

A Revision of the South African Species of *Anthericum*, *Chlorophytum* and *Trachyandra*

By

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INTRODUCTION

The genus *Anthericum* was described by Linnaeus in his *Species Plantarum*, Ed. 1, p. 310 (1753), to receive two well known European species, *A. ramosum* and *A. liliago* [previously known as *Phalangium*, Tournefort, *Inst.* 368, t.193 (1700)], four South African species now classified under *Bulbine*, a tumble-weed from the Cape (*Trachyandra revoluta*) and two European species at present placed under *Nartheceum*. The concept was a wide one, with the result that in time many and varied species were added to it on the one hand, while on the other, groups of species were withdrawn to form separate genera. *Bulbine* was again raised to generic rank by Willdenow in 1800.* The genus *Chlorophytum* was segregated in 1808 by Ker Gawler and *Caesia* by R. Brown in 1810. In 1843 Kunth discarded the genus *Anthericum* altogether and divided what was left into three genera, *Phalangium*, *Bulbinella* and *Trachyandra*, whilst he upheld *Bulbine*, *Chlorophytum* and *Caesia* and some other genera outside Africa, which do not concern us here. His genus *Phalangium* was the equivalent of what is now accepted as *Anthericum* L. The European species *A. ramosum* and *A. liliago*, which were known to Linnaeus and which fit his generic description, especially that of his later works, form the basis of this genus. In 1936 Green proposed that *A. ramosum* L. should be regarded as the type species.

Baker in his monograph on the Liliaceae [*Trans. Linn. Soc.* 15 : 253 (1876)] went back to *Anthericum* in a much broader sense (but not quite in the Linnaean circumscription for he recognized *Chlorophytum*, *Caesia* and *Bulbine*) and sank Kunth's genera *Phalangium*, *Bulbinella* and *Trachyandra*. In the *Flora Capensis* in 1896, he raised *Bulbinella* again to generic rank. Thus *Anthericum* in the *Flora Capensis* consisted of the sections, *Phalangium* and *Trachyandra*, whilst at the same time Baker placed certain species in a new section *Dilanthes*, which will be discussed later.

When examining the South African species in and related to *Anthericum*, it was found that species of *Trachyandra* Kunth were so different from typical *Anthericum* L. that it was decided to restore the genus. Far more difficulty was experienced in separating *Chlorophytum* from *Anthericum*. These two genera are rich in species and have a world-wide distribution. It is outside the scope of this revision to decide whether *Chlorophytum* should be made a section of *Anthericum* as suggested by Duthie [*Ann. Stell. Univ.* 4 : 1 (1926)], Perrier [*Notulae Syst.* Vol. V, p. 33 (1955)] and others. The seeds of *Anthericum* are small and angular, usually numerous and this distinguishes it from *Chlorophytum*, which has large flat seeds, very similar in appearance in all species. Further, the trigonous capsules, the rosulate leaves, the bracteate scape and the spongy roots usually combine to distinguish *Chlorophytum* from *Anthericum*, but, with the exception of the seed, one or two of these features may be absent. An example of this is for instance *Chlorophytum rigidum* Kunth, which has the leaves somewhat distichous and the pedicels articulated near the base, both features of many species of *Anthericum*. But its seeds are flat, for which reason it is best kept under *Chlorophytum* for the present.

* In Hort. Cliff. 122 (1735) Linnaeus had created the genus *Bulbine* for *B. caulescens* but in his *Sp. Pl.* (1753), he placed it under *Anthericum*. Jussieu's conception on the nomenclature of these genera differs from the modern accepted view. In his work, *Genera Plantarum* 1789, he regards *Bulbine* Willd. to be *Anthericum* whilst the true *Anthericum* L. (1753) was identified by him as *Phalangium*. Poiret in *Lam. Encycl.* (1804) and Persoon, *Synopsis* (1805), both follow Jussieu's classification.

A small number of species from the south western Cape regarded as *Anthericum* by Baker but which show a closer affinity to *Chlorophytum*, are here transferred to this genus. Kunth adopted this view with those species that were known to him, and Adamson and Salter in their Flora of the Cape Peninsula regarded *Anthericum triflorum* as a *Chlorophytum*. This had been suggested by Duthie. In notes published posthumously (Gen. Pl. Fragm. 70, 1866), Salisbury had also noticed the difference between species now placed in the genus *Trachyandra* (he probably was not aware of Kunth's genus at the time) and the true *Anthericum* species. He described a new genus *Dilanthes* and mentioned that *A. revolutum* and other closely related species should go into that genus. It must be regarded as a synonym of *Trachyandra*. Baker apparently did not recognize it as a synonym of *Trachyandra* and made it a section for the south western Cape species of *Chlorophytum* and those of *Anthericum* he thought possessed rough filaments. However, *A. polyphyllum*, *A. galpinii*, *A. multisetosum* and *A. robustum*, mentioned by Baker in this section, have glabrous filaments. This heterogeneous section cannot therefore be upheld.

Duthie's article on the species of *Anthericum* and *Chlorophytum* of the Stellenbosch Flats [Ann. Stell. Univ. 4, A, 1 : 1-23 (1926)], giving detailed descriptions of 13 species (9 species of *Trachyandra*, 3 of *Chlorophytum* and 1 of *Anthericum*) occurring in this area is most informative. Similarly the 20 species enumerated in the Flora of the Cape Peninsula by Adamson and Salter must be mentioned as a valuable contribution to our knowledge of these genera. While at Kew in 1950, Pauline Kies began a revision of these genera. After her marriage I continued with this work and as I have introduced many modifications I feel I must take full responsibility for the present account.

KEY TO GENERA

Inflorescence central; flowers one to many-nate (if solitary, supported by 2 bracts); pedicels articulated; perianth persistent; anthers basifixed, large; seeds with a black, shiny, granular testa; leafbase folded, not tubular:

- Seeds small, globose, irregularly compressed with many folds 1. *Anthericum* (p. 670)
 Seeds large, round and flat with a pointed hilum 2. *Chlorophytum* (p. 690)

Inflorescence axillary; flowers single, each supported by one bract; pedicels not articulated; perianth deciduous, only the base persisting as a small cup or rim if a capsule is formed; anthers versatile, small; seeds angular, grey or brown, smooth or verrucose, often glutinous when ripe; leafbase tubular

3. *Trachyandra* (p. 711)

1. ANTHERICUM

Linn. Sp. Pl. ed. 1 : 310 (1753); Gen. 422 (1754). Baker in J. Linn. Soc. 15 : 290 (1876); Fl. Cap. 6 : 378 (1897); Fl. Trop. Afr. 7 : 477 (1898) sensu lato. Benth. & Hook. Gen. Pl. 3, 2 : 788 (1893) sensu lato. Krause in Engl. & Prantl, Pflanzenfam. 15, A : 282 (1930) sensu lato. Phillips, Genera of S.A. Flow. Pl. 2nd ed. 183 (1951) sensu lato.

Phalangium Juss. Gen. Pl. 52 (1789). Poir. Encyc. Meth. 5 : 242 (1804). Kunth, Enum. 4 : 593 (1843). Salisb. Gen. Pl. Fragm. 70 (1866).

Herbaceous perennials, the parts above ground dying down in winter. *Roots*, many, long, thin, fibrous often with scattered watery tubers near the tips, sometimes fairly sturdy and woody, rarely swollen, cylindrical and fairly short (*A. calyptrocarpum*). *Rhizome* usually creeping, knobby, often covered with fibres (the remains of old leaf bases). *Leaves* distichous or rosulate; in the distichous species there are usually about 8, the primary leaves small, sometimes hairy, the later leaves becoming progressively larger; in the rosulate species the leaves are numerous; bases sometimes dilated, membranous, folded (never tubular); lamina flat or folded, rolled or terete, glabrous

or hairy, rarely glandular. *Inflorescence* central, simple or branched, usually overtopping the leaves; scape flattened, sometimes narrowly winged and usually naked in distichous-leaved species or terete and bracteate in rosulate species; lower bracts in compound inflorescences usually large, leaf-like, the fertile bracts much smaller; in a few species 2-keeled bracteoles present; pedicels articulated near the base or near the middle, lengthening at anthesis. *Flowers* in axillary fascicles each surrounded by bracts; in a few species flowers solitary, subtended by a bract and bracteole; flowers in each axillary fascicle opening consecutively; open all day, seldom opening in the afternoon (*A. calyptrocarpum*). *Perianth* rotate, white, rarely greenish, shiny, consisting of watery, translucent cells, the dark median keel usually appearing when the flower fades; the 3 outer segments slightly narrower than the 3 inner, marcescent, covering the capsule when it ripens. *Stamens* 6, adnate to the very base of, and slightly shorter than the perianth segments; filaments glabrous or papillate in the upper half, usually flattened below; anthers large, basifixed, the base at the back of the anther forming a rimmed pit where the filament is inserted; anthers introrse and curling backwards when fading. *Ovary* sessile, globose with about 10–30 biseriate ovules; with septal glands; style filiform often slightly dilated in upper half, smooth, often declinate; stigma minutely penicillate or capitate. *Capsule* loculicidally 3 valved, globose, obtuse, apiculate or beaked, smooth or with transverse ridges (the number of ridges roughly corresponding with the number of ovules). *Seeds* small, irregularly angled, minutely granular, black; embryo cylindrical, endosperm firm.

DISTRIBUTION: A few species in southern Europe and northern Africa; many found in tropical Africa extending southwards, one species being recorded from Cape Town. A few are also recorded from central America.

Type Species: *A. ramosum* L.

Typical European species bear racemes with solitary flowers, supported by one bract in each axil, whereas our tropical and subtropical species have several bractiferous buds clustered in each axil, or, if reduced to one flower, with at least two semi-opposing bracts. *A. ramosum* L. and *A. liliago* L., the typical species, moreover have 8 chromosomes whereas our South African species have 7 as far as is known. Kunth placed the species with the fascicled buds in a separate second section [Enum. Plant. 4 : 595 (1843) under *Phalangium*] and added here the South American species, some from India and two doubtful ones.

The South African species of *Anthericum* may be regarded as southern off-shoots of tropical members which migrated south; on reaching the drier, colder parts of the highveld, they became small and stunted, the Karroo effectively barring further expansion. These small impoverished highveld plants lose many of their usual characteristics and are often difficult to distinguish. It is likely that the effect of the frost, fires and drought affected some features i.e. hairiness, size, etc. An example is *A. galpinii* which grows up to 3 feet high in the eastern Transvaal lowveld and produces divaricately branched racemes, whereas some specimens, including the type, are only 8 inches high and have nearly simple racemes. Similarly I have come to the conclusion that *A. multisetosum*, *A. rubrovittatum* and *A. robustum* are merely small or tall forms of one species, *A. angulicaule*; the shape of the flowers, bracts, pedicels and capsules remains constant.

Several species e.g. *A. cooperi* and *A. fasciculatum*, have adapted themselves very well to the eastern highveld where they are common although usually small. C. E. Moss studied the genus for many years and I had the privilege of reading his manuscript notes which are preserved at the Moss herbarium of the University of the Witwatersrand. The variability of these eastern highveld species led Moss to suggest that "although no actual experiments appear to have been performed in connection with the matter, specimens occur which are difficult to account for on any hypothesis other than that they are hybrids or hybrid segregates."* I found that the numerous species described

* Duthie's statement in Ann. Stell. Univ. 4, A. 1 : 3 (1926) that "no indication of hybridisation has been met with" is not contradictory for she dealt mainly with *Trachyandra* species.

by Baker and others were often forms of one variable species and consequently reduced the number of species considerably. Even so when using the key, it will not be found easy to determine a stunted specimen which has lost many of its characteristics. I agree with Moss that it is likely that *A. cooperi*, *A. saundersiae*, *A. fasciculatum* and *A. galpinii* hybridize. It would for instance, account for the variability of the filaments in some of the species from the Drakensberge near van Reenen. *A. cooperi* and *A. capitatum* were described from plants collected in that area and the only difference seems to have been that *A. cooperi* had smooth filaments while in *A. capitatum* they were rough in the upper half. Similarly *A. nudicaule* was also separated from *A. cooperi* because of its rough filaments but N. E. Brown pointed out that even some plants on the type sheet of *A. nudicaule* had smooth filaments. In *Anthericum* the filaments are constant for each species, smooth or rough. So their variability points to a crossing of two species, one with smooth and the other with rough filaments. The filaments of the specimens of *A. cooperi* found on the Transvaal highveld are smooth, so possible parents of the mixture found near van Reenen could be *A. cooperi* on the one hand and either *A. saundersiae* (from the lower regions of Natal) or *A. fasciculatum* (a highveld species) on the other, these both with rough filaments. *A. fasciculatum* and *A. galpinii* probably also hybridize at times. It would be interesting to investigate these species to see if they do hybridize easily and also to study their polymorphism with regard to factors inhibiting growth, like frost, fires and drought. It was felt that the systematic work on these closely related species could not be solved satisfactorily in the herbarium and that there is need for research work in the field.

GEOGRAPHICAL NOTES: Seventeen species of *Anthericum* were found to occur in southern Africa. Of these three are confined to the Transvaal; *A. trichophlebium* has been found mainly around Pretoria and Johannesburg; it is related to *A. whytei* but segregated geographically and it is much smaller than its northern relative. The second, an interesting new species, *A. cyperaceum* is at present only known from the Transvaal bushveld. Its congested inflorescence resembling a cyperaceous plant is unusual. A third species, *A. radula* from the Woodbush in the Transvaal, found by Rehmann, has not been collected again. All the other species show a wide range, some being recorded from localities over a thousand miles apart. *Anthericum calyptrocarpum* for instance was described from Angola but it is also found in South West Africa, eastern Southern Rhodesia and near Pretoria. *Anthericum whytei* was described from Nyasaland but shows a continuous distribution through the Zambesi country to South West Africa. *A. anceps* is found in Southern Rhodesia and northern South West Africa. It is very closely related to a polymorphous widespread species from the eastern highveld, *A. cooperi*. Here too probably, geographical isolation caused them to become somewhat different. One other species worth mentioning is *A. rangei* Engl. & Krause; it was described from South West Africa but has been found south as far as the Cape Peninsula (where incidentally it flowers in summer). It is very unobtrusive and was described as *A. scariosum* by Duthie in 1926. Although the type of *A. rangei* from South West Africa was probably destroyed during the Second World War, the description and the record of intermediate localities between the Cape and South West Africa, made me decide to consider them one species. It is the only true *Anthericum* species found so far south. All the other species found in the winter rainfall area usually described as *Anthericum* species, belong either to *Trachyandra* or *Chlorophytum*.

Superficially the South African species could be grouped into two sections, but several species form links between these two groups. The members of the first group have distichous leaves and a usually compressed, naked scape, the flowers are arranged in fascicles in the axils of large bracts and the capsules are round and obtuse. In the second group the leaves are rosulate and the terete scape bears bracts. In *A. transvaalense*, *A. radula*, *A. longistylum* and *A. haygarthii*, which come under this latter

group, the flowers are solitary, with an outer bract and an inner 2-keeled bracteole and the capsule is beaked. Intermediate forms are *A. krauseanum*, *A. rangei* and *A. calyp-trocarpum*, which have the leaves rosulate and the terete scape bracteate, but the flowers are not always solitary nor is the capsule always beaked (for in *A. krauseanum* it is globose and with transverse ridges similar to those of the first section). A further link is made by *A. acutum* which has the leaves more or less distichously arranged and the flowers clustered but its capsule is beaked.

MORPHOLOGY

Roots: They are usually very abundant, nearly always thin, and often with watery tubers near the tips. (These are usually left behind when the plant is pulled out of the ground). I presume that these tubers are produced during the summer months and are used for water storage. *A. angulicaule* and *A. cyperaceum* have the roots more sturdy and no tubers were seen on the herbarium specimens. *A. calyp-trocarpum* with its swollen roots is an exception. No plants showed the production of the long root hairs so often found in *Chlorophytum* and *Trachyandra*.

Rhizome: It is horizontal and knobby, each shoot arising from a nodular, woody base. It is nearly always covered with fibres from old leaf bases.

Leaves: In the distichous species there are about 8, the outer very small, the inner ones becoming progressively larger. They clasp at the base but are never tubular. The veins are usually prominent. Sometimes the two outer veins fuse giving the leaf a prominent, usually yellow margin.

Inflorescence: In the distichous-leaved species the flowers and their bracts are arranged in small clusters in the axils of larger bracts. Actually these clusters, spirally arranged on the rhachis, represent repressed side branches. Occasionally in some species, e.g. *A. anceps*, *A. saundersiae*, *A. fasciculatum*, etc., a basal cluster may elongate; the flowers on this branch are then usually distichously arranged.

In the four closely related species *A. longistylum*, *A. radula*, *A. transvaalense* and *A. haygarthii* the flowers are always solitary with an outer bract and an inner 2-keeled bracteole. The inner bracteole in the 2 last mentioned species is not situated exactly opposite the outer bract, but to one side, probably as a result of the spiral arrangement of the raceme; the inner bracteole may have two horns or in *A. haygarthii* an oblique one-sided horn. In this rosulate group the scape is terete, with the lower bracts leaf-like, the upper becoming progressively smaller. In the distichous species the scape is usually compressed and naked and the lowest bract of the inflorescence is large, the following floral bracts being much smaller.

The species all have articulated pedicels. The articulation is found usually below the centre in our species. A specimen of *A. acutum* collected by Werdermann showed two small bracts produced at the articulation. An articulated pedicel may therefore be interpreted as a peduncle bearing a pedicel on top. It is usually this upper part, the pedicel proper, which elongates during the flowering and the fruiting stage. The inflorescences of these African species therefore appear to be the result of the reduction of a very complex inflorescence. As in *Chlorophytum*, the flowering period of an inflorescence lasts a long time as the flowers open consecutively. It is the only inflorescence produced on that shoot. Beside it a new shoot will develop from a lateral bud of the rhizome.

Flowers: These are very similar in structure; the perianth being white, dark keeled, delicate in texture with the watery cells translucent as in *Chlorophytum*. The stamens are often declinate. The filaments are smooth, or in some species rough in the upper part. The anthers are large and basifixed, with the filament tip inserted in a rimmed pit at the base of the anther. When the anthers fade they curl backwards in a spiral. Often the margins of the open locules are wavy. The ovary is oblong or ovoid with 8-24 biseriata, axillary ovules in each loculus. It was seen that in some

specimens one or both rows of ovules would double themselves—the basic number of 16 becoming thus 24 or even 32. The funicle is slender and short.

Capsule: In the distichous species (and also in *A. krauseanum*) the capsule is oblong, with many transverse ridges (the number of ridges corresponding roughly with the number of ovules). In the other species it is ovoid and apiculate or beaked and the transverse ridges may be absent.

Seed: It is small and angular with a black and granular testa. During development inside the rounded capsule the globular, young seeds are pressed into irregular, angular shapes.

KEY TO SPECIES

- Leaves distichous, ca. 8; scape usually naked seldom bracteate, often compressed, sometimes narrowly winged; capsule rounded, obtuse, rarely apiculate, with transverse ridges; flowers usually clustered:
- Robust plants up to 180 cm high (usually smaller); leaf margin often raised; roots woody, sturdy; pedicels articulated near the base; filaments smooth, shorter than anthers:
- Flowers in a divaricately branched raceme (simple in small or starved plants); floral bracts small, usually dark, firm; style not exerted from closed flower..... 1. *A. angulicaule*
- Flowers in dense fascicles supported by long basal bracts; floral bracts membranous, whitish, large; style exerted from closed flower..... 2. *A. cyperaceum*
- Smaller, more slender plants, 10–50 cm high; leaf margin not raised; roots wiry, numerous, with scattered tubers; pedicels articulated near the base or the middle; filaments smooth or rough in upper half, more or less equalling anthers in length:
- Leaves linear, not over 2 cm wide, usually much narrower:
- Filaments smooth (occasionally rough in *A. cooperi*):
- Raceme divaricate with bare wiry branches and the axils congested with subulate bracts many flower buds and an occasional, accessory branch; scape slender, subterete, not winged..... 3. *A. galpinii*
- Raceme more or less spicate, occasionally with a basal ascending branch; pedicels short, flowers closely arranged on rhachis; bracts enclosing the buds; scape flat, winged, stout, naked or with some sterile bracts near spike..... 4. *A. anceps*
- Raceme congested in a pseudo-capitate inflorescence, always simple, rarely somewhat elongated; bracts membranous, usually whitish and large, occasionally small; scape flat, fairly stout, naked; filaments smooth, occasionally rough..... 5. *A. cooperi*
- Filaments rough:
- Raceme divaricately branched, flowers often congested at first; ovules ca. 10; leaves flaccid; gregarious plants, found in the lower parts of Natal..... 6. *A. saundersiae*
- Raceme seldom divaricately branched, usually spicate, or with many interrupted spikes on rhachis; ovules ca. 14; plants variable, found on the highveld of the Transvaal and Orange Free State to South West Africa..... 7. *A. fasciculatum*
- Leaves lanceolate-ovate, over 2 cm wide, plants densely and shortly hairy:
- Leaf not "petioled"; filaments scabrid; Pretoria and surrounding districts 8. *A. trichophlebium*
- Leaf "petioled"; filaments smooth; northern South West Africa, Southern Rhodesia to Nyasaland..... 9. *A. whytei*
- Leaves rosulate, many (subdistichous in *A. acutum*) scape terete, bracteate; capsule ovoid (cylindrical in *A. acutum*) beaked or apiculate, smooth or with some transverse ridges; flowers single or 1–3-nate:
- Plants grasslike, xerophytic:
- Roots wiry, numerous, with scattered tubers:
- Capsule ovoid, beaked, glabrous; leaf margin not thickened; filaments smooth; southern South West Africa, south-western Cape..... 10. *A. rangei*
- Capsule small, globose, obtuse or apiculate, with transverse ridges; leaf margin thickened; flowers very small, pedicels filiform; filaments rough; northern South West Africa..... 11. *A. krauseanum*
- Roots swollen, cylindrical; capsule smooth, acute; Angola, northern South West Africa, Southern Rhodesia, Transvaal..... 12. *A. calyptrocarpum*
- Plants not grasslike (if with linear leaves then flowers solitary with an inner two-keeled bracteole):
- Leaves sub-distichous; flowers 1–3-nate on simple or sub-simple racemes, congested at first elongating during anthesis; capsule cylindrical, apiculate..... 13. *A. acutum*
- Leaves rosulate, numerous; flowers single with an ovate outer bract and a two-keeled inner bracteole; inflorescence branched or simple; capsule beaked:
- Inflorescence divaricately branched (simple in young plants); bracts small:
- Scape glabrous..... 14. *A. longistylum*
- Scape scabrid..... 15. *A. radula*
- Inflorescence simple, seldom with a basal, ascending branch; bracts large:
- Leaves hairy; inner bracteole with two horns..... 16. *A. transvaalense*
- Leaves glabrous; inner bracteole oblique with one horn..... 17. *A. haygarthii*

1. *A. angulicaule* Bak. in J. Linn. Soc. 15 : 305 (1876) and in Fl. Cap. 6 : 382 (1896). Type: Cape, Keiskamma, Hutton (K, lecto!, PRE, photo.).
A. robustum Bak. in Fl. Cap. 6 : 386 (1897). Type: Zululand, Wood 3972 (K, holo., NH. iso!, PRE, photo.). *A. multisetosum* Bak. in Fl. Cap. 6 : 386 (1897). Type: Swaziland, Galpin 1013 (K, holo., PRE, iso!). *A. rubrovittatum* Poelln. in Bol. Soc. Brot. 16, 2 : 49 (1942). Type: Transvaal, Barberton, Galpin 539 (B, holo!, PRE, GRA, iso!).

Plants variable in size, 20–150 cm high. *Roots* hard, woody, fairly stout, ca. 3 mm in diam. *Rhizome* with irregular woody knobs, horizontal, covered with fibres from old leaf bases. *Leaves* linear to linear-lanceolate, up to 75 cm long and 2.5 cm broad, coriaceous, ribbed, clasping at the base, tapering in upper half, apex acuminate, margin raised or flat; lamina glabrous, seldom minutely horizontally pubescent on the prominent ribs above (glabrous to the naked eye). *Inflorescence* branched (simple in starved plants); scape flattened, often narrowly winged, occasionally bracteate, rhachis often zigzagging between axils; bracts small ca. 3 mm long, deltoid, dark, apiculate, clustered; pedicels articulated near the base, up to 1 cm long in fruit, angular. *Flowers* 3–4-nate, white with dark keeled perianth segments ca. 1 cm long; tips ciliate, 3 outer often with dark tips; filaments glabrous, short; anthers large; ovary with ca. 16 ovules per cell. *Capsule* 6 mm long. *Seeds* typical.

Flowering Period: From June onwards through the summer.

DISTRIBUTION: Eastern Cape, Natal, Orange Free State, Transvaal, Bechuanaland, Swaziland, Portuguese East Africa. Usually found on grassy mountain slopes.

CAPE.—Peddie: Keiskamma River Mouth, edge of lagoon, Galpin 7652 (PRE). [In the Fl. Cap. 6 : 382 Baker quotes Zeyher, from Zwartkops River, but this is probably *Chlorophytum capense* (L.) Voss].

NATAL.—Pinetown: Galpin 12097 (PRE); Nkandhla: Qudeni, Gerstner 634 (PRE).

SWAZILAND.—Havelock Mine, Miller 2999 (PRE).

TRANSSVAAL.—Lydenburg: Kemp's Heights near Lydenburg, Marais 14 (PRE). Barberton: Saddleback Mountain slopes, Galpin 539 (PRE). Belfast: Waterval Onder, Young 1465 (PRE). Waterberg: farm Roodepoort No. 15, Palala Road, Galpin 11611 (PRE). Potchefstroom: Losberg, Theron 800 (PRE).

ORANGE FREE STATE.—Kroonstad: Bothaville, Goossens 1206 (PRE).

BECHUANALAND.—Taungs, Brueckner 591 (PRE).

PORTUGUESE EAST AFRICA.—Mocuba, Faulkner 242 (PRE).

A. angulicaule varies a good deal in size. It grows in grassveld which is regularly ravaged by fires. Of the synonyms, *A. robustum* seems to be its optimal form and *A. multisetosum* the small stunted form appearing early in spring after cold, drought and fires; *A. rubrovittatum* is intermediate. The type from the eastern Cape has no prominent leaf margin but this I consider to be merely a variation. The raised margin results from the fusion of the two outer ribs. The specimens from the western Free State and western Transvaal are more slender in habit. All the above specimens have the same essential characters; the hard, woody roots, knobby rhizome, flattened scape, small dark bracts, pedicels articulated near the base and very short filaments.

2. *A. cyperaceum* Kies sp. nov. distincta.

Radices crassae lignosae. *Folia* linearia conduplicata rigida glabra 80 cm longa, 6–12 mm lata, marginibus prominentibus. *Scapus* teres rectus costatus, 45–180 cm longus. *Flores* axillares fasciculati congesti. *Bracteae* inferiores 15 cm longae foliosae superiores 5 mm longae membranaceae basi rubrae brunneae carinatae marginibus laceratae. *Pedicelli* 15 mm longi, prope basin articulati. *Perianthium* 1 cm diam. *Filamenta* laevia, antheris breviora; stylus longe exsertus. *Capsula* ovoidea apice acute transverse rugosa.

Hard, glabrous, rush-like plants up to 180 cm tall. *Roots* hard, woody, fairly stout, 2 mm in diam. spreading. *Rhizome* with knobs, woody, horizontal, covered with fibres from old leaf bases. *Leaves* erect, linear, up to 80 cm long, ca. 14 mm broad, folded, glabrous, ribbed, hard, clasping at the base, long acuminate in upper half, margin raised, yellow. *Inflorescence* with flowers massed in 3-4 dense clusters at the apex, supported by a long, patent, basal bract; scape round, compressed, up to 180 cm tall, hard; lower basal bract leaf-like, long acuminate, patent, up to 17 cm long; floral bracts ovate, 8 mm long, white, thin; pedicels patent, articulated near the base, elongating during anthesis, up to 15 mm long in fruit. *Flowers* in several dense clusters; perianth segments ca. 14 mm long, tips of outer segments dark on outside; filaments glabrous, short; anthers large, longer than filaments; style declinate, crook-shaped, ultimately longer than perianth; ovary with ca. 10 ovules per loculus. *Capsule* oblong, 1 cm long, transversely rugose, apiculate. *Seeds* typical.

Flowering Period: February-March.

DISTRIBUTION: Transvaal, collected in the Waterberg, Middelburg and Lydenburg districts; ("in mixed open bushveld on hillside" *Story*).

TRANSVAAL.—Lydenburg: near Steelpoort, *Story* 4071 (PRE). Middelburg: Zoetevelden, *van der Merwe*, 1306 (PRE). Waterberg: *Pole Evans* in PRE 28768 (PRE, holo.).

A very distinct and conspicuous species, nearest *A. angulicaule* Bak. The congested inflorescence subtended by large, boatshaped bracts, separates it from all the other species.

3. *A. galpinii* Bak. Fl. Cap. 6: 385 (1897); aggregate species.

Glabrous or hairy plants up to 75 cm high. *Roots* many, thin, wiry with scattered tubers near the root-tips. *Rhizome* small, horizontal, sometimes covered with fibres from old leaf bases. *Leaves* distichous, about 8 per shoot, primary small, the following becoming progressively larger, linear to linear-lanceolate, 6-60 cm long, 2-10 mm broad, soft or firm, closely ribbed, glabrous or shortly, patently setose on the ribs especially on the primary leaves, the margin fimbriate or glabrous, base somewhat dilated, clasping. *Inflorescence* a divaricately branched raceme with patent, bare side branches emerging from the axillary flower fascicles, rarely simple in starved or young plants; scape terete or flattened and narrowly winged, ribbed; lower axillary bracts often with a long, soft awn, up to 3 cm long; floral bracts small, usually dark, apiculate; pedicels up to 1 cm in fruit, articulated below the middle. *Flowers* with perianth variable in size, segments 10-15 mm long; stamens declinate, 4 situated posteriorly, 2 anteriorly with the style; filaments smooth; ovary oblong with 10-30 ovules per cell. *Capsule* rounded, ca. 6 mm high, closely transversely ribbed. *Seeds* typical.

Flowering Period: November-March.

DISTRIBUTION: Warmer parts of the Transvaal, Southern Rhodesia to northern South West Africa and Angola; also in Portuguese East Africa. Usually in grassland or along river courses in sand.

KEY TO VARIETIES

- Primary leaves short, hairy, later leaves glabrous; bracts aristate; plants wiry; in grassveld
 Leaves glabrous, coriaceous; bracts small, apiculate; usually along river courses, in sand
 Leaves soft, margin fimbriate with red or white cilia up to 2 mm long; on rocky grass slopes
- a. var. *galpinii*
 b. var. *matabelense*
 c. var. *norlindii*

(a) var. *galpinii*

A. galpinii Bak. in Fl. Cap. 6: 385 (1897). Type: Transvaal, Barberton, *Galpin* 1160 (K, holo., PRE, NH, iso!).

A. patulum Bak. in Fl. Cap. 6 : 386 (1897). Type: Transvaal, Barberton, Saddleback Mountain, *Galpin* 1232 (K, holo., PRE, GRA, iso!). *A. rehmannii* Bak. in Bull. Herb. Boiss. Ser. 2 : 8 : 781 (1901). Type: Transvaal, Potgietersrus, Klippan, *Rehmann* 5432 (Z, holo!, PRE, photo.). *A. divaricatum* Bak. ex Schinz in Viert. Nat. Ges. Zür. 49 : 174 (1904), non Jacq. Type: Transvaal, Pietersburg, Shilouvane, *Junod* 665 (Z, holo! PRE, photo.). *A. bakerianum* Poelln., in Fedde, Rep. 50 : 232 (1941) nom. nov. for *A. divaricatum* Bak. ex Schinz. *A. junodii* Bak. in Viert. Nat. Ges. Zür. 49 : 175 (1904). Type: Transvaal, Pietersburg, Shilouvane, *Junod* 1735 (G, holo!, PRE, photo.). *A. delagoense* Poelln. in Fedde, Rep. 53, 6 : 134 (1944). Type: Portuguese East Africa, Lourenço Marques, *Schlechter* 11709 (B, holo., probably destroyed, PRE, iso!). Fig. 1.

Flowering Period: October–April.

DISTRIBUTION: Transvaal, Portuguese East Africa and Southern Rhodesia, grassveld.

TRANSVAAL.—Barberton: *Thorncroft* 24 (PRE). Nelspruit: Pretorius Kop, *van der Schyff* 1106 (PRE). Pilgrims Rest: Calais, *Killick & Strey* 2556 (PRE). Pietersburg: between Duiwelskloof and Munnik, *Schweickerdt* 1038 (PRE). Sibasa: Kruger National Park, Baiandbai, *Lang* (TM 32158, 32149, PRE). Waterberg: near Vaalwater, *Meeuse & Strey* 10424 (PRE).

PORTUGUESE EAST AFRICA.—Delagoa Bay, *Forbes* (B). Lourenço Marques, Sul do Save, between Boane and Gova, *Myre & Carvalho*, 1367 (PRE).

SOUTHERN RHODESIA.—Matobo, *West* 2443 (SRGH). Bulawayo, *Feiertag* (SRGH).

The variety *galpinii* is a xerophytic form, fairly uniform in appearance and is common around Barberton, the type locality, and elsewhere in the Lowveld. *A. patulum* also from Barberton, must have been collected in more shady, moist surroundings. It is glabrous and has few-flowered fascicles but no good differences could be detected. It agrees with specimens collected in Southern Rhodesia found near rivers.

(b) var. *matabelense* (Bak.) Oberm., stat. nov.

A. matabelense Bak. in Fl. Trop. Afr. 7 : 484 (1898). Type: Southern Rhodesia, Matabeleland, banks of the Matengwe River, *Holub* (K, holo.). *A. volkii* Soelch, in Mitt. Bot. Staatssamm. Muenchen II: 186 (1956). Type: South West Africa, Grootfontein, Blockfontein on dunes, *Volk* 1685 (M, holo., PRE, photo.).

Flowering Period: January–May.

DISTRIBUTION.—Angola, South West Africa, Southern and Northern Rhodesia, Transvaal.

ANGOLA.—Between Kembo and Kutile Rivers, *Pocock* 457 (PRE).

SOUTH WEST AFRICA.—Okavango Native Territory: Omuramba Khaudum, North of Tamso, *de Winter & Marais* 4735 (PRE, K).

NORTHERN RHODESIA.—Mkushi, Fiwila, *Robinson* 2574 (SRGH).

SOUTHERN RHODESIA.—Matoba, farm Besna kobila, *Miller* 1941, 2523 (SRGH); Enterprize, *Wild* 3698, 3232 (SRGH); Bikita, Devuli Bridge near Birchenough Bridge, *Obermeyer* 2482 (PRE).

TRANSVAAL.—Soutpansberg: Dongola Reserve, Sandveld, *Pole Evans* 4586 (PRE, SRGH); 4307 (PRE); Pretoria: Hammanskraal, *Codd* 5622; 3468 (PRE).

(c) var. *norlindii* (Weim.) Oberm., stat. et comb. nov.

Chlorophytum norlindii Weim. in Bot. Not. 1937, 434, photo., p. 435. Type: Southern Rhodesia, Makoni, near Maidstone, *Norlindh & Weimarck* 4128 (LD, holo., PRE, SRGH, iso!).

Flowering Period: January–March.

DISTRIBUTION: Southern Rhodesia, Transvaal.



FIG. 1.—*Anthericum galpinii* Bak. a, habit showing distichous leaves and tuberous root swellings, $\times \frac{1}{2}$. b, capsule, $\times \frac{1}{2}$. c, stamen, $\times 2$. d, seed, $\times 6$.

SOUTHERN RHODESIA.—Umtali, Quagga's Hoek, *Chase* 4874 (SRGH, PRE). Inyanga, *Chase* 559 (PRE). Salisbury: *Brain* 8327 (SRGH); Hunyani, *Eyles* 4613 (SRGH); Makabusi, *Wild* 2275 (SRGH); Marandellas, *Dehn* 34 (SRGH). Urungwe: near Msukwe River, *Davies* (SRGH 67829).

TRANSVAAL.—Waterberg: Visgat (near Dorset) near Vaalwater, *Meeuse* 10565 a (PRE).

A. limosum Bak. in Trans. Linn. Soc. ser. 2, Bot. 1: 257 (1878) from Angola, Barro do Bengo, in swampy ground, *Welwitsch* 3803, 3804 (BM, holo.?) may be this species but as I have neither seen the type nor any other material from that region, I hesitate to sink *A. galpinii* and its varieties under this species. The type at BM (PRE, photo.) does not agree with Baker's description.

4. *A. anceps* Bak. in J. Linn. Soc. 15: 305 (1876); Fl. Cap. 6: 382 (1896); Fl. Trop. Afr. 7: 482 (1898). Type: Southern Rhodesia, South African Gold Fields, *Baines* s.n. (K, holo.).

A. rautanenii Schinz in Bull. Herb. Boiss. Ser. 2, 8: 625 (1908); Poelln. in Fedde, Rep. 52: 260 (1943). Type: South West Africa, Amboland, Olukonda, *Rautanen* 603 (Z, holo.!, Pre, photo.). *A. otavense* Engl. & Krause in Engl. Bot. Jahrb. 45: 129 (1911); Poelln. in Fedde, Rep. 52: 260 (1943). Type: South West Africa, Otavi, *Dinter* 622 (B, holo., probably destroyed: NBG, iso.!, PRE, photo.).

