

Newly Described Species

By

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ASCLEPIADACEAE.

Ceropegia decidua E. A. Bruce, sp. nov. (Asclepiadaceae); affinis *C. caffroro* Schltr., sed foliis deciduis, tubo corollae intus basi tuberculato, corona exteriora cupuliforme columnam staminum multo superantia valde distincta.

Herba volubilis, usque 40 cm. longa, basi ramosa; ramis minutissime scabridulis basi 1.5 mm. diam., internodiis 1-4 cm. longis inferioribus brevioribus; tuber depressosphaericum, circiter 3 cm. diam. *Folia* decidua, oblongo-ovata, vel ovata, patentia, carnosiuscula, apice rotundata et apiculata vel abrupte et breviter acuminata, basi rotundata, 1-1.8 cm. longa, 0.4-1 cm. lata, margine et subtus basin versus pilis paucis albidis ornata; petiolus circiter 3 mm. longus. *Cymae* numerosae, 2-4 florum, breviter pedunculatae, e nodis lateraliter ortae, floribus succedaneis; pedunculus 4-10 mm. longus; pedicelli 3-4 mm. longi; bractae minutae, triangulares, vix 1 mm. longae. *Calyx* ad basin lobatus; lobi anguste lineari-lanceolati, 2-2.5 mm. longi, glabri. *Corolla* erecta, 2.2-2.5 cm. longa; tubus 1.6-1.9 cm. longus, basi 5-7 mm. ovoideo-inflatus, circiter 3.5 mm. diam., deinde 10-11 mm. cylindricus, 1.1 mm. diam., fauce vix ampliatus, extra glaber pallide viride-purpureus, intus basi tuberculatus, supra levis et parce pilosus; lobi 5-6 mm. longi, subspathulati, apice connati, basin versus leviter replicati, apice abrupte ampliati, margine pilis fuscis ornati. *Corona* exterior cupuliformis, circiter 1.5 mm. alta, lobis 5 latissime triangularibus 0.5 mm. longis basi 1 mm. latis apice subacutis vel emarginatis glabris columna staminum longioribus; lobi coronae interioris circiter 2 mm. longi, erecti, vel apicem versus leviter recurvo-patuli, spathulati, leviter compressi, glabri, columnam staminum multo superantes. *Folliculi* non visa.

TRANSVAAL.—Naboomspruit district, April, *Montgomery* s.n. (flower); Naboomspruit district, April, *Phillips* s.n. (flower); 3 miles south of Nylstroom on road to Warmbaths, Jan., and flowered in Pretoria, Aug., *Eric Codd* 47 (type); 22 miles north-east of Nylstroom on road to Naboomspruit, Jan., and flowered in Pretoria, Aug., *Eric Codd* 53 (flower).

PLATE I.

Ceropegia decidua was first discovered in April, 1947, by Mr. J. A. L. Montgomery, a keen collector of *Ceropegia*, who thought the plant might prove to be an undescribed species. The following year Mr. E. A. Phillips collected more material and a year later still further material was added by Eric Codd. All these plants were gathered in the Nylstroom-Naboomspruit area, though Mr. Phillips has since discovered the species 17 miles N.E. of Pretoria and three miles W. of Hammanskraal on the road to Zoutpan. The plant grows in open bush country in sandy soil, under the shade of trees, very often species of *Acacia*. An unusual characteristic of the species is that the slightly fleshy leaves are shed in early winter (May-June) before the flowers emerge, hence the specific epithet *decidua*. Mr. Phillips has made some observations on this point and states that the flowers appear occasionally in winter (July) but August seems to be its flowering period, going on till about October, the leaves appearing after August. Some of the specimens he has found have been erect and branching from the base, though he has also found twining specimens. It is possible that if no support is available the plant adapts itself to an erect habit. The inconspicuous grey-green flowers, unlike most other species of *Ceropegia*, are more prolific at the base of the stem, where they form small erect clusters, opening successively from ground level along the whole length of the stem.

In the shape of the corolla *C. decidua* is most closely allied to *C. caffrorum* Schltr., though the basal inflation in *C. decidua* is more ellipsoid and minutely tuberculate within, and the flowers are grey-green in colour not dark red-brown, as described by

Medley Wood in *C. caffrorum*. Other points of difference are the deciduous leaves and the deeper cup-like outer-corona, which far overtops the staminal column.

It is interesting to note that the enlarged apical portion of the corolla-lobe in *C. decidua* varies in shape, in some cases being transversely elliptic, the five apices forming a small canopy, whereas in other cases it is longer than broad, not, or scarcely forming, a canopy.

BURSERACEAE.

Commiphora neglecta *Verdoorn*, sp. nov. (Burseraceae); inter species austro-africana trifoliolata et spinescentes distincta, a *C. calcicola* Engl. foliis glabris majoribus a *C. betschuanica* drupis globosis haud acuminatis recedit.

Arbuscula vel arbor 8 m. alta nonnunquam suffrutescens. *Caules* virides vel grisei, squamis membranaceis solubili. *Ramuli* divaricati, extimi spinescentes, novelli cinereo-pubescentes. *Folia* viridia, trifoliolata; petiolus sparse pilosus, 0.5-4.5 cm. longus; foliola glabra, minute crenato-serrata (nonnunquam indistincte); medium late obovatum, 1-6 cm. longum et 0.7-3.5 cm. latum, apici breve acuminatum vel rotundatum, basi cuneatum, lateralia orbiculare-elliptica, 0.9-4 cm. longa, 0.5-2.5 cm. lata, apice basique breve acuminata. *Flores* unisexuales vel hermaphroditi, pedicellati, subfasciculati ramulis valde abbreviatis orti, hermaphroditi et feminei singulares, masculi in cymos dichasia evoluti. *Calycis* tubus 1 mm. longus; lobi 4, 1 mm. longi. *Petala* 4, libera, plus minus 3.5 mm. longa, 1.5 mm. lata. *Stamina* 8, 4 plus minus 3 mm. longa, 4 plus minus 1.5-2 mm. longa. *Ovarium* ovoideum, in stylum crassum acuminatum; stigma globosa. *Drupa* laevis, rubescens, subglobosa vel leviter compressa, 1 cm. diam., minute apiculata, pericarpio bivalvi; pyrena laevis, nigra, minute apiculata.

TRANSVAAL.—Waterberg, 21 miles N. of Nylstroom, *Codd* 4821, *Verdoorn* 2362; 3 miles N. of Nylstroom, *Smuts* and *Gillett* 3340; 10 miles N. of Ellisras *Codd* 1013; east of Oslo, *Codd* 4429, 3995, 4430; Kruger National Park, near Punda Maria, *Lang* in Transvaal Museum Herbarium 31083; 15 miles E. of Skukuza *Codd* and *Verdoorn* 5498 (Type fruiting specimen); *Codd* 4396; *Codd* and *de Winter* 5052; 9 miles SE. of Pretorius Kop, *Codd* and *de Winter* 5166.

MOZAMBIQUE.—*Hornby* 2836, Polana Beach, *Gerstner* 6658.

NATAL.—*Gerstner* 5025; False Bay, Hlabisa, *Gerstner* 6767; Mahlabatini, *Gerstner* 2222; Melmoth, *Acocks* 13004; Hluhluwe, Mangusi Forest, Forestry Herb. No. 5299; near Umgeni Dam, *Bayer* 729 and 730.

PLATE 2.

Small tree, sometimes up to 25 ft. tall, occasionally shrubby. *Stem* green (in some localities green at base only, grey above) bark peeling in thin membranous flakes. *Branches* divaricate the ultimate abbreviated and spine-tipped, at first ashy pubescent. *Leaves* spinach green, trifoliolate, varying in size; petiole sparsely pilose 0.5-4.5 cm. long; leaflets glabrous or with a few scattered hairs obscurely to distinctly, but finely, crenate-serrate on the margins, lateral veins about 4; the terminal leaflets broadly obovate, shortly apiculate or rounded at the apex, cuneate at the base, 1-6 cm. long and 0.7-3.5 cm. broad, the lateral sub-orbicular elliptic shortly acuminate at base and apex, 0.9-4 cm. long and 0.5-2.5 cm. broad. *Flowers* unisexual or hermaphrodite pedicelled and sub-fascicled on abbreviated shoots, the hermaphrodite and female singly and the male in stalked dichasial cymes. *Calyx* tube 1 mm. long, lobes 4, 1 mm. long. *Petals* 4, free about 3.5 mm. long, 1.5 mm. broad. *Stamens* 8, four about 3 mm. long and four about 1.5-2 mm. long (in female flowers aborted). *Ovary* ovoid narrowing into a short thick style and globose stigma (in male flowers aborted). *Drupe* smooth, green, turning scarlet when ripe, sub-globose or slightly compressed, about 1 cm. diam., minutely apiculate, 2-valved (and easily breaking into the two segments when ripe), seed smooth black with a minute white apicule, aril scarlet (bleaching with age), with 4 subterete claws running from the base to two-thirds up the seed.

The species described here differs in the particular combination of characters rather than in any outstanding characteristics. This may account for its not having been described before, in spite of its wide distribution in well-collected areas. In all the material seen so far the leaves are constantly trifoliolate and the branchlets spinescent. In these respects, among the South African species, it agrees with *C. calcicola* and *C. betschuanica* and can be distinguished as follows:—

Leaflets pubescent; small shrubs

C. calcicola.

Leaflets glabrous or rarely sparsely pubescent; trees sometimes shrubs:

Leaflets deeply crenate-serrate; drupes ovoid, acuminate

C. betschuanica.

Leaflets not deeply crenate serrate usually obscurely so; drupes globose

C. neglecta.

From the description of *C. rehmanni* Engl. it differs in that the leaves are always trifoliolate and not "trifoliolate and pinnately 5 foliolate on the same branch." Also the leaflets of our plant cannot be described as having the petiole and nerves of the leaflets grey pilose. The description does not mention whether the branchlets are spinescent or not.

The type of *C. rehmanni* which should be in the Berlin-Dahlem Herbarium was collected at "Klippan, Boschveld Transvaal." To date the locality has not been exactly established, and no specimen found that corresponds with the description.

CHENOPODIACEAE.

Salsola humifusa Brueckner, sp. nov. (Chenopodiaceae); ab omnibus speciebus habitu humifuso, ramis lateralibus longis gracilibus prostratis stoloniferis differt.

Suffrutex parvus, humifusus, 15–40 cm. diam., praerosus, ramis lateralibus longis gracilibus prostratis stoloniferis. *Rami* seniores glabri, ramulis et pullulis erectis pilosis. *Folia* bractiformia, griseo-viridia, opposita, carnosa, ovata, parva, c. 1.5 mm. longa, glabra vel parce pubescentia, supra concava, apice carnosa, marginibus hyalinis ciliatis, base auriculato amplexicaule breve calcarato. *Flores* axillares, sessiles, 2-bracteolati; bracteolae late ovatae, saepe inaequilateres, c. 1.8 mm. longae, 1.5 mm. latae, carnosae, leviter canaliculae, marginibus late hyalinis ciliatis. *Sepala* 5, lanceolata, c. 3 mm. longa, 1 mm. lata, membranacea, ciliata, basi leviter carnosa, in fructu base induriantia gibbosa, pilosa. *Stamina* 5, filamentis planis; antherae apice attenuatae. *Ovarium* globosum, apicem versus in stylum bifidum attenuatum; discus patelliformis, 5-lobulatus.

CAPE PROVINCE.—Phillipstown Division: *Henrici* 3927, *Brueckner* 683, Kimberley Division: *Acocks* and *Hafström* 1282.

O.F.S.—Fauresmith Division: near Koffiefontein, *Rabie* 15a, *C. A. Smith* 4514 (*type* in National Herbarium); near Petrusburg, *Rabie* 14a..

FIG. 1 AND 2.

A procumbent shrublet forming mats from 15 to 40 cm. in diameter, often cropped down, but with long, slender prostrate side branches, rooting at intervals. Older branches glabrous with erect, hoarily-pubescent branchlets and shoots. *Leaves* bracteolate, greyish-green, opposite, fleshy, ovate, small, about 1.5 mm. long, concave ventrally glabrous or very sparsely pubescent, apex fleshy, margin hyaline and ciliate, base auricled, amplexicaul, shortly spurred. *Flowers*, sessile, axillary, with two ensheathing bracteoles. *Bracteoles* opposite, broadly ovate, often asymmetric, about 1.8 mm. long and 1.5 mm. broad, fleshy, slightly keeled, with a wide hyaline, ciliate margin. *Sepals* 5, lanceolate, about 3 mm. long and 1 mm. wide, membranous but slightly fleshy basally, becoming indurated and lobed basally after fertilisation, with loose pubescence marginally and on thickened portions. *Stamens* 5, filaments flat, anthers attenuated. *Ovary* globose, narrowing into the style which is bifid at the apex; disc patelliform, 5-lobed.

The prostrate, matted habit of this *Salsola* is distinctive, and it was isolated as a separate species in 1928 by Mr. C. A. Smith under the unpublished name *Salsola humifusa*. Growing on the dry margins of pans and vleis, it is often well eaten down by game and small stock, and may be inconspicuous. Characteristic long lateral branches are produced from a long vertical taproot, and root at intervals along their length on



FIG. 1.—*Salsola humifusa* Brueckner.
Photo of type sheet, Smith 4514.

