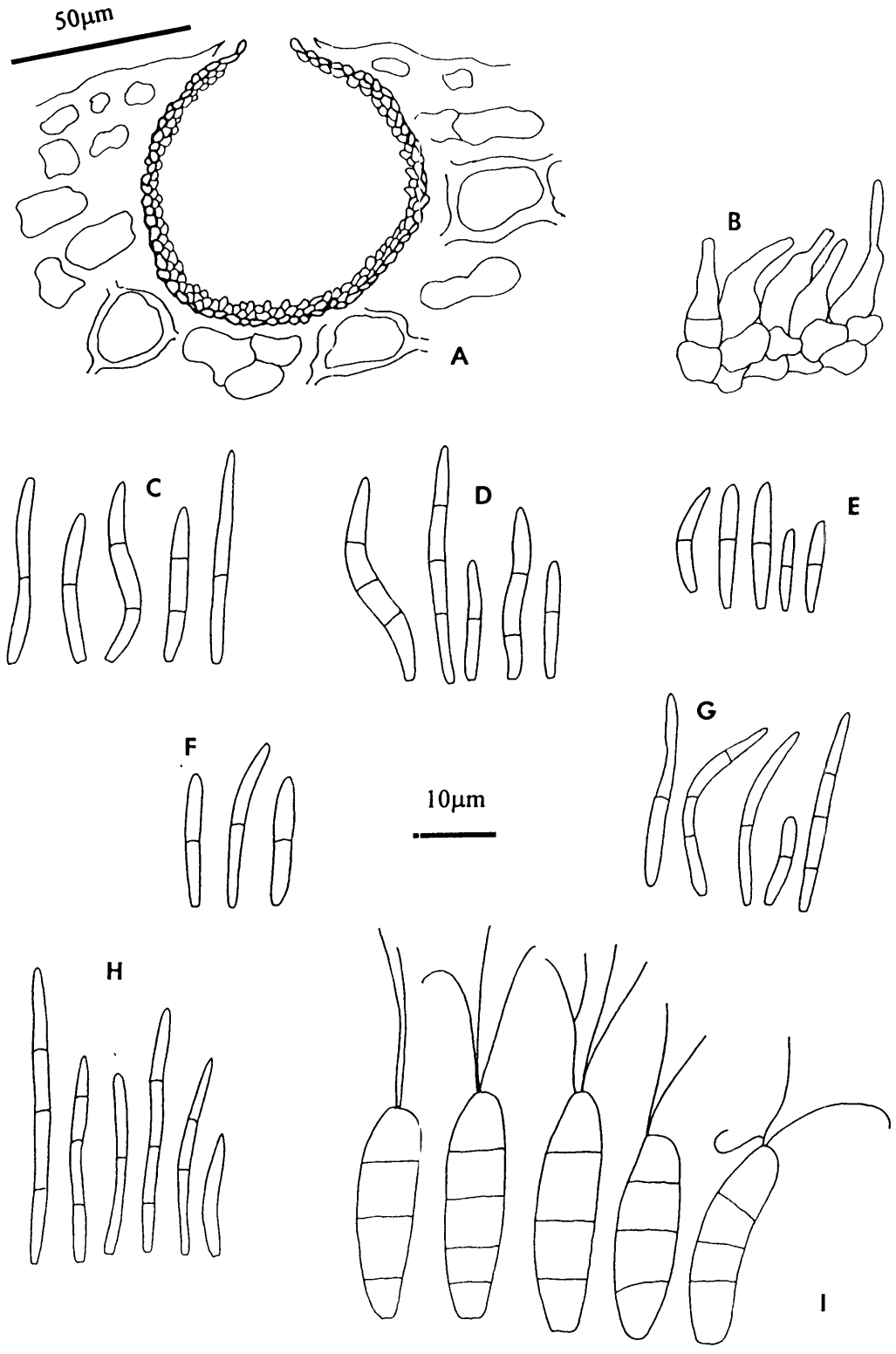

Fig.124. *Septoria citri*; (A) v.s. conidioma DAR 6573; (B) conidiogenous cells DAR 6573; C-I conidia (C) DAR 6573; (D) type ex MEL; (E) *S. flaccescens* type; (F) *S. depressa* type; (G) VPRI 15920 ex *Correa*; (H) DAR 58306 ex culture; (I) *S. westraliensis* type

also reported by Laundon (1973). Examination of the two microscope slides has revealed a few pycnidia present on one slide but no conidia were obvious. The second slide showed a few conidia measuring 8-14 x 1.5-2μm,1-septate and slightly fusiform. The conidia are slightly narrower than given in the original description where they were reported as 13-19 x 1.5-3.5μm and 1-septate. From the fruit symptoms and the conidia observed there is no doubt that *S. depressa* is identical with *S. citri*. The type collection of *S. flaccescens* (VPRI un-numbered) consists of three microscope slides only, made from orange leaves collected at Armadale, near Melbourne, Victoria, in October 1898. On one slide only pycnidia were observed and no other details were discernible. Several conidia observed on the other two slides measured 7-14 x 1.5-2.5μm and were mostly 1-septate. These conidia were mostly fusiform in shape and did not differ from conidia seen in collections of *S. citri* and I consider *S. flaccescens* to be synonymous with it. All Australian collections examined are identical with *S. citri*. Bonde *et al.* (1991) examined many isolates of *S. citri* from both Australia and the U.S.A. by isozyme analysis and found that all were the same species except for a single isolate from North Queensland which was isolated from Lime. This isolate, however, was reported to be morphologically identical to all other isolates, produced symptoms on rough lemon and lime, and, may represent a distinct pathotype restricted to those hosts. Fraser (1957) reported a species of *Mycospherella* on lemon leaves in south-western New South Wales treated by Dr. T.B. Kiely in association with studies on *Guignardia citricarpa*. Ascospore cultures yielded a fungus identical with cultures of *S. citri* (as *S. depressa*). In addition, orange leaves from Leeton in southern New South Wales and and lemon leaves from the same orchard as the earlier study also yielded a species of *Mycosphaerella* similar to that seen previously. Wellings (1981) artificially inoculated isolates of *S. citri* and an unidentified *Mycosphaerella* sp. onto *C. sinensis* and *C. paradisi* and produced symptoms identical to those described as "greasy spot" but was unable to re-isolate *Septoria citri*, in contrast to the *Mycosphaerella* sp., suggesting that there was no relationship between the two fungi. The relationship between the reported *Mycosphaerella* species of Fraser (1957) and Wellings (1981) and *Septoria citri* is not known. The ocurrence of *S. citri* in Queensland is based on the report by Bonde *et al* (1991), examination of a collection identified as *S. citri* on a leaf of *C. paradisi* collected by W. Pont at Cairns (BRIP 7655) failing to reveal any evidence of a *Septoria*. Many published records in the Australian literature refer to *S. citricola* Ruggieri, particularly in Victoria, however all collections examined are referrable to *S. citri*. A single collection of a species of *Septoria* has been examined associated with a distinct leaf spot on *Correa* (VPRI 15920). Conidiogenesis is holoblastic and sympodial proliferation was observed. The conidia measure (8-)12-18 x 1-1.5μm and are 0-3 septate, placing it well within the range and septation of *S. citri* and is placed here on the basis of being associated with a distinct leaf spot and its conidial dimensions. Other collections on the hosts *Boronia*

and *Coleonema* are referred to *Septoria* sp. (see below)

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Citrus aurantium*; **Victoria**; Armadale, Oct. 1898, D. McAlpine (VPRI) **holotype** of *S. flaccescens* McAlp. (host probably *C. sinensis*);

on *Citrus limon*; **New South Wales**; Leeton, July 1942, L.R. Fraser (DAR 4080); Leeton, 12 Feb. 1942, L.R. Fraser (DAR 4082); Yanco, Aug. 1958, L.R. Fraser (DAR 5120);Yanco, Sept. 1961, L.R. Fraser (DAR 6573); Yalgogrin, Sept. 1963 (DAR 12213); Agricultural Research Station, Yanco, 4 July 1974, P. Broadbent (DAR 24248) Dareton, 29 Sept. 1975, C.R. Wellings (DAR 26648); Tocumwal, 19 Mar. 1979, J. Quick (DAR 33282); Coomealla, 23 Mar. 1984, R. Browne (DAR 49731); Harden, 31 Aug. 1989, R. Kennedy (DAR 65488); **South Australia**; Adelaide, Sept. 1931, G. Samuel (DAR 1895); **Victoria**; Doncaster, 17 Oct. 1898, A. Thiele (VPRI 5938) **lectotype** of *S. depressa* McAlp.;

on *Citrus limonia*; **Tasmania**; Launceston, 28 July 1983, K. Izard (DAR 72877);

on *Citrus paradisi*; **New South Wales**; Pomona, Dec. 1974, P. Broadbent (DAR 25049); Narromine, 18 Oct. 1976, P. Barkley (DAR 30568); Euronga, 5 Oct. 1977, C.R. Wellings (DAR 30722); Morquong, 5 Oct. 1977, C.R. Wellings (DAR 30723);Wamoon, 31 Mar. 1977, C.R. Wellings (DAR 30876);

on *Citrus sinensis*; **New South Wales**; Canowindra, 4 Sept. 1961, J.F. Johnson (DAR 6561); Narromine, 5 Oct. 1983, J. Slack (DAR 48842); Forbes, 20 Nov. 1981, C. Wetherall (DAR 49740); Griffith, 21 Dec. 1987, P. Barkley (DAR 60711); Moama, 14 Mar. 1988, M. Hickey (DAR 61983); Narromine, Oct.1989, B. Terrill (DAR 63126), Narromine, 25 Oct. 1989, B. Terrill (DAR 63481);

on *Citrus* sp.; **New South Wales**; Griffith, Aug. 1961, L.R. Fraser (DAR 6594);

on *Correa* sp; **Victoria**; Plant Research Institute, Burnley, 16 May 1988, S. Isaacs (VPRI 15920).

EXTRALIMITAL COLLECTIONS:

Septoria citri; on *Citrus limon*; in horto botanico, Parma, **Italy**, Martio 1876, G. Passerini, *Thuem. Mycotheca Universalis* No. 495 (MEL) **type**; in horto botanico, Parma, **Italy**, April 1880, G. Passerini, *Erb. Critt. Ital.,Ser.2*, No. 990 (BRIP 1449); California, **U.S.A.**, 29 Mar 1983, G. Higgs (DAR 44486 and DAR 44491) quarantine interception.

Septoria westraliensis McAlp., *Fungus Diseases of Citrus Trees in Australia*, 101 (1899)

(Fig. 124I)

Host: *Citrus aurantium* L. (probably *C. sinensis*).

Distribution: Western Australia (McAlpine 1899, Carne 1925, Brittlebank 1937-1940, Shivas 1989).

Septoria westraliensis was described from "still green Orange leaves, also attacked by *Phoma omnivora*" in Western Australia. The type collection consists of a single leaf and accompanying microscope slide. The leaf specimen is badly damaged and has several areas which appear to have been removed. On the undersurface of the leaf several small irregular spots are present which are scabby in appearance, pale brown to grey with a raised brown margin. No evidence of conidiomata was observed. The microscope slide has dried out but showed pieces of leaf material, probably from the original leaf specimen, with a single ostiolate fruiting body. Conidia present were hyaline to faintly tinted, cylindrical, mostly straight, 3(-4) septate and measuring 20-26 x 4-6μm with a rounded apex and base. The apical cell bears 2-3 appendages (occasionally branched) up to 18μm long; no evidence of a basal appendage was observed. The generic placement of this taxon is uncertain since lack of details concerning conidiogenesis and poor conidition of the slide make further decision impossible. The conidia have probably both darkened and swollen in the mounting medium as the original description gave the conidia as being 21.5-22.5 x 3-5-4μm and hyaline. It appears to be close to *Hyalotiella* Papendorf as described by Nag Raj (1975).

Specimen examined: on *Citrus aurantium*; **Western Australia**; no locality, 30 Oct. 1898, B. Helms (VPRI 5921) **holotype**.

Septoria sp on *Boronia muelleri* and *Coleonema* sp.