Plants up to 40 cm high, solitary or gregarious. *Roots* many, thin, spreading, occasionally with tubers near the tips. *Rhizome* small, horizontal, knobby, covered with fibres from old leaf-bases. *Leaves* linear, up to 40 cm long, 1 cm broad, not much attenuated until near the apex, base clasping, slightly dilated, folded, glabrous, ribbed. *Inflorescence* a simple dense and closely flowered raceme, occasionally with a short, ascending basal branch which may be sterile; about as long as the leaves; scape stout, flattened, narrowly winged; lower sterile bracts clasping scape, upper floral bracts ascending with a patent, soft awn, glumaceous, up to 2 cm long, nerved; pedicels short, hidden by the bracts, up to 6 mm long in fruit, articulated below the middle. *Flowers* many in each axillary fascicle, the lowest "fascicle" sometimes elongating to form a short distichous-flowered side branch; perianth white, with the segments 11 mm long, the outer with dark tips; filaments glabrous, short; anthers typical; ovary with ca. 12 ovules per cell. *Capsule* globose, 7 mm in diam., closely, transversely ribbed. *Seeds* typical.

Flowering Period: October–March.

DISTRIBUTION: Southern Rhodesia, northern South West Africa, apparently in sandy mopani grassveld.

SOUTHERN RHODESIA.—Bulawayo, *Eyles & Johnston* 1180 (GRA). Wankie, *Levy*, 38 (PRE). Plumtree, *McLeod* 6 (PRE).

SOUTH WEST AFRICA.—Grootfontein: Otavi Valley, *Dinter* 5509 (B); Arisotavi, *Boss* (TM 35683, PRE); Gautscha Pan, *Maguire* 21966 (PRE); Rotenfels, *Rehm* (M). Outjo: Feigenwasser, *Volk* 1795 (M, PRE). Okavango Native Territory: near Nzinzi, *de Winter* 3997 (PRE).

5. *A. saundersiae* Bak. in Fl. Cap. 6: 384 (1896). Type: Natal, *Saunders* (K, holo.).

A. pulchellum Bak. in J. Bot. Lond. 1872: 140 nom. nud.; Fl. Cap. 6: 386 (1897). Type: Natal, Durban, *Gerrard* 554 (K, holo.). *A. rudatisii* Poelln. in Fedde, Rep. 53: 129 (1944). Type: Natal, Umzinto, Ifafa, *Rudatis* 1235 (B, holo.!, PRE, photo.). var. *angustum* Poelln. l.c. Type of var.: Natal, Marianhill, collector unknown (B, holo., probably destroyed).

Plants up to 40 cm high, gregarious. *Roots* thin, long (no tubers seen). *Rhizome* creeping, small, knobby, covered with sparse, short fibres from old leaf bases. *Leaves*

erect, linear, up to 30 cm long, 1 cm broad, gradually tapered to the subulate apex, clasping at the base, soft, usually flat. *Inflorescence* a branched or sub-simple, contracted and congested raceme with the lowest branch often patent; scape flat, winged, bare; lowest bract much longer than the following ones, leaflike; floral bracts small, 8 mm ovate, subulate, dark; pedicels up to 8 mm long, articulated near the base. *Flowers* very many in each axillary fascicle; perianth with segments 1 cm long; filaments minutely papillate in upper part, slightly longer than anthers; ovary with 7–10 ovules per cell; style declinate. *Capsule* globose, 6 mm in diam. with lax, transverse ridges. *Seeds* typical.

Flowering Period: October–March.

DISTRIBUTION: Natal, usually in low grasslands near river mouths which become inundated at times.

NATAL.—Port St. Johns: West Gate, *Galpin* 3404 (PRE); *Schonland* 4200 (GRA) Port Shepstone: Port Edward, *Moss* 19177 (J). Umzinto: Scottburgh, *Mauve* 4013 (PRE, G); Umlazi: Isipingo, *Salter* 381/34 (BOL). Durban: Westville, *Johnston* (NH 20172); Berea, *Forbes* 479 (NH). Hlabisa: *Ward* 1929; Hluhluwe Game Reserve, *Ward* 2806 (NH).

In the Fl. Cap. 6: 387 (1897), Baker cites *Nelson* 185 from the Vaal River, near rapids, as this species. Although the specimen is poor, it is recognizable as *A. fasciculatum*, the type of which was collected in the same area.

6. *A. cooperi* Bak. in J. Linn. Soc. 15: 304 (1876); Fl. Cap. 6: 382 (1896). Type: Natal, *Cooper* 1004 (K, syn.); Basutoland, *Cooper* 3302 (K, syn.). *A. pachyphyllum* Bak. in J. Linn. Soc. 15: 304 (1876); Fl. Cap. 6: 381 (1896). Type: Cape, Grahamstown, collector unknown (K, holo., PRE, photo.). *A. triflorum* var. *minor* Bak. in Fl. Cap. 6: 383, pro parte, as to *Galpin* 1025 (PRE, GRA) from Barberton. *A. nudicaule* Bak. in Fl. Cap. 6: 384 (1896). Type: Griqualand East, *Tyson* 1054 (K, holo, PRE, iso.). *A. capitatum* Bak. in Fl. Cap. 6: 384 (1896). Type: Natal, Van Reenen's Pass, *Wood* 4795 (K. holo., NH, iso.). *A. adscendens* Pcelln. in Bol. Soc. Brot. 16, 2: 70 (1942). Type: Lydenburg, *Wilms* 1503 (B, holo., PRE, photo.). *A. pascurorum* Poelln. in Bol. Soc. Brot. 16, 2: 46 (1942). Type: Natal, *Rudatis* 456 (B, holo., PRE, photo.).

Small plants 10–40 cm high, usually gregarious. *Roots* thin, many, producing some scattered tubers near the tips. *Rhizome* horizontal, knobby, woody, covered with fibres from old leaf bases. *Leaves* erect or falcate, linear to lanceolate, variable in length, 5–30 cm long, 3–10 mm broad, attenuated near the obtuse, apiculate apex, clasping at the base, flat or usually folded, glabrous or minutely pubescent on the prominent ribs and margin with minute, horizontal hairs or minutely ciliate. *Inflorescence* a simple raceme, usually congested near the apex; scape compressed, narrowly winged, usually naked, bracts variable, small or large, green or white and membranous; pedicels short, up to 8 mm in fruit, articulated below the middle. *Flowers* 1–3-nate, congested or occasionally somewhat lax, with the rhachis visible between the flower fascicles; perianth with segments 8–12 mm long; filaments smooth or papillate in upper half, longer than anthers; ovary with ca. 16–24–32 ovules per cell (one or both rows may sometimes double the number of ovules usually produced). *Capsule* globose, 8 mm in diam., with many transverse ridges. *Seeds* typical.

Flowering Period: October–March.

DISTRIBUTION: Eastern Cape, Natal, eastern Free State, Transvaal; in grassveld.

The size of the bracts varies from small and green to large, white and membranous; the type (form a) according to the description, has the large bracts, a common form in the Drakensberg area. It is very similar in appearance to *A. capitatum* which Baker separated because of the papillate (not smooth) filaments. I suspect that this variation in the filaments may be the result of hybridization, possibly with *A. saundersiae*. The

Transvaal and eastern Cape specimens show a form with small, green bracts, somewhat more lax inflorescence and fairly short, falcate leaves (form b). This form agrees with *A. pachyphyllum* Bak. It was not practicable however, to maintain these forms as separate species.

(a) Typical form with large, white, membranous bracts and a congested inflorescence; filaments smooth or papillate.

NATAL.—Klip Rivier: near van Reenen, *Wood* 6158, 12098 (PRE). Alfred: near Umzimkulu, *Killick & Marais* 2010 (PRE). Utrecht: Kaffir Drift, *Thode* A367 (PRE).

SWAZILAND.—*Stewart* (TM 10122, PRE).

TRANSVAAL.—Carolina: *Galpin* 12516 (PRE). Middelburg: Dullstroom, *Noomé* (TM 20800, PRE). Belfast: *Codd* 5632 (PRE); Pilgrims Rest: Graskop, *Galpin* 14530 (PRE).

(b) Form with small greenish bracts, a lax raceme and leaves usually fairly short, falcate (*A. pachyphyllum* Bak.).

CAPE.—Albany: Rockcliffe near Sidbury, *Daly* 816 (PRE); Alexandria: Bushman's River Bridge, on Port Elizabeth Road, *Archibald* 4015 (PRE); Idutywa, *Galpin* 10923 (PRE).

TRANSVAAL.—Potchefstroom: *Burt Davy* 1062 (PRE). Pretoria: hills, *Leendertz* 473 (PRE). Benoni: *Bradfield* 291 (PRE). Johannesburg: Witpoortjie, *Gilmore* 663 (PRE). Waterberg: near Nylstroom, *Burt Davy* 2072 (PRE).

7. *A. fasciculatum* Bak. in J. Linn. Soc. 15: 316 (1876); Fl. Cap. 6: 383 (1896). Type: Vaal River Plains, *Barber* (K, holo.).

A. subulatum Bak. in Bull. Herb. Boiss. Ser. 2, 1: 781 (1901). Type: Transvaal, Pretoria, Donkerhoek, *Rehmann* 6550 (Z, holo.!, PRE, photo.). *A. hereroense* Schinz in Bull. Herb. Boiss. Ser. 2, 1: 857 (1901); Poelln. in Fedde, Rep. 52: 237 (1943). Type: South West Africa, Hereroland, Orumbo, *Dinter* 1306 (Z, holo.!, PRE, photo.). var. *longibracteatum* Poelln., l.c. Type of var.: Aitzas, *Dinter* 823 (B, holo.?). *A. conrathii* Bak. in Bull. Herb. Boiss. Ser. 2, 4: 997 (1904). Type: Transvaal, Germiston, Modderfontein, *Conrath* 731 (GZU, holo.!, PRE, photo.). *A. lydenburgense* Poelln. in Bol. Soc. Brot. 15, 2: 73 (1942). Type: Transvaal, Lydenburg, *Wilms* 1538 (B, holo.!, PRE, photo.). *A. wilmsii* Diels ex Poelln. in Fedde, Rep. 53: 131 (1944). Type: Transvaal, Lydenburg, *Wilms* 1502 (B, holo. ! L, iso., PRE, photo.). *A. wilmsii* Diels ex Burt Davy and Pott-Leendertz in a First Check list of the Flowering Plants and Ferns of the Transvaal and Swaziland, Ann. Transv. Mus. 3: 134 (1912) nom. nud.

Plants up to 60 cm high, gregarious or solitary. *Roots* many, thin, spreading, with some tubers near the tips. *Rhizome* horizontal, woody, knobby, covered with fibres from old leaf bases. *Leaves* linear to filiform, 5–40 cm long and 1–5 mm broad, flat or usually folded, soft or coriaceous, ribbed, glabrous or with short, stiff hairs, on the ribs; base vaginate, dilated and with a ciliate margin; outer leaves very small. *Inflorescence* a simple raceme or with some divaricate basal branches or an interrupted, spike-like, branched inflorescence, overtopping the leaves; scape terete, seldom compressed, often ribbed, lowest bract slightly larger than the upper floral bracts, glumaceous, subulate, closely folded, amplexicaul, varying in length from 6–12 mm, ribbed, light or dark; pedicel up to 1 cm in fruit, articulated below the middle. *Flowers* congested or laxly arranged, perianth with segments ca. 14 mm long; filaments rough in upper half; ovary with ca. 14 ovules per cell. *Capsule* oblong, 9 mm. *Seeds* typical.

Flowering Period: October–March.

DISTRIBUTION: Eastern and south-western Transvaal, Bechuanaland, South West Africa, Orange Free State, northern Cape, Basutoland; a common grassveld species.

Apparently a variable, adaptable species with a wide distribution. The following forms were distinguished but it was not possible to maintain them as distinct varieties.

(a) Typical form. Found near the Vaal River from Vereeniging to Barkly West, apparently in moist surroundings. It is a soft leaved, gregarious species with usually a simple inflorescence and small, soft, whitish bracts.

TRANSVAAL.—Benoni: Benoni, in water or on its edge, *Bradfield* 349 (PRE).

ORANGE FREE STATE.—Fauersmith, *Kies* 334 (PRE). Boshoff: Smitskraal, *Burt Davy* (PRE, 12904b).

CAPE.—Kimberley: sandveld near Riverton, *Acocks* 2260 (PRE). Barkly West: Schietpan Kalk, *Acocks* 1645 (PRE). Vryburg: Armoedsvlakte, *Mogg* 8023 (PRE).

(b) Highveld form. Probably as a result of drought and cold the plants remain small and bear few flowers. They equal *A. subulatum* Bak. and *A. conrathii* Bak. the types of which were collected near Johannesburg.

TRANSVAAL.—Heidelberg: *Leendertz* (TM 4687, PRE). Middelburg: *Jenkins* (TM 10181, PRE). Wakkerstroom: near Volksrust, *Schweickerdt* 621 (PRE).

SWAZILAND.—Mbabane: Ukutula, *Compton* 25252; near Mbabane, *Compton* 27548 (PRE).

(c) Bushveld form. Solitary, large, coriaceous plants with compound, interrupted, spike-like inflorescences; it is found in the warmer parts of the Pretoria district to Lydenburg. It is extremely common in grassveld. Often recorded from limestone areas. They equal *A. lydenburgensis* Poelln. and *A. wilmsii* Poelln.

TRANSVAAL.—Benoni: *Bradfield* 350 (PRE). Pretoria: University Farm, Pretoria, *Kies* 364 (PRE); near Delmas, *Codd*, (PRE). Johannesburg: Milner Park, *Moss* 6040 (PRE J.).

(d) Western form. Gregarious, leaves narrow, shortly pubescent; flowers evenly spaced on a simple rhachis. This equals *A. hereroensis* Schinz.

SOUTH WEST AFRICA.—Grootfontein: *Rehm* (M), *Schoenfelder* S 432 (PRE). Otjiwarongo: *Volk* 463 (M). Gibeon: *Asis*, *Volk* 721 (M).

CAPE.—Mafeking, *Brueckner* 553 (PRE), *Leistner* 580 (PRE).

(e) Crisped form. Gregarious, leaves soft, fairly broad, margin often crisped, ciliate; inflorescence often divaricately branched.

CAPE.—Mafeking: *Acocks* 18778 (PRE); near Setlagoli, Kalahari Thornveld, *Leistner* 567 (PRE). Vryburg: Armoedsvlakte, *Sharpe* (PRE 7399), *Foley* (PRE 2760). Herbert: Campbell, *Acocks* 1421 (PRE).

TRANSVAAL.—Christiana: Kameelpan, *Theron* 433 (PRE), 612 (PRE); "Kaffraria" near Christiana, *Burt Davy* (PRE, 12774). Pretoria: near Pienaar's River Station, *Codd* 6222 (PRE).

8. *A. trichophlebium* Bak. in Fl. Cap. 6: 382 (1896). Type: Transvaal, Pretoria, hills above Apies River, *Rehmann* 4314 (K, holo.).

A. pretoriense Bak. in Bull. Herb. Boiss. Ser. 2, 1: 780 (1901). Type: Transvaal, Pretoria, hills above Apies River, *Rehmann* 4314 (Z holo.! PRE, photo).

A. vaginatum Bak. in Bull. Herb. Boiss. II, 4: 997 (1904). Type: Transvaal, Irene, *Conrath* 1243 (GZU, holo! PRE, photo.). In the publication no number is mentioned but on the type sheet this is given as 1243.

Small, pubescent plants up to 20 cm high. *Roots* many, hard, wiry, 1–2 mm in diam. *Rhizome* woody, horizontal, covered with fibres from persistent leaf bases. *Leaves* ca. 8, distichous, primary small, ovate, becoming progressively larger and ovate-lanceolate to oblong-oblancheolate, ca. 11 cm long, 3.5 cm wide, acute at the apex, narrowing towards the clasping base, lamina firm, ribbed, setose with white patent, velvet hairs. *Inflorescence* a simple, congested, many flowered raceme, rarely with a short basal side-branch; scape flattened, sturdy, ribbed, pubescent, 10–20 cm long; bracts lanceolate-acuminate, up to 3 cm long; pedicels articulated below the

middle, up to 8 mm in fruit. *Flowers* congested, with the perianth greenish-white, segments ca. 1 cm long; filaments with unequal short papillae in upper half; ovary with ca. 14 ovules per cell. *Capsule* typical, 8 mm long. *Seeds* typical.

Flowering Period: September–March.

DISTRIBUTION: Transvaal; found in the Pretoria, Johannesburg, Rustenburg and Waterberg districts, in grassveld, not very common.

TRANSVAAL.—Pretoria: *Mogg* 16323A (PRE); Meintjies Kop, *Leendertz* 912 (PRE). Johannesburg: Bryanston, *Gilliland* (J 28093, PRE). Rustenburg: Swartruggens, *Sutton* 793 (PRE). Waterberg: near Nylstroom, *Häfstrom & Acocks* 207 (PRE).

9. *A. whytei* Bak. in Fl. Trop. Afr. 7: 493 (1898). Type: Nyasaland, Mount Zomba, *Whyte* (K, holo.).

A. friesii Weimarck in Bot. Not. Lund 1937: 422, photo, p. 423. Type: Southern Rhodesia, Inyanga near Cheshire, *Norlindh & Weimarck*, 4330 (LD, holo., PRE, SRGH, iso.).

Plants up to 1 m high. *Roots* many, thin. *Rhizome* small, creeping, covered with fibres from old leaf bases. *Leaves* about 8, becoming progressively larger, the largest pair with a lanceolate lamina, 30 cm long, 3.5 cm broad, tapering to an acute apex and narrowing at the base into a long "petiole" up to 18 cm long, closely ribbed with the raised ribs densely and minutely pubescent, margin narrow, yellow. *Inflorescence* a simple, congested raceme, seldom with 1–2, short, basal ascending branches; scape flattened, narrowly winged, glabrous, but for the ciliate wings, often with a small, sterile, adpressed bract near the apex; fertile bracts small, ovate, acute, up to 8 mm long, membranous; pedicels up to 1 cm in fruit, articulated below the middle. *Flowers* congested with the white perianth segments 12 mm long, the apex of the outer segments dark and papillate; filaments glabrous, 4 mm; anthers 10 mm; ovary with ca. 18–24 ovules per cell; style ultimately longer than perianth. *Capsule* typical, closely ribbed. *Seeds* typical.

Flowering Period: November–March.

DISTRIBUTION: Northern South West Africa, Southern and Northern Rhodesia, Portuguese East Africa, Nyasaland. Usually in moist grassland in Mopani woodland. SOUTH WEST AFRICA.—Okavango Native Territory: Okavango River near Masari Camp, *de Winter* 4089 (PRE).

SOUTHERN RHODESIA.—Victoria Falls, *Rogers* 5624 (GRA). Que Que, *McLeod* 30 (PRE). Salisbury, *Brain* 9784 (SRGH).

NORTHERN RHODESIA.—Mazabuka, near Chirundu Bridge, *Drummond* 5410 (SRGH); Mazabuka, *Vet. Officer*, C.R.S. 587 (PRE); Livingstone–Maramba Road, *Young* 1091 (PRE, SRGH).

10. *A. rangei* Engler & Krause in Engl. Bot. Jahrb. 45: 125 (1910); Poelln. in Fedde, Rep. 52: 260 (1943). Type: South West Africa, Diamond area II, Aus, *Range* 157 (B, holo., probably destroyed).

A. scariosum Duthie in Ann. Stell. Univ. 4: 15, t5 (1926); Ann. Bol. Herb. 4: 136 (1928). Type: Cape, Stellenbosch, *Duthie* 1818 (STE, holo., J, iso.!). *A. tubiferum* Dinter in Fedde, Rep. 29: 263 (1931); Fedde, Rep. App. 23: 57 (1923) nom. nud.; Poelln. in Fedde, Rep. 52: 242 (1943). Type: South West Africa, Klinghardt Mountains, *Dinter* 4001 (B, lecto.!, PRE, iso.!, photo.). *A. rigidifolium* Poelln. in Bol. Soc. Brot. 16, 2: 48 (1942). Type: Cape Town, Claremont, *Schlechter* 524 (B, holo.!, PRE, photo.).

Grasslike, wiry plants up to 40 cm high. *Roots* numerous, wiry, often with many scattered watery tubers. *Rhizome* lateral, thickly covered with fibres from old leaf bases. *Leaves* many, rosulate, erect, straight or spirally curled, linear or filiform 5–20 cm long, 1–2 mm wide, dilated and membranous at the base, glabrous, wiry, margin

minutely cartilagino-dentate. *Inflorescence* simple or with some ascending branches, laxly flowered; scape terete, bracteate, glabrous; floral bracts fascicled, membranous; pedicels up to 10 mm long in fruit, articulated below the middle. *Flowers* 1-4-nate, perianth spreading, segments ca. 10 mm long; filaments smooth; ovary ovoid with ca. 10 ovules per cell, style glabrous, 6 mm long. *Capsule* ca. 8 mm long, ovoid, beaked, transversely rugose. *Seeds* ca. 2 mm in diam. tetrahedral.

Flowering Period: September–March (in the Cape from January to March, in leaf May–November; those from the southern Namib were in flower in September).

DISTRIBUTION: Southern South West Africa, the south-western Cape to the Cape Peninsula. "In gravelly soil, rare" *Duthie*.

SOUTH WEST AFRICA.—Diamond Area I: Buchu Mountains, Peilberg, on covered dunes, *Dinter* 6506 (B).

CAPE.—Namaqualand: Richtersveld, Kawarass, *Marloth* 12424 (PRE). Calvinia: Lokenburg, *Acocks* 17553 (PRE). Clanwilliam: *Smith* 2617 (PRE). Caledon: Rivier Zondereinde, *Schlechter* 9884 (B, PRE). Hills west of Baths, *Purcell* 57, 58 (NBG). Bredasdorp: between Bredasdorp and Malagas, *Lewis* 3304 (NBG). *Duthie* also cites: Cape, Rondebosch, *Wolley Dod* 2484 (BOL.) and specimens collected by *Guthrie*.

As the type of *A. rangei* was not at Berlin, I had to rely on the description and distribution to identify the species. Specimens collected by *Dinter* near the type locality of *A. rangei* and agreeing with the description, made it reasonably certain that it must have been this species. In their description *Engler & Krause* give the measurements of the pedicel and the perianth segments as 4 mm. This is much smaller than those of *A. rangei* and near to the small flowers of *A. krauseanum*, but they may have measured immature buds. *A. krauseanum* has not been recorded so far south.

11. *A. krauseanum* *Dinter* in *Engl. Bot. Jahrb.* 48: 354 (1912); *Poelln.* in *Fedde, Rep.* 52: 238 (1943). Type: South West Africa, Damaraland, Windhoek, Skaap River, *Dinter* 1913 (B, holo., probably destroyed; NBG, iso., PRE, photo.). *A. rigidum* *Krause* in *Engl. Bot. Jahrb.* 48: 353 (1913) e descr.; non *Baker* (1872); nec de *Wild.* (1913). *A. rigens* *Poelln.* in *Fedde, Rep.* 50: 232 (1941), nom. nov. for *A. rigidum* *Krause*; *Poelln.* in *Fedde, Rep.* 52: 256 (1943). Type: South West Africa, Auas Mountains, *Dinter* 1894 (B, holo., probably destroyed). *A. kyllingioides* *Krause* in *Engl. Bot. Jahrb.* 51: 441 (1914); *Poelln.* in *Fedde, Rep.* 52: 239 (1943) e descr. Type: South West Africa, Hereroland, *Kaistfeld, Seiner* 661 (B, holo., probably destroyed). *A. brachyphyllum* *Suess.* in *Mitt. Bot. Staatssam. Muenchen*, I: 49 (1950). Type: South West Africa, Rehoboth, Buellspoort, *Rehm*, (M, holo., PRE, photo.). *A. durum* *Suess.* in *Mitt. Bot. Staatssam. Muenchen*, I: 49 (1950); non *Poelln.* 1941. *A. suessenguthii* *Sölch* in *Mitt. Bot. Staatssam. Muenchen*, II: 176 (1956), nom. nov. for *A. durum* *Suess.* *A. pungens* *Poelln.* in *Fedde, Rep.* 52: 241 (1943) e descr. Type: South West Africa, Hereroland, Brakwater, *Dinter* 1510 (B, holo., probably destroyed).

Plants up to 55 cm, hard, glabrous, grasslike. *Roots* many, thin, 1–2 mm in diam. *Rhizome* horizontal, small, covered with fibres of old leaf bases. *Leaves* stiff, rigid, erect or falcate, flat, linear, 20–30 cm long, 1–3 mm wide, margin and midrib raised. *Inflorescence* a branched, laxly flowered panicle; scape terete, arcuate at the base, bracteate with small bracts; floral bracts minute, fascicled; pedicels filiform, up to 6 mm in fruit, articulated near the base. *Flowers* 1–3-nate, with perianth segments 5 mm long; filaments rough; ovary ovoid. *Capsule* small, 2 mm high, usually broader than long, tipped by the persistent style-base, transversely rugose. *Seeds* typical.

Flowering Period: December–January.

DISTRIBUTION: Known from the northern part of South West Africa, usually in sandy soil.

SOUTH WEST AFRICA.—Windhoek: Khomas Plateau, Friedenau, *Gassner* 209 (M); Voigtland, *Volk* (M 11335); Auas Mountains, farm Kromhoek, *Merxmüller*

793 (M). Rehoboth: Gams Mountains, *Merxmüller* 955 (M). Grootfontein: Otavi Mountains, *Rehm* (M); Grootfontein, *Dinter* 806 (NBG); Tsumeb, *Naegelsbach* 66 (M); Auros, *Volk* 5975 (M); *Dinter* 5609 (B). Ovamboland: Rehoboth, *Volk* 2519 (M).

Seiner noted that the Herero name was *ehosuo-tshisumba*, i.e. "make-up grass", as the Hereros grind the roots and then mix it with fat to make an ointment which they rub on their bodies. But in the description of the type plant (*Seiner* 661), Krause describes the roots of *A. kyllingioides* as thin. (*A. kyllingioides* is here considered to be a synonym of *A. krauseanum*). It is possible that this species, like *A. rangei*, mentioned earlier, has tubers near the root tips, but so far these have not been seen on specimens in the herbarium. It is also possible that there is a mistake somewhere. The following species, *A. calyptrocarpum*, with its swollen roots would seem a more likely source for an ointment ingredient.

12. *A. calyptrocarpum* *Bak.* in *Trans. Linn. Soc. Ser. 2: Bot. 1*, 258 (1878); *Fl. Trop. Afr. 7*: 480 (1898). Type: Angola, Huilla, between Mampulla and Lopollo, *Welwitsch* 3786 (BM, holo., PRE, photo.).

A. curvifolium *Krause* in *Engl. Bot. Jahrb. 48*: 354 (1913) e descr.; *Poelln. in Fedde, Rep. 52*: 258 (1943). Type: South West Africa; Auas Mountains, *Dinter* 1878 (B, holo., probably destroyed). *A. caespitosum* *Dinter* in *Fedde, Rep. 29*: 267 (1931); *Poelln. in Fedde, Rep. 52*: 234 (1943). Type: South West Africa, Grootfontein, Otavi, *Dinter* 5284 (B, holo., PRE, iso.).

Grasslike plants variable in size, 10–60 cm high. *Roots* fairly short, uniform, fleshy, many. *Rhizome* small, horizontal, covered with fibres from old leaf bases. *Leaves* many, filiform, 10–30 cm long base, dilated and membranous, fascicled; pedicels up to 8 mm long in fruit, articulated below the middle. *Flowers* 1–4-nate, with perianth segments rotate; filaments smooth; ovary with ca. 8 ovules per cell. *Capsule* turbinate, 5 mm long, glabrous, smooth, often capped with the withered perianth. *Seeds* typical, 0.75 mm long.

Flowering Period: December–March. Flowers open in the afternoon.

DISTRIBUTION: Angola, Southern Rhodesia, South West Africa, Transvaal; usually in dry grasslands, also in vleis.

SOUTH WEST AFRICA.—Okavango Native Territory: Andara, *Merxmüller* 2080 (M, PRE). Kaokoveld: Ondongua, *Barnard* (SAM 44167, NBG); Namakunde, *Volk* 997 (M), *Barnard* 583 (NBG). Grootfontein: Omaue, *Volk* 2849 (PRE). Rehoboth: Goellschau, *Volk* (M 11496). Windhoek: Binsenheim, *Volk* (M 11034); Voigtland, *Volk* (M 11399).

SOUTHERN RHODESIA.—Inyanga: near Inyanga town, *Norlindh & Weimarck* 4140 (PRE, SRGH). Salisbury: Marandellas, *Wild* 3292 (SRGH). Umvukwes: Darwin, Umsengedzi River, *Wild* 3984 (SRGH). Umtali: Dora Ranch, *Chase* 6362 (SRGH). TRANSVAAL.—Pretoria: Bronkhorstspuit, *Repton* 1214 (PRE). Witbank: *Gilifillan* 7263 (PRE). Waterberg: near Vaalwater, *Meeuse & Strey* 10410 (PRE, BM).*

The species is apparently very adaptable and this could be the reason for its wide distribution. Usually it is found in dry grassveld but Prof. Merxmüller collected his specimens in a vlei, the flowers floating on the surface of the water.

Baker describes the perianth with a circumscissile area at the base; it breaks off irregularly however, wherever pressure is greatest. The perianth may persist on top of the capsule, which is unusual for this genus.

A species closely related to *A. calyptrocarpum* *Bak.*, is the Angolan species, *A. tenellum* *Welw. ex Baker* in *J. Linn. Soc. Ser. 2, Bot. 1*: 256 (1878); type: Angola, Morro de Monino, *Welwitsch* 3796 (BM, holo.). Mr. John Lewis of the British Museum who compared the types, found *A. tenellum* to be a more slender species.

* TANGANYIKA.—Seronera to Kleins Camp, mile 57, *Greenway & Turner* 9997 (PRE).

13. *A. acutum* Wright in Kew Bull. 1914, 170 (1914). Type: Natal, Richmond, Ensikeni, *Haygarth* in Hb. Wood 12063 (K, holo., NH, PRE, iso.!).

Glabrous plants up to 80 cm high. *Roots* many firm, ca. 4 mm in diam. *Rhizome* small, usually covered with fibres of old leaf bases. *Leaves* subdistichous, ca. 8, becoming progressively longer, linear-lanceolate, up to 50 cm long, 1–2 cm broad, tapering gradually to the apex, clasping at the base, thin, flat, ribbed. *Inflorescence* a sub-simple, lax raceme or with 1–2 short, basal branches; scape terete, bracteate with 1–3 sterile, leaf-like bracts, fertile bracts resembling the sterile bracts but becoming smaller; pedicels very short in bud, up to 8 mm in fruit, articulated near the middle; flowers 1–2-nate, the secondary flower (or flowers) sometimes borne on contracted, bracteate side branches. *Flowers* with perianth segments up to 17 mm long, with a broad 5-ribbed green keel; filaments glabrous, slightly dilated at the base, about 8 mm long; ovary narrow, oblong, 4 mm high, ca. 20 ovules per cell. *Capsule* (immature) cylindrical, 3 grooved, 15 mm long, 5 mm in diam., green, coriaceous, with transverse wrinkles, the persistent style-base forming an apiculus. *Seeds* (immature) black, angular with a well developed funicle.

Flowering Period: December, probably short.

DISTRIBUTION: Southern Natal, north eastern Cape.

NATAL.—Richmond: *Hutchinson* 1829 (PRE, GRA); Underberg: Drakensberg Garden, *Werdermann* 1421 (B). Giant's Castle: *Symons* (TM 25296, PRE).

CAPE.—Mount Currie: Kokstad, *Hutchinson* 1829 (PRE).

This species is of interest as it shows a link between the truly distichous species with several flowers in the axil of an outer bract and those that are rosulate and have only one flower in the axil of each outer bract. The arrangement of the bi-nate flowers shows that it is the vestige of a contracted raceme, for the second flower is sometimes situated on a peduncle bearing small bracts. Fruiting material was collected for the first time by *Werdermann* 1421 (B) at Underberg. Although the capsules were not yet quite ripe, they showed a resemblance to those of *A. haygarthii*. The seeds although shrunken and immature, showed many folds and would probably become angular when ripe.

14. *A. longistylum* Bak. in J. Linn. Soc. 15: 305 (1876); Fl. Cap. 6: 381 (1896). Type: Transvaal, *Baines* (K, holo.).

A. polyphyllum Bak. in Fl. Cap. 6: 383 (1896). Type: Transvaal, Barberton, *Galpin* 1149 (K, holo., PRE, GRA, iso.!). *A. recurvifolium* Bak. in Kew Bull. 1906: 28. Type: Southern Rhodesia, near Salisbury, *Cecil* 143 (K, holo.). Fig. 2.

Glabrous plants up to 100 cm high. *Roots* numerous, fibrous, firm, up to 3 mm in diam. *Rhizome* woody, usually covered with fibres from old leaf-bases. *Leaves* many, rosulate, erect, or sometimes curled back, linear, up to 30 cm long, 2–8 mm broad, long tapered in upper half, clasping below, folded, ribbed, margin minutely papillate. *Inflorescence* a lax ascending panicle, sometimes simple, many flowered with the solitary flowers subtended by a bract and bracteole; scape terete, bracteate; basal sterile bracts leaf-like; fertile bract small, ovate-acuminate, auriculate, bracteole smaller, situated obliquely opposite bract, 2-cleft to emarginate with the apices usually unequal; pedicels short, up to 4 mm, stout and erect in fruit, articulated below the middle. *Flowers* with the perianth segments lanceolate, 13–16 mm long, reflexed when open; stamens declinate, 4 erect, 2 decumbent with style, filaments short, glabrous, flattened; anthers large, 7 mm; ovary ovate, acute with 9–30 ovules per loculus, style exceeding the perianth. *Capsule* erect, ovate, beaked, 13 mm long, 6 mm in diam., glabrous, transversely rugose, apiculate. *Seeds* typical.

Flowering Period: November–March.

DISTRIBUTION: Natal, Transvaal, Bechuanaland, Southern Rhodesia; dry bushveld, rocky slopes or sandy flats.



FIG. 2.—*Anthericum longistylum* Bak. a, habit showing rosulate leaves $\times \frac{1}{2}$. b, capsule, $\times 2$. c, outer auriculate bract and inner emarginate bracteole, $\times 2$. d, flower.

NATAL.—Bergville: *Killick* 1043 (PRE).

TRANSVAAL.—Barberton: *Galpin* 408 (PRE). Nelspruit: Kruger National Park, Pretorius Kop, *Codd* 5664 (PRE, SRGH). Pilgrim's Rest: *Rogers* 18238 (PRE); *Killick & Strey* 2558 (PRE). Pretoria: Premier Mine, *Rogers* 25033; Hammanskraal, *Kies* 367 (PRE), *Codd* 3493 (PRE). Letaba: Tzaneen, *Phillips* 3294 (PRE). Waterberg: near Maraheki, farm Waterval 6, *Meeuse & Strey* 10381, 10383 (PRE).

CAPE.—Mafeking: *Brueckner* 453 (PRE).

BECHUANALAND.—Near Derdepoort, *Codd* 8893 (PRE), 8862 (PRE, SRGH). Gaborones, *Van Son* (TM 28665, PRE). Mahalapye, *de Beer* 555 (SRGH).

SOUTHERN RHODESIA.—Rusape, *Dehn* R 59 (SRGH). Bulalima—Mangwe: Embakwe, *Feiertag* 45411 (SRGH). Salisbury: Beatrice, *Drewe* 47 (SRGH). Matobo, *West* 2447 (SRGH).

The types of *A. longistylum* and *A. polyphyllum* were compared at Kew by Mr. W. Marais who found them to be conspecific. The filaments of *A. polyphyllum* are glabrous and not scabrous as described. Baker describes the flowers of *A. longistylum* as 2–3-nate, but this is somewhat misleading for the flowers, although sometimes found close together, do not emerge from the axil of one bract. The part of the scape present on the type of *A. longistylum* is bare but this is unusual. The leaves of some specimens are very narrow.

15. *A. radula* Bak. in Bull. Herb. Boiss. Ser. 2, 1: 781 (1901). Type: Transvaal, Pietersburg, Houtbosch, *Rehmann* 5805 (Z, holo., PRE, photo.).

Plants resembling *A. longistylum*, but with the inflorescence glandular-scabrid. Roots many, long, firm. Rhizome short, covered with fibres from old leaf bases. Leaves rosulate, many, linear, ca. 20 cm long, 4 mm wide, folded, glabrous, rigid, ribbed. Inflorescence branched, glandular-scabrid, 35 cm high; scape firm, terete, bracteate, glabrous at the base, scabrid with stipitate glands above; lower sterile bracts large, leaf-like; each solitary flower subtended by a bract and bracteole; bract ovate, membranous, bracteole smaller, unequally bifid; pedicels 3 mm long. Flowers with perianth segments 16 mm long, 2 mm broad; filaments smooth, 4 mm long; anthers 4 mm; ovary ovoid, apex acute, style exerted, declinate. Capsule unknown.

Flowering Period: Not stated, probably December.

DISTRIBUTION: Transvaal, Houtbosch, only known from the type locality.

TRANSVAAL.—Pietersburg: Houtbosch, *Rehmann* 5805 (Z, holo., PRE, photo.).

The species very closely resembles *A. longistylum* and may eventually prove to be a glandular variety of this species.

16. *A. transvaalense* Bak. in Fl. Cap. 6: 384 (1896). Type: Transvaal, Barberton, *Galpin* 1035 (K, holo., PRE, NH, GRA, iso.).

A. indutum Poelln. in Fedde, Rep. 50: 232 (1941), nom. nov. for *A. vestitum* Bak. ex Schinz in Viert. Nat. Ges. Zürich, 49: 174 (1904); non Bak. in J. Linn. Soc. 15: 307 (1876). Type: Transvaal, Pietersburg, Shiluvane, *Junod* 862, 1441 (K, holo.).

