

SOUTH AFRICAN RUST FUNGI.

By E. M. Doidge.

Part VI.

THE SPECIES OF UROMYCES ON IRIDACEAE.

In Sydow's *Monographia Uredinearum* (Vol. II, 1910, p. 251), it is stated that of the 18 species of *Uromyces* known to occur in genera of the family Iridaceae, only one occurs in Europe, two in America and the remaining 15 species in Central and South Africa. The African species are closely related to one another, differing only in a number of small points such as the presence or absence of paraphyses in the sori, the size of the uredospores and the form and colour of the teleutospores, including the thickness of the wall, which is usually more or less thickened at the apex.

Fourteen of the 15 African species mentioned in the Monograph were recorded from South Africa, and since 1910, five more species have been described on hosts belonging to the Iridaceae in this country.

Several of the earlier species were described from a single collection and often from sparse material. When abundant material is available, some of the minor differences regarded as specific distinctions are found to fall away, as the spore characters are more variable than at first supposed. For example, *Uromyces Melasphaerulae* Syd. is said to be distinguished by its regularly spherical teleutospores; actually the teleutospores, although predominantly globose, vary considerably in form and may also be oblong or ovate with bluntly conical or truncate apices.

There has also been a tendency to describe as new, rusts found on host genera on which no species of *Uromyces* had been recorded. An imperfect knowledge of the nomenclature of South African plants has then led to a further multiplication of species. *Uromyces Zeyheri* Bubak is described on *Ixia scillaris*; this is the same plant as *Tritonia scillaris*, the host of the type of *Uromyces bona-spei*. There is no significant difference in the descriptions of the two *Uromyces* species.

It is evident that a critical comparative study of the South African species of *Uromyces* occurring in Iridaceae is desirable, now that more extensive collections have been made. In the Cryptogamic Herbarium, Fretoria, there is abundant material of several species, and I am indebted to the Director of the South African Museum, Cape Town, and to my colleagues in the phanerogamic section of the National Herbarium, Pretoria, for allowing me to examine a number of specimens on which rust pustules were found.

In studying this group of *Uromyces* species, it has been found that the form of the sorus is characteristic. The presence or absence of paraphyses and the depth of the sorus, including the number of rows in which the spores are arranged, are remarkably constant characters; they are of considerable diagnostic value, in view of the very slight variations in the size and form of the spores.

No fresh collections have been made of *Uromyces Sparaxidis* Syd. [Ann. Myc. 2 (1904) p. 27 and Monogr. Ured. II (1910) p. 257] which was described from material collected by Medley Wood in Natal; the collector's number is not quoted. In *Bothalia* II (1927) p. 31, a rust on *Dierama pendulum* (= *Sparaxis pendula*) collected by Medley Wood, was assigned to this species; so far as can be judged by the description of the spore characters, this is incorrect; it is not stated whether paraphyses are present in the teleuto-sori or not. There is also some doubt about the identity of the host plant. The type is said to be on *Sparaxis lineata* collected in Natal by Medley Wood. *Sp. lineata* is a plant occurring only in the winter rainfall area of the Cape and is not found in Natal. No authentic material of the species has been available for study, it has therefore not been possible to include it in the key, or to compare it with other South African species.

The remaining 18 species have been studied, and it is considered that only 10 can be regarded as distinct species; these have been re-described and figured. A further two species have been described.

KEY TO THE SPECIES.

A.—No paraphyses in the teleuto-sori.

(a) Teleutospores not thickened at the apex or only slightly so (up to $4\ \mu$)... 1. *U. Moraeae*.

(b) Teleutospores thickened at the apex ($4-10\ \mu$).

1. Teleuto-sori long remaining covered, shallow, not more than $100\ \mu$ deep, spores in ca. 3 rows.

x. Uredospore $16-25 \times 15-19\ \mu$, wall $1\ \mu$ thick..... 2. *U. Ectlonii*.

xx. Uredospore $20-27 \times 20-24\ \mu$, wall $2\ \mu$ thick..... 3. *U. Zeyheri*.

xxx. Uredospore $17-24 \times 15-20\ \mu$, wall $2.5-3\ \mu$ thick..... 4. *U. Ixiae*.

2. Teleuto-sori becoming naked comparatively early, sori compact, pulvinate, $100-150\ \mu$ deep, spores in 5-7 rows..... 5. *U. Gladioli*.

B.—Individual teleuto-sori surrounded by paraphyses.

(a) Paraphyses very freely developed and often continuous and palisade-like between distant sori..... 6. *U. kentaniensis*.

(b) Paraphyses less numerous, usually restricted to a palisade-like envelope round each individual sorus.

1. Teleuto-sori $100-125\ \mu$ deep, spores in five closely packed rows.... 7. *U. Dieramae*.

2. Teleuto-sori $60-80\ \mu$ deep, spores in 3-4 rows.

x. Aecidia present.

y. Uredospores $25-30 \times 19-22.5\ \mu$, wall $2-2.5\ \mu$ thick..... 8. *U. Ferrariae*.

yy. Uredospores $20-24 \times 13-20\ \mu$, wall $1.5-1.7\ \mu$ thick..... 9. *U. Anomathecae*

xx. Aecidia not present.

y. Uredospore with wall ca. $2\ \mu$ thick, finely but conspicuously verruculose-echinulate..... 10. *U. Antholycae*.

yy. Uredospore with wall $1.5\ \mu$ thick, closely and very minutely verruculose.

o. Wall of teleutospore ca. $2-2.5\ \mu$ thick, apex thickened $5-9\ \mu$; spore $17-20\ \mu$ broad..... 11. *U. Freesiae*.

oo. Wall of teleutospore ca. $2\ \mu$ thick, apex thickened $4-6\ \mu$, rarely more; spore $15-17.5\ \mu$ broad..... 12. *U. transversaliss*.

1. *Uromyces Moraeae* Syd.

Sydow, Ann. Myc. X (1912) p. 33, Doidge, Bothalia II (1927) p. 36.

II. Uredo-sori scattered, or numerous and crowded, but rarely confluent, oblong, lying between the veins of the leaf, $\frac{1}{2}-1$ mm. long, ca. $\frac{1}{2}$ mm. broad, at first blister-like, covered by the raised epidermis; the epidermis soon ruptures, revealing the pale yellow-brown spore masses, which are surrounded or partially veiled by the torn epidermis. Uredospores globose or subglobose to ovate, $21-25 \times 20-22.5\ \mu$, rarely oblong and up to $32\ \mu$ long; epispore thin, delicate, pale golden-brown to subhyaline, $1-1.25\ \mu$ thick, very finely and rather closely verruculose echinulate; germ pores 6-8, scattered, small but obvious.

III. Teleuto-sori similar to the uredo-sori but darker. Sorus shallow, the teleutospores usually developing in not more than three rows, usually becoming exposed rather early, subpulverulent; no paraphyses. Teleutospores deep chestnut-brown, globose, subglobose, oblong or ovate, rarely irregular in form; rounded at the apex; rounded at

the base, or, less frequently, tapering somewhat to the pedicel; mostly $22-25 \times 17-24 \mu$ ($18-28 \times 16-24$ *vide* Sydow); episporium smooth, $2-2.5 \mu$ thick, not thickened at the apex or slightly thickened ($2.5-4 \mu$); pedicel rather stout, hyaline except at the apex, where it is slightly tinted, persistent, ca. 6μ thick and up to 50μ long.

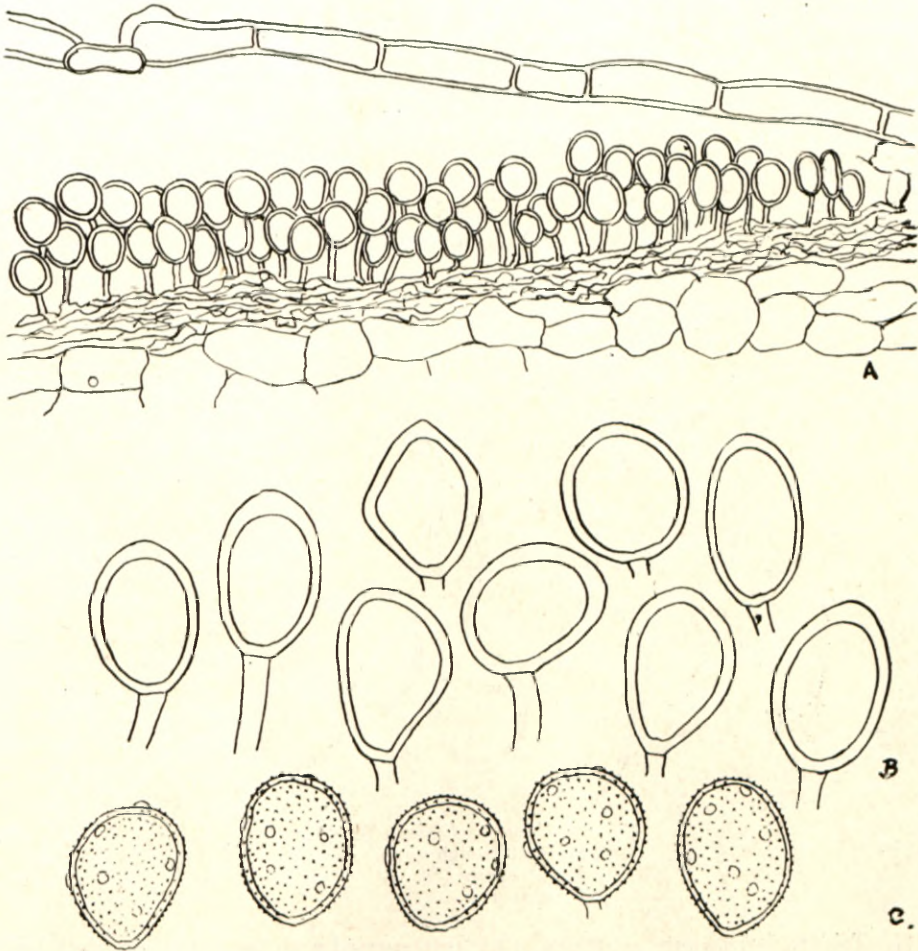


Fig. 1.—*Uromyces Moraiae* Syd.
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

n *Moraiae spathulata* Klatt., Volksrust, *Weeber*, 773 (Co-type); Melmoth, *Foster*, 11630; Mooi River, *Mogg*, 17036; Hopevale, nr. Donnybrook, *Doidge*, 33438.