(Fig. 122F,G)

Two collections identified as *Septoria* sp. have been examined on hosts *Boronia muelleri* (Benth.) Cheel and *Coleonema* sp. The collection on *Boronia* was isolated from stem dieback and is dried culture material only. The conidia measure 10-18 x 1-1.5μm and are 1-2 septate. The collection from *Coleonema* is associated with dead and dying leaves and has conidia measuring 10-18 x 1.1.5μm and 1-2 septate. Both these collections are similar to *S. citri* but the conidia are never as long, or become 3-septate in culture and are associated with dying stems or dead and dying leaves. Both are morphologically identical to other collections examined on a range of hosts including *Lonicera*, *Ligustrum*, *Hedera*, *Rosa* and *Prunus*.

Specimens examined:

on *Boronia muelleri*; **Victoria**; Silvan, 10 Sept. 1992, T. Allen (VPRI 18409);

on *Coleonema* sp; **Victoria**; Monbulk, 12 Sept. 1986, C. Richardson (VPRI 14440b).

SAMBUCACEAE

Septoria sambucina Peck, *28th Rept. N.Y. State Mus.* 58 (1879)

(Fig. 125)

Leaf lesions hologenous, orbicular to irregular, separate, rarely confluent, 4-5mm diam., on both surfaces pale grey-white in the centre with an indistinct margin. *Conidiomata* epigenous, scattered on lesions, separate, immersed, globose, black, 90-150μm diam., pycnidial. *Ostiole* single, apical, (15-) 25-45μm, cells around the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown and cells narrow in section, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, doliiform to ampulliform, 8-18 x 3-3.5μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 3-5 septate, straight to curved, 48-80 x 2-2.5(-3)μm, with a truncate base and tapering to a rounded apex.

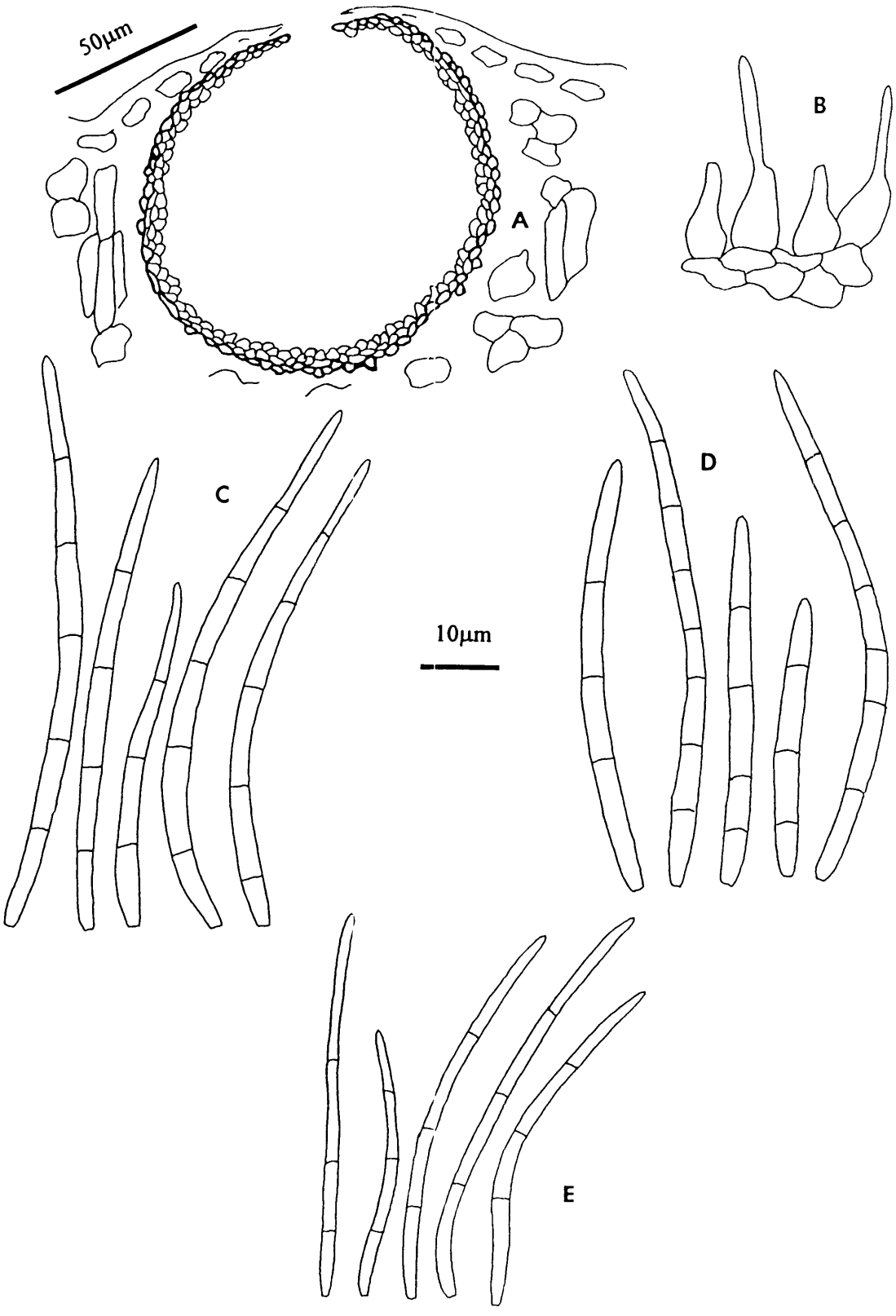

Fig.125. *Septoria sambucina*; (A) v.s. conidioma VPRI 1858; (B) conidiogenous cells VPRI 1858; C-E conidia (C) VPRI 1858; (D) DAR 68022 ex BPI 67020; (E) *S. ebuli* DAR 6437 (Krypt. Exs. No. 1624)

Host: *Sambucus* sp.

Distribution: Victoria (Brittlebank 1937-1940, host given as *Sambucus xanthocarpa*, Chambers 1982).

Two species of *Septoria* have been described from *Sambucus*, these being *S. ebuli* Desm. & Rob. on *Sambucus ebulis* in Europe and *S. sambucina* from *Sambucus canadensis* in Canada. *Septoria ebuli* was described with conidia 30-40 x 1-1.5μm and *S. sambucina* with conidia 50-70μm long. Examination of exsiccatus material has shown that both are distinct species separable on conidial length, as originally described, and conidial width, *S. sambucina* being wider than *S. ebuli*. The single Australian collection is identical to named material of *S. sambucina*.

Specimens examined:

AUSTRALIAN COLLECTION:
on *Sambucus* sp.; **Victoria**; Warburton, 14 Jan. 1915, C. French Jnr. (VPRI 1858).

EXTRALIMITAL COLLECTIONS:
Septoria ebuli; on *Sambucus ebulus*, Parma, **Italy**, G. Passerini, *Erb. Critt. Ital. Ser.2* No. 1098 (BRIP 1453); on *Sambucus* sp., Kenya, **Africa**, Dec. 1959, R.M. Nattrass (DAR 22845 ex IMI 88370);

Septoria sambucina; on *S. callicarpa*; California, **U.S.A.**, 25 Nov. 1933, H.E. Park (DAR 68022 ex BPI 67020); Washington, **U.S.A.**, 7 Aug. 1912, E. Bartholomew, *Fungi Columbiani* No. 4485 (DAR) host given in both as *S. racemosus* L. var. *callicarpa* Jep.; on *Sambucus canadensis*, London, **Canada**, Sept 1895, J. Dearness, *Fungi Columbiani* No. 846 (DAR 53978).

SALICACEAE

Septoria sp. on *Populus alba* L.

An undetermined species of *Septoria* was reported by Singh & Heather (1981) from incubated leaves of *Populus alba* in Canberra, Australian Capital Territory. The conidia were described as being 2-3

septate, hyaline, acicular and sometimes curved. In addition to the *Septoria*, a species of *Phyllosticta* was also observed on the incubated leaves. No collection has been located and both the identity of the *Septoria* and the record remains unsubstantiated. It is highly probable that the fungus is similar to that already seen on incubated material on several hosts during this study.

SCROPHULARIACEAE

Septoria antirrhini Rob. & Desm., *Ann. Sci. Nat.* (Ser.3), **20**: 87 (1853)

(Fig. 126)

Leaf lesions hologenous, orbicular to elongated, 2-3mm diam., on both surfaces pale brown to creamy-white in the centre with a slightly raised margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, becoming erumpent, globose, black, 45-90µm diam., pycnidial. *Ostiole* single, apical, 15-25µm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tisue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, rarely septate and integrated, lageniform, 8-10 x 3µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, 0-2 septate, straight to slightly curved, (12-)15-25(-32) x 1.5-2(-2.5)µm, with a truncate to obtuse base and rounded apex.

Host: *Antirrhinum majus* L. (Snapdragon).

Distribution: New South Wales (Noble *et al.* 1935 report only), Tasmania (Walker & Sampson 1982 report only), Victoria (Brittlebank 1937-1940, Chambers 1982), Western Australia (Goss 1964, Shivas 1989).

Septoria antirrhini was originally described from *Antirrhinum majus* with conidia given as 15-20 x 2-2.5µm. In Australian collections conidia were found to be as narrow as 1.5µm and close to the dimensions given for *S. antirrhinorum* Tharp (20-30 x 1.5µm), although in that species the conidia were noted to be aseptate. *Septoria antirrhini* var. *minor* Sacc. was described with conidia 14-16 x 2µm, which is not different from that seen in Australian collections where conidia were observed to be as short as 12µm.

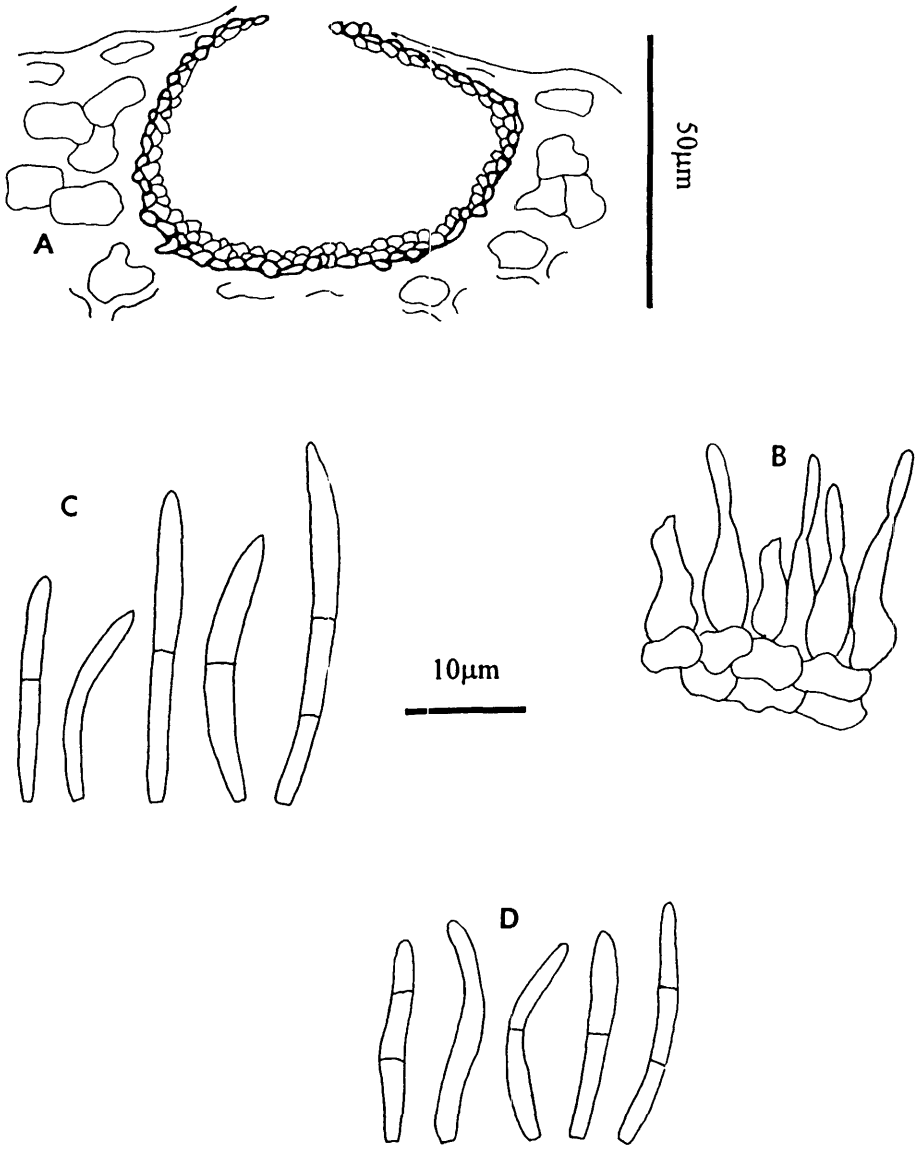

Fig.126. *Septoria antirrhini*; (A) v.s. conidioma PERTH 823589; (B) conidiogenous cells PERTH 823589; (C) conidia PERTH 823589; (D) conidia VPRI 1750

Specimens examined: on *Antirrhinum majus*; **Victoria**; Armadale, 22 Nov. 1899, D. McAlpine (VPRI 1750); Burnley, Oct. 1954, A.J. Pugsley (VPRI 1749); Chinten, 26 Nov. 1954, A.J. Pugsley (VPRI 1881); **Western Australia**; Parkeville, 18 Nov. 1942, (PERTH 823589).

