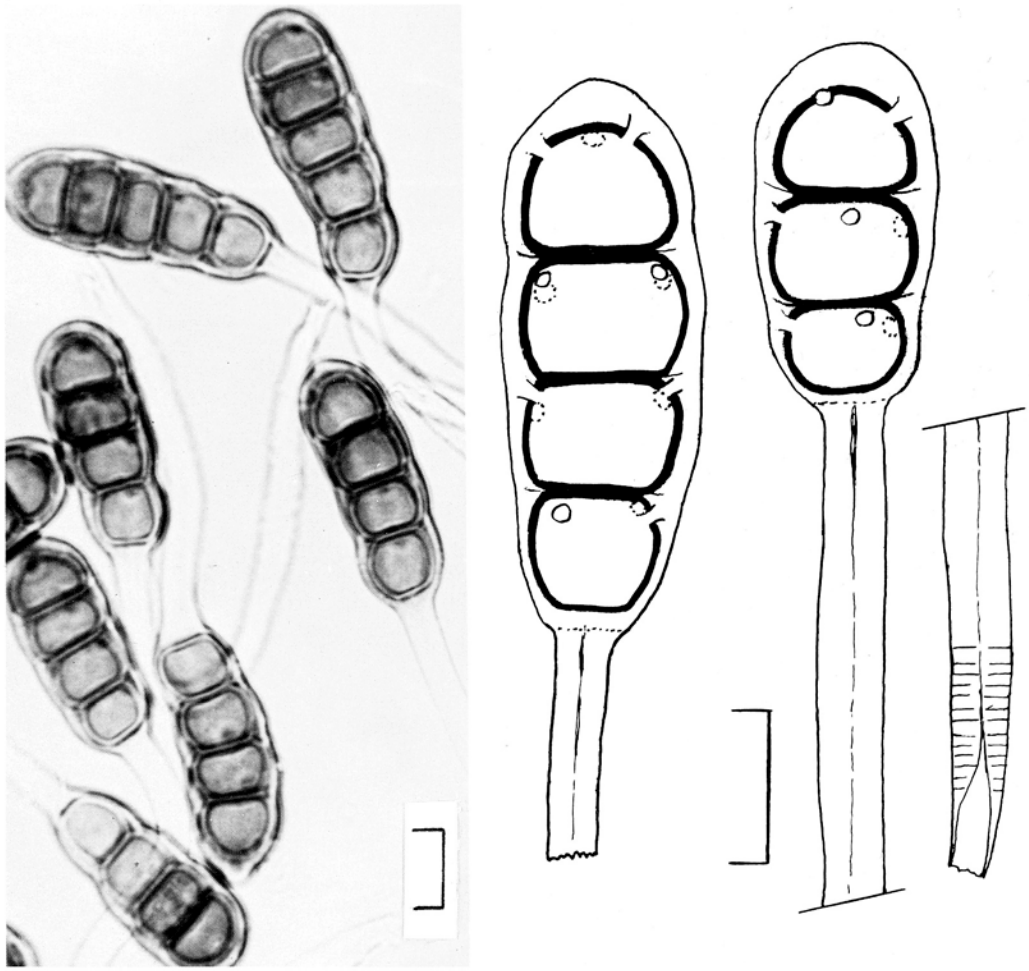
PHRAGMIDIUM POTENTILLAE



Teliospores, showing smooth wall somewhat thickened at apex, superequatorial germ pores, and long firm essentially unswollen pedicel. Scale = 20μ.

Phragmidium potentillae (Pers.) Karst., Bidr. Finl. Nat. Folk 31: 49. 1879.
≡*Puccinia potentillae* Pers., Syn. Fung. 229. 1801.

