South African Species of Acacia with Glandular Glutinous Pods.

By

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During a recent survey of the Kruger National Park a species of *Acacia* was observed which is a common constituent of the vegetation in parts around Skukuza and Malelane. The endeavour to identify this Acacia led to a study of the group of species with glutinous or glandular pods, for its affinities were obviously with that group. It was found that it did not exactly match any of the existing species, and is therefore being described here for the first time and named *A. exuvialis* because of the peeling skin on the stem and branches.

At the time of this investigation the group as found in South Africa was comprised of four species and one variety. It became obvious, from this study, that as Burtt Davy suspected, his variety (*A. permixta* var. *glabra*) is as distinct as any of the species and is therefore here raised to specific rank and named *Acacia tenuispina*, because of its generally known common name " Fyndoring ", meaning " slender spines."

It was also found that *A. rogersii* Burtt Davy from the northern Transvaal, north of the Zoutpansberg range, could not be upheld as distinct from *A. nebrownii* Burtt Davy, which was the new name given by Burtt Davy in the Kew Bulletin, 1921, for the S.W. African species *A. glandulifera* Schinz non Wats. Burtt Davy had only one specimen from Messina when he described *A. rogersii* and since then it has been collected repeatedly along the Limpopo River and in low-lying sites in dry bush country in the Messina and Dongola areas.

It is characterised in this group of species by the involucel being at the base of the peduncle and the leaves usually having only one pair of pinnae. Dr. L. E. Codd, Botanical Survey Officer, who knows the plant at Dongola, came across what seemed to him to be the same species when recently he travelled in S.W. Africa around Gobabis and southwards. On examination his specimens were also found to have the involucel at the base of the peduncle and the leaves with one pair of pinnae. In general his specimens compared very well with the Transvaal specimens. They also compared well with other collections from S.W. Africa, including three, Pearson 9256, 9814 and 8945, quoted by Burtt Davy under *A. nebrownii* in the Kew Bulletin, 1921.

It still remained to compare it with the type of the species. *Acacia nebrownii* being a new name for *A. glandulifera* Shinz (which name is antidated by *A. glandulifera* Wats.), the type must be one of the two S.W. African specimens on which Schinz based his species, Fleck 484a (flowering twig) from great Namaqualand, or Fleck 480a (fruiting twig) from Tsoaxaub, Hereroland. These specimens are in the Herbarium at Zurich. A member of our staff, Miss P. Kies, who had the opportunity of visiting Zurich, kindly examined these specimens and reported that they both had the distinguishing characters of the involucel and pinnae common to the other material.

The general description of the Zurich material also agrees well with the S.W. African and Dongola specimens already examined. It therefore appears that *Acacia rogersii* Burtt Davy cannot be upheld and must be sunk under *Acacia nebrownii* Burtt Davy.

Further study of the group confirmed Burtt Davy's decision to separate the rest of the South African material from *A. nebrownii*. He had at first (Kew Bull. 1921) cited specimens from Potgietersrust, Leydsdorp and Swaziland under this species, but in the Kew Bulletin 1922, he described *A. permixta* and its variety to include those

from the first locality and *A. swazica* those from the last mentioned. He did not account for the specimen from Leydsdorp which is unknown to us, but from the locality it is very unlikely that it is *A. nebrownii*.

The following key and the short account of each species given below summarises the present concept of the group in South Africa.

Mature pods torulose much curved, glutinous but glands not conspicuous:
- Leaflets glandular-punctate with distinct glands usually on lower surface and on margins (giving margins a crenate appearance), average leaflet under 3 mm. long, rarely longer..... 1. *A. borleae.*
- Leaflets not glandular-puntate with distinct glands, on the average larger than in above species, 5 mm. long or longer; skin peeling to a marked degree on stem and branches..... 2. *A. exuvialis.*