Septoria exotica Speg., *Anales de la sociedad Cientifica Argentina* **10**: 155 (1880)

(Fig. 127)

Leaf lesions hologenous, orbicular to slightly angular, 1-3mm diam., on the upper surface at first dark brown to purple-brown, later becoming pale brown to grey-white in the centre with a distinct raised dark-brown to purple-brown margin. On the lower surface grey-white with a pale brown margin. *Conidiomata* amphigenous, mostly epigenous, scattered on lesions, separate, immersed, globose, dark brown to black, 80-120µm diam., pycnidial. *Ostiole* single, apical, 10-25µm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 7-9 x 3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenos loci. *Conidia* hyaline, filiform, 1-3 septate, straight to slightly curved, (15-) 22-40(-47) x 1-1.5µm, with a truncate base and mostly tapering gradually to a sub-acute apex.

Hosts: *Hebe imperialis* Bouch ex Planch., *H. speciosa* (A. Cunn.) Cockayne & Allen, *Hebe* x *speciosa*, *Hebe* x *veronica*, *Hebe* sp., *Derwentia derwentiana* (Andr.) B. Briggs & Ehrend. ssp. *derwentiana*.

Distribution: New South Wales (Hynes *et al.* 1941 as *Septoria* sp. on *Hebe imperialis*, as *Veronica*), Victoria, Tasmania (Sampson & Walker 1982), Western Australia (Shivas 1989 on *Veronica* sp., report only).

The species of *Septoria* occurring on *Hebe* and *Veronica* have been revised by Wu *et al.* (1996). Australian collections examined agree with the description of *S. exotica* Speg. (Laundon 1978, Wu *et al.* 1996) and exsiccatus material identified as that species. According to Wu *et al.* (1996), *S. exotica* appears to be confined to species of *Hebe* and *Septoria veronicae* Desm. confined to true species of *Veronica*. Laundon (1978) examined type collections of both *S. exotica* and a second fungus identified as *Scoleciasis atkinsonii* Syd. (Sydow 1924), described from New Zealand on *Veronica atkinsonii* Cockayne, now known as *Hebe stricta* (Benth.) Moore var. *atkinsonii* (Cockayne)

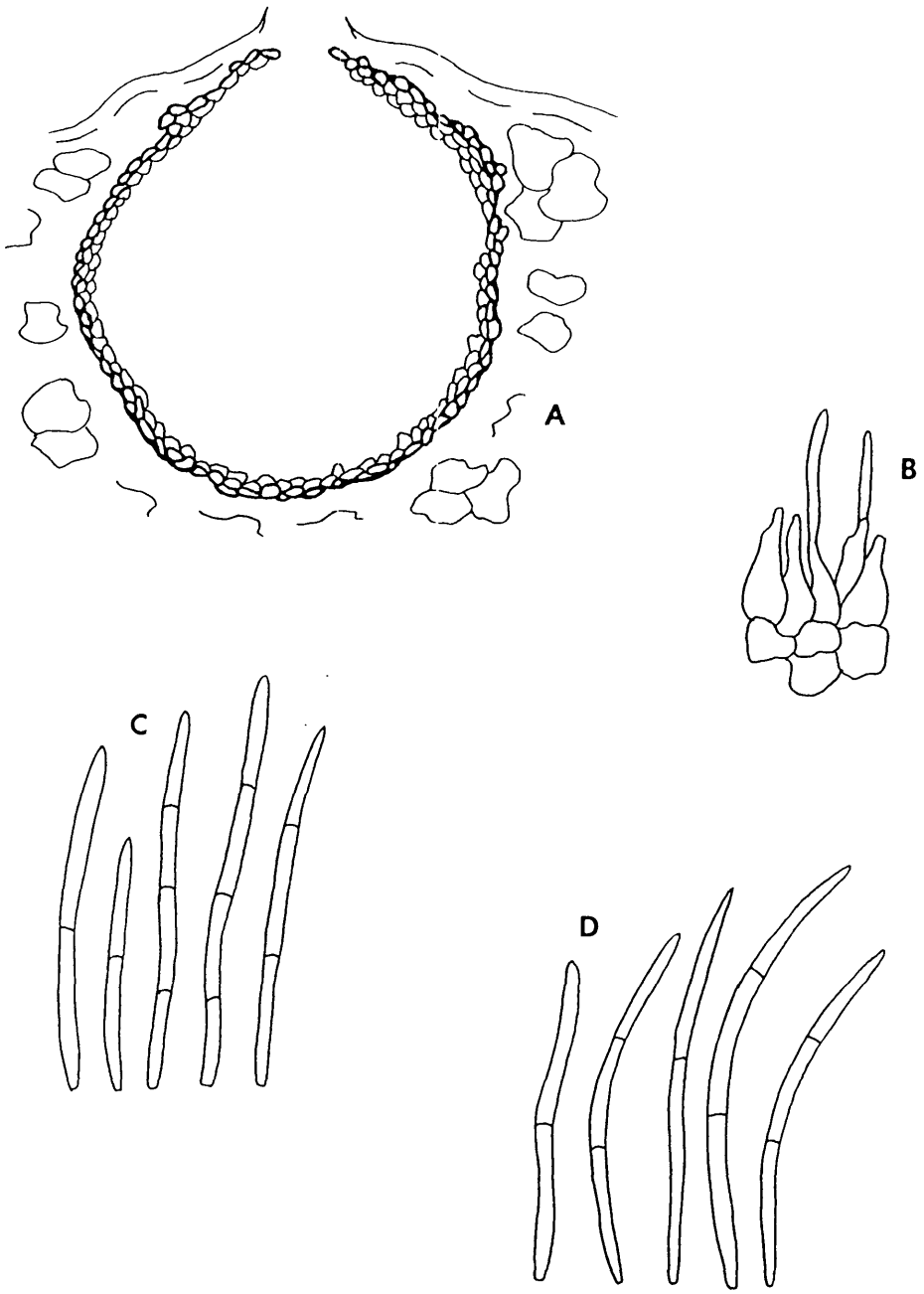

Fig.127. *Septoria exotica*; (A) v.s conidioma DAR 20919; (B) conidiogenous cells DAR 20919; (C) conidia DAR 20919; (D) conidia VPRI 15250 ex *Derwentia*

Moore. From the description of Laundon (1978) this is certainly identical to the fungus recently described by Wu *et al.* (1996) as *Kirramyces hebes* Wu, B. Sutton & Gange. A single collection of *S. exotica* has been examined from the native *Derwentia derwentiana* ssp. *derwentiana* collected in the Botanic Gardens in Canberra. The short narrow conidia (20-36 x 1-1.5μm) clearly place it in *S. exotica* and not *S. macalpinei* (see below) which has longer conidia than *S. exotica* and conidia of similar length but wider than those of *S. veronicae*.

Specimens examined:

AUSTRALIAN COLLECTIONS:
on *Hebe speciosa*; **New South Wales**; Bowral, 28 May 1966, S. Woffenden (DAR 20919); Baulkham Hills, 28 Dec. 1976, J. Walker (DAR 70193); **Tasmania**; Naracoopa, King Island, 18 Dec. 1970, K.G. Small (DAR 22210 & DAR 22211); King Island, Dec 1976, P.J. Sampson (DAR 28403); Currie, King Island, 18 Dec. 1970, K.G. Small (DAR 29992a); Taroona, 10 Oct. 1979, D. Secombe (DAR 44123);

on *Hebe* x *speciosa*; **New South Wales**; Milperra, 7 June 1985, J.B. Taylor (DAR 52772);

on *Hebe* sp.; **New South Wales**; Coonabarabran, 29 Dec. 1942, L.R. Fraser (DAR 4002); Castle Hill, July 1941, C.J. Magee (DAR 4005);Eastwood, 23 Jan. 1962, J. Anderson (DAR 6960); Castle Hill, 26 July 1966, A.L. Bertus (DAR 15726);

on *Hebe* x *veronica*; **Victoria**; Somerville, 18 Sept.1989, C. Carson (VPRI 16510);

on *Hebe imperialis*; **Victoria**; Box Hill, 19 Aug. 1987. A. Paul (VPRI 15559);

on *Derwentia derwentiana* ssp. *derwentiana*; **New South Wales**; Botanic Gardens, Canberra, 6 Mar 1987, I.K. Sharma (VPRI 15250) host as *Parahebe*.

EXTRALIMITAL COLLECTIONS:
all on *Hebe speciosa*; Domain, Auckland, **New Zealand**, 17 Apr. 1953, S.D. Baker (DAR 34467 ex PDD 12201); Mount Albert, Auckland, **New Zealand**, Aug. 1956, J.M. Dingley (DAR 62683 ex PDD 16373); **Moravia**, no date, Zimmerman, *Krypt. Exs. Vindobensis* No. 1468 (DAR 64404) host as *Veronica*.

Septoria macalpinei Priest sp. nov.

Etymology: after Daniel McAlpine, collector and author of many Australian fungi.

(Fig. 128)

Maculae hologenae, orbciularae vel elongatae, 7-12mm diam., vel 20mm diam, marginali, pallide brunneae cum margine distincto. *Conidiomata* amphigena, pycnidialia, immersa, separata, globosa, 70-110µm diam., crassitudine 3 cellularum, parieties pseudoparenchymatici, textura angulari, brunnea compositi. *Ostiolum* singulum, apicale, 20-35µm diam. *Cellulae conidiogenae* e cellulis interioribus conidiomatum formatae, discretae, hyalinae, ampulliformes, 7-11 x 2.5-4µm, holoblastica, proliferatione sympodiali conidia producentes. *Conidia* hyalina, filiformia, (1-)3-4 septata, recta vel curvata, laevia, (23-)30-45(-56) x 2-2.5(-3)µm, basim truncatum et apicem rotundatum.

Holotypus: in foliis *Derwentiana derwentiana* (Andr.) B. Briggs & Ehrend., Australian Alps, Victoria, Australia, 28 November 1903, C. French Jnr. (VPRI 8825).

Leaf lesions hologenous, orbicular to elongated, mostly 7-12mm, occasionally up to 20mm diam., elongated lesions often marginal and up to 12 x 2mm, on both surfaces pale brown in the centre, later becoming pale grey-brown, with a dark brown raised margin. *Conidiomata* amphigenous, mostly epigenous, scattered on lesions, separate, immersed, becoming erumpent, globose, dark brown to black, 70-110µm diam., pycnidial. *Ostiole* single, apical, 20-35µm, cells around the opening scarcely thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer pale to mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally integrated, ampulliform, 7-11 x 2.5-4µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, (1-) 3-4 septate, straight to curved, (23-)30-45(-56) x 2-2.5(-3)µm, with a truncate base and rounded apex.

