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Miscellaneous notes on the flora of Tropical East Africa including descriptions of new taxa, 38¹

P. R. O. BALLY

RÉSUMÉ.

La présente contribution est la douzième d'une série consacrée à la flore de l'Afrique tropicale orientale, que l'auteur se propose de continuer.

L'auteur traite l'ensemble des "Eucarallumes" d'Afrique orientale et modifie quelque peu leur classification pour tenir compte de notre connaissance approfondie de cette intéressante section du genre *Caralluma*. L'article contient une clef de détermination, quatre cartes de répartition et sept illustrations de quelques-unes des espèces et sous-espèces.

ZUSAMMENFASSUNG.

Dies ist der zwölften Abschnitt einer Folge von Beiträgen zur Kenntnis der Flora des tropischen Ostafrika, die der Autor fortzusetzen beabsichtigt.

Die tropisch-ostafrikanischen Eucarallumen werden hier in ihrer Gesamtheit dargestellt; einige Unklarheiten und Unstimmigkeiten werden berichtigt und dem Stand unserer heutigen Kenntnis dieser interessanten Sektion der Gattung *Caralluma* angepasst. Der Aufsatz enthält einen Bestimmungsschlüssel, vier Verbreitungskarten und sieben Illustrationen einiger der Arten und Unterarten.

SUMMARY.

This is the twelfth contribution to a series devoted to the flora of Tropical East Africa which the author intends to continue.

The East African Eucarallumas are reviewed here and their classification is somewhat modified to conform with our wider knowledge of this interesting section of the genus *Caralluma*. The paper contains a key to the East African species, four distributional maps and seven drawings of some of the species and subspecies.

¹ Cf. Candollea 17: 25, 53, 71; 18: 9, 335; 19: 145; 20: 13; 21: 3, 365; 22: 39, 255.

38. *Caralluma sect. Caralluma* (sect. *Eucaralluma* K. Schum. emend. White et Sloane)
in Tropical East Africa

When Alain White and Boyd L. Sloane published their classical monograph "The Stapelieae" in 1937, they extended K. Schumann's section *Eucaralluma* to all species of *Caralluma* which develop a long, virgate and tapering floriferous growth, including in it the section *Lalacruma* which Schumann had erected—tentatively only, in view of the fragmentary material at his disposal—in order to accomodate *Caralluma gracilipes*, on account of its stipitate corona.

Out of a total of 13 species in that section known in their time, White & Sloane recorded 4 for Tropical East Africa: *Caralluma gracilipes* K. Schum. (in Engl., Pflanzenw. Ost-Afr. C: 328. 1895), *C. priogonium* K. Schum. (Bot. Jahrb. 34: 327. 1905) *C. dicapuae* (Chiov.) Chiov. (Ann. Bot. 10: 392. 1912) and *C. mogadoxensis* Chiov. (Fl. Som. 2: 299. 1932).

In the course of the thirty-odd years which have passed since publication of White & Sloane's monograph, the present writer had many opportunities to study East African stapeliads in the field and in cultivation, and to examine gatherings made by other collectors.

Based on a thus greatly increased documentation he attempts hereunder to present his conception of the picture of the Tropical East African *Eucarallumas* as it emerges today.

Although he agrees with White and Sloane's view that the differences between *C. priogonium* and *C. gracilipes* do not call for their separation under two sections, he considers them as representing two well defined subsections within "*Eucaralluma*", each numbering two or more species or subspecies.

CONSPECTUS

Caralluma sect. Caralluma (sect. *Eucaralluma* K. Schum. emend. White et Sloane).
Floriferous portion of the stem virgately attenuated.

Subsect. **Priogonium** Bally, subsect. **nova** (type species: *C. priogonium* K. Schum.).

Angulis ramorum dense serratis; corollae lobis patentibus lanceolatis, pilis marginalibus in medio inflatis sparse instructis; gynostegio brevi, coronâ late sessili, aliquando pilis minutis instructa, lobis exterioribus erectis, obtuse bifidis, interioribus obtuse triangularibus, obtusis, supra gynostegium conniventibus.

Stems sturdy, their vegetative portion saw-edged with closely set teeth along their angles. Corona sessile. Follicles flattened, lozenge-shaped in cross section.

C. priogonium K. Schum.

C. congestiflora Bally

Subsect. *Lalacruma* (K. Schum.) Bally, stat. nov. (Basionym: *Caralluma* sect. *Lalacruma* K. Schum. in Engler & Prantl, Nat. Pfl.-Fam. 4/2: 278. 1895; type species: *C. gracilipes* K. Schum.)

Stems comparatively slender, teeth distant, Corona subsessile to stipitate. Follicles circular in cross section.

Ser. *Lalacruma*

Lobes of the mature corolla rigidly expanded, sublinear.

- C. gracilipes* K. Schum. ssp. *gracilipes*
- C. gracilipes* K. Schum. ssp. *arachnoidea* Bally
- C. gracilipes* K. Schum. ssp. *breviloba* Bally

Ser. *Flaccidiflorae* Bally ser. nova (type species: *C. dicapuae* (Chiov.) Chiov.)

Coronae maturae lobis flaccide pendulis, sublinearibus vel elliptico-ovatis, longitudinaliter plicatis.

Lobes of the mature corona flaccidly pendulous, sublinear to elliptic-ovate, longitudinally replicate.

- C. dicapuae* (Chiov.) Chiov. ssp. *dicapuae*
- C. dicapuae* (Chiov.) Chiov. ssp. *turneri* (E. A. Bruce) Bally
- C. dicapuae* (Chiov.) Chiov. ssp. *setiloba* Bally
- C. dicapuae* (Chiov.) Chiov. ssp. *ukambensis* Bally
- C. peckii* Bally

The position of *Caralluma mogadoxensis* Chiov. (described in Flora Somala 2: 299. 1932) is uncertain. I have not seen the type, but from the description and from the somewhat schematized drawing, it seems to combine the low, sessile corona of subsection *Priogonium* with the extremely narrow, elongate and possibly pendulous corolla lobes of some species in subsection *Lalacruma*. Since 1929, when Dr. Lorenzo Senni discovered it near Mogadiscio, the capital of Somalia, it was not collected again.

Eucarallumas with extra-African affinities are: *C. moniliformis* Bally from the Somalia Republic North, described and figured in Candollea 20: 17-19. 1965, whose closest affinity is with the Arabian *Caralluma subulata* Decne; and *C. edulis* (Edgew.) Gravely et Mayuran (*Boucerosia edulis* Edgew. in Journ. Linn. Soc. 6: 205, tab. 1. 1862), a species previously described from India (Punjab, Sind, Baluchistan), occurring in the plains, near sea level, of the Berbera District in the Somalia Republic North: it appears to be closely related to, if not identical with, *C. vittata* N. E. Br. Discovered by Theodore Bent in 1895 in the Kassala Province of the Sudan, it has since been recorded in the Red Sea District from sea level up to 1230 m (see T. W. Andrews, Flora of the Anglo-Egyptian Sudan 2: 404. 1952).