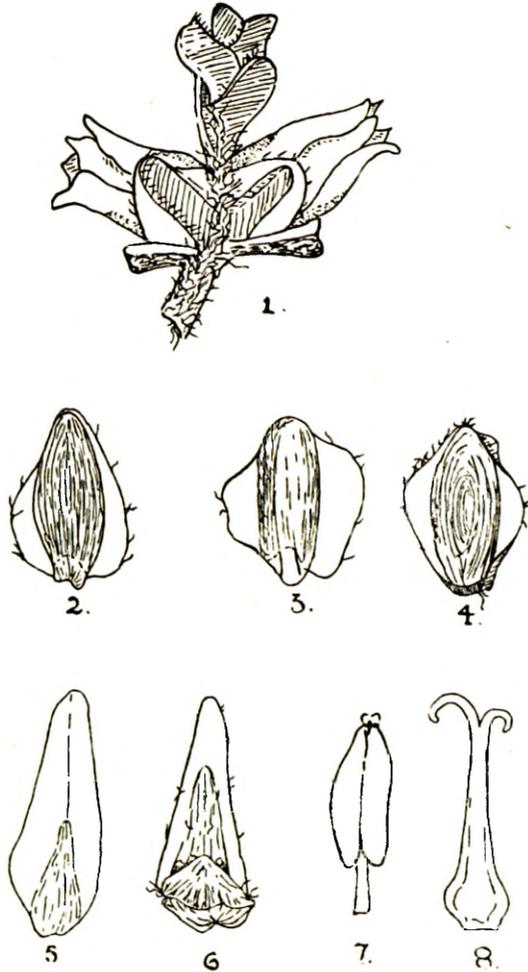


FIG. 2.—*Salsola humifusa* Brueckner.

1—Tip of branchlet showing opposite flowers. 2—Bract. 3—Bracteole (dorsal view). 4—Bracteole (ventral view). 5—Sepal. 6—Sepal of fruiting perianth (dorsal view), showing thickened indurated basal portion. 7—Stamen. 8—Gynoecium.

the soil surface or underground. The small greyish-green leaves are opposite and decussate, or subopposite, on short erect branchlets. Small flowers are axillary, the comparatively long sepals being conspicuous beyond the fleshy bracteoles which envelope the base. The indurated basal lobes of the fruiting perianth would appear to be homologous with the wings of the fruiting perianth of other *Salsola* species.

The vernacular names of this plant are *Springbokganna* and *Kruipganna*.

Salsola rabieana *Verdoorn*, sp. nov. (Chenopodiaceae); affinis *S. glabrescenti* et *S. tuberculatae* sed ab illa plantibus humilioribus induratioibusque bracteis bracteolisque appresse sericeis sepalis plus minus pubescentibus, ab hac plantis altis non compactis bracteis bracteolisque haud in nodulis compressis differt.

Suffrutex calciphilus, circa 50 cm. altus; ramuli intricati, lignosi, rigidi, indurati. *Folia* bractiformia, alterna, carnosae, 2 mm. longa, 1.5 mm. lata, dorso appresse sericea, apice carnosae, apiculatae, marginibus hyalinis. *Bracteolae* 2 mm. longae, 3 mm. latae, dorso appresse sericeae, apice carnosae, apiculatae, marginibus late hyalinis. *Sepala* 5, ovata, c. 3 mm. longa, 1-1.5 mm. lata, centro triangulare pubescente viride carnosae, in fructu ala late horizontali scariosa obtusata circiter 3 mm. longa, 2.5-5 mm. lata infra medium laborum instructa. *Stamina* 5. *Ovarium* depresso globosum 1.5 mm. longum 2.5 mm. diam. in stylum bifidum attenuatum; discus patelliformis marginibus hyalinis obscure lobatis.

ORANGE FREE STATE.—Fauersmith district: near Koffiefontein, *W. A. Rabie* 17a, Driefontein, *Henrici* 3885, 3885a (type), 3887, 3579, 3884, *Kies* 289; Luckhoff, Farm Rosemarie, *Henrici* 3826, 3889, 3889a, 3990b; Roodepoortjie, *Henrici* 3049; Kalabasdrift, *Henrici* 2865; east of Jagersfontein, *C. A. Smith* 4388; Jacobsdal, *H. G. Schweickhardt* 1129; Bloemfontein district: *Henrici* 2738, 2740.

CAPE PROVINCE.—Hopetown division: Potfontein, *C. A. Smith* 2815; Herbert division, 10 miles west of Belmont straight along road to Douglas, *H. G. Schweickhardt* 1129, Clievedon, *Brueckner* 657. Kimberley division: Kamfersdam, *Brueckner* 93, 64. Hay division: Heuningkrantz, *O. L. Cooke* in McGregor Museum, no number, Paaufontein, *O. L. Cooke*, no number.

TRANSVAAL.—*Ventersdorp* district: Raatsiehay, *I. B. Pole Evans* 3132.

FIG. 3.

Subshrub about 50 cm. high found in lime soils; branches intricate woody, rigid, and hard. *Leaves* bractlike, alternate, fleshy, 2 mm. long and 1.5 mm. wide, dorsally appressedly sericeous, apex with a fleshy apicule, margins with a hyaline border. *Flowers* sessile axillary bi-bracteolate; bracts very like the leaves but wider and with wider winglike margins, about 2 mm. long and 3 mm. wide. *Sepals* 5, ovate, about 3 mm. long, three about 1.5 mm. wide and two about 1 mm. wide, with central, triangular, green, pubescent, fleshy areas which in fruit bear below the middle, horizontal, scarios obtusate wings about 3 mm. long, of which three are 5 mm. wide and two 2.5 mm. wide. *Stamens* 5. *Ovary* depressed globose 1.5 mm. long, 2.5 mm. diam. narrowing above into a bifid style; disc patelliform with a hyaline border which is obscurely lobed.

This species, which is reported to grow on limestone formation, is close to *S. glabrescens* and *S. tuberculata* and seems to fall between these two species. From *S. glabrescens* it is distinguished by being a smaller bush with shorter and more intricate branches and in its greyish appearance due to the bracts and bracteoles being appressedly grey sericeous. *S. tuberculata*, while resembling our species in the plants being greyish owing to a similar pubescence, differs in being a lower and more compact bush with the bracts and bracteoles congested into nodules "like small brussels sprout" as described by Mr. C. A. Smith.

Many years ago Mr. Smith recognised this as a distinct species and gave it the manuscript name of *S. rabieana* in honour of the late Mr. Rabie of Fauersmith, who had a good knowledge of the veld plants in that area and their vernacular names. The common names by which this species is known are "bloupanganna" and "hardeganna."

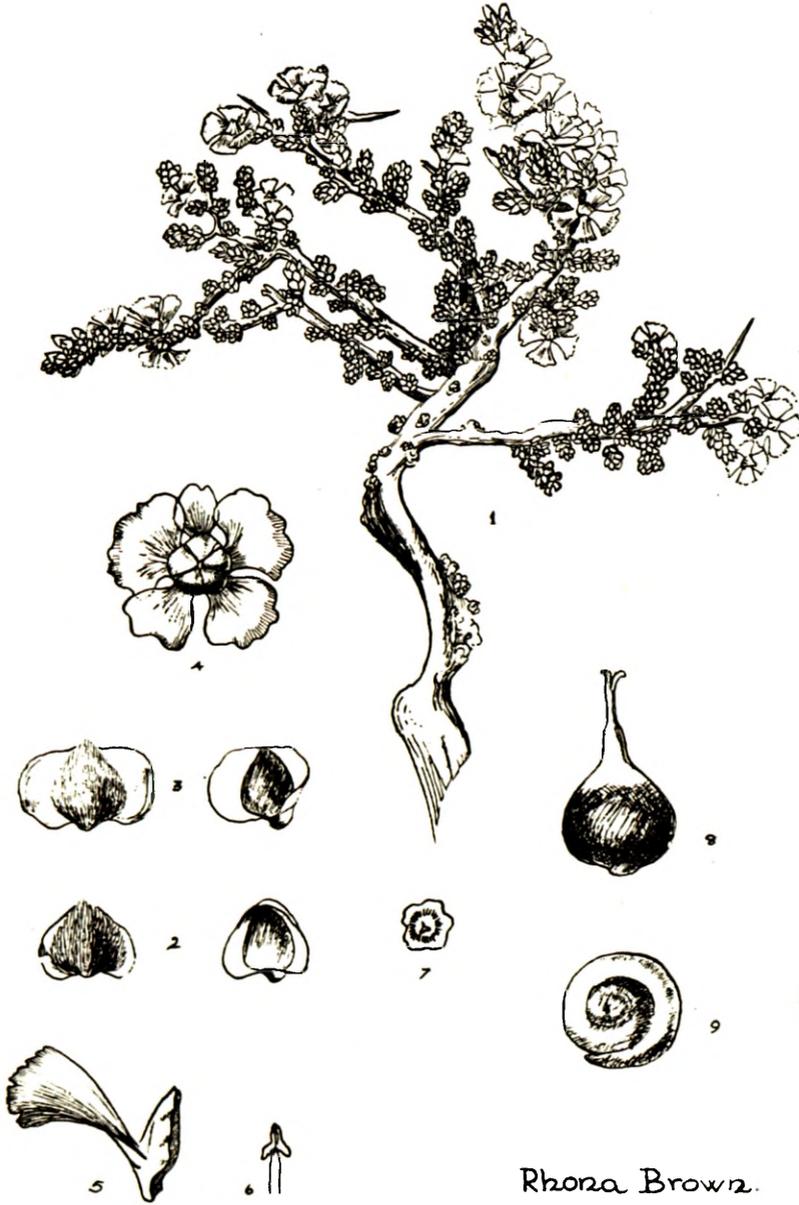


FIG. 3.—*Salsola rabieana* Verdoorn.

1—Branch of type specimen. 2—Bracteal leaf, dorsal and front view $\times 5$. 3—Bracteole dorsal and front view $\times 5$. 4—Mature flower viewed from above, showing the dorsal wings on the sepals $\times 3$. 5—Sepal and dorsal wing side view $\times 6$. 6—Stamen $\times 5$. 7—Disc $\times 5$. 8—Ovary, style and stigma $\times 12$. 9—Spiral embryo $\times 15$.

COMPOSITAE.

Pegolettia retrofracta (Thb.) P. Kies, comb. nov. (Compositae).

Eupatorium retrofractum Thb. Fl. Cap. (1823).

Pegolettia polygalaefolia Less. Syn. Comp. 200 (1832).

Vernonia polygalaefolia Licht. ex. Less. Syn. Comp. 200 (1832), non Less. 1831.

Iphiaea polygalifolia Benth. and Hook. Gen. II (1863)..

CYCADACEAE.

Encephalartos humilis Verdoorn sp. nov., affinis *E. lanato* Stapf & Burtt Davy et *E. laevifolio* Stapf & Burtt Davy sed ab ambitu inter alia plantis minoribus differt.

Planta humilis. *Caudex* in toto circa 35 cm. longus, 13 cm. diam., c. 12 cm. epigeus, lanuginosus, soboliferus. *Folia* recurvata, arcte lanuginosa, glabrescentia, 30–55 cm. longa; pinnae anguste lineares, integrae, apice pungentes, mediae 9–13 cm. longae, 4–6 mm. latae, plus minus 9-nervatae. *Strobilus masculinus* usque 15 cm. longus et 4 cm. diam.; squamae mediae 1.5 cm. longae et 2 cm. latae, facies dense lanuginosae. *Strobilus femineus* ignotus.

TRANSVAAL.—Schagen Hill, *Dyer* 4806 (with male cone) type, Verdoorn 2349 and 2350, *Liebenberg* 335; Schoeman's Kloof J. C. Smuts 285; Krantz Nurseries, *Christian* 568 (with male cone); *Verdoorn* 2348; Rosehaugh, *Reynolds* 3936 (with male cone), *Mogg* 17363; Majuba in Berlin Forest Reserve, *Verdoorn* 2351.

PLATE 3.

A low plant more or less hidden in the grass, suckering freely to form small clumps, usually wedged among low rocks. *Stem* rising about 12 cm. above ground, in the wild state (often higher in cultivation, one observed to be 45 cm. tall), in all about 35 cm. long (30–50 cm. long), 13 cm. diam., usually narrowing to a cone-like apex, thinly lanate. *Leaves* recurved with leaflets forming a V, glabrescent with small patches of wool persisting, 30–35 cm. long; pinnae narrowly linear, entire, with a pungent apicule; the median 9–13 cm. long and 4–6 mm. wide, more or less 9-nerved, nerves prominent beneath. *Male cone* up to 15 cm. long and 4 cm. diam., median scales about 1.5 cm. long and 2 cm. wide; scale faces densely lanate and not very prominent. *Female cone* not seen.

The specimens quoted under *E. lanatus* Stapf and Burtt Davy in the Flora Capensis all have entire, narrowly linear leaflets and come from the Transvaal. Under this species the monographers of the genus, Hutchinson and Rattray, sank *E. laevifolius* Stapf and Burtt Davy. Recent field observations have shown that not only are these two species distinct but that a third and undescribed species is involved. Although closely related, they are nevertheless as distinct from each other, as are some of the species in other groups of the genus.

Field observations on the three species are summarized as follows:

E. lanatus Stapf and Burtt-Davy. The type comes from Toevlugt (the Native name of which is Botshabelo), Middelburg district, Transvaal, and a large number of plants were examined there. They were found on the average to have stems about 1½ to 4 ft. tall (rarely up to 5 ft. tall); to have the leaves retain the lanate covering on the rhachis for quite a long time and the cones, male and female, to be thickly and persistently lanate. The same species was seen on the Wilge River and on General Sir Pierre van Ryneveld's farm 50 miles east of Pretoria. All these places are in what is termed the highveld of the Transvaal.

E. laevifolius Stapf and Burtt-Davy. This species occurs on some of the rocky ridges of the high mountainous country around Barberton (which is in the lowveld). The plants are usually taller than *E. lanatus* with stems 5 ft. to 11 ft. tall, and the leaves longer; they are soon glabrescent and have a slight glaucous look and the cones, especially the female, become glaucous glabrous except for a small, short lanate spot in the depressed centre of the scale face.

E. humilis n.sp. This newly described species occurs on some of the grass-covered rocky hills below the mountain summits in the lowveld area. It is a small plant, often practically hidden by grass, and the stem rises only a few inches above the ground. In this respect it differs from both the preceding. Another difference is in the male cone. Three male cones each from a plant in a different locality, were seen and they were very much smaller than those of either of the other species, being only up to 15 cm. long and 2 cm. diam. as against about 24–30 cm. long and 4–7 cm. diam. The scale faces in our species are flatter than in either of the others and are a little less thickly lanate than those of *E. lanatus* and much more so than in those of *E. laevifolius*.