Host: *Derwentia derwentiana* (Andr.) B. Briggs & Ehrend.(syns. *Parahebe derwentiana* (Andr.) B. Briggs & Ehrend., *Veronica derwentiana* Andr.).

Distribution: New South Wales (Walker & Mcleod 1970 as *Septoria* sp. on *Parahebe derwentiana*), Victoria (Chambers 1982 as *Septoria* sp. on *Veronica derwentiana*).

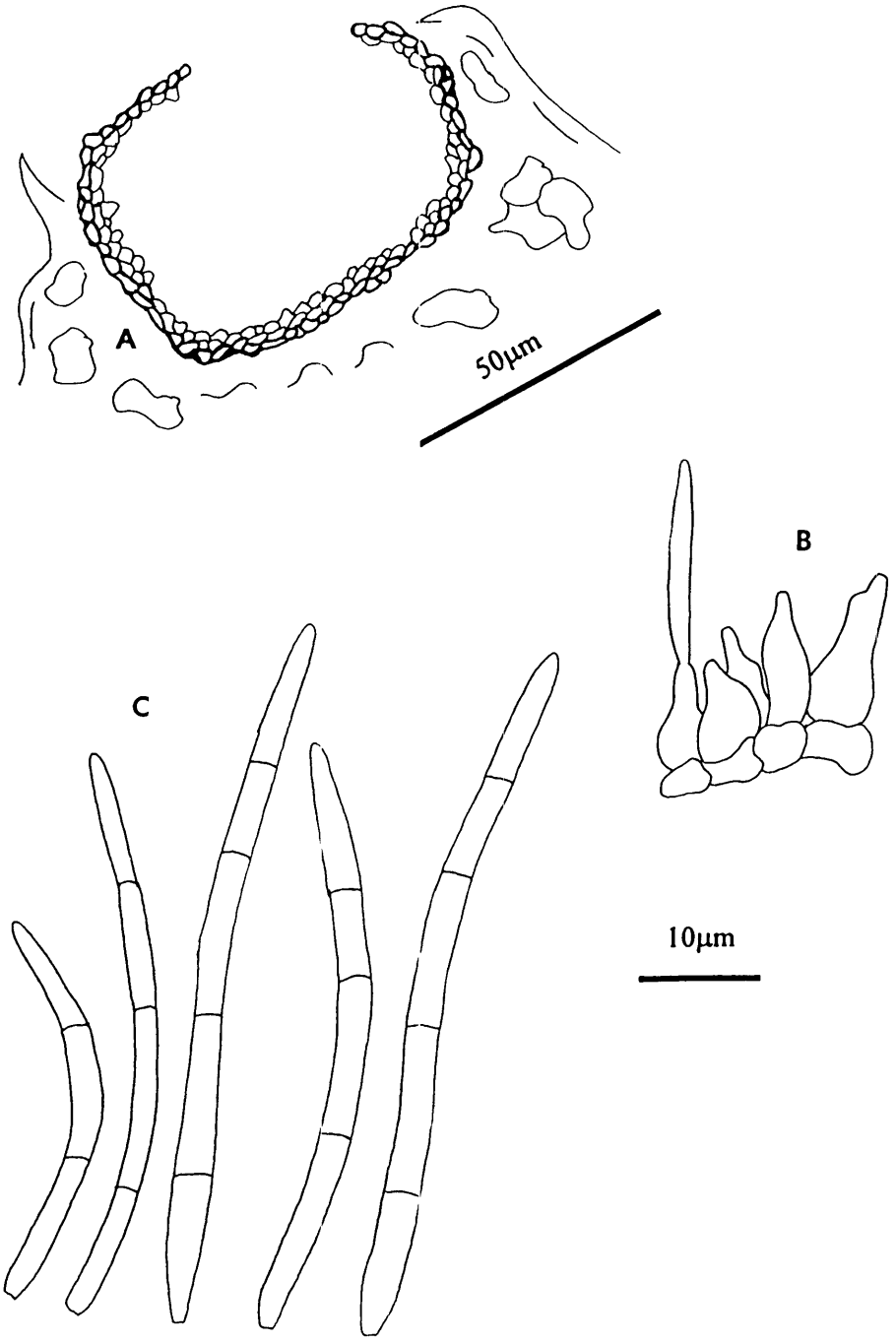

Fig.128. *Septoria macalpinei* VPRI 8828 holotype; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

Septoria macalpinei is clearly distinguished from both *S. exotica* and *S. veronicae* by its conidia being wider (2-2.5μm) than either of those two species whose conidia are only 1-1.5μm (*S. exotica*) and 1.5-2μm (*S. veronicae*). All collections examined are on the native host genus *Derwentia.*

Specimens examined: on *Derwentia derwentiana*; **New South Wales**; Chairlift area, Crackenback Ranges, 19 Jan. 1968, O.M. Williams (DAR 17775); Kanangra Walls, 3 Nov. 1986, D. Noble (DAR 59306); no locality, Dec. 1910, A.A. Hamilton (DAR 59306) hosts all as *Parahebe derwentiana*; **Victoria**; Wandong Ranges, 4 Nov. 1903, C. French Jnr. and Mount St. Bernard, 28 Nov. 1903, C. French Jnr. (both as VPRI 1775) host as *Veronica derwentiae*; Bright, 12 Dec. 1904, C. French Jnr. (VPRI 1776); Australian Alps, 28 Nov. 1903, C. French Jnr.(VPRI 8825) **holotype**, host as *Veronica derwentiae*; Burnley Gardens, Burnley, 21 Aug. 1986, I.G. Pascoe & B.C. Sutton (VPRI 14230) host as *Parahebe derwentiana.*

Septoria veronicae Desm., *Ann. Sci. Nat.* **11**: 348 (1849)

Reported by Brittlebank (1937-1940) and Chambers (1982) as occurring on *Veronica* sp. cult. in Victoria in 1914. No herbarium material under this name has been located and the record is unconfirmed. *Septoria veronicae* appears to be confined to true species of *Veronica* (Wu *et al.* 1996). Whether the host concerned was a true *Veronica* or *Hebe* is unknown although *Hebe* spp. were often known as 'Veronica' early this century.

Septoria sp. on *Veronica spicata*

Reported by Sampson & Walker (1982) from Fern Tree near Hobart, Tasmania. No herbarium material exists and the record remains unconfirmed. *Veronica spicata* is reported to be one of the hosts of *S. veronicae* Desm. (Wu *et al.* 1996), a species not yet confirmed for Australia.

SOLANACEAE

Septoria daturae Speg., *An. Soc. Cient. Argent.* **10**: 27 (1880)

Listed by Brittlebank (1937-1940) and Chambers (1982) on *Datura stramonium* L. in 1916 in Victoria. No herbarium material under this name has been located and the record remains unsubstantiated. *Datura stramonium* is listed as a host of *S. lycopersici* by Sutton & Waterston (1966c).

Septoria lycopsersici Speg., *An. Soc. Cient. Argent.* **13**: 16 (1882)

(Fig. 129)

Leaf lesions hologenous, orbicular, 2-3mm diam., on both surfaces pale brown at first, later becoming grey to creamy-white in the centre with a raised dark brown margin and a yellow-green chlorotic halo. *Conidiomata* amphigenous, mostly epigenous, scattered on lesions, separate, immersed, globose, dark brown, 95-175µm diam., pycnidial. *Ostiole* single, apical, 15-35µm, cells around the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer mid-brown, inner layers, pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform to lageniform, 11-20 x 3µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, 4-6 septate, straight to curved, 45-88(-105) x 2-2.5, with a truncate base and obtuse apex.

Host: *Lycopersicon esculentum* Miller (Tomato)

Distribution: New South Wales (Johnston 1910, Noble *et al.* 1935, Anon. 1966), Queensland (Veitch & Simmonds 1929, Aberdeen 1945, Simmonds 1966), South Australia (Osborn & Samuel 1922, Osborn 1924, Warcup & Talbot 1981, Cooke & Dube 1989), Tasmania (Sampson & Walker 1982), Victoria (Brittlebank 1924, Brittlebank 1937-1940, Washington & Nancarrow 1983), Western Australia (Carne 1925, Shivas 1989).

Septoria lycopersici is the cause of a cosmopolitan leaf spot on tomato (Sutton & Waterston 1966c). Australian collections do not differ from the description of Sutton & Waterston (1966c) and several

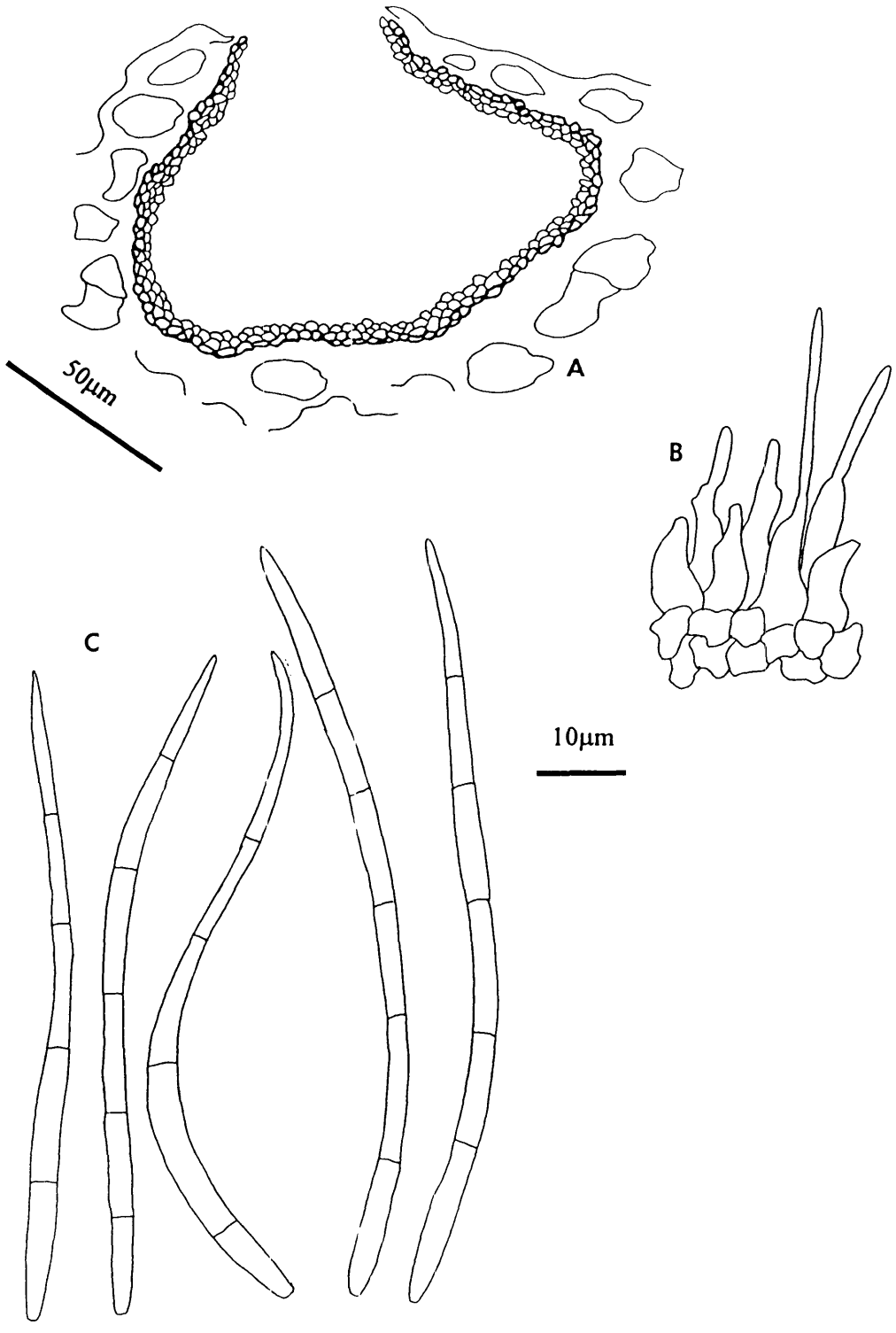

Fig.129. *Septoria lycopersici* DAR 1390: (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

exsiccatus collections identified as *S. lycopersici*. A complete study of the development of the pycnidium and host penetration of *S. lycopersici* was given by Harris (1935).