Plants up to 80 cm high. Roots numerous, firm, ca. 2 mm in diam. Rhizome woody, horizontal, covered with fibres of old leaf bases. Leaves rosulate or semi-distichous, straight or in a loose spiral, erect, 5–35 cm long, up to 6 mm broad, closely ribbed (midrib absent) flat, setose with long, white, patent hairs. Inflorescence glutinous, simple, seldom with a short basal branch, many flowered, elongating during anthesis; scape terete, pubescent, bracteate above, sterile bracts pubescent, leaf-like but smaller and narrower; each solitary flower supported by a large glabrous ovate, acute, auriculate bract and a bracteole with 2 long subulate horns; pedicels up to 3 mm in fruit, articulated in the middle. Flowers closely arranged on rhachis with bracts imbricate; perianth glutinous, segments 13 mm long, filaments short, anthers 5 mm long; ovary ovoid, each cell with ca. 15 ovules. Capsule ovoid, beaked, transversely rugose. Seeds typical.

Flowering Period: November–April.

DISTRIBUTION: Orange Free State, Swaziland, Transvaal, Southern Rhodesia, usually in grassveld on rocky outcrops.

ORANGE FREE STATE.—Senekal: Ferrara, iron stone hills, *Goossens* 984 (PRE).

SWAZILAND.—Stegi, Isateki Beacon, *Compton* 27297 (PRE).

TRANSVAAL.—Belfast: *Bolus* 12385 (PRE). Benoni: *Bradfield* 327B (PRE). Krugersdorp: Muldersdrift, *Gilliland* (J, 26103, PRE). Middelburg: *Mogg* 17314 (PRE). Lydenburg: Steenkampsberg, *Codd* 8222 (PRE, SRGH). Pietersburg: Woodbush Hill, *Pott* 4730 (PRE); Haffenden Heights, *Junod* 4120 (PRE).

SOUTHERN RHODESIA.—Inyanga, *Hopkins* (SRGH 9448); *Whellan* 603 (SRGH).

Like *A. longistylum* Bak. and *A. haygarthii*, this species also has narrow-leaved forms.

17. *A. haygarthii* (*Wood & Evans*) *Kies* comb. nov.

Chlorophytum haygarthii Wood & Evans in J. Bot. Lond. 37: 254 (1899). Type: Zululand, 'Nkandla, *Haygarth* in Hb. *Wood* 7448 (NH, holo., PRE, iso.).

Anthericum bracteatum Thode ex Poelln. in Fedde, Rep. 53, 6: 126 (1944). e descr. Type: Natal? Transvaal? "On stony kopje and plateau, 2100 M" *Thode* 3500, flow. January 1921 (B, holo., probably destroyed).

Plants up to 80 cm high. *Roots* many, firm, stout, 3 mm in diam. *Rhizome* small, woody, obliquely horizontal, covered with fibres of old, persistent leaf-bases. *Leaves* semi-distichous, linear to lanceolate, 20–80 cm long, up to 14 mm broad, tapered in upper half, base clasping, ribbed, glabrous, firm, flat. *Inflorescence* a simple raceme, many and closely flowered, with bracts imbricate; scape terete, stout, glabrous, with several leaf-like sterile bracts; rhachis pubescent and viscous above; each solitary flower with a membranous ovate bract and an inner oblique boatshaped bracteole, which covers the bud; pedicels erect, stout, 5 mm long in fruit, articulated in the middle. *Flowers* with perianth segments 15 mm long; stamens with glabrous filaments; ovary ovoid, with ca. 12 ovules per cell. *Capsule* ovoid, transversely rugose, sutures prominent, apex beaked. *Seeds* typical.

Flowering Period: November–February.

DISTRIBUTION: Natal, eastern Transvaal, stony slopes and swamps.

ZULULAND.—Ubombo: *Gerstner* (NH 22874).

NATAL.—Vryheid: *Galpin* 10198 (PRE). Paulpietersburg: Dumbe Mountain, *Galpin* 9654 (PRE).

TRANSVAAL.—Ermelo: Mavriestad, *Pott* 5173 (PRE). Wakkerstroom: *van Dam* (TM 24339, PRE); *Thode* (NH 16488). Barberton: Schagen, slopes of Amajuba Mountain, *Liebenberg* 3105 (PRE). Pilgrim's Rest: Mauchsberg, Sabie, *Smuts & Gillet* 2384 (PRE); Graskop, *Codd* 6736 (PRE). Belfast: Dullstroom, *Galpin* 13045 (PRE).

A. transvaalense and *A. haygarthii* are closely related.

SPECIES EXCLUDED *

A. brevicaule Bak. in Journ. Linn. Soc. XV: 298 (1876); Fl. Cap. 6: 391 (1897). Type: South Africa without locality, *Thunberg* (UPS?). *Caesia brevicaulis* (Bak.) Dur. & Schinz, Consp. Fl. Afr. V: 353 (1895). Identified as *Caesia contorta* (L.f.) Dur. & Schinz.

A. brevifolium Thunb. Prodr. 62 (1794). Bak. in Fl. Cap. 6: 388 (1897). Type: South Africa, without locality, *Thunberg* (UPS, holo., PRE, photo.). Identified as *Caesia contorta* (L.f.) Dur. & Schinz.

* See also p. 759.

A. longipedicellatum Poelln. in Fedde, Rep. 53: 128 (1944). Type: Cape, Riversdale, Rust 14 (B, holo.!, PRE photo.). Identified as **Ornithogalum zeyheri** Bak.

A. macranthum Bak. in Viert. Nat. Ges. Zürich 49: 175 (1904). Type: Transvaal, Letaba, Spelonke, top of Mamotsuiri, Junod 1448 (G, holo.!, PRE, photo.). Identified as an **Albuca** sp.

A. multiceps Poelln. in Bol. Soc. Brot. 16, 2: 68 (1942). Type: Cape, Riversdale, Rust 237 (B, holo.!, PRE, photo.). Identified as **Bulbine frutescens** Willd. var.

A. nonscriptum Poelln. in Bol. Soc. Brot. 16, 2: 45 (1943). Type: Ex hortus Berlin-Dahlem, 1826-7 (B, holo., probably destroyed in 1943). Poellnitz thought it originated from the Cape. Identified by Kies as **A. ramosum** L. from Europe.

A. pauper Poelln. in Bol. Soc. Brot. 16, 2: 47 (1942). Type: Transvaal: Heidelberg. Wilms 1542 (B, holo.!, PRE, photo.). Identified as **Ornithogalum leptophyllum** Bak.

A. quadrifidum Poelln. In Bol. Soc. Brot. 16, 2: 47 (1942). Type: Cape: Pondo-land, Port Grosvenor, Bachmann 276 (B, holo.!, PRE, photo.). Identified as **Ornithogalum leptophyllum** Bak.

A. seineri (Engl. & Krause) Poelln. in Fedde, Rep. 53: 136 (1944). Identified as **Ornithogalum seineri** (Engl. & Krause) Oberm. cf. *Bothalia* 7: 401 (1961).

A. unilaterale Thunb. nom. tant. ex Juel, Plant. Thunb., 121 (1918), (UPS, PRE, photo.). Possibly **Eriospermum cernuum** Bak.

For species excluded from *Anthericum* before 1897 the Flora Capensis vol. 6 should be consulted.

2. CHLOROPHYTUM

Ker Gawler in Bot. Mag. t.1071 (1808); Kunth, Enum. 4: 602 (1843); Baker in J. Linn. Soc. 15: 321 (1876); Benth & Hook. Gen. Pl. 3, 2: 788 (1883); Krause in Engl. & Prantl, Pflanzenfam. 15, A: 284 (1930); Phillips, Gen. S.A. Flow. Pl. ed. 2: 183 (1951).

Asphodelopsis Steud. ex Bak. in J. Linn. Soc. 15: 321 (1876).

Hartwegia Nees in Nov. Act. Nat. Cur. 15, 11: 372 (1831).

Herbaceous perennials the parts above ground persistent or dying down in winter. *Roots* variable, usually long, many, swollen, rarely wiry and with scattered tubers, in some south western Cape species, with sessile "tubers" (arrested roots) on the rhizome. *Rhizome* creeping, sometimes covered with fibres (the remains of old persistent leafbases). *Leaves* rosulate, rarely subdistichous, a few or many, rarely 1; lamina usually flat, glabrous or pubescent, rarely glandular, base often tapered into a "petiole", margin usually fimbriate. *Inflorescence* a central, simple or branched raceme, rarely glandular-pubescent; scape terete, bracteate; bracts large or small; pedicels articulated near or below the middle, rarely at the apex. *Flowers* 1-6-nate, opening consecutively, open all day. *Perianth* rotate or reflexed, rarely cup-shaped or urceolate, white, rarely pinkish, translucent, keel becoming dark with age; the 3 outer segments slightly narrower than 3 inner; marcescent, covering capsule, rarely reflexed in fruit. *Stamens* 6, hypogynous; filaments glabrous or papillate, shorter, or in certain species, longer than the segments; anthers basifixed, usually large, introrse. *Ovary* sessile or shortly stipitate, trigonous with 6-30 biseriata ovules: style simple, smooth; stigma minute, penicillate. *Capsule* trigonous, oblong, obcordate, or globose in outline, smooth or with transverse ridges or tuberculate. *Seeds* large, flat, round in outline with a notch where the pointed hilum is situated, testa black shiny, minutely granulate.

DISTRIBUTION: Africa, Madagascar, Asia.

Type Species: *Chlorophytum inornatum* Ker Gawler.

Like *Anthericum*, *Chlorophytum* is a widespread genus containing nearly 300 species most of which are found in tropical Africa, with some in Madagascar and a few in Asia. In South Africa the twenty species could be divided into two sections which coincide with their geographical distribution, namely nine from the winter rainfall area and therefore confined to the south-western Cape, and eleven from the summer rainfall region, these latter being more closely related to the tropical species. *Chlorophytum inornatum* is the type species of the genus published by Ker Gawler in 1804. It comes from Sierra Leone, but is not found in Namaqualand as Baker led us to believe in the Flora Capensis. On the whole our South African species are fairly uniform and fit in well with the genus. There remains, however, the problem whether to accept *Dasystachys* as a separate genus or as a section of *Chlorophytum*. For the present I regard only those species which have single flowers, each supported by a bract and bracteole, a simple raceme, non-articulated, very short pedicels and exerted stamens as true *Dasystachys*. But *Chlorophytum papillosum* Rendle which reaches our northern borders seems to form a link between these two genera. It possesses the exerted stamens and the non-articulated pedicels but its flowers are arranged in clusters. *Dasystachys* has the typical *Chlorophytum* type of capsule and seed and was considered to be a section of it by Engler and von Poellnitz. Baker referred it to *Dasystachys* but I have left it under *Chlorophytum*.

GEOGRAPHICAL NOTES.—On the whole the species are found to inhabit fairly small areas. *C. comosum* has a wide distribution but it has the same range as the eastern forests which it inhabits. With *C. modestum* and the subtropical species *C. gazense* and *C. laxum*, etc., it forms a group of closely related, shade and moisture loving species. *C. papillosum* also has a wide distribution in the Zambesi lowlands. *C. capense*, *C. bowkeri*, *C. krookianum* and *C. aridum* are closely related and are found in more open country where they occur in clumps in the shade of small thickets. Their leaves are firmer and usually slightly fleshy; the more favourable the situation the broader the leaf. The south-western Cape species are xerophytic. Why they do not dry black and why the others from the summer rainfall area do, could not be explained. Dr. P. H. B. Talbot examined the root of a specimen of *C. bowkeri* but he found no signs of mycorrhiza.

MORPHOLOGY

Roots: They are typical for each species or group of closely related species. The roots are numerous, long, thin or evenly or unevenly swollen. Those of *C. triflorum* are unique; they are hard and dark-coloured, swollen near the insertion to the rhizome and tapering gradually to the tip. *C. viscosum* has pink roots which are narrowly cylindrical; they become hollow when dry through shrinkage of the spongy mesoderm. *C. rigidum* has thin, wiry roots which show affinity to certain species of *Anthericum*. *C. trachycarpum* from northern South West Africa and Southern Rhodesia also has thin roots but these bear tubers near the tips also reminiscent of *Anthericum*. *C. undulatum* and *C. crassinerve* often possess sessile "tubers" on the rhizome. These "tubers" are roots arrested in their development, an adaptation to dry, unstable conditions. If the conditions become favourable, they will elongate. If they were favourable from the start no "tubers" are formed, the roots then merely showing a spindle-shaped thickening near the tip. In most species, especially those from the summer rainfall area, the mesoderm is spongy and there is a thin, inner, woody core. The root hairs are extremely well developed attaining up to 2 mm in length; they intertwine and form a matted surface. With age the root hairs and mesoderm disappear leaving only the thin, hard core.

Rhizome: The perennial rhizome is small and compact forming new plants horizontally.

Leaves: These show much variation especially in the south-western Cape species, where they have adapted themselves to dry conditions. Here we get such xerophytic adaptations as a reduction in the number of leaves, narrow lamina, pubescence, folding or twisting and a hardening of the epidermis. The margin of the leaf is ciliate in nearly all species. In some of the south-western Cape species the primary leaves remain small and resemble ligulate squamae, often purple spotted. The hard sclerenchymatous nerves of the leaf-bases persist as fibres in these species.

Inflorescence: It is a simple or branched raceme. Its flowering time is extended over a long period, as the many buds in each axil develop consecutively. Each axillary fascicle of flowers may be regarded as a reduced flowering branch. Occasionally in *C. crispum* and *C. capense*, we still find a minute peduncle on which these axillary flowers are arranged spirally. If flowering conditions are favourable, many flowers are produced; if it is too cold or too dry, many buds remain latent or are retarded so that in one axil a capsule, a flower and small buds may be found side by side. In this way the inflorescence will flower for months and incidentally it is the only one produced (centrally) during the season. This is in sharp contrast to *Trachyandra* and *Bulbine* where the (axillary) inflorescence appears, flowers and fades within a short period, perhaps a fortnight, whilst subsequent young racemes are to be seen near the base, developing and flowering soon after a rainy spell. As the bracts may be regarded as the equivalent of the leaves, the oldest and sterile ones found on the scape are the largest and still very leaf-like; the floral ones are small. If the leaf shows a special characteristic, such as long cilia on the margin, the floral bracts will also show this. The pedicels are usually articulated near the middle, rarely near the base (*C. rigidum* and *C. monophyllum*) or near the apex (*C. macrosporum* and *C. trachycarpum*). If not fertilized the flower drops off at the articulation. In those with the articulation near the base, the upper part of the pedicel has elongated during anthesis; in those with articulation near the apex, the lower part has developed. The location of the articulations is constant for each species as in *Anthericum*. The pedicels do not change their position while the capsule ripens. This they have in common with *Anthericum* but it is in contrast to the genus *Trachyandra* and some species of *Bulbine* where the position of the pedicel changes after the flower has dropped off if not fertilized, or when a capsule is formed.

Flowers: They are white, consisting of delicate, many cornered, transparent, watery cells which reflect the light in all directions, giving it a crystalline, translucent appearance. The keel is not visible at first, but appears when the tepals fade. The perianth is usually rotate, sometimes reflexed straight back; in *C. papillosum* it is cupshaped; in *C. macrosporum* the perianth is urceolate at the base with the segments ligulate above the cup, not at all like the usual flower form. The flowers are open all day and are apparently scentless. The perianth is persistent, either fitting closely around the capsule or reflexed. The segments do not fuse at the top in fading as in *Trachyandra*. The *stamens* have very delicate filaments which shrivel up unevenly so that they sometimes have a rough surface when dry. In some species they are scabrid but in the majority the surface appears smooth or, when magnified, with retrorse, short papillae. They are usually shorter than the perianth except in *C. papillosum* where during anthesis, they elongate beyond the perianth cup. Apparently the rate of growth varies in the filaments, some developing more slowly. The large, introrse anthers are basifixed and curl backwards when fading. The *ovary* is usually oblong to obovate or globose in outline. The *ovules* are biseriate and vary from 6–11 in certain species whereas in others we find 20–30 per loculus. It may happen that a whole row doubles itself so that for instance, 30 instead of the usual 20 ovules may be found in a loculus. The *style* is simple and also elongates rapidly during anthesis. The *stigma* is minute, penicillate.

Capsule: It is trigonous, the seeds are flattened perpendicularly in each compressed compartment. The walls are usually smooth with a raised margin. In *C. rigidum*, *C. monophyllum* and *C. viscosum* transverse ridges are present, like those found on most *Anthericum* capsules. In *C. trachycarpum* the ovary is papillate, the papillae afterwards developing into irregular tuberculate ridges on the capsule.

Seed: It is flat, large (2–4 mm in diam.) round in outline and notched where the hard pointed hilum is situated; the testa is black, shiny, granular.

Vegetative reproduction occurs in all species through the formation of lateral buds on the rhizome. *C. comosum* is of special interest for its propagation by leaf tufts found at the apex of the inflorescence. These sink down to earth and become rooted.

Chromosome Number: The basic number of chromosomes was found to be seven in *C. krookianum* and *C. comosum* and in the tropical species *C. laxum* and *C. inornatum*.

KEY TO SPECIES

Species from summer rainfall area; filaments smooth (except *C. crispum*); plants usually drying black:

Filaments shorter than perianth segments which are spreading or reflexed:

Inflorescence patently branched, floral bracts shorter than the flowers:

Ovary sessile:

Scape compressed, oval in cross-section, glaucous, coriaceous plants; S.E. Cape 1. *capense*

Scape terete:

Small plants 20–50 cm high, leaves flat up to 10 cm long, margin distinctly crisped fimbriate; filaments papillate; S.E. Cape..... 2. *crispum*

Larger plants, leaves more than 10 cm long, usually half-folded, margin smooth or minutely crisped fimbriate, filaments smooth; eastern Cape, Transvaal, Natal:

Leaves ca. 2 cm wide, usually half-folded, undulate; ovary with ca. 10 ovules in each cell, capsule globose; Transvaal bushveld..... 3. *aridum*

Leaves ca. 6 cm wide, flat or somewhat folded; ovary with ca. 16 ovules per cell, capsule oblong; large Aloe-like plants; eastern Cape to eastern Transvaal 4. *krookianum*

Ovary stipitate, perianth urceolate, pedicels very slender, up to 2.5 cm long; north-eastern

Transvaal, Southern Rhodesia..... 5. *macrosporum*

Inflorescence simple or with 1–2 long, basal, ascending branches:

Capsule smooth, roots swollen:

Capsule obovate in outline; raceme simple, scape arcuate at the base thrusting the few flowered raceme outside leaf-rossette; small plants found in the warm eastern coastal area..... 6. *modestum*

Capsule globose:

Leaves linear..... 7. *pulchellum*

Leaves lanceolate, attenuated towards the base; raceme often with a leafy apical tuft..... 8. *comosum*

Capsule oblong; raceme dense with flowers close together and the bracts usually larger than the flowers..... 9. *bowkeri*

Capsule tuberculate; roots thin with small tubers near the tips; northern South West Africa, Southern and Northern Rhodesia..... 10. *trachycarpum*

Filaments ultimately exerted from campanulate perianth; perianth glandular-papillate on outside. Northern South West Africa and southern tropical Africa.... 11. *papillosum*

Species from winter rainfall area; filaments rough; plants not drying black; rhizome often with fibres:

Inflorescence divaricately branched, seldom simple; roots all alike, thin or slightly thickened; leaves somewhat distichous, margin not fimbriate; fertile bracts small, clustered; pedicels articulated near the base; capsule transversely rugose:

Plants glabrous, roots thin:

Leaves numerous..... 12. *rigidum*

Leaf solitary..... 13. *monophyllum*

Plants glandular, roots pink, slightly swollen..... 14. *viscosum*

- Inflorescence simple, rarely with 1–2 basal, ascending branches; roots various; leaves in a rosette; margin minutely fimbriate; fertile bracts usually large, often resembling the perianth; pedicels articulated near the middle; capsule smooth with a raised margin: Roots all alike, hard, thickest at place of insertion to rhizome, tapering gradually, with some transverse wrinkles; Cape Peninsula and surrounding districts..... 15. *triflorum*
 Roots various but not as above:
 Leaves glabrous (except minutely ciliate margin):
 Plants with many leaves:
 Leaf margin not prominent, apex usually long tapering:
 Leaves in an elongated rosette; roots hard, not much thickened; ovules ca. 18 per cell; Namaqualand..... 16. *namaquense*
 Leaves usually in a flat rosette; roots all alike or dimorphous i.e. with anchoring roots which at first have a lanate, spongy skin which later sloughs off leaving a thin, hard, woody core, and often with small sessile tubers on rootstock between the old fibres..... 17. *undulatum*
 Leaf margin raised, apex usually obtuse..... 18. *crassinerve*
 Plants with one old and one young, green leaf; 1–2 short, membranous bract-like primary leaves present at the base..... 19. *pauciphyllum*
 Leaves pubescent, rhizome small, bulbous..... 20. *lewisae*

1. *C. capense* (L.) Voss in Vilmorin's Blumeng. 1: 1086 (1895); O. Kuntze, Rev. Gen. Pl. 3: 316 (1898); Van Oostroom in Blumea 4: 495 (1941); Adamson & Salter in Flora of the Cape Peninsula, 185 (1950), as "*C. capense* (L.) Druce".

Asphodelus capensis L. Syst. Nat. ed. 10, 982 (1758). Type: Miller's Ic. t.56 (1760). Linnaeus describes the plant, "A scapo nudo, ramoso, fol. lanceolatis planis" and refers to this plate. The specimen No. 431–6, preserved in the Linnaean herbarium, with a simple raceme and named *Asphodelus capensis* L. Syst. Nat. ed. 10A does not represent this species. It was impossible to identify it however, from the indistinct photo at PRE.

Anthericum rouwenortii de Gorter, Cat. Plant. Hort. Ulenp. 51 (1783); van Oostroom in Blumea 4: 493 (1941). Type: probably Cape (L, holo.! PRE, photo.). It was said to have come from Ceylon but this was already doubted at the time. It was in cultivation at the Hortus Ulenpas in Holland round about the same time that *Anthericum elatum* Aiton was cultivated at Kew. They could have been raised from the same batch of seed which must have been collected in the south-eastern Cape. *A. elatum* Ait. in Hort. Kew, 1: 448 (1789). Type: Cape, probably (BM, holo., PRE photo.). Aiton refers to Miller's plate 56.

Phalangium elatum (Ait.) Redouté, Lil. t.191 (1807).? *P. fastigiatum* Poir. in Lam., Encycl. 5: 246 (1804). No type preserved. Redouté asserted that Poirét's species was not the same as Aiton's *A. elatum* but as no specimen exists, this cannot be verified. *P. "fasciculatum"* Bak. in J. Linn. Soc. 15: 331 (1876) in error for *P. fastigiatum* Poir.

Chlorophytum elatum (Ait.) R.Br. ex Sprengel, Syst. II: 88 (1825); Roem. & Schult., Syst. 7: 454 (1829); Kunth, Enum. 4: 604 (1843); Saunders in Ref. Bot. 3, t.216 (1870); Bak. in J. Linn. Soc. 15: 330 (1876), et in Fl. Cap. 6: 399 (1897).

Herbaceous, glaucous plants up to 1 m tall. *Roots* many, long fleshy. *Rhizome* small, vertical. *Leaves* many, in an elongated rosette, linear-lanceolate 30–45 cm long, 25 mm broad, gradually narrowed towards the apex, base clasped firmly around rhizome and other leaves, closely ribbed, glaucous, coriaceous, glabrous. *Inflorescence* a tall, much branched raceme with several to many ascending, lateral branches; scape compressed, firm, with some leaf-like bracts, covered with a white bloom; fertile bracts small, deltoid; pedicels short, up to 4 mm, articulated above the middle when in fruit. *Flowers* laxly arranged, 3-many nate, if many, arranged in short, spiral, bracteate fascicles; perianth rotate with segments 9 mm long; filaments glabrous (minutely papillate when magnified); ovary with ca. 10 ovules per cell. *Capsule*

8 mm, broadly obovate in outline, apex deeply emarginate. *Seeds* typical, 3 mm in diam.

Flowering Period: October–May.

DISTRIBUTION: Known only from the eastern Cape, Humansdorp to Albany districts.

CAPE.—Humansdorp: Jeffrey's Bay, *Lewis* 3608 (NBG), *Fourcade* 4321 (BOL). Uitenhage: Sandhills, *Ecklon & Zeyher* 111 (NBG). Port Elizabeth: Cradock Place, on downs, *Galpin* 6448 (PRE, GRA); Redhouse, *Paterson* 1960 (GRA); Mackay Bridge, Sundays River, *Urton* 240 (GRA); Addo, *Drége* 8719a (L), 8719 (K). Albany: bank of Fish River, Penrock farm, *Dyer* 1188 (PRE). King William's Town: Pirie, *Sim* 1104 (PRE).

Miller's plate, t.56, was made from a plant raised from seed in the Chelsea Garden in 1751; it flowered in March the following year. Miller stated that part of the seed parcel went to Holland. He goes on to say that although he could not find a reference to it in any botanical books, it seems likely to have been cultivated formerly in the Dutch gardens for it can be seen on flower paintings, which were painted up to sixty years previously. Whether the flowers painted were really those of *Chlorophytum capense* we do not know. The shape of the flower is so elementary that several other species might also have been mistaken for it, e.g. *Trachyandra hirsuta*. After the 1751 consignment of seeds, he mentions that several more packets arrived and he therefore supposed it to be quite common at the Cape. But he describes the seeds as angular, which is not correct. The capsule on the plate is deeply grooved, therefore the seeds inside must have been compressed, which is typical for *Chlorophytum*. Once again he may have confused the seeds with those of a *Trachyandra* species.

The species is endemic in the eastern Cape where it has been collected in dry, shady vegetation on river banks, often near the sea. Redouté's plate (Lil. t.191) and that of the Ref. Bot. 3: t.216 are more life-like. It is doubtful whether it ever occurred on the Peninsula. Adamson says "doubtfully native, rare under trees or by streams on the Groote Schuur and Newlands Housing Estates". I think these Cape Peninsula plants are better placed under *C. comosum*.

2. *C. crispum* (Thunb.) Bak. in J. Linn. Soc. 15: 331 (1876); Fl. Cap. 6: 398 (1897).

Anthericum crispum Thunb. in Prod. 63 (1794); Thunb., Fl. Cap. ed. Schultes, 324 (1823). Type: Cape, *Thunberg* (UPS, holo., PRE, photo.). *Anthericum rustii* Poelln. in Fedde, Rep. 53: 127 (1944), e descr. Type: Cape, Riversdale, *Rust* 298 (B, holo., probably destroyed). Poellnitz says the type was leafless. It is almost certainly this species. *Anthericum rosenbrockii* Poelln. in Bol. Soc. Brot. 16: 69 (1942). Type: Cape, Port Elizabeth, *Rosenbrock* 82 (B, holo.! PRE, photo.). *Bulbine crispa* (Thunb.) Roem. & Schult., Syst. Veg. 7: 448 (1829); Kunth, Enum. 4: 568 (1843).

Small plants variable in size. *Roots* many, unevenly swollen, spongy below, older parts thinner and harder. *Rhizome* compact, vertical. *Leaves* forming a flat rosette, linear-lanceolate to ovate-lanceolate, 3–10 cm long, 5–15 mm broad, herbaceous, striate, glabrous but for the prominent, fimbriate, crisped margin, base cuneate, apex acuminate. *Inflorescence* a much branched raceme, up to 50 cm high, usually smaller, sometimes simple in starved plants; scape terete, glabrous, bracteate, fertile bracts resembling the sterile ones, small, 3 mm long, deltoid; pedicels up to 6 mm in fruit, articulated in the middle. *Flowers* 1–15 nate, if many, spirally arranged on a minute rhachis; perianth rotate, segments 8 mm long, white, green keeled; filaments muricate; anthers basifixed, revolute; ovary with ca. 8 ovules per cell; style declinate. *Capsule* 5 mm long, emarginate, with faint, transverse ridges. *Seeds* typical.

Flowering Period: September–May.

DISTRIBUTION: South-eastern Cape, Riversdale to Alexandria districts.

CAPE.—Riversdale: Hills near Riversdale, *Muir* 2757 (BOL). George: Keurboom's River, Longkloof, *Fourcade* 3393 (BOL). Oudtshoorn: Moeras Rivier, *Compton* 23158 (NBG). Uniondale: *Compton* 10540 (NBG); Misgund, *Esterhuysen* 6959 (BOL). Uitenhage: on sandhills near Zwartkops River, *Zeyher* 1069 (BOL, NBG, PRE). Alexandria: Addo National Park, Korhaan Vlakte, *Archibald* 5266 (PRE).

3. *C. aridum* Oberm. sp. nov. *C. krookiano* Zahlbr. affine sed minore differt.

Planta glabra ad 1 m alta. *Radices* tumescentes. *Folia* lanceolata ad 30 cm longa 2 cm lata glabra striata marginibus crispulatis fimbriatis. *Racemus* erectus ramosus; bracteae inferiores 3 cm longae caducae superiores fertiles minutae deltoides; pedicelli in fructu filiformes 7 mm longi ad centrum articulati. *Perianthii segmenta* 9 mm longa; ovula in quoque loculo circ. 10. *Capsula* parva 5 mm longa globosa vel obcordata.

Plants glabrous, up to 1 m high. *Roots* typical, swollen, with many thin rootlets and the swollen parts covered with long, interwoven root hairs. *Rhizome* horizontal or vertical, small, woody. *Leaves* many, in a basal rosette, erect, linear-lanceolate, up to 30 cm long, 2 cm broad, semi-folded, glabrous, striate, margin white with a narrow red rim, crisped, fimbriate. *Inflorescence* an erect, branched, spreading raceme ca. 60 cm high; scape terete, bracteate, lower bracts up to 3 cm, caducous, upper fertile, minute, deltoid; pedicels filiform up to 7 mm in fruit, articulated in the middle. *Flowers* ca. 4-nate; perianth white, delicate, shiny, reflexed when fully open, free from the base, segments lanceolate, 9 mm long, 3 outer with a brown spot at the apex, the inner wider than outer, 5 mm broad; filaments glabrous, 3 mm, erect, spreading; ovary with ca. 10 ovules; stigma apical, minutely papillate. *Capsule* globose to obcordate in outline, 5 mm in length, emarginate, sulcate. *Seeds* 2 mm in diam.

Flowering Period: December–February. Bees collect much pollen from them.

DISTRIBUTION: Transvaal, drier areas of the Bushveld.

TRANSVAAL.—Lydenburg: Koffiehoogte in dry Bushveld, *J. M. J. de Wet* (Prinshof 001403) in flower Dec. 1956 (PRE). Pretoria: near Rust der Winter, *Mauve* 4067 (PRE, holo.), *Codd* 2225 (PRE); Rooikop, *Smuts & Gillett* 2526 (PRE). Potgietersrus: *Leendertz* TM 10172 (PRE). Waterberg: Towoomba Pasture Research Station, *Codd* 3620 (PRE); Soutpansberg: *Smuts & Gillett* 4115 (PRE). Kruger National Park, Mtile-kop, Klokwene, *van der Schyff & Marais* 3742 (PRE).

The plants increase in size in cultivation or in more moist and warm surroundings and the leaves then become wider and more flabby, reclining in the upper half. It then resembles *C. krookianum* although still smaller in all respects and with a more slender scape. After more research it might eventually be considered a variety of *C. krookianum*. It is also closely related to *C. capense* but the softer leaves with their crisped, fimbriate margin, the terete scape and the reflexed perianth distinguish it from the Cape species.

4. *C. krookianum* Zahlbr. in *Ann. Nat. Hofmus. Wien*, 15, 1: 19 (1900) e descr. Type: Cape, East Griqualand, Newmarket–Umzinkulu, *Krook* (Pl. Penth. 784, W, holo., destroyed); Cape: Port St. Johns, Isnuka, *Galpin* 3495 (PRE, neo.).

C. longipedunculatum Forbes in *Bothalia* 4: 37 (1941) et in *Fl. Pl. S.A.* 22: t.861 (1942). Type: Transvaal, Nelspruit, Sabie, *Pole Evans* 4247 (PRE, holo.).

Anthericum magnificum Poelln. in *Eol. Soc. Brot. Ser.* 2, 16: 44 (1942). Type: Natal, Umzinto, Campbellton–Dumisa, *Rudatis* 1845 (B, holo., PRE, photo.).

Large, glabrous plants up to 2 m tall when in flower. *Roots* typical. *Rhizome* small. *Leaves* many, in a basal rosette, erect or upper half reclining, lanceolate, up to 136 cm long, 7 cm wide, half folded, glabrous, shining, somewhat succulent, slightly narrowed to the clasping base, attenuate in upper half, margin narrow, membranous, yellow, sometimes crisped, fimbriate. *Inflorescence* a tall, branched raceme with 4–8 ascending branches, up to 2 m; scape woody, terete, bracteate; sterile bracts

up to 16 cm long, fertile usually small, deltoid, acuminate, scarious, caducous; pedicels short during anthesis, up to 22 mm long in fruit, articulated in the centre. *Flowers* in compact fascicles, 3-6 nate; perianth rotate with white, delicate, shiny segments ca. 16 mm long, 4 mm wide, 3 exterior ones with a green dot at the apex, becoming red-streaked when fading; filaments 5 mm, glabrous, declinate; ovary with 15-20 ovules per cell; style declinate, stigma apical, minutely penicillate. *Capsule* oblong, ca. 12 mm. long, attenuated to the base, coriaceous. *Seeds* typical.

Flowering Period: January-April.

DISTRIBUTION: Eastern Cape, Natal, Swaziland to eastern Transvaal, usually in moist situations.

CAPE.—Port St. Johns: Isnuka, *Galpin* 3495 (PRE, neo, BOL).

NATAL.—Alfred: near Stafford's Post on Harding Road, *Marais* (PRE, GRA). Pietermaritzburg: *Dyer* (PRE). Lion's River: Nottingham Road, *McClellan* 892 (PRE).

Weenen: Estcourt Research Station, laboratory kloof, *West* 1783 (PRE). Estcourt: Loskop, Cathkin Park, *Howlett* 115 (NH). Zululand, *Howlett* (NH 40426).

SWAZILAND.—Hlatikulu, *Stewart* (BOL 10072, PRE, TM 9640); *Compton* 26398 (PRE, Swaziland Herb.).

TRANSSVAAL.—Barberton: *Liebenberg* 2462 (PRE); *van Dam* (PRE. TM 21147).

This is the largest *Chlorophytum* in South Africa. Although the type was destroyed, the description and the locality indicated this species.

5. *C. macrosporum* Bak. in J. Linn. Soc. 15: 330 (1876) et in Fl. Cap. 6: 400 (1897). Type: "South African Goldfields" *Baines* s.n. (K, holo.). The type locality is most probably in Southern Rhodesia where the species occurs.

C. rhodesianum Phill. in Fl. Pl. S.A. 14, pl. 540 (1943). Type: Southern Rhodesia, Bulawayo, *Pole Evans* (PRE 8821, holo.!).

Plants glabrous, up to 150 cm high. *Roots* thick, numerous, lanate. *Rhizome* compact, woody. *Leaves* in an ascending, basal rosette, linear-lanceolate, up to 40 cm long, 15 mm broad, tapering towards base and apex, usually half-folded, glabrous, somewhat glaucous, margin wavy. *Inflorescence* a tall, branched, spreading raceme, many flowered, much taller than the leaves; scape terete, bracteate; bracts lanceolate-acuminate, upper fertile bracts deltoid, acute; pedicels 1 cm in bud, up to 2.5 cm in fruit, articulated above the middle. *Flowers* 2-6 nate; perianth urceolate at the base, the free part of the segments narrowed at the base, ligulate, 15 mm long, reflexed in the open flower and in fruit, greenish; filaments smooth, spreading, swollen in upper part, 3 much shorter than the others, anthers typical; ovary stipitate, protruding from the perianth cup, with ca. 20 ovules per cell. *Capsule* oblong, 10-15 mm long, stipe very short or absent. *Seeds* typical, 3 mm in diam.

Flowering Period: November-March.

DISTRIBUTION: Southern and Northern Rhodesia, northern Transvaal.

TRANSSVAAL.—Sibasa: Kruger National Park, Punda Maria, *Lang* (TM 32253, PRE); Baiandbai, *Lang* (TM 32147, PRE, NH); between Mabase and Baiandbai, *Lang* (TM 31105, PRE).

SOUTHERN RHODESIA.—Bulawayo, *Kolbe* 4026 (BOL), *Rogers* 13801 (SRGH). Salisbury: *Eyles* 593 (SRGH); *Wild* 2292 (SRGH). Matobo, *Miller* 2042 (SRGH, PRE). Umtali, *Chase* 4288 (SRGH). Manica: Odzani River Valley, *Teague* 352 (BOL). Nuanetsi, *Davies* 1712 (SRGH, PRE). Hartley: *Hornby* 3387 (PRE, SRGH). NDanga: Lundi, Sabie River, *Hall* (NBG 540/50).

NORTHERN RHODESIA.—Lusaka, *Noak* 294 (SRGH).

The species is unusual because of the cup-shaped base of the perianth and the stipitate ovary, which is not noticeable in the fruit however. It shares this charac-

teristic with *C. andongense* Bak. from Angola, which must be very closely related to it or perhaps conspecific. The leaves of *C. andongense* Bak. are broader.

6. *C. modestum* Bak. in J. Linn. Soc. 15: 329 (1876) et in Fl. Cap. 6: 397 (1897). Type: Natal, Krauss 177 (K, holo.).

