

New taxa, combinations and records of Pteridophyta from southern and central Africa

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Keywords: central Africa, new records, new taxa, Pteridophyta, southern Africa

ABSTRACT

Four new taxa of ferns are described and illustrated from southern Africa: *Ophioglossum convexum* J.E. Burrows, *Mohria caffrorum* (L.) Desv. var. *ferruginea* J.E. & S.M. Burrows, *Marsilea farinosa* Launert subsp. *arrecta* J.E. Burrows and *Asplenium seburgweense* J.E. Burrows. The combination of *Grammitis rigescens* (Bory ex Willd.) J.E. Burrows is made. *Ophioglossum thomasi* Clausen, *O. rubellum* Welw. ex A. Braun, *Vittaria ensiformis* Swartz and *Asplenium buettneri* Hieron. ex Brause are new records for Zimbabwe, while *Hymenophyllum splendidum* V.d. Bosch and *Asplenium uhligii* Hieron. are new records for Malawi and Zimbabwe. *Actiniopteris semiflabellata* Pichi-Sermolli is recorded from Namibia and *Thelypteris oppositifolmis* (C. Chr.) Ching is recorded from the Transvaal.

UITTREKSEL

Vier nuwe varingtaksons van suidelike Afrika word beskryf en geïllustreer: *Ophioglossum convexum* J.E. Burrows, *Mohria caffrorum* (L.) Desv. var. *ferruginea* J.E. & S.M. Burrows, *Marsilea farinosa* Launert subsp. *arrecta* J.E. Burrows en *Asplenium seburgweense* J.E. Burrows. Die kombinasie *Grammitis rigescens* (Bory ex Willd.) J.E. Burrows word gemaak. *Ophioglossum thomasi* Clausen, *O. rubellum* Welw. ex A. Braun, *Vittaria ensiformis* Swartz en *Asplenium buettneri* Hieron. ex Brause word die eerste keer in Zimbabwe aangeteken, terwyl *Hymenophyllum splendidum* V.d. Bosch en *Asplenium uhligii* Hieron. die eerste keer in Malawi en Zimbabwe aangeteken word. *Actiniopteris semiflabellata* Pichi-Sermolli word in Namibië aangeteken en *Thelypteris oppositifolmis* (C. Chr.) Ching word in die Transvaal aangeteken.

INTRODUCTION

While carrying out research on southern African pteridophytes, it became obvious that there were a few undescribed taxa from, as well as a number of new records to, the area covered by *Flora zambesiaca* and *Flora of southern Africa*, several being interesting southern extensions of tropical species. This paper attempts to update our knowledge of southern African ferns in the light of recent collections and research.

1. *Ophioglossum thomasi* Clausen in *Memoirs of the Torrey Botanical Club* 19: 152 (1938). Type: Uganda, Kampala, Kabaka's Lake, *Thomas 1903* (BM, holo.).

ZIMBABWE.—2028: Matopo Hills, Besna Kobila Farm, 1 465 m, Jan. 1956, *Miller 3305* (PRE!).

Distribution: Liberia, Ivory Coast, Ghana, Nigeria, Cameroon, Gabon, Zaïre, Uganda, Tanzania and Zambia.

2. *Ophioglossum convexum* J.E. Burrows, sp. nov.

Rhizoma elongatum, 5–25 mm longum cum vel sine aliquot basibus petiolorum persistentibus. *Radices* proliferae. *Folium* unum (raro duo), ad angulum 0–30° portatum vix supra vel terram adpressum. *Petiolus* 6–25 mm longus, 60–90% longitudinis subterraneus. *Lamina sterilis* desuper convexa, ovata vel late ovata, late acuta vel obtusa et breviter apiculata; basis late cuneata vel truncata; nervatura obscura. *Spica fertilis* 30–100 mm longa, ad vel vix infra basin laminae sterilis inserta; sporangia paribus 6–15; apex acutus vel breviter apiculatus.

TYPE.—Transvaal, 2530 (Lydenburg): Coromandel Farm (–AD), *Burrows 3683* (PRE, holo.; BOL, K, iso.).

Rhizome elongate, 5–25 mm long with or without a few persistent petiole bases. *Roots* proliferous. *Leaves* one, rarely two, held at 0–30° from the horizontal, just above or appressed to the ground. *Petiole* 6–25 mm long, 60–90% of its length subterranean. *Sterile lamina* convex above, ovate to broadly ovate, broadly acute to obtuse and shortly apiculate, base broadly cuneate to truncate, venation obscure. *Fertile spike* 30–100 mm long, inserted at, or just below, the sterile lamina base, 6–15 pairs of sporangia, apex acute to shortly apiculate. Figure 1.

ZAMBIA.—0830: Abercorn District, ± 2.4 km above Sansia Falls, Kalambo River, *Richards 10371* (?K) [Schelpe 1970: 35 as *O. rubellum*].

ZIMBABWE.—1731: Ngomakurira Mtn, Chindamora, 1 430 m, *Burrows 3040* (BOL, K, SRGH), 3046 (Herb. Burrows); *Mavi 1601* (SRGH).