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Lycopersicon esculentum*; **New South Wales**; Sydney, Jan. 1914 (DAR 142); Chatswood, Nov 1917 (DAR 143); Warriewood, Aug. 1930 (DAR 1390); Epping, May 1922 (DAR 1391); Newport, June 1930 (DAR 1392); Lake Cargellico July 1921 (DAR 1393); Sydney, 14 Mar. 1921 (DAR 1394); Mona Vale, Sept. 1929 (DAR 1395); Maclean, Nov. 1961, P.G. Valder (DAR 6638); Lismore, 18 July 1962 (DAR 6987); Taree, 19 June 1979, D. McCoy (DAR 34342); Nabiac, 18 Mar. 1975, R.K. Nagle (DAR 58491); Armidale, 21 Feb. 1988, B.S. Walker (DAR 61487); **Queensland**; Ormiston, 1910, H. Tryon (BRIP 5788); Pinkenba, 25 Nov. 1927, H. Chapman (BRIP 5798); Moggill, 26 Oct. 1970, J.C. Johnson (BRIP 5802); Deception Bay, 9 May 1972, K.G. Pegg (BRIP 5839); **South Australia**; Adelaide, Feb. 1952, A. Kerr (ADW 1767);**Tasmania**; Dilston, 18 Nov. 1981, F. Peacock (DAR 43711); Bagdad, 8 Nov. 1979, R. Richards (DAR 44080); **Victoria**; Orbost, Feb. 1955, A. Pugsley (VPRI 1814; Shepparton, 1 Nov. 1951, H. Freeman (VPRI 1815); Fish Creek, 12 Mar. 1911, J. Knight (VPRI 1816); **Western Australia**; Geraldton, 5 July 1926, R. Sutcliffe (PERTH 821985).

EXTRALIMITAL COLLECTIONS:

on *Lycopersicon esculentum*; Prencow, **Czechoslovakia**, 20 Sept. 1898, A. Kmet, *Fungi Schemnitziensis* (DAR 64390); London, **Canada**, Sept. 1898, J. Dearness, *Seymour & Earle Econimic Fungi* No. 520 (DAR 51817); Columbus, Ohio, **U.S.A.**, 2 Aug. 1903, W.A. Kellerman, *Ohio Fungi* No. 137 (DAR 50568); Domasi, Nyasaland, **Africa**, D.C.M. Corbett (DAR 13312 ex IMI 76236); Mount Eden, Auckland, **New Zealand**, 13 Mar 1909, E. Cheel (DAR 64386).

Septoria sp. on *Solanum nigrum*

Listed by Simmonds (1966). No herbarium material has been located and the species of *Septoria* is unknown.

Septoria tabacina McAlp., *Victorian Naturalist* **16**: 142 (1900)

(Fig. 130)

Leaf lesions hologenous, orbicular, 3-5mm diam., occasionally coalescing to form lesions up to 10mm diam., on both surfaces at first brown-green with a pale yellow-green margin, later becoming pale brown with a cream centre and an indefinite pale brown-green margin. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, globose, dark brown to black, 100-180µm diam., pycnidial. *Ostiole* single, apical, 20-25µm, at maturity opening up to 45µm, cells around the opening thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown and thickened, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, lageniform, 8-15 x 3-4µm producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, 1-3(-5) septate, straight to curved, (18-)35-60(-72) x 2-2.5(-3)µm, with a truncate base and obtuse apex.

Hosts: *Nicotiana suaveolens* Lehm., *N. rosulata* (S. Moore) Domin, *N. velutina* H. Wheeler, *Nicotiana* sp.

Distribution: New South Wales, Victoria (McAlpine1900, Brittlebank 1937-1940, Chambers 1982), Western Australia (Shivas 1989 as *Septoria* sp. on *N. rosulata*).

The type collection of *S. tabacina* consists of four microscope slides only, the type specimen appearing to be lost. Examination of the slides reveals some ostiolate pycnidia present measuring 150-180µm and conidia measuring 31-36 x 2-2.5(-3)µm and 1-3 septate, in agreement with the original description. There are several species of *Septoria* described from the host genus *Nicotiana* including *S. nicotiana* Pat. (conidia 50-55 x 2-3µm and 3-4 septate), *S. palan-palan* Speg. (conidia 75-80 x 2.5-3µm and 1-3 septate), and *S. diversa* Sacc. et Syd. (≡ *S. nicotianae* Speg. *non.* Pat.) with conidia 25-40 x 1.5-2µm. Examination of the type collections of *S. palan-palan* and *S. diversa* has shown that both are morphologically different from *S. tabacina*. The type collection of *S. diversa* consists of three packets all marked *S. nicoatianae* Speg. n.sp. on hosts *N. acutiflora* and *N. longiflora* with different collection dates, but all material examined is identical with the original description. I have not examined the type collection of *S. nicotianae* Pat., which from its original description is similar to *S. tabacina*, and prefer to keep *S. tabacina* separate until further type studies have been carried out. The collection on *N. rosulata* from Western Australia (PERTH 832111) has very widely open conidiomata and they appear to be acervular, but it may also be a question of maturity of the

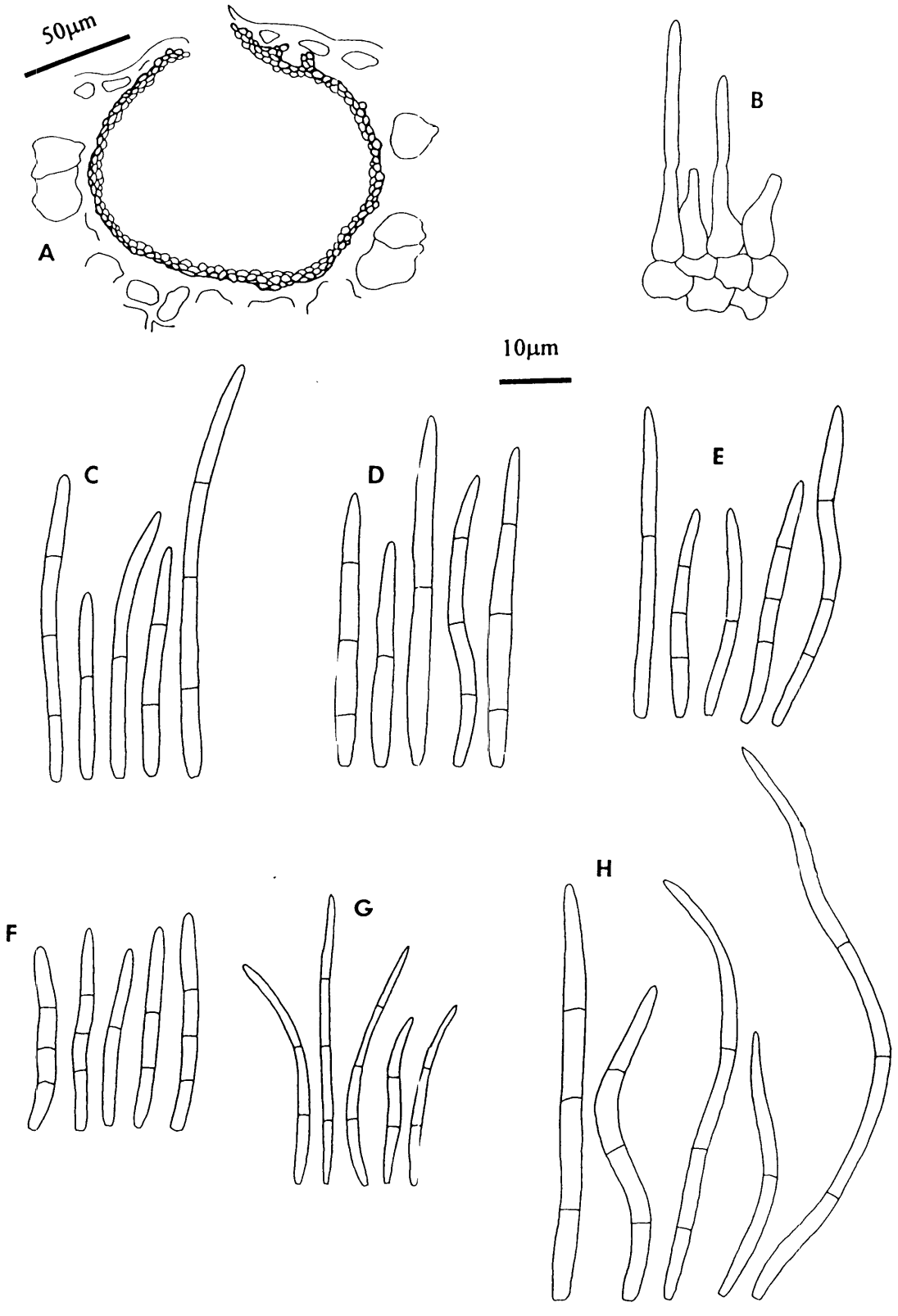

Fig.130. *Septoria tabacina*; (A) v.s. conidioma VPRI 1894; (B) conidiogenous cells VPRI 1894; C-H conidia (C) VPRI 1894; (D) type in VPRI; (E) DAR 122207; (F) PERTH 832111; (G) *S. diversa* type; (H) *S. palan-palan* type

material. The conidia measure only 18-26 x 2-2.5µm which is at the lower end of the range for *S. tabacina* which on other collections has conidia rarely shorter than 24µm. However, it is here included under *S. tabacina.*

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Nicotiana suaveolens*; **Victoria**; Mallee district, 10 Oct. 1899, C.French Jnr. (VPRI un-numbered) **holotype** (microscope slides only); Jackson Creek, 1 Oct. 1900, C. French Jnr. (VPRI 1894); Merri Creek, 2 Feb. 1903, C. French Jnr. (VPRI 8835);

on *Nicotiana rosulata*; **Western Australia**; Northam, Oct.1942, W.P. Cass-Smith (PERTH 832111);

on *Nicotiana velutina*; **Victoria**; Wyperfield, 18 June 1979, I.G. Pascoe (DAR 70072 ex VPRI 10737)

on *Nicotiana* sp.; **New South Wales**; Cobar-Ivanhoe, 9 Sept. 1963, L.R. Fraser (DAR 12209);

EXTRALIMITAL COLLECTIONS:

Septoria diversa; on *Nicotiana acutiflora* and *N. longiflora*; La Plata, **Argentina**, 15 Sept. 1887 and Nov. 1891 (LPS 10447) **holotype** of *S. nicotianae* Speg.;

Septoria palan-palan; on *Nicotiana glauca*, La Plata, **Argentina**, Dec. 1911 (LPS 10511) **holotype.**

THYMELEACEAE

Septoria daphnes Rob. in Desm., *Ann. Sci. Nat.* (Ser.2) **19**: 339 (1843)

Listed by Brittlebank (1937-1940) on *Daphne indica* L. and, Chambers (1982) on *Daphne odora* Thunb. in Victoria. No herbarium collection under this name has been located and the record is unsubstantiated. A further report of a *Septoria* sp. on *Daphne* at Scoresby, near Melbourne in 1950 by Chambers (1982) is also unconfirmed. *Septoria daphnes* was transferred to the genus *Marssonina* (as

Marsonia) by Sacardo (1884) and *Gloeosporium daphnes* Oud. was listed as an additional synonym. Chambers (1982) lists both *Septoria daphnes* and *Marssonina daphnes* as occurring in Victoria as well as *Gloeosporium mezerei* Cooke which from its description is probably another synonym of *M. daphnes*. None of the above records is supported by herbarium collections.

Septoria roemeriana Moesz, *Bot. Koezlemen* **14**: 153 (1915)

(Fig. 131)

Leaf lesions hologenous, orbicular to elongated, 7-10mm diam., on the upper surface pale to mid-brown with a scarcely differentiated margin, on the lower surface yellow-brown with a narrow brown margin. *Conidiomata* hypogenous, scattered on lesions, separate, immersed, globose, 90-100µm diam., pycnidial. *Ostiole* single, apical, 10-15µm, cells around the opening slightly thickened. *Conidiomatal wall* 2-3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform, 5-7 x 2-2.5µm, producing one or more conidia holoblastically, secession schizolytic, subsequent proliferation of the conidiogenous locus not observed. *Conidia* hyaline, filiform, straight to slightly curved, *in-vivo* 0-1 septate and 10-15 x 1-1.5µm, *in-vitro* 1-3 septate and 15-35 x 1-1.5µm, with a truncate base and obtuse apex.