C. durbanense O. Kuntze, Rev. Gen. 3, 2: 316 (1898). Type: Natal, Durban Bluff, Kuntze (NYS, holo., PRE, photo.).

Small plants up to 30 cm high. *Roots* typical, many, long, swollen. *Rhizome* compact, vertical. *Leaves* linear-lanceolate, 15–23 cm long, thin, soft, flat, glabrous, apex acute, tapered towards the base into a long “petiole”, membranaceously dilated at the clasping base. *Inflorescence* simple, very seldom with a short, basal side branch, few flowered; scape arcuate at the base, so that the raceme is exerted outside the leafy rosette, as long as or somewhat longer than the leaves; lowest bract linear, acuminate, up to 2 cm long, upper smaller, subulate; pedicels short, 4 mm in fruit, articulated below the middle. *Flowers* 1–4 nate; perianth with segments 1 cm long; filaments glabrous; ovary with 4–6 ovules per cell. *Capsule* obcordate, 1 cm long, 8 mm wide at the emarginate apex. *Seeds* typical, 3 mm in diam.

Flowering Period: November–March.

DISTRIBUTION.—A forest and coastal bush species found in Pondoland, Natal and Portuguese East Africa, perhaps extending further northwards.

CAPE.—Port St. Johns: Moss 3489 (PRE); Schonland 3982 (PRE). Lusikisiki: *Blenkiron* 16042 (BOL).

NATAL.—Durban: Berea, Wood 9187 (PRE), 9406 (NH). Estcourt: Loskop, Cathkin Park, Howlett 8 (PRE). Umzinto: Scottburgh, common on the pavements and in clearings, usually in shady situations, Mauve 4049 (PRE).

PORTUGUESE EAST AFRICA.—Lourenço Marques, Polana, Gomes Pedro 48 (PRE).

Related to the tropical African species *C. gazense* Rendle, *C. laxum* R. Br. and *C. petiolatum* Bak.

7. *C. pulchellum* Kunth, Enum. 4: 605 (1843); Bak. in Fl. Cap. 6: 398 (1897). Type: South Africa, Lalande (B, holo., probably destroyed). As Lalande collected in the eastern Cape, it is probable that the species came from that area. Queenstown, Gwatyn Farm, mountain sides, Galpin 8333 (PRE, neo.).

Small plants up to 70 cm high. *Roots* many, swollen near the tips. *Rhizome* small, vertical, with some fibres from old leaf bases. *Leaves* forming a loose rosette, spreading from near the base, ca. 9 per shoot, linear, up to 30 cm long, 4 mm wide, folded ribbed, hard, glabrous. *Inflorescence* a long simple or few branched raceme, up to 70 cm high; scape longer than the leaves, firm, terete, bracteate; sterile and fertile bracts small, deltoid, apiculate; pedicels up to 6 mm long, articulated in the middle. *Flowers* many, laxly arranged on rhachis, 2–4 nate; perianth segments 1 cm long; filaments probably glabrous, shrivelling unevenly when dry, anthers typical; ovary with 10–12 ovules per cell. *Capsule* not seen.

Flowering Period: December.

DISTRIBUTION: Probably from eastern Cape.

CAPE.—Queenstown: Gwatyn farm, mountain sides, Galpin 8333 (PRE, neo.).

The species is closely related to *C. comosum* but the leaves are narrower and firmer and the ovary has 10–12 ovules per cell. The leaves do not make an elongated rosette as in *C. capense*. The filaments are described as retrorsely papillate; those on the Galpin specimen appear to have been glabrous, but have shrivelled irregularly. Our specimen is taller, but otherwise agrees with the description of the type.

8. *C. comosum* (Thunb.) Jacques, Journ. de la Soc. Imp. et Centr. d’Hortic. 8: 345 (1862); Bak. in J. Linn. Soc. 15: 329 (1876) and in Fl. Cap. 5: 400 (1897); Wood

in Natal Plants 3: 279 (1902); Adamson & Salter in Flora of the Cape Peninsula, 185 (1950); Watt & van Brandwyk in the Medicinal and Poisonous Plants of Southern Africa, 13 (1932).

Anthericum comosum Thunb. Prod. 63 (1794), and in Fl. Cap. ed. Schultes 323 (1823); Roem. & Schult., Syst. Veg. 7: 475 (1829). Type: Cape, Uniondale, Langekloof Thunberg (UPS, holo., PRE, photo.). ? *A. sternbergianum* Roem. & Schult., Syst. Veg. 7: 1693 (1829). Type: apparently described from a plate and description made by Sternberg who named it *C. comosum*. Neither the plant nor the plate could be found. *A. planifolium* Thunb. a and c, nom. tant. ex Juel in Plant. Thunb. 121 (1918), (UPS, PRE, photo.). *

Phalangium comosum (Thunb.) Poir. in Lam. Encyc. 5: 252 (1804). *P. viviparum* Hort., Bak. in Fl. Cap. 6: 400 (1897).

Chlorophytum burchellii Bak. in J. Linn. Soc. 15: 330 (1876). *C. elatum* var. *burchellii* Bak. in Fl. Cap. 6: 399 (1897). Type: Cape: Albany, Blue Krantz, *Burchell* 3650 (K, holo.). *C. delagoense* Bak. in Fl. Cap. 6: 399 (1897). Type: Portuguese East Africa, Delagoa Bay, *Monteiro* (K, holo.). Baker thought that the raceme was part of a panicle but both Killick and Marais, who studied the type at Kew, thought it to be simple and not a branch. They could not distinguish it from *C. comosum*. *C. longituberosum* Poelln. in Bol. Soc. Brot. 2, 16: 56 (1942). Type: Natal, Scottspoor (alt. 4,000 ft.) *Thode* 3495 (B, holo.! PRE, photo.). I could not trace this locality. *C. vallistrappii* Poelln. in Bol. Soc. Brot. 2, 16: 79 (1942). Type: Cape, Albany, Trapp's Valley, *Daly* 625 (B, holo.!, GRA, iso!).

Plants up to 80 cm high. *Roots* long, many, swollen near the tips. *Rhizome* small, vertical. *Leaves* variable, 10–30 cm long, 1–2 cm broad, tapering at the base and apex, soft, usually flat, arranged in a loose rosette. *Inflorescence* much longer than the leaves, a simple long, lax raceme, sometimes with 1–2 basal ascending branches; often the apical flowers suppressed and the bracts enlarged to form a leafy tuft; scape long, terete, bracteate; sterile bracts narrow lanceolate, 2–4 cm long, acuminate, fertile small, deltoid, subulate; pedicels thin, up to 8 mm in fruit, articulated near the middle. *Flowers* in small, spiral, bracteate, axillary fascicles, 1–6 nate; perianth with narrow segments, 1 cm long, sometimes reflexed; filaments glabrous, slightly swollen above the middle, shrinking unevenly when dry; ovary with ca. 6 ovules per cell. *Capsule* globose in outline, emarginate, 5 mm in length. *Seeds* typical, slightly convex on one side.

Flowering Period: During the summer months.

DISTRIBUTION: Found along the eastern forest areas from Swellendam to the Soutpansberg; an important constituent of the forest undergrowth; also found near streams and in moist shady places.

CAPE.—Humansdorp: *Thode* A 1053 (PRE). Knysna: Ashkop, *Fourcade* 3709 (BOL); Belvidere, *Duthie* 994 (BOL). George: *Compton* 10689, 14342 (NBG); Wilderness, *Compton* 15546 (NBG); Grootvadersbosch, *Marloth* 3493 (PRE), *Zeyher* 4236 (NBG). Port Elizabeth: Loerie, *Dix* 183 (GRA). Queenstown: Gwatyn, *Galpin* 8192 (PRE); Katberg, near Sanatorium, *Schonland* 4323 (GRA). Komgha: *Flanagan* 2248 (PRE, BOL, NBG, GRA). Kentani: *Pegler* 1171 (PRE, BOL).

NATAL.—Bergville: Mont aux Sources, *Bayer & McLean* 109 (PRE). Estcourt: Cathkin Park, Ndema Forest, *Galpin* (PRE, 11760). Durban: Berea, *Forbes* 819 (NH). Zululand: Eshowe Bush, *Gerstner* (NH 22596), *Lawn* 110 (NH).

TRANSVAAL.—Pietersburg: Woodbush, *Pott* 4790 (PRE), *Codd* 9415 (PRE). Soutpansberg: Entabeni, *Obermeyer* 901 (PRE).

PORTUGUESE EAST AFRICA.—Delagoa Bay, *Monteiro* (K).

* Add to synonymy: *Hartwegia comosa* Nees in Nova Acta 15, 2, 373 (1831); Kunth, Enum. 4: 607 (1843).

Caesia comosa (Thunb.) Spreng. Syst. 2: 88 (1825); Kunth l.c. 610.

Characteristic of this species are the leafy tufts at the apices of the racemes. These bend down to earth because of their weight and take root. In this way they multiply very rapidly and cover vast stretches in the undergrowth of the eastern Cape forests. The plants however do not always produce these leafy rosettes. Those seen from the northern Transvaal never had them. Adamson records it from the Cape Peninsula as "not more than a garden escape". It is used as a purgative by the Xhosas.

This plant and the variety mentioned below are well known cultivated stoep plants in South Africa, known as "Hen and Chickens". It is also well known in Europe where for many years the variety with a broad yellow band on each side of the midrib of the leaf has been a popular pot plant called *C. variegatum* (Fl. Mag. 1875, t.152). It is often mistakenly called *C. capense* or *C. elatum* [cf. G erome, Nouvelles Pr ecisions sur les Vari et es Panach ees et sur les Caract eres Distinctifs entre *C. elatum* et *C. comosum*, in J. Soc. Nat. Hort. France, 28: 98 (1927)]. In America it is called the Bracket plant or Spider plant. In Bailey 9: 29 (1961) Dress has written an article on the species of *Chlorophytum* in cultivation in America, their descriptions and a key. He doubts whether the cultivated plants which there bear the names *C. capense* and *C. comosum* are really different. As I have not seen the larger and broader leaved plant which they call "*C. capense*", I cannot give an opinion on it. In South Africa *C. comosum* may bear leafy tufts or not and the leaves of the wild plants are usually longer and broader than those of the cultivated specimens. True *C. capense* is rather rare and never cultivated. Lawrence in Gentes Herbarium 8: 11 (1949) wrongly applied the name *C. capense* (L) Kuntze to *C. comosum*.

9. *C. bowkeri* Bak. in Ref. Bot. t. 352 (1873); in J. Linn. Soc. 15: 332 (1876) et in Fl. Cap. 6: 398 (1897). Type: Probably from the eastern Cape, *Bowker* (K, holo.). Described and drawn from a living plant.

C. stamineum Zahlbr. in Ann. Nat. Hofmus. Wien 15, 1: 18 (1900), with figure in text e descr. Type: Cape: Griqualand East, *Krook* (Pl. Penth. 510; W, holo., destroyed). *C. strictum* Bak. in Bull. Herb. Boiss. Ser. II, 1: 782 (1901). Type: Transvaal, Middelburg, Elandspruitberge, *Schlechter* 3831 (Z, holo., PRE, photo.). *C. nigricans* Bak. Bull. Herb. Boiss. Ser. 2, 4: 997 (1904). Type: Transvaal, Johannesburg, Modderfontein, *Conrath* 666 (Z, holo., PRE, photo, GZU, iso.). *C. wilmsii* Engl. & Krause in Engl. Bot. Jahrb. 45: 138 (1910). Type: Transvaal, Lydenburg, near the town, *Wilms* 1522 (B, holo., probably destroyed, K, iso., PRE, photo.). *C. perlongibracteatum* Poelln. in Port. Acta Biol. 1: 229 (1945) e descr. Type: Natal, Scottspoort, *Thode*, 3496 (B, holo., probably destroyed). This locality could not be traced.

Plants glabrous, gregarious, up to 1 m high. *Roots* typical. *Rhizome* small, woody. *Leaves* many, rosulate, linear to lanceolate, 30–60 cm long, 2–6 cm broad, semi-folded, somewhat undulate, slightly narrowed to the clasping base, attenuate in upper half. *Inflorescence* simple, seldom with a basal branch, up to 100 cm high, with many flowers closely arranged and supported by large bracts, hiding the rhachis; scape terete, firm, ca. 40 cm long with some large, sterile bracts; fertile bracts lanceolate, subulate, up to 2 cm long, upper usually smaller, caducous or persistent; pedicels 2–4 nate, up to 6 mm long, articulated near the base, erect. *Flowers* 2–4 nate; perianth with segments 1 cm long, rotate; filaments smooth; ovary with ca. 15 ovules per cell, style declinate. *Capsule* oblong, 11 mm long, 7 mm broad, firm. *Seeds* typical.

Flowering Period: November–March, usually in the spring.

DISTRIBUTION: Eastern Cape, Natal, Swaziland, Transvaal, Bechuanaland, Southern Rhodesia; often in damp situations or in grassveld.

CAPE.—King William's Town: Hogsback Mountain, *Rattray* 363, *Sim* 1099, 20293 (PRE, BOL). Stutterheim: Evelyn Valley, *Leighton* 2678 (BOL); Stutterheim commonage, *Acocks* 9540 (PRE). East London: *Wormald* 21 (GRA). Kentani: *Pegler* 1172 (BOL, PRE). Komgha: near Komgha, grassy hills, *Flanagan* 568 (PRE).

NATAL.—Weenen: Estcourt Research Station, *Acocks* 10753 (PRE). Inanda: *Wood* 1228 (NH). Klipriver: van Reenen's Pass, *Schweickerdt* 951 (PRE).

SWAZILAND.—Near Forbes Reef, *Codd and Muller* 316 (PRE).

TRANSVAAL.—Barberton: Rimer's Creek, *Galpin* 1204 (PRE). Pilgrim's Rest: Kowyn's Pass, *Codd* 6449; 7040 (PRE). Belfast: *Leendertz* (TM 10132, PRE); Machadodorp, *Galpin* 13006 (PRE); Lydenburg, *Smuts & Gillett* 2491 (PRE). Bronkhorstspuit: Rhenosterkop, *Young* 2133 (PRE). Pretoria: *Mogg* 15911 (PRE). Potchefstroom: *Louw* 1301 (PRE). Waterberg: below Krantzberg, *Dyer & Erens* 4205 (PRE). Marico: Lekkerlach, *Louw* 806 (PRE). Potgietersrus: Kwarriehoek, *Steyn* 83 (PRE). Pietersburg: Chuniespoort, *Mogg & Barnard* 1165 (PRE). Soutpansberg: Elim, *Obermeyer* TM 29327 (PRE).

BECHUANALAND.—Lobatsi, *Rogers* (BOL).

SOUTHERN RHODESIA.—Salisbury, *Eyles* 2081 (PRE).

The typical plant (cultivated) had wide leaves; those from moist areas also have them but some from around Pretoria and several other localities have a much narrower lamina, a xerophytic adaptation. The very long, subulate bracts and the flowers congested on the simple raceme are typical for the species. Although there are usually about 15 ovules per cell, the type plant was said to have 20–30 ovules. The doubling of one or both rows of ovules occasionally occurs.

C. magnificum Weimarck from Southern Rhodesia seems to be a wide-leaved luxuriant form of *C. bowkeri*.

10. *C. trachycarpum* Oberm. sp. nov. *C. brachystachyo* Bak. affine sed ita differt: capsulae tuberculatae minores. Fig. 3.

Radices tenues apice tuberiferae. *Folia* oblongo-lanceolata plana tenuia marginibus fimbriatis. *Racemus* simplex circ. foliis aequalis; scapus teres saepe nudus; flores congesti; bractae ovatae abrupte aristatae; pedicelli breves sub fructu ad 5 mm longi ad apicem articulati. *Perianthii* segmenta 1 cm longa; filamenta glabra; ovarium papillatum sulcatum. *Capsula* parva, lata irregulariter tuberculata.

Plants up to 40 cm high, gregarious. *Roots* many, thin, wiry, with tuberous swellings near the tips. *Rhizome* compact, small. *Leaves* oblong-lanceolate, up to 40 cm long, 5 cm broad, attenuate below and above, flat, thin, striate, margin crisped, fimbriate: outer primary leaves much smaller. *Inflorescence* simple, shorter or somewhat longer than the leaves; scape terete, erect, usually bare, flowers closely arranged on rachis; bracts broad, suddenly narrowed into a soft, long, ciliate awn; pedicels short, up to 5 mm in fruit, articulated below apex. *Flowers* 3–5 nate; perianth-segments ca. 1 cm long; stamens with smooth filaments; ovary globose, with ca. 7 deep, transverse and 6 vertical grooves, raised areas pulvinate, papillate; 6 ovules per cell, style, exerted. *Capsule* trigonous, 3 mm high, 5 mm broad, with rough, tuberculate, transverse ridges, seldom nearly smooth. *Seeds* typical, 1½ mm in diam. ca. 2 per cell.

Flowering Period: December–January.

DISTRIBUTION: Northern South West Africa, Southern and Northern Rhodesia in the West; a shade plant usually found near rivers.

SOUTH WEST AFRICA.—Okavango Native Territory: between Sambiu and Masari, *de Winter* 4081 (PRE, holo.).

SOUTHERN RHODESIA.—Lomagundi: Urungwe, Mensa Pan near Chirundu bridge, *Drummond* 5372 (SRGH). Darwin: Umvukwes, Umsengedzi River, *Wild* 3980 (SRGH). Wankie: 40 miles south of Wankie, *Wild* 4748 (SRGH).

NORTHERN RHODESIA.—Mazabuka, Kandabwe River Dam, *Robinson* 1790 (SRGH); near Chirundu bridge, *Drummond* 5415 (SRGH).



FIG. 3.—*Chlorophytum trachycarpum* Oberm. a, habit showing tuberosous root swellings, $\times \frac{1}{2}$. b, flower, $\times 2$. c, leaf margin, much enlarged. d, capsule, $\times 4$.

The species is related to *C. brachystachyum* Bak. but it has a papillate ovary, a small broad tuberculate capsule and thin roots with scattered tubers. The type of *C. brachystachyum*, unfortunately, is incomplete consisting only of 2 small, fimbriate leaves ca. 11 cm long, 1.5–2 cm wide. For the rest we have Baker's description made from a living plant sent by Buchanan from Nyasaland. He describes the roots as cylindrical, fleshy and the raceme branched at the base but he does not mention the ovary or capsule. I therefore think that the ovary must have been smooth, otherwise he would have remarked on it. In the Salisbury Herbarium is a specimen from Zomba in Nyasaland (*Banda* 360) which I think is true *C. brachystachyum*; it has firm roots, fimbriate leaves and lanceolate, ciliated bracts; it has a smooth, oblong ovary. *West* 3776 from Inyanga, Southern Rhodesia could also belong to Baker's species. An unusual feature in *C. trachycarpum* is that the articulation of the pedicel is just below the perianth.

11. *C. papillosum* Rendle in J. Linn. Soc. 30: 422 (1895). Type: East Africa, Tanganyika, between the coast and Uyui, *Taylor* (BM, holo., PRE, photo.).

C. dolomiticum Dinter in Neue Pfl. Deutsch-Südwest Afr. 23 (1914). Type: South West Africa, Tsumeb, *Dinter* 2703 (NBG, iso.!). *C. tsumebensis* Dinter in Bot. Jahrb. 57: 237 (1921). Type: South West Africa, Tsumeb, *Dinter* 2703 (B, holo.!, PRE, photo., NBG, iso.!).

Dasystachys papillosa (Rendle) Bak. in Fl. Trop. Afr. 7: 514 (1898).

Anthericum lunatum Poelln. in Fedde, Rep. 52: 259 (1943). Type: South West Africa, Outjo, *Dinter* 1398 (B, holo.!, PRE, photo.). Fig. 4.

Plants up to 80 cm high. *Roots* long, many, hard and fibrous when old, younger parts soft and fleshy. *Rhizome* small, compact, horizontal, fibrous. *Leaves* many, in an elongated rosette, linear to lanceolate, ca. 40 cm long, 2.5 cm wide, soft, glabrous, shiny, half-folded, margin undulate, ciliate. *Inflorescence* simple or seldom with an ascending branch below, exceeding the leaves; scape terete, glabrous below, glandular-papillate above, bracteate; bracts 5–2 cm, linear-subulate, ciliate; pedicels short up to 5 mm in fruit, not articulated. *Flowers* ca. 5-nate, congested on the raceme, perianth white, glandular-papillate, globose at the base, constricted near the middle, with the segments slightly spreading, 1 cm long, apex of segments green tipped; filaments glabrous, lengthening when the flower opens and ultimately much exerted, up to 12 mm long; ovary trisulcate, placed on a small disk with 10–14 ovules per cell; style exerted declinate; stigma capitate, minute. *Capsule* oblong, trigonous, green, shiny, 1 cm long, shortly stipitate. *Seeds* 4 mm in diam.

Flowering Period: January–April.

DISTRIBUTION: Tanganyika, Southern Rhodesia, northern South West Africa; a shade plant.

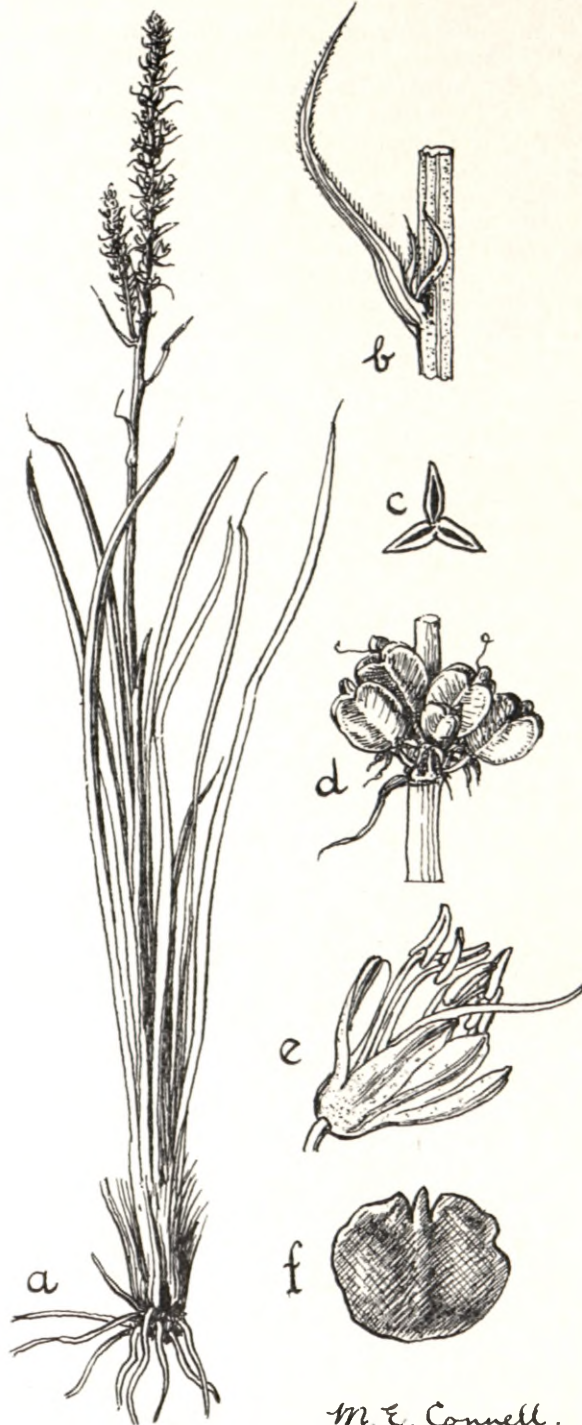
SOUTH WEST AFRICA.—Outjo: Narebis, *Barnard* 182 (NBG). Okavango: Mohembo, *de Winter* 4404 (PRE). Kaokoveld: near Kaoko Otavi, *de Winter & Leistner* 5545 (PRE).

BECHUANALAND.—Ngamiland, *Curson* 555 (PRE).

SOUTHERN RHODESIA.—Bulawayo: *Brain* 5048 (SRGH). Ndanga: Triangle, *Wild* 3722 (SRGH).

The wild specimens are glanduliferous but in cultivation in Pretoria this character disappeared, the plants becoming very luxuriant and growing to twice their usual size.

12. *C. rigidum* Kunth, Enum. 4: 604 (1843). Type: Cape, Tulbagh, Great Winterhoek, *Drège* 8738 (K, holo.!, PRE, photo.).



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FIG. 4.—*Chlorophytum papillosum* Rendle. a, habit, $\times \frac{1}{3}$. b, outer and inner bracts. c, cross-section of capsule. d, capsules. e, papillate flower with globose base, exserted stamens and style $\times 2$. f, flat black seed with cuneate funicle, $\times 5$.

Anthericum rigidum (Kunth) Bak. in J. Bot. 10: 141 (1872) et in Fl. Cap. 6: 381 (1896). *A. schultesii* sensu Bak. in J. Linn. Soc. 15: 315 (1876) et in Fl. Cap. 385 (1897); sensu Duthie in Ann. Univ. of Stell. 4, 1: 17, t. 6 (1926). Baker, who had not seen the type of *Chlorophytum dubium* Roem. & Schult. (which was given the name *Trachyandra schultesii* by Kunth, when he transferred it to his new genus), quoted specimens under *A. schultesii* in the Fl. Cap., which should have come under *C. rigidum*. [*Chlorophytum dubium* is a synonym of *Chlorophytum triflorum* (Ait.) Kunth.].

Plants up to 50 cm high. *Roots* wiry with age, soft and fleshy when young. *Rhizome* small, horizontal or inclined, often covered with fibres of old leaf bases. *Leaves* more or less distichous, variable, up to 30 cm long, 8 mm wide, glabrous, folded or flat, somewhat rigid; primary leaves short, falcate. *Inflorescence* with a few branches up to 50 cm high; scape firm, terete with a few small bracts; fertile bracts in small rosulate clusters, dark ovate; pedicels up to 1 cm in fruit, articulated near the base. *Flowers* 3–6 nate; perianth variable in size, 25–35 mm in diam. white with a 5-nerved brown keel; filaments slender, scabrid; ovary with 6–15 ovules per cell.* *Capsule* trigonous with transverse, rugose ridges. *Seeds* 3 mm in diam.

Flowering Period: May–October.

DISTRIBUTION: Cape: Caledon, Somerset West, Stellenbosch, Paarl and Tulbagh districts.

CAPE.—Caledon: lower S. slopes of French Hoek Mts. (Gem Pk), *Esterhuysen* 11426 (BOL). Somerset West: Sir Lowry's Pass, *Bolus* 5560 (BOL); Villiersdorp, *Bolus* 5268 (BOL); Gordon's Bay, *Guthrie* (BOL 25718). Stellenbosch: Jonkershoek, *Compton* 15291 (NBG). Paarl: Wemmershoek, *Compton* 20196 (NBG); Hercules Pillar, *Barker* 4854 (NBG); Bainskloof, *Bolus* 4071 (BOL). Tulbagh: Ontongsberg, *Leighton* (BOL 24289).

The specimens from Sir Lowry's Pass, *Bolus* 5560 and Gordon's Bay, *Guthrie* in herb. *Bolus* 25718, are larger than the type specimen but otherwise agree.

13. *C. monophyllum* Oberm. sp. nov. *C. rigidum* Kunth affine, sed monophyllo differt.

Planta ad 50 cm alta. *Rhizoma* non visa. *Folium* solitarium angustissimum ad 40 cm longum 2 mm latum complanatum rigidum glabrum basi dilatatum. *Racemus* ramosus divaricatus; scapus teres glabrus; bractee minores fuscae, bractee fertiles fasciculatae; pedicelli sub fructu ad 1 cm longi prope basin articulati. *Segmenta* perianthii rotata vel reflexa 1 cm longa; filamenta scabra; ovula in quoque loculo circ. 10. *Capsula* 7 mm alta transverse costata.

Plants up to 50 cm. *Roots* not seen. *Rhizome* not seen. *Leaf* 1, linear, 40 cm long, 2 mm broad, folded, rigid, glabrous, broadened at the very base. *Inflorescence* a much branched divaricate panicle; scape terete, glabrous, about as long as the raceme, with a small dark bract; branches elongate, congested above; fertile bracts minute, deltoid, clustered; pedicels short in bud, up to 1 cm in fruit, articulating near the base. *Flowers* laxly arranged in upper part; perianth with spreading or reflexed segments, 1 cm long; filaments slender, scabrid; ovary with ca. 10 ovules per cell. *Capsule* typical, 7 mm high, with transverse ridges. *Seeds* immature.

Flowering Period: December.

DISTRIBUTION: Only known from the type locality.

CAPE.—Ceres: Cold Bokkeveld, sandflats, *Adamson* D9 (PRE, holo., BOL, iso).

The species is closely allied to *C. rigidum* but Adamson noted that it had only one leaf, which moreover is much narrower. It will be interesting to see more material of this species.

* Kunth found 6 ovules per cell, while I counted up to 15.

14. *C. viscosum* Kunth, Enum. 4: 605 (1843). Type: Cape, Namaqualand, near the mouth of the Orange River, *Drège* 2673 (B, holo., L, K, iso., PRE, photo.). *Anthericum viscosum* (Kunth) Bak. in J. Bot. 10: 141 (1872) in J. Linn. Soc. Bot. 15: 316 (1876) et in Fl. Cap. 6: 387 (1897). Dur. & Schinz, Consp. Fl. Afr. 5: 387 (1893). Poelln. in Fedde, Rep. 52: 243 (1943). *A. kovismontanum* Dint. in Fedde, Rep. 29: 268 (1931). Type: South West Africa, Kavis mountains, *Dinter* 6645 (B, holo., PRE, photo.). *A. longibracteatum* Dinter in Fedde, Rep. 29: 267 (1931); Poelln. in Fedde, Rep. 52: 240 (1943) including var. *brevibracteatum* l.c. and including forma *submembranaceum* Poelln. in Fedde, Rep. 52: 244 (1943). Type: South West Africa; Diamond Area II; Pomona, *Dinter* s.n. 2nd June 1929 (B, holo., M, iso., PRE, photo.). Type of var.: South West Africa: Diamond Area I: Halenberg, dunes, *Dinter* 4066 (B holo! PRE, photo.).

Gregarious plants hard in texture, up to 60 cm high (usually smaller in the Namib) with all parts glandular; glands shortly stipitate. *Roots* many, uniform, pinkish, slightly swollen, 3 mm in diam. hollow when dry, the soft mesoderm having shrunken, *Rhizome* short, horizontal, covered with old hard leaf-bases which may eventually disintegrate into fibres. *Leaves* distichous or rosulate, variable in size, 15–35 cm long, 2–10 mm broad, dilated at the clasping base, flat, closely ribbed, glandular, hard; primary outer leaves ca. 2 cm long, pale, membranous. *Inflorescence* simple or laxly branched, shorter or longer than the leaves; scape glandular with a few small bracts; fertile bracts small, membranous; pedicels short at first, up to 11 mm in fruit, articulated near the base. *Flowers* laxly arranged, ca. 4-nate; perianth spreading, white, dark keeled, segments ca. 8 mm long; filaments scabrous; ovary with ca. 19 ovules per cell. *Capsule* ovoid, apiculate, trigonous, closely transversely ribbed. *Seeds* flat.

Flowering Period: June–October.

DISTRIBUTION: South western Cape, recorded from the Piketberg, Vanrhynsdorp, Calvinia and Namaqualand districts, to the southern part of South West Africa. Usually in sand; noted to be fairly frequent where found.

CAPE.—Piketberg: sandy slope between Verloren Vlei and Rooikransberg, *Pillans* 7849 (BOL). Clanwilliam: near Clanwilliam, sandy arid fynbos, *Acocks* 19762 (PRE). Vanrhynsdorp: Zandkraal, marginal strandveld, *Acocks* 15165 (PRE). Calvinia: Lokenburg, *Acocks* 17391 (PRE). Namaqualand: Witbank, *Pillans* 5145 (B).

SOUTH WEST AFRICA.—Diamond Area I: Klinghardt Mountains, *Dinter* 4048 (PRE, B). Luederitz: Rheinpfalz, *Dinter* 6376 (B); Peilberg, Buchu Mountains, *Dinter* 6507 (B); Kavis Mts. *Dinter* 6291 (B).

The plants are variable in size, due no doubt to surroundings; those from more favourable localities grow up to 60 cm high, whereas those from the Namib remain stunted, seldom over 15 cm high. The pink, uniform roots and glandular covering allow for easy recognition of the species.

15. *C. triflorum* (Ait.) Kunth, Enum. 4: 606 (1843); Adamson & Salter, Flora of the Cape Peninsula, 185 (1950).

Anthericum triflorum Ait. in Hort. Kew 1: 448 (1789); Willd. Spec. Plant. 2: 140 (1799); Roem. & Schult., Syst. Veg. 7: 466 (1829); Bak. in Fl. Cap. 6: 383 (1896); Duthie in Ann. Univ. Stell. 4: 18 (1926). Type: ex hortus Kew (BM, holo., PRE, photo.). Introduced in 1782 by George Wench. *A. pauciflorum* Thunb., Prod. 63 (1794); and in Fl. Cap. ed. Schultes 320 (1823). Type: Cape, Lion Mountain, and in the Swartland, *Thunberg* α (UPS, holo., PRE, photo.). *A. bipedunculatum* Jacq., Coll. Suppl. 88: 10; Icones 2: 18, t. 410 (1795). Type: Plate 410, l.c. No specimen preserved. *A. dubium* (Roem. & Schult.) Poelln. in Fedde, Rep. 50: 232 (1941).

Phalangium bipedunculatum Poir. in Lam. Encyc. 5: 244 (1804). *P. pedunculatum* Bak. in error for *P. bipedunculatum* Poir. in J. Linn. Soc. 15: 315 (1876). *P. triflorum* (Ait.) Pers., Synops. 1: 368 (1805).

Chlorophytum dubium Roem. & Schult., Syst. Veg. 7: 455 (1829). Type: Cape (M, holo.!, PRE, photo.). There is no locality or collector noted on the label, only a number 1624. *C. brehmeanum* Roem. & Schult., Syst. Veg. 7: 454 (1829) e descr. Type: Cape, *Brehm* (the type could not be located).

Trachyandra? brehmeana (Roem. & Schult.) Kunth, Enum. 4: 586 (1843). * *T. pauciflora* (Thunb.) Kunth, Enum. 4: 584 (1843). *T. schultesii* Kunth, Enum. 4: 586 (1843). [Kunth changed the epithet of *Chlorophytum dubium* Roem. & Schult., to *schultesii* when he transferred it. The specimens quoted by Baker under *Anthericum schultesii* in the Fl. Cap. belong to *Chlorophytum rigidum*].

Plants sturdy, up to 1 m high. *Roots* many thick, hard, dark, swollen above, tapering gradually to the tip. *Rhizome* small, compact, horizontal, with a few fibres from old leaf bases. *Leaves* rosulate, variable in size, linear-lanceolate, up to 25 cm long, 2 cm wide, long tapered in upper half, clasping at the base, folded or flat, soft, striate, glabrous. *Inflorescence* a simple raceme, seldom with a short, basal, ascending branch; scape firm, terete, bracteate; bracts diminishing in size, upper subulate, dark keeled, with a membranous edge; pedicels short at first, up to 14 mm in fruit, articulated just above the middle. *Flowers* 2–4 nate; perianth white, thin, reddish brown on the outside, segments 10–12 mm, spreading or reflexed; filaments scabrid; ovary with 11–17 ovules per cell. *Capsule* typical, ca. 2 cm long, 12 mm wide. *Seeds* typical, 4 mm in diam.

Flowering Period: July–October.

DISTRIBUTION: South western Cape; in crevices on mountain slopes or in sand. CAPE.—Wynberg: Sea Point, above Bantry Bay, *Smith* 2883, 2932 (PRE); Green Point, *Pappe* (NBG 22905); Cape Town, *Rogers* 2469 (GRA), *Wolley-Dod* 2778 (BOL); Salt River, *Zeyher* 4659 (NBG); Melkbosch Strand, *Esterhuysen* 2842 (BOL). Malmesbury: Mamre Hills, *Wasserfall* 450 (NBG, PRE), *Compton* 21663 (NBG); near Darling, *Esterhuysen* 3875 (NBG, BOL). Piketberg: between Verloren Vlei and Rooikransberg, *Pillans* 8080 (BOL).

It is one of the oldest *Chlorophytum* species from the Cape known to be cultivated in Europe. The roots are very typical and distinguish it from all other species.

16. *C. namaquense* *Schltr ex Poelln.* in Ber. Deutsche Bot. Ges. 61: 207 (1943). Type: Cape, Namaqualand, Vogelklip, *Schlechter* 11295 (B, holo., probably destroyed, PRE, iso.!).

C. marlothii *Poelln.* in Port Acta Biol. 1: 229 (1945). Type: Namaqualand, Anenous, *Marloth* 12218 (B, holo., probably destroyed, PRE, iso.!). *C. inornatum* sensu Bak. in Fl. Cap. 6: 399 (1897); non Gawler.

Fairly large plants, up to 80 cm high. *Roots* many, probably soft and spongy when young, woody and ca. 2 mm thick when old. *Rhizome* small, covered with fibres from old leaf bases. *Leaves* in an elongated rosette, lanceolate, long tapered in upper half, clasping at the base, up to 40 cm long, 25 mm broad, flat, glabrous, margin minutely ciliate. *Inflorescence* simple or with 1–2 ascending branches, 40–80 cm high, much exceeding the leaves; scape glabrous, stout, up to 5 mm in diam. bracteate, the bracts diminishing in size, fertile bracts ca. 5 mm acuminate; pedicels short at first, 1 cm long in fruit, articulated in the middle. *Flowers* 2–4 nate; perianth white, with a dark keel, segments rotate, 12 mm long; filaments scabrid; ovary with ca. 20 ovules per cell. *Capsule* typical, sutures prominent, 15 mm long, 7 mm broad. *Seeds* typical, 3 mm in diam.