2 *Uromyces Ecklonii* Bubak.

in Sydow, *Monogr. Ured.* II (1910) p. 253. *Doidge*, *Bothalia* II (1927) p. 32.

II. Uredo-sori amphigenous, lying between the veins of the leaf, round to irregular or transversely oblong, up to ca. 0.6 mm. diam., or becoming confluent and larger, early naked, yellow, pulverulent, surrounded by the torn epidermis, which splits longitudinally.

Uredospores ovate or subglobose, pale yellow to subhyaline, $16-25 \times 15-19 \mu$; epispore 1μ thick, minutely and rather closely verruculose-echinulate; germ pores 6-9, small, obscure.

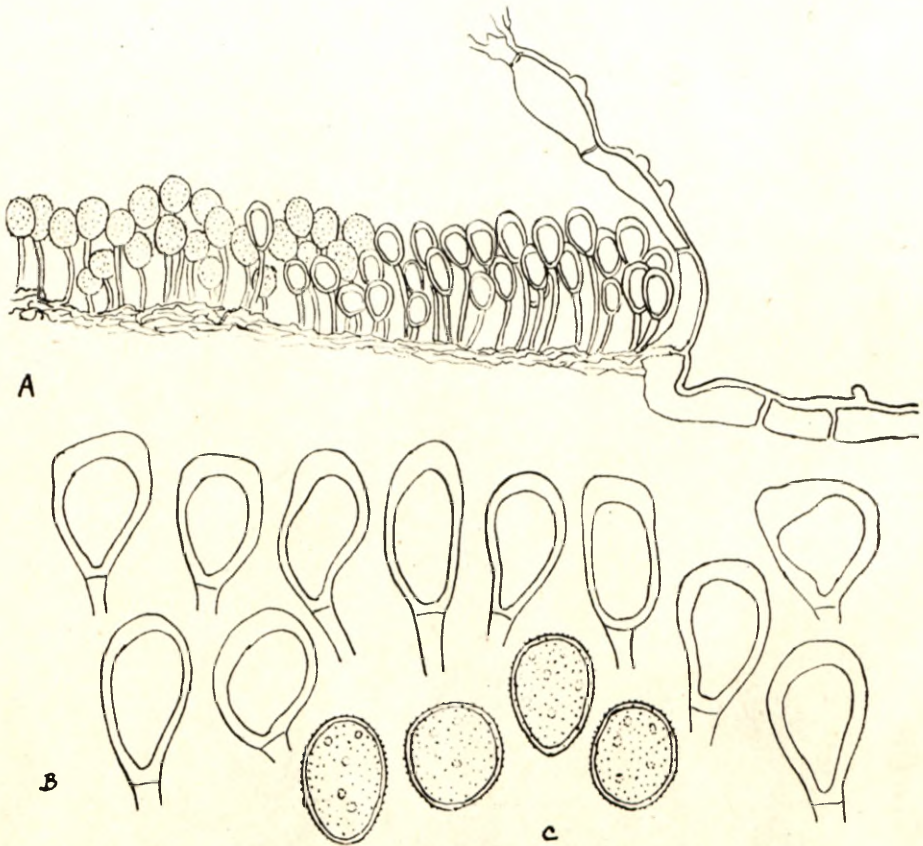


Fig. 2.—*Uromyces Ecklonii* Bubak.
(a) Section through sorus.
(b) Teleutospores.
(c) Uredospores.

III. Teleuto-sori minute, scattered, often interspersed with the uredo-sori, dark brown, round to irregular, up to ca. 0.3 mm. diam., compact, long covered by the epidermis; teleutospores often forming at the margin of a uredo-sorus; sori shallow, spores in not more than three rows. Teleutospores ovate to subglobose, or somewhat irregular and angular through mutual pressure, brown, apex usually rounded, less frequently truncate or obtusely conical, base more or less attenuate, less frequently rounded, $20-32 \times 15-20 \mu$; epispore smooth, $2-2.5 \mu$ thick, slightly thickened ($4-8 \mu$) at the apex. Pedicel persistent, hyaline except at the apex, where it is slightly tinted, ca. 5μ broad, up to 40μ long.

on *Freesia* sp., Prospect, nr. Komgha, Pegler, 5129; Thornville Junction, Natal, Slatter, 23186.

Uromyces Ecklonii was originally described by Bubak on *Freesia odorata*, collected at the Cape by Ecklon and Zeyher. The type has not been available for study, but the collections quoted agree well with the original description. The genus *Freesia* has been revised, and the species of the host plants are not determinable without flowering material; the generic identification, however, presents no difficulty.

3. *Uromyces Zeyheri* Bubak.

in Sydow, Monogr. Ured. II (1910) p. 255; Doidge, Bothalia II (1927) p. 255.

Uromyces Bona-spei Bubak in Syd. Monogr. Ured. II (1910); Doidge, Bothalia II (1910) p. 37.

II. Uredo-sori amphigenous, scattered or in groups, round to irregular, often in transversely oblong groups and becoming confluent; the epidermis ruptures irregularly and exposes the yellow, pulverulent spore masses; uredospores are sometimes also found in the teleuto-sori. Uredospores globose, subglobose, ovate or oblong, yellow, $20-27 \times 18-24 \mu$; episporium ca. 2μ thick, very briefly echinulate, with 6-8 scattered germ pores.

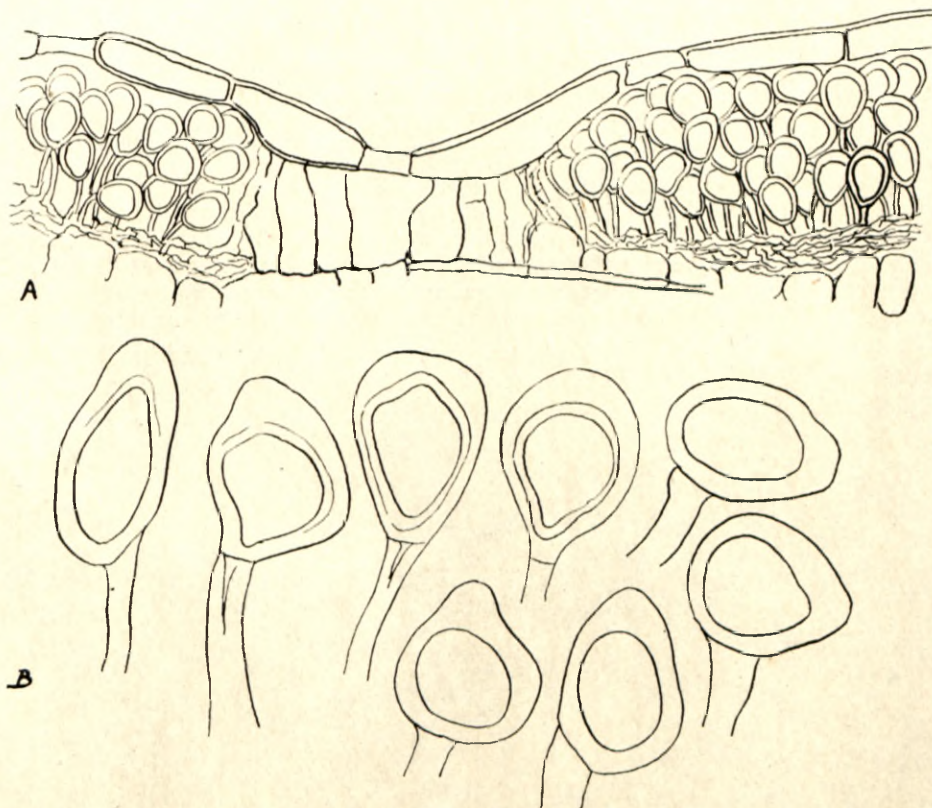


Fig. 3—*Uromyces Zeyheri* Bubak.
(a) Section through teleutosorus.
(b) Teleutospores.

III. Teleuto-sori amphigenous, minute, more or less circular in outline, $100-300 \mu$ diam., scattered or confluent in oblong, transverse groups, dark brown, compact, long covered by the epidermis, developing under a stoma, $75-100 \mu$ deep; spores closely packed in ca. 3 rows; no paraphyses. Teleutospores globose, ovate or ellipsoid, often irregular and asymmetrical through mutual pressure; apex rounded, conical or truncate, sometimes oblique; base usually rounded, or less frequently tapering somewhat; $24-37.5 \times 20-27 \mu$, mostly $30-35 \times 22-24 \mu$; episporium deep chestnut-brown, smooth, $3-4 \mu$ thick, rarely 2.5μ , thickened at the apex ($5-10 \mu$); pedicel persistent, tinted brown, especially near the apex, rather stout, $5-7 \mu$ broad and up to 90μ long.

on *Tritonia scillaris* Bkr. (= *Ixia scillaris*) Houwhoekberg, Cape, Schlechter 9411 (part of type collection of *U. Zeyheri*) 33296.

Uromyces Zeyheri was described by Bubak as occurring on *Ixia scillaris*, which is the same plant as *Tritonia scillaris*, the type host of *U. Bona-spei*. There is no significant difference in the descriptions of the two species and I think there can be no doubt that they are identical. In the case of *U. Bona-spei* neither locality nor collector is mentioned.

Sydow also mentions *Acidanthera pallida* as a host of the latter species; *Acidanthera pallida* (Ker.) Pax is mentioned as an African plant in Engler and Prantl, *Naturl. Pflanzenfam.* II. 5 (1887) p. 155; the name is not to be found in any other publication on tropical or South African plants which is available, and it is not known to what plant this name refers.