Mature pods flat only slightly curved, usually with numerous conspicuous, raised glands:
- Branchlets and leaf-rachis pubescent with long hairs, branchlets densely so..... 3. *A. permixta.*
- Branchlets and leaf-rachis glabrous or nearly so:
  - Involucel at or near base of peduncle; shrubs up to 8 ft., forming thickets; pods 8–10 mm. broad, leaves usually 1-jugate, sometimes 2-jugate..... 4. *A. nebrownii.*
  - Involucel midway on peduncle or higher:
    - Stoloniferous shrubs usually 2–4 ft. tall, sometimes 6 ft. tall, forming colonies in turfy ground; pods linear, 5–7 mm. broad; leaves 3–6-jugate; leaflets 6–8 pairs, about 3–4 mm. long, 1·5 mm. broad, veins not conspicuous..... 5. *A. tenuispina.*
    - Small trees 6–8 ft. tall, pods oblong, usually over 7 mm. broad (more or less 1 cm. broad); leaves 1–2-jugate, rarely more; leaflets 3–6 pairs (or more), usually over 5 mm. and up to 10 mm. long, veins usually conspicuous..... 6. *A. swazica.*

1. **A. borleae** Burtt Davy in Kew Bull. 1922 (=*A. barbertonensis* Schweickerdt in Kew Bull. 1937).

FIG. 1.

Slender, gregarious trees or shrubs from 3–8 ft. tall, branching from near the base with slender ascending branches; obviously glutinous in parts, especially the long (up to 7 cm. by 3 mm.), much curved torulose pods. The leaves have up to six, rarely more, pairs of pinnae which are short, more or less 2·5 cm. long and the leaflets very small, about 2 mm. long. On the lower surface and margins of the leaflets are comparatively large glands, those on the margins giving a crenate appearance to the leaflet. As in other species of the group the straight, slender, white spines are a feature and the flowers are borne in small yellow, globose heads on axillary, slender peduncles more or less as long as the leaves. In this species the involucel is in the upper half of the peduncle.

A. borleae occurs in low-lying sites in dry bushveld country from northern Zululand to Portuguese East Africa and Central Swaziland, with two widely spaced records from the Kruger National Park, one in the south about 14 miles N.E. of the Pretorius Kop Camp, in mixed bush on greyish sandy flats, and the other near Punda Maria in the extreme north of the Park.

2. **A. exuvialis** sp. nov. ab *A. borleae* foliolis marjoribus sine glandulis distinctis et ab *A. swazicae* leguminibus subtorulosis valde curvatis differt. *Arbor* parva, nonnunquam suffruticosa, caulibus ramisque gracilibus glutinosis cuticulis exutis. *Spinae* stipulares valde evolutae, strictae, albidae. *Folia* bipinnata usque ad 7 cm. longa; pinnae 1–6 jugatae, usque ad 3 cm. longae; foliola 3–6-juga, 3·5–7 mm. longa 2–3 mm. lata, mucronata, nerviis inconspicuis. *Inflorescentia* axillaris, capitata; pedunculi usque ad 3 cm. longi, supra medium involucrati. *Flores* lutei. *Calyx* 1·75 mm. longus, extus glaber, 5 lobatus; lobis dorso glandulosis. *Corollae* tubus 2·5 mm. longus, 5 lobatus; lobi 0·75 mm. longi, subacuti, recurvati. *Stamina* lutea, e tubo 2 mm. exserta. *Legumen* stipitatum, maturum valde curvatum, leviter torulosum, subplanum, usque ad 5 cm. longum, distincte venosum.

FIG. 2.

TRANSVAAL.—Nelspruit district: 16m. W. of Skukuza, *Codd* and *Verdoorn* 5464 (fruiting specimen) Type !; 4 m. W. of Skukuza *Codd* and *Verdoorn* 5467; 9½ miles S. of Skukuza, *Codd* and *Verdoorn* 5502; north banks Sabi River at Skukuza, *Letty* 30; near Malelane Camp, *Codd* 4359. Pilgrims Rest district: 7½ m. S. Olifants Bridge, *Codd* 1666. Zoutpansberg district: 3 m. N.W. of Shingwedzi Camp, *Codd* and *de Winter* 5569; 3½ m. N.W. of Shingwedzi *Codd* and *de Winter* 5568.