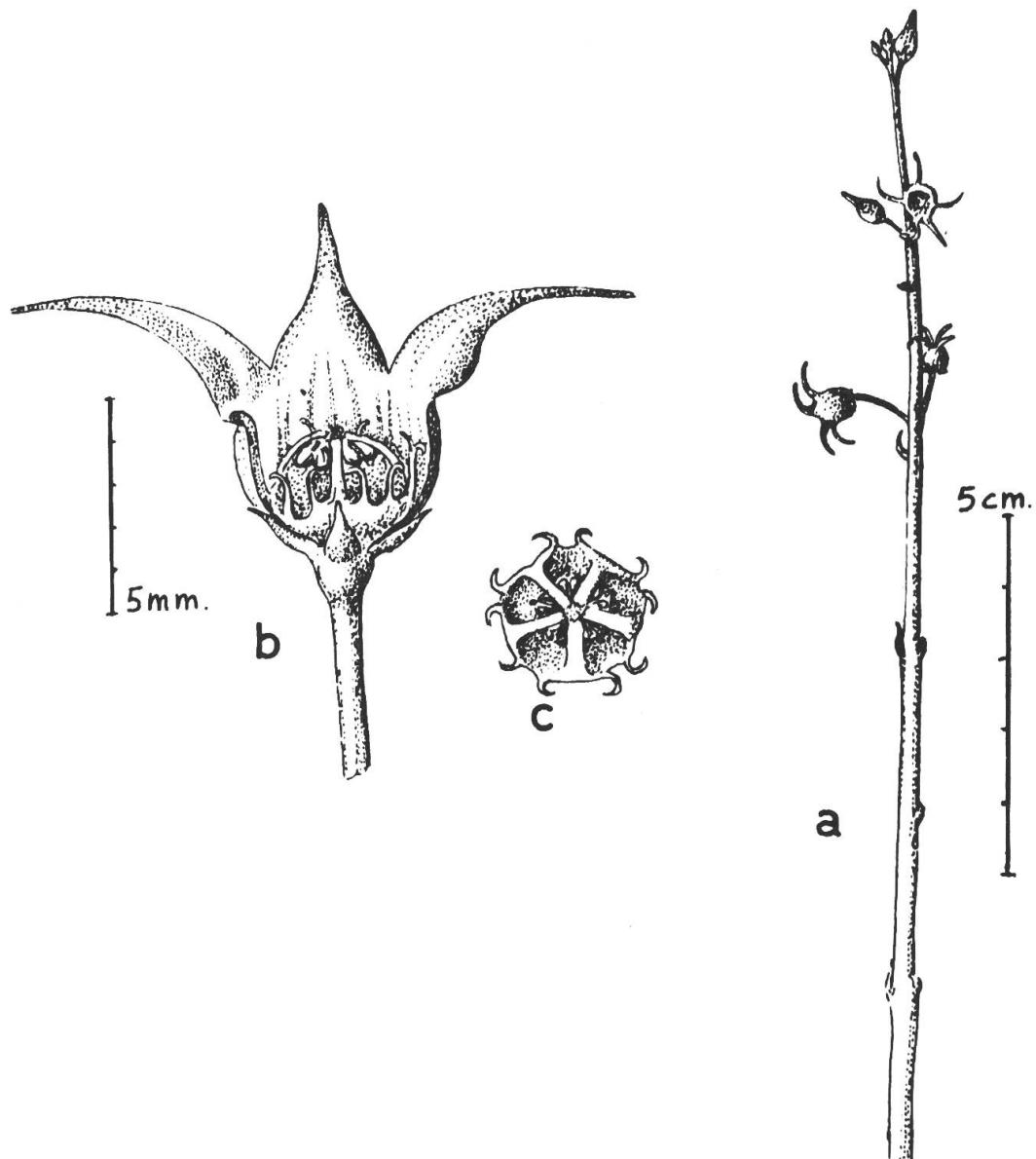


Fig. 1. — *Caralluma edulis* (Edgew.) Benth. et Hook. fil.:
a, top of a flowering growth; b, longitudinal section through a flower; c, corona, viewed from above (from Bally B7130).

KEY

1 Corolla tube globose-campanulate; lobes less than twice as long as the tube; stems subterete, semi-scandent . . . *Caralluma edulis* and *C. vittata*

1* Corolla tube widely funnel-shaped to shallowly cupular; lobes more than twice as long as the tube 2

2 Floriferous portion of the stems terete, constricted at the internodes
C. moniliformis

2* Floriferous portion of the stem quadrangular or subquadrangular, tapering evenly 3

3 Corona sessile, widest at the base (subsect. *Priogonium*) 4

3* Corona subsessile to stipitate (subsect. *Lalacrumia*) 6

4 Outer corona lobes simple, forming 5 obtuse, elliptical lobes; inner lobes linear-spathulate, shortly bifid at the apex (imperfectly known species) *C. mogadoxensis*

4* Outer corona lobes bifid 5

5 Flowers 1-3 at each internode, corolla purple with white bands and spots at the base of the lobes *C. priogonium*

5* Flowers up to 30 at each internode, corolla and corona bright yellow
C. congestiflora

6 Corolla lobes rigidly spreading (ser. *Lalacrumia*) 7

6* Corolla lobes flaccidly pendulous (ser. *Flaccidiflorae*) 9

7 Inner corona lobes much reduced, equalling the staminal column
C. gracilipes ssp. *breviloba*

7* Inner corona lobes, erect, much exceeding the staminal column 8

8 Outer corona lobes much reduced, obtusely bifid; staminal column conspicuously stipitate *C. gracilipes* ssp. *gracilipes*

8* Outer corona lobes deeply bifid with subulate segments; staminal column subsessile or shortly stipitate *C. gracilipes* ssp. *arachnoidea*

9 Corona subsessile or shortly stipitate 10

9* Corona clavately stipitate 12

10 Corona with setose outer lobes; outer corona lobes short, obtusely bifid; inner corona lobes broadly strap-shaped, obtuse
C. dicapuae ssp. *seticorona*

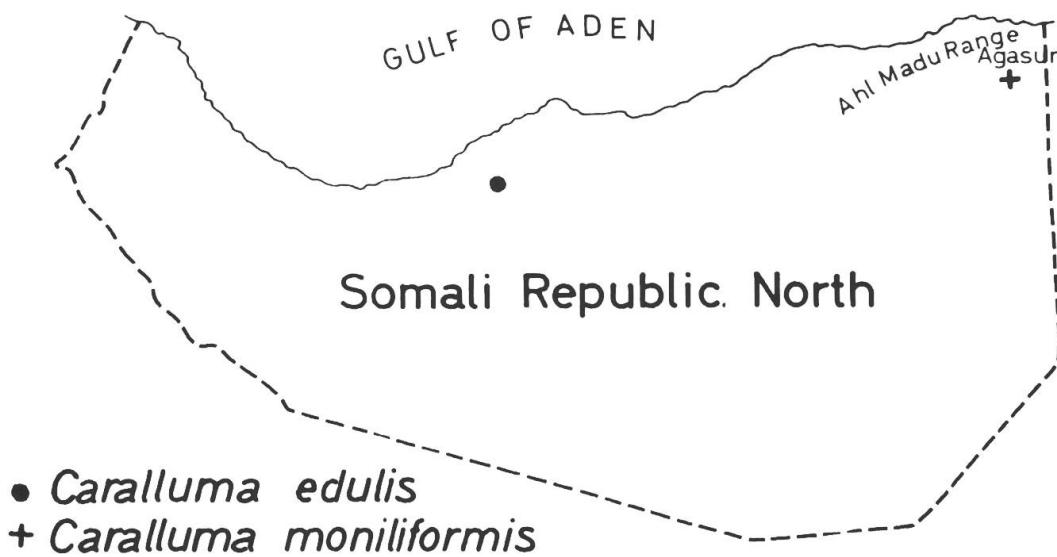
10* Corona glabrous 11

11 Outer corona lobes short, erect, obtusely bifid; inner corona lobes sublinear *C. dicapuae* ssp. *dicapuae*

11* Outer corona lobes deeply bifid with spreading erect, or reflexed subulate segments *C. dicapuae* ssp. *turneri*

12 Outer corona lobes shortly bifid with reflexed subacute tips, inner lobes linear, exceeding and connivent over the staminal column
C. dicapuae ssp. *ukambensis*

12* Outer corona lobes reduced to 2 minute scale-like appendages, inner lobes shortly triangular, acute, equalling the staminal column *C. peckii*



DISCUSSION OF THE SPECIES AND THEIR DISTRIBUTION

***Caralluma priogonium* K. Schum. in Bot. Jahrb. 34: 327. 1905.**

= *Caralluma elata* Chiov. in Miss. Biol. Borana Racc. Bot. Angiosp. Gymnosp.: 169. 1939.

C. priogonium was discovered by Prof. A. Engler on Oct. 9, 1902 at Kihurio, Tanzania at the southern limit of its distribution; it is a component of the xerophytic vegetation typical of the more arid parts of the Horn of Africa which spills over towards the South through a gap of low country between the Pare- and the Usambara Hills. The species occurs throughout Kenya and Southern Ethiopia in the drier regions and is found as far north as Erivago in the Somalia Republic North.

The type specimen, deposited in the Berlin-Dahlem Herbarium, did not survive World War II, but from its photograph published in White & Sloane's "The Stapelieae" and from K. Schumann's description it would seem that the flowers, with a corolla measuring 10 mm in length only, were not fully mature (White & Sloane erroneously quote 10 mm as the diameter, not as the length of the corolla). Subsequent gatherings from the type locality and from elsewhere show the flowers to be somewhat larger: mature buds 1.2-1.6 cm long, the diameter of the fully open flower varies from 1.9 to 3.4 cm.

The colouring of the flowers is fairly constant throughout: corolla lobes outside (lower-surface) silvery grey with small purple dots. Inner (or upper) surface dark purple, sometimes suffused with olive green, in the lower third an irregular pattern of white stripes and dots. Margins beset with thin cilia in the lower half and with 1-3 thicker, straight setae at the mucronate apex. Cilia and setae show a bladder-like swelling in the upper half.