Flowering Period: August–September.

DISTRIBUTION: Cape: known only from Namaqualand, apparently rare.

CAPE.—Namaqualand: Mesklip, *Barker* 1883 (NBG), *Compton* 5869 (NBG); Modderfontein, *Bolus* 6585 (BOL.).

* In J. Bot. Lond. 10: 139 (1872) Baker refers it to *Anthericum brehmeanum*.

Baker in the Fl. Cap. 6: 399 (1897) refers *Bolus* 6585 from Modderfontein, Namaqualand, to *C. inornatum* Gawler from Sierra Leone but this species has a flat rosette with soft leaves, only 2–5 seeds per loculus and a scabrid, villous scape. The difference in localities moreover makes it unlikely that they could be conspecific.

17. *C. undulatum* (Jacq.) Oberm. comb. nov.

Anthericum undulatum Jacq., Coll. Suppl. 68, 10; Icones 2: 18, t. 411 (1793). Bak. in J. Linn. Soc. 15: 304 (1876); and in Fl. Cap. 6: 380 (1876). Type: Plate 411, l.c. No specimen preserved.

A. graminifolium Willd., Sp. Plant. 2: 139 (1799) nom. nov. for *A. undulatum* Jacq. (1793); non Thunb. (1794); Roem. & Schult. in Syst. Veg. 7: 463 (1829). [Thunberg's *A. undulatum*, a synonym of *Trachyandra hispida* (L.) Kunth, was published in his Prodrum, which appeared in 1794, so that Jacquin's name remains valid]. *A. bolusii* Bak. in Fl. Cap. 6: 385 (1897). Type: Cape, Namaqualand, *Bolus* 6601 (K, holo., BOL, iso.!). *A. pauciflorum* Thunb. var. β , *minor* Bak. in J. Linn. Soc. 15: 315 (1876); *A. triflorum* Ait. var. β *minor* Bak. in Fl. Cap. 6: 383 (1897). Type of var.: Cape, Paarl, between Paarl and Lady Grey Railway Bridge, *Drege* 8723 a (L, iso.!, PRE, photo.). (*Galpin* 1025 from near Barberton, Transvaal, quoted in Flora Cap. 6: 383, is *Anthericum cooperi* Bak.). *A. tumidum* Poelln. in Bol. Soc. Brot. 16, 2: 77 (1942). Type: Cape Piketberg, *Diels* 191 (B, holo.!, PRE, photo.). *A. pleiophyllum* Schlechter ex. Poelln. in Fedde, Rep. 53: 6 (1944). Type: Cape, Namaqualand, *Schlechter* 11277 (B, holo.!, PRE, iso.!). *A. dielsii* Poelln. in Fedde, Rep. 53: 127 (1944). Type: Cape, Clanwilliam, Olifantsdal, *Diels* 366 (B, holo.!, PRE, photo.).

Phalangium undulatum (Jacq.) Poir. in Lam. Encycl. 5: 242 (1804).

Chlorophytum graminifolium (Willd.) Kunth, Enum. 4: 606 (1843). *C. tuberculatum* Duthie in Ann. Stell. Univ. 4: 15, t. 7 (1926). Type: Cape, Stellenbosch, Flats, *Duthie* 992 (STE, holo., BOL, iso.!). *C. piquetbergense* Poelln. in Port. Act. Biol. 1: 230 (1945). Type: Cape, Piketberg, Nieuwe Kloof, *Diels* 194 (B, holo.!, PRE, photo.).

Plants variable in size, up to 50 cm high. *Roots* many, covered with a soft mesoderm when young and then ca. 2 mm in diam., the soft parts disappearing with age, leaving the wiry, hard, inner core, sometimes the root tips swollen; short sessile "tubers" (arrested roots) often present on rhizome between fibres of old leaf bases. *Rhizome* small, horizontal, covered with fibres of old leaf bases. *Leaves* forming more or less flat rosettes, very variable in size and appearance, linear to lanceolate, 5–20 cm long, 2–10 mm wide, tapered to the apex, attenuate to the base if lamina is wide, extended near the base if it is narrow, erect or spirally twisted, flat or folded, margin straight or crisped, ciliate; outer primary leaves absent or present as ligulate bracts up to 4 cm by 1 cm, spotted with red. *Inflorescence* a simple raceme, seldom with a basal ascending branch; scape terete, firm, bracteate, fertile bracts membranous, resembling the perianth; pedicels short at first, 14 mm long in fruit, articulated near the middle. *Flowers* fairly close together, 2–4 nate; perianth white, with a dark, often wine-red keel, spreading or reflexed, segments 8–15 mm long; filaments scabrid; ovary with ca. 12 ovules per cell, style declinate, stigma small, penicillate. *Capsule* oblong, 12 mm long, 8 mm broad emarginate, sutures prominent. *Seeds* typical, 3 mm in diam.

Flowering Period: July–October.

DISTRIBUTION: South western Cape districts, common.

CAPE.—Stellenbosch: Faure, *Strey* 516 (PRE). Bellville: north of Tygerberg, *Compton* 20056 (NBG). Hopefield: *Salter* 3031 (BOL). Malmesbury: near Vredenburg, *Leighton* 588 (BOL, PRE). Tulbagh: *Zeyher* 28 (NBG). Paarl: Hercules Pillar, *Barker* 1822 (NBG). Piketberg: de Hoek, *Esterhuysen* 5518 (BOL). Clanwilliam: near Doorn River Bridge, *Barker* 6554 (NBG); Bidouw Berg, *Schlechter* 8687 (PRE). Vanrhynsdorp: sandveld, *Marloth* 8270 (PRE). Calvinia: Perdefontein, *Acocks*

17310 (PRE); Lokenburg, *Acocks* 18908 (PRE). Namaqualand: Springbok, *Acocks* 19433 (PRE). Ceres: Spes Bona, *Marloth* 10366 (PRE). Laingsburg: Matjiesfontein, *Acocks* 17145 (PRE). Prince Albert: *Marchand* in herb. *Marloth* 10510, (PRE).

Anthericum undulatum figured and described by Jacquin was said to have come from the Cape but Baker in the *Flora Capensis* could not place any specimens under this species. When, however, a plant collected at Lokenburg in the Calvinia district, flowered at the Division of Botany, its resemblance to the Jacquin plate was very striking. As it is a very common Cape species, although variable and therefore given many names, it is likely that Jacquin had received seeds or plants from this species. The flowers were painted singly by Jacquin but it is seen occasionally that the subsequent buds can be absent or very small. He also described the filaments as glabrous but those of *A. bipedunculatum* on the previous plate and *A. "flexuosum"* on the following, were also called glabrous by him which in fact they are not but the small papillae on the filaments are easily overlooked. It was suggested that the plate represented *A. liliago* L. from North Africa, but this species has an ovoid, pointed ovary whereas Jacquin described it in his species as "subrotundum, triquetrum". Jacquin's plant more-over flowered in October, which is the flowering time for the Cape species, whereas *A. liliago* from North Africa flowers in May. *Acocks* commented on the variability of *C. undulatum* as follows: "My feeling is that all these *Chlorophytums* are a single species no matter whether they have short, narrow straight leaves with straight, undulate or crenulate margins, or broad, folded, arcuate leaves, long or short, straight edged, undulate or crisped; no tubers, few or many, thin or fat; short inflorescence or long; so much depends on where they grow, whether in deep, sandy soil, near a water course, or on heavy soil, or on next to no soil in the crevices of shale and on whether they have had lots of well distributed rain, no rain, or intermittent rain with droughts in between; and on how many times they were eaten off, before they managed to come into flower; not to mention of course whether they were growing in shady places, in dense scrub or in bare exposed places. If a plant is obstinate enough to be a perennial in those parts it has to be tough and adaptable".

It was seen that the root-tubers were young roots arrested in their development; under moist conditions they elongate to become normal roots. In optimal surroundings they are absent. Jacquin described the three inner segments as undulate, and these suggested the name, but it is a rather obscure character, difficult to see in dried flowers.

18. *C. crassinerve* (Bak.) Oberm., comb. nov.

Anthericum crassinerve Bak. in *J. Bot.* 29, 71 (1891) et in *Fl. Cap.* 6: 384 (1896). Type: Cape: Namaqualand, near Ookiep, *Bolus* 6600 (BOL, syn.!, K, iso.); *Scully* 114 (BOL, syn.!).

Glabrous plants up to 40 cm high. *Roots* spongy, when young, thin and hard when old; short, bulbous, erect or spreading root-tubers present on rootstock between fibres. *Rhizome* compact, covered with fibres from old leaf bases. *Leaves* in a rosette, ca. 5, lanceolate, ca. 12 cm long, 14 mm broad, coriaceous, glabrous, closely ribbed, margin prominent, apex obtuse, apiculate, base attenuate; primary leaves rudimentary, membranous, mottled with purple. *Inflorescence* simple, up to 40 cm high; scape terete, firm, glabrous, spotted, bracteate; bracts membranous resembling the perianth segments, ovate, auriculate, acuminate; pedicels short at first, up to 1 cm in fruit, articulated in the middle. *Flowers* laxly arranged, 2-4 nate; perianth spreading or reflexed, segments 15 mm long, white, red keeled; filaments scabrid; ovary with ca. 15 ovules per cell. *Capsule* typical. *Seeds* typical.

Flowering Period: August-October.

DISTRIBUTION: Known only from Namaqualand.

CAPE.—Namaqualand: between Garies and Khamieskroon *Pillans* in herb. BOL. 19174; Brakdam, *Esterhuysen* 5680 (BOL); *Scully* 14 (BOL); *Morris* in herb. BOL. 19173; 6 miles N. of Garies, *Leighton* 1396 (BOL).

The species is closely allied to *C. undulatum*; the obtuse, broad leaves with the thick red margin distinguish it.

19. *C. pauciphyllum* Oberm., sp. nov. *C. undulata* (Jacq.) Oberm. affine sed foliis paucis pubescentibus differt.

Planta ad 15 cm alta. *Radices* plures spongiosa. *Folia* primaria brevia ligulata maculata; folium maturum unum linearis ad 45 cm longum 5 mm latum planum rigidum costatum pubescente vel glabrescente; folium novum immaturum sub anthesi pubescente. *Racemus* simplex vel basi ramo uno ad 26 cm alto; scapus gracilis teres glabrus bracteatus; pedicelli filiformes ad centrum articulati. *Segmenta* perianthii rotata 6 mm longa, filamenta scabro.

Plants up to 15 cm high. *Roots* many, ca. 10 cm long, covered with a soft, spongy, lanate tissue which disappears with age leaving a hard, thin, inner core: younger roots usually spindle shaped and with several fascicled thin rootlets appearing from the tips of the swellings. *Leaves* few; primary short, ligulate, clasping the scape, purple spotted; old mature leaf (from previous season) linear, up to 45 cm long, 5 mm wide, flat, rigid, ribbed, pubescent to glabrous, margin prominent; new leaf 20 cm long at time of flowering, pubescent, clasping scape at the base. *Inflorescence* simple, 26 cm tall; scape slender, terete, glabrous with a small sterile bract; fertile bracts small, 5 mm long, membranous, pedicels filiform, articulated near the middle. *Flowers* laxly arranged, 1–2 nate; perianth rotate, 12 mm in diam. white with a green keel; filaments densely scabrous; ovary typical. *Capsule* not seen.

Flowering Period: March–September.

DISTRIBUTION: Only known from Clanwilliam in the Cape; apparently a mountain species.

CAPE.—Clanwilliam: N. of Bulshoek Barrage, *Barker* 7301 (NBG, holo., PRE, photo.). Citadelskop near Wupperthal, fairly frequent, *Leipoldt* 1071 (BOL); Nieuwoudt Pass, *Esterhuysen* 8150 (BOL).

Easily distinguished from the related species *C. undulatum* because of its solitary, long leaf, and from *C. lewisae* which has several short leaves and a bulbous rhizome.

20. *C. lewisae* Oberm., sp. nov. *C. undulato* (Jacq.) Oberm. affine sed rhizomate bulboso foliis setosis differt.

Planta ad 20 cm alta. *Radices* longae lanatae. *Rhizoma* bulbosa. *Folia* 2–4 ad basin et marginem setosa. *Racemus* simplex vel basi ramulo solitario; scapus pubescens bracteatus; pedicelli tenues 9 mm longi ad basin articulati. *Segmenta* perianthii reflexa 6 mm longa; filamenta scabra; ovula in oculis 12.

Small pubescent plants up to 20 cm tall. *Roots* fairly thin, the spongy tissue not much swollen, lanate. *Rhizome* bulbous, ca. 1 cm in diam. horizontal, covered with fibres of old leaf bases. *Leaves* 2–4, linear-lanceolate, up to 16 cm long, 5 mm broad, attenuate in upper half, terminating in a tiny, black, bulbous point, base slightly dilated, clasping the bulbous rhizome, upper surface glabrous, lower surface, especially the margins, setaceous. *Inflorescence* up to 25 cm tall, simple or with one short, ascending side branch; scape terete, thin, pubescent, with 1–3 small, sterile bracts; fertile bracts ovate, auriculate, 4 mm long; pedicels thin, 9 mm long, articulated below middle. *Flowers* 6–10, laxly arranged on rhachis, 2–3 nate; perianth reflexed, white with 3 dark-green nerves, segments obovate, 12 mm; filaments scabrous; ovary oblong with ca. 12 ovules. *Capsule* and seed not seen.

Flowering Period: September.

DISTRIBUTION: Cape, Calvinia.

CAPE.—Calvinia: top of Botterkloof Pass, *Lewis* (SAM 62038, holo., NBG, PRE, photo.); same locality *Johnson* 561 (NBG).

The globose rhizome and the hairy leaves distinguish it from the other species.

SPECIES EXCLUDED

C. vaginatum Bak. in Fl. Cap. 6: 397 (June 1897), non Hua. Type: Natal, Weenen, Wood 4425 (K, holo., NH, iso.!).

This species was found to be identical with *ORNITHOGALUM LONGISCAPUM* Bak. in Bull. Herb. Boiss. Ser. 2, 1: 854 (1901). There is also *C. vaginatum* Hua [Contr. Fl. Congo Franç. Lil. 22 (1897)] from the French Cameroons which was published in the same year as *C. vaginatum* Bak. Professor Aubrevilles in Paris and Mr. W. Marais at Kew, were unable to discover in which month this volume appeared. As it was therefore impossible to discover which name was the older of the two, it was decided to regard Hua's name as the one published first. This makes Baker's name a synonym and so the name *Ornithogalum longiscapum* Bak. remains valid.

C. drepanophyllum Bak. in Fl. Cap. 6: 398 (1897). Type: Namaqualand, near Nababeep, Bolus 6584 (K, holo.). This is *Trachyandra falcata* (L.f.) Kunth.

C. haygarthii Wood & Evans in J. Bot. Lond. 37: 254 (1899) and in Wood's Natal Plants 1: 79 t. 98 (1899). Type: Zululand, Haygarth (Wood 7448, NH, holo.!, PRE, iso). This is *Anthericum haygarthii* (Wood et Evans) Kies, comb. nov.

Chlorophytum norlindii Weim. in Bot. Not. 1937: 434, photo, p. 435. Type: Southern Rhodesia, Makoni district, Maidstone, Norlindh and Weimarck 4128 (LD, holo.!, PRE, iso.!). This is *Anthericum galpinii* Bak. var. *norlindii* (Weim.) Oberm. comb. et stat. nov.

SPECIES INSUFFICIENTLY KNOWN

Chlorophytum leipoldtii Poelln. in Ber. Deutsche Bot. Ges. 61: 207 (1943) by error "*C. leipoldtii*." Type: Cape, Leipoldt s.n. (B, holo., probably destroyed in 1943). If this specimen was the same as Leipoldt 493 from Clanwilliam (GRA), and from the description it seems to be, it is a synonym of *C. undulatum* (Jacq.) Oberm.

C. dregei Poelln. in Port. Acta Biol. 1: 228 (1945). Type: Cape, Drège 1827 (B, holo., probably destroyed in 1943). It may be found in other herbaria. As the specimen had no roots it cannot be determined with certainty whether it was *C. triflorum* or *C. undulatum*.

C. schlechterianum Poelln. in Ber. Deutsche Bot. Ges. 61: 208 (1943). Type: Cape, Schlechter s.n. ex hortus Berlin-Dahlem (pressed for herb. 1900; B, holo., probably destroyed in 1943). The roots unknown. It could be *C. undulatum* or *C. namaquense*.

SPECIES ERRONEOUSLY REFERRED TO SOUTH AFRICA

C. blepharophyllum Schweinf. ex Bak. in J. Linn. Soc. 15: 327 (1876). The type comes from Central Africa, Gallabat. Baker in the above publication mentions: "Africa australis, in ditone Transvaal, Baines; perianthium non vidi". Mr. W. Marais looked up the Baines specimen at Kew and found it had three labels: 1. S.A. Goldfields. 2. Segetse, Quae Quae River. 3. Matabele Land, source of the Gwailo River, therefore all from Southern Rhodesia. It has not been recorded from the Transvaal.

C. inornatum sensu Bak. in Fl. Cap. 6: 399 as to Bolus 6585 (1897); non Gawler. Baker places Bolus 6585 from Namaqualand under this tropical species. It is *C. namaquense* Poelln.

3. TRACHYANDRA

Kunth, Enum. 4: 573 (1843). *Dilanthes* Salisb. Fragm. 70 (1866). *Liriothamnus* Schlechter in Notizbl. Bot. Gart. & Mus. Berlin 9: 145 (1924).

Perennials, suffrutescent or herbaceous and in this case the parts above ground dying down in winter; with glandular pubescence in some species. *Roots* various; fibrous or spindle-shaped, sometimes swollen only near the tips; in some fused to form a "toed", contracted tuber. *Stems* upright, woody, naked or covered with old leaf bases, or more usually developed as a rhizome. *Rhizome* vertical, seldom horizontal. *Leaves* uniform or dimorphous; base tubular, often persistent as a sheath of fibres. In dimorphous-leaved species, tubular, membranous, basal squamae are present, surrounding the leaves and scape and sometimes the shoots; leaves arranged in a rosette, rarely somewhat distichous, or in congested spirals on aerial stems; lamina flat, triquetrous, terete or canaliculate, hairy or glabrous or glandular-pubescent; sometimes spirally contorted, undulate or plicately folded. *Inflorescence* an axillary, single or branched raceme rarely sub-umbellate; scape terete, naked or with some sterile bracts (vestiges of side-branches); bracts one per flower; pedicels single, not articulated, changing their position during anthesis and when the capsule ripens, erect, patent or recurved, sometimes making a complete loop. *Flowers* single, scentless or with a strong scent, usually opening in the afternoon, closing in the evening. *Perianth* rotate or recurved, erect or pendulous; usually white, rarely yellow, pink or mauve, dark keeled; 3 outer segments slightly narrower than 3 inner; often with yellow, green or dark didymous maculae near the base, caducous, the flower falling off completely if not fertilised; if fruit is formed, the perianth base persists below the ovary forming a small, sometimes stipitate rim or cup. *Stamens* 6, adnate to the very base of the perianth, slightly shorter than the segments, spreading or the inner convergent; filaments similar or dimorphous, retrorsely scabrid, occasionally declinate; anthers versatile, introrse. *Ovary* sessile, globose with 2-16 bi-seriate ovules in each chamber; with septal glands; style filiform, ultimately exerted, often declinate; stigma small, minutely penicillate. *Capsule* loculicidally 3-valved, globose or trisulcate, coriaceous, seldom fleshy; apex obtuse or apiculate, stipitate through abortion of lower ovules; smooth or tuberculate with a few or many, small or large gland-tipped tubercles, rarely with 3 lateral horns. *Seeds* angled, usually brown or grey, smooth or verrucose, with or without prominent ridges; with immersed yellow glands when immature, becoming glutinous when ripe, probably as a result of the glands erupting.

DISTRIBUTION: A predominantly South African genus with the majority of the species in the south western Cape; found all over South Africa and South West Africa, a few extending to Southern Rhodesia, Angola, Nyasaland, Kenya and Abyssinia.

Suggested type species; *T. hispida* (L.) Kunth.

Species of *Trachyandra* are found throughout southern Africa, but the majority are endemic to the winter rainfall region of the south western Cape. A few species extend further northwards, one as far as Abyssinia. Linnaeus and others after him classed this group of plants with *Anthericum* but Kunth recognized it as constituting a separate genus which he named *Trachyandra*, giving a good description of it in Enum. 4: 573 (1843). Baker in the Journ. Linn. Soc. 15: 307 (1876) reverted to the old classification and sank the genus as a section under *Anthericum* where it remained until now. On close examination, however, it will be seen that the species belonging to this section are very different from true *Anthericum* and more closely related to *Bulbine*. The axillary inflorescence, the single, non-articulated pedicel and the deciduous perianth are but a few obvious characters that distinguish them from *Anthericum* at a first glance. As in *Bulbine*, the perianth, if the flower is not fertilized, drops off completely; if seed is set, however, its base remains and forms a cup or rim below the capsule. Both have axillary inflorescences, pedicels that change their position when the capsule is formed and leaf-bases that are tubular. Furthermore a parallel development is found in the formation of tuberous roots and the production of aerial stems in some of the species. The caulescent habit of *T. involucreta* induced Schlechter to put it in a separate genus, *Liriothamnus*, with the remark that it showed affinity to *Bulbine caulescens*. But separation solely on its caulescent habit, is not sufficient.

When Kunth published the name *Trachyandra*, referring to its scabrid stamens he treated the name as feminine as can be seen from his epithets.

RESUMÉ OF THE SECTIONS

The genus can be divided into three sections. The first, § *Liriothamnus*, could be regarded as the most primitive. The roots are fibrous and the outer leaves are similar to the later ones. The inflorescence is simple in the majority of species, the perianth (with very few exceptions) immaculate and rotate and the filaments are uniformly scabrid and spreading. The number of ovules varies from 10–2 per loculus. There is a tendency to reduce the number of ovules.

The second section, § *Trachyandra*, shows a much greater diversity in the root system, in the special rudimentary outer leaves or squamae and in the more elaborate floral structure. Amongst its species are so called "tumble weeds". The flowers are often strongly scented, sweet or musklike. The pendulous flower has an ingenious use for its retrorsely scabrid filaments. These form a tube around the ovary, and the nectar, copiously exuded from the septal glands, is collected between the retrorse excrescences of the filaments and attracts insects.

The third section, § *Glandulifera*, is distinguished from the other two sections in the development of glandular hairs. In some varieties of *T. asperata* these may be restricted to a few microscopic stipitate glands on the ovary which afterwards crown the tubercles that emerge with the development of the capsule. In *T. gerrardii* and *T. sabulosa*, however, the whole raceme may be densely glandular while the furry capsule somewhat resembles the fruit of a plane tree, being densely covered with pectinate gland-tipped tubercles. The degree of pubescence and glandulosity is very variable. The inflorescence is always branched (sometimes reduced to a simple raceme, i.e. in some specimens of *T. asperata* var. *stenophylla*), the perianth maculate and the lower ovules absent or abortive giving the capsule a stipitate appearance. This may not be obvious at first in capsules which are densely covered with tubercles, the stipe being hidden by them. The leaves are usually triquetrous. Archibald and Phillips noted that the plants exuded a strong unpleasant odour.

MORPHOLOGY:

Root system: The roots of the § *Liriothamnus* are fibrous, and numerous. In the § *Trachyandra* they have become storage organs and vary a good deal. In the tumble-weed groups there are many arranged in a congested circle; they are often swollen, elongate-spiral-shaped but not contracted or fused. The thickness depends on the season and whether growth and flower-production have used up much of their contents. The next step, as seen in *T. jacquiniana* and related species, seems to have been the contraction into tubers and a reduction in their number. This development is confined to species of the winter rainfall region. Ultimately the roots and rootstock become fused forming a solid "toed" foot as in some *Bulbines*. How the new parts develop is not yet properly understood. The many hard outer skins suggest that new roots are formed inside the old skins which may remain in situ for a long time. In the § *Glandulifera* they are long, spreading, often branched and the lower half of the root near the tip is swollen. In many species from sandy areas the root is covered by a dense felt composed of long interlacing root-hairs. These are apparently permanent and seem able to absorb water very quickly.

Stem-rhizome: One of the most striking features of this genus is the development of a woody stem which may reach a height of up to 6 ft. in *T. adamsoni*. A close ally, *T. involucrata*, also produces a woody, rather gnarled, naked stem while *T. acocksi* and *T. burkei* have short ones that are covered with persistent leaf-bases. In the § *Glandulifera* the Cape species *T. scabra* and *T. sabulosa* also possess short branched stems. The anatomy of the wood was studied by Adamson [J. Bot. Lond. 69: 10 (1931)] who found it to be of typical monocotyledonous development as in *Dracaena*.

The cambium is external and complete amphivasal vascular strands are added, forming separated, secondary ground tissues. Most species however, have a hard, irregularly shaped, woody rootstock. Growth usually takes place in a vertical direction, but in certain species, e.g. *T. brachypoda* and *T. chlamydophylla* the rhizome grows horizontally.

Leaves: The bases of all leaves are tubular. A remarkable development has taken place in those species here put in the second section, § *Trachyandra*, where the leaves have become dimorphous, the first or outer leaves having been changed into short tubular membranous prophylls functioning as a protective covering for the vital inner parts. I decided to use the term "squamae" for these organs as "basal rudimentary leaves" is so cumbersome and "prophylls" vague. Jackson's definition of squama, "usually the homologue of a leaf", fits these organs very well. If the monocotyledonous leaf is interpreted as a leaf-base and petiole, we may regard the squamae as the sheathing leaf-bases which have lost their petioles. Their reduction from leaf to squama can be followed in various species. *T. tabularis*, which may be regarded as a link, shows outer leaves that occasionally lose their lamina, thus becoming short tubular prophylls, something often seen in the *Liliaceae*. In the next phase the lamina has disappeared permanently and the squamae now become very different from the leaves. They are now truly dimorphous, brown or white and membranous. One to three narrow tubular squamae can be seen surrounding each leaf- and each scape-base. A further change now takes place in that each shoot becomes surrounded with squamae in addition to those fitted around the leaf- and scape-bases. With the expansion of the shoot these outer squamae often burst and become tattered. In some other species the squamae are wide and loose-fitting, and remain whole. In some, e.g. *T. bulbinifolia* and *T. dissecta* the thin, inner squamae differ from the more sturdy outer squamae.

The leaves sometimes show a slight twist or are strongly wavy or plicately folded or form a stiff spiral. This spiral twisting, waving and folding, is met with in other Monocotyledons from Namaqualand, e.g. in *Ornithogalum*, *Moraea*, *Dipcadi*, *Albuca*, *Babiana*, etc. It could be an adaption to the dry conditions. Certain specimens of one species however show it markedly whereas others growing near it have straight leaves. Pubescence varies from short raised points to long hairs even in one species.

Arber in her classic work on the Monocotyledons remarks on p. 130 that in this phylum there is a greater variety in the width of the leaves amongst the different species than in the Dicotyledons, which could be expected if the "blade" is interpreted as an expansion of the petiolar region. This variation in leaf-width is very marked even in individuals of one species.

Of cytological interest are the spiral thickenings of the vessels in the lamina. They draw out into fine spiral threads when the leaf is broken (cf. Duthie l.c.). It was also observed in *T. laxa* var. *erratica*.

Inflorescence: A number of species, all from the first section, have simple racemes i.e. *T. saltii*, *T. esterhuysenae*, *T. reflexipilosa*, etc., but in the majority of species, including the whole § *Glandulifera*, the inflorescence is branched. In some of the branched species, we meet specimens which occasionally bear simple racemes probably because the plants were immature or depauperate. On the other hand there is a definite tendency in some species to suppress side branches. In some species like *T. falcata* and *T. ciliata*, side-branches, although small and suppressed, can always be detected near the base of the raceme. In *T. longepedunculata* these side branches have often disappeared altogether, only the empty bracts remaining. In the above species and some others however, the raceme may elongate to 2 or 3 times its original length during anthesis, becoming prostrate in the process.

In the "tumble-weeds" the raceme is much branched and divaricate. At first the branches, branchlets and pedicels are erect but after flowering they spread out and downwards forming a "ball" which after detachment rolls around in the wind. It is extremely light, the scape consisting mainly of pith. An interesting development

are the accessory branches. It is found in the majority of the species but often one or both side-branches are suppressed. We meet it for instance in *T. laxa* var. *erratica*, where the 3 lowest branches are trichotomous arising from the clavate apex of the scape; the upper branches are alternate. In other species, e.g. in *T. jacquiniana* these accessory branches are found in nearly every axil but one of the branches remains small. If the branch is completely suppressed we still find its bract. In the § *Glandulifera*, *T. asperata*, and *T. gerrardii* also have accessory branches.

Bracts: These do not vary very much. Some become nearly amplexicaul, e.g. in *T. falcata*. They show a resemblance to the leaves. From a phylogenetic point of view they are of interest in that they are the last surviving organs in cases where floral side-branches are suppressed. The rhachis, pedicels and flowers may have disappeared but the bracts remain as a relic. This also occurs in *Anthericum* and *Chlorophytum*.

Pedicels: They are not articulated. In some cases it would appear as if there could be an articulation near the apex. This occurs in some species, e.g. in *T. tabularis*, after fertilisation when the perianth-base elongates into a short stipe below the persistent rim. If the flower is not fertilized, it drops off completely at the apex of the pedicel. In this case the pedicel remains thin and does not change its position. If a capsule is formed, however, the pedicels move into certain positions, upwards or downwards, patent or with the apex recurved, sometimes forming a complete loop. The ultimate position is constant and makes a useful character for recognizing the species or varieties.

Flowers: When the perianth closes after flowering, it fits snugly around the ovary, the apical part protruding above it as a rod. It does not twist. Through pressure of the enlarging ovary, it tears off below and falls off like a pointed cap, leaving its saucershaped base below the capsule. The perianth is either rotate or revolute. The first species Linnaeus described from the Cape was named *Anthericum revolutum* by him because of its recurved perianth. It forms a graceful "ball" around its pedicel. It is pendulous. A number of related species in this section have the same type of recurved, pendulous perianth but in the majority of the species it is rotate and the flowers face upwards. They are usually white, but in *T. arvensis* they are yellow, in *T. thyrsoidea* mauve, and in *T. tortilis* and *T. hirsutiflora* they are pink, while in many a faint pink tinge may be seen. In those species where the segments curve backwards, we find a pair of yellow, green or dark spots near their base, probably serving as honey guides. Duthie, Adamson, Marloth, Jacquin and others noted a strong smell, sweet in some species, musk-like in others. The flowers usually open in the afternoon and close during the night. In the branched racemes a few flowers open daily but on the simple racemes, e.g., in *T. saltii*, they flower profusely from the base upwards after good rains. Within a few days the flowering period is over and the unobtrusive plants sink back into obscurity. The plants however, have young inflorescences near the base, ready to emerge when conditions become favourable once more. In *T. ciliata* and some others the raceme continues to lengthen if conditions remain favourable.

Stamens: In the rotate perianths the filaments are uniform, shortly scabrid and spreading. At the base, where they surround the ovary in bud, the filaments are always smooth. In the revolute perianths however, the filaments are dimorphous. The outer spread and are shortly scabrid but the inner are connivent around the ovary; they are flattened and smooth in the lower half where they surround the ovary but have lateral and dorsal fringes. Above the ovary they bend outwards and there have long, retrorse excrescences. As the flowers hang upside down the copious nectar is caught amongst these outgrowths. Miss Duthie records that bees are the chief pollinating insects. The anthers are small and versatile.

Ovary and capsule: The number of ovules per cell is fairly constant for each species, occasionally 2 more or 2 less. In the § *Trachyandra* the number of ovules is usually about 10 but in one plant of *T. jacquiniana* 16 ovules were counted in a cell, the largest

number for the genus. However, there is a tendency, especially in the § *Glandulifera*, to reduce the number of ovules or to abort the lowest. The capsule then becomes obovoid or shows a stipe at the base above the persistent perianth rim. The widespread species *T. saltii* has about 8 ovules per loculus, only the upper usually being fertile. In the variety *secunda* with reflexed pedicels only 4 were counted in some of the specimens examined. In the related Angolan species, *T. pyrenicarpa*, each loculus produced only one seed, a large one for the genus. The ovules are axial and biseriolate. The placenta is sometimes swollen, perhaps the result of insect irritation. The septal glands produce much nectar. A curious feature of *T. margaretae* is the presence of a dense covering of simple, erect hairs on the young ovary. In *T. zebrina* the ovary is glabrous when young but some reflexed setae appear later on the capsule. The § *Glandulifera* (apart from the two non-glandular species just mentioned) is the only section which has the ovary not glabrous; here it is sparsely to densely covered with stipitate glands. When the capsule matures, simple or complex pectinate tubercles or horns are formed on which the glandular hairs are mounted. The glands erupt and disappear but the excrescences persist in covering the capsules, partly or entirely. The capsules open loculicidally, the walls sometimes recurving. The style is always glabrous. [Baker in the *Flora Capensis* 6, 379 (1897) erroneously mentions in the key "filaments and style scabrous"]. At first the style is short but it eventually becomes longer than the stamens. The stigma is small, penicillate.

Seed: When immature, the testa in most species shows golden flecks which appear to be glands which burst when the seed is ripe and thus give it a glutinous coat. The seed is angled, usually grey, smooth or verrucose in certain species. The seeds of the *Glandulifera* species have a different but definite verrucose pattern for nearly each species; it may be globose or flattened or in some with a crenulate wing and with large and small tubercles near the perimeter, the thick central area being fairly smooth.

The species have mostly adapted themselves to very definite, special habitats. The tumbleweeds for instance are always found growing in sandy soils. Others are grassveld species, i.e. the widespread, *T. saltii*, while others, e.g., *T. erythrorrhiza*, prefer marshy surroundings. Adamson in the *Flora of the Cape Peninsula*, records a number of species that flower after veld-fires e.g. *T. muricata*, *T. hirsuta*, *T. hirsutiflora*, etc. Apparently growth is stimulated but this problem has not yet been fully investigated. It occurs in many other genera. The bare ground will become warmer after the vegetative covering has been removed and this may also be a reason for more rapid flowering. Because of their capacity to develop so rapidly they will have completed their annual life cycle by the time their neighbours crowd around them once more.

The plants have no economic importance. Karsten (*The old Company's Garden at the Cape*, 1951) mentions that shoots of a wild *Anthericum* were served as asparagus on Van Riebeeck's table. It could have been *T. divaricata* which is plentiful around the Cape, producing the fattest and most succulent shoots, or perhaps *T. falcata*, but our recent records of this species show its southernmost habitat to be Saldanha Bay. The plants, especially the tumbleweeds, are eaten by animals, records showing that pigs even dig up the roots. They are not poisonous, although they were often suspected.

In this review 45 species are enumerated from the Union and South West Africa; 10 of these are new species. A few extend beyond our borders, i.e. *T. saltii* which is found in Southern Rhodesia to Kenya and Abyssinia. *T. arvensis* occurs in Northern Rhodesia. *T. reflexipilosa* has also been discovered in Southern Rhodesia. In Angola occurs *T. pyrenicarpa*, a species closely related to *T. saltii* but with one large seed per locule. There is one glandular species, *T. malosana*, recorded from Nyasaland and Southern Rhodesia. It is close to *T. asperata* and may be conspecific. Baker in the *Flora of Trop. Africa* 7: 491 (1898) refers specimens collected in Angola and Beira to "*Anthericum elongatum* Willd." It may prove to be a mixture of species, some perhaps belonging to the tumbleweed group and others probably to *T. saltii*. Von Poellnitz

described a large number of *Anthericum* species from tropical Africa in various publications. Many of his type-specimens were destroyed during the second World War. Some of these may prove to belong to *Trachyandra*.

KEY TO SECTIONS

Plants not glandular-pubescent:

Plants with the outer leaves occasionally smaller but not changed into squamae; roots fibrous; inflorescence simple, seldom branched; perianth immaculate, seldom maculate; filaments shortly scabrid..... § 1. *Liriothamnus*

Plants with the outer leaves changed into squamae; roots usually in a circle, often swollen, sometimes contracted or fused into a few tubers and also fused to the rhizome; inflorescence branched, seldom simple through reduction; perianth usually maculate; filaments uniform or dimorphous, the outer spreading the inner connivent around the ovary and then curving outwards, there with long retrorse bristles..... § 2. *Trachyandra*

Plants glandular-pubescent with the stipitate glands few, minute, confined to the ovary and afterwards the capsule, to densely scabrid-glandular on all parts of the raceme..... § 3. *Glandulifera*

KEY TO SPECIES

Section 1. LIRIOTHAMNUS. [*Liriothamnus* Schlechter in Not. Bot. Gart. & Mus. Berlin 9: 145 (1924)].

Roots wiry, thin, seldom lanate. *Aerial stems* sometimes developed or usually with a *rhizome* which is often covered with fibrous leaf-base remains. *Leaves* uniform (in *T. brachypoda* and *T. tabularis* lamina of primary leaves often reduced). *Inflorescence* simple or branched; scape often arcuate near the base. *Perianth* erect, rotate, immaculate (maculate in *T. adamsonii* and *T. burkei*); filaments spreading, uniform, shortly scabrid; ovules 10–2 per cell, the lower sometimes abortive. *Capsule* glabrous, often stipitate. *Seeds* smooth or verrucose.

DISTRIBUTION: Widely distributed.