Characteristically this is a slender *tree* up to 15 ft. tall, the slender ascending branches becoming more and more branched towards the top, broomlike, and frequently seem too heavy for the slender stem, the whole tree eventually falling over. It also occurs in a *shrubby form* up to 8 ft. tall. The stems and branches are shiny glutinous in parts and the thin skin peels off in strips or flakes which roll backwards.

The stipular spines are long, straight and ivory white, the leaves 1–6 pinnate and the *leaflets* usually in 3 to 6 pairs. The leaflets are from 3·5–7 mm. long and 2–3 mm. broad, varying in shape from ovate oblong to obovate oblong, midrib oblique, apex obtuse or subobtuse, mucronate, the surfaces are microscopically grandular with minute immersed glands and rarely a few scattered stalked glands. The rachis is slender, flattened and slightly sulcate above and bears a prominent gland between the pinnae, it is terminated by a 1–4 mm. long very acute bract. The flower heads are yellow, axillary on slender peduncles up to 3 cm. long, bearing a pair of perfoliate involucral bracts about midway or higher up. In this character it is distinguished from *A. nebrownii*, which has the involucral bracts at or near the base of the peduncle.

The mature pods distinguish *A. exuvialis* from *A. nebronwii*, *A. swazica* and *A. tenuispina* in that they are somewhat torulose and strongly curved, without obvious glands on the surface while the others are flatter, only slightly curved with numerous raised glands quite obvious on the flat surfaces.

In respect of pods the species described here resembles more nearly *A. borleae* which also has torulose strongly curved pods, but they are longer than in our species, up to 7 cm. long. The smaller leaflets with large glands, especially dorsally and on the margins, giving a crenate effect, also help to distinguish *A. borleae*.

A. exuvialis is seen quite frequently in the Kruger National Park. In the southern part of the Park it occurs plentifully around Skukuza and Malelane in deciduous low-veld woodland on gritty, granitic slopes. Here it is characteristically a slender tree but in the northern part of the Park a shrubby form is found along the road from the Olifants to the Shingwedzi Rivers, growing in open Mopane veld. Here the plants grow in many-stemmed groups from 6–8 feet tall but, except for having more than one stem, they agree in all other respects with the typical plant described above.

3. **A. permixta** Burtt Davy in Kew Bull. 1922.

FIG. 3.

Small trees with a few weakly ascending branches which give it the popular name of " slap doring." It is distinguished in the group by having branches thickly covered with a long, whitish hairy pubescence. Like the related species it is generously provided with straight, rather long white spines and the leaves are short with only 2–4 pairs of short (1·5–2 cm. long) pinnae and up to 8 pairs of leaflets, which are about 3–5 mm. long with a distinct mucro. The petiole and rhachides are thinly hairy, and in this respect, and the leaflets often being ciliate, it also differs from the other species in this group. The inflorescence is globose, yellow, on axillary peduncles more or less as long as the leaves and with the involucel midway or higher on the peduncle. The pods are very flat and slightly curved, up to 4 cm. long and 1·4 cm. broad with sparsely scattered raised glands and prominent veins on the flat surfaces.

This species is found usually on sandy or gritty slopes derived from granite formations, chiefly along the edges of the Pietersburg plateau, where open grassland gives way to scattered thorn scrub. Here it is showing signs of spreading on overgrazed veld and is looked upon as a potential weed. Records of the species are noted from the Brits district and Sibasa area of the Zoutpansberg, both on weathered granite.

4. **A. nebrownii** Burtt Davy in Kew Bull. 1921 (=*A. glandulifera* Schinz non Wats. and *A. rogersii* Burtt Davy).

FIG. 4.

The slender free branching habit of this species and its gregarious nature result in the production of dense thickets up to 8 ft. high. It is distinguished in the group by the involucel being at or near the base of the peduncle. For the rest, except that the peduncles are usually shorter than in the other species and the leaves rarely with more than one pair of pinnae, it is typical of this group. It was indeed the first of these species to be described.