TRANSSAAL.—2530 (Lydenburg): Lydenburg, Lisabon State Forest (–BC), *Burrows 3427* (PRE, Herb. Burrows). 2430 (Pilgrim's Rest): Pilgrim's Rest, New Chum Falls (–DB), *Roberts 102* (BOL!).

MADAGASCAR.—Grid ref. unknown: Boina, *Perrier 7694* (P!) [*O. nudicaule* L. f. sensu Tardieu-Blot 1951].

REUNION.—2155: Chemin des Anglais, *Cadet 956, 1203, 1258* (P!) [all as *O. nudicaule* L. f.].

Within all the populations seen of *O. convexum* there are large numbers of plants that do not bear fertile spikes. These plants all have the lamina appressed flat on the ground although those plants that carry a fertile spike appear to have a petiole that raises the lamina 2–3 mm above the ground, with the lamina typically held at ± 30° from the horizontal.

O. convexum is closely related to *O. rubellum* Welw. ex A. Braun (Figure 2) but differs from it in having a longer

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FIGURE 1. — *Ophioglossum convexum* J.E. Burrows, in natural habitat, Lisabon State Forest, Lydenburg, Transvaal, Burrows 3427.

and narrower rhizome, only a single leaf (*O. rubellum* almost always has two or more), and in having the leaf appearing convex from above with the margins generally curving downwards although the midrib region may be concave, while the leaf of *O. rubellum* appears folded along the midrib, sloping upwards to the margin and is never appressed to the ground, being held at 10–20° from the horizontal. There are a number of collections of plants identified as *O. rubellum* from east and central Africa which have a single leaf and are stated to have the lamina lying flat upon the ground which are undoubtedly *O. convexum*. The confusion has almost certainly arisen from a misinterpretation of Welwitsch's type from Angola which is in Kew (isotype in BM). On the three sheets (two in K, one in BM), there are a total of 41 plants, of which six bear a single leaf, 29 with two and six with three leaves. Schelpe (1970) states that *O. rubellum* has a single leaf, quoting and illustrating a plant collected from Zambia (*H.M. Richards 10371* — said to be in Kew but not found by the author) that is clearly *O. convexum*. It is likely that this error has been perpetuated elsewhere in Africa.

O. convexum is also similar to *O. nudicaule* L. f. (Figure 3). *O. nudicaule* sens. strict. is, in the author's opinion, confined to the Cape Province and has up to five leaves per plant, each leaf being concave when viewed from above, with the whole lamina somewhat deflexed. Like most species of *Ophioglossum*, *O. convexum* does not appear to be closely linked to climate or altitude, occurring in the Transvaal in montane grassland at altitudes of between 1 200 and 1 900 metres, but in warmer climates and at lower altitudes north of the Limpopo River (Figure

4). Proliferating roots as found in this species are not unusual in the genus, although they are seldom documented (Chen & Chiang 1972). Due to its proliferous roots the species tends to form colonies of several square metres.

3. *Ophioglossum rubellum* Welw. ex A. Braun in Kuhn, *Filices africanae*: 179 (1868). Type: Angola, Pungo Andongo, Welwitsch 33 (K, holo.; BM, iso.).

Icon: Tardieu-Blot: pl. 1, fig. 8 (1953).

Specimens collected on seasonally wet sandy soils in the Sengwa Wildlife Research Area lack the reddish tinge that gave the specific name to the type collection, but in all other characters are identical to Welwitsch's plants examined by the author. There are collections from Zambia, Kenya and Ethiopia that have smaller, single leaves with a bluish tinge that have been attributed to *O. rubellum* but they may in fact be *O. convexum* J.E. Burrows (Figure 1), or an undescribed species. (See also notes under the previous species.)

ZIMBABWE. —1828: Gokwe, Sengwa Wildlife Research Institute, 0,5 km NE of bridge over the Sengwa Gorge, 880 m, 12.2.1983, Burrows 3019 (BOL, K, PRE, SRGH, Herb. Burrows). Figure 2.

Distribution: Ethiopia, Kenya, Uganda, Tanzania, Zambia and Angola.

4. *Mohria caffrorum* (L.) Desv. var. *ferruginea* J.E. & S.M. Burrows, var. nov., a var. *caffrorum* rhachidi juventute perdense squamis atroferrugineis oblecta differt.

TYPE. —Natal, (2929) Underberg: Drakensberg Mts, Injasuti, below Women Grinding Corn (–AB), Burrows 3670 (BOL, holo.; K, PRE, iso.).



FIGURE 2. — *Ophioglossum rubellum* Welw. ex A. Braun, in natural habitat, Sengwa Wildlife Research Institute, Gokwe, Zimbabwe, Burrows 3019.