In connection with the size of the cones it should be noted that since the description of *E. lanatus* in the Flora Capensis is based on specimens of all three species, the measurements given for the cones should not be taken as being those of typical *E. lanatus*. They are in fact smaller than those of either *E. lanatus* or *E. laevifolius* as observed in the field. This is accounted for in one instance by the presence on a herbarium sheet of an immature female cone of true *E. lanatus*, and for the rest the measurements of the male cones were probably taken from specimens of *E. humilis*. For instance the quoted specimen Wilms 1355, from "Crocodile River near Piet Schoeman" (Flora Transvaal, Vol. 1, p. 99, and Fl. Cap., Vol. 5, 2, p. 43) must be *E. humilis* according to the locality and in the Flora of the Transvaal the specimens mentioned in the following quoted note under *E. laevifolius* are most probably all *E. humilis*: "Davy 32d, collected on the lower slopes of Spitzkop, Lydenburg, 4,000 ft. alt., on the side near Sibthorpe's (several in a clump, all young, among grass by the roadside), and a plant collected by Sim at Rosehaugh, Lydenburg, may belong here."

The late Mr. H. Basil Christian was the first to suspect that there was a third species in this group. Among his very good collection of living cycads were some plants which he had got from the Kranz Nurseries in Schoeman's Kloof (plants said to have come from the neighbourhood) and he noted that the stems were more cone-shaped and the leaf scars smaller than any of his other species. The leaves, though resembling those of *E. lanatus* remained smaller over the long period that these plants were observed growing next to plants of *E. lanatus* and *E. laevifolius*. In connection with the leaves he also observed that they did not arise "like a bunch of asparagus" in the centre of the stem apex but appeared in close succession and the petiole was much twisted. This may be a pathological condition, but it has been noticed since on several plants of this species. Then a male cone appeared and it was like a miniature of the other two species. These observations led to the investigations which resulted in the description of this species.

EUPHORBIACEAE.

Euphorbia clivicola R. A. Dyer, sp. nov. (Euphorbiaceae); affinis *E. schinzii* Pax ramis brevioribus congestis flavo-viridibus aculeis minoribus differt.

Planta succulenta, perennis, armata. *Radix* tuberosa caudice continuata, plus minusve 15 cm. longa et 2–3 cm. crassa, attenuata, radicibus tenuibus paucis instructa. *Rami* plurimi, congesti, breves vel brevissimi, 2–6 cm. longi, 1·5 cm. crassi, indistincte 4-angulati, tuberculati apicem versus angustiores, angulis tuberculis prominentibus, podariis corneis haud confluentibus 2-aculeatis. *Aculei* circiter 5 cm. longi. *Cyma* solitaria tribus cyatheis sessilis vel perbrevisiter pedunculata. *Cyathium* primum masculinum; 2 bisexualia, lateralia, subsessilia. *Involucrum* 3·5 mm. diam., glabrum, lobis 5 parvis fimbriatis et 5 glandulis transverse oblongis integris 1·5 mm. latis contiguis flavis munitum. *Ovarium* glabrum, sessile; styli 2 mm. longi, fere infra medium conati, apice bifidi.

TRANSVAAL.—Potgietersrust district: about 20 miles north of Potgietersrust on Farm Lunsclip, quartzite ridge, *Plowes* in National Herbarium, Pretoria, No. 28386 (type), with photographs. Pietersburg district: near Pietersburg, Kirsten, photographs.

Dwarf spiny perennial succulent with the main stem and root merging into each other and forming an underground tuberous body about 15 cm. long and 2–3 cm. thick, tapering to the base and with a few slender secondary roots. *Stem* repeatedly branched and retracting further underground as plant enlarges, only the young ultimate branches appearing above ground. *Branches* yellowish-green, congested into a dense mass, about 2–3 cm. long but up to 6 cm. if the plant is shaded by grass, 1.5 cm. thick towards base, narrower towards apex, being reduced at each successive tubercle, obscurely 4-angled by the more or less decussate arrangement of the tubercles and their paired spines; angles often with spine-pairs opposite but occasionally irregularly disposed, usually armed with spines on the apical 2–4 tubercles; tubercles with the upper margin truncate, sloping gradually below the spines; spine-shields extending to the leaf scar above the spines and 1–2.5 mm. decurrent; spines up to above 5 mm. long, in pairs at the apex of the tubercles, grey, and with minute prickles by the side of the leaf-scar. *Leaves* rudimentary, soon deciduous. *Inflorescence*: cymes solitary from the apical flowering eyes of the branchlets, sessile, usually consisting of 3 cyathia, the central one male with two bisexual cyathia laterally disposed on very short peduncles or sessile; involucre cup-shaped, 3.5 mm. in diam., glabrous, with 5 glands and 5 sub-quadrangle fringed lobes; glands bright yellow, transversely oblong, 1.5 mm. in their greater diameter, entire. *Ovary* sessile, included in involucre, glabrous; styles about 2 mm. long, united into a column in the basal third, spreading above, with bifid tips.

There seems little doubt that *E. clivicola* is an evolutionary form from *Euphorbia schinzii*-like stock. The present concept of *E. schinzii* is so broad that our plant could be squeezed in also, but this would appear to be making an unsatisfactory position worse. It is felt that some of the many forms now under *E. schinzii* could conveniently be given definite taxonomic status, either with varietal or even specific rank.

The main characters distinguishing *E. clivicola* from *E. schinzii* are: the branches are yellowish-green, broadest below the middle, furnished with few (2–4) spine-pairs, congested into cushion-shaped masses rising only slightly above ground level and forming a compact plant with a single tuberous main root.

It occurs between Potgietersrust and Pietersburg in the northern Transvaal, on quartzite slopes, in company with *Euphorbia clavarioides* Boiss., *Aloe pretoriensis* Pole Evans and *Caralluma lutea* N.E. Br. The specific epithet refers to the hillslope habitat. Mr. Darrel Plowes, the collector, added that the "soil" was sour, being derived from the white quartzite rubble and consisted mostly of rock chips.

Euphorbia confinalis R. A. Dyer sp. nov., affinis *E. triangulari* Desf. et *E. excelsae* W. D. & S., ab illa habitu trunco uno erecto robusto ramis minus constrictis angulis 4 minus compressis, ab hac cymis 1–3, 3-cyatheis differt.

Arbor succulenta usque ad 8 m. alta, trunco cylindrico erecto, ramis numerosis patenti-ascendentibus. *Rami* usque 1–1.5 m. longi, 2.5–6 cm. crassi, nonnunquam ramosa, 4- vel 3–5-angulati, segmentis 5–20 cm. longis constricti, podariis corneis 2-aculeatis bruneis haud vel rariter confluentibus, aculeis abortivis vel ad 8 mm. longis. *Cymae* 1–3, plus minusve 2–5 mm. supra aculeos dispositae, 3-cyatheis. *Pedunculus* 2 mm. longus, ramis 3 mm. longis. *Cyatheum* primum masculinum; cyathea lateralia 2, bisexualia; involucrum 6–8 mm. diametro, glabrum, lobis parvis obovatis fimbriatis et glandulis 5 transverse elliptico-oblongis circiter 3.5 mm. latis contiguis integris flavis munitum. *Ovarium* obtuse triangulare, stipitatum; styli 1.5–3 mm. longi infra medium vel medio connati. *Capsula* plus minusve 8 mm. lata, pedicello circiter 5 mm. rare usque 8 mm. longo exserta.

TRANSVAAL.—Zoutpansberg District: Kruger National Park, 6–7 miles SW. of Punda Maria, Codd 3026; 5366; 10–11 miles SW. of Punda Maria, Dyer, photo; Codd, photo; Pilgrims Rest district, Kruger National Park, 2 miles E. of The Gorge Camp, Codd and de Winter 5580 (type); Barberton district, Komatipoort, Dyer=4799.

PORTUGUESE E. AFRICA.—Near Ressano Garcia, van der Merwe 1698; E. 17; ridges between Moamba and Ressano Garcia, Dyer 4799.

Tree 15–25 ft. but occasionally up to 30 ft. tall, with a straight unbranched trunk or occasionally with 1–2 trunk-like branches, with a crown of curved ascending branches which wither with age and fall, leaving the naked trunk. *Branches* 3–4 ft. long, 4- or occasionally 3–5-angled, constricted at intervals of 5–20 cm. with more or less parallel sides, 2·5–5 cm. between adjacent angles, usually about 3 cm. on flowering segments; angles moderately compressed, about 5 mm. thick near the margin and projecting 3–3·5 cm. from the centre, furnished with paired spines or their rudiments. *Spine-pairs* 1–2 cm. apart, 0·5–8 mm. long, those on young plants conspicuous, becoming obsolete on old trees, on a horny base which is discontinuous or sometimes continuous along the angles. *Cymes* 1–3 together at the flowering eyes, 2–5 mm. above the spine pairs; each cyme consisting of 3 cyathia, a central male and 2 lateral bisexual cyathia arranged in a plane parallel to the main axis. *Peduncle* about 2 mm. long, branches 3 mm. long with bracts 2·5 mm. long and as broad, shortly ciliate on the margin, keeled on back. *Involucre* 6–8 mm. diam. with 5 glands and 5 obovate deeply fimbriate lobes; glands greenish-yellow, transversely somewhat oblong, 3–4 mm. in their greater diam. *Ovary* 3-angled and raised on a pedicel; and subtended by a small triangular calyx. *Styles* 1·5–3 mm. long, divided up to or below half-way with bifid tips. *Capsule* exerted from the involucre on a gynophore about 5 mm. or occasionally up to 8 mm. long.

Information about this plant has accumulated slowly since it was first brought to the notice of the writer in 1936 by Dr. F. Z. van der Merwe. It was referred to in a note under *E. triangularis* Desf. in the Succulent Euphorbiae 2; 897 (1941). The weight of evidence is now strongly in favour of according it separate specific rank.

In habit it resembles *E. excelsa* W. D. & S. more than *E. triangularis* Desf. but differs in the cymes which in *E. excelsa* are single from the flowering eyes and each has more cyathia. Whereas *E. triangularis* usually has a few to several trunk-like branches, *E. confinalis* more often than not has a straight unbranched trunk crowned by the curved ascending angled branches. The branches of mature trees are often practically spineless and have more solid, or at least less winglike angles and larger involucre than in *E. triangularis*.

E. confinalis occurs commonly on rocky hills on the western border of the Kruger National Park near Punda Maria and extends at intervals southwards on to the Lebombo Mts. and occurs on both sides of the border between the Transvaal and Portuguese East Africa at Komatipoort and Ressano Garcia. This association with boundaries suggested the specific epithet, the choice of which in such a large genus as *Euphorbia* being decidedly limited as regards appropriate names.

It may be added here that the distribution of *E. triangularis* into Portuguese East Africa seems to be proved by the record of a large colony of fairly typical plants not far from the Swaziland border in the catchment area of the Umbeluzi River on the road to Goba. A specimen collected by Mr. L. C. C. Liebenberg and recorded as rare at the bridge near the Royal Sheba mine near Barberton, and another by Thorncroft, extends the distribution into the Transvaal as well.

***Euphorbia keithii* R. A. Dyer, sp. nov.** (Euphorbiaceae); affinis *E. zoutpansbergensi* R. A. Dyer, ramis ramosis 3–6-angulatis stylis et ovulis differt.

Frutex vel *arbor* 2–6 m. alta, succulenta, spinosa, trunco teretiusculo ramis numerosis. *Rami* plus minusve patenti-ascendentes, ramosi, segmentis usque 25 cm. longis 3–4 cm. crassis constricti, 3–6-plerumque 5-angulati, inter angulos sulcati; anguli compressi, podariis corneis griseis confluentibus aculeis 2, 5–8 mm. longis. *Cymae* 3, rariter 1–2, supra aculeos emittentae, sessiles, 3 cyathia; pedunculus bibracteatus. *Cyathium* primum masculinum deciduum, cyathia bisexualia breviter pedunculata. *Involucrum* 4–5 mm. diam., glabrum, 5 lobis subquadratis fimbriatis et glandulis transverse oblongis 2–2·5 mm. latis integris contiguis viridi-flavis munitum. *Ovarium* stipitatum, glabrum; styli 1·5 mm. longi in columnam ad medium versus connati, apice bifidi. *Capsula* stipite usque 6 mm. longo, 6–7 mm. lata, obtuse trilobata; semina suborbiculata.

SWAZILAND.—On western edge of Ubombo Mts., cultivated, near Stegi, *D. R. Keith* in Nat. Herb. Pretoria, 28421, 28422, 28423 (type), 28424; about 8 m. SE. of Stegi on east-facing krantz, *Dyer*, photographs.

PLATES 6, 7 AND 8.

Shrub or small tree 6–20 ft. high with the older branches eventually withering and falling from the stems. *Branches* dark green, spreading ascending, 1–2 m. long, 3–6 usually 5—angled, constricted at intervals into segments; segments varying in length according to habitat conditions up to about 25 cm. long and 3–4 cm. broad with more or less parallel sides or somewhat narrowed to the apex; angles winglike, about 0·7–1·5 cm. deep and 1·5–2 cm. between the ridges of adjacent angles, only slightly tuberculate; spine shields united into a continuous horny margin along the margin of the angles and with the flowering eyes about 5 mm. above the spine pairs; spine pairs 1–1·75 cm. distant, 5–8 mm. long, moderately stout. *Leaves* rudimentary, about 5 mm. long, ovate-cordate, spreading recurved, soon deciduous. *Inflorescence* with 3 cymes or occasionally only 1–2 developing from each of the flowering eyes. *Cymes* subsessile, each cyme consisting of 3 subsessile cyathia vertically disposed, i.e., one central male cyathium and one bisexual cyathium on either side arranged in a plane parallel to the main axis; bracts small, scale-like; involucre cup-shaped, 4–5 mm. in diam., glabrous with 5 glands and 5 subquadrate fimbriate lobes; glands contiguous, yellowish-green, transversely oblong, 2–2·5 mm. in their greatest diam. *Ovary* exerted on a curved gynophore about 5 mm. long, moderately 3-angled, about 1·5 mm. broad; styles about 1·5 mm. long, united into a column for half their length, with bifid stigmas. *Capsule* on a curved gynophore about 6 mm. long, reddish-green, obtusely 3-angled, 6–7 mm. broad, flattened, i.e., broader than long, with ovules filling the cells, subglobose, smooth.

