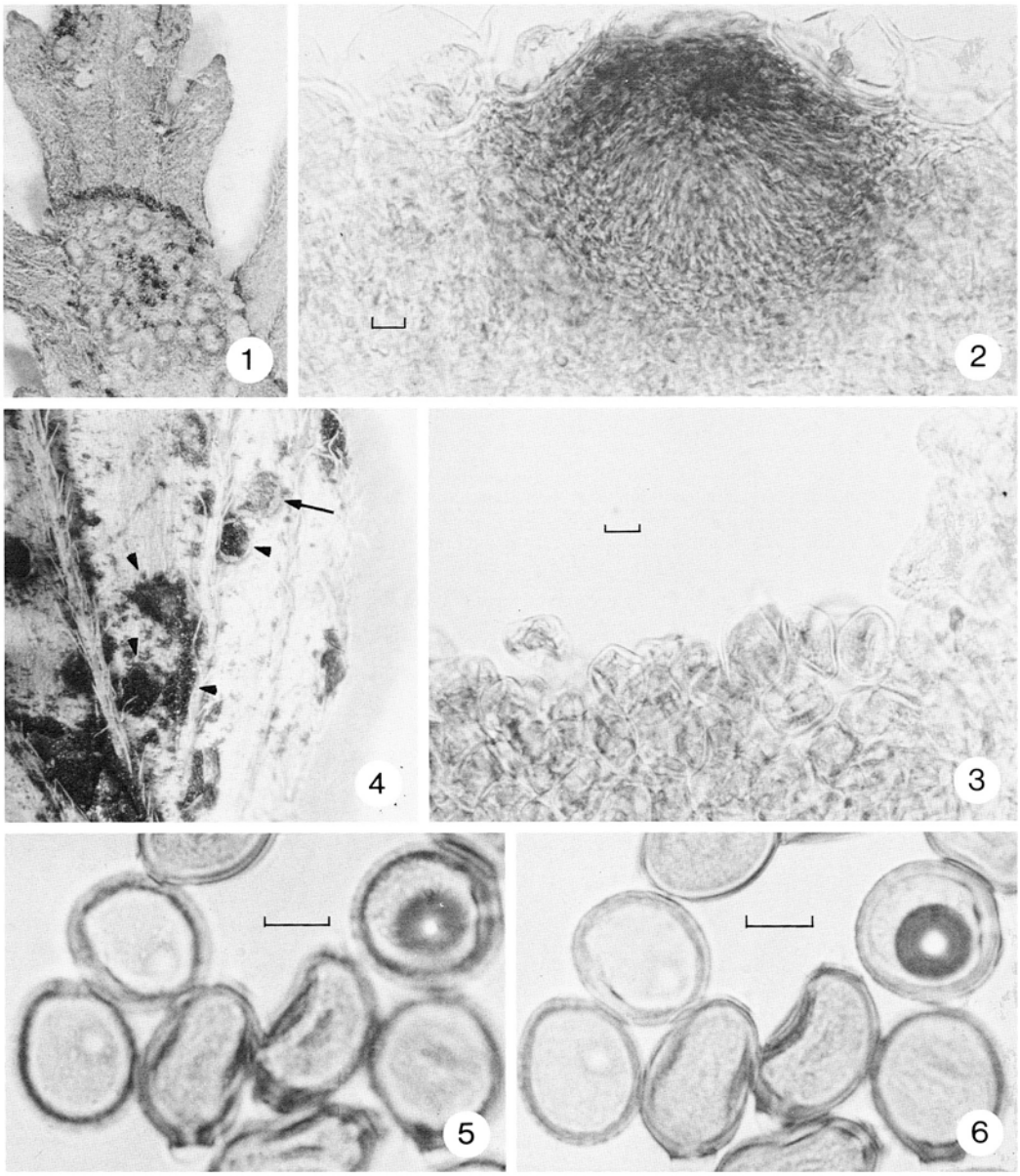
UROMYCES GERANII



1, Pycnia black, surrounded by bullate aecia, × 9; 2, pycnium in section, subepidermal; 3, aeciospores in section with few and barely distinctive peridial cells at right; 4, uredinium (arrow) and telia (arrowheads) × 9; 5, urediniospores and teliospores (apical pore) in surface view; 6, same in optical median view. 1,2,3 DAOM 196878 extralimital. 4,5,6 DAOM 196882. Scales = 10 μm.

Uromyces geranii (DC.) Fries, Summa Veg. Scand., p. 514. 1849.
≡ *Uredo geranii* DC. Syn. Pl., p. 47. 1806.