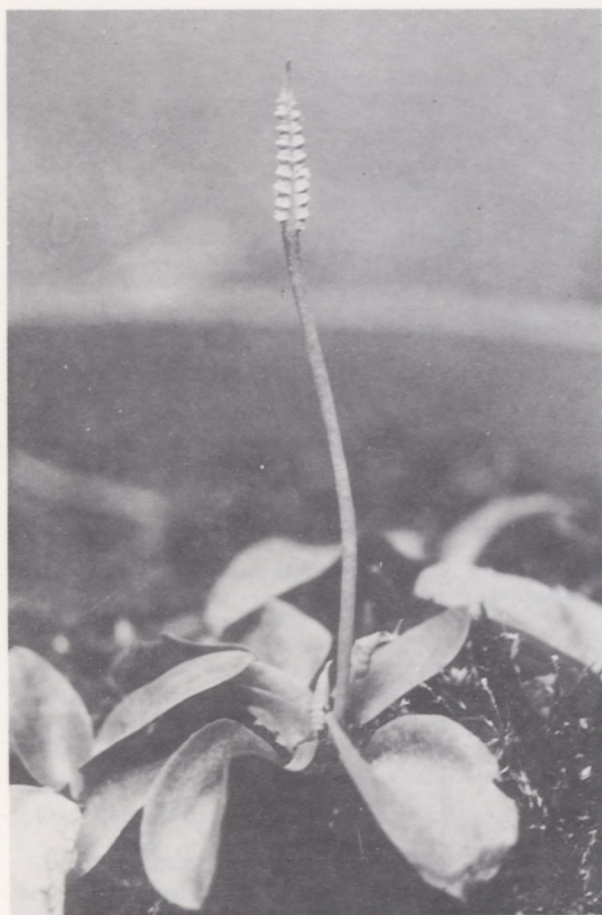


FIGURE 3.—*Ophioglossum nudicaule* L. f., ex hort., 14 km from Grahamstown on Cradock Road, Cape Province, Burrows 3685.

Rhizome erect to procumbent, 5–8 mm in diameter, with closely packed, tufted, erect fronds. *Rhizome scales* rusty brown, linear-lanceolate, attenuate, entire, concolorous, 2–6 mm long. *Stipe* 40–120 mm long, brown basally, stramineous distally when dry, variously set with dark, reddish brown, subulate, entire scales, 0.5–2 mm long, and scattered scales near the base similar to those on the rhizome, becoming subglabrous with age. *Lamina* 120–300 × 30–60 mm, narrowly elliptic to narrowly oblanceolate, with the basal pinnae decrescent, 3-pinnatifid. *Pinnae* ± 25 × 16 mm, ovate to triangular, bluntly acute. *Pinnules* oblong, obtuse, deeply pinnatifid into rounded lobes, margins widely and shallowly serrate-crenate, involute, glabrous above, with occasional, minute subulate scales below, both surfaces with scattered, opaque, linear, gland-like projections ± 0.1 mm long. *Rachis and secondary rachises* sulcate above, densely set with dark, reddish brown, subulate scales similar to those on the stipe, almost obscuring the rachis when young. *Sori* submarginal, partly covered by the involute margins (Figure 5B).

M. caffrorum var. *ferruginea* is separated from var. *caffrorum* by its thick mat of dark, reddish brown scales that clothe the rachis when young and by the glabrous to subglabrous lamina which, in old pressed fronds, turns a metallic grey. In addition, it appears to be restricted to wet situations along the margins of mountain streams and around springs, whereas var. *caffrorum* is also found on drier soils and in the shelter of boulder bases, rock cracks, as well as in scrub on the forest ecotone. Like *M. hirsuta*

J.P. Roux, it appears to be restricted to high altitudes of between 1 700 and 2 300 m (Figure 6).

TRANSVAAL.—2530 (Lydenburg): Lydenburg District, Die Berg (–AA), Burrows 3677 (BOL, PRE, Herb. Burrows); Lydenburg, Coromandel Farm (–AD), Burrows 3679 (BOL, J, PRE).

O.F.S.—2828 (Bethlehem): Golden Gate National Park (–CB), Roberts 3125, 3277 (PRE).

NATAL.—2828 (Bethlehem): Mont aux Sources (–DD), Mogg 5303 (PRE). 2829 (Harrismith): Ntonjelane, Mweni area (–CC), Esterhuysen 14523 (BOL); Lambonja Valley, Cathedral Peak area, Esterhuysen 12894 (BOL, PRE). 2929 (Underberg): Giant's Cup Trail, Cobham State Forest (–CB), Nicholas & V.d. Berg 1323 (PRE); Cobham Forest Reserve, Underberg District (–CB), Hilliard & Burtt 15935 (BOL); Tributary of Mkhomazi River, Underberg District (–CB), Hilliard & Burtt 15731 (BOL); Bamboo Mountain, Polela District (–CB), Doidge P.8 (PRE). 3029 (Kokstad): Mt Currie, Kokstad (–AD), McLoughlin 771 (BOL, PRE).

LESOTHO.—2828 (Bethlehem): Leribe (–CC), Dieterlen 475, 841 p.p. (K, MPU).

CAPE.—3227 (Stutterheim): Gxulu Mt, Keiskamma Hoek District (–CA), Story 3502 (PRE).