4. *Uromyces Ixiae* (Lev.) Wint.

Winter in *Flora* 58 (1884) p. 262; Sydow, *Monogr. Ured.* II (1910) p. 255; Doidge *Bothalia* II (1927) p. 34.

?*Uredo Ixiae* Rud., *Linnaea* 4 (1829) p. 387.

?*Uredo Ixiae* Lev., *Ann. Sc. Nat.*, III Ser., tome 3 (1845), p. 70.

Uromyces Melasphaerulae Syd., *Ann. Myc.* II (1904) p. 28; Syd. *Monogr. Ured.* II (1910) p. 256; Doidge, *Bothalia* II (1927) p. 35.

•*Uromyces delagoensis* Bubak, in Syd. *Monogr. Ured.* II (1910) p. 255; Doidge *Bothalia* II (1927) p. 35.

II. Uredo-sori amphigenous, scattered or in groups, minute, round or oblong, yellow or yellow-brown; covered at first by the blistered epidermis which ruptures, and remains partly veiling the sorus. The leaf tissues may be discoloured in the region of the sori, or rather indefinite, round to irregular brown leaf spots may be formed (especially on *Melasphaerula*). Uredospores yellow or yellow-brown, usually pale, globose or ovate, $18-24 \times 17-22 \mu$; epispore $2.5-3 \mu$ thick, rarely up to 3.5μ , minutely and closely verruculose; germ pores 6-8, minute, scattered.

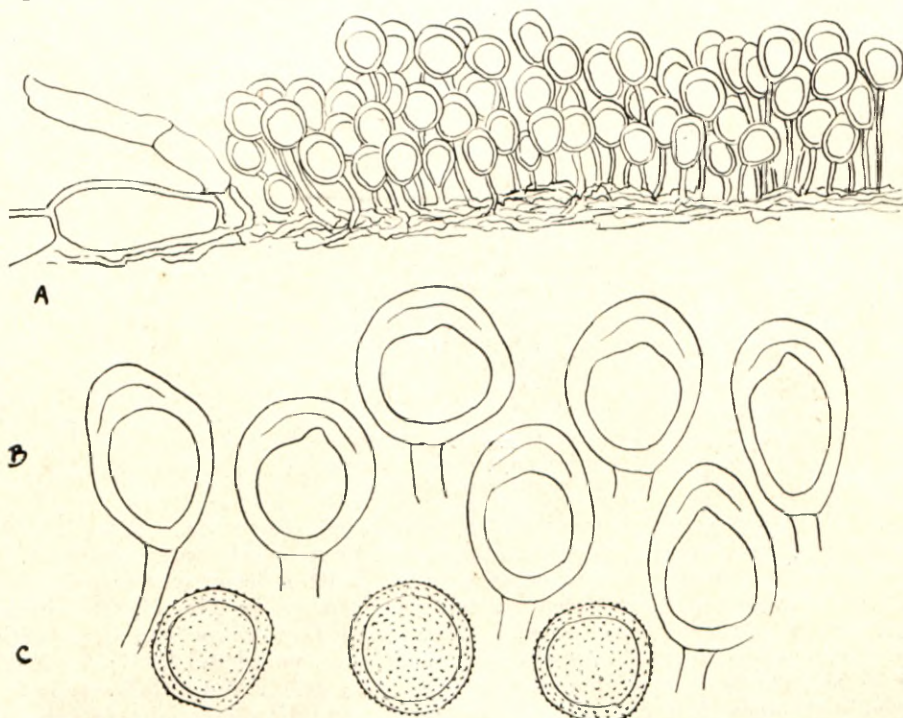


Fig. 4—*Uromyces Ixiae* (Lev.) Wint., on *Lapeyrousia corymbosa*
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

III. Teleuto-sori scattered, or crowded and becoming confluent, more or less round but angular, or oblong, lying between the veins, long covered by the epidermis. Sori comparatively shallow, usually ca. $75\ \mu$ deep, rarely up to $100\ \mu$; formed of about three rows of closely packed spores; no paraphyses. Teleutospores chestnut-brown, globose, oblong or ovate, rarely ellipsoid, sometimes slightly angular and irregular through mutual pressure; usually rounded at the apex, less frequently obtusely conical or truncate; base rounded or somewhat attenuate; $22.5\text{--}35\ \mu$, rarely up to $40\ \mu$ long, $17.5\text{--}30\ \mu$ broad, mostly $30\text{--}35 \times 20\text{--}25\ \mu$; episore smooth, mostly $2.5\text{--}3\ \mu$ thick, less frequently up to $3.5\ \mu$, thickened at the apex, $5\text{--}10\ \mu$, rarely up to $12.5\ \mu$; pedicel rather stout, persistent, usually $6\text{--}7\ \mu$ thick (up to $9\ \mu$ *vide* Winter) and $60\ \mu$ long, tinted brown throughout or near the apex.

on *Ixia furcata* Ker., Bokkeveld, Marloth 7659, 33302.

Ixia leucantha Jacq., St. James, Pole Evans, 7736.

Ixia lutea Bkr., Drakenstein Mts., Galpin 12281, 33306.

Ixia maculata Thunb., nr. Hopefield, Cape, Letty, 33305.

Ixia paniculata Del., Caledon, Marloth 5939, 33304.

Ixia patens Ait., Genadendal, Roser, 33309.

Ixia scariosa v. *longifolia* Bkr., Bokkeveld, Marloth 13341, 33303.

Ixia splendida Lewis, nr. Zebrakop, Fiquetberg, Pillans 7183, 33307.

Lapeyrousia corymbosa Ker., without locality, Zeyher 1594, 33320.

Lapeyrousia delagoensis Bkr., Tolana Beach, Delagoa Bay, Thoaay 169, 33321.

Melasphaerula graminea Ker., Table Mt., Ecklon, 33301; Bredasdorp, C. A. Smith, 33308.

Sparaxis bulbifera Ker., Bloemendal, Zeyher 3968, 33319.

The first mention of a rust on *Ixia* is in Linnaea 4 (1829) p. 387, where *Uredo Ixiae* is described by Rudolphi on leaves of *Ixia conica* Salisb. (= *Ixia maculata* Thunb.) from the Cape. "Caeoma maculis subnullis; acervis amphigenis rotundis epidermide rumpente; sporidiis ovatis, medio punctatis, nigris, demum fuscis pedicellatis."

In 1845, Lévillé (Champignons Exotique, in Ann. Sc. Nat. III Sér. t. 3, p. 70) described a rust on *Ixia* sp. as follows:—

"331. *Uredo Ixiae* nov. sp. Amphigena, acervulis gregariis oblongis nigris epidermide tectis, sporangiis globoso-ellipticis glabris obtusis pedicellis longiusculis. —Hab. ad Cap. Bon. Sp. in foliis *Ixiae* . . . Drège n. 8369.

"Les petites pustules que forme cette espèce sont allongées, parallèles aux fibres des feuilles, et recouvertes presque constamment par l'épiderme; leur couleur est noire; les sporanges, à peu près elliptiques, glabres, et supportés par un pédicelle aussi long qu'eux, ressemblent à ceux de l'*Uredo Iridis*; mais dans ce dernier ils sont jaunes."

Winter (Flora 1884, p. 262) drew attention to the fact that according to Lévillé's description *Uredo Ixiae* was a *Uromyces* sp., and considered it identical with a rust on *Ixia* which he had examined. *Uromyces Ixiae* Wint. was described from a rust on *Lapeyrousia corymbosa* and Winter stated that the same fungus occurred on *Ixia* and on *Sparaxis grandiflora*.

Sydow (Monogr. Ured. II 1910, p. 255) does not mention *Lapeyrousia corymbosa*, the type host, but quotes as hosts *Sparaxis grandiflora*, *Acidanthera exscapa* [= *Engysiphon exscapus* (Thunb.) Lewis] and several species of *Ixia*. Of the latter, *Ixia coerulescens* is now known as *Babiana villosa* Ker. and Gaul; the rust on the *Babiana* spp. examined in the course of this study was not *Uromyces Ixiae*. The identity of the *Ixia erecta* mentioned by Sydow is not certain, as the name of the author is not given; *Ixia erecta* Jacq. is *I. lutea* Bkr. and *I. erecta* Berg is *I. polystachya* L.

Uromyces delagoensis Bubak was described on *Lapeyrousia delagoensis* from Mozambique; the description of this species does not differ materially from that of *U. Ixiae*, except in

the thickness of the wall of the uredospore (*vide* Sydow 3-3.5 μ in *U. Ixiae*, 2-2.5 μ in *U. delagoensis* and *U. Melasphaerulae*); actually it varies in thickness, even in the same spore; it is usually 2.5-3 μ thick and occasionally up to 3.5 μ . The rusts on *Lapeyrouisia delagoensis* and *Melasphaerula graminea* examined cannot be distinguished from *Uromyces Ixiae*.

Sydow (*l.c.*) suggests that *U. delagoensis* may be the same as *U. Anomathecae* but he had not seen Medley Wood's collection of this fungus, which has paraphyses in the teleutosori. According to Sydow, *U. Melasphaerulae* is characterised by spherical teleutospores; in material examined, a considerable proportion of globose spores was seen, but oblong and ovate forms were also present and spores with bluntly conical or truncate apices.

5. *Uromyces Gladioli* P. Henn.

Hedwigia 34 (1895) p. 326; Sydow, Monogr. Ured. II (1910) p. 254; Doidge, Bothalia II (1927) p. 33.

? as *Puccinia Gladioli* Cast. (Fungus stylosporiferus *Uredo Gladioli* Req.) f. *Gladioli Ecklonii* von Thumen, Flora (1875) p. 379.

Uromyces Geissorhizae F. Henn., Hedwigia 39 (1900) p. (153); Syd. Monogr. Ured. II (1910) p. 253; Doidge, Bothalia II (1927) p. 32.