In the Transvaal *A. nebrownii* has been found only north of the Zoutpansberg, records being mainly from the Salt Pan and along the Limpopo River in the Messina-Dongola area. In S.W.A. it is quite widely spread and has been recorded from Bechuanaland. It grows characteristically in low-lying sites in dry bush country usually where silty soil has accumulated, as at watercourses.

5. **Acacia tenuispina** sp. nov. stat. nov. =*A. permixta* var. *glabra* Burtt Davy in Kew Bull. 1922, p. 330.

FIG. 5.

TRANSVAAL.—Waterberg district: Naboomspruit, *Galpin* 475m. (type); 541 m. Potgietersrust district: farm Keron, *Galpin* 11597; nr. Villa Nora *Acocks* 8819; farm Somerset Estate, *Pole Evans* 3523. Pretoria district: Pretoria North, *Smith* 6170.

When describing the above variety Burtt Davy wrote: " This may prove to be a distinct species when more complete material is available." Our present knowledge of the glandular-pod species of Acacia shows that this plant is as distinct from *A. permixta* as are any of the other species in the group. The specific epithet was suggested by the generally used common name " Fyn doring " describing the slender thorns with which the plants bristle. The species is characterised by its stoloniferous habit forming large clumps or colonies, usually in turfy ground. It is usually low growing, 2–3 ft. high, but may grow taller, up to 6 ft., according to some records. Besides the differences of the glabrous branches and narrower pods, this growth habit clearly distinguishes it from *A. permixta* which occurs as a small tree about 6 ft. tall. In some respects it is nearer *A. nebrownii* and *A. swazica* but can be distinguished from both in the smaller leaflets and narrower pods. From *A. nebrownii* it also differs in having the involucel about midway on the peduncle and not at or near the base, as in the former. *A. exuvialis* is easily distinguished from it by the habit, being a slender tree, and by the torulose much curved pods, those of *A. tenuispina* being linear and only slightly curved.

6. **A. swazica** Burtt Davy in Kew Bull. 1922.

FIG. 6.

Small trees, rather stout as compared with the others in this group, with short ascending branches. It is distributed mainly in the Barberton and Nelspruit districts, where it grows in dry, bush-covered slopes and hillsides, usually in rocky situations. Specimens from Swaziland are easily distinguished by the leaflets being larger than in the other species, up to 1 cm. long, and with conspicuous veins. From further north, however, where the distribution overlaps with that of *A. exuvialis* as it does near Malelane, the leaflets are not quite so large and the veins often not conspicuous. It is, however, distinguished from *A. exuvialis* in the pods being flat, up to 1 cm. broad, somewhat curved and with scattered raised glands on the flat surfaces, as against the much curved, sub-torulose pods, without raised glands of *A. exuvialis*.

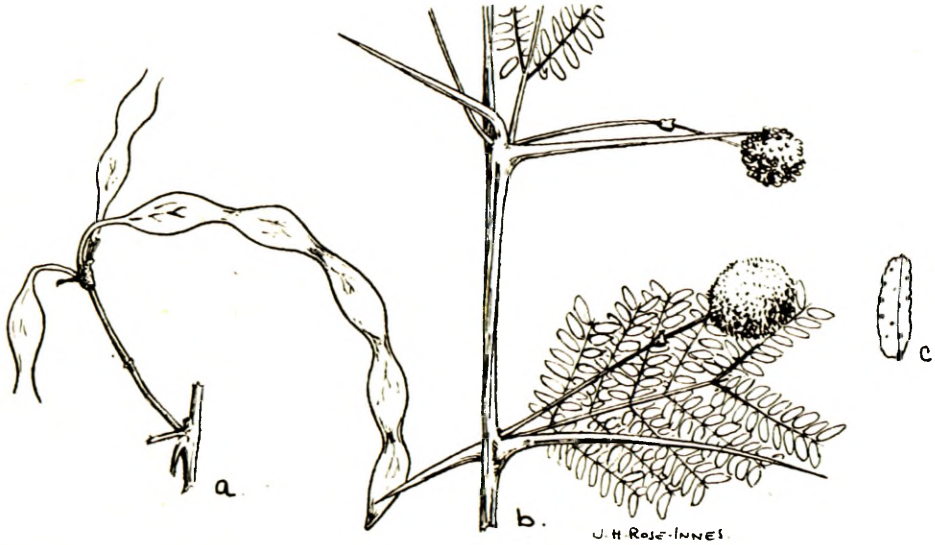


FIG. 1.—*Acacia borleae* Burtt Davy: *a*, fruiting inflorescence; *b*, portion of flowering twig; *c*, leaflet, × 3.