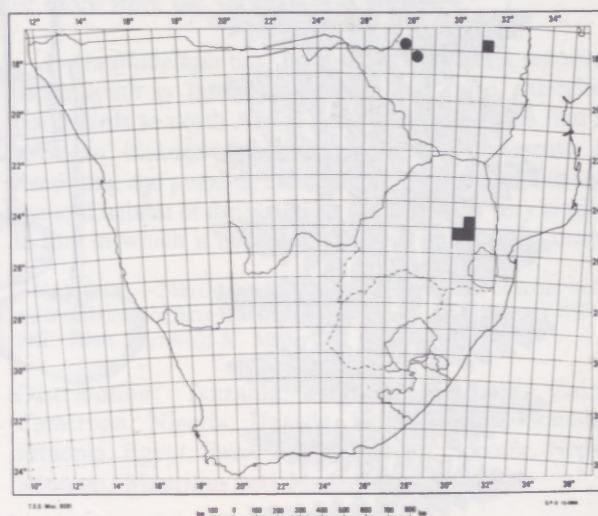


FIGURE 4.—Distribution of *Ophioglossum convexum* J.E. Burrows, ■, in the Transvaal and Zimbabwe; *Asplenium seburgweense* J.E. Burrows, ●, in Zimbabwe.

5. *Marsilea farinosa* Launert subsp. *arrecta* J.E. Burrows, subsp. nov. Differt a subsp. *farinosa* pedicellis longioribus et e basi et in axillis stipitis exorientibus sporocarpisque ad angulum c. 180° a pedicello feruntur.

TYPE.—Transvaal, (2328) Baltimore: 40 km S of Groblersbrug on Potgietersrus road (–AA), Burrows 3597 (BOL, holo.; J, K, PRE, Herb. Burrows, iso.).

Differs from subsp. *farinosa* (Launert 1968, 1983) in that the pedicels are longer and arise from both the base of the stipe and the axils of the stipe, and the sporocarps are held at ± 180° to the pedicels. (Figure 7B).

BOTSWANA.—2227 (Palapye): ± 10 km N of Martin's Drift on the Palapye Road (–DD), Burrows 3715 (PRE, Herb. Burrows). 2425 (Gaberone): 3 miles north of Gaberone (–DB), Mott 314 (BOL, PRE, UBLS). Grid ref. unknown: Content Farm, Gaberone District, Kelaole A13 (PRE).

6. *Hymenophyllum splendidum* V.d. Bosch in Nederlandsch Kruidkundig Archief 5: 192 (1863). Type: Fernando Po [Bioko], Mann s.n. (K, ?holo.; L, iso.).