Uromyces Babianae Doidge, Bothalia II (1927) p. 31.

Uromyces Romouleae v. d. Byl and Werd., Rep. spec. nov. regni veg. 19 (1923) p. 54.

Uromyces Romuleae Doidge, Bothalia II (1927) p. 31.

II. Uredo-sori irregularly round to oblong, scattered between the veins of the leaf, up to 0.5 mm. long, but often in series, becoming confluent, and forming longer striae; at first covered by the white, blistered epidermis which early ruptures longitudinally, exposing yellow, pulverulent spore masses. Uredospores globose to ovate, pale golden-brown to subhyaline, 20-25 \times 17.5-24 μ ; episporium uneven in thickness, 2-3.5 μ thick (mostly 2-3 μ), finely and rather closely verruculose echinulate and with 6-9, small, obscure, scattered germ pores.

III. Teleuto-sori amphigenous, elliptic or oblong, scattered or in series between the veins of the leaf, up to 1 mm. long, or confluent and forming striae up to 2 mm. long; at first covered by the lead-coloured epidermis, which splits longitudinally rather early, revealing the dark brown spore masses. Sorus without paraphyses, compact, pulvinate, 100-150 μ deep and consisting of 5-7 or even 8 rows of closely packed spores. Teleutospores dark chestnut brown, subglobose, ovate, rarely ellipsoid, or angular and irregular through mutual pressure; apex mostly rounded, but sometimes truncate or broadly conical; base usually rounded; 22.5-35 \times 20-25 μ , rarely up to 40 μ long, mostly 25-30 \times 20-22.5 μ ; episporium smooth, 2.5-3.5 μ or rarely 4 μ thick, thickened at the apex, 6-7.5 μ , less frequently up to 9 μ ; the episporium is more or less distinctly lamellate and there is some indication of an apical pore; pedicel stout, persistent, tinted brown, especially near the apex, 5-7 μ broad and up to 75 μ long, occasionally inserted somewhat obliquely.

on *Babiana disticha* Ker., Retreat, Pole Evans, 12959 and Kew (type collection of *U. Babianae*).

Babiana stricta Ker., Cold Bokkeveld, Marloth, 21014.

Geissorhiza secunda Ker., Vogelgat, western Cape, Schlechter 9577, 33300 (part of type collection of *U. Geissorhizae*).

Gladiolus crassifolius Bkr., Ugie, Cape, Joubert, 25317.

Gladiolus cuspidatus Jacq., Diep River, Cape, Marloth, 9304; Kenilworth, Bolus, 8366.

?*Gladiolus Ecklonii* Lehm., Bazuja, Kaffraria, Baur.

Gladiolus formosus Klatt., Bokkeveld, Marloth 7561, 10032.

Gladiolus hirsutus Jacq., Picquetberg, Cape, Marloth, 21031.

Gladiolus recurvus L., Kentani, Pegler 1958, 8412; Albertina, Muir, 8867.

Gladiolus spp., Durban, v. d. Byl, 9176; Capetown, 543; Cramond, Pole Evans, 6851; Mooi River, Mogg, 17037.

Romulea rosea Ecklon, Klapmuts, v. d. Byl 494, 10094, 32447 (part of the type collection of *U. Romouleae*).

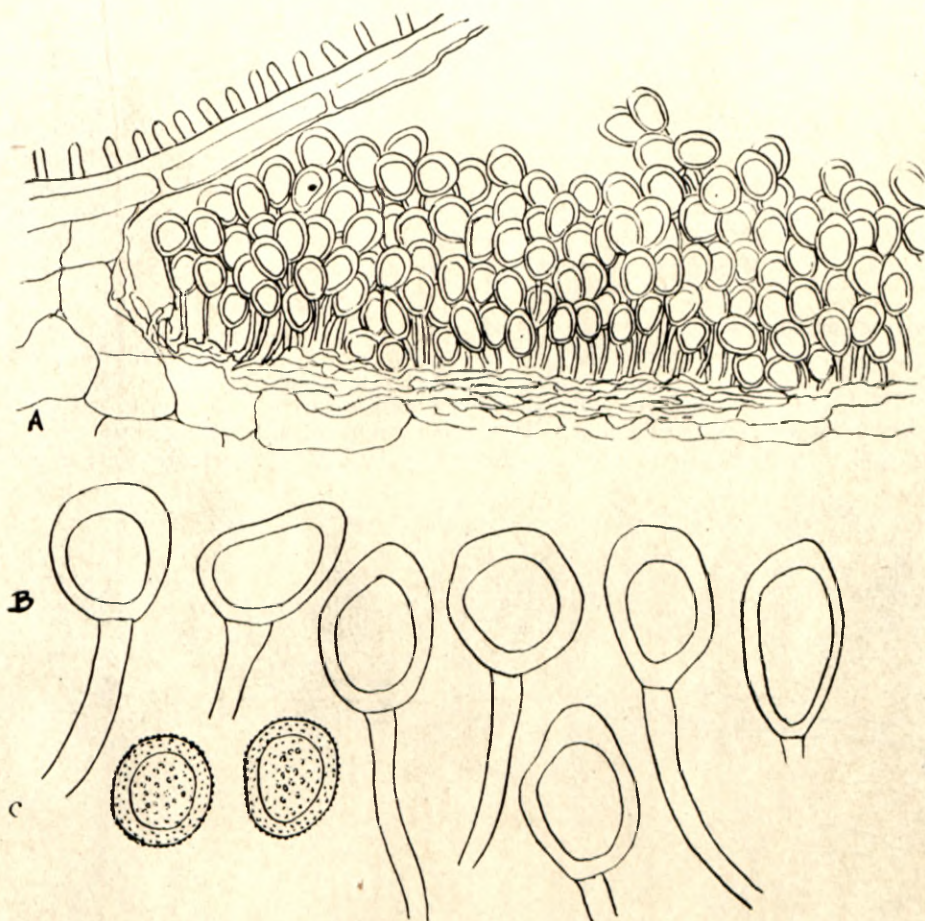


Fig. 5.—*Uromyces Gladioli* P. Henn.
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

Uromyces Gladioli was originally described by Hennings (l.c.) on leaves of *Gladiolus angustus* L., collected by Leibold at the Cape. This specimen has not been seen, but, from the description there can be little doubt that this is the rust studied on the several *Gladiolus* spp. enumerated. It is also recorded by Sydow (l.c.) on *Gladiolus blandus* Ait. and *G. orchidiflorus* Andr. from South Africa and *G. Quartinianus* from Kilimandscharo, in tropical Africa.

It seems probable that the rust on *Gladiolus Ecklonii* Lehm. mentioned by von Thümen (l.c.), uredo only, is this species; unfortunately no description is given and this specimen

has not been seen. It seems unlikely that it is *Uromyces transversalis* with which von Thümen was familiar.

Uromyces Geissorhizae P. Henn. was described on leaves of *Geissorhiza* sp. collected at Vogelgat in the western Cape, *Schlechter 9577*; sori were found on this collection in the phanerogamic herbarium and were studied; in every particular the sori and spores resemble those of *Uromyces Gladioli*. Type collections of *U. Babianae* Doidge and *U. Romoulea* v. d. Byl were also studied and these rusts found to be identical with *U. Gladioli*.

Sydow has recorded the occurrence of *U. Geissorhizae* on *Geissorhiza rupestris* Schlecht. and *G. secunda* (Berg.) Ker. and also on *Moraea ramosa* Ker. The only *Uromyces* sp. on *Moraea* in the material studied is *Uromyces Moraeae* on *Moraea spathulata*; no locality or collector is mentioned by Sydow in connection with the fungus on *Moraea ramosa*, and no rust on this host could be traced.

Uromyces Gladioli occurs on a wide range of hosts, many of which are restricted to the south-western Cape and to the coastal area of the eastern Cape and Natal. Nearly all the localities in which it has been found are within 75 miles of the coast, the only exception being Ugie in the Maclear district, which is about 85 miles inland. In collection No. 17037 on *Gladiolus* from Mooi River, Natal, *U. Gladioli* was found in close association with *U. transversalis*; sori of both species were found in close proximity on the same leaves.

6. *Uromyces kentaniensis* Doidge.

Doidge, *Bothalia* II (1927) p. 30.

II. Uredo-sori hypophyllous, on rather indefinite, greenish or brownish leaf spots, not numerous, widely scattered, solitary or in small groups of 2-4, rarely more, round or oval, up to $\frac{1}{4}$ mm. diam., surrounded by the torn epidermis. Uredospores ovate or sub-

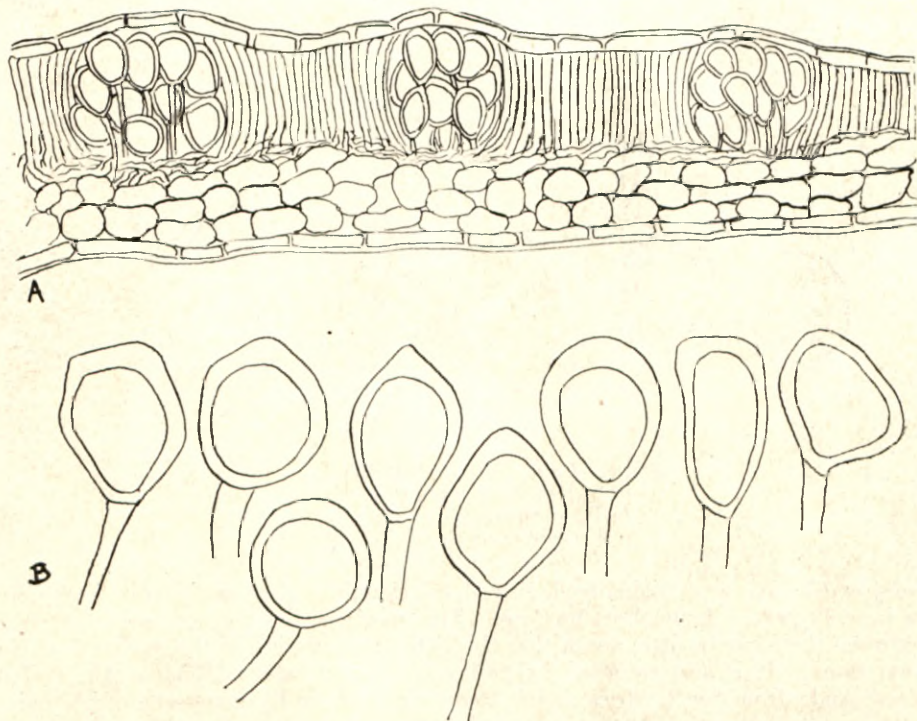


Fig. 6—*Uromyces kentaniensis* Doidge.
(a) Section through teleutosorus.
(b) Teleutospores.

globose, $19-28 \times 17.5-22.5 \mu$; epispore hyaline, $1-1.5 \mu$ thick, minutely and closely verruculose; germ pores small obscure, several, scattered. A few teleutospores and paraphyses are sometimes to be found in the uredo-sori.