Capt. *D. R. Keith*, of Ravelston, near Stegi, first brought this species to my notice about 1942. He had one young specimen in his garden, from which complete flowering and fruiting material was eventually obtained for description in 1949–50. Efforts to establish the distribution of the species indicate that it does not cover a very wide range. It may well be abundant locally on krantzes on the western side of the Lebombo Mountains, though not necessarily west-facing, since those plants photographed in their natural habitat in 1947 were mainly on an east-facing aspect.

E. keithii has a general likeness to such arborescent species as *E. sekukuniensis* *R. A. Dyer*, but the disposition of the cyathia of the cymes is distinctive. In this essential character it is seen to approach nearest to *E. zoutpansbergensis* among South African species, but even to that species the relationship is not particularly close. Nearer relatives are likely to be found on the mountains between Southern Rhodesia and Mocambique.

Euphorbia restricta *R. A. Dyer*, sp. nov. (Euphorbiaceae); affinis *E. enormi* N.E. Br. ramis luteo-viridibus immaculatis podariis corneis confluentibus plerumque 4–6-angulatis differt.

Planta humilis, succulenta, perennis, armata. *Radix* tuberosa caudice continuata apicem versus 4–8 cm. crassa. *Caulis* brevissimus, leviter ramosus, tuberculatus. *Rami* pauci caudicis apice editi plerumque 4–6-angulati, usque 16 cm. longi, 2–3 cm. crassi, maiores segmentis 1–2 cm. longis constricti, podariis corneis confluentibus 2-aculeatis; anguli compressi recti vel rariter leviter torti. *Aculei* usque 1 cm. longi minimi ad ramorum constrictiones. *Cyma* singula, subsessilis, tribus cyathiis. *Cyathium* primum masculinum, 2 bisexualia. *Involucrum* 5–6·5 mm. diam., glabrum, lobis 5 parvis laceratis et glandulis transverse oblongis 3 mm. latis integris luteis munitum. *Ovarium* glabrum, sessile; styli 3·5 mm. longi ad medium connati, apice bifidi. *Capsula* circiter 6 mm. diam., sessilis, obtuse trilobata; semina 2·5 mm. longa, subglobose, brunea, plana.

TRANSVAAL.—Letaba district: on farm The Downs, between P.O. The Downs and Wandrags Asbestos Mine, 4,500 ft., *Codd* 3092 (type); *Crundall* in National Herbarium, Pretoria, 28391.

PLATE 9.

A dwarf succulent plant with a combined subtuberous main root and reduced main stem, which usually branches into 2 or more stem-like branches, each of which produces a tuft of aerial flowering branches. *Main stem* 4–8 cm. diam., irregularly tuberculate with some tubercles over 0.5 mm. prominent. *Branches* up to about 16 cm. long, generally unbranched, but occasionally rebranched, withering with age and finally falling away from stem, up to about 3 cm. in diam. and constricted into segments 1–2 cm. long, depending on seasonal conditions, 4–6-angled. *Angles* fairly acute and winglike, armed with a continuous horny margin and paired spines. *Spines* up to 1 cm. long in pairs at intervals of about 7.5 mm. but closer on stem constrictions, with a pair of prickles on the sides of the flowering eyes, which are slightly below midway between the spine pairs. *Cymes* solitary from the flowering eyes of the terminal segments, with 3 cyathia, 1 central male and 2 bisexual produced in a plane parallel to the main axis, occasionally 1 bisexual cyatheum suppressed; peduncle very short with 2 broadly ovate obtuse bracts subtending the cyathia; bisexual cyathia with a very short bibracteate peduncle. *Involucres* cup-shaped, glabrous, 5–6 mm. diam. with 5 glands and 5 subquadrate, somewhat lacerate lobes; glands yellowish, transversely oblong, about 3 mm. in their greater diam., concave, with slightly upturned margins. *Ovary* sessile, glabrous; styles about 3.5 mm. long united into a column for half their length and bifid at the tips; connective tissue to ovary shortly hood-shaped. *Capsule* about 6 mm. diam. moderately 3-angled, 2.5 mm. long; subglobose, slightly longer than broad, brown, smooth.

The first record in the National Herbarium of this species dates from April, 1945, when Mr. A. H. Crundall forwarded material from the farm The Downs in the Letaba district of the Northern Transvaal. The plant, however, was not in flower and it was not until Dr. L. E. Codd and Mr. B. de Winter collected complete material on the same farm, in October, 1947, that it was possible to draw up a fuller description. Dr. Codd records that the plants were locally common, growing in shallow soil and in the crevices of dolomite ridges, being associated with *E. schinzii* Pax. The new species is restricted both in size and distribution and hence the specific epithet.

While the plant resembles some forms of *E. enormis* N.E. Br. in the Lydenburg district, it is readily distinguished by the branches being unmarked, yellowish-green with up to 6 angles; by the angles having a continuous horny margin; and by the subsessile cymes with smaller cyathia. In general appearance it suggests a miniature *E. barnardii* W. D. & S., which is also in the same geographical region and may well be the closest relative in the evolutionary sense.

Euphorbia unicornis R. A. Dyer, sp. nov. (Euphorbiaceae); affinis *E. corniculatae* R. A.

Dyer podariis corneis 1-aculeatis glandulis connatis facile distinguitur.

Planta humilis, succulenta, perennis, armata, ramosa, usque 30 cm. alta. *Rami* plus minusve erecti, ramosi, basin versus subcylindrici, 1 cm. crassi, superne indistincte 6–7-angulati, tuberculati; tuberculi pulvinati, 5–7 mm. longi, usque 5 mm. lati, podariis corneis 1-aculeatis. *Aculeus* singulus, 4–6 mm. longus, 2 superioribus parvissimis 1–1.5 mm. longis. *Cyma* breviter pedunculata, tribus cyatheis; pedunculi 1–2 mm. longi apice bibracteati. *Cyathia* apicem ramorum versus producta; primum masculinum; bisexualia 2, lateraliter producta. *Involucrum* plus minusve 3 mm. diam., glabrum, lobis 5 parvis minute dentatis et glandulis rubris suberectis connatis munitum. *Ovarium* sessile 3-angulatum; styli 2 mm. longi ad medium connati apice bifidi.

MOCAMBIQUE.—Niassa Province: Quissanga district, Cuero Mt., 400 m. alt., Sept. *Pedro* and *Pedrogao* 5091.

PLATE 10.

A branched succulent spinescent shrublet, up to about 30 cm. tall, greyish-green with purplish tinge. *Branches* subcylindric, about 1 cm. thick, not perceptibly constricted at intervals, possibly commonly with two lateral branches arising from the same level, indistinctly 6–7-angled or subcylindric with 6–7 grooves about 1 mm. broad at the base, tubercled along the angles and with rudimentary leaves on young growth.

Tubercles slightly prominent and cushion-like, almost completely covered by a horny surface but with the horny surface interrupted narrowly between the tubercles at the flowering eyes, bearing centrally a single spine 4–6 mm. long and above this 2 prickles 1–1.5 mm. long, one on either side of the leaf-scar. *Flowering-eyes* 5–7 mm. apart, slightly above the leaf-scars. *Cymes* solitary from apical flowering-eyes on peduncles 1–2 mm. long, consisting of a central male involucre and 2 lateral bisexual cyathia arising in a plane at right-angles to the main axis. *Bracts* oblong, 1 mm. long. *Involucre* cup-shaped, about 3 mm. diam. with 5 subquadrate finely-toothed lobes and a glandular rim. *Glands* 5, red, apparently forming a continuous rim but actually connected by very narrow membranes. *Ovary* sessile, 3-angled. *Styles* 2 mm. long, united for about half their length, the free portions becoming twisted, emarginate at the slightly flattened tips.

The cushion-like tubercles almost completely covered by a horny shield seem to distinguish this and the related species *E. corniculata* from previously described plants. I have, however, seen a similar but incomplete and unnamed specimen with paired spines collected near the Kenya-Somaliland border, and a close comparison of other tropical African dwarf species is indicated. The pattern of the cyme is similar to that displayed by *E. schinzii* and its relatives.

I am very grateful to the two Portuguese collectors, Messrs. Pedro and Pedrogao, who kindly forwarded the material with the following additional information: "common name 'nya nyach', growing near the administrative officer's residence on rocky outcrops, greyish-green purpurascensly shaded, involucre rosy to red." The connection of the glands by very narrow membranous strips into a continuous cup-shaped structure is most unusual for the genus.

Jatropha messinica *E. A. Bruce*, sp. nov. (Euphorbiaceae); affinis *J. pseudoglanduliferae* Pax, sed foliis fere basin lobatis, petalis florum masculinorum liberis, sepalis femineorum lanceolatis, stylis liberis vel basi connatis differt.

Suffrutex parvus, glaber, 60–90 cm. altus; caules plures, erecti, basin versus ramosi, substriati, pallido-cinerei vel stramenei. *Folia* chartacea, viridia, glabra, digitata, usque basin 5–7 lobata; lobi lanceolati—anguste elliptico-lanceolati, 2.5–6 cm. longi, 5–7 mm. lati, apicem et basin versus angustati, margine glanduloso-serrati, nervis lateralibus utrinque impressis usque media circiter 16, nerva media supra impressa, subtus prominente; petiolus 2–3.5 cm. longus, glaber. *Stipulae* dissectae, setaceae, 4–5 mm. longae, glanduliferae. *Inflorescentia* terminalia in cymis pedunculis disposita; bractae lanceolatae, acutae, 3–4 mm. longae, margine et apice glandulosa-dentatae. *Flores* masculini sessiles, apicem versus 5–6 dispositi, pedunculo circiter 6 mm. longo. *Sepala* ♂ 5, ovata, acuta, circiter 1.5 mm. longa, basi cohaerentia, glabra, eglandulosa. *Petala* ♂ 5, libera, glabra, late ovata, circiter 2 mm. longa, 1.5 mm. lata, apice rotundata, basi subunguiculata. *Stamina* 8, monadelphia, antheris vix 1 mm. longis. *Flores feminei*, basi inflorescentia masculina solitarii, subsessiles vel breviter pedicellati. *Sepala* ♀ 5, lanceolata, circiter 3 mm. longa, margine integra vel superne glandulosa. *Petala* ♀ 5, libera vel leviter coherentia, glabra, obovata, circiter 6 mm. longa, 3 mm. lata, apice rotundata, basin versus angustata, subunguiculata. *Discus* 5-lobatus. *Ovarium* ovoideum, glabrum, 3.5 mm. longum, 2.5 mm. diam., leviter trilobatum; styli 3, erecti, liberi vel basi vix connati, persistentes, circiter 2 mm. longi, stigmata crassa bifida tuberculata. *Capsula* ovoidea, leviter trilobata, 11 mm. longa, 9 mm. lata, rugosa, fusco-cinerea, petalis sepalisque basi persistentibus. *Semina* suboblonga, c. 7 mm. longa, 4 mm. lata, pallido-brunnea vel straminea fusco-maculata, dorso rotundata aliter compressa, apice carunculata.

TRANSVAAL.—Zoutpansberg district, Messina, a few hundred yards from the railway station west of Messina, May, 1945, *Gerstner* 5461, flower and fruit, type ; *Gerstner* 5447; Vanetzi Valley, 2,500 ft., March, 1946, *Gerstner* 6052; Messina, Government Experimental Farm Vergelegen, March, *D. G. Steyn*; Messina, 1,900 ft., on margins of river bed, June, *Galpin* 9191; Dongola, Farm Greefswald No. 615, 1 mile north of

Mapungubwe, 1,700 ft., on a rocky sandstone ridge in light shade, April, *Codd* 4125.

Jatropha messinica is a small half-herbaceous shrub or soft bush with bright green digitate leaves very similar to those of *Cannabis sativa*. There are six different collectings of this species in the National Herbarium, Pretoria; four from Messina, one from Dongola and one from the Vanetzi Valley about 20 miles south-east of Messina, so the specific epithet *messinica* was thought to be appropriate. The Dongola specimen, *Codd* 4125, was sent to Kew for identification and was returned as equal to specimens of *Moss* and *Rogers* 76 and *Rogers* 19350 named *J. pseudo-glandulosa*. There is no record of such a name being published and this is probably a clerical error for *J. pseudo-glandulifera*, which the liaison officer at Kew says is quite distinct from our specimen.

J. messinica belongs to the section *Glandulifera* Pax of the subgenus *Adenoropium* (Pohl) Griseb., which is characterized by the flowers having both petals and sepals and the stipules being fimbriate and persistent. It is most nearly allied to *J. pseudo-glandulifera* Pax, but differs from this species in the deeply 5-7-lobed leaves, the segments of which are almost free to the base. There are also slight differences in the floral characters, the styles in *J. messinica* are free almost to the base, whereas in *J. pseudo-glandulifera* they are connate for two-thirds of their length, the sepals of the female flowers in the former species are lanceolate, whereas in the latter they are ovate. There seems to be some variation in both male and female flowers among the specimens quoted under *J. messinica*. A male flower of *Codd* 4125 was examined and was found to be larger than those of the type (*Gerstner* 5461), the sepals were oblong 2.5 mm. long and the petals 3.5 mm. long and 2.5 mm. broad and just coherent at the base, not free as in the type. In the female flowers the petals of the type were coherent at the base, whereas in *Codd* 4125 they were free. These slight differences are interesting to record, though they are not of specific importance.