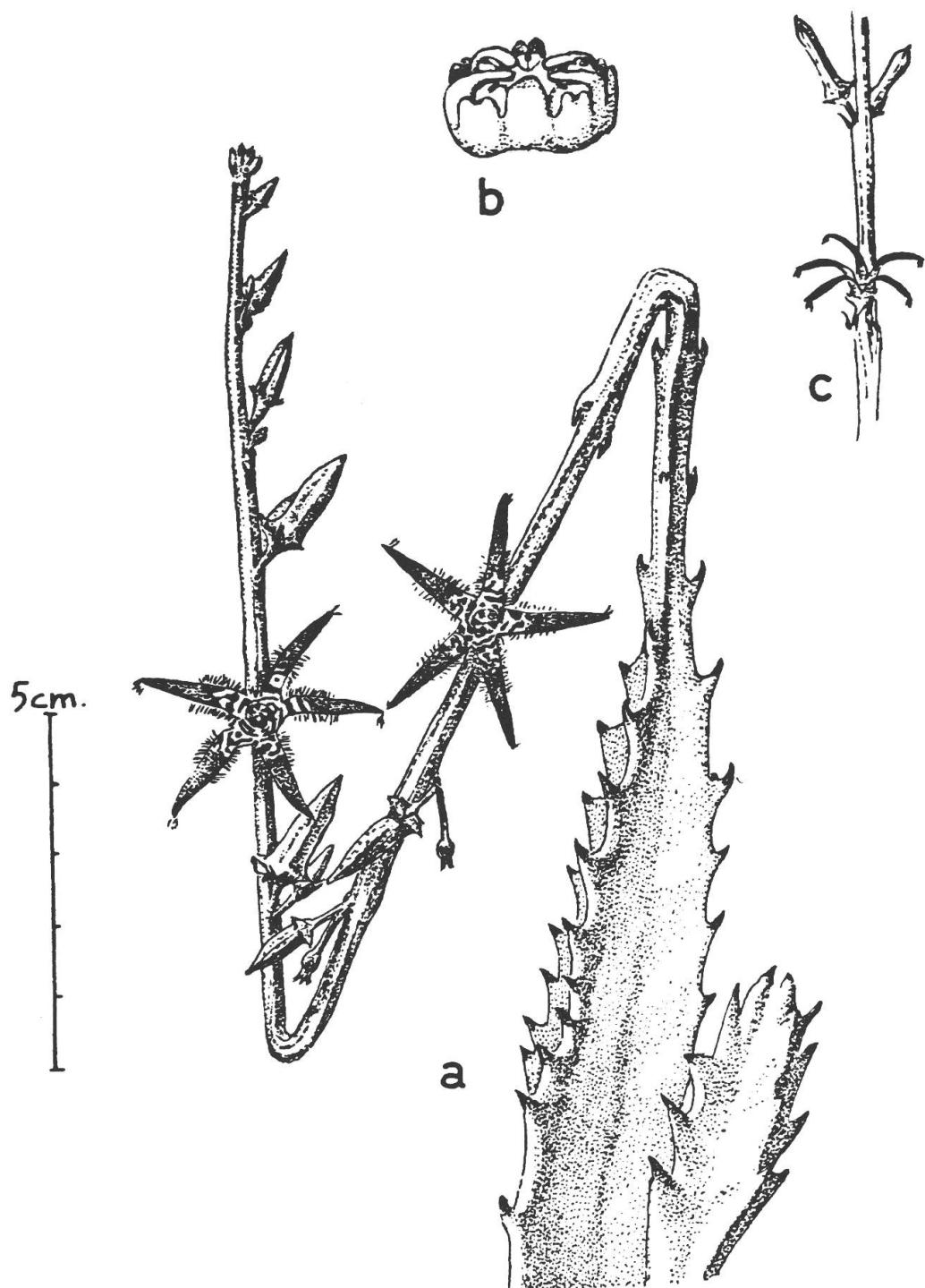
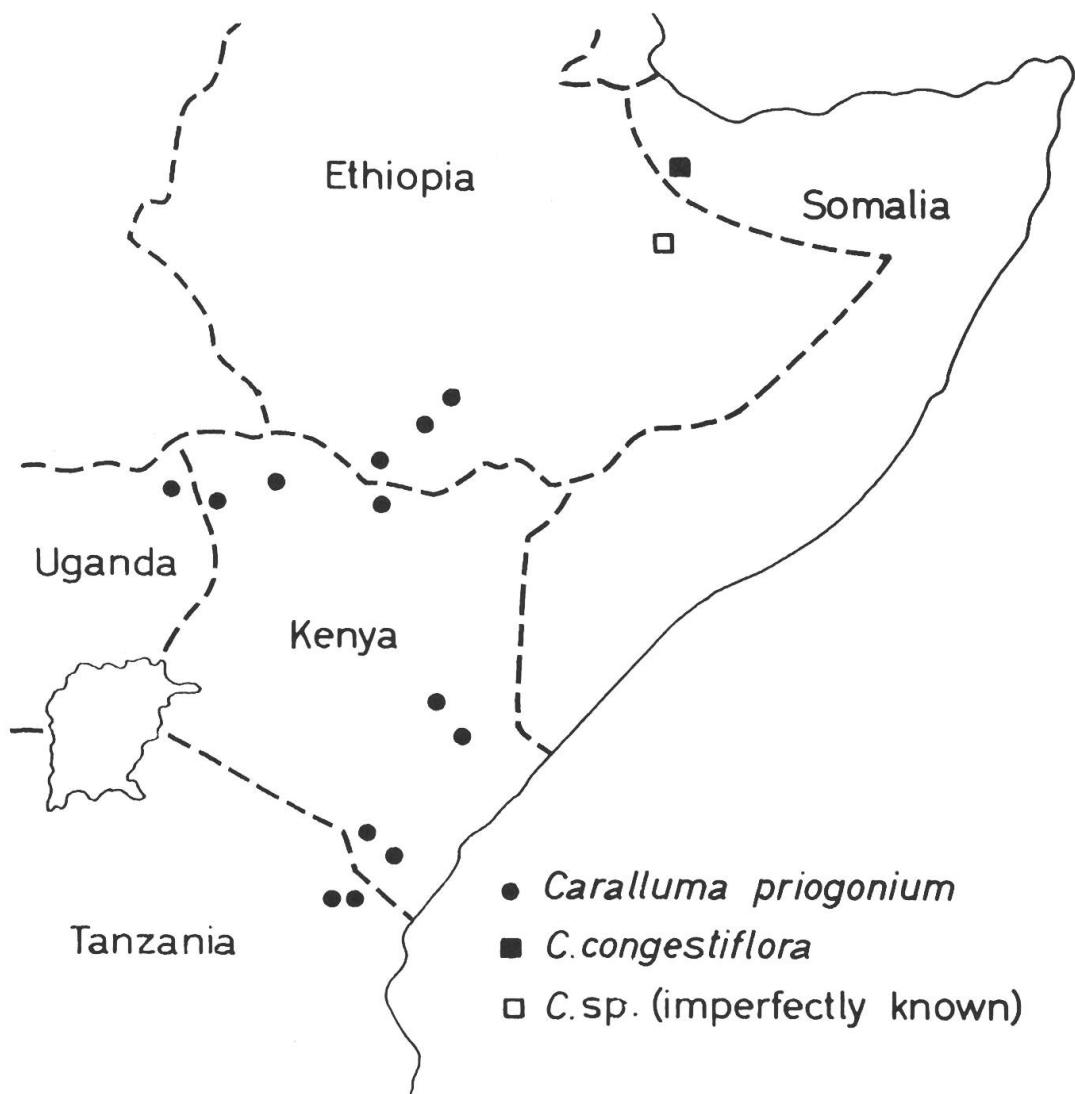


Fig. 2. – *Caralluma priogonium* K. Schum.:
 a, b, large-flowered form (from C. G. MacArthur, 25.2.1939): a, flowering growth; b, corona;
 c, small-flowered form (from Ritchie in Bally S177).



Map 2. – The East African Eucarallumas: the known distribution of subsection *Priogonium*.

Structure and measurements of the corona are constant throughout, its colour varies from dark purple to cream. The corona lobes are glabrous or beset with very minute purple hairs.

