



1, Branch galls ($\times 1/2$) with crustose and zonate stroma of *C. staphula*; 2, vertical section through stroma on bark of gall ($\times 45$) with immersed, empty pycnidia of *Diplodia tumefaciens*; 3, surface view of stromatal projections ($\times 10$); 4, vertical section through perithecial and empty pycnidial locules ($\times 45$); 5, vertical section through perithecial locules ($\times 45$); 6, vertical section through pycnidial locules ($\times 80$); 7-9, asci and ascospores ($\times 400$), 7, before dehiscence of outer wall, 8, after dehiscence of outer wall and elongation of inner ascus wall; 9, after expulsion of two ascospores; 10, conidia ($\times 400$); 11-13, single ascospore cultures on 2% P.D.A.; 11, 15°C, 8 wks, showing black conidial tendrils ($\times 2$), 12, 21°C, 4 wks ($\times 1/2$), 13, 21°C, 10 wks ($\times 1/2$).

Cucurbitaria staphula Dearness ex R.H. Arnold & R.C. Russell, Mycologia 52: 501. 1960.

ASCOSTROMATA turbinate to subspherical, black, externally roughened, bases united by a thin stromatic layer extending into bark tissue, each projection bearing one ascococule, collapsing apically and becoming perforate at maturity, clustered in cracks in bark, crustose, or zonate. ASCOCOCULES $335-470 \times 165-300 \mu$, subspherical or turbinate, lined with hyaline stromatic cells, hymenium covering base of each locule. ASCI bitunicate, $144-240 \times 17.5-25.5 \mu$ before dehiscence of outer wall, clavate, short-stipitate, eight-spored. ASCOSPORES $27-48 \times 12.5-16 \mu$, obovoid or pyriform with 3-7 cross-septa at maturity, the cells divided by one or more longitudinal or oblique septa, constricted at all septa but strongly so at primary septum, obtuse or occasionally acute at the apex, acute or caudate at the base, surrounded by a hyaline sheath 0.5μ thick. PSEUDOPARAPHYSES 1.5μ wide, abundant, septate, anastomosing.

CONIDIAL STROMATA mingled with ascostromata, closely aggregated or in concentric rings on margins of galls. CONIDIA borne singly on tips of hyaline simple conidiophores, $3-10.5 \times 3-5 \mu$, or on

very short projections, on cells lining subspherical or ovoid pycnidial locules, 100-300 × 75-295 μ, in black stromatal projections, one or more locules to a projection. MACROCONIDIA (form genus *Pseudodichomera* v. Höhnelt) 12.5-16 × 8-10.5 μ, dark brown, muriform, subspherical or irregular-ovoid, with 1-3 cross-septa and few longitudinal or oblique septa, surrounded by a hyaline sheath 0.5 μ thick. MICROCONIDIA 2 × 0.5 μ, hyaline, allantoid or ovoid.

SUBSTRATE: galls and rough-bark on *Populus tremuloides* Michx. and *P. balsamifera* L. caused by *Diplodia tumefaciens* (Shear) Zalasky.

DISTRIBUTION: Saskatchewan.

COLLECTIONS (selected): On *P. balsamifera*; Beaver Creek, Saskatoon, IX.1929, DAOM 14544 (R.C. Russell), VII.1928, 63181 (R.C.R.), VIII.1938, 64002 (J.E. Bier & R.C.R.), IV.1958, 59082 (R.C.R. & C.G. Riley), Buchanan, VIII.1929, 64001 (Mead & R.C.R.), Indian Head, IX.1943, 63180 (R.C.R.), Naisberry, IX.1927, Dearness Herb. 6104 (R.C.R.), Pike Lake, X.1929, DAOM 63209 (R.C.R.). On *P. tremuloides*; Candle Lake, IX.1958, 64003 (H. Zalasky & C.G.R.), Redberry, VI.1959, 64004 (R.C.R. & H.Z.).

CULTURAL CHARACTERS: Slow growing on 2% PDA at c. 21°C in diffuse light, forming a compactly woven, felty colony, sometimes zonate near margin; radial growth 4-15 mm in 8 weeks; at first white, then tinged with grey or tan. Mycelium of thick-walled hyphae, 2.5-3.5 μ diam, sparingly septate and branched at right angles. By 9 weeks pycnidial stromata found within the aerial mat with mature macroconidia typical of those found in nature.

NOTES: Common in Saskatchewan and also recorded from Alberta on *P. balsamifera* (Tripp, Robins & Blauel, Ann. Rept. Forest Insect & Dis. Surv., Ottawa p.94, 1969) and on *P. tremuloides* (Tripp & Blauel, ib. p.107, 1968), and from British Columbia on *Populus trichocarpa* Torr. & Gray (Molnar, ib. p.85, 1957). Collections of this species made from April to October have been examined and found in excellent condition with both ascigerous and conidial states present. Zalasky (Can. J. Bot. 42: 1856, 1964) reported two types of one-celled microconidia in pycnidial locules on the host: one 3-6(-8) × 1-2(-3.5) μ, hyaline, cylindrical, and the other 2 × 1-1.5 μ, ovate, with light olivaceous walls. He obtained these in culture only on Czapek's agar containing xylose 20g/l. (cylindrical type), or on Czapek's agar containing dulcitol 1.0 g/l. (ovoid type).

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