Host: *Daphne* sp.

Distribution: Victoria.

On host material the collection showed only short conidia, but in culture the conidia were much longer and are identical with those of *S. roemeriana* as described by Andrianova (1992), who examined the type collection and gave conidia as 20-42 x 1-1.5µm and 1-3 septate. *Septoria daphnes* has been transferred to *Marssonina* (see above) and *S. naumovii* Lashevski has conidia 26-37 x 1.9-2.6µm according to Andrianova (1992) which are wider than those of *S. roemeriana*. Because of the conidial dimensions, the Australian collection is placed under *S. roemeriana*.

Specimen examined: on *Daphne* sp.; **Victoria**; Ellinbank Nursery, Ellinbank, 7 Oct. 1992, C. Copes (VPRI 18400).

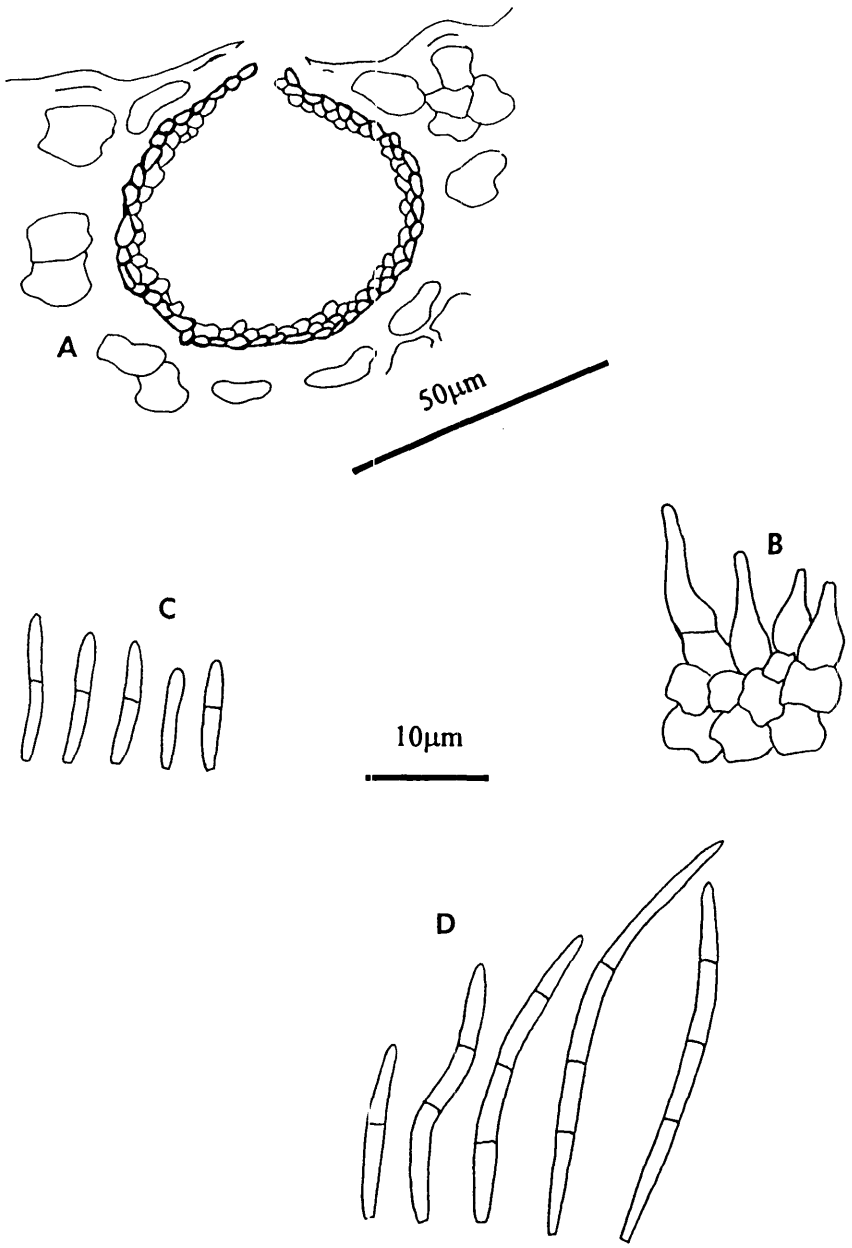

Fig.131. *Septoria roemeriana* VPRI 18400; (A) v.s conidioma; (B) conidiogenous cells; (C) conidia ex host; (D) conidia ex culture

TREMANDRACEAE

Septoria tetrathecae B. Sutton & Pascoe, *Studies in Mycology* **31**: 182 (1989)

(Fig. 132)

Leaf lesions absent. *Conidiomata* hypogenous, scattered, separate, immersed, globose, black, 120-150μm diam., pycnidial. *Ostiole* single, apical, 15-20μm, cells around the opening scarcely thickened. *Conidiomatal wall* 6-7 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer two layers mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, often septate, cylindrical, 5-8 x 2-3μm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, cylindrical to clavate, 1-septate, 20-26 x 3.5μm, with a truncate base and obtuse apex.

Host: *Tetratheca ciliata* Lindley.

Distribution: Victoria (Sutton & Pascoe 1989).

Septoria tetrathecae was fully described and discussed by Sutton & Pascoe (1989). It is known only from the type collection. The structure of the conidioma suggests a similarity to *Jahniella* with its many-layered pycnidial wall but the conidiogenesis in that genus is simple holoblastic (Sutton 1980) and the conidia are 3-4 septate. Examination of the holotype collection failed to reveal evidence of the presence of *S. tetrathecae,* the only fungus found being *Ceuthospora.* The illustration here is taken from the prepared slides accompanying the type collection.

Specimen examined: on *Tetratheca ciliata*; **Victoria**; Teddy Bears Gap, Grampians National Park, 27 Aug. 1986, B. Sutton, I. Pascoe & M.J. Priest (VPRI 14491) **holotype.**

URTICACEAE

Septoria urticae Desm. & Rob., *Ann. Sci. Nat. (Ser. 3)* **8**: 24 (1847)

(Fig. 133)

Leaf lesions hologenous, orbicular to irregular, bounded by veins, 2-4mm diam., occasionally coalescing, on both surfaces pale creamy-white in the centre with a thin dark brown margin.

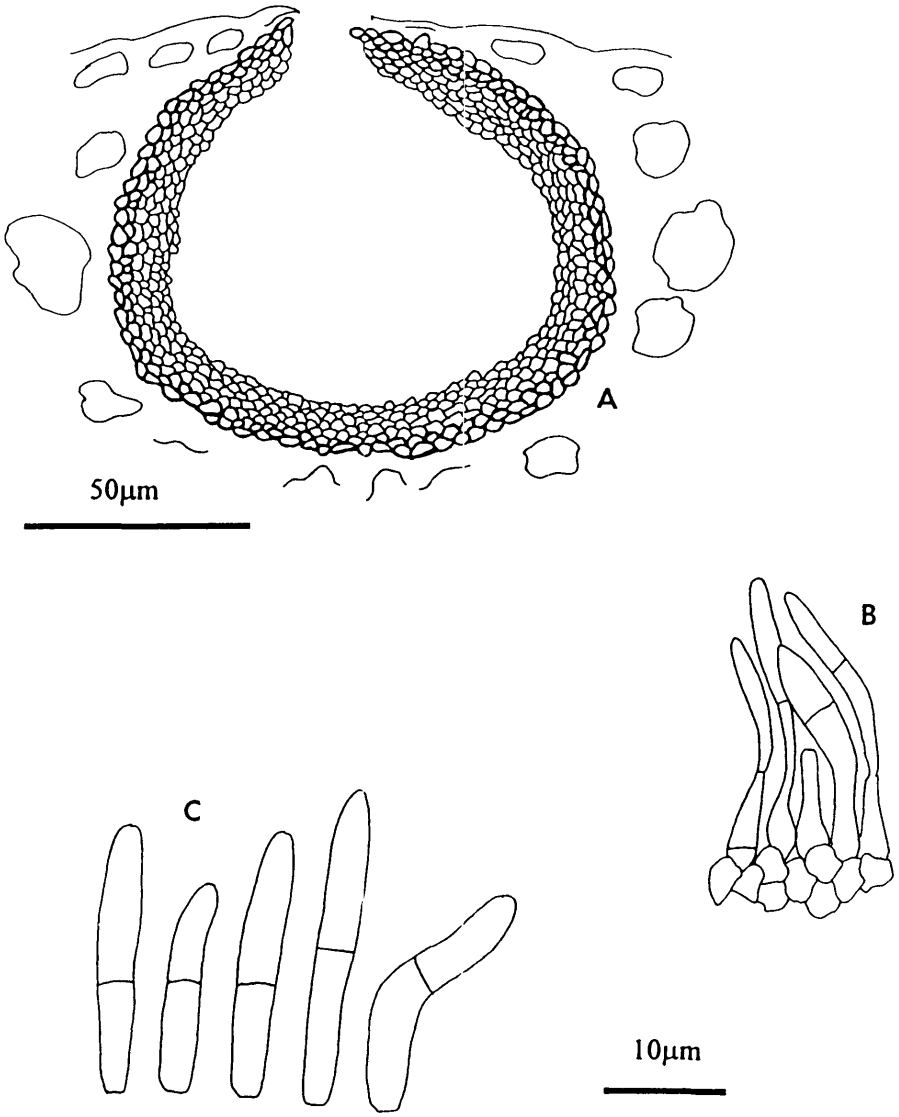

Fig.132. *Septoria tetrathecae* VPRI 14491 type; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

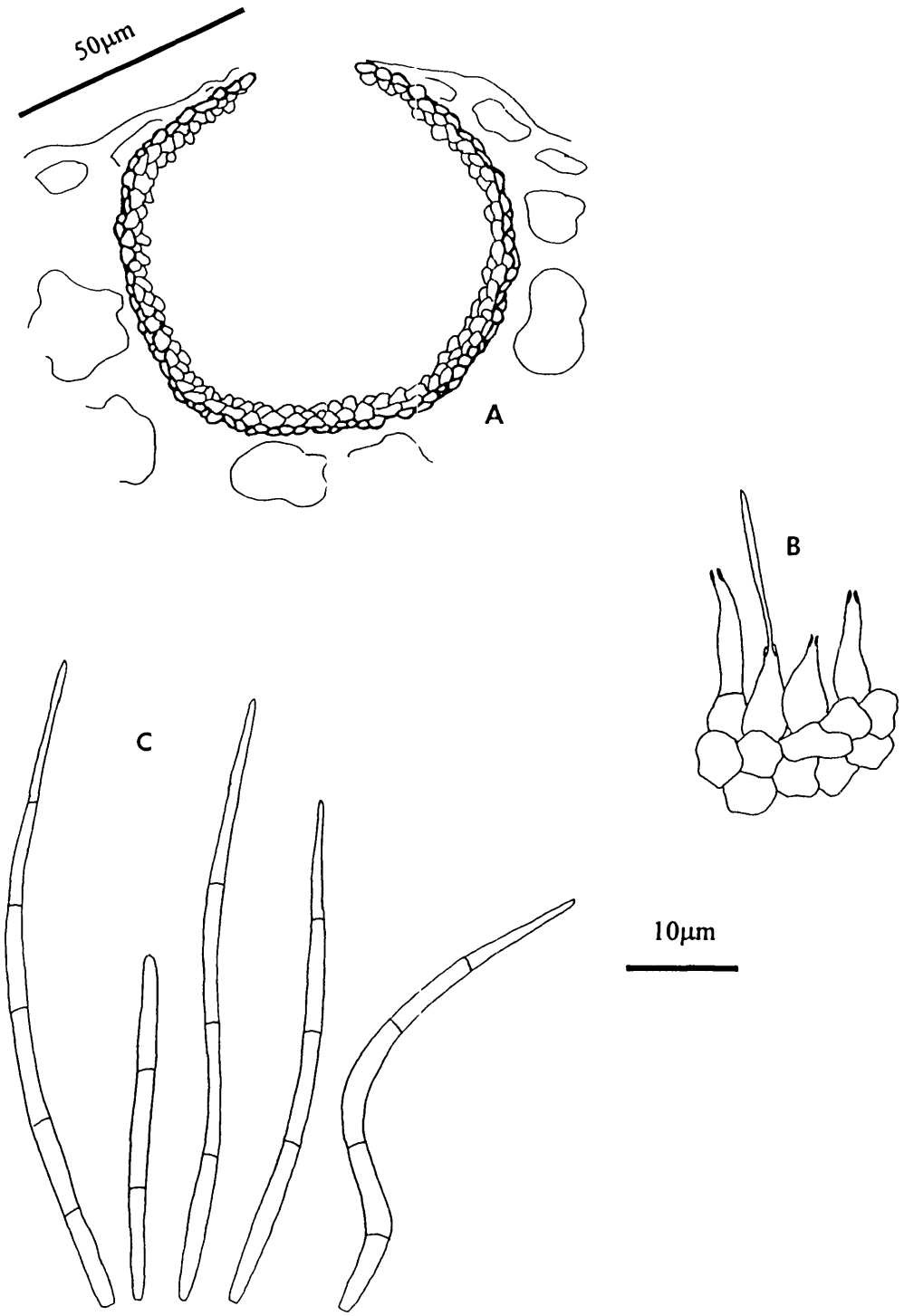

Fig.133. *Septoria urticae* ADW 1771; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