III. Teleuto-sori mostly hypophyllous, only an occasional one on the upper leaf surface, minute, brownish-black, remaining covered by the epidermis; in more or less close groups, often in oblong groups flanking the groups of uredo-sori, above and below; groups of teleuto-sori ca. $\frac{1}{2}$ mm. broad and up to 4 mm. long. Single sori small, $50-75 \mu$ diam., $55-70 \mu$ deep, with spores in three rows; sometimes closely set, sometimes more remote, $10-180 \mu$ apart, the intervening space being filled with golden-brown, palisade-like paraphyses. Teleutospores ovate, ovate-ellipsoid or broadly cuneate; rounded, truncate or obtusely conical at the apex, attenuate, or more rarely rounded at the base; light brown, darker at the apex, $23-24 \times 18-27 \mu$; epispore smooth, thin at the base, ca. 1μ , becoming gradually thicker towards the apex, usually $1.5-2 \mu$ thick at the sides and 4μ , rarely 5μ thick at the apex. Pedicel hyaline or slightly tinted, persistent, up to 30μ long. Paraphyses light golden-brown, firmly agglutinated by their lateral walls, except where they are found with teleutospores in the uredo-sori; up to 50μ long and about 6μ thick.

on *Petamenes aethiopica* (L.) Phillips (= *Antholyza aethiopica* L.), Kentani, *Pegler 2381*, 9313.

7. *Uromyces Dieramatis* Doidge nov. spec.

sub *Uromyces Sparaxidis* Syd. in *Bothalia* II (1927) p. 31.

Uredo-sori amphigeni, sparsi vel aggregati, oblongi v. lineares, minuti v. usque 1 mm. longi, diutius epidermide tecti tandem ea longitudinaliter fissa cincti, ochracei. Uredosporae ovatae v. subglobosae, rarius ellipsoideae v. oblongae, $17.5-25 \times 12.5-20 \mu$, minute denseque verruculoso-echinulatae, membrana hyalina v. subhyalina ca. 1.5μ crassa, prois germ. 6-9, sparsis. Teleuto-sori amphigeni, singuli minuti, $75-100 \mu$ diam., $100-125 \mu$ alti, epidermide tecti, sed densissime in greges oblongos v. lineares usque 1 mm. longos dispositi et confluentes, paraphysibus periphicis cylindraceis, subrectis v. leniter curvatis, aureo-brunneis anguste obvallati. Teleuto-sporae brunneae, levēs, variables, ovatae, oblongae v. cuneatae, haud raro plus minus irregulares subinde e mutua pressione angulatae, apice rotundatae, truncatae v. subconicae, basim versus attenuatae, plerumque $20-30 \mu$ longae et $15-20 \mu$ latae, rarius $35-37.5 \mu$ longae et $10-12.5 \mu$ latae; episporio plerumque 2μ crasso, raro 1.5μ vel 2.5μ , ad apicem crassiore, $5-6 \mu$, nonnunquam usque 7.5μ ; pedicello usque 40μ longo, leniter colorato.

Hab. in foliis *Dieramatis penduli*, Cramond, leg. I. B. Pole Evans, 1580.

II. Uredo-sori not on definite leaf spots but often causing some light brown discolouration of the leaf tissues, amphigenous, scattered, or often very numerous and closely crowded, oblong or linear, not transverse, minute or up to 1 mm. long, long covered by the epidermis, which finally ruptures longitudinally and partly exposes the pale yellow spore masses. Uredospores ovate or subglobose, less frequently ellipsoid or oblong, very variable in form and size, $17.5-25 \times 12.5-20 \mu$; epispore hyaline or subhyaline ca. 1.5μ thick, closely and minutely verruculose-echinulate; germ pores 6-9, small, scattered.

III. Teleuto-sori interspersed with the uredo-sori, darker, remaining covered indefinitely, in closely crowded oblong or linear groups up to 1 mm. long. Single sori rather deep, $75-100 \mu$ diam., $100-125 \mu$ deep, each surrounded by a narrow palisade of pale golden-brown paraphyses. Teleutospores in 5 closely packed rows, often very irregular and angular through mutual pressure, golden-brown to chestnut-brown (the latter in the outer rows) ovate, oblong or cuneate; apex rounded, truncate or broadly conical, sometimes oblique; base attenuate; mostly $20-30 \times 15-20 \mu$, less frequently $35-37.5 \mu$ long and $10-12.5 \mu$ broad; epispore smooth, usually ca. 2μ thick, rarely 1.5 or 2.5μ , thickened at the apex $5-6 \mu$, rarely up to 7.5μ ; pedicel more or less persistent, tinted, especially near the apex, up to 40μ long and ca. 5μ broad.

on *Dierama pendulum* Bkr., Cramond, *Pole Evans* 1580, Type, 1451, 2410; Inanda, *Medley Wood* 585, 10475; Durban, *McClellan*, 31030; Bethlehem, O.F.S., *van der Merwe*, 28815.

Dierama pulcherrimum Bkr., Kentani, *Pegler*, 6677, 6924, 7092.

Dierama sp., Nottingham Road, Natal, *McClellan*, 32308.

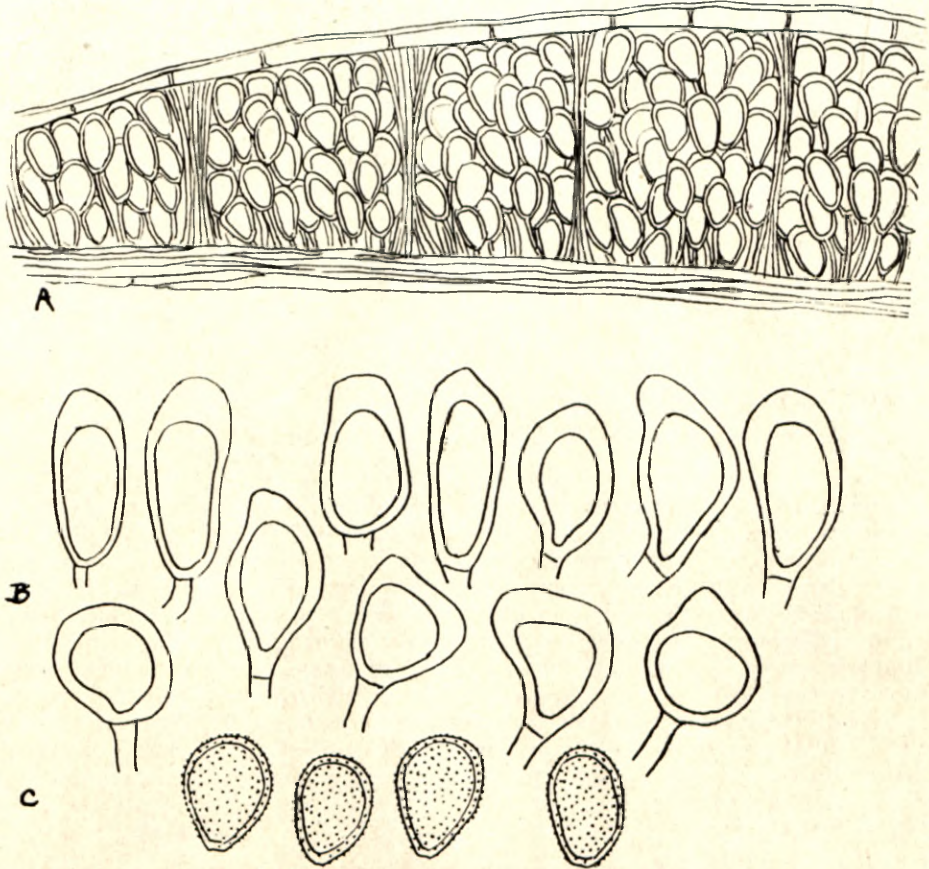


Fig. 7—*Uromyces Dieramae* Doidge.
(a) Section through teleutosorus.
(b) Teleutospores.
(c) Uredospores.

In *Bothalia* (l.c.) the fungus on *Dierama* was erroneously assigned to *Uromyces Sparaxidis* Syd. The wall of the teleutospore is ca. $2\ \mu$ thick, not $1.5\ \mu$ as required by the description of *U. Sparaxidis* and there are other minor differences; nothing is said about paraphyses in the description of the above species. The two rusts are closely related, but it is impossible to regard them as identical without an examination of the type of *U. Sparaxidis*. This is said to be "in foliis Sparaxidis lineatae, Natal, J. M. Wood"; unfortunately Medley Wood's number is not quoted. The identity of the host is also open to question, as *Sparaxis lineata* is a species confined to the winter rainfall area of the Cape, and does not occur in Natal.

Teleto-sori are comparatively rare in most of the collections mentioned, which are rather heavily parasitised by *Darlucia filum*; some difficulty was experienced in finding typical sori for study.

8. *Uromyces Ferrariae* Doidge nov. spec.