LABIATAE.

Coleus vagatus E. A. Bruce, sp. nov. (Labiatae); affinis *C. pentheri* Gürke, sed habitu prostrato vagato bracteis herbaceis viridibus subcrassis apice plus minusve truncatis numquam acuminatis valde distinctus.

Herba perennis, aromatica, basi ramosa; caulis primus subquadrangularis, laterales prostrati, vagati, subteretes, usque 60 cm. longi, circiter 2.5 mm. diam., pilis albidis multicellulis patulis parce pilosis et pilis brevibus incurvis pubescentes et glandulis aurantiacis parcissime induti, internodiis 2-6 cm. longis saepe e nodis radicati. *Folia* opposita, petiolata; petiolus 0.5-1 cm. longus, planus, pubescens et pilosus; lamina ambitu diversa, late ovata—obovata, 1.5-2.5 cm. longa, 1.5-2 cm. lata, apice rotundata, superne crenata, inferne in basin cuneatim angustata et integra, pallido-viridis, crassa, subtus plus minusve dense supra paricissime pubescens at glandulis aurantiacis punctata, margine pilis albidis incurvis ciliata; nervi vix conspicui, supra leviter impressi, subtus prominentes. *Inflorescentia* compacta, sub anthesi circiter 10 cm. longa, verticillastris sessilibus 4-6 floris; bractee oppositae et decussatae, virides, oblongo-ovatae, 9 mm. longae, 6 mm. latae, subcrassae, apice late rotundatae vel subtruncatae, margine inferne pilosis multicellulis albidis ciliatae, subtus aurantiaco-glandulosae et appresso-pubescentes, supra parce pubescentes nec glandulosae; pedicelli c. 3 mm. longi, pubescentes, suberecti. *Calyx* bilabiatus, glandulosus et pilosus; tubus brevissimus, c. 1.5 mm. longus; lobus posticus suborbiculatus, 3 mm. longus, 4 mm. latus, apice plus minusve apiculatus margine longe ciliatus; lobi laterales triangulares, c. 2 mm. longi, antichi lateralibus similes 1.5 mm. longi uterque ciliati. *Corolla* c. 1.6 cm. longa, patens, atro-violacea; tubi pars inferior cylindrica, 3-3.5 mm. longa, pars superior geniculatus, amplius, compressus, 5 mm. longus, 4 mm. latus, breve pubescens et parce glandulosus; lamium posticum erectum vel leviter recurvatum, suborbiculatum 4 mm. altum, 4.5 mm. latum, parce glandulosum et pilis longis paucis instructum, superne leviter 4-lobatum, lobis posticis majoribus et latioribus 2-2.5 mm. latis, lobis lateralibus minoribus 0.5 mm. latis subacutis; lamium anticum patens, cymbiforme, 1-1.1 cm. longum, c. 3.5 mm. profundum, pubescens, glandulosum, et pilis longis paucis

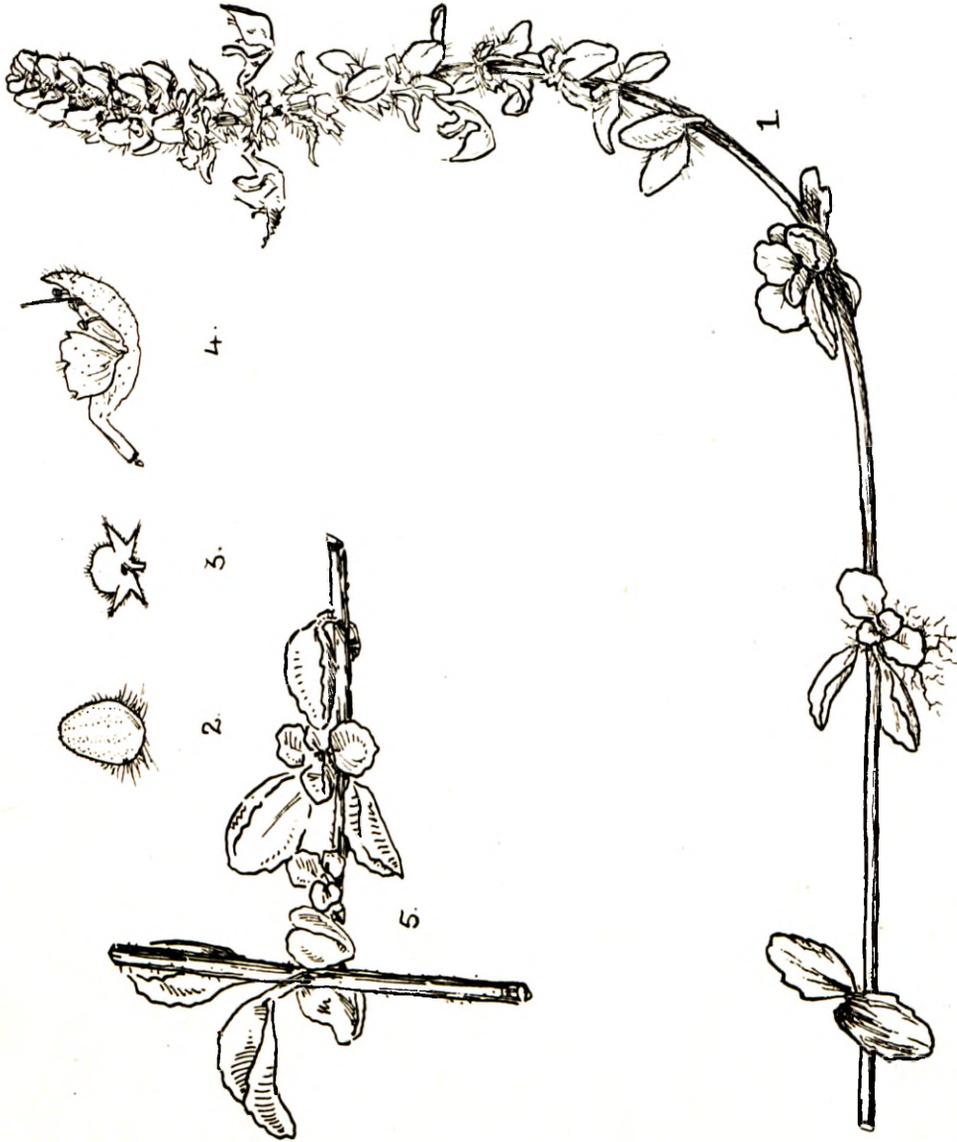


FIG. 4.—*Coleus vagatus* E. A. Bruce.
 1—Plant, natural size. 2—Bract, $\times 2$. 3—Calyx split open, $\times 2$. 4—Corolla,
 $\times 2$. 5—Portion of stem with leaves, natural size.

instructum. *Stamina* 4, declinata, 2 labium anticum subequalia, vel paullum exserta, 2 breviora; filamentis parte superiore excepta in tubum antice apertum connatis; antherae 1·25 mm. longae. *Ovarium* glabrum, disco in glandulam late oblongam leviter concavam vix 1 mm. longam producto; stylus gracilis, c. 2·2 cm. longus.

TRANSVAAL.—Nelspruit district, Kruger National Park, 1½ miles E. of Skukuza, 900 ft., in lowveld bush, on stream bank, May, *Codd* 5489 type. Zoutpansberg district, Messina, Dec., *Rogers* 20708; Komatipoort, April, *Dyke*, 5516.

SWAZILAND.—On the road to Komatipoort, May, *Pole Evans* 3461.

FIG. 4.

Coleus vagatus is an inconspicuous, aromatic, perennial herb with a fairly short, erect, quadrangular main stem, from which a number of long, prostrate, straggling branches arise, which frequently root at the nodes. The species is most closely allied to *Coleus pentheri* Gürke but differs from it in the prostrate habit, fleshy leaves and green, ovate bracts, which are more or less truncate and not acuminate at the apex. The bracts are arranged in densely packed opposite and decussate pairs, each bract subtending a 3-flowered cyme, so that the whole forms a dense spike terminating a lateral branch. The deep violet flowers only appear a few at a time and do not make a conspicuous show, so that the green intricate bracts are the main feature of the inflorescence. In common with some other species of the genus *C. vagatus* bears numerous red-gold glands and long white, multicellular, bristle-like hairs, which are particularly prominent on the bracts, though they are also present on the stems, leaves, calyces and corolla and the glands are even present on the anthers. The specific epithet *vagatus* meaning straggling or wandering refers to the habit of the plant.

LILIACEAE.

Asparagus glaucus *Kies*, sp. nov. (Liliaceae); *A. suaveolenti* Burch. affinis sed perianthiis majoribus persistentibus differt.

Suffrutex 30–60 cm. altus. *Radices* multi, crassi, fusiformes, 0·6 cm. diam. *Rhizoma* squamis stramineis 2 cm. longis vestita *Caules* aggregati (juniores exteriores), glauco-purpurei, squamis deltoideis coriaceis amplexicaulibus marginibus membranaceis 0·7 cm. longis ornati, caules seniores straminei, basi simplices, superne ramosi, ramis patentibus; ramuli fasciculati, pungentes, squamis membranaceis parvis ornati. *Cladodia* 1–6 fasciculata, teretia, mucronata, leviter curvata, glauca, 3–7 mm. longa. *Flores* solitarii vel binati. *Pedunculi* basin versus articulati, 3 mm. longi. *Perianthium* cremeum, segmentis 3 mm. longis patulis dorso purpureo-carinatis. *Filamenta* lanceolata; antherae luteae. *Stylus* brevis, brevissime 3-ramosus. *Bacca* glaucoviridis, 3 mm. diam., globosa, perianthio persistente inclusa. *Semina* nigra, solitaria.

CAPE PROVINCE.—Kimberley division: Mollers Pan, *Acocks* and *Hafström*, H. 874; Riet River, *Acocks* 8464.

S.W.A.—Great Namaqualand: Great Karas Mountains, *Ortendahl* 425.

ORANGE FREE STATE.—Fauersmith division: Petrusberg, *Marais* 124; Ventersvlei, *Verdoorn* 1153; Veldreserve, *Henrici* 3987. Heuningberg, *Marais* 155; Groenvlei, *Mogg* 13621, *Kies* 340 (Type in Nat. Herb. Pretoria); Rosemarie, *Verdoorn* 2148, 1623a.

FIG. 5.

Shrublet, 30–60 cm. high. *Roots* thick, fusiform, 0·6 cm. diam., many; rhizome clothed by straw-coloured striate horny scales, 2 cm. long. *Stems* many, growing in circular patches (young shoots round the edge of the patch), glaucous, purple or greenish, bearing deltoid amplexicaul squamae of leathery texture and with membranous margins, 0·7 cm. long; older stems becoming straw-coloured, simple at base, branched above with branches stiffly at right angles. *Branchlets* fascicled, ending in

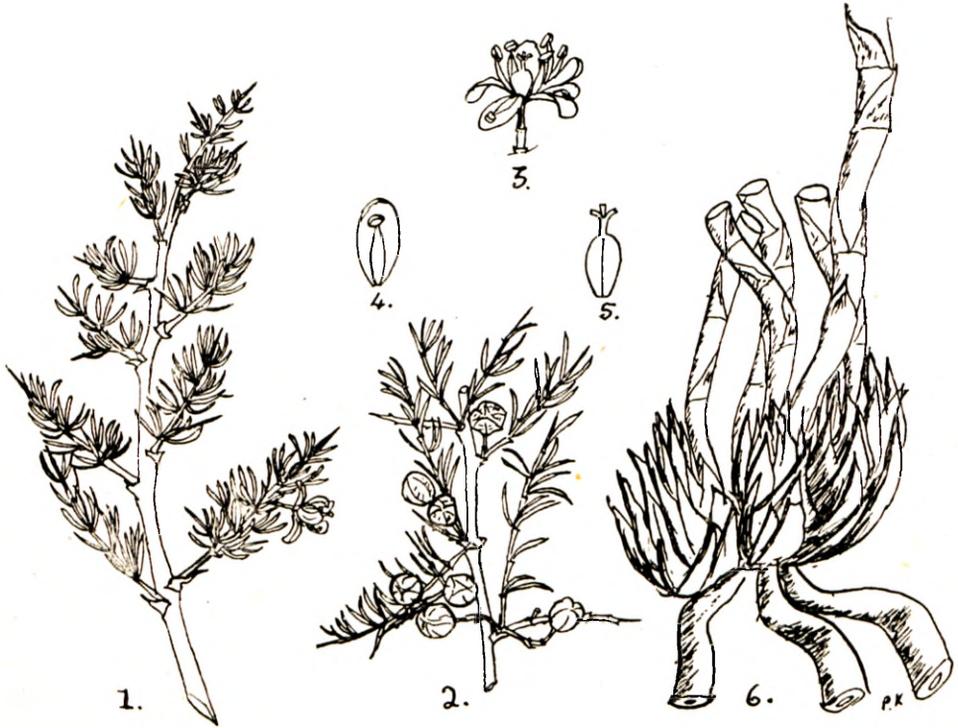


FIG. 5.—*Asparagus glaucus* Kies (Kies 340).
 1—Twig, $\times 1$. 2—Twig with fruits, $\times 1$. 3—Flower, $\times 2$. 4—Perianth lobe with stamens attached, $\times 3$. 5—Gynoecium, $\times 3$. 6—Rootstock, $\times 1$.

sharp spines, bearing minute membranous squamae which subtend the cladodes. *Cladodes* 1-6 per fascicle, terete, mucronate, narrowed towards the base, slightly curved, glaucous, 3-7 mm. long. *Flowers* solitary or sometimes 2-nate. *Peduncles* jointed near the base, 3 mm. long. *Perianth lobes* 3 mm. long, patently spreading, creamy with purple line down centre on outside. *Filaments* broadly lanceolate, anthers yellow. *Ovary* with style short and style branches very short. *Fruit* glaucous, green, 3 mm. diam. covered by the dry, horny, keeled, persistent perianth. *Seed* single, black.