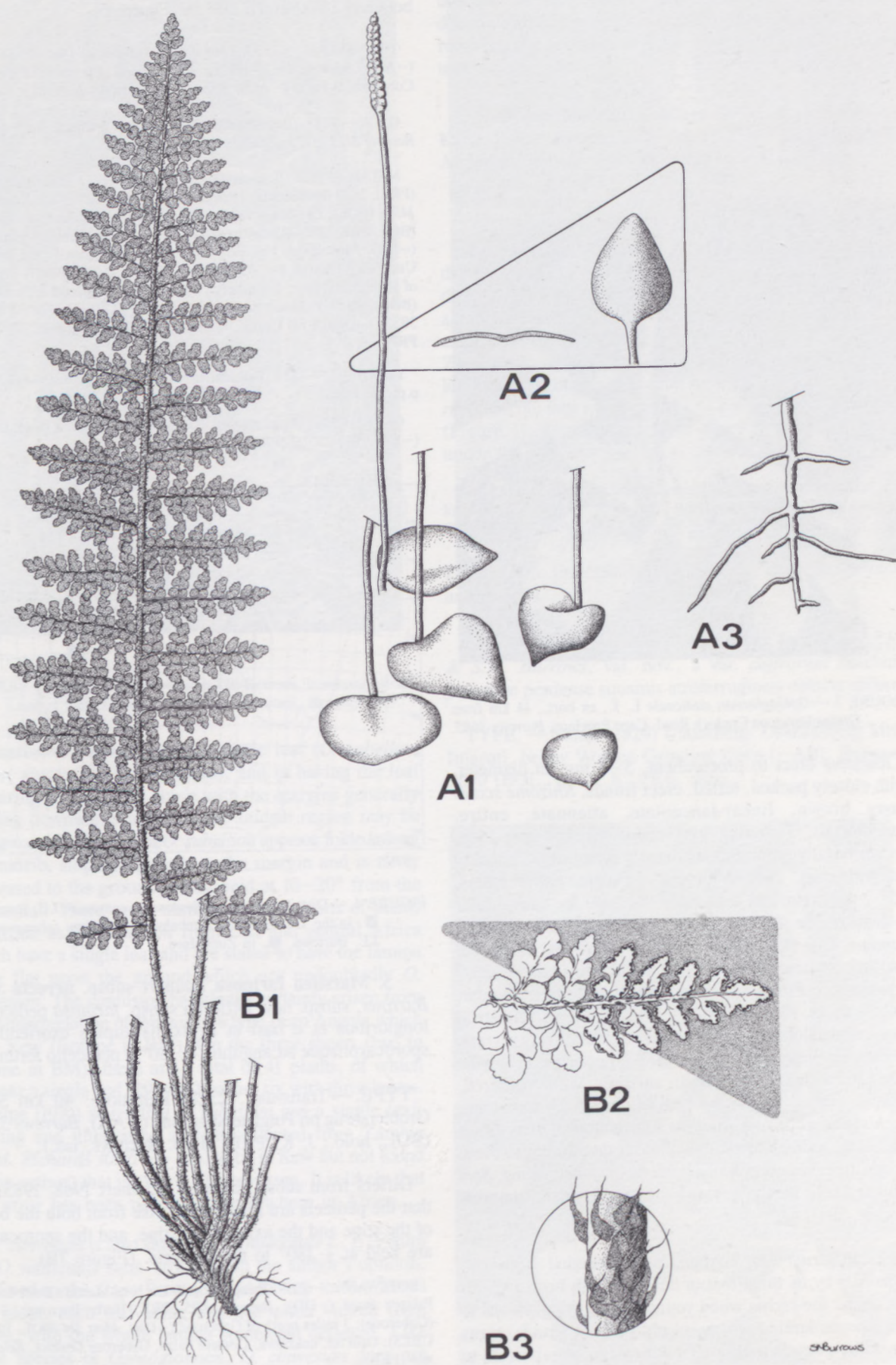


FIGURE 5.—*Ophioglossum convexum*, Burrows 3683: A1, various aspects of plants, $\times 1,5$; A2, sterile lamina, view from above and cross-section, $\times 1,5$; A3, rhizome, $\times 1,5$. *Mohria caffrorum* var. *ferruginea*, Burrows 3677: B1, plant, $\times 0,7$; B2, pinna, $\times 1,5$; B3, rachis, $\times 3,5$.

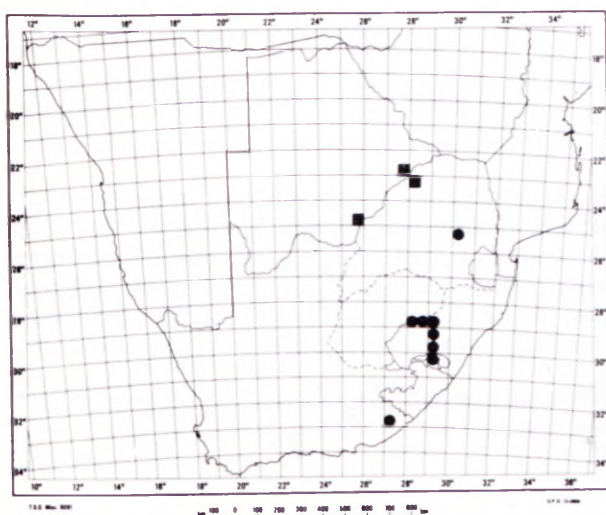


FIGURE 6. — Distribution of *Mohria caffrorum* var. *ferruginea* J.E. & S.M. Burrows, ●, in southern Africa; *Marsilea farinosa* subsp. *arrecta* J.E. Burrows, ■.

Hymenophyllum ciliatum Swartz var. *splendidum* (V.d. Bosch) C. Chr.: 368 (1906). *Sphaerocionium splendidum* (V.d. Bosch) Copeland: 31 (1938).

Hymenophyllum plumieri Hooker & Grev.: t. 123 (1829).

Icon: Tardieu-Blot: pl. IX (1964).

Whereas material recently collected by the author in both Zimbabwe and Malawi is certainly *H. splendidum*, a collection from Gúruè in Mozambique, Torre & Correia 16899 (COI, EA, LISC, LMU, SRGH) has been determined as *H. hirsutum* (L.) Swartz. Examination of the specimen in SRGH revealed a few stellate hairs on the lamina as well as the margins and veins, making it likely that it too, is *H. splendidum*, although the ranges of the two species overlap through much of tropical Africa.

MALAWI. —1535: Mount Mulanje, below Lichenya Hut, 1 820 m, Burrows 3746 (PRE, Herb. Burrows).

ZIMBABWE. —1832: Nyanga, eastern slopes of Mt Inyangani, 2 040 m, Burrows 2936 (BOL, SRGH, Herb. Burrows), 3698 (PRE, Herb. Burrows).

Distribution: Cameroon, Equatorial Guinea, Bioko, São Tomé & Príncipe, Gabon, Zaïre, Rwanda, Burundi, Kenya and Tanzania.

7. *Vittaria ensiformis* Swartz in Gesellschaft naturforschender Freunde zu Berlin, Neue Schriften 2: 134, t. 7, fig. 1 (1799). Type: Mauritius, Sonnerat s.n. (P).

Oetosis ensiformis (Swartz) Greene: 103 (1900).

Vittaria plantaginea Bory: 325 (1804). Type: Mascarene Islands.

Icon: Holttum: fig. 359 (1966).

V. ensiformis differs from the superficially similar *V. isoetifolia* in having broader fronds that arch out from the vertical substrate on which it grows, rather than hanging straight down, as does *V. isoetifolia*. In addition, *V. isoetifolia* has very distinctive rhizome scales with thickened cell walls and margins that bear strong, thorn-like projections, both of which are absent in *V. ensiformis*. It has been recorded growing as a low-level epiphyte on the boles of old trees in tall, semi-deciduous *Newtonia buchananii*–*Millettia stuhlmannii* forest, near perennial rivers, at an altitude of $\pm$ 360 m.