PYCNIA not seen in any Canadian specimen, described as amphigenous and few. AECIA predominantly epiphyllous, bright yellow, caeomoid, with few or no thin-walled clavate paraphyses. AECIOSPORES (18-)20-29(-30.5) × (15-)16.5-22(-23)μ; walls 0.7-1.8μ thick, hyaline, echinulate with sharply conic echinulae 0.5-0.8(-1.0)μ diam. and (1.0-)1.2-3.2(-4.5)μ spacing; germ pores generally obscure, apparently ca. 6-8 and scattered. UREDINIA hypophyllous, yellow fading to cream; marginal thin-walled clavate paraphyses ca. 8-15μ diam. occasionally abundant but often few or none. UREDINIOSPORES (18-)19.5-28(-30)((-33)) × (15-)16-21.5(-23)μ; walls (0.5-)0.6-1.0(-1.2)((-1.5))μ, hyaline, with echinulations 0.4-0.7(-0.8)μ diam. and (1.0-)1.2-3.5(-4.5)μ spacing; germ pores apparently several, scattered, but generally obscure. TELIA hypophyllous or occasionally on petioles or calyces, black, pulvinate. TELIOSPORES ((17-))(32-)43-85(-92)((-103)) × 20-29(-30.5)μ, (1-)3-5(-6)-celled, generally very slightly constricted at septa; walls 1.5-2.3μ minimum near pedicel, 2.5-3.5(-4.5)μ on sides, increasing to 5-7(-8)μ at rounded to subconic apex (rarely with short apiculus to 4.5μ long), completely smooth, inner layer light chestnut (cleared), outer layer yellow to yellow-brown; germ pores of end cells generally 2-3, of inner cells (2-)3-4 per cell, always strongly superequatorial, rarely one pore

of uppermost cell strictly apical; pedicels hyaline, firm, not (or very slightly) swollen in lower part, often with delicate annular grooves in lower half, ca. 80-170(-205)μ long.

CANADIAN HOSTS AND DISTRIBUTION: *Potentilla concinna* Richards., var. *concinna*, Craigmyle, Alta. (Brinkman 1913); *P. hippiana* Lehm., Indian Head (Cowan) and Assiniboia, Sask. (Machacek); *P. hookeriana* Lehm., Dawson, Yukon (Calder & Billard 2896), Yellowknife, Mack. (Cody & McCanse 2654, 3073); *P. nivea* L., Mt. Ste Anne, Percé, Gaspé E. Co., Que. (Parmelee 704); *P. pectinata* Raf., Charlevois to Gaspé E. Cos., Que. (9 collections); *P. pensylvanica* L. (incl. *P. bipinnatifida* Dougl., *P. glabrella* Rydb., *P. strigosa* Pall.), Dawson, Yukon (Calder & Billard 2969, 4554), Fort Simpson, Mack. (Cody & Matte 8301, 9128), Fort Smith, Mack. (Cody 3844, 4164), ne. to s. cent. B.C. (Calder et al., 12 collections), Waterways to Fort MacLeod, Alta. (10 collections), Edam to Cypress Hills and Qu'Appelle Valley, Sask. (10 collections), Russell to Bird's Hill, Man. (4 collections). (All in DAOM).

NOTES: Reported from Alaska on *P. pensylvanica* by Cash (Pl. Dis. Reptr. Supp. 219. 1953); also in DAOM on *P. hookeriana* from mi. 241.5 Richardson Hwy. (Cody & Webster 5095). Widespread in ne. and nw. U.S.A., and across Eurasia.

The *Phragmidia* on *Potentillae* are generally closely host-limited. Thus it is doubtful whether *Potentilla pensylvanica* and its close eastern relative *P. pectinata* take the same biotype that attacks *P. nivea* and the closely related *P. hookeriana*; but if there is any morphological distinction it is concealed by the great morphological variation on each host. It is significant that *Potentilla argentea* L., which is abundantly infected in Europe, has not been found rusted in North America, although it now occurs freely from the Atlantic coast to North Dakota and sparingly west of the Rockies. European material on *P. argentea*, the lectotype host, is not morphologically separable from North American specimens. As with some other species, the first and last telia formed in a season tend to have shorter spores, fewer cells, and shorter pedicels than those formed in mid season under nearly optimal conditions. As noted above, no pycnia were found in the six available Canadian aecial collections. In addition one specimen bears no aecia but only amphigenous primary uredinia. It thus appears that the species is in process of simplifying its life cycle. The aeciospores and urediniospores are generally separable only by the thicker walls of the former, although the urediniospores tend to have slightly finer echinulations and elongate spores occasionally have a recognizable hilum.

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