but these characteristically lack phosphorus. It is possible that these granules in *Diderma* are cryptocrystalline, that is with a sub-microscopic crystalline structure. The manner of deposition of the calcareous deposits may account for the formation of either amorphous or crystalline granules in the genus *Diderma*.

In this species, the sporangia are very variable but consistently small perhaps due to the small plasmodia. The globose or subglobose shape of the solitary sporangia may become angular when tightly clustered. The hypothallus, while usually absent, is occasionally seen as thin and white; on one occasion it appeared stalk-like. In all the observed collections, the capillitia are sparse to absent and the columella is always absent. The spore wall pattern, however, appears to be constant.

We thank D. P. Rogers for preparing the Latin description and R. MacLeod, Director of the Center for Electron Microscopy, University of Illinois for use of the facilities.

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## *UREDO ANDROPOGONIS-GAYANI* SP.NOV. FROM NIGERIA

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**Uredo andropogonis-gayani** Eboh sp.nov. (Figs. 1–5)

Uredinia hypophylla, obscure brunnea, paraphysibus 48–77 μm longis, capitatis, clavatis vel aliquando geniculatis, membrana ventralis 2·4–4·8 (–7·2) μm crassa, apicalis 7–16·8 μm crassa, hyalina vel pallide brunnea; sporae 26–31 (–33·6) × 16–21·6 μm, obovoideae vel late ellipsoideae, membrana 1·8–2 μm crassa, capita 14–21·6 μm crassa, verrucosa, poris germinationis sparsis, versimiliter 6–8.

*Specimen examined.* On *Andropogon gayanus* Kunth, Enugu Ngwo 9th mile corner, in the premises of Agricultural Development Corporation, Nsukka, Nigeria. 11 Apr. 1977, Eboh 50, EFH, holotype.

The most common rust fungus on *Andropogon gayanus* and *A. tectorum* Schum. & Thonn. in Nigeria is *Puccinia agrophila* H. Syd. A comprehensive account of this fungus was given by Cummins (1971). The aecial state is found on the leaves of *Solanum* species during the rainy season or all year round in well-irrigated farms and vegetable gardens. The uredinia are yellow and conspicuously pulverulent. The urediniospores are mostly globose or broadly ellipsoid and have inner surfaces which invaginate at the pores thus giving slightly stellate outlines to their lumina. The telia are less frequently observed. The teliospores are golden to dull yellow, broadly ellipsoid to broadly obovoid (Fig. 1).

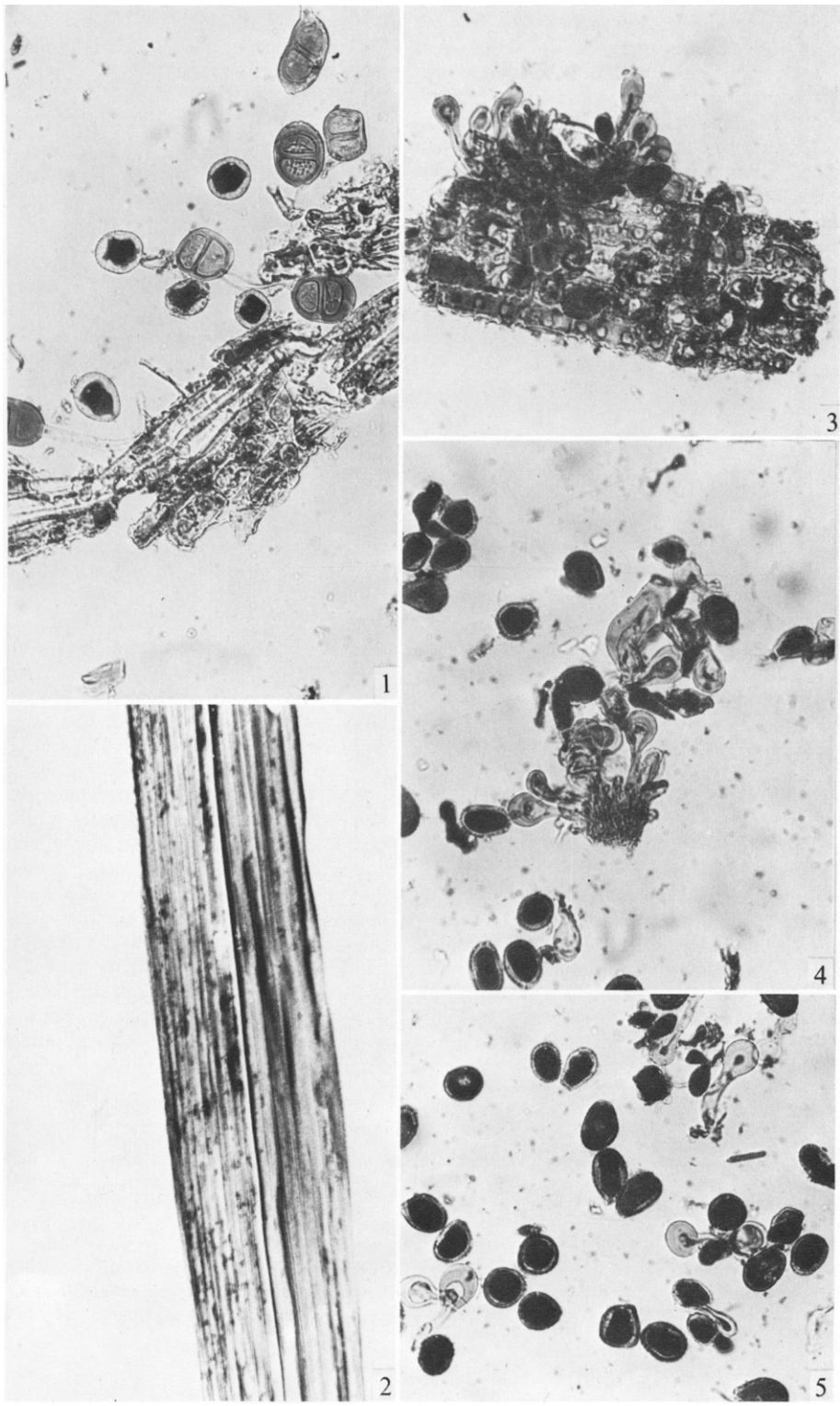
Fig. 1. Urediniospores and teliospores of *Puccinia agrophila*. × 190.