TANZANIA: Tanga Prov., Korogwe Distr., Kihurio, 570 m, $4^{\circ}27'S$, $38^{\circ}05'E$, *Engler 1521*, 9.10.1902; ibid. *Bally S10* (K); Northern Prov., Pare Distr., Makanya, 630 m, $4^{\circ}22'S$, $37^{\circ}49'E$, *Bally S10a*, 7.9.1934 (Phot. only, publ. in White & Sloane, The Stapelieae).

KENYA: Coast Prov., Treita Distr., Voi, 566 m, $3^{\circ}24'S$, $38^{\circ}34'E$, *Bally 12372* (*S255*). Northern Prov., Garissa Distr., Bura, 120 m, $1^{\circ}06'S$, $39^{\circ}56'E$, *Bally S136*, Jan. 1942; Garissa, 160 m, $0^{\circ}28'S$, $39^{\circ}39'E$, *Joy Adamson* in *Bally B12375*, Sept. 1947; Moyale Distr., Turbi, 610 m, $3^{\circ}17.5'N$, $38^{\circ}27'E$, *Bally B12579* (*S263*), 2.3.1963 (K, EA, G); Rift valley Prov., Marigat, 1070 m, $0^{\circ}27.5'N$, $35^{\circ}58'E$, *A. T. A. Ritchie* in *Bally S36*, April 1940 (EA); Samburu country, *Lady Muriel Jex-Blake* in *CM6856*, June 1937 (G); Turkana, foot of Napau Pass, $2^{\circ}25'N$, $34^{\circ}56'E$, *A. T. A. Ritchie* in *Bally S177*, 1948 (form with very narrow corolla lobes and with a pale yellow corona, beset with minute purple hairs),

ETHIOPIA: Galla-Sidamo Prov., Mega Mountain, ca. 2000 m, $4^{\circ}05'N$, $38^{\circ}19'E$, *Bally B9146* (*S262*), 8.9.1953; 2 miles E of Dawa Parma bridge near rapids, 950 m appr., $4^{\circ}53'N$, $39^{\circ}20'E$, *Bally B9444* (*S253*), 29.9.1953 (K); Neghelli, 1450 m. on arid slopes near the Ganale Doria, app. $5^{\circ}30'N$, $39^{\circ}40'E$, *E. Zavattari 35*, 12.3.1937 (type-locality of *C. elata* Chiov.; FI).

SOMALIA REPUBLIC: Northern Region, no precise locality, reported to occur in the neighbourhood of Hargeisa and Erigavo (cult. in Burao) *E. Peck 1942* in *S132*; 25 miles N of Hargeisa on Aderiale Hill, 1240 m, *Bally B11788*, 2.10.1957 (G).

UGANDA: no precise locality, Karamoja, *Eggeling 6672* in *Bally S254* (Städt. Sukkulentensammlung, Zürich).

Caralluma congestiflora Bally in Candollea 20: 12-15. 1965.

Although closely related to *C. priogonium* K. Schum. by its vegetative growth and by the structure of its flowers, it is distinct by its manyflowered bright yellow inflorescence, further by its outer corona lobes which are erect and exceed the staminal column considerably.

This very striking and beautiful *Caralluma* is known from its type locality only, and even there it appears to become increasingly rare owing to progressive destruction and denudation of the soil.

SOMALIA REPUBLIC NORTH: Hargeisa, 1350 m, $9^{\circ}36'N$, $44^{\circ}06'E$, *E. A. Peck* in *Bally S130*, 27.1.1944; ibid., east of township in the shelter of spiny *Acacia* bushes on rocky, much eroded soil, *Bally B11996* (type, holo- K, iso- G).

Imperfectly known species (*Caralluma* aff. *priogonium* K. Schum.).

In 1943 the regretted T. H. E. Jackson collected a specimen in southern Ethiopia which presents characters of *C. priogonium* (few-flowered inflorescences with similar inner corona lobes) and of *C. congestiflora* (with comparably large, erect outer corona lobes). The dried specimen, now in the Kew Herbarium, is too fragmentary for a satisfactory description. Geographically, the possibility of its being a hybrid of the two species cannot be ruled out.

ETHIOPIA: Ogaden Prov., Daghabur, 950 m, $8^{\circ}07'N$, $43^{\circ}42'E$, T. H. E. Jackson in Bally S110, April 1943 (K).

Caralluma gracilipes K. Schum. in Engl., Pflanzenw. Ost-Afr. C: 328. 1895.

This species was discovered by J. M. Hildebrandt, a noted botanical collector, in the Kitui District of Kenya in about 1876. While training as a machinist he had lost an eye in an explosion. Unable to continue in his profession, he turned to botany and, in spite of poor health, he travelled extensively in Arabia, Somalia, East Tropical Africa and Madagascar for several years, in fact until his death at the early age of 34. In the course of his journeys Hildebrandt collected an astonishing number of hitherto unknown plants.

The typical subspecies appears to be rare: apart from the Kitui District, where it occurs on Mutomo Hill, the present writer found it only in the extreme north of Kenya, at the foot of the Huri Hills, Moyale District.

Another subspecies, which differs from the type through its subsessile to shortly stipitate corona with well developed, deeply bifid outer lobes terminating in subulate or filiform segments, is far more common and more widely distributed. Professor W. Rauh refers to it as a distinct species, *C. arachnoidea*, on page 78 of his superbly illustrated book "Die grossartige Welt der Sukkulanten" (1967), but after careful examination of many specimens over a wide area, I come to the conclusion that it deserves no more than subspecific rank.

Caralluma gracilipes K. Schum. ssp. *gracilipes*

KENYA: Southern Prov., Kitui District, Hildebrandt 2700, about 1876; Mutomo Hill, summit, 1000 m, $1^{\circ}50'S$, $38^{\circ}13'E$, Bally S99, 20.1.1942; Northern Prov., Moyale Distr., Huri Hills, ca. 1000 m, $3^{\circ}24'N$, $37^{\circ}45'E$, Bally B12528 (S260), 25.2.1963 (K).

Caralluma gracilipes K. Schum ssp. *arachnoidea* Bally, ssp. *nova*

= *Caralluma arachnoidea* Bally in W. Rauh, Die grossartige Welt der Sukkulanten: 78. 1967, nomen nudum.



- *Caralluma gracilipes* ssp. *gracilipes*
- *C. gracilipes* ssp. *arachnoidea*
- ◎ *C. gracilipes* ssp. *breviloba*

Map 3. – The East African Eucarallumas: the known distribution of series *Lalacruma* in subsection *Lalacruma*.