Found on surface limestone with *Salsola*, and on alluvial soil. Plentiful and characteristically glaucous in appearance. It differs from *A. suaveolens* principally in the glaucous appearance and the larger perianth which persists and encloses the ripe fruit.

***Kniphofia ensifolia* Bak. var. *albiflora* E. A. Bruce, var. nov.** (Liliaceae); a typo floribus albidis differt.

TRANSVAAL.—Pretoria district: 13 miles west of Witbank on the road to Pretoria, November 1947, *Codd* and *de Winter* 3156 in National Herbarium Pretoria 28928 (type); September, 1948, *Codd* 4774; 14 miles south-east of Pretoria, December, 1947, *Bruce* 27; 2 miles east of Middelburg, November, 1949, *Codd* 5767.

This striking *Kniphofia* with its narrow spikes of cream or white flowers, long exerted stamens and broad glaucous leaves, was found in a marshy vlei in black clay loam 13 miles west of Witbank. The 3½-5 ft. high plants were growing in small clumps and were locally abundant in an area of about a quarter of an acre. At first this was thought to be an undescribed species closely allied to *K. ensifolia* Bak., *K. tuckii* Bak. (Bot. Mag. t. 7644) and *K. rivularis* Berg. (F.P.S.A. pl. 866). *K. ensifolia* was originally collected in the Western Transvaal near the Matebe River about 12 miles north-west of Zeerust. *K. tuckii* is a native of Colesberg in the northern Cape, and *K. rivularis* was described from Modderfontein, north of Johannesburg. *K. rivularis* had previously been found in the Rietvlei catchment area near Pretoria, so it was decided to visit this area and make a comparison between these plants and the specimen from Witbank. It was not until December 12th, over a month later, that *K. rivularis* was found in flower, thinly scattered in a vlei about 14 miles south-east of Pretoria. The flowering spikes of this species consisted of dull red flowers in the upper part and greenish-white below, but one inflorescence was found with pure white flowers and no trace of red. This plant was compared with our var. *albiflora* from near Witbank and no real distinction could be found. Both were tall plants with broad glaucous-green leaves with serrulate keels and margins, though this latter character was variable and some of the outer leaves were smooth; the peduncles in both cases were slightly longer than the leaves and the inflorescences dense, white-flowered and sub-cylindrical. The only difference observed was that the plant from Rietvlei was in flower a month later and that a basal sterile bract 5-8 cm. long was conspicuous in the bud stage of this plant and was not observed in the Witbank ones. It was now necessary to determine whether *K. rivularis*, the most recently described of the three species, was distinct from the other two. The type specimens of *K. ensifolia* Bak., *K. rivularis* Berg. and *K. tuckii* Bak. were kindly loaned by the Royal Botanic Gardens, Kew, for comparison. The type of *K. ensifolia* was unfortunately very fragmentary, but a careful examination of all three specimens was made and though there were minor differences between them in the width and serration of the leaves and the size of the floral bracts, they agreed well in the shape and density of the inflorescence, the shape of the floral bracts, the size and shape of the perianth and the length of exertion of the stamens. Since going to press both *K. ensifolia* and *K. tuckii* have been collected from their type localities and from this material it is clear that *K. rivularis* is not distinct from *K. ensifolia*, though *K. tuckii* differs in its brighter flower colour and shorter leaves and should be upheld only as a variety of *K. ensifolia*, while our white-flowered plant becomes *K. ensifolia* Bak., var. *albiflora* E. A. Bruce.

OCHNACEAE.

Ochna glauca Verdoorn, sp. nov. (Ochnaceae); *O. pretoriensi* Phillips accedit sed a qua et a ceteris speciebus africanis foliis ramulisque glaucis differt.

Frutex 1.5–2.5 m. altus; ramuli glauci, lenticellati lenticellis haud conspicuis. *Folia* hysterantha, glauca, late oblongo-elliptica, 3 cm. longa, 1.8 cm. lata, marginibus minute crenato-serratis; petioli 2–5 mm. longi. *Flores* solitarii, apices ramulorum valde abbreviatorum orti; pedunculi 10–12 mm. longi. *Sepala* subaequalia, plus minusve oblonga, 7.5–8 mm. longa, 3.5–5.5 mm. lata, persistentia, deinde 1 cm. longa et reflexa. *Petala* mox decidua, unguiculata, circa 10 mm. longa, 8 mm. lata. *Stamina* indefinita; filamenta circa 4 mm. longa; antherae 2.5 mm. longae, 0.75 mm. latae, basifixae, rimis apicalibus dehiscentes. *Carpella* 5, 1 mm. longa, 0.5 mm. lata; stylus gynobasis 5.5 mm. longus apice breviter 5-lobatus; lobi 0.25 mm. longi apice stigmatosi. *Drupae* nonnumquam 2 disco incrassato insidentes, circa 8 mm. longae, 6 mm. latae.

TRANSVAAL.—Zoutpansberg district: de Klunderdt, Dongola Botanic Reserve, *Pole Evans* 4494 (fruiting) type; 4590; 4588 (flowering); *Verdoorn* 2292, 2333.

A glaucous straggling shrub 5–8 ft. tall; branches brittle, lenticels not very conspicuous. *Leaves* crowded, glaucous, metallic green, hysternanthous, often folded about the midrib and drooping, broadly oblong elliptic, about 3 cm. long and 1.8 cm. broad, margin rather obscurely or finely crenate-serrate, teeth proclivent, midrib prominent beneath, many slender lateral veins prominent above or on both surfaces and reticulate veins fairly obvious; petiole 2.5 mm. long. *Flowers* precocious, solitary at the apices of much abbreviated shoots which are numerous on the apical branchlets. *Peduncle* slender 10–12 mm. long. *Sepals* 5, rather unequal, the outer 7.5 mm. long 5.5 mm. broad, and the inner 8 mm. long and 3.5 mm. broad. *Petals* soon deciduous, obovate, crinkled in bud, 10 mm. long 8 mm. broad, rounded or bluntly acuminate at the apex, cuneate into a claw at the base. *Filaments* numerous, about 4 mm. long; anthers 2.5 mm. long, 0.75 mm. broad basifixed, dehiscing by 2 apical slits. *Carpels* 5, 1 mm. long and 0.5 mm. broad; style gynobasic, 5.5 mm. long, very shortly 5-lobed at the apex, lobes 0.25 mm. long, stigmatic at the apex. *Fruit* usually with 2 carpels maturing on the fleshy disc, about 8 mm. long, 6 mm. broad, green, turning brownish (persistent sepals reflexed from the disc turning reddish-brown).

All the specimens quoted above come from a granite hill on the farm de Klunderdt in the north-western Transvaal, but they were collected at different times of the year. The farm De Klunderdt was in the now abandoned Dongola Reserve. The species occurred in large numbers on this particular hill but it has, to date, not been recorded from anywhere else in South Africa. A duplicate sent to Kew was matched with a specimen, *Eyles Herb.* 3765, from the Matopos, S. Rhodesia, so it is probable that the species occurs in the granite hills of that country and our locality is the most southerly one. (While in press it has been possible to confirm this through the courtesy of the officer in charge of the Salisbury Herbarium.)

The glaucous green leaves are the most striking characteristic of this species. Like other species of *Ochna* the shrubs are leafless in winter and the flowers appear profusely before the leaves in spring. The leaves and fruits are borne during the very hot months when few collectors are out in the granite hills of these sub-tropical regions.

The species, having the inflorescence solitary or 2-nate at the apex of abbreviated shoots, falls in the same section in Phillip's key (*Bothalia* 1, Part 2, page 87) as *O. pretoriensis* Phillips and it is nearest to that species. Besides the glaucous colour of the leaves there are other characters in which our specimens differ from *O. pretoriensis*, but further material is required before they can be said to be specific distinctions. There seems to be some variation in leaf-shape in *O. pretoriensis* but the leaves of our plant are shorter and broader than those of the type and less distinctly serrate. In the fruiting material of *O. glauca* the enlarged persistent sepals are not erect and surrounding the

ripening fruits as seen on specimens of *O. pretoriensis*, but are strongly reflexed, exposing 2 green drupes, turning brownish as they ripen, seated on the enlarged disc, the sepals also turning a brownish-red colour. In *O. pretoriensis* the sepals eventually become reflexed evidently only after the fruit has ripened. The flowers, especially the petals of our specimens, are smaller than those of typical *O. pretoriensis*.

PEDALIACEAE.

Ceratotheca saxicola E. A. Bruce sp. nov. (Pedaliaceae); ab omnibus speciebus foliis minoribus suborbiculatis vel late ovatis, floribus concoloribus hellebori-rubris habitu minore multo ramosa saxicola valde distincta.

Herba perennis, parva, c. 45 cm. alta, basi et superne multo ramosa; rami graciles, teretes, lignosi, dense pubescentes, basi c. 3.5 mm. diam., ramuli graciliores vix 1.5 mm. diam., internodiis 1-2.4 cm. longis. *Folia* patuli, opposita, longe petiolata; petioli foliorum inferiorum usque 1.5 cm. longi superiorum 3 mm. longi, dense pubescentes; laminae suborbiculares vel late ovatae, inferiores 1.3-1.8 cm. longae, 1.3-2.4 cm. latae, basi truncatae, late cuneatae vel rare subcordatae, apice rotundatae, margine crenatae, utrinque pubescentes, superiores minores, ovatae vel late ovatae, 9-11 mm. longae, 8-13 mm. latae, basi cuneatae, aliter quam inferiores. *Flores* hellebori-rubri, in axillis foliorum superiorum solitarii; pedicelli 4-5 mm. longi, pubescentes. *Calyx* ad basin 5-lobatus; lobi leviter inaequales, oblongi, inconspicue falcati, 5-5.5 mm. longi, 2-2.5 mm. lati, apice rotundati, utrinque pubescentes. *Corollae-tubus* c. 2 cm. longus basi subglobosus, 3 mm. longus, 4 mm. diam., deinde inflatus oblique subcampanulatus, fauce 1.5 cm. diam., extra pubescens, intus e constrictione dense pilosus aliter glaber; lobi 5, extra pubescentes, intus glabri, 1 inferiore majore subpendulo late ovato 7 mm. longo 8.5 mm. lato, 4 superioribus subrectis transverse ellipticis 3 mm. longis 6.5 mm. latis. *Stamina* 4, subdidynama, supra constrictionem inserta, filamentis 1.1, et 1.2 mm. longis glabris, antheris anguste oblongis 3 mm. longis. *Discum* annulum, c. 0.5 mm. profundum. *Ovarium* subcylindricum, c. 2 mm. longum, 1.3 mm. latum, apice rotundatum, pubescens; stylus gracilis, glaber, 1.8 cm. longus, stigmata bilobata lobis planis oblongis apice acutis usque 1.5 mm. longis. *Capsula* oblongo-ovoidea, compressa, pubescens, 8-9 mm. longa, c. 5 mm. diam., apice breviter bi-cornuta, basi rotundata, cornubus patentibus vix 0.7 mm. longis. *Semina* subovoidea, compressa, brunnea, c. 2 mm. longa, rugoso-tuberculata, margine pallidiora leve.

TRANSVAAL.—Zoutpansberg district: Kruger National Park, 32 miles north-east of Punda Maria, 1,000 ft., in crevices in sandstone krantzies overlooking the Levubu River, May, *Codd* 5535 (type); April, *Codd*, 5980.

Ceratotheca saxicola is an attractive little plant with showy deep hellebore red flowers (Ridgway, pl. 38), differing from other species of *Ceratotheca* in its branched, bushy habit and small leaves. It appears to be very localized, as Dr. L. E. Codd, who discovered the species, has found it growing in only the one place in the Kruger National Park, though he has done extensive survey work on the flora of the whole of that region. Only two or three plants were found growing in a more or less inaccessible rock crevice on a steep rock face in Karoo sandstone formation, on the south bank of the Levubu River some miles west of the Pafuri Rest Camp.

C. triloba E. Mey ex Bernh., the only other species recorded from South Africa, is a common weed, which occurs throughout both Tropical and South Africa. Our plant is easily distinguished from this, not only in the flower colour, habit and size of leaves but also in the oblong obtuse calyx lobes, the broader anthers and stigma lobes, the very short horns on the capsule and the lack of glandular pubescence.

The specific epithet *saxicola*, meaning "rock-dweller" refers to the plant habitat.

RUTACEAE.

Fagara humilis E. A. Bruce, sp. nov. (Rutaceae); affinis *F. capensis* Thunb. et *F. magalismontanae* Engl., a quibus foliolis minoribus latioribus numquam nitidis basi rotundatis paribus subaequalibus nec apicem versus majoribus, rhachide piloso nec vel vix canaliculato, floribus majoribus valde distincta.

