



1, Urediniospores and teliospores. Note teliospores at right in two planes of focus.

Uromyces punctatus Schroet., Abh. Schles. Ges. 48: 10. 1870.

PYCNIA and AECIA systemic on *Euphorbia*, not recorded in North America. UREDINIA and TELIA scattered, amphigenous or hypophyllous. UREDINIOSPORES (fully cleared) 19-29 μ long, (14.5-)16-22(-24) μ wide, globoid or ellipsoid; walls 1.2-2.0 μ (slightly more at base), light to dark yellow-brown, echinulations 0.4-0.6 μ diam., at (1.0-)1.3-3.5 μ spacing, continuous to hilum; germ pores ((2-))3-4(-5)((-6)), equatorial (-scattered), with slight internal annular thickening, very slight or no cap. TELIOSPORES (cleared) 19-25 μ long, 14.5-20 μ wide, globoid to obovoid; walls 1.2-1.8 μ , light chestnut, shallowly verrucose with warts ca. 0.3-0.5 μ high \times 0.6-1.2 μ wide, circular and randomly scattered, or occasionally slightly elongate and tending to be in longitudinal rows; germ pore apical to slightly (-1/3) depressed, with small yellow cap 0.5-1.0 μ high, 3-6 μ diam.; pedicel hyaline, deciduous.

HOSTS: *Astragalus* and *Oxytropis*.

DISTRIBUTION: Quebec, Manitoba, Saskatchewan, Alberta, British Columbia.

COLLECTIONS: *Astragalus iskanderi* Lipsky, Sask., Regina, (cult. ex Rechinger 11586 from Iraq, leg. C.F. Ledingham); *A. lentiginosus* Dougl. ex Hook., B.C., 6 mi. WSW of Kamloops, 10 June 1953, DAOM 139624 (Calder & Savile 10300); *A. lotiflorus* Hook., B.C., 11 mi. N of Cache Creek, 30 June 1954, DAOM 139622 (C., S. & Ferguson 12292); *A. purshii* Dougl. ex Hook. var. *purshii*, B.C., 2 mi NW of Okanagan Falls, 29 June 1953, DAOM 139623 (C. & S. 9830). *Oxytropis campestris* (L.) DC. var. *gracilis* (A. Nels.) Barneby, B.C., near Keremeos, 30 June 1953, DAOM 139621 (C. & S. 9909); *O. campestris* var. *johannensis* Fern., Que., cliff crevice, Mt. Ste Anne, Percé, 15 Aug. 1959, DAOM (Parmelee 699); *O. sericea* Nutt. var. *spicata* (Hook.) Barneby, Man., Birkle, 19 July 1927, DAOM 1636

(Conners); B.C., Summerland, 7 Aug. 1953, DAOM 139620 (C. & S. 11537); *O. splendens* Dougl. ex Hook., Alberta, Yarrow Creek, 22 Aug. 1941, DAOM 117402 (Moss 1300 SSS).

NOTES: *Uromyces punctatus* was described from Europe (lectotype on *Astragalus glycyphyllos*, Silesia), where it produces systemic O, I on *Euphorbia*. It is most abundant in warm regions of Eurasia, Africa, and North and Central America. No aecia have been found in the new world; and the nearly complete restriction of the rust in North America to warm and dry regions (e.g. Upper Sonoran Similkameen and southern Okanagan Valleys, and the almost equally arid Kamloops - Cache Creek region in B.C.) suggests that it may persist by urediniospores. It is also notable that telia are scarce in Canadian collections, even those taken in August. The specimen from Percé, Que., although from an arid site, is nearly 1200 miles, across mesic habitats, from the nearest known occurrence of the rust in Wisconsin. It is possibly a relict from the postpleistocene hypsithermal interval. *U. punctatus* is related to *U. pisi* and *U. striatus* (also with systemic O I on *Euphorbia*) from which, however, it is biologically and morphologically distinct.

D.B.O. Savile
J.A. Parmelee