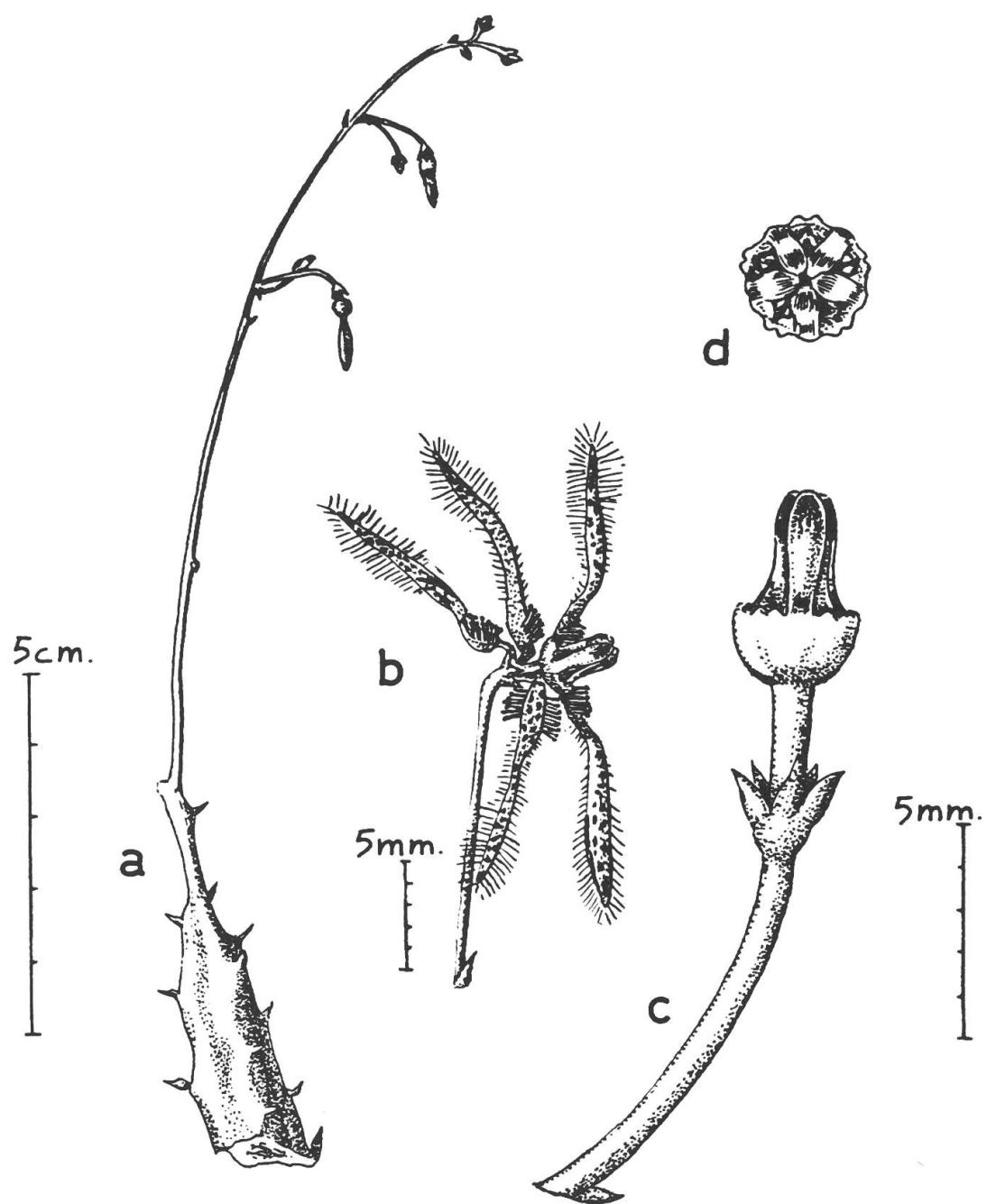


Fig. 3. — *Caralluma gracilipes* K. Schum. ssp. *gracilipes*:
a, flowering growth; b, mature flower; c, calyx and corona, side view; d, corona, viewed from above (from Bally S99).

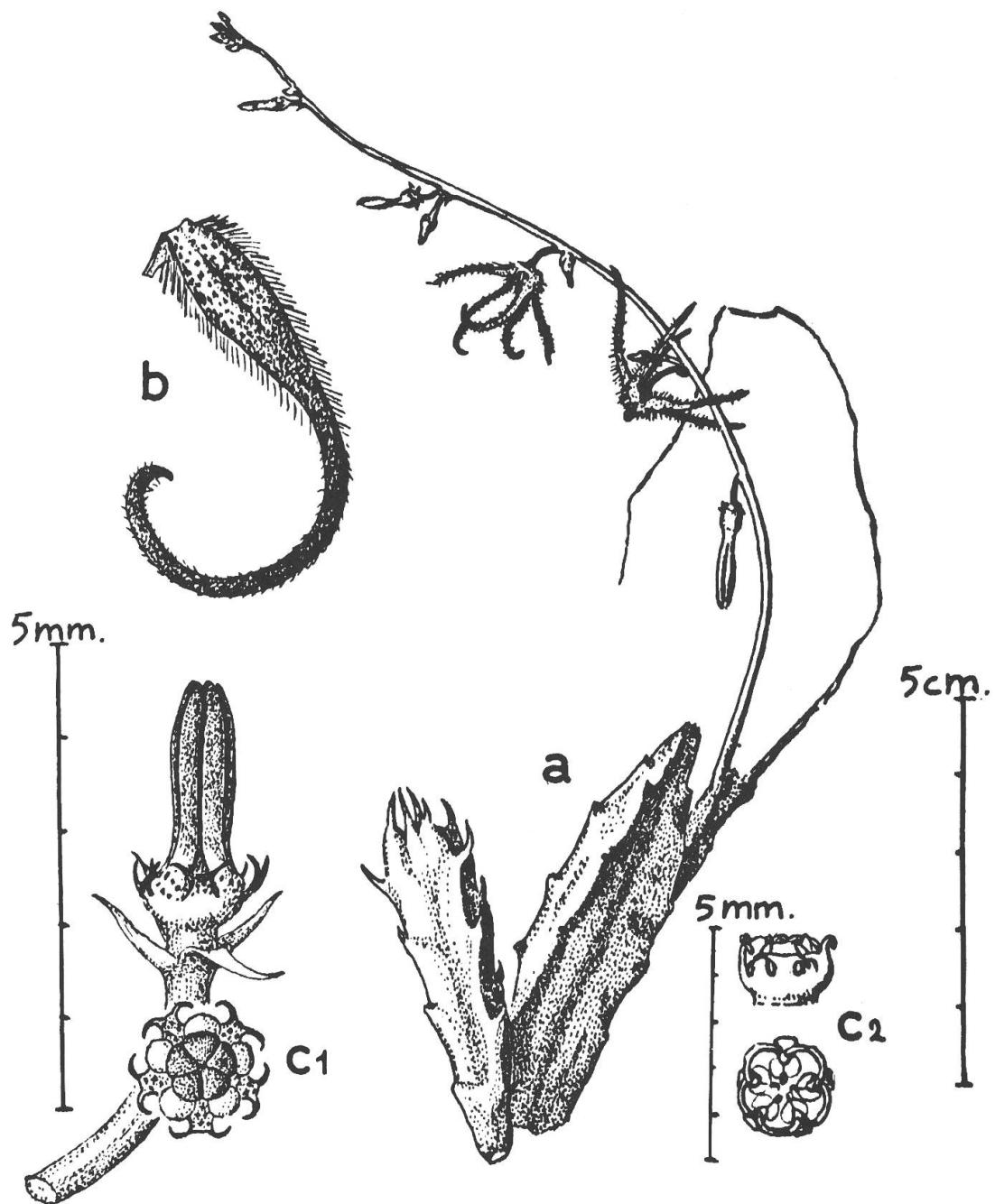


Fig. 4. — *Caralluma gracilipes* K. Schum. ssp. *arachnoidea* Bally (a, b, c₁) and ssp. *breviloba* Bally (c₂):

a, flowering growth; b, corolla lobe; c, corona, viewed from the side and from above (a from Bally S11; b, c₁ from Bally S141; c₂ from Bally B12267 = S254).

A typo gynostegio brevius stipitato, coronae lobis exterioribus acute bifidis, apice subulatis differt.

TYPE: Uganda, North Karamoja, *W. J. Eggeling* 5692 in *Bally* B6294, June 1946 (holo- G).

TANZANIA: Himo and Soko, in Plains round Lake Jipe, foot of North Pare Hills, 800 m, $3^{\circ}27'S$, $37^{\circ}36'E$, *Bally* S11, Dec. 1937 (EA); Tanga Prov., Kihurio, 570 m, $4^{\circ}24.5'S$, $38^{\circ}05'E$, *Bally* S261, 1937; Between Tanga and Moa, Tanga Prov., coast *P. J. Greenway* in *Bally* B11430 and S264 (K, E, A, G).

KENYA: Maktau Hill, Coast Prov., Teita Distr., 1440 m, $3^{\circ}23'S$, $38^{\circ}03'E$, on top of hill, *Bally* S32, Dec. 1940 (EA); Southern Prov., Kiboko Station, 930 m, $2^{\circ}12.5'S$, $37^{\circ}42.5'E$, undulating grassy plains, *Bally* S165, July 1943; Coast Prov., Tana River Distr., Hola (Galole), 100 m, $1^{\circ}30'S$, $47^{\circ}01'E$, xerophytic plains but occasionally flooded by the Tana River, *A. T. A. Ritchie* in *Bally* S63, 1940 (EA); Rift Valley Prov., S. of Lake Baringo, at Marigat, $0^{\circ}27'N$, $35^{\circ}58'E$, dry alluvial plains, *A. T. A. Ritchie* in *Bally* S38, 10.10.1940; Rift Valley Prov., Karasuk, 5 miles west of the Turkwell George, at Cara, 1070 m, $1^{\circ}43'N$, $35^{\circ}17.5'E$, *Mrs. E. Tweedie* 1426 in *Bally* S239a, Feb. 1957; Rift Valley Prov., West Suk, Kacheliba Escarpment, appr. 1840 m, $1^{\circ}19'N$, $35^{\circ}00'E$, *A. T. A. Ritchie* in *Bally* S56, Oct. 1940; Rift Valley Prov., at Sibit near Kapenguria, 1500 m, *Mrs. E. Tweedie* in *Bally* E226, Feb. 1957 (G).

UGANDA: Moroto River, no precise locality, *R. Dale* in *Bally* S141, Oct. 1944.

SUDAN: Aequatoria Prov., Torit Distr., at Tirongole, ca. 800 m, $4^{\circ}28'N$, $32^{\circ}50'E$, *J. G. Williams* in *Bally* B8005 and S239, June 1951.