ZIMBABWE. —1932: Chimanimani District, Ngorima T.T.L., west bank of the Haroni R., Grid Ref. 016864, Burrows 2737 (BOL, SRGH, Herb. Burrows); Chimanimani National Park, Mukurapini R., Burrows 2792 (BOL, Herb. Burrows).

8. *Actiniopteris semiflabellata* Pichi-Sermolli in Webbia 17: 24 (1962). Type: Ethiopia, Tertale, Pozzi di El Banno, Corradi 26 (Herb. Pichi-Sermolli, holo.; FI, iso.).

Icones: Pichi-Sermolli: fig. 4 (1962); Lawalree: pl. 1 (1969).

A plant of this fern was first collected by M. Müller of the Windhoek Herbarium in the Naukluft Mountains in 1979 and determined as *A. radiata* (Swartz) Link. Upon closer examination, it became apparent that the collection was *A. semiflabellata*, based upon the homomorphic fronds (although the fertile fronds are somewhat larger than the sterile fronds), the two types of rhizome scales (one concolorous, the other with a dark central stripe) and, most characteristically, the dried fronds which are only slightly inclined to one side, whereas in the other three African species the fan of the dried frond is bent at 90° or more from the vertical.

A. semiflabellata has, up to now, only been recorded as far south as Tanzania, Burundi and Zaïre, extending northwards to north Africa and south Asia. This find in such an isolated situation, therefore, represents an interesting and puzzling extension for the species, although the arid habitat of the Naukluft Mountains is very similar to that in which it occurs throughout much of its range.

NAMIBIA. —2416 (Maltahöhe): Naukluft, Farm Zais, on south-facing cliffs on border of farm Blässkranz, 1 400 m, (–AA), Burrows 3737 (J, PRE, Herb. Burrows); M. Müller 995 (WIND).

Distribution: Tanzania, Burundi, Rwanda, Zaïre, Cameroon, Nigeria, Uganda, Kenya, Sudan, Somalia, Ethiopia, Egypt, Saudi Arabia, Yemen, Socotra, Nepal, Réunion, Mauritius and Madagascar.

9. *Grammitis rigescens* (Bory ex Willd.) J.E. Burrows, comb. nov.

Polypodium rigescens Bory ex Willd. in Species plantarum 4: 183 (1810). *Ctenopteris rigescens* (Bory ex Willd.) J. Sm.: 184 (1875). *Xiphopteris rigescens* (Bory ex Willd.) Alston: 26 (1956). Type: Réunion, Bory de St. Vincent s.n., in Herb. Willdenow no. 19668 (B, holo.; FI, P, iso.).

Grammitis flabelliformis sensu Morton: 57 (1967). *Xiphopteris flabelliformis* sensu Schelpe: 217 (1967).

Pichi-Sermolli (1983) has clearly shown that, in terms of Art. 8 of the Code of Botanical Nomenclature, Morton's application of the name *Grammitis flabelliformis* (Poir.) Morton (loc. cit.) is unacceptable, and that the plants from Réunion belong to *Polypodium rigescens*, described by Willdenow in 1810, while Poiret's *Polypodium flabelliforme* applies to the central American taxon.

In accordance with current generic concepts in Grammitidaceae (Morton 1967; Proctor 1985; Stolze 1981), the recognition of *Xiphopteris* at generic level is not upheld, particularly in view of the poor value of degree of lamina dissection as a distinguishing criterion.

10. *Asplenium buettneri* Hieron. ex Brause in Wissenschaftliche Ergebnisse der Deutschen Zentral-