Plants producing naked, aerial, woody stems: (two species, found in the Vanrhynsdorp and Namaqualand districts: *Liriothamnus* Schlechter):

Shrubs with bare stems up to 6 ft. high; leaves flat, over 2 cm wide, perianth maculate; capsule erect..... 1. *T. adamsonii*

Shrubs usually about 2 ft. high; leaves terete ca. 6 mm in diam.; perianth not maculate; capsule recurved..... 2. *T. involucreata*

Plants producing short aerial stems, which are covered with leaf-bases:

Leaf-bases hard, thick, quill-like; leaves many; inflorescence simple, perianth immaculate 3. *T. acocksii*

Leaf-bases long with reticulated thickenings; leaves few; inflorescence usually branched; perianth maculate..... 4. *T. burkei*

Plants without aerial stems; with rhizomes; raceme simple or branched; nerves of leaf-bases often persistent as fibres:

Inflorescence simple:

Ovary glabrous:

Leaves usually less than 5 mm wide, variously pubescent but not with long reflexed setae only:

Leaves flat or terete, glabrous or with soft long hairs and short curly ones; scape sharply arcuate below pushing inflorescence outside leaf rosette; 4–8 ovules per loculus (Summer rainfall region)..... 5. *T. saltii*

Leaves filiform, glabrous; flowers congested near the apex; pedicels short; 2 ovules per loculus (Great Winterhoek Mountains, Cape)..... 6. *T. esterhuysenae*

Leaves filiform with a uniform, white, short curly pubescence; inflorescence lax; pedicels ca. 15 mm long; 6 ovules per loculus (Calvinia)..... 7. *T. gracilentia*

Leaves usually 8 mm wide, flat; upper surface glabrous, lower surface and scape evenly setose with long, straight, retrorse hairs; immature scape densely reflexi-pilose; pedicels untidy, straggling in all directions, patent or erect in fruit, 15–25 mm long, thin; raceme long, lax, flowers in irregular groups along rachis..... 8. *T. reflexipilosa*

Ovary densely pubescent with tawny, erect hairs..... 9. *T. margaretae*

Inflorescence branched:

Plants rosulate:

Mouth of leaf-base fimbriate (eastern Cape)..... 10. *T. affinis*

Mouth of leaf-base not fimbriate (Cape Peninsula):

Sclerotic plants; leaf margin raised, smooth; flowers laxly arranged on rhachis; perianth segments ca. 8 mm long; capsule globose, dry; seeds smooth, usually 1 per loculus..... 11. *T. brachypoda*

Soft plants; leaf margin not raised, minutely denticulate; flowers fairly close together; perianth segments ca. 12 mm long; capsule trisulcate, slightly fleshy; seeds with 3 prominent, crenulate ridges, tubercular, usually several per loculus 12. *T. tabularis*

Plants sub-distichous, softly hairy; leaves soft, erect; seeds with small ridges, somewhat tuberculate..... 13. *T. hirsuta*

Section 2. TRACHYANDRA. [*Dilanthes* Salisb. Fragm. 70 (1866)].

Roots many, swollen, arranged in a congested circle, fusiform or contracted, sometimes fused together and with the rhizome. Outer leaves changed to squamae. *Inflorescence* branched, often with accessory branches at the nodes, seldom simple through reduction. *Perianth* erect or pendulous, rotate or recurved, maculate (except in *T. chlamydophylla*, *T. hispida*, *T. peculiaris* and *T. hirsutiflora* where it is immaculate); filaments subequal, shortly scabrid or dimorphous with the three outer spreading, shortly scabrid, the three inner connivent around the ovary, with dorsal and lateral fringes, curving outwards above and there with long retrorse bristles; ovules 16-4 per cell. *Capsule* glabrous (except in *T. zebrina* and *T. hirsutiflora*) never stipitate. *Seeds* smooth or verrucose.

DISTRIBUTION: Found mainly in the south western Cape; a few species belonging to the tumbleweed group found northwards as far as Southern and Northern Rhodesia and Angola.

Inflorescence a simple raceme or rarely with a few short basal, ascending branches, elongating during anthesis; scape often with a few sterile bracts (vestiges of undeveloped side branches); plants glabrous or hairy; perianth immaculate (maculate in *T. falcata* and *T. ciliata*):

Each leaf-base wrapped up in separate tubular, brown, firm squamae but no squamae surrounding shoots; inflorescence simple; rhizome horizontal; roots all alike, hard, cylindrically swollen, not bulbous; perianth immaculate, glabrous..... 14. *T. chlamydophylla*

Each shoot as well as the leaf-bases and scapes wrapped up in tubular, membranous, loose squamae, the outer bursting when plants expand; inflorescence simple or with a few short, basal branches (*T. falcata*); pedicel usually recurved in fruit (except in *T. hirsutiflora*); rhizome vertical; roots often bulbous; perianth immaculate or maculate, hispid on the outside (glabrous in *T. longepedunculata*):

Inflorescence simple, scape naked:

Racemes capitate, dense, short, the lower pedicels long, overtopping the apex of the inflorescence; pedicels recurved in fruit; leaves usually longer than the raceme:

Bracts long, linear-acuminate, ending in a soft awn, hispid; (Cape Peninsula) 15. *T. hispida*

Bracts deltoid, glabrous, white, membranous, edges fimbriate (South West Africa) 16. *T. peculiaris*

Racemes spicate, white- or fawn-tomentose; pedicels erect in fruit..... 17. *T. hirsutiflora*

Inflorescence with a few, short side-branches or rarely simple through reduction, if simple then with 1-3 sterile bracts below inflorescence (vestiges of side branches), when old often prostrate:

Leaves flat, ca. 2.5 cm wide; perianth softly hairy on outside, sometimes glabrous or becoming glabrous: young inflorescences with bracts closely imbricate, resembling an ear of corn; large plants:

Lower bracts not amplexicaul; inflorescences ultimately prostrate; pedicels recurved in fruit..... 18. *T. ciliata*

Lower bracts amplexicaul; inflorescence erect; pedicels erect in fruit..... 19. *T. falcata*

Leaves terete, 2 mm in diam. scapes bracteate, often mottled at the base; perianth glabrous outside; slender, glabrous plants..... 20. *T. longepedunculata*

Inflorescence a divaricate raceme, seldom simple in immature or starved plants; scape naked, erect; perianth maculate:

Squamae surrounding shoots absent. Leaves and scapes arranged horizontally on the discoid rhizome; each leaf- and scape-base separately surrounded by several close-fitting tubular

squamae; roots many, firm, often spindle-shaped but not fused or contracted into tubers, the new ring of spreading roots formed above the old one; perianth recurved; filaments dimorphous, 3 inner with long, retrorse bristles in upper half; tumbleweeds:

Flowers white, pedicels up to 1 cm long:

Stout, glabrous, littoral plants; panicle branches usually short, dichotomous or trichotomous, patent, many-flowered; capsule often somewhat fleshy, ca. 1 cm in diam., perianth recurved from the middle..... 21. *T. divaricata*

Smaller plants, glabrous or with the base of scape hairy and leaves rough; not littoral; racemes laxly flowered; capsule small, dry; perianth recurved from near the base:

Scape-base minutely, sparsely hairy, seldom glabrous; leaves rough, flat or rolled; lowest branches not trichotomous; perianth segments ca. 8 mm long; filaments yellow at the base (southern and south eastern Cape)..... 22. *T. revoluta*

Scape-base glabrous; leaves terete, smooth, sometimes glutinous; branches of raceme alternate or the 3 lowest trichotomous with the apex of the scape clavate; perianth segments ca. 12 mm long; filaments yellow in the middle (Kalahari sandveld) 23. *T. laxa*

Flowers yellow, plants slender, laxly flowered; pedicels up to 15 mm long..... 24. *T. arvensis*

Squamae surrounding shoots present, bursting when plants develop (often worn away in older specimens); leaves and scapes arranged vertically on the narrow rhizome; leaf- and scape-bases surrounded by thin, smaller inner squamae, which are usually different to the outer ones; roots various; perianth spreading or recurved; filaments uniform or slightly dimorphous:

Roots many, not fused or contracted:

Leaves 2 or few, opposite, flat, up to 5 cm wide, smooth or usually muricate; roots many, usually fairly thin and long..... 25. *T. muricata*

Leaves many (if few, roots spindleshaped), linear, hairy or glabrous; squamae numerous, white, entire or inner fimbriate:

Roots somewhat spindleshaped; inner squamae often fimbriate; leaves minutely setaceous or glabrous; filaments minutely papillate..... 26. *T. bulbinifolia*

Roots not spindleshaped, usually long, felted:

Plants lanate; inflorescence umbellate (Namib)..... 27. *T. lanata*

Plants with retrorse, coarse hairs; inflorescence not umbellate, compact; flowers mauve or pinkish (Karoo)..... 28. *T. thyrsoides*

Roots few, contracted, bulbous, often fused into one or a few hard tubers or tuber split at the base into several points:

Pedicel recurved in fruit; small plants; leaves few, flat, glabrous, linear-lanceolate, usually transversely plicate..... 29. *T. tortilis*

Pedicels patent or erect in fruit:

Ovules 12-16 per cell; ovary oblong; leaves linear, up to 5 mm wide, glabrous or with reflexed, long, silky hairs, wavy when young; large plants up to 40 cm high; panicles divaricate with accessory branches in nearly all axils; pedicels short ascending; capsule ultimately touching rhachis; roots usually fused, often hard... 30. *T. jacquiniana*

Ovules 6-11 per cell; ovary ovoid; leaves filiform or (in *T. paniculata*) linear-lanceolate, variously hairy or glabrous; plants usually up to 30 cm high; panicles with or without accessory branches:

Leaves few, flat, linear-lanceolate, ca. 1 cm broad, glabrous above, shortly pubescent below; panicle with accessory branches; roots soft, bulbous, not fused 31. *T. paniculata*

Leaves several, filiform or linear, less than 1 cm broad, glabrous or variously pubescent:

Capsule, pedicel and rhachis shortly setose with sparse, reflexed bristles; squamae forming a long neck, often transversely striped with dark bands.... 32. *T. zebrina*

Capsule, pedicel and rhachis glabrous:

Pedicels 1-3 cm long, patent:
Inflorescence about as long as the leaves, pedicels up to 3 cm long, side-branches of inflorescence about as long as main branch; roots fused into a hard tuber split below..... 33. *T. karrooica*

Inflorescence overtopping the leaves, divaricately branched with many accessory branches; pedicels 10-15 mm long; squamae usually forming a long, sleek, brown neck; root-tubers not fused..... 34. *T. patens*

Pedicels short, less than 1 cm, erect, capsule ultimately touching rhachis:

Leaves 3-15, soft, more or less flat above, convex below, glabrous or with a few to many, retrorse bristles along margin; bracts aristate; raceme simple or few-branched; small plants..... 35. *T. oligotricha*

Leaves 2-6, usually wavy, wiry, light green, ribbed, muricate or glabrous; scape shortly hairy or glabrous; bracts aristate; plants variable in size 36. *T. flexifolia*

Leaves ca. 3, filiform, straight; plants glabrous, racemes divaricate, laxly flowered; bracts minute, mucronate; outer squamae hard, brown, forming a neck, inner thin, breaking up into shreds..... 37. *T. dissecta*

Section 3. GLANDULIFERA.

Roots wiry or stout and woody, often with some fusiform swellings near the tips. *Rhizome* woody, sometimes produced into short branches. *Leaves* uniform, triquetrous or flat and keeled, glabrous or hairy, bases often persisting as fibres. *Inflorescences* branched, often with accessory branches, rarely simple through reduction. *Perianth* erect, rotate, maculate; filaments spreading, uniform, shortly scabrid; ovules 6-2 per cell, the lower sometimes abortive. *Capsule* covered with a few to many gland-tipped tubercles, usually obovoid or with a short stipe. *Seeds* verrucose. *Glands* few to many, either confined to a few on the ovary, which become stipitate when the capsule develops, or the whole raceme glandular; in some species the raceme is scabrid with truncate, gland-tipped tubercles; the glands disappear with age.

DISTRIBUTION: Two species are endemic in or near the Cape Peninsula in sandy habitats, a third is found only in South West Africa, the majority occur in the eastern Cape, northwards to the eastern Transvaal, on mountain grasslands or in marshy places, extending as far as Nyasaland.

Leaves in a terminal fascicle at the end of very short, woody branches; ovules 2 per cell:

Pedicels patent, recurved at the apex in fruit (South Western Cape):

Capsule ob-triangular, contracted at the base, with a few gland-tipped tubercles and some transverse ridges..... 38. *T. scabra*

Capsule globose (stipe hidden) densely covered with dendroid, gland-tipped tubercles 39. *T. sabulosa*

Pedicels erecto-patent in fruit; plants densely glandular, glands shortly stipitate (South West Africa)..... 40. *T. glandulosa*

Leaves rosulate or somewhat distichous from a basal rhizome; pedicels erect or twisted; ovules 6-2 per cell (eastern Cape to eastern Transvaal):

Ovules 6-4 per cell; base of plant fibrous; capsule not horned:

Capsule ca. 5 mm in diam. when fully developed (unknown in *T. capillata*) with few to many short gland-tipped tubercles and some transverse ridges on the skin:

Roots thin fibrous, fusiform near the tip:

Leaves filiform to linear, usually 15-20 cm long, tapering to the apex, grasslike 41. *T. asperata*

Leaves few, triquetrous, over 40 cm long, each face ca. 8 mm broad, soft, with soft golden hairs..... 42. *T. capillata*

Roots red, stout, ca. 4 mm in diam. cylindrical; leaves flat, somewhat distichous; pedicels erect..... 43. *T. erythrorrhiza*

Capsule ca. 10 mm in diam. when fully developed, burry, being covered with pectinate, gland-tipped tubercles; robust plants with hairy leaves and scabrid-glandular, branched racemes..... 44. *T. gerrardii*

Ovules 2 per cell; base of plant not fibrous; capsule with 3 lateral horns..... 45. *T. giffenii*

Section 1. LIRIOTHAMNUS (Schltr.) Oberm., stat. nov.

Liriothamnus Schltr. in Not. Bot. Gart & Mus., Berlin 9: 145 (1924).

1. *T. adamsonii* (Compton) Oberm., comb. nov.

Liriothamnus adamsonii Compton in J. Bot. Lond. 69: 10 (1931). Type: south western Cape, Vanrhynsdorp, mouth of the Doorn River near Klaver, *Compton* (NBG. 318/22, holo.!).

Shrubs with a vertical, woody stem, up to 180 cm high, branched near the apex. *Roots* about 5 mm in diam. lanate. *Stems* ca. 2 cm in diam. covered with hard leaf-bases which may eventually disappear. *Leaves* in tufts near the apex, somewhat fleshy glaucous, glabrous, 16-30 cm long, 15-35 mm wide, with about 25 nerves, margin minutely denticulate. *Inflorescence* axillary, simple or with 1-2 small basal branches, 30-50 cm long, bracts widely ovate, long acuminate, 10 mm long, 3 mm wide, membranous, margin minutely denticulate; pedicels erect, stout, up to 10 mm long in fruiting stage. *Flower* with perianth white or faintly flushed with pink, maculate and probably recurved; segments up to 14 mm long; filaments scabrid; ovary with ca. 9 ovules per loculus, style terete, stigma minute. *Capsule* erect, ovate, 12 mm long, 5 mm broad, apex obtuse. *Seeds* 3 mm long, tuberculate.

Flowering Period: August.

DISTRIBUTION: Only known from the type area.

CAPE.—Clanwilliam: Doorn River Bridge, *Compton* 22779 (NBG); Doornpoort, *Hall* 810 (NBG).

Live plants of this interesting species were collected by Compton in 1922 and cultivated at Kirstenbosch where they flowered in August, 1926. Adamson collected fruiting material at the type locality in September 1923 and examined the secondary thickening of the stem which was like that of *Dracaena*.

2. *T. involucrata* (Bak.) Oberm., comb. nov.

Anthericum involucratum Bak. in J. Linn. Soc. 15: 311 (1876). Type: Cape, Namaqualand near Mierenkasteel, *Drège* 2681 (K, holo., L, iso.! PRE, photo.).

Liriothamnus involucratus (Bak.) Schltr. in Notizbl. Bot. Gart. & Mus. Berlin 9: 145 (1924).

Small gnarled, woody shrubs up to 60 cm high. *Roots* many, slightly thickened, lanate. *Stems* ca. 1 cm in diam. at the base, 3 mm in diam. near the tips. *Leaves* in tufts near the apex usually on short young branches; leaf-bases forming a membranous, wide, conspicuous tube sometimes produced into a denticulate point opposite the lamina; lamina terete, succulent, ca. 17 cm long, ca. 6 mm in diam. glaucous, glabrous, canaliculate, long acuminate in upper half. *Inflorescence* simple or branched, up to 26 cm long; bracts small, 7 mm long, acuminate, scarious; pedicels up to 2 cm long in fruit, recurved in an S-shaped loop. *Flower* with perianth rotate, immaculate, white, segments 10 mm long, 2 mm broad: filaments spreading, scabrid; ovary globose with about 9 biseriolate ovules per cell. *Capsule* pendulous narrowly ovoid, 18 mm long, tapered below and above; opening at the apex where the points then recurve giving it a 3 horned appearance. *Seeds* (immature) verrucose?

Flowering Period: July. A faint scent was noted at times when a plant flowered at the Division of Botany.

DISTRIBUTION: Namaqualand.

CAPE.—Namaqualand: Richtersveld, Twee Rivieren, *Marloth* 12268 (PRE); Kubus Mt., *Dyer & Verdoorn* 1841 (PRE); Nigramoep, *Acocks* 19355 (PRE); Karee Mt., *Schlechter* 8190 (PRE).

3. *T. acocksii* Oberm., sp. nov., distincta, nullis e specibus notis propinqua.

Plantae ad 45 cm altae gregariae, caulibus brevibus lignosis. *Folia* glabra glauca dura, 12–30 cm longa, basi reliquiis penniformibus breves erecti. *Flores* basi cupuliformes; ovula in loculis 4. *Capsula* globosa parva stipitata. *Semina* glabra.

Small glabrous, glaucous shrublets up to 45 cm high, with hard leaves, growing in dense clumps. *Roots* hard, woody. *Stems* short, branched, woody, densely covered with the congested, hard quill-like leaf-bases. *Leaves* 12–30 cm long, triangular in cross-section, hard, glaucous, glabrous, straight or with a lax spiral twist when young. *Inflorescence* a simple raceme up to 50 cm long; bracts minute, subulate, membranous, white; pedicels erect, up to 15 mm long in fruit. *Flower* with perianth forming a short cup at the base, segments white, spreading, keel broad and dark; filaments uniform, spreading; ovary with ca. 4 ovules per cell. *Capsule* globose, dry, 5 mm in diam., contracted at the base. *Seeds* about 2 per cell, smooth, grey.

Flowering Period: January–May, apparently after rains.

DISTRIBUTION: Recorded only from the Great Karroo, where the plants are confined to the eastern slopes growing high up on rugged hills, amongst boulders.

CAPE.—Britstown: Brewershoek, *Loots* (PRE, 7609). Beaufort West: *Watt* (PRE, 26454); near Nelspoort, *Acocks* 15877 (PRE). Richmond: 7 miles W. N.W. of Richmond, *Acocks* 16338 (PRE, holo.).

4. *T. burkei* (Bak.) Oberm., comb. nov.

Anthericum burkei Bak. in J. Bot. Lond. 1872, 140; in J. Linn. Soc. 15: 298 (1876).

Type: Transvaal, Apies River, *Burke* (K, holo.). The locality is doubtful as the species occurs only in the eastern Kalahari sandveld.

Bulbinella burkei (Bak.) Benth. in Gen. Plant. 3: 784 (1883); Bak. in Fl. Cap. 6: 358 (1896).

Hard, grasslike plants forming short, woody stems at the base which are densely covered with reticulate fibres. *Roots* many, covered by a short, felted covering of root hairs. *Stems* short, woody below, the new shoots formed laterally, covered with the tubular, reticulated leaf-bases which afterwards remain as coarse, long fibres. *Leaves* few, the long, reticulated leaf-bases tightly clasped around the young leaves and bases of scapes, venation consisting of parallel sclerenchymatous veins connected by ascending oblique lateral veins; lamina semi-terete, flattened above, up to 40 cm long, 2 mm wide, hard. *Inflorescence* a divaricate raceme with di- and trichotomous branching, ca. 30 cm tall; scape short, arcuate at the base, terete, glabrous; pedicels, patent, up to 15 mm long; bracts minute, subulate. *Flower* with perianth spreading or slightly recurved, segments ca. 6 mm long, maculate with 2 green or dark spots at the base; filaments erect shortly scabrid; ovary with 2 ovules per cell. *Capsule* small, erect, ca. 5 mm, somewhat 3 lobed, constricted at the base. *Seeds* apparently 1 per cell (no ripe seed seen).

Flowering Period: September–March. Flowers sweetly scented (*Acocks*).

DISTRIBUTION: A psammophyte found in the south eastern Kalahari sandveld. Recorded from the Kimberley district, north western Free State, south western Transvaal and Bechuanaland.

CAPE.—Kimberley: near Riverton, *Acocks* 742 (PRE).

ORANGE FREE STATE.—Boshof: Smitskraal, *Burt Davy* (PRE 11312, 11356).

TRANSVAAL.—Christiana: Kameelpan, *Theron* 518 (PRE). Wolmaransstad: Boskuil, *Sutton* 53 (PRE). Lichtenburg: *Kinges* 1890 (PRE). Mafeking: *Brueckner* 451 (PRE), *Leistner* 568 (PRE).

BECHUANALAND.—14 miles N.W. of Molepolole, *Codd* 8943 (PRE).

The reticulate structure of the persistent long leaf-base, resembling some *Bulbinella* species is unique in the genus. This character no doubt induced Bentham to place it in that genus but the structure of the flower and capsule make it a *Trachyandra*.

5. *T. saltii* (Bak.) *Oberm.*, comb. nov., aggregate species.

Anthericum saltii Bak. in J. Linn. Soc. 15: 309 (1876); in Fl. Trop. Afr. 7: 492 (1898). Fig. 5.

Grasslike plants 10–50 cm high. *Roots* many, wiry, fairly stout. *Rhizome* vertical. *Leaves* variable in size, filiform to linear, 5–50 cm long, 1–25 mm wide; lamina flat or rolled, tapering to the apex, below gradually dilated into a tubular, membranous base, mouth fimbriate; glabrous or pubescent with long straight hairs sometimes intermixed with short curly hairs; nerves in basal part of leaf sometimes persistent as fibres (if sclerenchymatous because of dry conditions). *Inflorescence* a simple raceme, usually many-flowered; several young racemes usually present near the base of the plant; scape arcuate near the base, protruding outside the leaf-rosette, 6–40 cm long; bracts small, narrow, cuspidate, margin fimbriate or smooth; pedicels 8–15 mm long, ascending, sometimes recurved in fruit. *Flower* with perianth segments ca. 1 cm long, typical: stamens typical; ovary turbinate, with ca. 8 ovules per cell, the lower usually aborting. *Capsule* globose 5 mm in diam. glabrous, constricted at the base. *Seeds* grey, smooth.

Flowering Period: November–March after good rains. A number of flowers open in the afternoon and fade during the night, the inflorescence finishing its flowering period in 2 or 3 days. Young inflorescences are present below and emerge at the next favourable opportunity.



FIG. 5.—*Trachyandra saltii* (Bak.) Oberm. a, habit, $\times \frac{1}{2}$. b, tubular leaf base, enlarged. c, gynaecium. d, stamen. e, capsule.

DISTRIBUTION: Common on the highveld and eastern grassveld of the Cape, Natal, Orange Free State and Transvaal, Bechuanaland, South West Africa, Southern Rhodesia and extending northwards to Abyssinia. Absent from the karroo and winter-rainfall districts.

This species seems very adaptable; it has been found in dry surroundings growing only a few inches high or near the river banks, 20 inches high. It has been described several times throughout its range but no sound differences could be found between the synonyms cited. Mr. John Lang of the British Museum was kind enough to compare specimens from South Africa with the type of *Anthericum saltii* Bak. and he found them to be conspecific.

Baker and others after him, attached some importance to the absence or presence of basal fibres, referring the fibrous ones to *Anthericum micranthum* Bak. and those without to *A. elongatum* var. *holostachyum* Bak. This sclerenchymatous tissue is developed more profusely under dry conditions, but has no systematic value.

From the ample material seen, I could group the specimens roughly into 3 forms. These were not restricted to geographical areas. The distribution for instance of the var. *secunda* with pedicels recurved in fruit, agrees with that of var. *saltii* in South Africa. The var. *oatesii* with its long, erect, pedicels was found in Southern Rhodesia and in the Kimberley area; side by side, however, the var. *saltii* with short, erect pedicels also appeared.

KEY TO VARIETIES

Pedicels erect in fruit:

- | | |
|---|------------------------|
| Pedicels, ca. 1 cm long..... | a. var. <i>saltii</i> |
| Pedicels ca. 2-3 cm long..... | b. var. <i>oatesii</i> |
| Pedicels recurved and often pseudo-secund in fruit, ca. 15 mm long..... | c. var. <i>secunda</i> |

(a) var. *saltii*.

Anthericum saltii Bak. in J. Linn. Soc. 15: 309 (1876). Type: Abyssinia, *Salt* (BM, holo.). *A. micranthum* Bak. in J. Bot. 1891, 71; et in Fl. Cap. 6: 388 (1897). Type: Cape, Griqualand West, du Toit's Pan near Kimberley, *Elliott* 1220 (K, holo., incomplete, according to Miss Kies who examined the type). *A. elongatum* var. *holostachyum* Bak. in Flor. Cap. 6: 389 (1897). Type of var.: Cape, Griqualand East, *Tyson* 2122 (K, holo.). *A. crassiusculum* Dinter in Fedde, Rep. 29: 266 (1931). Poelln. in Fedde, Rep. 52: 235 (1943). Type: South West Africa, Otavi, *Dinter* 5275 (B, holo.! PRE, photo.). *A. aristatum* Poelln. in Fedde, Rep. 50: 321 (1941); et in Fedde, Rep. 52: 234 (1943). Type: South West Africa, Grootfontein, *Schoenfelder* 919 (B, holo.!, PRE, iso.!). *A. brevitepalum* Poelln. in Bol. Soc. Brot. 16, 2: 71 (1942). Type: Transvaal, Komatipoort, *Schlechter* 11846 (B, holo.!, PRE, photo.). *A. gracilitepalum* Poelln. in Bol. Soc. Brot. 16, 2: 53 (1942). Type: Transvaal, Middelburg, Nazareth, *Schlechter* 4480 (B, holo.!, PRE, BOL, iso.!). *A. amboense* Poelln. in Fedde, Rep. 52: 233 (1943). Type: South West Africa, Amboland, Umkuanyama, *Rautanen* 439 (B, holo.? probably destroyed; K, iso.). *A. cepaeefolium* Dinter apud Poelln. in Fedde, Rep. 52: 235 (1943). Type: South West Africa, Windhoek, Auas Mts., *Dinter* 1885 (B, syn.? probably destroyed, NBG, iso.!) Gaub, *Dinter* 2458 (NBG, iso.!). *A. lanzae* Cuf. in Miss. Biol. Borana, Racc. Bot. Angiosp. IV, 306, photo, p. 307 (1939), e descr. Type: Eritrea; Arero, *Miss. Biol.* 321 (RO, syn.); Javello, *Miss. Biol.* 544 (RO, syn.) *A. kässneri* Poelln. in Fedde, Rep. 50: 322 (1941) e descr. Type: Kenya, *Kässner* (B, holo.?).

SOUTH WEST AFRICA.—Grootfontein: Auros, *Volk* 801, 8368 (M). Keetmanshoop: Western Karasberg, *Pearson* 7970 (BOL, distributed under the name *A. pilosum* Bak.). **CAPE.**—Barkley West: Newlands, *Ferrar* 24 (NH); Warrenton: near Warrenton, *Hafström* H950 (PRE). Kimberley: *Acocks* 77 (PRE), *Esterhuysen* 1159 (BOL).

Griqualand East: near Clydesdale, *Tyson* 2122 (GRA). Middelburg: Bangor farm, *Bolus* 14047 (BOL), *Gill* 109 (PRE).

BASUTOLAND.—LERIBE, *Dieterlen*, 322, 348 (PRE).

ORANGE FREE STATE.—Fauresmith: *Smith* 960 (PRE). Kroonstad: *Pont* 625 (PRE).

Vrededorst: *Parys*, *Bruce* 145 (PRE). Bloemfontein: *Lam & Meeuse* 4787 (L.).

NATAL.—Estcourt: *Acocks* 10610 (PRE). Polela: *Killick & Marais* 2089 (PRE).

TRANSVAAL.—Sibasa: Kruger National Park, Baiandbai *Lang* (TM 32150, PRE, NH); near Punda Maria, *Lang* (TM 31107, PRE). Warmbaths: *Sidey* 1159, *Collins* 2409 (PRE). Carolina: *Galpin* 12211 (PRE). Germiston: Modderfontein, *McLean* (PRE). Heidelberg: Suikerbosrand, *Schlechter* 3498 (PRE, BOL). Christiana: *Theron* 437 (PRE).

SOUTHERN RHODESIA.—Urungwe Reserve, Mgunje, *Wild* 4155 (SRGH, PRE); Mt. Selinda, *Hack* 54 (SRGH). Umtali, *Chase* 5938 (SRGH, PRE). Salisbury, *Wild* 3685 (SRGH).

NORTHERN RHODESIA.—Mapanza, Choma, *Robinson* 2948 (SRGH); Medinilunga, *Milne-Redhead* 1078 (PRE).

KENYA.—Ngong Hills, *Greenway* 8475 (PRE); western slopes of Kilimanjaro, *Greenway* 4394 (PRE); Moyale, *Gillett* 13980 (PRE; named *Anthericum lanzae* Cufodontis).

UGANDA.—Ruizi River, *Jarrett* 341 (PRE; named *A. kässneri* Poelln.).

(b) var. *oatesii* (*Bak.*) *Oberm.*, stat. et comb. nov.

Anthericum oatesii Bak. in J. Bot. Lond. 1878; 324; et in *Oates*, *Matab.* ed. 2: 411, t.13 (1889). Type: Southern Rhodesia, Matabeleland, *Oates* (BM, holo.). *A. betschanicum* Poelln. in Bol. Soc. Brot. 16, 2: 53 (1942). Type: Cape, Bechuanaland, Kuruman, *Marloth* 1014 (B, holo.!, PRE, iso.!).

SOUTHERN RHODESIA.—Umvukwes, Mazoe, *Wild* 3985 (SRGH). Matobo, *West* 2506 (SRGH). Farm Besnakobila, *Miller* 4867 (SRGH, PRE); Embakwe, *Feiertag* (SRGH, 45422). Makoni, Maidstone: *Norlindh & Weimarck* 4132 (SRGH).

CAPE.—Kimberley: Macfarlane, *Acocks* 1410 (PRE, BOL).

ORANGE FREE STATE.—Fauresmith: *Henrici* 4247 (PRE).

(c) var. *secunda* (*Krause & Dinter*) *Oberm.*, stat. et comb. nov.

Anthericum secundum Krause & Dinter in Engl. Bot. Jahrb. 45: 127 (1911). Poelln. in Fedde, Rep. 52: 260 (1943). Type: South West Africa; Grootfontein, *Dinter* 855 (B, holo.? probably destroyed; NBG, iso.!). The description noted that the pedicels were erect after the flowers had dropped off; probably the flowers were not fertilised. The type number in NBG shows recurved, fruiting pedicels. In the original description the length of the pedicel was stated to be 1 dm, but this must have been 1 cm. In some specimens only four ovules were counted in a cell.

TRANSVAAL.—Pretoria: Magaliesberg, Witfontein, *Smith* 12 (PRE); Wonderboom, *Repton* 2762 (PRE). Germiston: Modderfontein, *Conrath* 660, 665 (GZU). Nelspruit: Pretorius Kop, *van der Schijff* (PRE). Pietersburg: *Moss* 15665 (PRE, J.). Pilgrim's Rest: Calais, *Killick & Strey* 2557 (PRE).

ORANGE FREE STATE.—Senekal: Doornkop, *Goossens* 684 (PRE).

CAPE.—Albert: Burgersdorp, *Pocock* 103 (GRA).

NATAL.—Hlabisa: *Ward* 1557 (PRE). Richard's Bay, *Lawn* 1728 (NH).

PORTUGUESE EAST AFRICA.—Delagoa Bay, *Junod* 399 (SRGH); Inyamosan, *Schlechter* 12072 (PRE).

NYASALAND.—Zomba, *Jackson* 2082 (SRGH).

SOUTHERN RHODESIA.—Inyanga, *Chase* 3683 (SRGH); *Fries*, *Norlindh & Weimarck* (SRGH).

6. *T. esterhuysenae* Oberm., sp. nov. *T. saltii* affinis sed plantis glabrescentibus ovulis duobus differt.

Plantae graminiformes. *Folia* subteretia glabra, basi reliquiis duris longis fibrosis. *Racemi* simplices ad apicem congesti; scapus bracteis minutis; pedicelli erecti. *Ovula* in loculis 2 pendula. *Capsula* erecta globosa.

Grass-like plants up to 50 cm long. *Roots* unknown. *Rhizome* unknown. *Leaves* semiterete to narrowly linear, up to 50 cm long, 1–2 mm broad, glabrous; leaf-bases persisting as hard, long fibres. *Inflorescence* simple, flowers aggregated near the apex; scape erect, straight, up to 50 cm long, with some empty bracts below raceme; bracts small; pedicels short ca. 5 mm long, ascending to erect. *Flower* with perianth segments ca. 5 mm long; filaments papillate (nearly smooth in one flower); ovary with 2 pendulous, collateral ovules in each loculus. *Capsule* (immature) globose, erect.

Flowering Period: February.

DISTRIBUTION.—Apparently confined to high altitudes on mountains in the south western Cape districts.

CAPE.—Worcester: Slanghoek Mts., Observation Peak, shale band, *Esterhuysen* 5613 (BOL, holo.!, PRE, photo.). Caledon: Kogelberg, *Esterhuysen* 9961 (BOL). Stellenbosch: Hottentots Holland Mts., above Diepgat, *Esterhuysen* 16728 (BOL); Banhoek Kloof, *Esterhuysen* 19902 (BOL). Piketberg: Twenty-four Rivers Mts., above Porter-ville, sandy, swampy flats, *Esterhuysen* 16616 (BOL).

The 2 pendulous collateral ovules show affinity to *Bulbinella*, which it does resemble superficially. In *Bulbinella* however, the perianth is star-shaped and persistent whereas our species has a typical *Trachyandra* perianth, for in fading the segments fuse above the ovary, and it then drops off, where the pressure of the expanding capsule tears it apart. The species resembles *T. tabularis* but this species has a branched inflorescence and 6 ovules per cell to mention but a few differences.

I have named it after Miss E. Esterhuysen who collected it in four different localities. So far there is no record of anybody else having collected it.

7. *T. gracilentia* Oberm., sp. nov. *T. esterhuysenae* Oberm. affinis, sed ita differt: plantae pilis minutis albis crispis indutae, pedicelli longiores, loculi 6 non 2-ovulati.

Plantae graminiformes. *Radices* multae lanatae ad acumen tumescentes. *Folia* linearia tomentosa, pilis minutis albis crispis induta. *Racemi* simplices laxi, scapo tomentosio, pedicellis sub anthesi 15 mm longis. *Ovula* in 1. culis 6.

Grass-like plants up to 40 cm high. *Roots* many, covered with felted root-hairs; with some swellings near the tip. *Rhizome* small, woody. *Leaves* linear, rolled, 40 cm long, 1–2 mm broad, ribbed, evenly pubescent with small, white curly hairs, bases persistent but usually not breaking up into fibres. *Inflorescence* a simple, lax raceme, 20–30 flowered; scape slender terete, minutely pubescent; bracts minute, white, subulate, fimbriate, folded around pedicel: pedicels 15 mm in flower, spreading. *Flowers* with perianth probably spreading, thin, dark keeled, segments 1 cm long; stamens uniform, shortly scabrid; ovary with ca 6 ovules per cell. *Capsule* unknown.

Flowering Period: September.

DISTRIBUTION: Only known from type locality.

CAPE.—Calvinia, Lokenburg, Stinkfontein hills, on flat top; arid fynbos vegetation, *Acocks* 18550 (PRE, holo.!).

A graceful, grass-like plant distinguished from *T. esterhuysenae* by its pubescence, and the longer pedicels. Moreover the ovary contains 6 ovules per cell, not 2.

8. *T. reflexipilosa* (O. Ktze.) Oberm., comb. et stat. nov.

A. filiforme Thunb. var. *reflexipilosum* O. Kuntze, Rev. Gen. 3, 2: 315 (1898). Type: Natal, Charlestown, *Otto Kuntze* s.n. (K, holo.).

Setose, robust, many-leaved plants up to 70 cm high. *Roots* many, wiry, thin. *Rhizome* small woody. *Leaves* linear-lanceolate, up to 45 cm long, 8 mm broad, flat or slightly rolled, upper surface glabrous, lower ribbed, retrorsely fulvous setose on margin and ribs, seldom nearly glabrous. *Inflorescence* a simple, many-flowered, tall raceme, up to 1 m high; scape terete, retrorsely setose especially near the base and when immature; rhachis glabrous; bracts small, subulate, surrounding pedicel, fimbriate; pedicels slender up to 25 mm long in fruit, glabrous, irregularly spaced along rhachis and spreading haphazardly in all directions. *Flowers* with perianth segments spreading, 1 cm long; filaments scabrid, uniform; ovary with 6 ovules per cell. *Capsule* globose, 4 mm in diam. contracted at the base, glabrous. *Seeds* (immature) with oblong white raphides (?) on skin.

Flowering Period: October–March.