C. gracilipes ssp. *arachnoidea* is reported to occur as far North as Diredawa in Ethiopia and Gaan Libah in Somalia North, but of these I have not seen flowering specimens.

Caralluma gracilipes K. Schum. var. breviloba Bally, var. nova

A typo gynostegio subsessili, lobis coronae exterioribus breviter subulatis reflexis, interioribus linearibus, gynostegium vix superantibus differt.

TYPE: Kenya, District, Olorgasailie, 1200 m, $1^{\circ}48'S$, $36^{\circ}26'E$, *Bally* 12267 (S163), 12.6.1960 (holo- K, iso- Städt. Sukkulentensammlung, Zürich).

Caralluma dicapuae (Chiov.) Chiov. ssp. dicapuae

In 1904 Emilio Chiovenda described *Spathulopetalum dicapuae*, a Stapeliad from Eritrea, which he considered to be deserving of generic distinction on account of its spoon-shaped pendulous corolla lobes; however, when he collaborated with

White & Sloane in the publication "The Stapelieae" he included it in the genus *Caralluma* as *C. dicapuae* (Chiov.) Chiov. Its discovery by the Italian explorers Terraciano and Pappi dates back to May 11, 1892.

It is claimed that the corolla lobes are spreading at first (as in the *Arachnoidea* group) and subsequently reflexed-pendulous. In actual fact the lobes do not spread out at any stage: On the contrary, the buds, which point upwards when young, gradually assume a nodding position as they mature and point downwards vertically at the moment of opening; the corolla lobes remain in this vertically pendulous position throughout their flowering stage. In 1949 the present writer had the good fortune to see and to photograph, quite close to the type locality, a mature plant of this species in flower, which shows this feature distinctly.

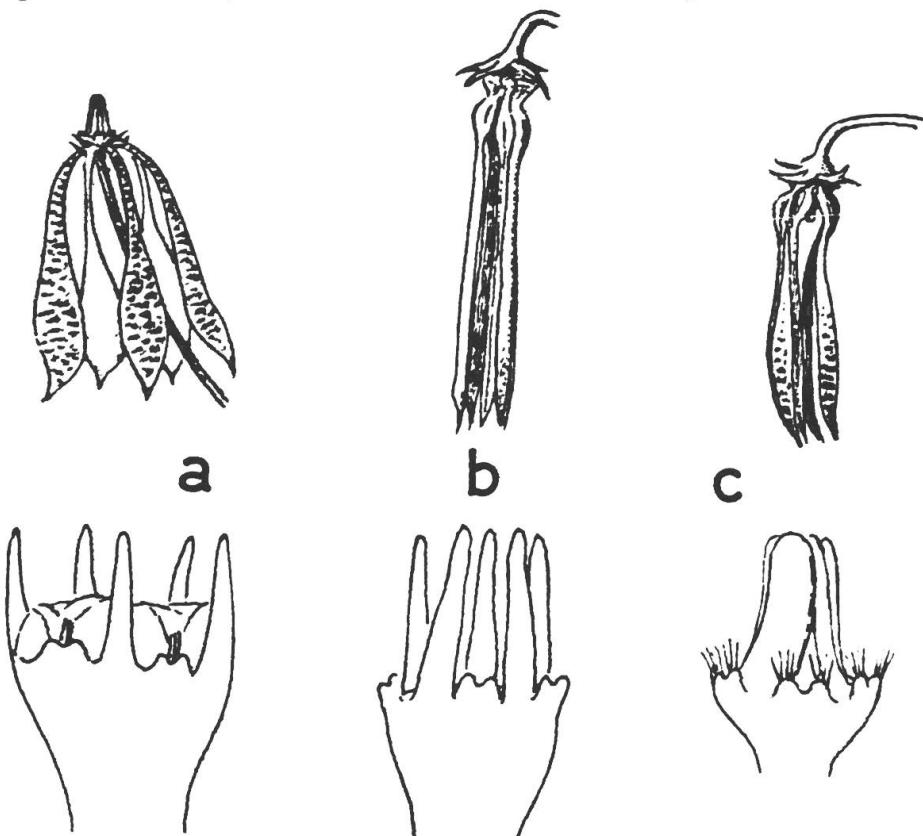
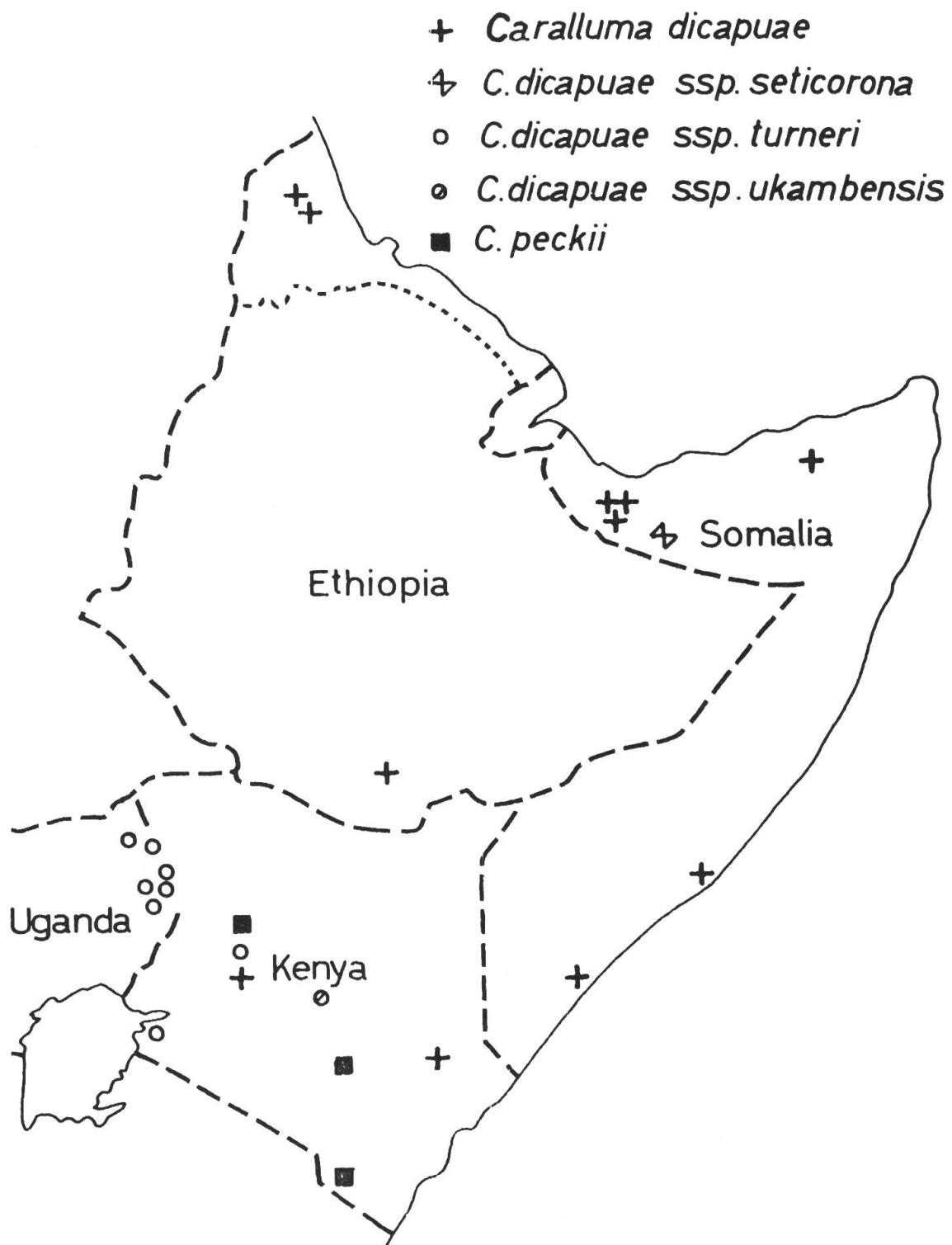


Fig. 5. — Mature flowers and coronas of *Caralluma dicapuae* (Chiov.) Chiov.:

a, after a drawing from the type by E. Chiovenda; the flower is shown here in an unnatural position with the corona pointing upwards (reproduced from White & Sloane, The Stapelieae: 187, fig. 137, 1937); b, narrow-lobed form of ssp. *dicapuae* from Kenya (from Ritchie in Bally S27); c, ssp. *seticorona* Bally (from Bally B10429 = S248).