Frutex parvus, 0.9–1.5 m. altus, cortice pallido-cinereo; rami e basi plures, suberecti, ramosi, dense pubescenti, demum glabrescentes, 4–7 mm. diam., aculeis plerumque curvatis 5–9 mm. longis basi valde dilatatis interdum e ramulis junioribus aculeis suberectis armatis. *Folia* petiolata, 8–15 (plerumque 9–10) jugata paribus subaequalibus vel apicem versus minoribus; petioli et rhachides 7–9 cm. longi (juniores breviores 3–6 cm. longi,) pilosi nec vel vix canaliculati, aculeis parvis recurvatis armati. *Foliola* aromatica, sessilia, coriacea, numquam nitida, ovata vel oblongo-ovata, leviter obliqua, basi rotundata, apice rotundata vel rare subacuta, 1–1.3 cm. longa, 5–7 mm. lata, margine superne crenata in quoque sinu glandula notata leviter incurvata pilis paucis ciliata, nervis lateralibus utrinsecus circiter 4–6 patulis; foliola juniora tenuiora, minora, supra fusca subtus pallidiora. ♂ *Inflorescentia* racemosa, racemis e nodo caulis apicem versus 4–7 fasciculatis; racemi 2.5–3 cm. longi, 4–6-flori, pedunculo pubescente basi sublanato petiolo multo breviora; flores albi vel flavi, breviter (1–1.5 mm.) pedicellati, inferiores mox decidui, pedicellis basi articulatis. *Sepala* 5, parva, late triangularia, basi connata, c. 1 mm. longa, apice plus minusve lanata, acuta. *Petala* 5, oblongo-elliptica, leviter cymbiformia, c. 4.5 mm. longa, 1.8 mm. lata, basi angustata, apice obtusa vel subacuta. *Stamina* 5, filamentis 2.5 mm. longis, antheris anguste oblongis 2 mm. longis. *Ovarium* abortivum, parvum, subglobosum. ♀ *Inflorescentia* spicata, spicis apice caule 3–5 fasciculatis; spicae c. 2 cm. longae, pedunculo pubescente. *Sepala* 5, parva, ovato-triangularia, basi connata, c. 0.5 mm. longa, apice obtusa vel subacuta, margine ciliata. *Petala* 5, oblongo-elliptica, 2.5–3 mm. longa. *Stamina* 0; staminodia minuta. *Ovarium* late et oblique ovoideum, 1.5 mm. longum, stylo incurvato unilateraliter juxto, stigmata subglobosa, disco parvo. *Capsula* oblique ovoidea, circiter 7 mm. longa, glandulosa, brunnea. *Semina* solitaria, nigra nitidaque.

TRANSVAAL.—Letaba district: Kruger National Park, 4½ miles south of Shingwedzi Camp, 1,000 ft., shrub 4 ft. high with yellow flowers and reddish twigs, in Mopane veld on reddish granitic flats, Nov. 4th, 1948, *Codd* and *Dyer* 4671 (♂ fls.) type; Shingwedzi Camp, near Ranger's house, 900 ft., shrub 3 ft., erect branches, aromatic leaves and white flowers, in lowveld bush on rocky koppie, Nov. 3rd, 1948, *Codd* and *Dyer* 4651 (♂ fls.); *Lamont* 25 (young fruit); 13 miles north-east of Punda Maria, 1,400 ft., shrub 5 ft. high with aromatic leaves in Mopane veld in leegte, *Codd* and *Dyer* 4579; near Skukuza, in bush, leaves sweet-scented, Oct. 1934, *Letty* 68 (♀ fls.). Vanetzi River, 2,500 ft., shrub 4 ft. in dry bush veld, root-bark used against sores in the mouth, oil cellules in corners of leaf serrations, March 2nd, 1946, *Gerstner* 6034 (leaf); near junction of Limpopo and Pafuri Rivers, *Smuts* 2392 (leaf).

PORTUGUESE EAST AFRICA.—On dry stony soil in forest of *Copaifera* and *Acacia*, May 8th, 1944, *Torre* 6599 (fruit).

This interesting species of *Fagara* has been collected several times in the Kruger National Park in addition to two outside localities. Material of both male and female flowers, fruits and leaves has been gathered, so that it has been possible to draw up a full description of the species. According to Engler's revision of Rutaceae in Engl. and Prantl. *Natürliche Pflanzenfamilien* Bd. 19A, p. 221 (1931), this species should belong to Section *Maqueria* Triana and Planch., subsection *Paniculatae* Engl. § *Gerontogaeae* Engl., and in the small leaflets is most closely allied to *F. capensis* Thunb. and *F. magalismontana* Engl. It is, however, distinguished from these species in the dwarf habit, pubescent branches and leaf rhachis, dull surfaced leaves and fasciculate inflorescences.

F. humilis, as the name implies, is a small, comparatively insignificant shrub with no outstanding characteristics. It grows singly or forms a low thicket of thorny stems, which bear the small creamy-yellow flowers towards the ends of the branches in late spring before the leaves are fully developed.

SCROPHULARIACEAE.

Lindernia dongolensis E. A. Bruce, sp. nov. (Scrophulariaceae); affinis *L. stuhlmanii* Engl., sed caule simplice, foliis inferioribus plurimis, superioribus apicem caulis versus longioribus, floribus axillaribus differt.

Herba erecta, simplex, gracilis, glabra, 5–7 cm. alta, caule subquadrangulare circiter 0.5 mm. diam. *Folia* sessilia, integra, glabra, inferiora plurima, linearia vel subulata, 5–7 mm. longa, basi 1 mm. lata, superiora linearia vel anguste lineari-lanceolata, usque 1.3 cm. longa, 1.5 mm. lata, apicem caulis versus in 2–4 paribus disposita. *Flores* in axillis foliarum superiorum solitarii, pedicellis 4–8 mm. longis. *Calyx* campanulatus, glaber, 2–2.5 mm. longus, 5-lobatus, lobis trianglari-ovatis circiter 1 mm. longis basi vix 1 mm. latis apice rotundatis vel subacutis minute mucronatis. *Corolla* 9–11 mm. longa, tubo infundibuliformi 4–5 mm. longo fauce circiter 4 mm. diam., labio superiore anguste obovato glabro 4 mm. longo 2.5 mm. lato, inferiore longiore trilobo lobis lateralibus anguste obovatis 4–4.5 mm. longis 3 mm. latis medio longiore obovato 4.5–6 mm. longo apicem versus 4–4.5 mm. lato basi 2 mm. lato inferne puberulo. *Stamina* 4, filamentis 3.5–4 mm. longis, inferioribus basi 1 mm. incrassatis geniculatis, superioribus c. 3 mm. longis fauce insertis; antherae c. 0.5 mm. longae divaricatae. *Ovarium* ovoideum; stylus circiter 4 mm. longus, stigma bilamellata lobis suborbicularibus circiter 1 mm. diam. margine fimbriatis. *Capsula* ovoidea, circiter, 4 mm. longa, 2 mm. diam. calyce longiora.

TRANSVAAL.—Zoutpansberg district: Dongola area, De Klundert, growing in water in a shallow rock pan on a rocky koppie, March, Bruce 66 (flower).

FIG. 6.

This small slender herb was found growing in about $\frac{1}{2}$ –1 in. of water in a shallow rock depression or pan about 4 ft. diam. on a large flat rock slab half-way up a koppie in full sun. There were a number of these plants growing close together in little clumps, their long slender roots intertwined and forming a dense mass, which held together what little "soil" there was. The rather fleshy basal leaves of the plants form a dense cluster or rosette and towards the top of the otherwise bare stem were two to four opposite pairs of rather longer leaves. The plants were flowering freely and the white corollas tinged with lilac with an orange spot at the throat, made a colourful display against the bare grey rock. The upper lip of the corolla is entire and forms a little hood under which the stamens are curved, the lower lip is large and 3-lobed, forming a platform from which the lower pair of stamens arise. This pair of stamens has a purple-tinged, knee-like, puberulous appendage at the base.

The genera *Craterostigma*, *Ilysanthes*, *Torenia* and *Lindernia* are very closely related. *Ilysanthes* can be separated out in having only two stamens, whereas the other three genera have four stamens. Both *Torenia* and *Craterostigma* have a winged or plicate calyx, which is not the case in *Lindernia*. Our specimen, therefore, definitely belongs to the genus *Lindernia*, as it has four stamens and the calyx-tube is neither plicate nor winged. A duplicate specimen was sent to Kew and it was there confirmed that it was a new species of *Lindernia*, though similar in habit to *Ilysanthes welwitschii* Engl. It is interesting to note that Dr. Pole Evans, who knows the vegetation of the Dongola area very well, has no recollection of having seen this little plant before.

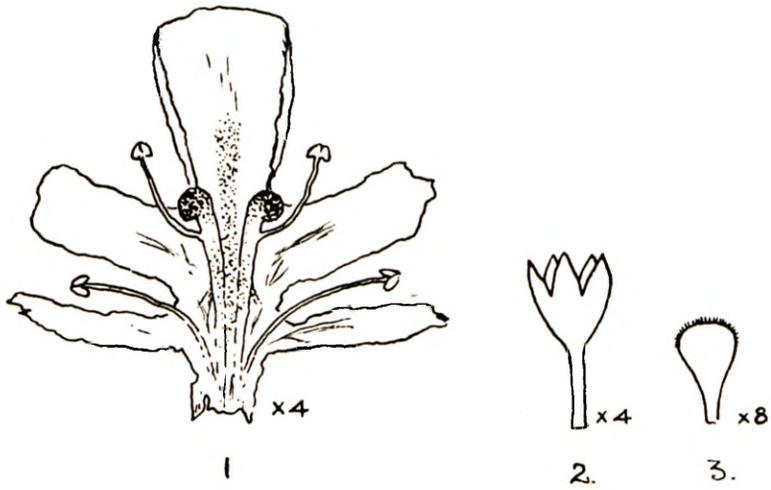


FIG. 6.—*Lindernia dongolensis* E. A. Bruce.
1—Corolla split down one side, $\times 4$. 2—Calyx, $\times 4$. 3—Stigma $\times 8$.

VERBENACEAE

***Vitex patula* E. A. Bruce** sp. nov. (Verbenaceae); affinis *V. madiensis* Oliv. et *V. amboniensis* Gürke, a quibus foliolis sessilibus vel subsessilibus fructu minore, a *V. madiensis* foliolis minoribus integris, a *V. amboniensis* foliis 3-foliolatis obovatis obtusis facile distinguenda.

Frutex vel *arbor* parva, 2-4.5 m. alta; rami patuli, subteretes, cani vel pallido-brunnei, parce pubescentes demum glabrescentes, longitudinaliter fissi; ramuli juniores pallido-flavo-brunnei-tomentosi. *Folia* opposita, submembranacea nec coriacea, plerumque 3-foliolata rare 4-5-foliolata, longe petiolata; petiolus inflorescentia plus minusve subaequalis, 3.5-6.5 cm. longus, teres nec caniculatus, pubescens vel juniore brevior tomentosus; foliola integra, sessilia vel subsessilia (terminale obovata 4-7.5 cm. longa 2-3.5 cm. lata lateralibus minoribus obovato-ellipticis 3-6.5 cm. longis 2-3.5 cm. latis) apice rotundata vel rare subacuta, basi cuneata, subtus parce glandulosa et nervis crispo-pubescentibus, supra parce scabridula (juniora densiore pubescentia); nervi laterales utrinsecus 8-11, subtus prominentes plus minusve patuli, nervis tertiariis distinctis inter se paralleleis. *Cymae* dichotomae, axillares, ramulos apicem versus longe pedunculatae; pedunculi 3-4 cm. longi, dense pubescentes vel subtomentosi; bracteae lineares, 0.8-1.3 cm. longae, pubescentes vel tomentosae. *Flores* parvi pedicellati, mauvi. *Calyx* obscure bilabiatus, 5-dentatus, extus tomentosus, intra glabrescens, tubo campanulato c. 2.5 mm. longo, lobis 3 anticis quam 2 posticis majoribus triangularibus acutis 1-1.5 mm. longis. *Corollae-tubus* anguste infundibuliformis calyce longior, c. 4.5 mm. longus, basi 1.5 mm. fauce 3-5 mm. diam.; lobi inaequales, tomentosi apice rotundati, antico maximo transverse elliptico 3.5 mm. longo 4 mm. lato lateralibus ovatis 2.5 mm. longis 2 mm. latis. *Stamina* 4, basi corollae inserta, breviter exserta. *Ovarium* globosum, 1 mm. diam., glabrum, glandulis paucissimis apicem versus obtectum. *Fructus* niger, nitidus, ovoideus, 1.5 cm. longus, 0.9 cm. diam.

PORTUGUESE EAST AFRICA.—Maputo district: between Santaca and Mazimiana, on sandy soil in open forest, Nov., *Gomes e Sousa* 3885; near the Transvaal border, growing in sandy soil, small edible berry, Dec., *Lamont* 27.

TRANSVAAL.—Zoutpansberg district: Kruger National Park, Dzundweni Hill, 11½ miles S.E. of Punda Maria, in lowveld bush on rocky hillside, 1,500 feet, March, *Codd* 5319, (type); 4½ miles north-east of Punda Maria, in dense bush on low rocky ridge, 1,400 feet, June, *Codd* 4227; Punda Maria, in sandy veld on koppie, Jan., *Lamont* 45; 6 miles north-west of Punda Maria, in fairly dense bush, 1,500 feet, April, *E. A. Bruce* 172; Limpopo, Dec. 1928, *Hutchinson* 2101; 1½ miles north of P.O. Wylliespoort, 3,000 feet, on steep rocky hillside at foot of north slopes of Zoutpansberg Range, May, *Codd* 4163; near Wylliespoort, Nov., *Pole Evans* 1951; Wylliespoort, April, *Rodin* 4232.

Vitex patula is a summer flowering shrub or small tree with rather straggling, spreading branches, mauve flowers, 3-foliolate, rarely 4-5 foliolate, leaves and small shiny, black, edible fruits. The species generally occurs in fairly dense bush on rocky hillsides, but has also been found on sandy soil in open forest. Its range of distribution, as represented by our material, is from Wylliespoort in the Zoutpansberg range eastwards to Punda Maria and then a long jump south-east to the Maputo district in Portuguese East Africa.

As in other species of *Vitex* there is variation in leaf size, texture and pubescence and in the pubescence of the branchlets in the flowering and fruiting stages; the leaves and young branches particularly are much more densely pubescent in the flowering than in the fruiting stages. According to Pieper's Revision of *Vitex* in Engler's Bot. Jahrb. (1928), *V. patula* E. A. Bruce, on account of its glabrous, subglobose ovary and more than 3-celled calyx hairs with an elongate unthickened tip, should belong to subgenus *Euvitex*, sect. *Axillares*, subsect. *Cymosae* § *Glandulosae*: *Eutriches*. Material

sent to Kew for comparison was allied to *V. amboniensis* Gürke, a species belonging to §*Pilosae*, which differs from our species in the 5-foliolate leaves with narrower, acute, more pubescent, petiolulate leaflets, and hairy ovary. Our species is also related to *V. madiensis* Oliv., a very variable species with a number of varieties. It can be distinguished from this in the smaller, sessile, thinner-textured leaflets in which the tertiary veins are finely impressed, reticulate.