Fig. 2. Portion of the blade of *Andropogon gayanus* showing minute pustules of *Uredo andropogonis-gayani*. × 1.

Fig. 3. Mount of a very young uredinial sorus of *U. andropogonis-gayani* showing cluster of paraphyses. × 140.

Fig. 4. Paraphyses of *U. andropogonis-gayani* showing extensive wall thickening. × 140.

Fig. 5. Urediniospores from fully matured pustule of *U. andropogonis-gayani*. × 140.


1
2
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5

*Uredo andropogonis-gayani* is a new rust fungus which is found interspersed with *P. agrophila* or in some cases, solely occupying the blades of the grass (Fig. 2). The uredinia are minute, dark brown, initially whitish with contents being entirely paraphysal (Fig. 3). The paraphyses are capitate, clavate to broadly clavate and distinctly thickened at the apical region and occasionally the thickening extends to the base (Fig. 4). As the sori age, the paraphyses are progressively limited to the peripheral zone and only scantily present in fully matured pustules (Fig. 5).

I wish to thank Professor G. B. Cummins, Department of Plant Pathology, University of Arizona, Tucson, U.S.A. for his comments on the taxonomy of the fungus.

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## *LEPTOGRAPHIUM RECONDITUM* SP.NOV. AND OBSERVATIONS ON CONIDIOGENESIS IN *VERTICICLADIELLA*

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The *Leptographium* complex of fungi is characterized by dematiaceous, macronematous, mononematous conidiophores bearing a penicillate conidiogenous apparatus. The members of this complex were reclassified by Kendrick (1961) who placed most in *Leptographium* Lagerb. & Melin, *Verticicladiella* Hughes and *Phialocephala* Kendrick. The characteristics of the conidiogenous cell are used to differentiate between these genera. Conidiogenesis is phialidic in *Phialocephala*, annellidic in *Leptographium* and sympodial in *Verticicladiella*. The isolation of a fungus which obviously belonged to the *Leptographium* complex necessitated a study of the conidiogenus apparatus of *Leptographium* and *Verticicladiella* to determine its generic relationships. The scanning electron microscope (SEM) was used to study the conidiogenous apparatus of the unknown species (Fig. 1), *L. lundbergii* Lagerb. & Melin (Fig. 5) DAOM 64746, *V. abietina* (Pk) Hughes (Fig. 6) CBS 515.63 = DAOM 62102, and two isolates of *V. procera* Kendrick CBS 516.63 = DAOM 62096 (Fig. 10) and CBS 606.69.

The fungi were cultured on oatmeal agar in Petri dishes and incubated at 25 °C. Sporulation was allowed to commence for a short period before further treatment since excessive sporulation obscured the conidiogenous cells. The critical point procedure (Cohen, 1970) was used to dry the specimens for the SEM. This requires frequent handling of the specimens so the following procedure was adopted to minimize handling during dehydration. A 2 mm² block of agar was cut from a sporulating part of the culture and placed on

Fig. 1. *L. reconditum*, conidiogenous apparatus. ×750.

Figs. 2, 3. *L. reconditum*, conidiogenous cells showing annellides. ×2500. Fig. 4. *L. lundbergii* conidiogenous cell with annellides. ×2500. Fig. 5. *L. lundbergii*, interference contrast micrograph of conidiogenous apparatus. ×625. Fig. 6. *V. abietina*, portion of conidiogenous apparatus showing attached conidia. ×1250. Fig. 7. Rhizoids of *L. reconditum*. ×280. Fig. 8. Camera lucida drawing of *L. reconditum* conidiogenous apparatus (Bar = 10 μm). Fig. 9. Conidia of *L. reconditum*. ×1250. Fig. 10. *V. procera* (CBS 516.63), conidiogenous apparatus. ×1250. Fig. 11. *V. abietina*, conidiogenous cells. ×2500. Fig. 12. *V. procera* (CBS 606.69), swollen portion of conidiogenous cells representing the conidial scars. ×2500. Fig. 13. *V. procera* (CBS 516.63), arrows indicate stacked conidiogenous scars and young conidium. ×3125.