Conidiomata amphigenous, scattered on lesions, separate, immersed, becoming erumpent, globose, dark brown, 50-120µm diam., pycnidial. *Ostiole* single, apical, 25-35µm, cells around the opening slightly thickened. *Conidiomatal wall* 4 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, cylindrical, 10-15 x 3-4µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from narrow conidiogenous loci. *Conidia* hyaline, filiform, 3-5 septate, straight to slightly curved, (26-)35-50(-70) x 1.5-2µm, with a truncate to rounded base and obtuse apex.

Hosts: *Urtica incisa* Poir., *U. urens* L.

Distribution: New South Wales (Anon. 1948), South Australia (Warcup & Talbot 1981, Cooke & Dube 1989), Tasmania, Victoria (Brittlebank 1937-1940, Chambers 1982).

Septoria urticae was originally described with conidia given as 40-50 x 2µm. Grove (1935) gave conidia for British material as 30-50 x 1-2µm, Jørstad (1965) as 22-81 x 1-1.5µm on *U. dioica* and 28-64 x 1-2µm on *U. urens*, Saccardo (1878) as 50 x 2µm and Spegazzini (1910) as 40-60 x 1-1.5µm. Australian collections do not differ from these descriptions and are placed under this name.

Specimens examined:

on *Urtica incisa*; **New South Wales**; Megalong Valley, 20 Aug. 1967, O.M. Williams (DAR 16987); **Victoria**; Jackson Creek, 3 Oct. 1900, C. French Jnr. (VPRI 8840);

on *Urtica urens*; **New South Wales**; Leeton, May 1947, L.R. Fraser (DAR 4167); Temora, 1 Nov. 1951, P.G. Valder (DAR 4758); **South Australia**; Horrocks Pass, Aug. 1922, G. Samuel (ADW 1777); **Tasmania**; Bruny Island, 8 Aug. 1980, D. Morris (DAR 73859); **Victoria**; Armadale, 1 Sept. 1899, G.H. Robinson (VPRI 1902) host as *U. dioica*; Nyah, Oct. 1979, D. Trimboli (DAR 34391).

VERBENACEAE

Septoria verbenae Rob & Desm., *Ann. Sci. Nat. (Ser3)*, **8**: 19 (1847)

(Fig. 134)

Lesions on stems, orbicular to occasionally irregular, 1-2mm diam., occasionally coalescing to form elongated lesions up to 5mm long, at first purplish-red later becoming creamy-white in the centre with a purple-red margin. *Conidiomata* scattered on lesions, separate, immersed, globose, dark brown, 90-150µm diam., pycnidial. *Ostiole* single, apical, 25-35µm, cells round the opening slightly thickened. *Conidiomatal wall* 3-4 cells thick, composed of pseudoparenchymatous tissue, *textura angularis*, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally septate and integrated, cylindrical to lageniform, 13-20 x 2.5-5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, (1-) 3 septate, straight to slightly curved, 26-48 x 1.5(-2)µm, with a truncate base and obtuse apex.

Host: *Verbena officinalis* L.

Distribution: New South Wales, Victoria (Brittlebank 1937-1940, Chambers 1982, both report only).

Specimens examined:

AUSTRALIAN COLLECTION:

on *Verbena officinalis*; **New South Wales**; Parramatta, Apr. 1962, J. Walker (DAR 7483).

EXTRALIMITAL COLLECTION:

on *Verbena officinalis*; Prencow, **Czechoslovakia**, 16 June 1898, A. Kmet, *Fungi Schemnitzienses* (DAR 62902).

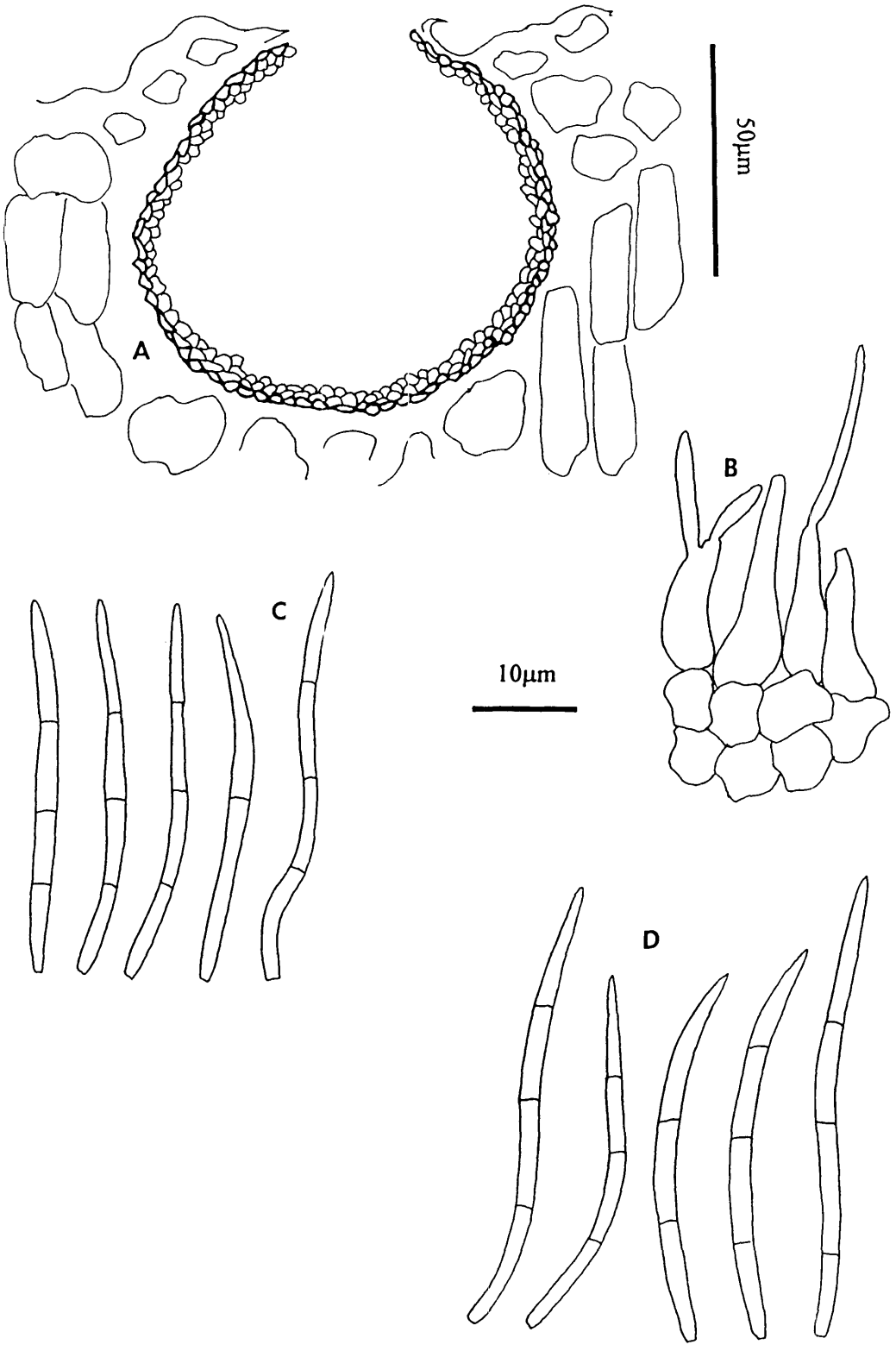

Fig.134. *Septoria verbenae*; (A) v.s conidioma DAR 7483; (B) conidiogenous cells DAR 7483; (C) conidia DAR 7483; (D) conidia DAR 62902 (Fungi Schemnitzienses)

VIOLACEAE

Septoria australiae McAlp., *Proc.Linn. Soc. N.S.W.* **28**:360 (1903)

(Fig. 135)

Leaf lesions hologenous, orbicular to irregular, 2-3mm diam., separate occasionally confluent and forming blotches up to 8mm diam., on both surfaces raised with a creamy centre and yellow-brown margin. *Conidiomata* amphigenous, scattered on lesions, immersed, becoming erumpent, separate, globose, dark brown, 90-120µm diam., pycnidial. *Ostiole* single, apical, 10-20µm, cells around the opening slightly thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer mid-brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, ampulliform to lageniform, 7-12 x 3.5-4µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced and seceding holoblastically from sympodially proliferating conidiogenous loci. *Conidia* hyaline, filiform, (1-)3 septate, straight to curved, 27-45(-55) x 1.5-2µm, with a truncate base and tapering gradually to a sub-acute apex.

Hosts: *Hymenanthera dentata* R. Br. ex DC., *Viola betonicifolia* Sm., *V. caleyana* Don, *V. hederacea* Labill.

Distribution: New South Wales, Victoria (McAlpine 1903, Brittlebank 1937-1940, Chambers 1982).

Septoria australiae was described from the native host *Viola betonicifolia* with conidia given as 30-45 x 0.75-1µm. Examination of the type collection has shown that conidia are mostly 1.5µm wide and are rarely narrower. Over the collections examined, the conidia are generally in the range of length given in the original description but are wider, and in young material can be strongly curved in addition to being straight and narrow. In a single collection on *Hymenanthera*, most of the conidia are curved but as they are also found in several collections on *Viola betonicifolia* examined, I regard it as an extreme form of *S. australiae*. Further collections on *Hymenanthera* are needed to establish whether it is possibly a separate taxon. I have not examined any material from Europe identified as *S. violae* Westend. but only material identified as such from the U.S.A. in addition to the type of *S. hyalina* Ellis & Everh. All of these collections have conidia measuring mostly 26-40 x 1(-1.5)µm which is narrower than seen in *S. australiae*. Measurements given for conidia of *S. violae* given by authors such as Grove (1935) and Jørstad (1965) indicate that they are mostly 1µm wide and narrower than those of *S. australiae*.