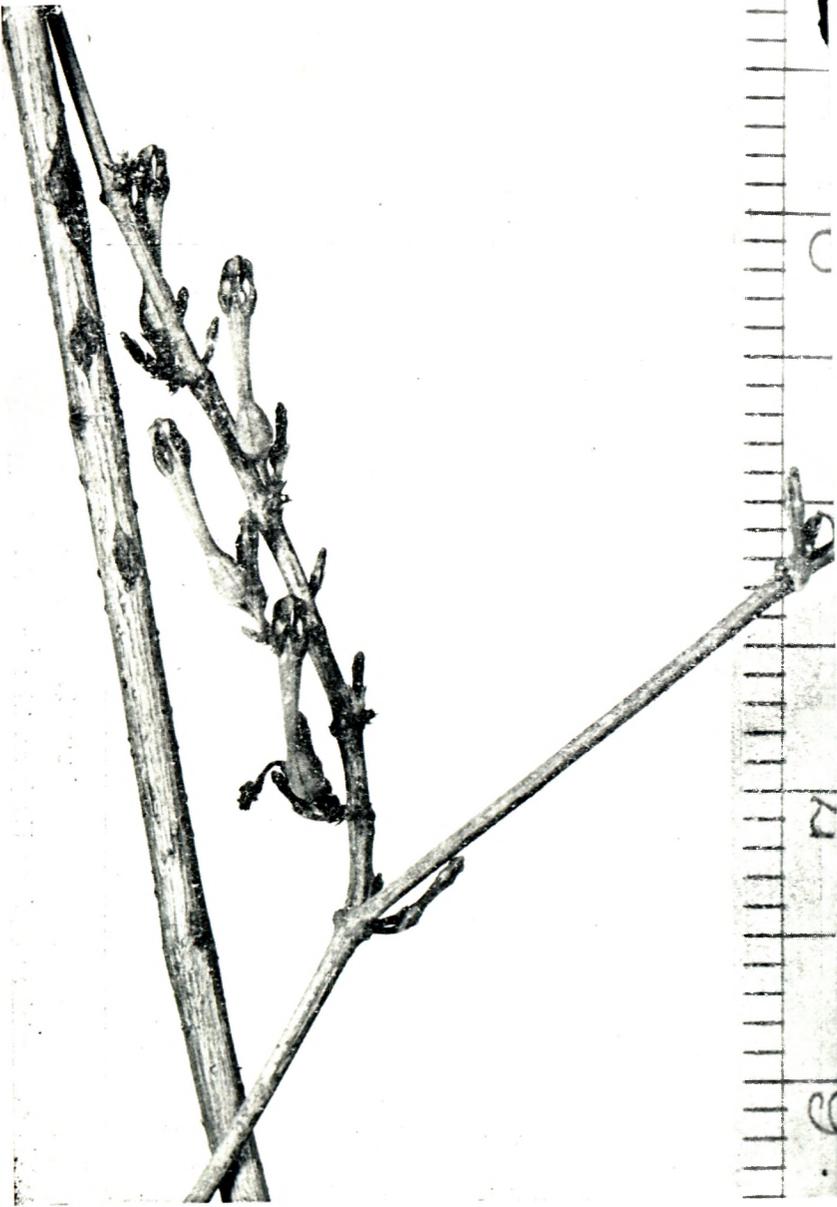


PLATE I.
Ceropogia decidua E. A. Bruce.
(Photo of type by H. King.)

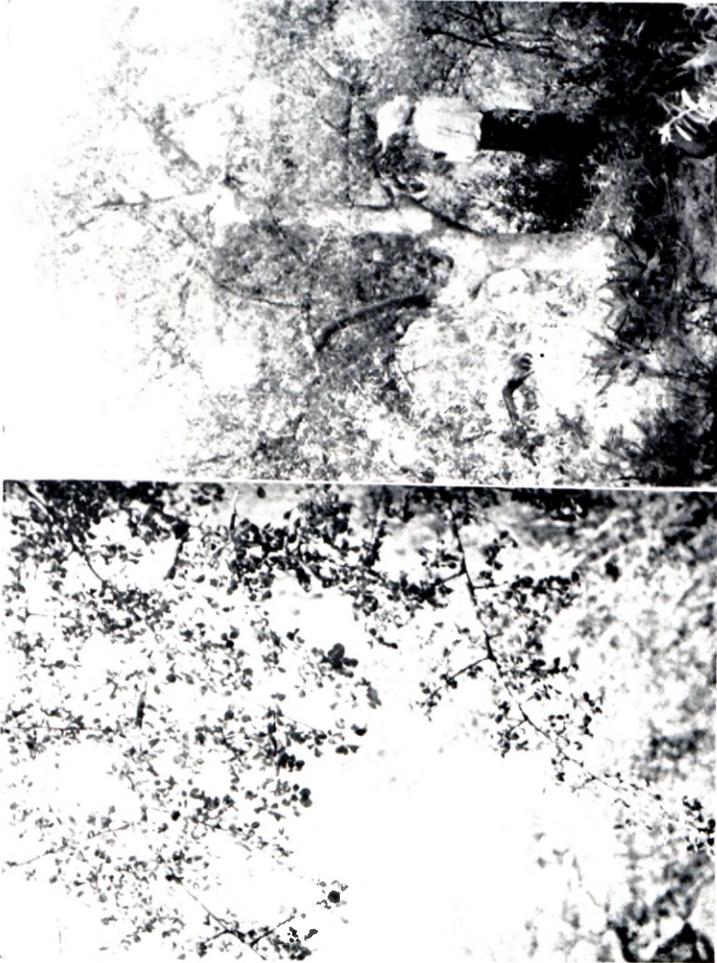


PLATE 2.

Commiphora neglecta Verdoorn, 21 miles N.E. of Nylstroom.



PLATE 3.

Encephalartos humilis Verdoorn. Top male cone on plant on Schagen Hill; below, the whole plant. [Photos by R. A. Dyer.



PLATE 4.

Euphorbia clivicola R. A. Dyer.



PLATE 5.

Euphorbia confinalis R. A. Dyer; type specimen taken from the tree in foreground in the Kruger National Park. [Photo by L. E. Codd.]

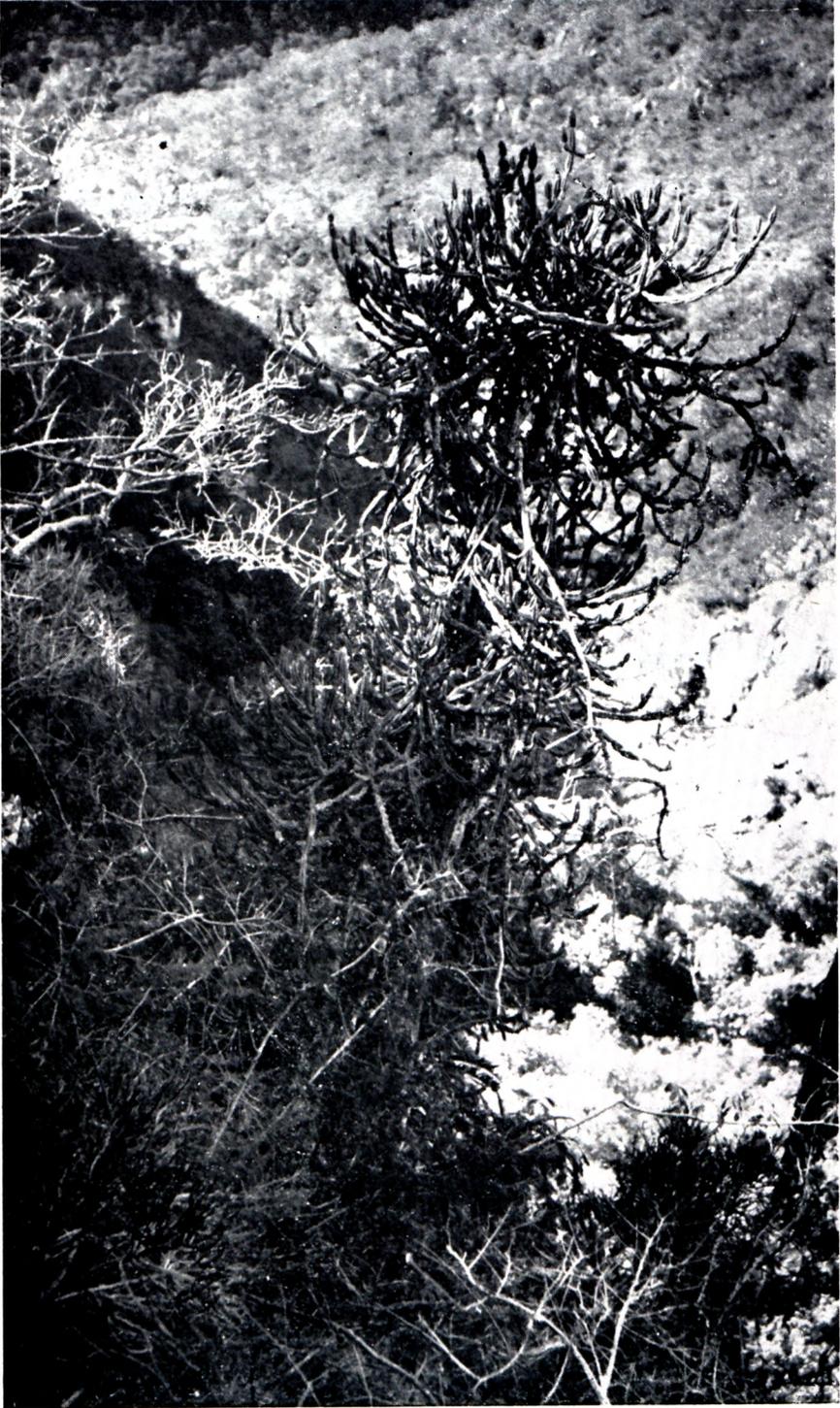


PLATE 6.
Euphorbia keithii R. A. Dyer, in natural habitat.



PLATE 7.

Euphorbia keithii R. A. Dyer. Left, small tree in natural habitat on face of krantz near Stegi; right, top of branch in young fruit.

[Photo by H. King.]

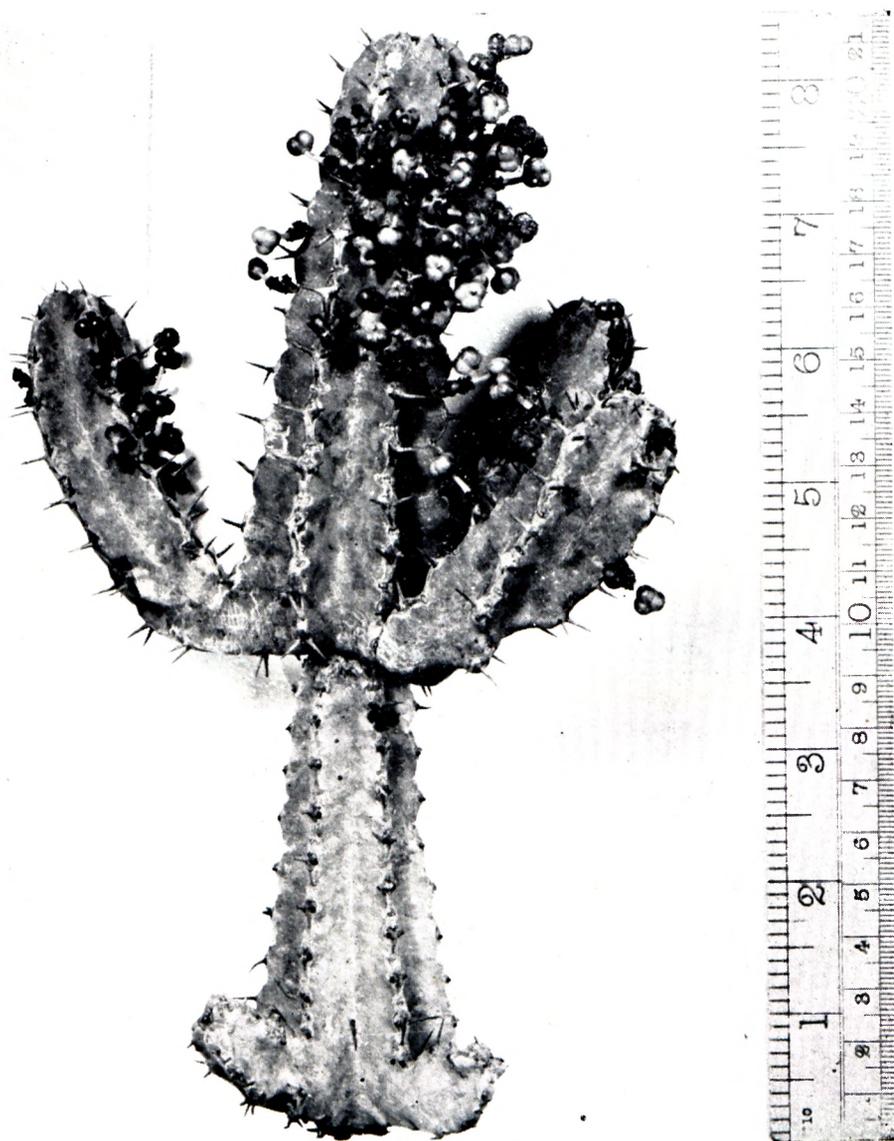


PLATE 8.

Euphorbia keithii R. A. Dyer, fruiting specimen.—(Photo *H. King.*)



PLATE 9.
Euphorbia restricta R. A. Dyer. (Photo H. King.)



PLATE 10.
Euphorbia unicornis R. A. Dyer. (Photo H. King.)