The corolla lobes vary from spatulate, as shown on the drawing of the type by Chiovenda himself, to almost linear as represented on t. 3340 in Hook., Ic. Pl. (1937) drawn from Gillett 3993 in Hargeisa, and even more strictly linear in a Kenya specimen from near Lake Baringo, figured on t. 1032 in Fl. Pl. Afr. (1947). Their colour varies from a uniform pattern of minute maroon dots on a green ground to broad transverse bands of dark maroon and pale yellow-green.



Map 4. — The East African Eucarallumas: the known distribution of series *Flaccidiflorae* in subsection *Lalacruma*.

In two specimens recorded from Somalia South, the bifid outer corona lobes are laterally divergent and might represent an intermediate form leading to ssp. *turneri* (E. A. Bruce) Bally.

ETHIOPIA: (Eritrea:) Chelamet to Oazat, ca. 600 m, $16^{\circ}04'N$, $38^{\circ}42'E$, *Terraciano* & *Pappi* 498 (955) (type), 11.5.1892; Naro, Moga, *Pappi* 8314, 22.4.1909; foot of Asciorum Pass, ca. 930 m, $16^{\circ}20'N$, $38^{\circ}40'E$, *Bally* B7069, 22.3.1949 (also photograph) (K); (Galla-Sidama:) 2 miles west of the Dawa Parma bridge on Yavello-Neghelli road, $4^{\circ}48'N$, $39^{\circ}17'E$, *Bally* B12370, 20.9.1953 (K).

SOMALIA REPUBLIC: (North:) Eastern Al Madu Range, above Baditir, 1240 m, $10^{\circ}51'N$, $48^{\circ}58'E$, *Bally* B10969, 9.10.1956; 20 miles north of Hargeisa at Ged Debt, 1160 m, $9^{\circ}38'N$, $44^{\circ}06'E$, *Bally* B11771, 27.9.1957 (G) (also at Koda Yera, $9^{\circ}47'N$, $44^{\circ}30'E$, photographed only, *Bally*, 27.5.1949); Hargeisa, 1320 m, $9^{\circ}33'N$, $44^{\circ}01'E$, *Gillett* 3993, 22.9.1932 (figured in Hook., Ic. Pl.: t. 3340) *ibid.* *Bally* S241, 14.11.1954; (South:) Mogadiscio, coast, $2^{\circ}03'N$, $45^{\circ}20'E$, *MacLoughlin* in *Bally* 140, 1941; 7 miles north of Margherita, 20 m, $0^{\circ}10'N$, $42^{\circ}50'E$, *Bally* B9521 (S249), 28.1.1954 (K, G. Z.).

KENYA: Rift Valley Prov., Lake Baringo area, *A. T. A. Ritchie* in *Bally* S27, 1.4.1940 (K); recorded also from Bura on the Tana River and from the Northern Frontier Prov., Samburu District.

Caralluma dicapuae (Chiov.) Chiov. ssp. *seticorona* Bally, ssp. *nova*

A typo corollae lobis exterioribus setosis, interioribus late loriformibus nec linearibus distinguitur.

A multistemmed, sparsely branched, erect shrublet; stems succulent, 4-angled, toothed, teeth prominent, ascending, 2-3 cm distant. Succulent portion of stems to 30 cm high, virgate, floriferous portion ca. 20 cm long; internodes 2-4.5 cm distant, producing 2 flowers in each internode. Corolla pendulous, 2.2 cm long; lobes oblanceolate, pale green at the base, increasingly spotted with maroon towards the mucronate tips. Corona 2.4 mm high, 3 mm diam., outer lobes erect-spreading, obtusely bifid, lobes sparsely beset with stiff setulose hairs ca. 0.5 mm long. Inner lobes erect-connivent, 3 mm long, 0.9 mm wide, obtuse, white with maroon dots, glabrous.

TYPE: Somalia North, south-east of Odweina, 925 m, $9^{\circ}24'N$, $45^{\circ}03'E$, *Bally* B10429 (S248), 29.10.1954 (holo- K, iso- G). Further distribution not known.

Caralluma dicapuae (Chiov.) Chiov. ssp. *turneri* (E. A. Bruce) Bally, comb. nova

Basionym: *C. turneri* E. A. Bruce in Hook. Ic. Pl. 34: tab. 3339. 1937.

E. A. Bruce described *Caralluma turneri* from Kanam in South Kavirondo, Kenya, quoting *C. priogonium* K. Schum. as its nearest affinity. She recognized further its close relationship with *C. gracilipes* but the type specimen of the latter

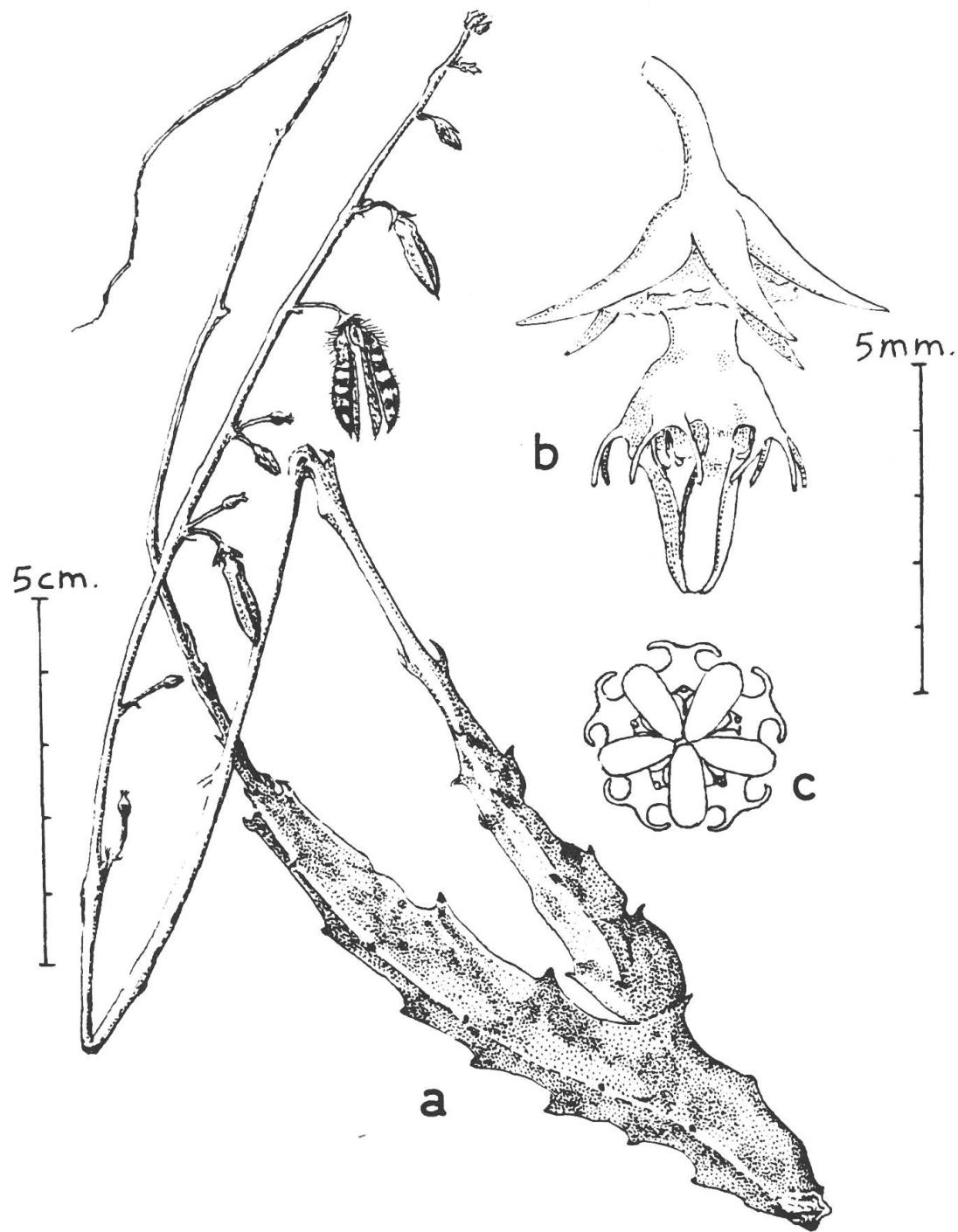


Fig. 6. — *Caralluma dicapuae* (Chiov.) Chiov. ssp. *turneri* Bally:
a, flowering growth; b, calyx and corona; c, corona, viewed from above (from *Ritchie* in
Bally S60).

was too poor to allow for more than a summary comparison. Miss Bruce's description of *C. turneri* was made from a dried specimen in which the pendulous habit of the corolla was not evident and is thus not mentioned. Besides, the corolla lobes of the living flower are by no means undulate-inflexed as indicated in the description and shown on the accompanying plate. It is the drying process which causes the maroon bands on the lobes to contract more sharply than the alternating white bands; forms of the same species with uniformly maroon, or with irregularly mottled, flowers dry with even—not undulate—margins. The original description and figure published for *C. turneri* are thus somewhat misleading, as has been pointed out as early as 1939 by Dr. R. A. Dyer in connection with a gathering of this species (*J. B. Pole-Evans & Erens 1526*) in Kenya in the previous year.