PYCNIA conspicuous, amphigenous or petiolicolous, associated with aecia. Aecia bullate, hypophyllous or petiolicolous in compact groups on vascular tissue, usually causing swelling and distortion. AECIOSPORES globose to ellipsoid and somewhat angular 22.4-38.4 × 16-25.6 μm; wall hyaline, 1.4-2.8 μm thick including verrucae which are densely and evenly scattered over the entire surface; verrucae are 0.7 μm high, 0.3 μm in diameter and 0.3 μm apart; pore plugs absent. PERIDIUM inconspicuous, not protruding as in normal cupulate aecia; PERIDIAL CELLS present, slightly larger than aeciospores and with coarser warts. UREDINIA hypophyllous, cinnamon brown, scattered, pulverulent. UREDINIOSPORES globose to obovoid, 24-28.8 μm diameter; wall yellow-brown, uniformly 1.4 μm thick, echinulate except for a bare area (tonsure) below pore; pore 1, approximately equatorial. TELIA hypophyllous, black-brown, scattered, becoming pulverulent. TELIOSPORES obovoid to ellipsoid, 28-38.4 × 19.2-25.6 μ; wall dark yellow-brown, smooth, uniformly 0.7 - 1.7 μm thick except at the apex where it becomes 4.9-7.7 μm with an abrupt pale yellow cap over the single apical pore; pedicel fragile, usually breaking at 5-10 μm, hyaline.

HOSTS: Geraniaceae: *Geranium albiflorum* Ledeb., *G. anemonifolium* L'Her., *G. erianthum* DC., *G. platypetalum* Fisch. & Mey., *G. pratense* L., *G. sylvaticum* L., *Geranium* sp.

DISTRIBUTION: Prince Edward Island, New Brunswick, Ontario, British Columbia.

SPECIMENS EXAMINED (SELECTED): 0 ,I , II, III on *Geranium albiflorum*: **Ont**.: Central Experimental Farm (C.E.F.), Ottawa, 31 July 1935, DAOM 2571; also 4 June 1936, DAOM 3020, M. Timonin. On *G. anemonifolium*: **Ont**.: Central Experimental Farm, Ottawa, 4 June 1936, DAOM 3022; also 31 July 1935, DAOM 2570, M. Timonin. On *G. erianthum*: **B.C**: north of Hazelton, 19 Aug. 1954, DAOM 196883, Calder 14736, Savile & Ferguson; on road to Hazelton, 18 Aug. 1954, DAOM 196882, Calder 14703, Savile & Ferguson. On *G. platypetalum*: **Ont**.: Central Experimental Farm, Ottawa, 4 June 1936, DAOM 3021, M. Timonin; also 31 July 1935, M. Timonin & Conners. On *G. pratense*: **Ont**: Central Experimental Farm, Ottawa, 20 May 1940, DAOM 6441, Senn; Dundas Co., Williamsburg, 24 Aug. 1935, DAOM 2574, H.D. House; near Elma, Perth Co., Oct. 1935, DAOM 79310 = TRTC 8158, H.D. House. **P.E.I**: Brackley Beach, 17 Sept. 1941, DAOM 7662, R.R. Hurst. On *G. sylvaticum*: **Ont**.: 31 July 1935, Central Experimental Farm, Ottawa, 31 July 1935, DAOM 2573, M. Timonin & Conners; also 4 June 1936, DAOM 3019, M. Timonin. On *Geranium* sp.: **N.B**: St. Andrews, 1 Sept. 1936, DAOM 12176, J. Adams.

NOTES: Rusted *G. erianthum* is known from Japan. *Geranium pratense* in Europe and *G. sylvaticum* in Europe especially in Scandinavia are also rusted. Additionally, the specimens in DAOM indicate that this rust occurs throughout the world on *Geranium* spp., other than those listed here. Occasionally *Uromyces geranii* and *Puccinia leveillei* occur in mixed infections, (DAOM 196878, Alaska), but are separable because the telia of the *Puccinia* are in large, compact groups and have a general matt appearance with reflected light as opposed to the small, scattered and shiny telia of the *Uromyces*. The matt versus shiny telia results from the presence of warted teliospore walls in *Puccinia* versus the smooth walls in this *Uromyces*.

It is noteworthy that *Pelargonium* spp. (Geraniaceae) in Africa and Australia bear the macroform rust *Puccinia pelargonium-zonalis* Doidge. This species is intercepted occasionally at Canadian ports of entry (Ontario, Manitoba, British Columbia) on plants imported from abroad or from the southern United States. Sori, of the stage II and III appear on the underside of leaves as concentric rings providing a ready means of identification.

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

National Mycological Herbarium, Biosystematics Research Centre
Research Branch, Agriculture Canada
Ottawa, Ontario, K1A 0C6

©Minister of Supply and Services 1990
Cat. No. A54-10/33-1990
ISSN-0823-0552