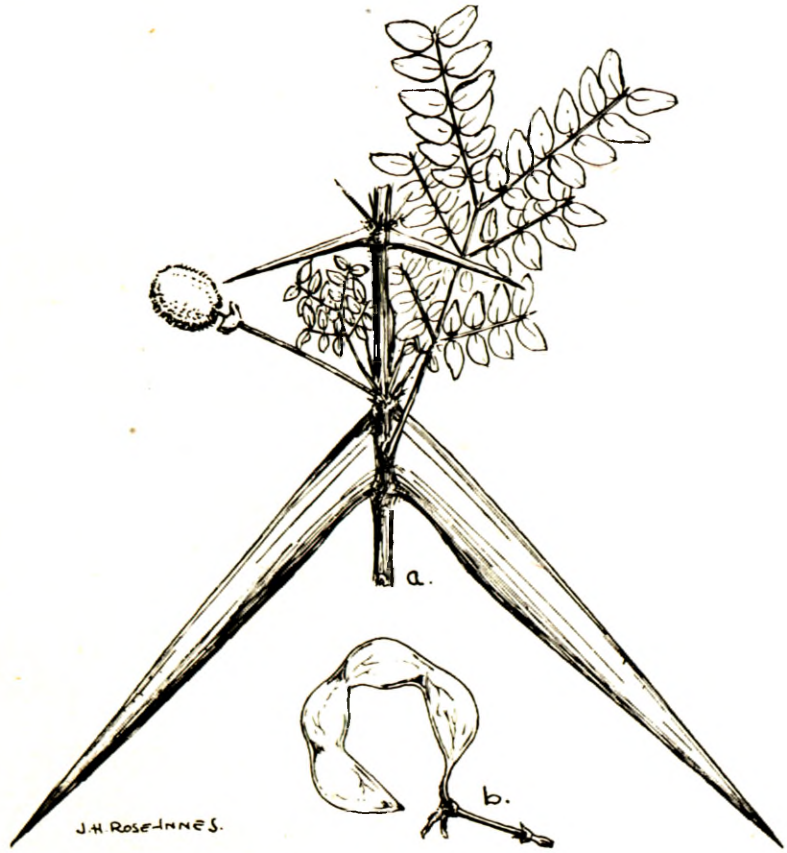


FIG. 2.—*Acacia exuvialis* Verdoorn: *a*, portion of flowering twig; *b*, fruiting inflorescence.

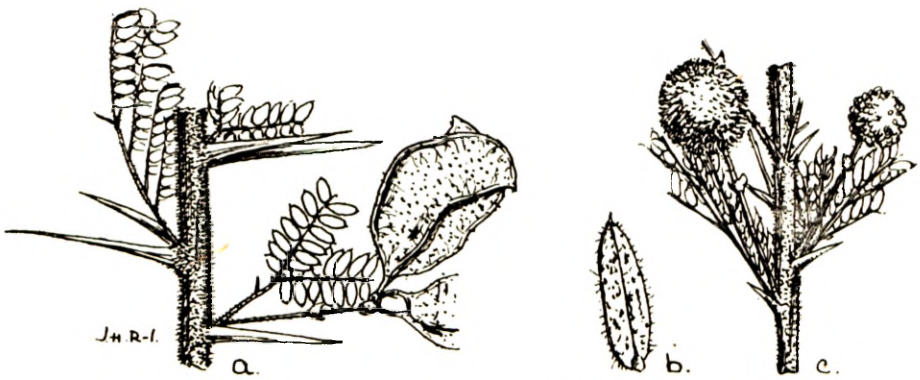


FIG. 3.—*Acacia permixta* Burtt Davy: *a*, portion of fruiting twig; *b*, leaflet, × 5; *c*, portion of flowering twig.