DISTRIBUTION: Northern Natal, Swaziland, eastern Transvaal, eastern Southern Rhodesia, on moist grassland, swamps or black turf.

NATAL.—Vryheid: *Burt Davy* (PRE, 11470).

SWAZILAND.—Mbabane, Forbes Reef Road, swamp, *Compton* 27574. (PRE); Hull's Farm, *Compton* 25431 (PRE).

TRANSVAAL.—Lydenburg: *Wilms* 1507 (PRE, L). Pilgrims Rest: Graskop, *Galpin* 14480 (PRE). Nelspruit: Mauchsberg, Sabie, *Smuts & Gillett* 2289 (PRE). Barberton: Shiya-lo-ngubo Dam, *Codd* 6426 (PRE). Witbank: Springbok Colliery, *Kies* 388 (PRE).

SOUTHERN RHODESIA.—Melsetter: Chimanimani Mts., Mt. Poza, grasslands, *Goodier* 509 (SRGH, PRE).

A mountain grassland species resembling *T. saltii* but distinguished by the long, reflexed tawny hairs, which are characteristic especially on the young racemes emerging from between the leaves. The thin, untidily straggling pedicels are also typical. In drying the plants usually turn black.

9. *T. margaretae* Oberm., sp. nov., *T. saltii*, affinis, sed ovario piloso differt.

Plantae graminiformes gregariae. *Radices* fibrosae durae. *Folia* filiformia leviter hirsuta pilis patentibus. *Racemi* simplices, primum prope apicem floribus congesti, scapo sub anthesi extendo. *Ovarium* hispidum pilis longis erectis indutum; ovula in locis 4–6.

Hard, grasslike plants growing in clumps up to 60 cm high. *Roots* hard, thin, woody. *Rhizome* small, woody. *Leaves* terete or linear, up to 40 cm long, 2 mm broad, canaliculate or rolled, ribbed, hard, sparsely hairy with small patent hairs or nearly glabrous, leaf-bases persistent as fibres. *Inflorescence* simple, glabrous, flowers at first congested near the apex, rhachis elongating during anthesis; scape terete; bracts small, clasping the pedicel, subulate, fimbriate; pedicels ascending, up to 12 mm long. *Flowers* with white, glabrous perianth segments 1 cm long; filaments very shortly scabrid; ovary densely covered with long erect hairs; ovules 4–6 per cell. *Capsule* not seen.

Flowering Period: August–November.

DISTRIBUTION: Natal, eastern Transvaal to Woodbush Mts., apparently in damp grassveld.

TRANSVAAL.—Barberton: Saddleback Mountain, summit, damp hollows, *Galpin* 538 (PRE, holo.). Nelspruit: Sabie, *Pole Evans* (PRE, 28725, SRGH). Pietersburg: Woodbush Mts., grassveld, *Moss* 15434. (PRE, J).

NATAL.—Utrecht: Tweekloof, *Thode* A388 (PRE). Estcourt: Cathedral Peak, *Esterhuysen* 15464 (BOL).

The species is closely related to *T. saltii* but the hairy ovary is a very unusual feature. Professor C. E. Moss named the plant *margaretae* after his wife, but he did not publish the name.

10. *T. affinis* Kunth, Enum. 4: 579 (1843). Type: Cape, Port Elizabeth, Addo, Drège 8727 (P, iso., PRE, photo.).

Anthericum affine Bak. in J. Bot. Lond. 10: 138 (1872).*

A. pubescens Bak. in J. Linn. Soc. 15: 309 (1876) et in Fl. Cap. 6: 390 (1897). Type: Cape, Mountain grassland near Somerset East, MacOwan 1589 (K, holo.). *A. pudicum* Bak. in Fl. Cap. 6: 388 (1897). Type: Cape, Uitenhage, amongst shrubs near the Zwartkops River, Zeyher 1070 (K, holo., BOL, PRE, iso.). *A. longiciliatum* Poelln. in Bol. Soc. Brot. 16, 2: 54 (1942). Type: Cape, Bathurst, Trapp's Valley, Daly 561 (B, holo.! PRE, photo., GRA, iso.). *A. pseudofalcatum* Poelln. in Bol. Soc. Brot. 16, 2: 63 (1942). Type: Cape, Port Elizabeth, Zwartkops River, Ecklon & Zeyher, Aspod. 113 (B, holo.!, PRE, photo.). Poellnitz in his description mentions that the collector and locality were unknown; apparently he was unaware of the Ecklon & Zeyher system of numbering places. *A. longifolium* var. *burchelli* Bak. in J. Linn. Soc. 15: 312 (1876) et in Fl. Cap. 6: 394 (1897). Type of var.: Cape, Port Alfred, Burchell 3795 (K, holo.).

Slender or fairly robust plants up to 1 m high, solitary or a few together. *Roots* wiry. *Rhizome* small. *Leaves* erect, somewhat fleshy, semiterete to linear, tapering towards the apex, canaliculate above, up to 40 cm long, 8–16 mm broad, usually glabrous, occasionally margin ciliate or lamina pubescent; mouth of tubular base fimbriate. *Inflorescence* erect, branched, laxly flowered up to 1 m high; scape somewhat compressed, pubescent; bracts small, ovate, acuminate; pedicels usually up to 16 mm long in fruit (up to 4 cm in one variety), erect. *Flowers* white with spreading perianth segments 12 mm long, immaculate; filaments scabrid; ovary with 6 ovules per cell. *Capsule* globose, 5 mm in diam. *Seeds* smooth.

Flowering Period: September–June. Flowers sometimes opening fairly early in the day, sweet smelling.

DISTRIBUTION: Humansdorp to Durban, in clearings or on grassy slopes near the coast.

CAPE.—Humansdorp: Eerste River, Fourcade 1186 (BOL); Hankey, Fourcade 3328 (PRE). George: Sinksa Bridge, Wasserfall (PRE). Uniondale: Joubertina, Esterhuysen 7099 (BOL); Haarlem, Esterhuysen 6034 (BOL). Bathurst: Port Alfred, Rogers 28057 (GRA); Tyson (BOL 25743, GRA 10, PRE, in Herb. Marloth 8510); Acocks 17692 (PRE). King William's Town: Tyson 3072; Sim 1513 (BOL); Galpin 5955 (PRE). Albany: Grahamstown, Daly & Sole 100 (GRA); 319 (PRE); Britten 5169, 5137 (GRA); near Grahamstown, Dyer 2108 (GRA); Botha's Hill, Lotsy & Goddyn 149, 171 (L). Kentani: Nobongubo, Pegler 1397 (GRA); Qolora Mouth, grassy slopes, Pegler 1349 (BOL).

NATAL.—Umzinto: Scottburgh, in clearings along railway line, Mauve 4050 (PRE). Claremont: Wood 7727 (NH).

The species is variable in size, pubescence and width of leaf, no doubt due to the variation in climate. The specimens from George are usually smaller and more pubescent than those from the warmer Natal South Coast. Some collectors record that the plants appear after veld fires which stimulate early development. As a result of injuries, usually from veldfires, the side branches of the raceme are often mutilated and remain as small bracteate buds near the base of the scape. The apical bud however, probably originally protected by the tissues of the side-branches, is stimulated to develop into a long, densely flowered, simple raceme becoming prostrate with age. This traumatic form was described by von Poellnitz as a separate species, *A. pseudofalcatum* and by Baker as a variety, var. *burchellii*, of *A. longifolium*. Baker thought that the

* Baker places here *A. filiforme* β , Thunb. (L, holo., PRE, photo). I have not seen the actual specimen but this appears to be correct. In J. Linn. Soc. 15: 308 (1876) Baker makes it a variety, var. *affinis*, of *A. jacquinianum* Schult. f.

small bracteate buds, that is the injured, sterile side-branches, could give rise to new plants ("scapi elongati, decumbentes, pilosi, e nodis vivipari"), but this is a wrong interpretation.

Some specimens from the Cape, e.g. *Archibald* 5697 from Alexandria district, Langebosch Height, in pine plantations; *Acocks* 17692 from Bathurst district, Port Alfred, West Bank, flats below dunes, possess very long pedicels, reaching a length of up to 4 cm.

11. *T. brachypoda* (Bak.) Oberm., comb. nov.

Anthericum brachypodum Bak. in Fl. Cap. 6: 389 (1897). Duthie in Ann. Stell. Univ. 4, A: 10, t.II, fig. 4, 5 (1926). Adamson & Salter, Flora of the Cape Peninsula 183 (1950). Type: Cape, sand dunes near Cape Town, *Bolus* 3921 (K, holo.)* *A. lowryense* Bak. in Bull. Herb. Boiss. Ser. 2, 4: 996 (1904). Type: Cape, Somerset West, Sir Lowry's Pass, *Schlechter* 5364 (Z, holo!, B, GRA, iso!). *A. obtusifolium* Poelln. in Bol. Soc. Brot. 16, 2: 74 (1942). Type: Cape, Table Mountain, 1/17, *Bergius* (B, holo!, PRE, photo.). *A. validum* Poelln. in Bol. Soc. Brot. 16, 2: 79 (1942). Type: Cape, Malmesbury, near Hopefield, *Bachmann* 811 (B, holo!, PRE, photo.). *A. submaculatum* Poelln. in Bol. Soc. Brot. 16, 2: 78 (1942). Type: Cape, Swellendam, Rhenosterkop, *Schlechter* 10575 (B, holo!, PRE, photo.). There are only two buds on the plant. Von Poellnitz described the flower from a detached one in a capsule and noted it to be maculate. I doubt whether it belonged to this plant for *T. brachypoda* is immaculate. *A. tenuifolium* Adams. in J. S.A. Bot. 9: 137 (1943); Adamson & Salter, Flora of the Cape Peninsula 183 (1950), nom. nov. for *A. stenophyllum* Adamson (non Bak.) in J. S.A. Bot. 7: 189 (1941). Type: Cape Peninsula, Smitswinkel Bay, *Adamson* 3128 (BOL, holo!). *A. brachypodum* Bak. var. *caespitosum* Adamson in J. S.A. Bot. 7: 189 (1941). Adamson & Salter, Flora of the Cape Peninsula, 183 (1950). Type of var.: Cape Peninsula, between Rondebosch & Kenilworth, *Adamson* 2789 (BOL, holo.).

Plants up to 70 cm high, xerophytic, solitary or in clumps. *Roots* many, whitish, thin or slightly swollen at times. *Rhizome* horizontal, unbranched or branched, forming clumps of plants. *Leaves* 4–12 per tuft, often persisting for a long time, erect, linear, 20–50 cm long, 2–4 mm wide, sclerotic, ribbed, glabrous, the margins usually raised, yellow, occasionally with a spiral twist; sometimes outer leaves consisting of a membranous sheath only without a lamina. *Inflorescence* usually much taller than the leaves, branched or reduced to a simple raceme; lowest branches with unequal, accessory branches, scape terete, firm, shiny; bracts small, deltoid apiculate; pedicels short, up to 4 mm long in fruit, erect. *Flowers* with perianth immaculate, white, rotate; segments ca. 8 mm long; ovary with 4 ovules per cell; *Capsule* globose, ca. 5 mm in diam. *Seeds* ca. 2 mm in diam. black, minutely verrucose (mature?).

Flowering Period: October–April.

DISTRIBUTION: Cape Peninsula and surrounding districts, "damp sandy soils with humus" (*Adamson*); on Stellenbosch Flats in sandy stony places, locally frequent (*Duthie*).

CAPE.—Peninsula: Table Mountain, *Esterhuysen* 11680 (BOL); Constantia Corner, *Salter* 7164 (BOL); Vygekraal, *Wolley Dod*, 5577 (BOL). Stellenbosch: S.W. of Stellenbosch, *Salter* 2049 (BOL). Bredasdorp: Struys Bay, *Esterhuysen* 4387 (BOL). Swellendam: Rhenoster Hills, *Marloth* 12034 (PRE).

* In the Flora Capensis, *Ecklon & Zeyher*, *Asphod.* 106, from mountains near Simonstown, is also cited. Mr. W. Marais, who examined this specimen at K found it to be correctly named. In the Berlin Herbarium this number represents a plant of *A. hirsutum* Thunb. together with a detached inflorescence of an *Urginea* species. This collection was described by von Poellnitz as *A. praetermissum*, in Bol. Soc. Brot. 16, 2: 62, 1942, a nomen confusum, cf. p. 579.

Adamson separated those plants with persistent leaves growing in dense tufts, and with leaf margins not thickened, into the variety *caespitosum*. Duthie, who studied this species around Stellenbosch, noted that the leaves persisted long after flowering and that they sometimes formed tufts but she did not recognize two distinct varieties. It is the only species from the south western Cape to flower in summer.

12. *T. tabularis* (Bak.) Oberm., comb. nov.

A. tabulare Bak. in Fl. Cap. 6: 391 (1897). Adamson & Salter, Flora of the Cape Peninsula, 182 (1950). Type: Cape, Table Mountain, *Bolus* 4726 (K, holo., BOL, iso.). *A. palustre* Adamson in J. S.A. Bot. 7: 187, fig. 1 (1941); Adamson & Salter, Flora of the Cape Peninsula, 183 (1950). Type: Cape Peninsula, Patrys Vlei, *Salter* 8472 (BOL, holo.). *A. glabrum* Adamson in J. S.A. Bot. 7: 100 (1941); Adamson & Salter, Flora of the Cape Peninsula 182 (1950). Type: Cape Peninsula, Steenberg, *Adamson* 2768 (BOL, holo.).

Solitary, glabrous plants variable in size, up to 100 cm tall but usually much smaller. *Roots* wiry, thin. *Rhizome* small, woody. *Leaves* many, forming a basal, erect rosette; outer leaves smaller, often consisting only of a tubular sheath without a lamina; lamina of produced leaves linear to semi-terete, up to 50 cm long, 2–10 mm broad, long tapered in upper half, ribbed, margin minutely denticulate. *Inflorescence* divaricately few-branched or simple; lowest branches showing suppressed accessory branches; scape usually about as long as the leaves, firm, terete, arcuate; side-branches curved upwards, densely flowered near the top; bracts small, 5 mm, acuminate; a few sterile bracts from suppressed side-branches often present on scape; pedicels erect, up to 1 cm in fruit, those of dropped sterile flowers recurved. *Flowers* with perianth immaculate, white often tinged with pink; segments 14 mm long; ovary with 6 ovules per cell. *Capsule* globose, succulent, glabrous, sulcate 9 mm long. *Seed* rough, with 3 large crenulate ridges or wings.

Flowering Period: August–September.

DISTRIBUTION: Known only from Table Mountain and surrounding mountains at fairly high altitudes, often on wet cliffs.

CAPE.—Peninsula: Patrys Vlei, *Salter* 8534 (BOL); Cirkels Vlei, *Leighton* 667 (BOL); Kommetjie near Simonstown, *Galpin* 4749 (PRE). Table Mountain, *Marloth* 776 (PRE), 14056 (PRE), *Haagner* (Conrath 778, GZU). Caledon: Berg, Kleinmond, *de Vos* 231 (BOL).

In the herbarium, Adamson's two species, *A. glabrum* and *A. palustre* could not be separated from *T. tabularis*. They may be forms however that show differences in their natural habitat.

13. *T. hirsuta* (Thunb.) Kunth, Enum. 4: 577 (1843).

Anthericum hirsutum Thunb., Prod. 63 (1794) et in Fl. Cap. ed. Schult. 322 (1823). Bak. in J. Bot. Lond. 1872: 139 et in Fl. Cap. 6: 394 (1897); Duthie in Ann. Stell. Univ. 4, A: 8, t2, fig. 1, 10 (1926); Adamson & Salter, Flora of the Cape Peninsula, 182 (1950). Type: Cape, *Thunberg* (UPS, holo., PRE, photo.).

T. corymbosa Kunth, Enum. 4: 577 (1843). Type: Cape, Table Mountain, *Drège* 8716 (P. iso., PRE, photo.). In E. Meyer's Zwei Pflanzengeogr. Documente, *Drège* 8716 was said to have been collected in the Tulbagh district, Klein Drakenstein between Berg River and Drakenstein Berge but the Paris specimen gives the locality as Table Mountain.

Plants up to 60 cm high. *Roots* thin, wiry, many, slightly swollen in spring. *Rhizome* small, compact. *Leaves* 4–6 per shoot, subdistichous, arranged in an erect fanlike manner, linear to broadly linear, 7–40 cm long, 5–20 mm broad, flat, striate, pubescent, firm, dark green, 2 inner smaller falcate; the basal tube often produced into a prominent triangular point opposite the lamina; outer leaves often short, or without a lamina. *Inflorescence* taller than the leaves, with a few ascending branches,

the lowest axils showing buds of suppressed, accessory branches, rarely simple; scape arcuate, firm, woody, pubescent, 30–40 cm long; racemes laxly flowered, elongating during anthesis; bracts small, subulate, ciliate; pedicels erect, up to 1 cm long and curving inwards in fruit. *Flowers* with perianth rotate, immaculate; segments 10–12 mm long; stamens spreading; ovary with 6 ovules per cell. *Capsule* globose, 6 mm, glabrous. *Seed* verrucose, grey, 3 mm.

Flowering Period: September–October.

DISTRIBUTION: A mountain species found on the Peninsula and surrounding districts.

CAPE.—Cape Town: Devils Peak, *Bolus* 3794 (BOL); Peninsula, *Kuhl & van Hasselt* [L, 909, 84 (261)]; Kenilworth Race Course, *Salter* 7714 (BOL). Caledon: Koude Rivier, *Schlechter* 9730 (B, BOL, L.). Stellenbosch: *Duthie* 653 (BOL). Paarl: Hercules Pillar, flats at the North base, *Leighton* 558 (BOL). Malmesbury: near Darling, *Esterhuysen* 3873 (BOL). Piketberg: near Goedverwacht, *Bolus* (BOL, 25730).

Baker refers *Burchell* 4118 from the Bathurst district, Theophilis, to this species and mentions that it is a form with prostrate “viviparous” flowering stems. Although I did not see this specimen, I suspect that it is *T. affinis* Kunth, or possibly *T. ciliata*. *T. hirsuta* does not occur so far east.

The species was found in an unusual habitat in the Caledon district, near Bot River Lagoon, next to running water in a marshy area, growing in clumps; plants luxuriant, flowering profusely, September 1960, *Mauve* 4070 (PRE, NBG).

Section 2. TRACHYANDRA.

14. *T. chlamydophylla* (Bak.) Oberm., comb. nov.

Anthericum chlamydophyllum Bak. in Fl. Cap. 6: 389 (1897); *Duthie* in Ann. Stell. Univ. 4, A; 14, t.II, fig. 2, 11 (1926); *Adamson & Salter*, Flora of the Cape Peninsula 181 (1950). Type: Cape, Tulbagh Kloof, *MacOwan* 2603 (K, holo.).

Plants up to 70 cm high. *Roots* many, all alike, hard, thick, often covered with a tomentum of thick, long, felted root hairs. *Rhizome* compact, hard. *Squamae* brown, narrow tubular, several surrounding one leaf or scape (but none surrounding a shoot). *Leaves* numerous, terete or subterete, 30–70 cm long, 3–5 mm in diam. usually erect and straight, glabrous or slightly muricate, ribbed. *Inflorescence* a simple raceme with ca. 30 flowers, compact at first and shorter than the leaves, ultimately longer and then usually prostrate and falsely secund; scape arcuate at the base with a few sterile bracts (vestiges of suppressed side-branches); fertile bracts subulate, up to 7 mm long; pedicels patent, lengthening during anthesis, curved downwards near the base then spreading, up to 28 mm in fruit; scape and pedicels thickening markedly in fruiting stage. *Flowers* with perianth rotate, immaculate; segments 10–13 mm long; filaments subequal, erect or spreading; ovary with 4 ovules per cell. *Capsule* globose, ca. 8 mm in diam., persistent perianth-base wide, slightly scalloped. *Seeds* tetrahedral, 3–5 mm in diam.

Flowering Period.—August–November. Sweet scented.

DISTRIBUTION.—Cape Peninsula and surrounding districts. Although the type locality was stated to be Tulbagh Kloof, no subsequent collections were made from this area. *Duthie* remarks that it grows most luxuriantly on well-drained, sandy soil; when it occurs in other situations it is often much stunted.

CAPE.—Wynberg: Wynberg Hill, *Salter* 8993 (PRE) 8786 (BOL). Kirstenbosch, *Barker* 2607 (PRE). Stellenbosch: *Faure*, *Esterhuysen* 11927 (PRE, BOL). Paarl: *Klapmuts*, *Häfstrom & Acocks* 188 (PRE). Malmesbury: *Mamre*, *Leighton* 1822 (BOL). Worcester: *Botha's Halt*, *Gillett* 276 (BOL).

15. *T. hispida* (L.) Kunth, Enum. 4: 575 (1843).

Anthericum hispidum L., Spec. Pl. ed. 2 (1762); Jacq. Coll. Suppl. 91; l.c. 2: 17 t.409 (1786–1793); Thunb., Prod. 63 (1794) et in Fl. Cap. ed. Schult. 321 (1823); Willd., Spec. 2: 145 (1799); Bak. in Fl. Cap. 6: 393 (1897); Duthie in Ann. Stell. Univ. 4, A: 7, t.II, fig. 3, 7, 8 (1926); Adamson & Salter, Flora of the Cape Peninsula, 181 (1950). Type: Cape, *Thunberg* (Linn. H. Cat. 432–23, syn.; 432–24, syn., LINN. herb. PRE, photo.). I propose making this also the type species of the genus. *A. squameum* L.f., Suppl. 202 (1781). Roem. et Schult., Syst. Veg. 7: 481 (1829). Type: Cape, *Thunberg* (Linn. Herb. Cat. 432–22; LINN. holo., PRE, photo.). *A. undulatum* Thunb., Prod. 63 (1794) et in Fl. Cap. ed. Schult. 321 (1823); Willd., Spec. Plant 2: 140 (1799). Roem. & Schult., Syst. Veg. 7: 470 (1829). Type: Cape, *Thunberg* (LINN. Cat. no. 432–24, holo., UPS, iso., PRE, photo.). *A. paradoxum* Roem. & Schult., Syst. Veg. 7: 459 (1829). Type: Cape, without locality or collector (M, holo.!, PRE, photo.). The specimen bears a label with “1623” on it. *A. subpilosum* Poelln. in Bol. Soc. Brot. 16, 2: 64 (1942). Type: Cape, Piketberg, Piqueniers Kloof, *Schlechter* 10748 (B, holo.!, GRA, iso, PRE, photo.). *A. congestum* Adams. in J. S.A. Bot. 10: 133 (1944); Adamson & Salter, Flora of the Cape Peninsula, 181 (1950). Type: Cape, Claremont, *Salter* 8762 (BOL, holo.!). The number 8767 in the text is a misprint.

Phalangium squameum (L.f.) Poir. in Lam. Encyc. 5: 246 (1804).

Arthropodium hispidum (L.) Spreng. Syst. 2: 87 (1825).

Bulbinella? squamea (L.f.) Kunth, Enum. 4: 573 (1843).

Trachyandra undulata (Thunb.) Kunth, l.c. 583. *T. paradoxa* (R. & S.) Kunth, l.c. 576.

Small plants usually solitary or occasionally in clumps up to 30 cm high. *Roots* fleshy, swollen above, very irregular with numerous, filiform secondary roots. *Rhizome* small. *Squamae* membranous, large, surrounding a whole shoot as well as the base of the leaves and the scape individually, gaping, membranous, white. *Leaves* 2–5 per tuft, linear to linear-lanceolate, 6–45 cm long, 2–10 mm broad, straight or with a lax twist or occasionally, plicately folded, thin, flat, glabrous or hispid, often with a purple margin, glaucous, erect or prostrate. *Inflorescence* a simple, congested raceme; peduncle at first short, lengthening during flowering, 2–28 cm long, hispid or glabrous; bracts large, ovate-lanceolate, acuminate, up to 15 mm long, membranous; pedicels up to 3 cm long, hispid, curving down in fruit. *Flowers* with perianth hispid on outside, pinkish white, slightly spreading, immaculate; segments ca. 1 cm long; stamens dimorphous, filaments pink, inner more muricate than outer, ciliate at the base; ovary with 8 ovules per cell. *Capsule* ovate, glabrous, 4 mm. *Seed* 2 mm in diam.

Flowering Period: June–September; sweet smelling.

DISTRIBUTION: Cape and neighbouring districts; occasional on seasonally damp flats and lowest slopes on the Peninsula according to Adamson.

CAPE.—Cape Town: *Marloth* 165 (PRE), *Haagner* in herb. *Conrath* 1241 (GZU); Claremont Royal Observatory, *Adamson* 2950 (PRE); Rondebosch, *Bolus* 3731 (BOL), *Salter* 8762 (GRA, BOL); Wynberg, *Schlechter* 1060 (GRA); Green Point, *Tyson* (GRA). Caledon: Rivier Sonder Einde Mountains, *Wilman* 542 (BOL). Malmesbury: Mamre Hills, *Barker* 4606 (BOL). Stellenbosch: *Burmester* (GZU), *Duthie* 533 (BOL). Worcester: Stetty, *Leipoldt* 3384 (BOL). Clanwilliam: Doorn Rivier, *Schlechter* 8055 (B, BOL, PRE, L.). Hopefield: *Bolus* 12871 (BOL, NH).

Adamson records that the tubers may form buds giving rise to new shoots. He separated his species *A. congestum* because of its short peduncle whilst he also found it growing in clumps. Duthie found these various forms around Stellenbosch but did not separate them.

16. *T. peculiaris* (Dinter) Oberm., comb. nov.

Anthericum peculiare Dinter in Fedde, Rep. 29: 263 (1931); Poelln. in Fedde, Rep. 52: 254 (1943). Type: South West Africa, Lüderitz: Halenberg, 40 m. E. of Lüderitz Bay on a steep, hot slope of a mica schist mountain, Dinter 6651 (B, holo.! PRE, photo.).

Small plants up to 10 cm long. *Roots* tuberous, fused together and with the rhizome. *Squamae* short membranous white, gaping. *Leaves* few, linear, 10 cm long, 4 mm wide, glabrous. *Inflorescence* a congested raceme, many flowered; scape 6 cm long, hirsute; bracts ovate, white, membranous, glabrous, margins fimbriate; pedicels recurved in fruit, hirsute, up to 12 mm long. *Flowers* with a white perianth, segments 6 mm long, sparsely hirsute outside. *Capsule* glabrous, 5 mm long. *Seeds* black, verrucose, $1\frac{1}{2}$ mm in diam., tetrahedral.

Flowering Period: In fruit, August.

DISTRIBUTION: Only known from type specimen, collected at Halenberg, South West Africa.

SOUTH WEST AFRICA.—Lüderitz: Halenberg, 40 m. E. of Lüderitz Bay on a steep, hot slope of a mica schist mountain, Dinter 6651 (B, holo.! PRE, photo.).

Very near *T. hispida* (L.f.) Kunth but with small glabrous bracts and apparently geographically isolated from the Cape species. Dinter found only four plants which were in fruit. So far not collected again.

17. *T. hirsutiflora* (Adamson) Oberm., comb. nov.

Anthericum hirsutiflorum Adamson in Journ. S.A. Bot. 7: 98 (1941); Adamson & Salter, Flora of the Cape Peninsula, 181 (1950). Type: Cape, Wynberg, Bolus 3448 (BOL, holo.). *A. pilosissimum* Poelln. in Bol. Soc. Brot. 16, 2: 61 (1942). Type: Cape, Muizenberg, Wilms 3759 (B, holo! PRE, photo.). *A. canaliculatum* sensu Bak. (non Aiton) in J. Linn. Soc. Bot. 15: 309 (1876) et in Fl. Cap. 6: 391 (1897).

Hairy plants up to 60 cm high. *Roots* many, swollen, spreading, yellow. *Rhizome* small. *Squamae* surrounding shoots as well as leaf- and scape-bases, tubular, membranous. *Leaves* 2-4 per shoot, subterete, canaliculate, up to 50 cm long, 2 mm in diam. hard, striate, scabrid. *Inflorescence* a tall simple tomentose raceme, sometimes elongating to form a second set of flowers; scape terete, purple, covered with white, straggling hairs; bracts narrow ovate, subulate, hairy; pedicels densely hairy, erect, up to 3 cm in fruit. *Flowers* with cupshaped perianth, densely hairy, pink or pale mauve on outside, immaculate, segments 12 mm long; stamens shortly scabrid; ovary hairy, with 10 ovules per cell. *Capsule* dark purple, globose, hairy, 15 mm in diam.

Flowering Period: June-October.

DISTRIBUTION: Cape Peninsula and surrounding districts. According to Adamson it is found in sand, generally amongst rocks, at low altitudes, flowering most freely after fires.

CAPE.—Wynberg: Kenilworth, Salter 7734 (BOL); Tokai, Guthrie 1131 (BOL). Simons-town: Laubner (in Herb. Conrath 662, GZU), Wright 214 (L); Red Hills, Lam & Meeuse 4125 (L). Paarl: Franschoek Mountains, Phillips 8549 (BOL). Caledon: near Stanford, Acocks 15500 (PRE). Clanwilliam: lower Olifants River, Marloth 8391 (PRE).

Baker confused this species with *Anthericum canaliculatum* Ait., which is a synonym of *A. ciliatum* L.f., a very different species. The rough woolly pubescence and the erect fruiting pedicel easily distinguish it from *T. ciliata* and *T. hispida*.

18. *T. ciliata* (L.f.) Kunth, Enum. 4: 585 (1843).

Anthericum ciliatum L.f., Suppl. 202 (1781). Thunb., Prod. 63 (1794) et Fl. Cap. ed. Schult. 324 (1823); Willd. Spec. Plant. 2: 146 (1799). Bak. in J. Bot. Lond. 1872: 139 et in Fl. Cap. 6: 396 (1897). Adamson & Salter, Flora of the Cape Peninsula, 182 (1950). Type: Cape, Thunberg (UPS, holo., PRE, photo.). *A. canaliculatum* Ait., Hort. Kew. 1: 448 (1789) et Hort. Kew. ed. 2: 268 (1811).

Willd., Spec. Plant. 2: 141 (1799). Ker Gawler in Bot. Mag. t. 1124 (1808). Lindley in Bot. Reg. t.877 (1825) under var. *rufum*. Roem. & Schult., Syst. Veg. 7: 460 (1829). Kunth, Enum. 4: 578 (1843). Type: Cape, Introduced to Kew by Francis Masson in 1774 (BM, holo., PRE, photo.). *A. longifolium* Jacq. Coll. Suppl. 92; Ic. 2: 18, t.413 (1786–1793). Willd. Spec. Plant. 2: 139 (1799). Roem. & Schult., Syst. Veg. 7: 464 (1829). Type: Iconotype, Cape, Jacquin, Ic. t.413. *A. vespertinum* Jacq., Hort. Schoenbr. 1: 44, t.85 (1804). Roem. & Schult., Syst. 7: 464 (1829). Ker Gawl. Bot. Mag. t.1040 (1807). Type: Iconotype, Jacquin, Hort. Schoenbr. t.85. *A. blepharophoron* Roem. & Schult., Syst. Veg. 7: 461 (1829). Type: Iconotype, Jacquin, Hort. Schoenbr. t.413. *A. falcatum* sensu Bak. in Fl. Cap. 6: 394 (1897) as to *Burchell* 4076, non L. *A. recurvatum* Dinter in Fedde, Rep. 29, 264 (1931). Poelln. in Fedde, Rep. 52: 255 (1943). Type: South West Africa, Diamond Area I: Klinghardt Mountains, *Dinter* 3960 (B, holo.! PRE, photo.). *A. pilosiflorum* Poelln. in Bol. Soc. Brot. 16, 2: 60 (1942). Type: Cape, Namaqualand, Brakdam, *Pearson* 5948 (B, holo., probably destroyed) including var. *subpappilosum* l.c. Type var.: Cape Peninsula, *Bergius* (B, holo! PRE, photo.). *A. spongiosum* Poelln. in Bol. Soc. Brot. 16, 2: 65 (1924). Type: Cape, van Rhynsdorp, Zout Rivier, *Bergius* (B, holo! PRE, photo.). *A. hamatum* Poelln. in Bol. Soc. Brot. 16, 2: 67 (1942). Type: Cape, Hopefield, *Bachmann* 801 (B, syn. probably destroyed); Riversdale, *Rust* 565 (B, syn! PRE, photo.). *A. maculatum* Poelln. in Bol. Soc. Brot. 16, 2: 73 (1942). Type: Cape, Clanwilliam, Packhuisberg, *Schlechter* 10811 (B, holo! GRA, PRE, L, iso!).

Phalangium canaliculatum (Ait.) Poir. in Lam. Enc. 5: 249 (1804). *P. longifolium* (Jacq.) Poir. l.c. 243. *P. vespertinum* (Jacq.) Poir. l.c. 249.

Bulbine ciliata (L.f.) Link, Enum. 1: 329 (1821). Roem. & Schult. in Syst. Veg. 7: 450 (1829). *B. canaliculata* (Ait.) Spreng., Syst. 2: 86 (1825).

Trachyandra blepharophora (Roem. & Schult.) Kunth, Enum. 4: 582 (1843). *T. bracteosa* Kunth, Enum. 4: 582 (1843). Type: Cape, Saldanha Bay, between Dassenberg & Groenekloof, *Drège* 1493 (L, iso! PRE, photo.).*

Plants variable in size, up to 50 cm high. Roots swollen and spongy but not fused, becoming thinner and harder later in the season. Rhizome discoid, small. Squamae membranous, thin, white, surrounding shoot as well as leaf- and scape-bases. Leaves variable, linear, up to 100 cm long and 4 cm broad, dull glaucous, with a juicy, spongy mesoderm, soft, flat or keeled with some scattered hairs on margin and keel or glabrous. Inflorescence branched with 1–2 basal branches or simple (through reduction), erect at first, sometimes elongating during anthesis and becoming prostrate; scape pubescent at first, glabrous with age, with some sterile bracts or vestiges of suppressed side-branches; bracts large, boatshaped, 1 cm long, dark, subulate, auriculate, margin minutely ciliate the young, compact racemes with the imbricate, subulate bracts resembling an ear of corn; pedicels 8 mm long in flower, erect, up to 2 cm long in fruit and then recurved and sub-secund. Flowers with a recurved, translucent, white perianth; segments ca. 1 cm long, often hairy outside, with yellow spots near the base (these sometimes faint); the outer stamens erect, scabrid, the inner connivent around the ovary, retrorsely scabrid in lower half; ovary with 10 ovules per cell. Capsule ovoid to globose or cylindrical, glabrous, 6–14 mm long, slightly fleshy. Seeds black, minutely verrucose.

Flowering Period: August–September. Said to be scentless.

DISTRIBUTION: From the southern part of South West Africa to the south eastern Cape, usually near the coast in sand, occasionally further inland. Sometimes spreading as a weed around Cape Town.

CAPE.—Peninsula: Karbonkelberg, *Leighton* 704 (BOL); near Cape Town, *Alberth* (GZU). Hopefield: near Hopefield, *Bolus* 12872 (BOL). Clanwilliam: *Schlechter* 8422 (GRA). Piketberg: *Piquenierskloof*, *Schlechter* 10773 (GRA, L). Caledon: Gansbaai, *Gillett* 4406 (BOL). Knysna: *Fourcade* 1563 (GRA). Port Elizabeth:

* Add to synonymy: *T. canaliculata*, *T. longifolia*, *T. vespertina*, l.c.

Walmer, *Cruden* 329 (GRA); New Brighton, *Paterson* 2146 (GRA). Bathurst: near Theopolis, *Burchell* 4076 (L.); this specimen is cited under *Anthericum falcatum* L.f. by Baker in *Flor. Cap.* 6: 394 (1897).

SOUTH WEST AFRICA.—Diamond Area I; Klinghardt Mts., *Dinter* 3960 (B, holo.! PRE, photo.).

Adamson in the *Journ. of S.A. Bot.* 7: 97 (1941) discusses the plates in the *Bot. Magazine* (t.1124) and *Bot. Register* (t.877). He found that Baker's *Anthericum canaliculatum* of the *Flora Capensis* really represented a new species, which he described as *A. hirsutiflorum*. But he could not place these two plates as he had not seen the type of *A. canaliculatum* Ait., which I consider a synonym of *T. ciliata*. As Curtis mentions in the text that the plant was introduced by Masson and as Aiton himself refers to this plate, *Bot. Mag.* t.1124, in the second edition [*Hort. Kew.* 2: 268 (1811), under *A. canaliculatum*] it is likely that the plates were made from the old type plant or its offspring. After years in unnatural surroundings it had probably degenerated somewhat. Lindley called his plant var. *rufum* as the pedicel and the "interior" of the flower was hairy. He must have meant the exterior of the flower. He described the filaments as smooth but this might have been a careless observation. Both Curtis and Lindley suggested that the species might be identical with *Trachyandra hirsuta* but this species is different; it has wiry roots, broader leaves, etc.

19. *T. falcata* (L.f.) Kunth, *Enum.* 4: 586 (1843).

Anthericum falcatum L.f., *Suppl.* 202 (1781). Willd., *Spec. Pl.* 2: 138 (1799). Thunb., *Prod.* 63 (1794); et in *Fl. Cap.* 3d. Schult. 323 (1823). Type: Cape, *Thunberg* (UPS, holo., PRE, photo.). *Anthericum drepanophyllum* (Bak.) Schlechter ex *Index Kew.* 7: (1929); cf. Schlechter in *Schultze, Aus Namaland und Kalahari*, p. 202 with figure in text (1907). Schlechter refers this species to *Anthericum* but does not mention the basonym. Baker described it as *Chlorophytum drepanophyllum*. *Anthericum weissianum* Dinter in *Fedde, Rep.* 29: 262 (1931), *Poelln. in Fedde, Rep.* 52: 257 (1943). Type: South West Africa, north bank of Orange River, near its mouth, *Weiss* in herb. *Dinter* 6608 (B, holo.! PRE, photo.).