Spermogonia plerumque hypophylla, modice copiosa in series ordinata, mellea, 100–130 μ diam. Aecidia hypophylla in greges ellipticos v. irregulares usque 5 mm. longos disposita, cupulata, 200–250 μ diam., margine albido, recurvato, lacerato; cellulae peridii laxae conjunctae, rhomboideae v. polygonales, 17.5–25 \times 14–17.5 μ , pariete exteriori striato 5–7 μ crasso, interiore verrucoso 3–4 μ crasso; sporae angulato-globoso, 17–22 μ diam., vel ovatae v. oblongae, 22.5–30 \times 12.5–17.5 μ ; membrana hyalina, ca. 1.5 μ crassa, dense minuteque verruculosa, Uredo-sori amphigeni, sparsi, minuti vel usque 1 mm. longi, mox nudi, dilute cinnamomei. Uredo-sporae subglobosae v. ovatae, 25–30 \times 19–22.5 μ , ubique dense verruculosae; membrana 2–2.5 μ crassa, poris germ. 5–9, sparsis praedita. Teleuto-sori amphigeni, inter uredo-soros sparsi, singuli minuti, 75–135 μ diam., 60–75 μ alti, epidermide tecti, sed densissime in greges oblongos usque 0.5 mm. longos, atros, dispositi et confluentes, paraphysibus periphicis obvallati. Teleutosporae castaneae, leves, plerumque subglobosae, subinde ovatae, obovatae v. cuneatae et e. mutua pressione angulatae; apice rotundatae, late subconicae v. truncatae; basi rotundatae v. attenuatae; 22–32.5 \times 20–27.5 μ ; episporio 1–1.5 μ crasso apice leniter incrassato (usque 7.5 μ); pedicello leniter colorato usque 40 μ longo.

Hab. in foliis et pedunculis *Ferrariae* sp., Chipinga, 33427.

O. Spermogonia mostly hypophyllous, occasionally epiphyllous, near the groups of aecidia, in regularly spaced, longitudinal rows between the veins, rather numerous, honey-yellow, lenticular, 100–130 μ diam.

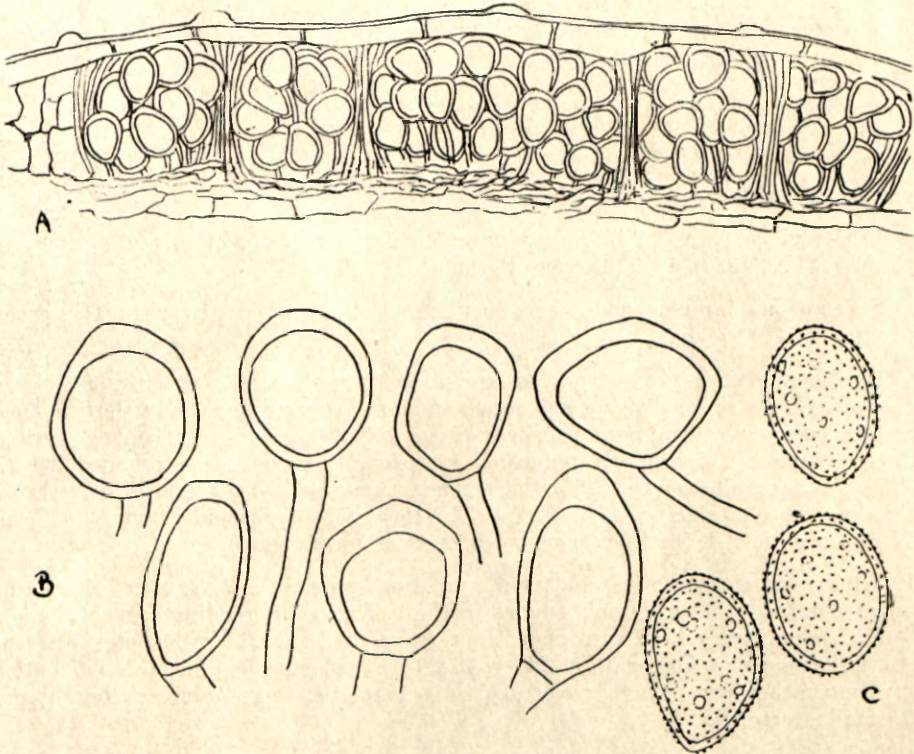


Fig. 8—*Uromyces Ferrariae* Doidge.
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

I. Aecidia hypophyllous, in groups which are elliptic or sometimes irregular in outline and up to 5 mm. long, cupulate, 200–250 μ diam., margin white, recurved, lacinate. Cells of the peridium rather loosely connected and readily falling apart, rhomboid or irregularly angular, 17.5–25 \times 14–17.5 μ ; outer wall striate, 5–7 μ thick, inner verrucose, 3–4 μ thick. Spores angular-globose, 17.5–22 μ diam., or ovate to oblong, 22.5–30 \times 12.5–17.5 μ ; epispore ca. 1.5 μ thick, closely and minutely verruculose.

II. Uredo-sori amphigenous, scattered between the veins of the leaf, elongated (not transverse) minute or up to 1 mm. long; the raised epidermis ruptures longitudinally, early exposing the light brown spore masses. Uredo-spores subglobose to ovate, 25–30 \times 19–22.5 μ ; epispore closely verruculose, 2–2.5 μ thick; germ pores 5–9, scattered.

III. Teleuto-sori amphigenous, scattered, interspersed with the uredo-sori, oblong, up to $\frac{1}{2}$ mm. long, black, compact, parallel with the veins, not transverse, remaining covered; consisting of a number of individual sori more or less closely crowded. Individual sori 75–135 μ diam., 60–75 μ deep, covered by the epidermis, each surrounded by golden-brown, palisade-like paraphyses. Teleutospores closely packed in 3–4 rows, chestnut-brown, subglobose to ovate, obovate or cuneate, becoming more or less angular through mutual pressure; apex rounded, broadly conical or truncate; base rounded or attenuate; 22.5–32.5 \times 20–27.5 μ ; epispore smooth, 1–1.5 μ thick, slightly thickened at the apex (up to 7.5 μ). Pedicel persistent, slightly tinted, especially near the apex, 5–6 μ broad and up to 40 μ long.

on *Ferraria* sp., on leaves, spathes and peduncles, Chipinga, S. Rhodesia (Rh. 4298) 33427.

The spermogonia, aecidia, uredo- and teleuto-sori are all to be found on the same leaves, and all in good condition for study, although some of the aecidia were rather old. The teleuto-sori are predominantly hypophyllous, but fairly often develop more or less opposite to one another on each side of the leaf, sometimes they form at the edge of the uredo-sorus.

9. *Uromyces Anomathecae* Cke.

Cooke, *Grevillea* XIX (1890) p. 6 Sydow, *Monogr. Ured.* II (1910) p. 256, and *Ann. Myc.* XX (1922) p. 54, Doidge, *Bothalia* II (1927) p. 35.

O. Spermogonia amphigenous, not very numerous, interspersed with the aecidia, honey-yellow, 90–100 μ diam.

I. Aecidia amphigenous, in small groups up to 2 mm. diam., not crowded, globose, deeply immersed in the leaf tissue and long remaining covered by the epidermis, finally opening by means of a central pore, pale ochraceous, 150–200 μ diam. Cells of the peridium very loosely connected, irregularly polygonal, occasionally more or less rounded, 20–27.5 \times 15–25 μ ; outer wall smooth, 5–6 μ thick, inner verrucose, 3–4 μ thick. Spores hyaline or subhyaline, angular-globose, 17.5–22.5 \times 15–19 μ , rarely ellipsoid-oblong, 25–27.5 \times 13.6–14 μ ; epispore 1–1.5 μ thick, closely and very minutely verruculose.

II. Uredo-sori amphigenous, scattered or in loose groups, on brown leaf spots which are elongated in a direction at right angles to the leaf axis. Sori minute, round or oval, up to $\frac{1}{2}$ mm. diam., pale yellow, surrounded by the torn epidermis. Uredospores subglobose or ovate, less frequently ellipsoid, 20–24 \times 13–20 μ ; epispore hyaline, 1.5–1.7 μ thick, minutely but rather conspicuously verruculose echinulate; germ pores rather obscure, ca. 6–9, small, scattered.

III. Teleuto-sori minute, scattered or in oblong transverse groups, up to 1 mm. long, between the veins; often interspersed with the uredo-sori, but rarely developing round them. Individual sori compact, often developing opposite to one another on either side of the leaf, solitary or in more or less loose groups, but usually discrete, rarely confluent:

remaining covered by the epidermis, mostly 150–250 μ diam. and 50–70 μ deep, with three rows of closely packed spores; surrounded by a narrow palisade of pale golden-brown paraphyses. Teleutospores pale or darker chestnut-brown, oblong, ovate or cuneate, often irregular and angular through mutual pressure; apex broadly rounded, truncate or conical; base attenuate or rounded; 25–35 \times 16–24 μ ; episore smooth, ca. 2 μ thick, thickened at the apex (5–9 μ); pedicel light brown, persistent, ca. 5 μ thick and up to 45 μ long.

on *Lapeyrousia cruenta* Bkr., Durban, *Medley Wood 693*, Co-type, 330; Stella Bush, Durban, *Leslie*, 31951; Winkle Spruit, *Doidge*, 2507; Donkerpoort, Pretoria District, *Doidge* and *Bottomley*, 30109.

Lapeyrousia grandiflora Bkr., Wonderboom, *Pole Evans* 443; Durban, 30937.