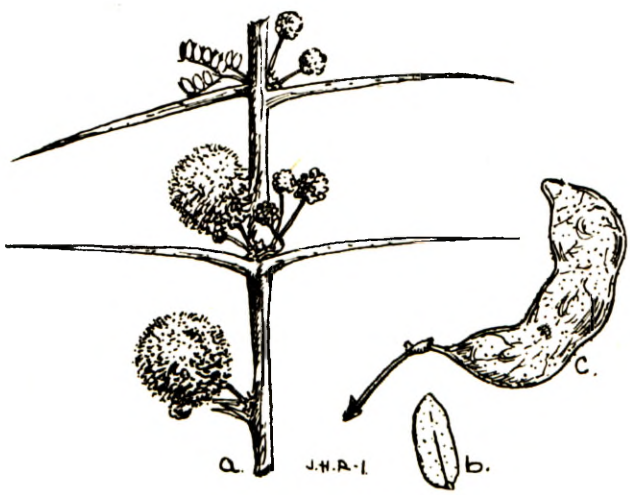


FIG. 4.—*Acacia nebrownii* Burtt Davy: *a*, portion of flowering twig; *b*, leaflet, × 3; *c*, portion of fruiting inflorescence.

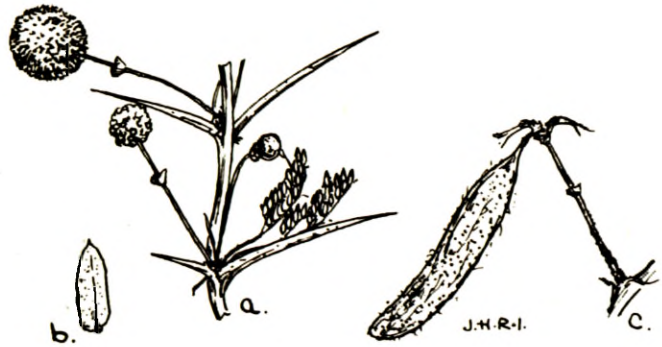


FIG. 5.—*Acacia tenuispina* Verdoorn: *a*, portion of flowering twig; *b*, leaflet, × 3; *c*, portion of fruiting inflorescence.