From the evidence available today, the nearest affinity of ssp. *turneri* is not with *C. priogonium* but with *C. dicapuae* from which it is distinct mainly by the long subulate outer corona lobes and by the always broadly spathulate lobes of the corolla; the latter vary similarly in colour and markings: they are either spotted with irregular maroon specks, alternately banded yellow-green and maroon, or uniformly dark maroon.

The area of distribution of ssp. *turneri* as we know it today is comparatively restricted, reaching from Kanam near the Kavirondo Gulf on Lake Victoria, in the south, to the Moroto District of Uganda, in the north. The Kenya-Uganda border is roughly its western limit. Near Mwingi in the southern Prov. of Kenya it seems to reach the easternmost limit with ssp. *ukambensis*.

In fact, the differences with *C. dicapuae* being so small and their distinctions obscured by intermediate forms, the present writer considers it to be no more than a subspecies of the former. This view is borne out by its comparatively limited geographical distribution.

KENYA: South Kavirondo, Kanam, 1320 m ft. of Homa Mt. $0^{\circ}28'S$, $34^{\circ}28'E$, *H. J. Allen Turner* in *CM3692*, Jan. 1935 (type, K); Turkana: between Kapenguria and Lodwar, *Pole-Evans & Erens 1526* (*S258*), 28.7.1938; 60 miles SW of Lodwar, 1600 m, *J. G. Williams* in *Bally B11446* (*S237*), 7.4.1956, (G); Southern Prov.: Ngong Hills, 2000 m appr., $1^{\circ}30'S$, $36^{\circ}37'E$, *Bally S12*, 1938; Rift Valley Prov., Kerio Valley, *A. T. A. Ritchie* in *Bally S37*, 10.10.1940; West Suk Distr., Kacheliba Escarpment, *A. T. A. Ritchie* in *Bally S60*, Oct. 1940; *ibid*, *A. T. A. Ritchie* in *Bally S161*, 1941.

UGANDA: Karamoja Prov., Amudat, 1350 m, $1^{\circ}58'N$, $34^{\circ}57'E$, *Mrs. M. Tweedie* in *Bally S222*, Oct. 1955 (K, G); North Karamoja, *Eggeling 5710* in *Bally S246*, June 1946 (Städt. Sukkulentensammlung, Zürich).

Caralluma dicapuae* (Chiov.) Chiov. ssp. *ukambensis* Bally ssp. *nova

A typo proceritate minore, ramis subteretibus haud angulatis, coronae lobis exterioribus brevioribus, pilis corollae loborum flexuosis differt.

TYPE: Kenya, Southern Prov., Ukamba, Ithumbi Hill, 1200 m, $0^{\circ}53'S$, $38^{\circ}04'E$, *C. G. MacArthur* in *Bally S135*, Feb. 1944 (holo- Städt. Sukkulentensammlung, Zürich). Distribution: not known beyond the type locality.

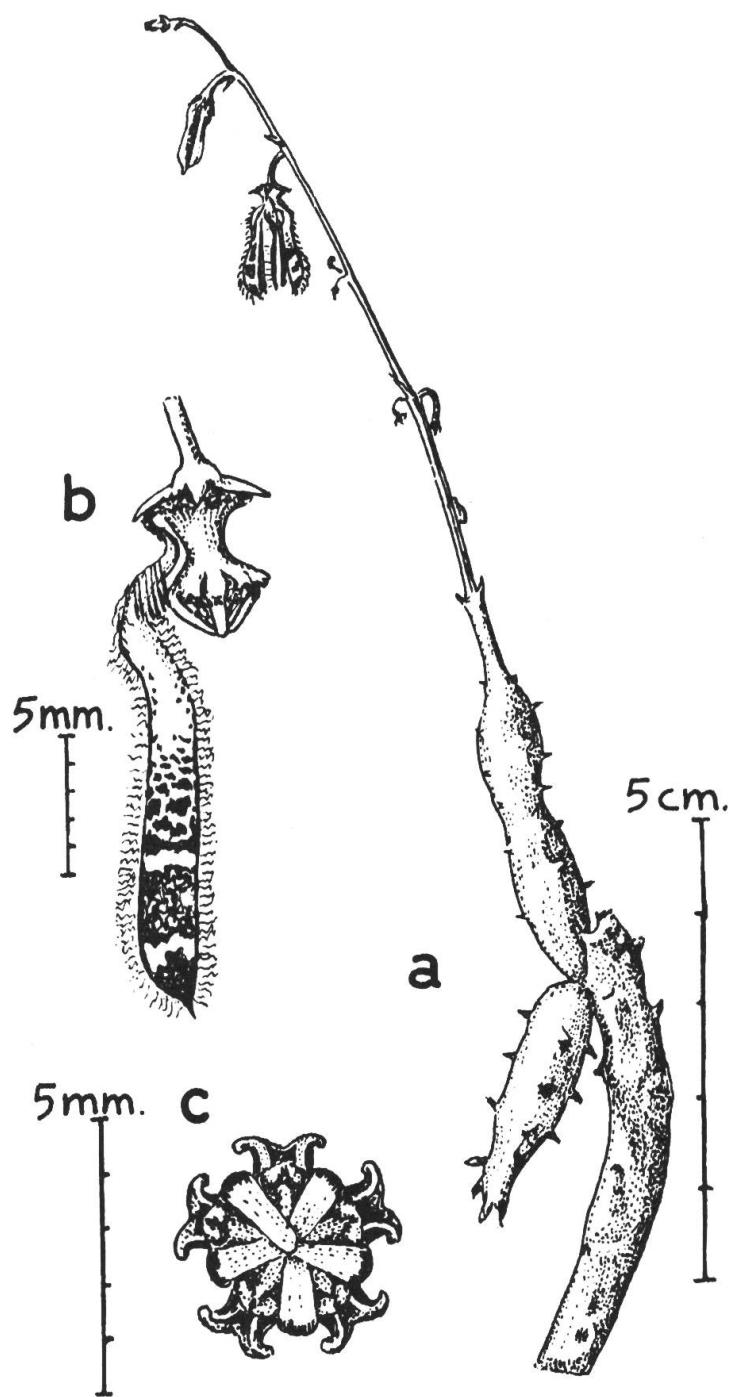


Fig. 7. – *Caralluma dicapuae* (Chiov.) Chiov. ssp. *ukambensis* Bally:
a, flowering growth; b, flower with four lobes removed to show corona; c, corona, viewed from above (from the type specimen).

Caralluma peckii Bally in Candollea 18: 14-15. 1962.

The description, published in an earlier issue of this journal and accompanied by a figure of the type and a distributional map, gives all the necessary particulars concerning this interesting species which is confined, as far as our information goes, to the more arid regions of Kenya.

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*Errata, amendments and additions to:
37. Notes on Euphorbia rubella Pax*¹

Page 261, legend to Fig. 4: for "var. *exigua* Bally" read: var. *brunellii* (Chiov.) Bally; "(type)" to be omitted.

Page 262, line 9 from top: for "later study it was able to" read: later was able to study it.

Page 262, after line 7 from bottom (at the end of the paragraph on var. *brunellii*) insert:

ETHIOPIA: Galla-Sidama Prov., Goda Bongdi chain, at Duca d'Aosta peak, 1300 m, *Vatova* 1997, 12.3.1938; Mega, 1930 m, 4°05'N, 38°20'E, *Gillett* 14425, 24.11.1952.

KENYA: North. Front. Prov., Moyale, 1200 m, 3°32'N, 30°41'E, *Gillett* 12860.

UGANDA: Eastern Prov., Mbale Distr., Tororo Hill, summit, 1490 m, 0°41'N, 38°11'E, *Bally* E375, 25.4.1952.

Page 263, legend to Map 2: for "*exigua*" read: *brunellii*.

¹ Cf. Candollea 22: 261-263, 1967.