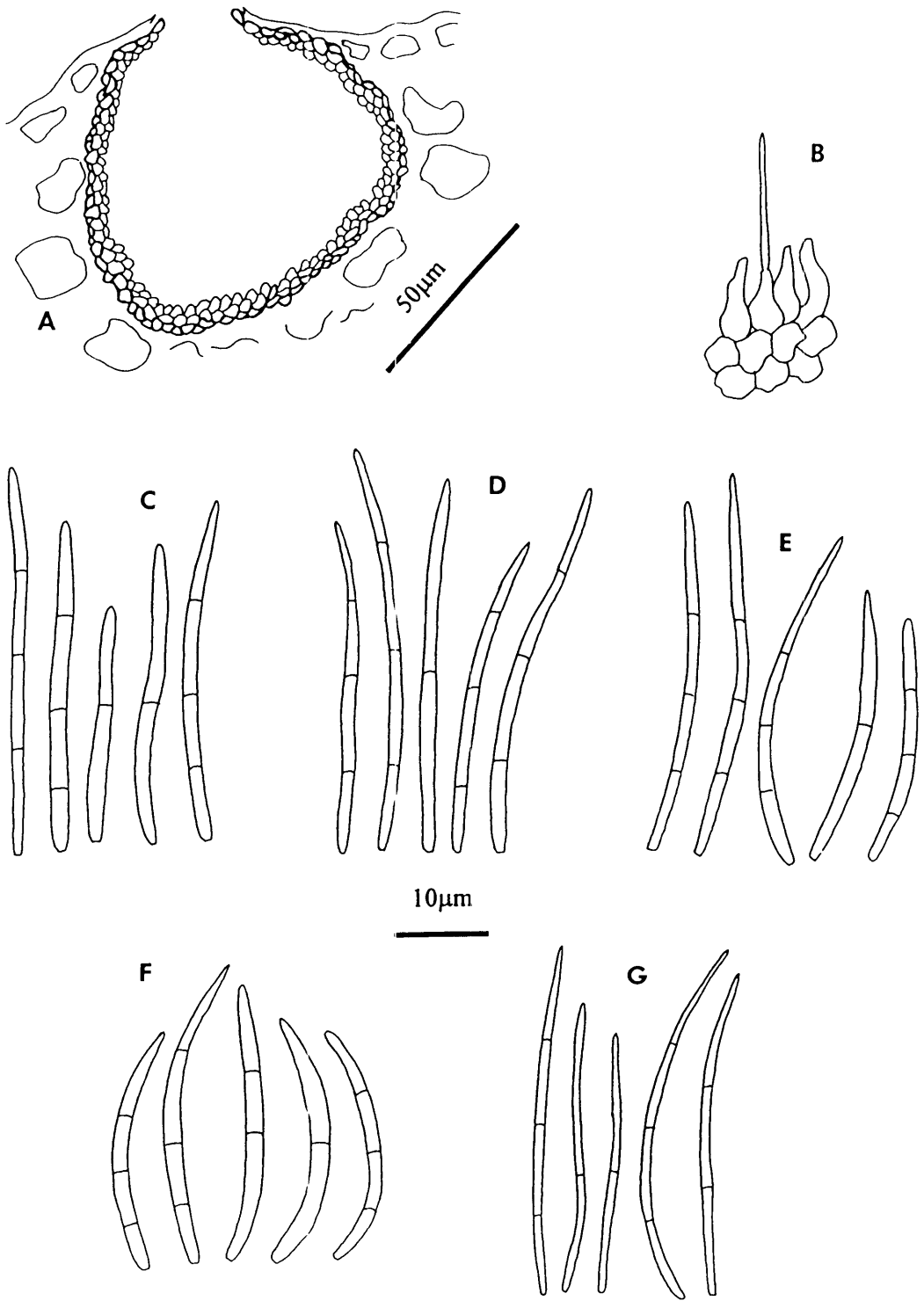

Fig.135. *Septoria australiae*; (A) v.s conidioma DAR 58921a; (B) conidiogenous cells DAR 58921a; C-G conidia (C) DAR 58921a; (D) VPRI 1755 type; (E) DAR 73923; (F) VPRI 14112 ex *Hymenanthera*; (G) *S. hyalina* type

Specimens examined:

AUSTRALIAN COLLECTIONS:

on *Hymenanthera dentata*; **Victoria**; Organ Pipes National Park, 9 July 1986, H.Y. Yip (VPRI 14112)

on *Viola betonicifolia*; **New South Wales**; Mount Selwyn, Kosciusko National Park, 18 Apr. 1987, M. Priest, I. Pascoe, S. Templer & A. Francis (DAR 58921a ex VPRI 15304 and DAR 58922b ex VPRI 15306); Victoria; Kiewa Valley, 14 Nov. 1902, G.H. Robinson (VPRI 1755) **holotype**.

on *Viola cayleana*; **New South Wales**; Round Mountain, Armidale, 21 Dec. 1974, J.B. Williams (NE 27993);

on *Viola hederacea*; **New South Wales**; Port Macquarie, 16 Apr. 1992, J. Walker (DAR 68462); Orange, 3 Feb 1982, R. Medd (DAR 73923).

EXTRALIMITAL COLLECTIONS:

Septoria hyalina; on *Viola primulifolia*; Nuttallburg, West Virginia, **U.S.A.**, July 1894, L. W. Nuttall, *Fungi Columbiani* No. 576 (DAR 53723) **type**;

Septoria violae; on *Viola blanda*; Wisconsin, **U.S.A.**, 14 Aug 1927, J.J. Davis (DAR 14981 ex WIS); Michigan, **U.S.A.**, Aug. 1893, G.H. Hicks, *Fungi Columbiani* No. 367 (DAR 53518).

Septoria violae Westend. f. ***odoratae*** Gonz. Frag., *Bol. Soc. Broteriana* (Ser. 2.), **2**: 78 (1924)

(Fig. 136)

Leaf lesions hologenous, orbicular to irregular, 5-7mm diam., on both surfaces pale straw brown in the centre with a narrow dark brown margin and pale brown necrotic tissue. *Conidiomata* amphigenous, scattered on lesions, separate, immersed, globose, black, 70-150µm diam., pycnidial. *Ostiole* single, apical, 22-36µm, cells around the opening thickened. *Conidiomatal wall* 3 cells thick, composed of pseudoparenchymatous tissue, textura angularis, outer layer dark brown, inner layers pale brown. *Conidiogenous cells* arising from the inner wall layer, hyaline, discrete, occasionally septate and integrated, ampulliform, 8-12 x 2.5µm, producing conidia holoblastically, secession schizolytic, subsequent conidia produced enteroblastically and seceding at the same level from

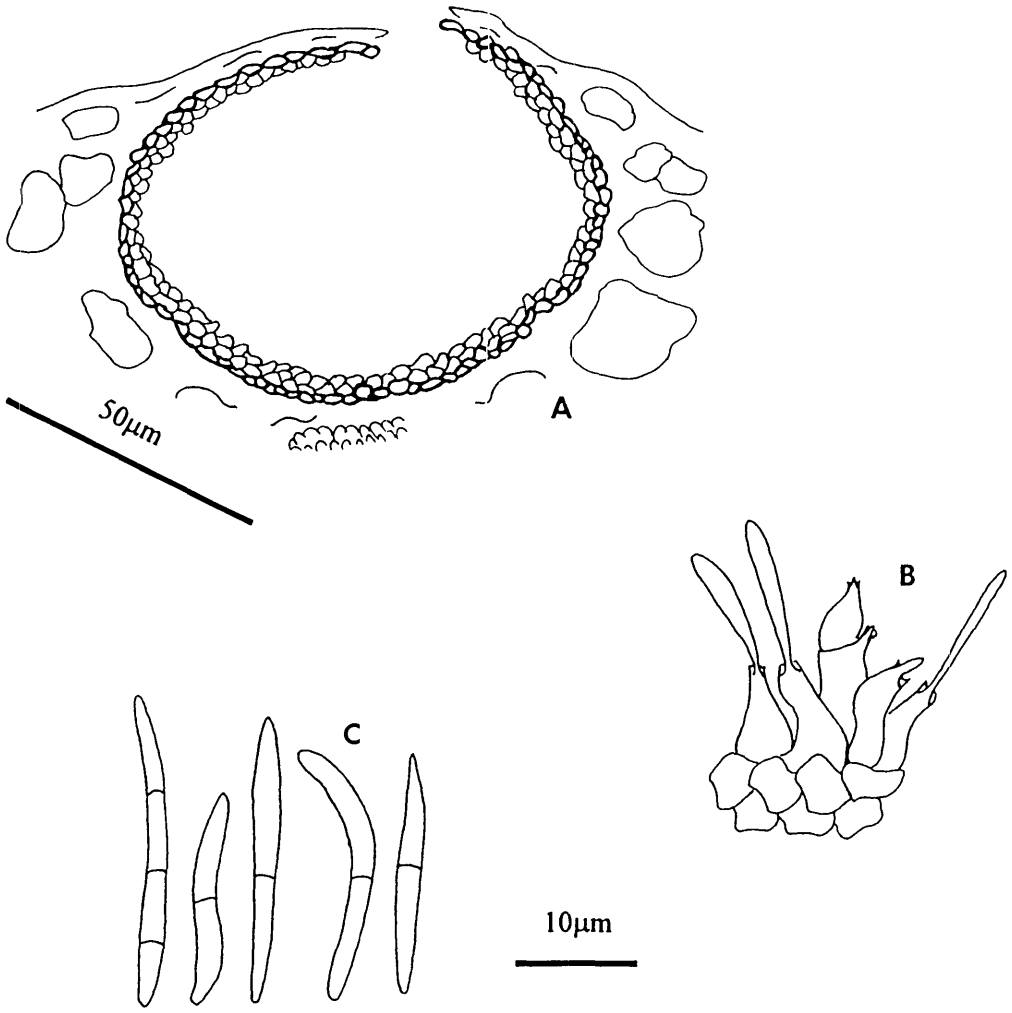

Fig.136. *Septoria violae* f. *odoratae* VPRI 1901; (A) v.s. conidioma; (B) conidiogenous cells; (C) conidia

integrated conidiogenous loci. *Conidia* hyaline, filiform to fusiform, 0-3 septate, straight to curved, 13-26 x (1.5-) 2μm, often narrowing to a rounded or truncate base and obtuse to sub-acute apex.

Host: *Viola odorata* L.

Distribution: Victoria (Brittlebank 1937-1940, Chambers 1982)

The single collection examined appears to be the basis for the record of *S. violae* by Brittlebank (1937-1940) and Chambers (1982). Examination of the material available shows conidia which appear to be wider than given for *S. violae,* given as 1(-1.5)μm by many authors including Grove (1935) and Jørstad (1965), although the latter noted conidia up to 2μm wide on *Viola palustris*. Grove (1935) also noted that the conidia have sub-acute ends which is somewhat consistent with the fusiform nature of the conidia seen in the Australian collection. *Septoria violae* f. *odoratae* Gonz. Frag. has been described on *V. odorata* with conidia 20-30 x 1.7-2.2μm and 1-3 septate, which is similar to the size of conidia seen in the Australian collection. As the conidia of the Australian collection are generally wider and shorter than given for *S. violae* and closer to those described for *S. violae* f. *odoratae*, the latter is the name provisionally adopted here.

Specimen examined: on *Viola odorata*; **Victoria**; Armadale, ? 1895 (date uncertain), D. McAlpine (VPRI 1901).

Septoria sp. on *Viola* sp.

Listed by Cooke (1892), Cobb (1893) and McAlpine (1895). The species of *Viola* is not given and the identity of the species of *Septoria* is consequently not known.

VITACEAE

Three *Septoria* spp. are reported to occur on hosts in the Vitaceae. None of these reports are supported by herbarium material being available for examination.

Septoria allescheri Syd., *Hedwigia* **38**: 138 (1899)

Listed as occurring in Victoria by Brittlebank (1937-1940) on *Ampelopsis hederacea* DC., and by Chambers (1982) on *Parthenocissus quinquefolia* (L.) Planch. No herbarium material has been located and the record is unsubstantiated.

Septoria tassiana Syd., *Hedwigia* **38**: 223 (1899)

Listed by Brittlebank (1937-1940) as occurring on *Vitis antarctica* (Vent.) Benth. (syn. *Cissus antarctica* Vent.) in Queensland. No herbarium material under this name has been located and the record is unsubstantiated.

Septoria vitis Lev., *Ann. Sci. Nat.* (Ser. 3), **5**: 279 (1846)

Listed by Brittlebank (1937-1940), Fisher & Freeman (1959), Washington & Nancarrow (1983) on *Vitis vinifera* L. in Victoria prior to 1940. No herbarium material under this name has been located and the record is unsubstantiated.