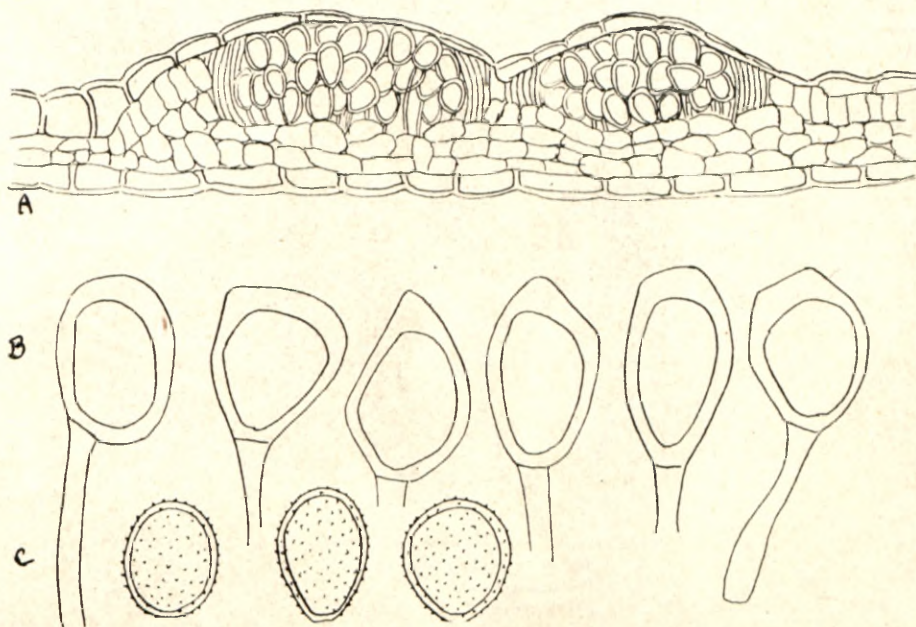


Fig. 9—*Uromyces Anomathecae* Cke., on *Lapeyrousia cruenta* (Medley Wood 693).
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

The aecidium, which has not been previously described, occurs on No. 443, in close association with typical teleuto-sori.

Lapeyrousia cruenta and *L. grandiflora* both belong to the sub-genus *Anomatheca* of the genus *Lapeyrousia*; they are closely related and may even be forms of the same species. *Lapeyrousia corymbosa* and *L. delagoensis* on which *Uromyces Ixiae* is found, belong to the sub-genus *Ovieda* and differ considerably.

10. *Uromyces Antholyzae* Syd.

Sydow, *Ann. Myc.* II (1904) p. 27 and *Monogr. Ured.* II (1910) p. 252. Verwoerd, *Sc. Bull.* 88, Union Dept. Agr. (1929) p. 5. Doidge, *Bothalia* III (1939) p. 510.

II. Uredo-sori amphigenous, not on leaf spots, but leaf tissues often vaguely discoloured, round or transversely oblong, minute, up to $\frac{1}{2}$ mm. diam., scattered or in transverse series 2–2.5 mm. long, limited in length by the veins; uredo-sori also develop on the peduncle, where they are scattered or in groups, elliptic or irregular in outline and up to 5 mm. long.

At first covered by the blistered epidermis, which finally ruptures, exposing the pale yellow, pulverulent spore masses. Uredospores usually globose or subglobose, less frequently ovate, rarely ellipsoid, $17.5-24 \times 15-17.5 \mu$, mostly $17.5-20 \times 17.5 \mu$; epispore hyaline or subhyaline, mostly 2μ thick, rarely 1.5 or 2.5μ , minutely but conspicuously verruculose-echinulate; germ pores small, rather obscure, $6-8$, scattered.

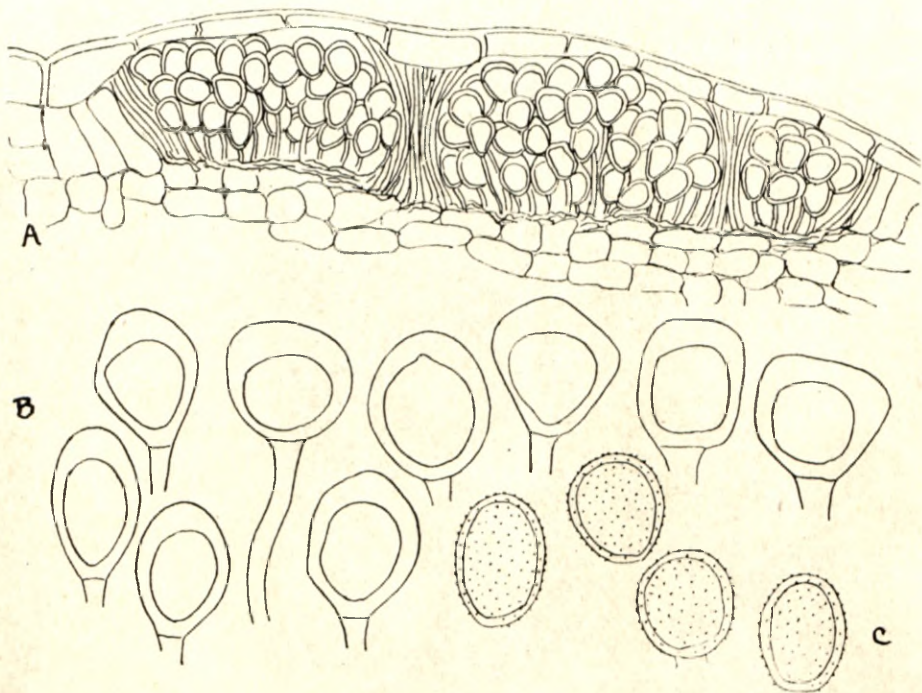


Fig. 10—*Uromyces Antholyzae* Syd.
 (a) Section through teleutosorus.
 (b) Teleutospores.
 (c) Uredospores.

III. Teleuto-sori amphigenous, minute, often developing in the old uredo-sori, similar to the uredo-sori, but dark and remaining covered by the epidermis. Individual sori minute, ca. $100-250 \mu$ diam., $50-75 \mu$ deep, compact, each surrounded by a palisade, up to 10μ broad, of pale golden-brown paraphyses. Spores usually in 3, sometimes 3-4 rows. Teleutospores chestnut brown, subglobose, globose or oblong, often somewhat irregular through mutual pressure; apex usually broadly rounded or flattened, less frequently obtusely conical; base usually rounded, less frequently attenuate; mostly $20-25 \times 15-20 \mu$, rarely up to 30μ long and 22μ broad; epispore smooth, $1.5-2 \mu$ thick, thickened at the apex, $4-7 \mu$; pedicel persistent, rather stout, light brown, $5-6.5 \mu$ thick and up to 32μ long.

on *Anapalina revoluta* N. E. Br. (= *Antholyza revoluta*), Ruytersbosch, Mossel Bay, Gemmell 30085.

Uromyces Antholyzae has also been recorded by Verwoerd (l.c.) from Stellenbosch, Newlands and Knysna. It was originally described by Sydow "in foliis *Antholyzae abyssinicae* in Abyssinia (Schimper)." This host may be *Antholyza abyssinica* Bkr. now known as *Petamenes latifolia* N. E. Br., or *A. abyssinica* Brong, which is the same plant as *Oenostachys abyssinica* N. E. Br.

11. *Uromyces Freesiae* Bubak.

in Oesterr. Bot. Zeitschr., L. (1900) p. 318. Sydow, Monogr. Ured. II (1910) p. 252.
Doidge, Bothalia II (1927) p. 32.

II. Uredo-sori amphigenous, on brown leaf spots, scattered, minute, round or oval, up to $\frac{1}{2}$ mm. long, light brown, surrounded by the torn epidermis, which usually splits in a direction transverse to the leaf axis. Uredospores mostly ovate, less frequently subglobose or ellipsoid, $19-24 \times 12.5-17.5 \mu$, mostly $19-20 \times 13-15 \mu$; epispore hyaline, ca. 1.5μ thick, closely and minutely verruculose, and with 6-9 small, scattered, rather obscure germ pores.

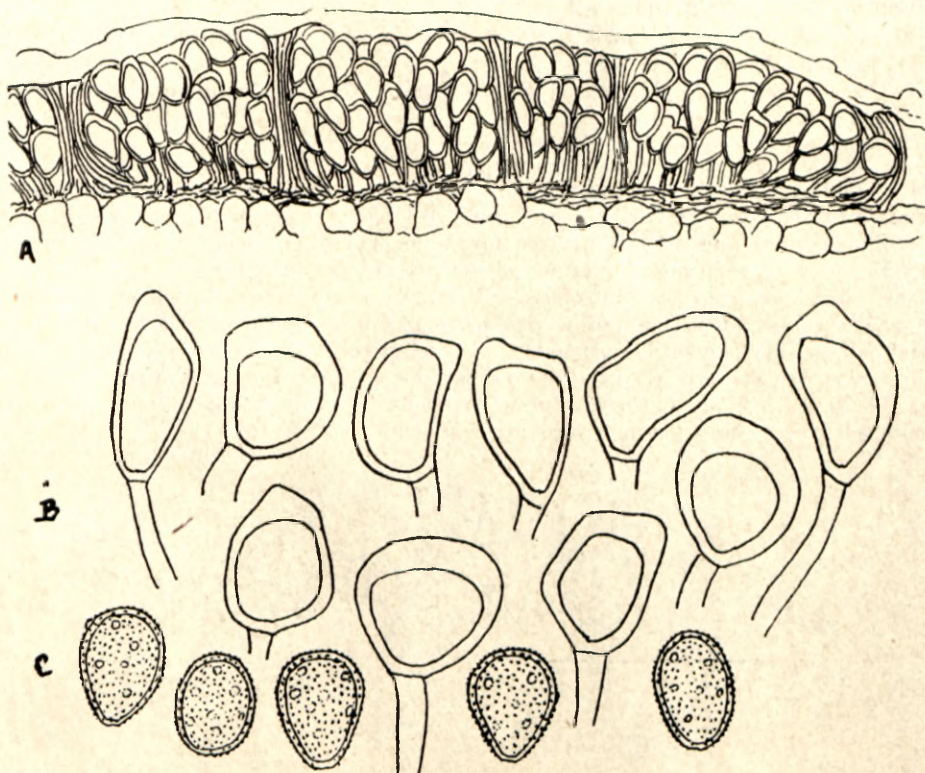


Fig. 11—*Uromyces Freesiae* Bubak.
(a) Section through teleutosorus.
(b) Teleutospores.
(c) Uredospores.