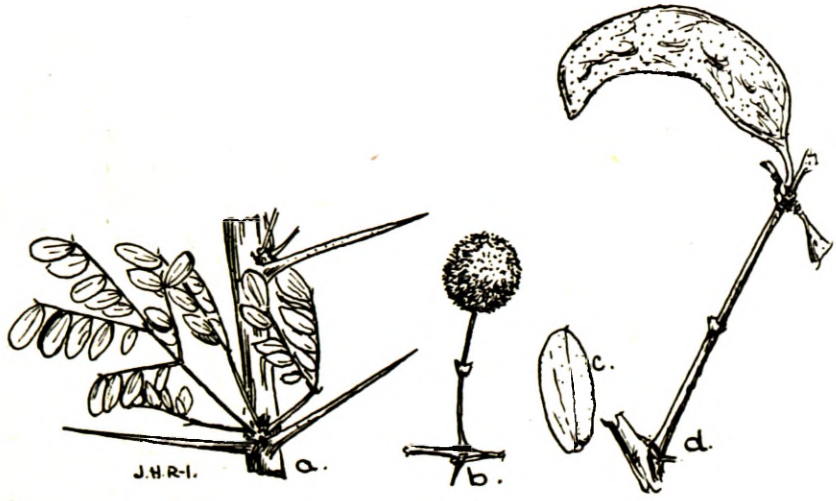
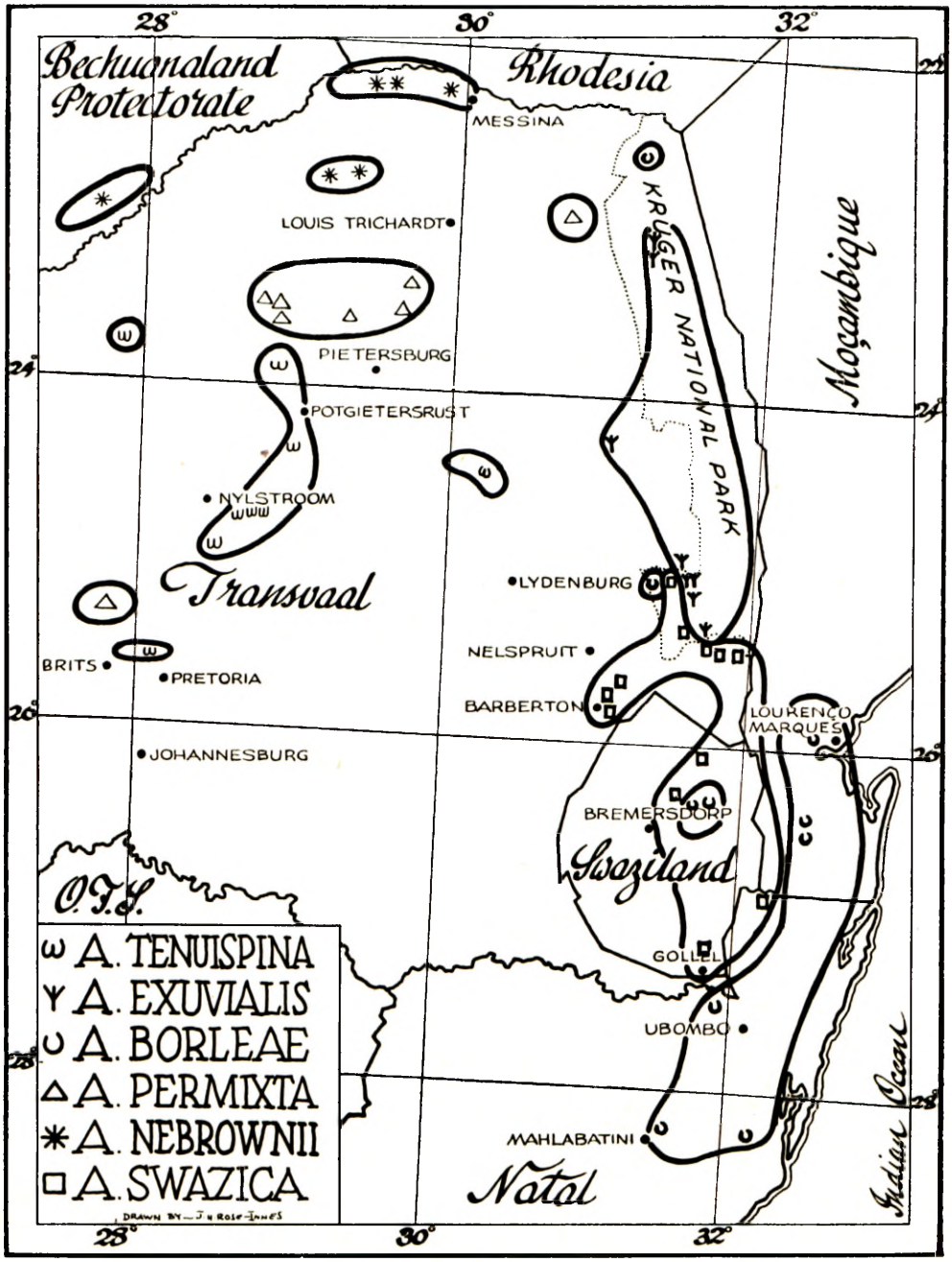


FIG. 6.—*Acacia swazica* Burtt Davy: *a*, portion of leafy twig; *b*, inflorescence; *c*, leaflet × 3; *d*, portion of fruiting twig.



Distribution Map. (*Drawn by J. H. Rose Innes*).