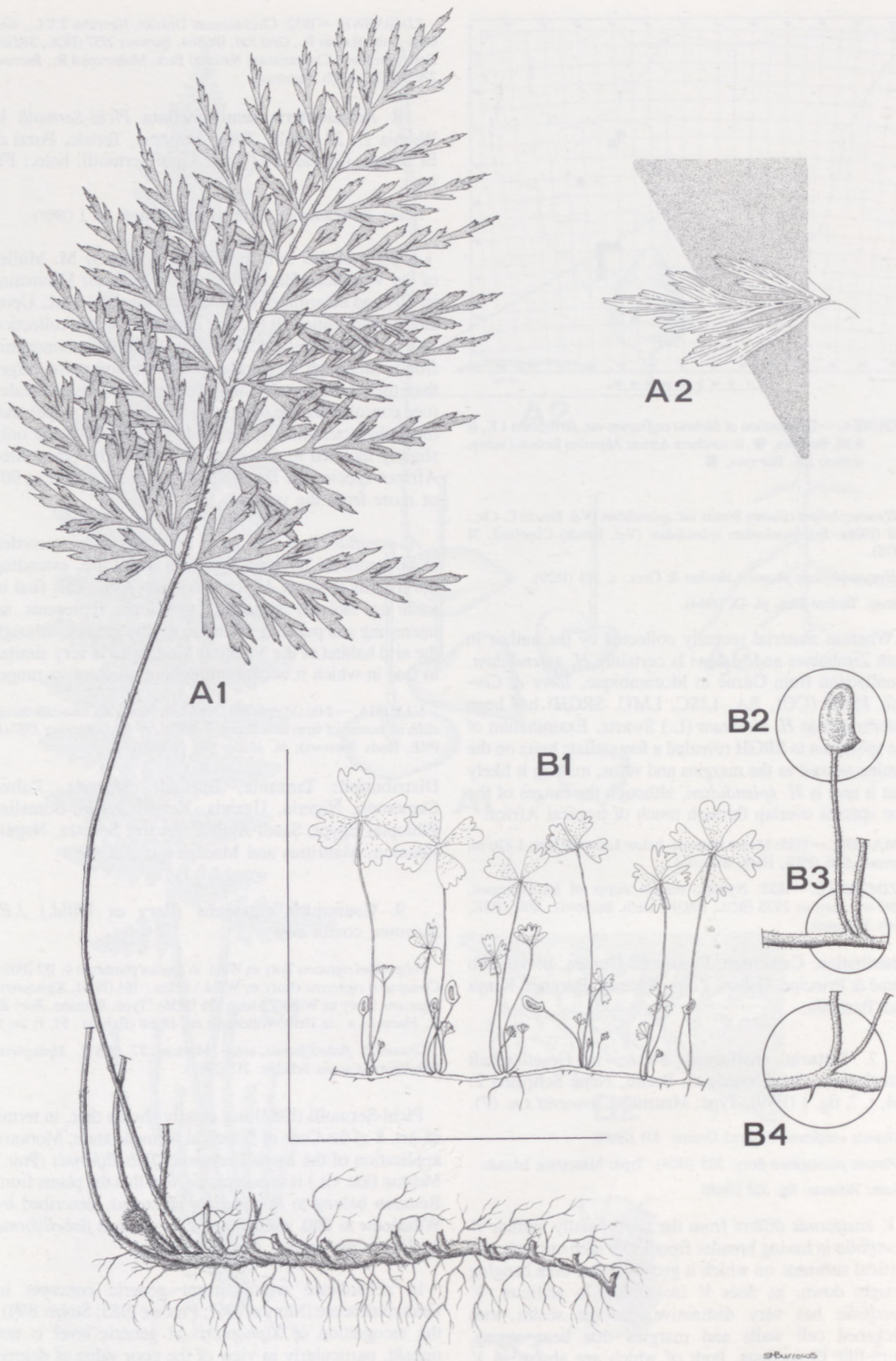


FIGURE 7.—*Asplenium seburgweense*, Burrows 3026: A1, frond and rhizome, $\times 0.6$; A2, pinnule, $\times 1$. *Marsilea farinosa* subsp. *arrecta*, Burrows 3597: B1, plant, $\times 0.6$; B2, sporocarp, $\times 2$; B3, B4, points of pedicel attachment, $\times 2$.

Afrika-Expedition 1907–1908 2: 23, t.2, fig. 2 (1910). Type: Togo, Misahöhe, *Baumann* 42 (B, lecto.; P).

Asplenium parablaspophorum Braithwaite: 5 (1972). Type: Zimbabwe, Chimanimani Mts, *Mitchell* 391 (BOL, holo.; SRGH, iso.).

Icones: Tardieu-Blot: pl. XXXIII (1964); Jacobsen: fig. 270 (1983).

In the course of examining material of *Asplenium* from south and central Africa, it became obvious that *A. parablaspophorum* Braithwaite from south-eastern Zimbabwe was identical to *A. buettneri* Hieron. from neighbouring Mozambique and tropical Africa, and accordingly the former is hereby sunk into *A. buettneri*.

Distribution: Ghana, Togo, Nigeria, Gabon, Cameroon, Zaïre, Tanzania, Zambia, Malawi, Mozambique and Zimbabwe.

11. *Asplenium sebungweense* J.E. Burrows, sp. nov.

Rhizoma repens, $\pm$ 5 mm diametro, frondibus 4–10 mm distantibus, interdum aspectu caespitosis. *Squamae rhizomae* 2,5–4 mm longae, atrobrunneae lineari-lanceolatae clathratae subintegrae; apex arista longa. *Stipes* laminam aequans vel eo longiore, ad 260 mm longus, castaneus vel fere ater, squamis atrobrunneis clathratis lineari-lanceolatis ad 2 mm longis modice obtectus, glabrescens. *Lamina* 150–250 $\times$ 100–140 mm, ovati-triangularis, bipinnata vel profunde tripinnatifida, pinnae basales longissimae. *Pinnae* ovatae vel triangulares. *Pinnulae* obcuneatae vel oblanceolatae, 4–14 mm latae, pinnulae proximales profunde pinnatifidae; margines distales profunde irregulariterque serrati et incisi, atrovirides, pagina supra glabra, pagina infera pallidior et glabra distali aliquot squamis nigris capillaceis ad 1 mm longis basim pinnularum proximis et secus rhachides secundarias; nervatura flabellata, prominens in superficiebus ambabus frondis. *Rachis* proximali ater, distali viridescens, squamis et pilis dispersis nigrescentibus obtectus. *Sori* numerosi, lineares, secus venas positae; indusium lineare, integrum, 3–9 $\times$ 0,2 mm.

