



1, Uredinia (arrowheads) on *Secale cereale*, DAOM 244; 2, telia (arrows) same collection; 3, urediniospores with conspicuous, scattered germ pores, DAOM 24125; 4, telia, incompletely loculate in section, DAOM 244; teli-spores subcylindric, DAOM 244. 1, 2, $\times 10$; 3, 4, 5 scales = $10\mu\text{m}$.

Puccinia recondita Rob.: Desm., Bull. Soc. Bot. France, 4: 1857, s. str.
 = *Puccinia dispersa* Erikss. & Henn., Z. Pflanzenkr. 4: 17. 1894.

PYCNIA and AECIA on *Anchusa*, *Lithospermum* and *Lycopsis* in Europe, not North America.
 PYCNIA amphigenous. AECIA mainly abaxial or caulicolous. AECIOSPORES 18-24(-25.5) \times

16-22 μ m; wall 0.6-1.0 μ m excluding verrucae, hyaline; verrucae 0.3-0.6 μ m high, bizonately ca. 0.1-0.2(-0.3) μ m and 0.3-0.8(-1.0) μ m diam. (type 2 spores of Savile, Rept. Tottori Mycol. Inst. 10: 225-241, 1973) UREDINIA and TELIA on *Secale cereale*. UREDINIA adaxial, amphigenous (or on sheaths), moss: advanced adaxially, medium sized, naked early to long remaining covered and spores sifting through split epidermis, light or medium yellow-brown, paraphysate. UREDINIOSPORES (22-)25-29(-32)(-35) \times (19-)21-27(-29) μ m; wall (0.8-)1.0-1.7 μ m, outer layer light yellow, inner light to dark brown; echinulae 0.5-0.8(-1.0) μ m diam., 1.3-3.0 μ m between centers; germ pores scattered, (6-)7-9(-10), usually clear, (slight to) moderate (to strong) internal ring, cap occasionally to 1.0 μ m high. TELIA abaxial or on sheath, plumbeous when covered but scanty stroma may allow epidermis to split and slough off revealing black sorus; stroma and fused paraphyses usually weak and often yellow rather than orange-brown; paraphyses ca. 55-75(-90) μ m long; incomplete locules allow easy removal of spores. TELIOSPORES typically 2-celled, but few 1-celled ones in many collections and 3-celled ones in a few; 2-celled spores (30-)35-78(-85) \times (11.5-)13-22(-24) μ m, (not-) slightly (-moderately) constricted, generally subcylindric except few short and wide teratological spores, occasionally with 1-3 delicate longitudinal ridges ca. 1.0-1.5 μ m wide; wall 0.5-0.8(-1.0) μ m min. in lower cell, hyaline to pale yellow; 2.5-6.5(-7.5) μ m at apex, yellow-brown to chestnut, conic-rounded to truncate (then occasionally with 1-3 shallow bumps to ca. 1.0 μ m high); no germ pore; hilum orange; pedicel generally orange at spore and yellow below, rarely to 22 μ m long, easily broken and minimum length doubtful.

HOST: *Secale cereale* L.

DISTRIBUTION: Nova Scotia, New Brunswick; Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia.

COLLECTIONS (partial): On *Secale cereale*. N.S.: Kentville, 8 Aug. 1936, DAOM 3979 (Hockey). N.B.: Fredericton, 20 July 1937, DAOM 4976 (Conners). Que.: Macdonald College (culture), 11 Dec. 1917, DAOM 114556 (Fraser); 10 Oct. 1927, DAOM 162956 (Gordon); Montreal Bot. Garden, 2 Aug. 1944, DAOM 153185; 3 Aug. 1944, DAOM 153186 (Jacques); Dolbeau, 17 Aug. 1939, DAOM 5708 (Conners). Ont.: Harrow, 8 June 1950, DAOM 24125 (Parmelee); Guelph, 12 July 1947, DAOM 19619 (Conners); 12 July 1946, DAOM 132495 (Sutton); New Durham, 17 June 1935, DAOM 77556 (Cain). Man.: Brandon, 27 July 1921, DAOM 244 (Conners); Winnipeg, 30 Sept. 1918, DAOM 183297 (Fraser); 7 Aug. 1945, DAOM 153314 (Brown); 9 Aug. 1920, DAOM 153184 (Conners). Sask.: Scott, 16 Aug. 1926, DAOM 156973 (Newton); Saskatoon, 26 July 1939, DAOM 7131 (Russell); 18 Aug. 1942, DAOM 179888 (Simmonds); Antelope, 23 Aug. 1939, DAOM 5789 (Ledingham); Indian Head, 26 Aug. 1926, DAOM 116; 10 July 1928, DAOM 140 (Sallans); Froude, 20 July 1942, DAOM 153182 (?). Alta.: Beaver Lodge, 20 Sept. 1927, DAOM 153199a (Newton); Edmonton, 19 Aug. 1926, DAOM 164903 (Newton); Lacombe, 20 Aug. 1926, DAOM 156978, 20 Aug. 1926, DAOM 162965 (Newton). B.C.: Vancouver, 2 Aug. 1950, DAOM 24340 (Toms); Agassiz, July 1943, DAOM 118786 (Jones).

NOTES: See notes for *Puccinia triticina* (F. Canadenses No.309) for comparison of these nomenclaturally confused but morphologically and biologically distinct rusts. See also keys to the cereal leaf rusts under *P. hordei* (F. Canadenses No.312). It should also be noted that *P. triticina* rarely occurs on *Secale*. The above description is based on all Canadian and extralimital specimens available in DAOM.

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Cat. No. A54-10/31-1986
ISSN-0823-0552