III. Teleuto-sori minute, brownish-black, scattered or developing in circles round the uredo-sori, long covered by the epidermis. Individual sori small, up to ca. 100μ diam., at first distant and each surrounded by a palisade of pale golden-brown paraphyses, often becoming closely crowded and sometimes completely fused; in the latter case the paraphyses are not always distinguishable through the older sections of the sori, but at the margin of the groups of sori, paraphyses are still evident. Sori compact, $60-80 \mu$ deep, with 3-4, mostly 4 closely packed rows of spores. Teleutospores mostly ovate to ellipsoid, occasionally subglobose or clavate, but often very irregular, asymmetrical or angular through mutual pressure; light to deep chestnut-brown, the darker spores in the outer rows of the sorus; apex rounded, truncate or conical; base rounded or attenuate; $20-35 \times 15-22 \mu$, mostly $20-30 \times 17-20 \mu$; epispore smooth, $2-2.5 \mu$ thick, thickened at the apex, $5-9 \mu$; pedicel subsistent, hyaline, ca. 5μ broad at the apex and up to 55μ long.

on *Freesia* sp., Johannesburg, 17283; Joubertina, Cape Deysel, 29714.

According to Sydow (l.c.) paraphyses are to be found among the uredospores; they are clavate, ca. $40\ \mu$ long and $9\text{--}16\ \mu$ broad. This statement was quoted by Doidge (l.c.). In the material examined, no paraphyses were found in the uredo-sori, but the sori were rather old and there were comparatively few spores left in position.

The genus *Freesia* has been revised and it cannot be said whether the host of the above collections is the plant now known as *Freesia refracta*. The type was "in foliis *Freesiae odoratae* in Promontorio Bonae spei Africa austr. (Zeyher)"; this collection has not been available for study.

12. *Uromyces transversalis* (Thuem.) Wint.

Winter, Flora (1884) p. 263; Sydow, Monogr. Ured. II (1910) p. 257; Doidge, Bothalia II (1927) p. 33.

Uredo transversalis Thuem., Flora (1876) p. 570; Kalchbrenner, Grevillea XI (1882) p. 25.

Uromyces Watsoniae Syd., Monogr. Ured. II (1910) p. 258.

II. Uredo-sori amphigenous, scattered or in groups, which are often oblong, transverse and limited by the larger veins of the leaf, round to oblong or irregular, but typically transversely oblong, sometimes minute up to $\frac{1}{2}$ mm. long, but often longer, up to $1\frac{1}{2}$ mm. long and $\frac{1}{2}$ mm. broad; on all hosts longitudinal sori are also found, $\frac{1}{2}$ mm. to 2 mm. long, but these are more numerous on *Watsonia*; sori at first covered by the blistered epidermis which finally splits; dehiscence usually transverse, but parallel with the leaf axis in the longitudinal sori and sometimes irregular; the ochraceous spore masses remain partially veiled by the torn epidermis. Uredospores variable in form and size, ovate, ellipsoid or oblong, $14\text{--}26 \times 13\text{--}25\ \mu$; epispore hyaline, typically $1.5\ \mu$ thick, rarely up to $2\ \mu$, closely and minutely verruculose; germ pores rather obscure, 6–8, scattered.

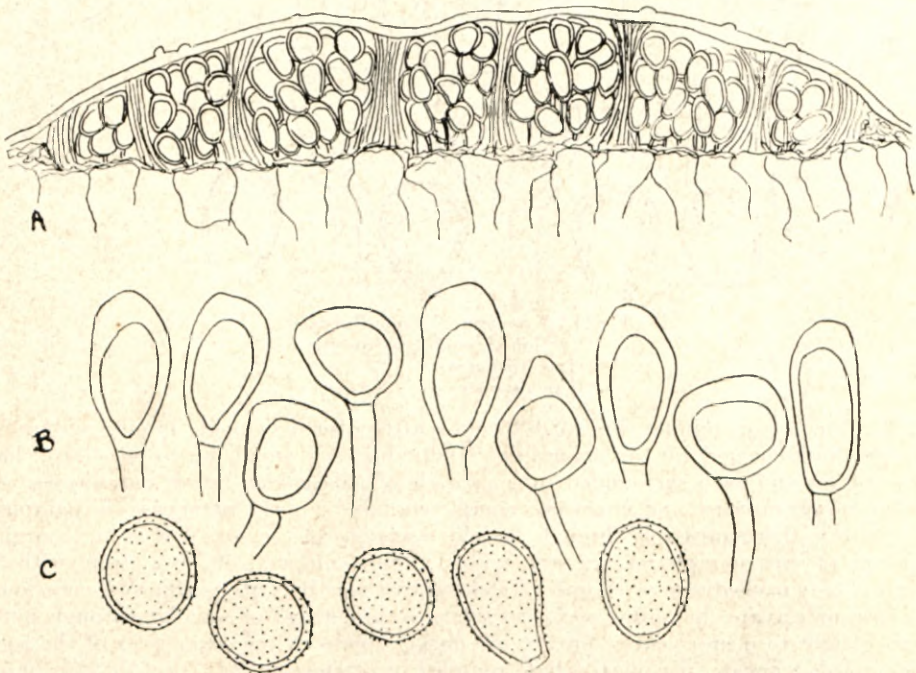


Fig. 12—*Uromyces transversalis* (Thuem.) Wint.

- (a) Section through teleutosori on *Tritonia*.
 (b) Teleutospores from *Tritonia*.
 (c) Uredospores from *Tritonia*.

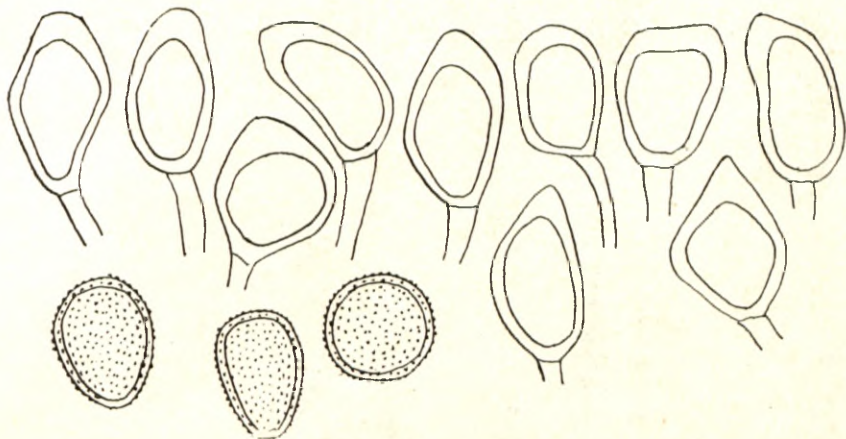


Fig. 13—*Uromyces transversalis* (Thuem.) Wint.
Teleutospores from *Gladiolus*.
Uredospores from *Gladiolus*.

III. Teleuto-sori minute, black, remaining covered by the epidermis, in small or larger groups, which may be scattered, but not infrequently form an irregular zone round a uredosorus or a group of uredo-sori. Single sori small, crowded together, separated only by a zone of golden-brown, palisade-like paraphyses; $50-112.5 \mu$ diam., $55-75 \mu$ deep, with spores in 3-4 closely packed rows. Teleutospores ovate, ellipsoid or pyriform, less frequently globose, often irregular or angular through mutual pressure, light brown, darker—often chestnut-brown—near the apex; apex rounded, truncate or broadly conical; base usually attenuate, less frequently rounded; $17.5-34 \times 14-21 \mu$, the majority being $20-25 \times 15-17.5 \mu$; episporium smooth, usually ca. 2μ thick, thickened at the apex, $4-6 \mu$, rarely up to 8μ ; pedicel subpersistent, hyaline or tinted at the apex, ca. 3μ thick and up to 45μ long.

on *Gladiolus psittacinus* Hk., Sydenham, Natal, *Medley Wood* 360.

Gladiolus Saundersii Hk. f., Somerset East, MacOwan.

Gladiolus spp., Port Elizabeth, *Clark*, 26611; Nottingham Road, *McClellan*, 32310; Mooi River, Natal, *Mogg*, 10077, 17037; Rosetta, *Mogg*, 11635, 14145; Entumeni, Zululand, *Haygarth*, 14176, 14181; Arcadia, Pretoria, 472; Garstfontein, Pretoria District, *Pienaar*, 1258; Debbe's Ravine, *Bosman*, 29853; Silverton Road, *Doidge*, 29418; Kaalfontein, *Pole Evans*, 10134 and *Mogg*, 11676; Paardeplaats, Lydenburg Distr., *Pienaar*, 1503; Brits, *Sieling*, 30981; Belfast, *Pole Evans*, 10987,

Tritonia lineata Ker., Capetown, *MacOwan*, 4064 (Rabh. Fung. Eur. 3724).

Tritonia securigera Ker., Boschberg, *MacOwan* 1254 (Type) 3355, 20780, (Rabh. Fung. Eur. 3014); Uitenhage, *Schmutz*, 25488.

Tritonia sp., Kentani, *Pegler* 2435, 10992.

Watsonia angusta Ker., Kentani, *Pegler* 2360, 2379, 9165, 9192.

Watsonia densiflora Bkr., Belfast, *Doidge*, 552 (co-type of *Uromyces Watsoniae*).

Watsonia meriana Mull., Paddock, Natal, *McClellan*, 33322.

Watsonia spp., Sweetwaters, Natal, *Cromden*, 23182; Cana, Basutoland, *Hean*, 32142.

This species is widespread throughout the Union, and is particularly common in the Transvaal, where it causes a serious disease of cultivated Gladioli.

There appears to be no significant difference between *Uromyces Watsoniae* and *U. transversalis*. Sydow states that the wall of the teleutospore is only 1μ thick in the former species, but in all the specimens examined, including the type collection, it was predominantly 2μ thick.