TYPE. — Zimbabwe, tributary of Busi River, 12 km NE of Lusulu, Grid Ref. NL. 976095, *Craig, Mahlangu & Burrows* 8 (PRE, holo.; Sengwa Herb., iso.).

Rhizome creeping, $\pm$ 5 mm in diameter, with fronds spaced 4–10 mm apart, sometimes appearing tufted. *Rhizome scales* 2,5–4 mm long, dark brown, linear-lanceolate, clathrate, subentire, with a long hair-tip. *Stipe* up to 260 mm long, as long or longer than the lamina, castaneous to almost black, lightly set with dark brown, clathrate, linear-lanceolate scales up to 2 mm long, glabrescent. *Lamina* 150–250 $\times$ 100–140 mm, ovate-triangular in outline, 2-pinnate to deeply 3-pinnatifid, with the basal pair of pinnae longer than those above. *Pinnae* ovate to triangular. *Pinnules* obcuneate to oblanceolate, 4–14 mm broad, becoming deeply pinnatifid proximally, apical margins deeply and irregularly serrate and incised, dark green, glabrous above, paler below and glabrous distally with scattered black, hair-like scales up to 1 mm long near the pinnule bases and along the secondary rachises, venation flabellate, prominent on both surfaces. *Rachis* black proximally, becoming matt-green distally, set with scattered, blackish scales and hairs. *Sori* numerous, linear, set along the veins; indusium linear, entire, 3–9 $\times$ 0,2 mm (Figure 7A).

A. sebungweense is closely allied to *A. aethiopicum* but is distinguished from the latter by the ovate-triangular frond, the relatively longer stipe and the thinner and more widely creeping rhizome. It occurs at altitudes of between 850 and 1 120 m, in hot and dry, deciduous woodland where it finds a degree of protection in deep ravines in the sandstone mantle that covers much of north-western Zimbabwe (Figure 4). *A. aethiopicum* is not found in this area and the two species are not known to overlap. *A. sebungweense* is remarkably constant morphologically compared to the highly variable *A. aethiopicum*.

ZIMBABWE. — 1828 (Kamativi): Gokwe District, Charama Plateau, near Sai turn-off (–AB), *Burrows* 3026 (Herb. Burrows); Sengwa Wildlife Research Institute, Kove River Gorge (–AA), *Burrows* 2604 (Herb. Burrows).

ZAMBIA. — 1324: North West Province, Kabompo Gorge, *Leach & Williamson* 13469 (PRE).

12. *Asplenium uhligii* Hieron. in *Botanische Jahrbücher* 46: 374 (1912). Type: Tanzania, Kilimanjaro, *Uhlig* 116 (B, holo.; P, iso.).

Icon: Tardieu-Blot: pl. XXVII, fig. 4 (1964).

A. uhligii is a high altitude fern occurring in deeply shaded recesses among boulders, growing in mats of *Hymenophyllum tunbridgense* (L.) Sm. together with *Grammitis rigescens* (Bory ex Willd.) J.E. Burrows. Although smaller than the typical form from central Africa, the thin, creeping rhizome and the short, ovate, shiny brown rhizome scales which lack any central cell wall thickening, are consistent and distinguish it from the superficially similar *A. aethiopicum* (Burm. f.) Becherer and *A. linckii* Kuhn.

MALAWI. — 1535: Mount Mulanje, Sapitwa, 2 600 m, *Burrows* 3758 (Herb. Burrows); *Wild* 6200 (BOL, SRGH!).

ZIMBABWE. — 1832: Nyanga District, Mount Inyangani, 2 560 m, *Burrows* 2086 (Herb. Burrows).

Distribution: Togo, Nigeria, Cameroon, Zaïre, Uganda, Kenya and Tanzania.

13. *Thelypteris oppositifomis* (C. Chr.) Ching in *Bulletin of the Fan Memorial Institute of Biology*, Botany 10: 253 (1941). Type: Madagascar, *Perrier* 7582 (P, holo.).

Dryopteris oppositifomis C. Chr. in Bonap.: 173 (1925).

Amauropelta oppositifomis (C. Chr.) Holtt.: 135 (1974).

Dryopteris tsaratananensis C. Chr.: 45 (1932). *Thelypteris tsaratananensis* (C. Chr.) Ching: 255 (1941). Type: Madagascar, Mt Tsaratanana, *Perrier* 16455 (P, holo.).

Thelypteris strigosa sensu Schelpe: 193 (1970).

TRANSVAAL. — 2530 (Lydenburg): Die Berg, between Roosenekal and Lydenburg (–AA), 2 200 mm, *Burrows* 3709 (PRE, Herb. Burrows).

Distribution: Zimbabwe, Malawi, Tanzania, Uganda, Kenya, Ethiopia, Sudan, Cameroon, Nigeria.

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