Bulbine falcata (L.f.) Roem. & Schult., *Syst. Veg.* 7: 451 (1829).

Chlorophytum drepanophyllum Bak. in *Fl. Cap.* 6: 398 (1897). Type: Cape, Namaqualand: near Nababeep, *Bolus* 6584 (K, holo.).

Fairly tall, large plants up to 60 cm high. *Roots* very many, long, spreading, swollen in spring, covered with a thick tomentum of root hairs. *Rhizome* small. *Squamae* membranous surrounding the shoot, leaves and scape-base. *Leaves* usually 4, up to 30 cm long and 3–5 cm wide, falcate, flat, leathery, glabrous or shortly pubescent, margin minutely ciliate. *Inflorescence* an erect, branched, raceme with the branches ascending and with accessory branches, sometimes simple through reduction, overtopping the leaves, densely flowered; scape about as long as the raceme, terete, glabrous at the base, or hairy at first becoming glabrous, stout; lower bracts amplexicaul, short, forming a wide erect collar around the stem, apiculate, floral bracts widely ovate, subulate, membranous, white with a brown patch near the tips, closely imbricate in bud; pedicels short, 1 cm long, erect. *Flower* with perianth pale mauve, maculate; segments 12 mm long; stamens scabrid; ovary with 8–10 ovules per cell. *Capsule* turbinate, 12 mm long, apiculate, dry. *Seeds* grey, with raised hyaline margins.

Flowering Period: July–October.

DISTRIBUTION: Western Cape, coastal region from Saldanha to the southern part of South West Africa, in sandy soil. Collectors all found it to be common where they collected it. Schulze noted that it made a nice spinach. Marloth called it the wild cauliflower.

CAPE.—Hopefield: Saldanha Bay, *Bohnen* 1053 (PRE); Vredenburg, *Bohnen* 1054 (PRE). Clanwilliam: *Marloth* 5859 (PRE). Van Rhynsdorp: Klaver, *Andreae* 423 (PRE). Calvinia: Driefontein, Voor Hantam, *Marloth* 12818 (PRE). Laingsburg: Matjesfontein *Foley* 163 (PRE). Robertson: Vink River along road from Robertson to Worcester, *van Breda* 983 (PRE). Namaqualand: Richtersveld, Kawarass, *Marloth* 12423a (PRE); between Springbok and Hondeklip, *Dyer & Verdoorn* 1804 (PRE); Kamies Mountain, Garies, *Leistner* 742 (PRE); Lilyfontein, *Rodin* 1468 (PRE).

SOUTH WEST AFRICA.—Diamond Area I, north bank of Orange River near its mouth, Weiss in herb. *Dinter* 6608 (B, holo.! PRE, photo.).

20. *T. longepedunculata* (Steud. ex Roem. & Schult.) Kunth, Enum. 4: 584 (1843).

Anthericum longepedunculatum Steud. in Roem. & Schult., Syst. Veg. 7: 457 (1829). Bak. in J. Bot. Lond. 1872, 138 et in Fl. Cap. 6: 390 (1897). Duthie in Ann. Stell. Univ. 4, a: 12, t.1 (1926). Adamson & Salter, Flora of the Cape Peninsula, 180 (1950). Type: Cape, *Ludwig* (in herb. Steudel originally but it could not be traced with certainty).*

Anthericum revolutum a in Herb. Thunberg (UPS); Juel, Pl. Thunb., 121 (1918) nom. Cape, *Thunberg* (UPS). This is the sheet to which Baker refers in J. Bot. 1872, 138.

Soft plants 18–60 cm high, solitary or several together. *Roots* swollen, ca. 7, contracted, not fused, whitish with numerous long thin rootlets. *Rhizome* small, compact. *Squamae* membranous, whitish, 15–30 cm high, surrounding the shoot as well as the leaf- and scape-bases. *Leaves* 2–8, subterete to linear, 11–40 cm long, 1–7 mm broad, tapering gradually to the apex, soft, glabrous or very minutely scabrid, dark green, often mottled near the base. *Inflorescence* 1–5 per plant, occasionally branched but usually simple through reduction, many flowered, often shorter than the leaves, elongating and falsely secund in fruiting stage; scape usually short, glabrous, or minutely scabrid, often reddish-brown and mottled near the base; sterile bracts (vestiges of suppressed branches) present; bracts boatshaped, cuspidate, sub-amplexicaul; pedicels short in bud, elongating to 3 cm in fruit and then patent, slightly recurved. *Flower* with perianth rotate, white to pinkish with reddish-brown keels, immaculate, segments 1 cm long, inner ciliate at the base; stamens with white filaments, inner with longer bristles, anthers orange; ovary with 9 ovules per cell. *Capsule* cylindrical, ca. 8 mm long, 3 mm in diam., thin walled, apiculate. *Seeds* black.

Flowering Period: August–October. “Sweet smelling, bee-pollinated” Duthie.

DISTRIBUTION: Cape Peninsula and surrounding areas, usually in damp marshy places at low altitudes.

CAPE.—Cape Town: Green Point, *MacOwan* 1986 (GRA); Claremont Sanatorium, *Wolley Dod* 2968 (BOL); Sassar, *Bohnen* 1063 (PRE). Malmesbury: Darling Flora Reserve, *Rycroft* 1995 (BOL). Stellenbosch: flats at Faure, *Esterhuysen* 11928 (BOL, PRE). Caledon: Stanford, *Compton* 19936 (BOL). Hopefield: near Hopefield, *Bolus* 12807 (BOL, PRE).

Adamson noted that the inflorescence did not lengthen in fruit but Duthie observed that it did. The herbarium specimens seem to indicate that they do lengthen during anthesis. The large forms seem to come very close to *T. ciliata*.

* Mr. W. Marais who searched for the type at the Kew herbarium wrote the following: “There is no Ludwig specimen at Kew but there is one alleged to be from Lehmann. On this sheet is written ‘Lehmann’ in the hand of W. J. Hooker. Then a label ‘*Anthericum longepedunculatum* n. sp. C.B.S.’ in an unidentified hand. The ‘n. sp.’ leads one to think that it is by Steudel or by a person who wrote labels for him. Below this label ‘*Trachyandra longepedunculata* Kunth’ in the hand of Planchon. Then a note by N. E. Brown: ‘Matches the plant labelled in Herb. Thunberg *Anthericum revolutum* exactly’. The only suggestion is that this specimen is part of the Ludwig specimen which came to Hooker via Lehmann and that Baker knew about this. That would explain the citation of Ludwig and the omission of Lehmann by Baker in the J. Linn. Soc. 15: 138 and in the Flora Capensis 5: 390”.

21. *T. divaricata* (Jacq.) Kunth, Enum. 4: 580 (1843).

Anthericum divaricatum Jacq. Hort. Schoenbr. 4: 7, t.414 (1804); Roem. & Schult., Syst. Veg. 7: 463 (1829). Adamson & Salter, Flora of the Cape Peninsula, 184 (1950). Type: Iconotype, Jacquin, Hort. Schoenbr. 4: 7, t.414. *A. revolutum* (β) sensu Thunb., Prod. 62 (1794) et in Fl. Cap. ed. Schult. 318 (1823). Juel, Pl. Thunb. 121 (1918) nom. non L. *A. revolutum* sensu Ker Gawl. in Bot. Mag. t.1044 (1804) exclud. syn. non L. *A. revolutum* sensu Bak. in J. Bot. 1872, 138; in Trans. Linn. Soc. 15: 311 (1876) et in Fl. Cap. 6: 393 (1897), non L. *Phalangium aethiopicum ramosum*, floribus albis, petalis reflexis. Comm. in Hort. Amst. 1: 67, t.34 (1697).

Plants robust up to 90 cm high. *Roots* many, not much thickened, occasionally growing to a great depth. *Rhizome* woody, thick, irregular in shape. *Squamae* narrow, tubular, surrounding each leaf- and scape-base separately. *Leaves* linear, up to 100 cm long, 4–12 mm wide, tapering gradually to the apex, flat, glabrous, somewhat fleshy, flexible, erect or usually prostrate, straight or with a lax spiral twist, bright green occasionally orange at the base. *Inflorescence* stout, usually with accessory branches, divaricately branched; scape 10–50 cm high, stout glabrous; bracts small, 4 mm long, membranous, widely ovate at the base; pedicels 4–12 mm long. *Flowers* erect, perianth segments 7–12 mm long, white, green-keeled, with a yellow dot near the base, spreading, recurved from the middle; stamens yellow in lower half, dimorphous, 3 outer spreading, 3 inner connivent around ovary, spreading and retrorsely scabrid above; ovary with 12 atropous ovules per cell. *Capsule* globose, 12 mm in diam., slightly inflated, dry or somewhat fleshy, yellowish. *Seeds* 2 mm in diam. smooth, tetrahedral.

FLOWERING PERIOD: "August–September but also at other times; flowers opening in the morning". Adamson.

DISTRIBUTION: South western to south eastern Cape, common on sand and on dunes near the sea.

CAPE.—Namaqualand: Hondeklip Bay, *Pillans* 18254; 2 miles S. of Goodhouse, *Lewis* 64663 (NBG), *Barker* 6259 (NBG). Hopefield: Saldanha Bay, *Clarkson* 375. Cape: Blouberg Strand, *Bohnen* 1052 (PRE), *Compton* 8923, 8924 (NBG); Robben Island, *Walgate* 482 (PRE). Peninsula: Schusters Bay, *Lam & Meeuse* 4117 (L.); Kommetjie, *Eyles* 7741 (SRGH), Fishhoek, *Marloth* 2844 (PRE). Heidelberg: Witsand, *Gillett* 811 (BOL). Knysna: Plettenberg Bay, *Fourcade* 1051, 1489 (BOL), *Kapp* 114 (PRE). Bathurst: Port Alfred, *Rogers* 28052; *Hutton* 741.

Commelin's plate, t.34 in Hort. Amst. 1 (1697) is the oldest drawing of a *Trachyandra*. Baker referred it to *Anthericum revolutum* L. but its stout succulent appearance on the plate indicates that it is better placed under *T. divaricata*.

23. *T. revoluta* (L.) Kunth, Enum. 4: 579 (1843).

Anthericum revolutum L., Sp. Pl. 310 (1753). Roem. & Schult., Syst. Veg. 7: 462 (1829). Adamson & Salter, Flora of the Cape Peninsula, 184 (1950). Type: no type preserved. Cape: Hermanus, *Galpin* 12898 (PRE, neo.). *A. filiforme*, (γ), Thunberg, Prod. 62 (1794) et in Fl. Cap. ed. Schult. 318 (1824). non Ait. Type: Cape, on hills below Table Mountain, *Thunberg*, sheet (γ) (UPS, holo., PRE, photo!). *A. elongatum* Willd., Sp. Pl. 2: 136 (1800); Roem & Schult. Syst. Veg. 7: 456 (1829); Bak. in Fl. Cap. 6: 389 (1897). Willdenow gave Thunberg's plant a new name as Aiton had already used the epithet *filiforme* for an *Anthericum* which is now *Bulbinella filiforme* (Ait.) Kunth. Sprengel in Syst. 2: 83 (1825) in error united them. *A. jacquinianum* sensu Bak. in J. Bot. Lond. 1872, 308, excl. var. et in Trans. Linn. Soc. 15: 308 (1876); *A. scabrum* sensu Duthie in Ann. Univ. Stell. 4, A: 15, t4 1926, non L.f.

?*Phalangium revolutum* Poir. in Encycl. Meth. Bot. 5: 247 (1804).

?*Dilanthes revolutum* Salisb. Fragm. 70 (1866).

Trachyandra elongata (Willd.) Kunth, Enum. 4: 584 (1843).

Adamson, Notes on Some Cape Peninsula Species of *Anthericum* in Journ. S.A. Bot. 7: 93 (1941).

Plants up to 50 cm high, usually smaller. *Roots* many, crowded, yellow, somewhat swollen, fusiform, firm, the circle of new roots produced above the old one. *Rhizome* small, discoid. *Squamae* narrow, tubular, reddish-brown, surrounding each leaf-base and also the scapes, separately (no squamae surrounding the shoots). *Leaves* erect or prostrate when older, sometimes slightly undulate or with a spiral twist, 10–40 cm long, 1–4 mm in diam. linear, firm and somewhat fleshy in texture, dark green, scabrid, at least when young, especially on the margins. *Inflorescence* a much branched, lax, pseudo-dichotomous, divaricate raceme, usually overtopping the leaves; scape slender, up to 30 cm long, 3–6 mm in diam., scabrid especially at the base when young; bracts small, 2–5 mm long; pedicels up to 1 cm, erect in bud and in fruit, recurved during anthesis. *Flowers* pendulous, perianth recurved forming a “ball” around pedicel, segments 8–10 mm long, narrow, white, brown-keeled and with 2 yellow maculae near the base; filaments yellow below, dimorphous, outer sparsely, inner densely shaggy in lower half, and curved around the ovary; ovary with ca. 10 ovules per cell. *Capsule* sub-globose, greyish brown, ca. 2 mm in diam., tetrahedral.

FLOWERING PERIOD: August to November. Odour heavy, musklike (*Duthie*). Adamson noted that it flowered freely after fires.

DISTRIBUTION: Eastern to western Cape, near the coast or more inland occasionally. “Common on seasonally damp, heathy flats”. Adamson. “Seasonal swamps” *Duthie*.

CAPE.—Cape Town: *Kuhl & van Hasselt* (L 909, 84/270), *Bolus* (BOL. 25734); Path above Kalk Bay, *Goulinis* (BOL. 25733); Wynberg: *Schlechter* 1546 (GRA); Rondebosch, *Bolus* 3750 (BOL); Noordhoek Flats, *Esterhuysen* (BOL, 25736); Sassar, *Bohnen* 1060 (PRE); Peninsula, Klaassenbosch, *Wolley Dod* 2454 (BOL). Stellenbosch: *Duthie* (BOL 25744). Hopefield: Saldanha Bay, Hoetjies Bay, *Bolus* (BOL. 12867). Ceres: Bokkeveld, *Marloth* 8364 (PRE). Van Rhynsdorp: Bitterfontein, *Schlechter* 11038 (GRA, L.). Namaqualand: near Soebatsfontein, *Verdoorn & Dyer* 1797 (PRE); foot of Kamies Mountains near Garies, *Esterhuysen* 1367 (BOL). Humansdorp: Kruisfontein, *Galpin* 4748 (PRE); Albertinia, *Muir* 1191 (BOL). Bathurst: Port Alfred, *Hutton* 1154 (GRA), *Rogers* 28052 (PRE). Port Elizabeth: *Paterson* 166 (GRA). Alexandria: *Archibald* 3686 (PRE). East London: *Galpin* 3357 (PRE).

It is the oldest known species from the Cape. Adamson in his helpful article (Journ. S.A. Bot. 7: 93, 1941), discusses the confusion that existed between *Anthericum revolutum* L. and *A. divaricatum* Jacq., while later on *A. flexifolium* sensu Jacq. (not of L.f.) also became involved. *A. divaricatum* Jacq. is a stout, glabrous bright green plant found on the dunes and flats near the sea. *A. revolutum* L. has a wider distribution and is usually found on firmer soils. It is more slender than *A. divaricatum* Jacq. and the base of the dark green leaves and scape are scabrid. The description of *A. revolutum* by Linnaeus although very short, does mention “folia asperis” which points to the slender plant.* I therefore agree with Adamson that this smaller plant should be regarded as *A. revolutum* L. [*T. muricata* (L.f.) Kunth also possesses asperous leaves but it is not as common as *T. revoluta* (L.) Kunth].

In literature these two species were often confused. Miller, Thunberg and Baker seem to have thought that the two names were conspecific. Ker Gawler’s plate in the Botanical Magazine, t.1044 (1807) also figures the more succulent *A. divaricatum* Jacq. In Thunberg’s herbarium, *A. filiforme* γ is a synonym of *A. revolutum* L. As the epithet *filiforme* was invalid, Willdenow gave it a new name, *A. elongatum*. Roemer & Schultes then enumerated all 3 names in their Syst. Veg. 7: 456, 462 (1829). They also gave

* “*Anthericum revolutum* L. was founded entirely upon a species described by Tournefort as *Asphodelus foliis compressus, asperis, caule patulo* and its country is unknown.” N. E. Brown on a sheet at J.

a new name, *A. jacquinianum*, to a plate (Ic. t.412) of an *Anthericum* which Jacquin had mistakenly called *A. flexifolium* L.f. When Baker revised the *Anthericum* species for the Flora Capensis he made this species, *A. jacquinianum*, a synonym of *A. elongatum* Willd. As neither the roots nor the squamae of the species figured by Jacquin, correspond with those of *A. revolutum* L. (*A. elongatum* Willd. is a synonym), I do not think this was correct and have kept them separate.

23. *T. laxa* (N. E. Br.) Oberm., comb. nov., aggregate species.

Anthericum laxum N.E. Br. Kew Bull. 1909, 143.

Plants glabrous, up to 60 cm high. *Roots* many, somewhat fleshy or thin, often with a lanate pubescence of root hairs. *Rhizome* small, irregular, woody. *Squamae* narrow tubular, membranous, brown, several surrounding each leaf- and scape-base separately but none surrounding a shoot. *Leaves* many, terete, up to 40 cm long, 3 mm in diam., erect or drooping, often glutinous from secretions of sub-epidermal glands situated in longitudinal lines. *Inflorescence* a divaricate much branched raceme, branches either alternate or the first three arising trichotomously from a clavate apex, the following branches alternate, laxly flowered; bracts ovate, ca. 3 mm long, membranous, white with a brown keel; pedicels up to 6 mm long, erect in bud, pendulous during anthesis, erect in fruit. *Flowers* pendulous with perianth 1 cm in diam. recurved from near the base, forming a "ball" around pedicel, white, dark keeled, with 2 yellow spots near the base, scentless, producing much nectar; 3 outer stamens scabrid, 3 inner forming a tube, curving outwards above ovary and there yellow and densely, retrorsely scabrid; the basal area touching the ovary, smooth with lateral, and dorsal fringes; ovary with ca. 10 ovules per cell. *Capsule* ca. 6 mm long, globose, dry. *Seed* dark brown, angled.

FLOWERING PERIOD: In late summer after rains, February to April. In South West Africa in the southern part the flowering period could be any time after a rare, rainy spell. The dry inflorescence starts rolling about in April.

Common Names: Rolbossie, tolbossie, sandui. Said to be eaten by animals, pigs even digging out the roots.

DISTRIBUTION: Kalahari sandveld; Bechuanaland, western Transvaal, western Free State, northern Cape, South West Africa.

KEY TO VARIETIES

Branches of inflorescence alternate; scape not clavate at the apex; plants rather slender (a) var. *laxa*
Three lowest branches of inflorescence trichotomous; scape clavate at the apex; sturdy plants
(b) var. *erratica*

(a) var. *laxa*.

Anthericum laxum N. E. Br. in Kew Bull. 1909, 143. Type: Bechuanaland, Kalahari, Bachakuru, West of Serowe, *Lugard* 234 (K, holo. ! PRE, photo.).

A. glutinosum Dinter in Fedde, Rep. 16: 338 (1920); and in Fedde, Rep. App. 23: 55 (1923) name only. Type: South West Africa, Diamond Area 1: Klinghardt Mountains, *Schäfer* 559 (B, holo., probably destroyed). Dinter apparently overlooked his publication of the species in 1920 and republished it in 1931. Von Poellnitz now gave the second plant i.e. *Dinter* 3940, a new name i.e. *A. dinteri* Poelln. in Fedde, Rep 50: 232 (1942), nom. nov. for *A. glutinosum* Dinter in Fedde, Rep. 29: 265 (1931) non *Dinter* 1920. Type: South West Africa, Diamond Area 1: Buntfeldschuh, Namib, *Dinter* 3940 (B, holo ! PRE, photo.). They are conspecific. *A. nigrobracteatum* Dinter in Fedde, Rep. 29: 265 (1931). Type: South West Africa: Diamond Area 1, Klinghardt Mountains, *Dinter* 3952 (B, holo! PRE, photo.). This plant was referred to under the name of *A. glutinosum* by Dinter in Fedde, Rep. App. 23: 55 (1923). It was collected in the same area as *A. dinteri* Poelln. and the differences are too small to merit the rank of a separate species. *A. buchbergense* Poelln. in Fedde, Rep. 52: 245 (1943). Type: South West Africa, Diamond Area 1, Buchu Mountains, *Dinter* 6571 p.p. (B, holo.! PRE, photo.). ?*A. pachyrrhizum* Dinter in Fedde, Rep. 29: 157 (1923).

Type: South West Africa; locality uncertain, probably Diamond Area 1, Klinghardt Mountains in the S.W. Namib, *Dinter* 1780 (B, holo! PRE, photo.). The specimen is sterile but the roots and leaves are typical of *T. laxa*. ?*A. brunneoviride* Dinter ex Poelln. in Fedde, Rep. 52: 261 (1943). Type: South West Africa, Bethany: near Aus, *Dinter* 6202 (B, holo! PRE, photo.). The specimen is sterile but roots and leaves are typical of *T. laxa*. *A. elongatum* sensu Poelln. in Fedde, Rep. 52: 249 (1943). South West Africa, Bethany: Sandverhaar (near Aus), *Pearson* 4278, 4438 (BOL). The scape of one of the specimens was scabrid showing affinity to *T. revoluta*.

CAPE.—Prieska: *Bryant* B 338 (PRE). Kuruman: Batlharos, *Silk* 211 (PRE, SRGH), *Pole Evans* 2119 (PRE). Hay: Matsap, *Acocks* 2446 (KMG). Barkley West: *Acocks* 1557 (PRE, KMG). Kimberley: Koppies Kraal, *Muir* (PRE).

TRANSVAAL.—Potgietersrus: Naboomspruit, *Galpin* 353 (PRE).

SOUTH WEST AFRICA.—Bethany: Sandverhaar, *Pearson*, 4278, 4438 (BOL).

(b) **var. *erratica* (Oberm.) Oberm.**, stat. et comb. nov.

Anthericum erraticum Oberm. Journ. S.A. Bot. 2: 187 (1936). Type: Transvaal, Maquassi, *van Niekerk* (TM 35736, PRE, holo!). *A. arvense* Schinz var. *rigidum* Suss. in Mitt. Bot. Staatssam. Muenchen 1: 49 (1950). Type var.: South West Africa, Grootfontein, *Rehm* (M, holo!). Fig. 6, p. 000.

CAPE.—Barkley West, *Smith* 2332 (PRE). Kimberley: Doornfontein, *Adams* (PRE KMG, BOL). Hay: Padkloof, *Acocks* 2082 (PRE, KMG). Mafeking: *Brueckner* 570 (PRE). Vryburg: *Burt-Davy* (PRE, 14672).

ORANGE FREE STATE.—Boshof: near Boshof, *Schweickerdt* 1115 (PRE). Kroonstad: *Goossens* 1173 (PRE).

BECHUANALAND.—Genesa, *Rogers* (BOL, 12591). Mochudi, *Rogers* 6317 (BOL). Kanye, *Hillary & Robertson* 622 (PRE).

TRANSVAAL.—Lichtenburg: Grasfontein, *Sutton* 380 (PRE). Potchefstroom, on road to Schoemansdrift, *de Wet* 1850 (PRE). Warmbaths: Radium, *Obermeyer* TM 35737 (PRE); near Pienaars River, *Codd* 848 (PRE).

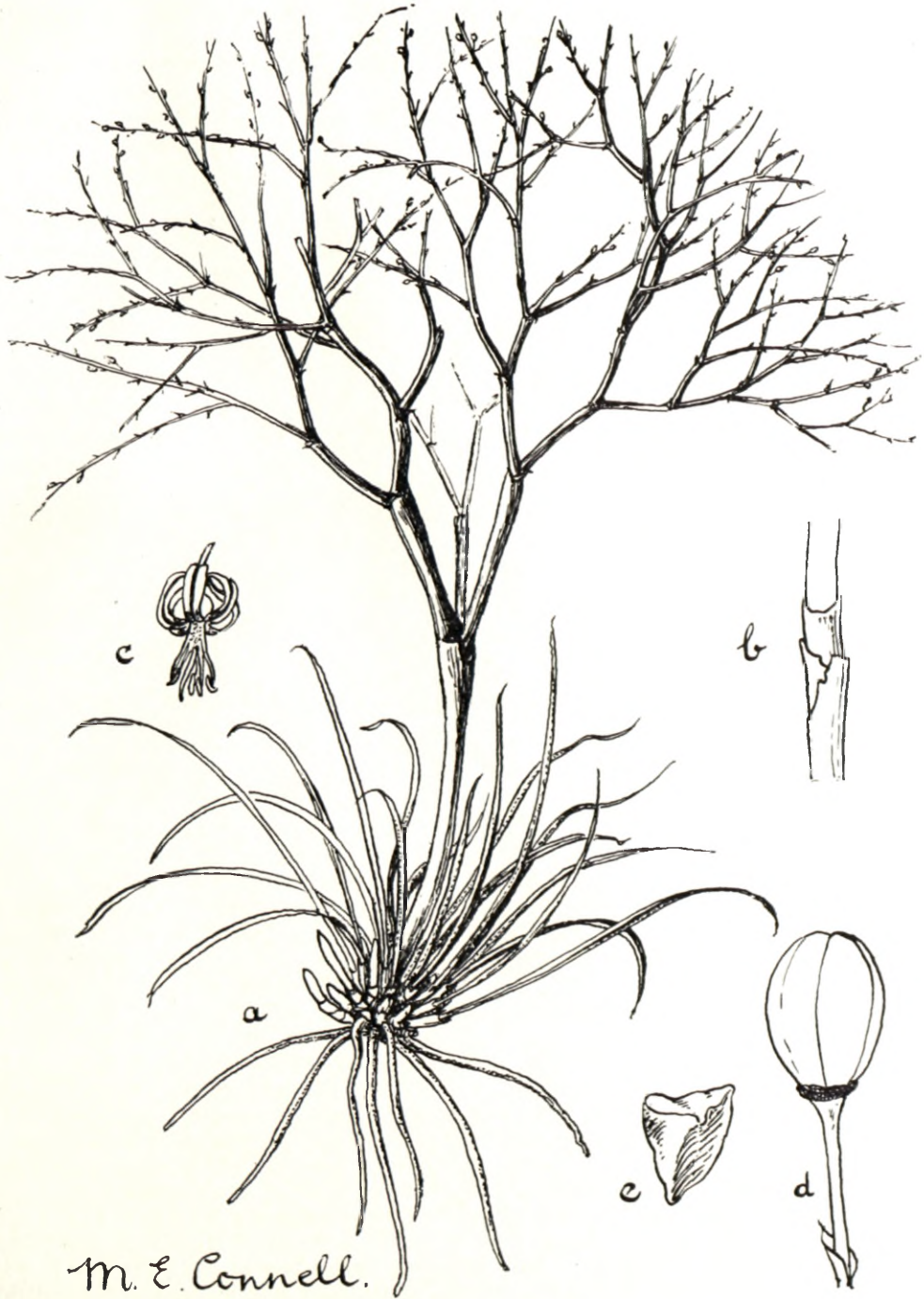
SOUTH WEST AFRICA.—Gobabis: farm Onreg, *Merxmüller* 1117 (PRE, M); *Basson* 107 (PRE). Windhoek: *Meyer* (PRE). Otjiwarongo: Waterberg Plateau, *Boss* (PRE).

T. revoluta and *T. laxa* are two closely related tumble weeds; the first is a Cape species with rough, flat or rolled leaves and a scape that is pubescent at the base. *T. laxa* occurs in the Kalahari sandveld, is entirely glabrous and has terete, often glutinous leaves. It seems wisest to consider the umbellate species (*Anthericum erraticum*) a variety of *T. laxa* for these two forms occur side by side in some areas; but for the difference in the arrangement of the lowest branches of the inflorescence, they agree in other respects except that *T. erraticum* is usually a somewhat stouter plant.

The herbarium material from South West Africa is very scanty. When more material becomes available and with more field work we will be able to judge better whether all Dinter's species are conspecific with *T. laxa*. In tumble weeds one can of course expect a wide and erratic distribution.

24. ***T. arvensis* (Schinz) Oberm.**, comb. nov.

Anthericum arvense Schinz in Verh. Bot. Ver. Brand. 31: 216 (1889). Bak. in Fl. Trop. Afr. 7: 210 (1898). Poelln. in Fedde, Rep. 52: 245 (1943). Type: South West Africa: Ovamboland, Olukonda, *Schinz* (Z, holo! PRE, photo.). *A. flavoviride* Bak. in Fl. Trop. Afr. 7: 490 (1898). Type: Bechuanaland, Ngamiland, Botletle Valley, *Lugard*, 194 (K, holo.). *A. pallidiflavum* Engl. & Gilg in Warburg, Kunene Sambesi Exp. 187 (1903). Type: Angola (near S.W. border), Okavango Riverbank at Kavanga, *Baum* 412 (B, holo., probably destroyed). *A. gilvum* Krause in Engl. Bot. Jahrb. 48: 353 (1912). Poelln. in Fedde, Rep. 52: 249 (1943). Type: South West Africa:



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FIG. 6.—*Trachyandra laxa* var. *erratica* Oberm. a, habit, $\times \frac{1}{4}$. b, basal squamæ enveloping a leaf, $\times 2$. c, pendulous flower. d, capsule, $\times 3$. e, seed, $\times 4$.

Hereroland, Klein Namas near Hochanas *Dinter* 1941 (B, holo., probably destroyed); var. *brunneolum* Poelln. in Fedde, Rep. 52: 250 (1943). Type of var.: South West Africa, Hereroland, Otjispera near Epata *Seiner* III/357 (B, probably destroyed).

Slender, glaucous, glabrous plants up to 70 cm high. *Roots* many crowded, fusiform, dark brown. *Rhizome* woody, compact, globose, irregular. *Squamae* tubular, membranous, several enveloping each leaf- and scape-base, the outer gaping. *Leaves* linear, flat, or subterete, up to 60 cm long, 2.5 mm broad, glaucous, longitudinally grooved, long tapering to the apex. *Inflorescence* ca. 70 cm tall, a much branched divaricate, many flowered raceme; peduncle slender, ca. 40 cm long, 5 mm wide; side branches thin, lax, spreading; bracts minute, 2 mm long, white, membranous, acute; pedicels slender 2–3.5 cm long, recurved in flower, remaining so if flower is not fertilized, erect in fruit. *Flowers* with perianth pendulous, campanulate at the base, recurved, yellow, maculate; segments 1 cm long, 1 mm wide; stamens dimorphous the outer spreading, muricate, the inner connivent, curved outwards above the ovary with the filaments flattened below and these with lateral and dorsal fringes, densely covered with retrorse, obtuse papillae in upper half; ovary with 10–12 ovules per cell. *Capsule* erect, narrow ovate, 7 mm long, glabrous. *Seeds* smooth, often with an orange band (probably consisting of glands) near the hilum.

FLOWERING PERIOD: August–March.

DISTRIBUTION: Northern South West Africa, Bechuanaland, Southern Rhodesia, Northern Rhodesia, Angola.

Common on the sandy banks and islands of the Okavango River and its tributaries, also straying into surrounding country.

SOUTH WEST AFRICA.—Okavango Native Territory: between Runtu and Kapako, Okavango River, *de Winter* 3730 (PRE); Andara, *Merxmüller* 1962 (PRE, M). Grootfontein: Gautscha Pan, 157 miles E. of Grootfontein, *Stony* 6150, 5321 (PRE).

SOUTHERN RHODESIA.—Salisbury: Hunyani River, in sand, *Wild* 4623 (SRGH); Arthur's Seat, Hunyani, *Greatrex* (SRGH, 13969).

NORTHERN RHODESIA.—Barotseland: Shangombo, Kwando or Mushi River, *Codd* 7469 (PRE); Nangweshi on the Zambesi River, *Codd* 7201 (PRE, SRGH).

25. *T. muricata* (L.f.) *Kunth*, Enum. 4: 576 (1843).

Anthericum muricatum L.f., Suppl. 202 (1781); Thunb., Prod. 63 (1794) et in Fl. Cap. edit. Schult. 322 (1823); Willd. Sp. Pl. ii: 145 (1799); Roem. et Schult., Syst. Veg. 7: 459 (1829); Bak. in Journ. Bot. Lond. 1872, 139 et in Fl. Cap. 6: 395 (1897); Adamson & Salter, Flora of the Cape Peninsula, 183 (1950). Type: Cape, *Thunberg* (UPS, holo., PRE, photo.). *Anthericum fimbriatum* Thunb., Prod. 63 (1794); Roem. & Schult., Syst. Veg. 7: 465 (1829) et in Fl. Cap. edit. Schult. 322 (1823). Type: Cape, *Thunberg* (UPS, holo., PRE, photo.). *A. bachmannii* O. Ktze, Rev. Gen. 3, 2: 315 (1898). Type: Cape, Malmesbury: Hopefield, *Bachmann* 802 (B, holo.! PRE, photo.). *A. scabromarginatum* Schlechter apud Poelln. in Bol. Soc. Brot. 16: 2. 80 (1942). Type: Cape, Calvinia: Doorn Rivier, *Schlechter* 10873 (B, holo.! GRA, PRE, iso!). *A. diphyllum* *Dinter* in Fedde, Rep. 16: 338 (1920); Poelln. in Fedde, Rep. 52: 248 (1943). Type: South West Africa, Diamond Area I: Klinghardt Mountains, *Schäfer* 553 (B, holo.! PRE, photo.). *A. apicicolum* Krause in Engl. Bot. Jahrb. 52: 236 (1921). Type: South West Africa: Klinghardt Mountains, *Schäfer* 553 (B, holo., probably destroyed). *Schäfer* 553 is the type for both *A. diphyllum* and *A. apicicolum*. *A. longifolium* sensu Sprengl., Syst. 11: 84 (1825). *A. longifolium* sensu Bak. in J. Bot. Lond. 1872, 139 et in Fl. Cap. 6: 394 (1897). *A. longifolium* sensu Duthie in Ann. Stell. Univ. 4, A: 9, t2, fig. 6, 9 (1926). Non *Jacquin*. Willdenow in Sp. Pl. II, 140 (1799), thought that *A. muricatum* L.f. and *A. longifolium* Jacq. could be conspecific and this was accepted as a fact by Sprengel, Baker & Duthie; cf. Adamson, Journ. S.A. Bot. 7: 99 (1941).

Arthropodium muricatum (L.f.) Spreng., Syst. 2: 87 (1825).

Trachyandra fimbriata (Thunb.) *Kunth*, Enum. 4: 583 (1843).

Few leaved, muricate or glabrous plants up to 50 cm high. *Roots* many, orange, thick, firm and long. *Rhizome* small. *Squamae* small, membranous, the outer loosely surrounding shoot, the inner closely surrounding leaf- and scape-bases. *Leaves* 2–10, opposite, flat, variable in size, linear to oblong, up to 80 cm long, 5–50 mm wide, muricated, especially along the raised margin and nerves, seldom glabrous. *Inflorescence* a laxly flowered, divaricate panicle up to 50 cm high, often with unequal accessory branches; scape firm, muricate or glabrous, nearly as long as the racemes; bracts small, 4 mm long, deltoid, auriculate; pedicels up to 12 mm in fruit, ascending. *Flowers* with spreading, maculate perianth, segments ca. 10 mm long; inner stamens connivent; ovary with 8 ovules per cell. *Capsule* globose, 5 mm in diam. glabrous. *Seeds* black, tetrahedral, with hyaline margins.

FLOWERING PERIOD: July–October. Adamson notes that it flowers most freely after fires.

DISTRIBUTION: Cape Peninsula, south western Cape to southern South West Africa; on mountain slopes.

CAPE.—Cape Town: Hills about Cape Town; *Prior* (PRE), Camps Bay, *Strey* 528 (PRE). Malmesbury: Riebeeck Kasteel Mountain, *Esterhuysen* 6029 (BOL). Stellenbosch: Guardian Peak, *Esterhuysen* 11997 (BOL); Jonkershoek, *Lam & Meeuse* 4406 (L.). Paarl: lower clay slopes of Seven Sisters, *Esterhuysen* 9047 (BOL). Clanwilliam: hills between Witte Els Kloof and Lamberts Hoek Berg, *Pillans* 9166 (BOL, PRE). Calvinia: Nieuwoudtville, *Schmidt* 225 (PRE).

SOUTH WEST AFRICA.—Diamond Area 1: Klinghardt Mts., *Schäfer* 553 (B).

The type of *A. scabromarginatum* from Doorn Rivier, Calvinia has numerous leaves which are short and glabrous. It may prove to be a separate species. As the species appears to be variable however, I have retained it here for the present.

26. *T. bulbinifolia* (Dinter) Oberm., comb. nov.

Anthericum bulbinifolium Dinter in Fedde, Rep. 29: 261 (1931). Type: South West Africa: Lüderitz Bay, *Dinter* 3836 (B, lecto.! PRE, photo.), 6693 (B, iso., probably destroyed); Rheinpfalz, *Dinter* 6387 (B, probably destroyed). *A. schlechteri* Poelln. in Fedde, Rep. 53: 130 (1944). Type: Cape, Namaqualand, Goechas, *Schlechter* 11376 (B, holo., PRE, GRA, iso.). ?*A. odoratissimum* Dinter, in Fedde, Rep. 29: 260 (1931). Type: South West Africa, Diamond Area 1: coast at Rheinpfalz, *Dinter* 6377 (B, holo.! PRE, photo.); including var. *brevibracteatum* Dint.

Plants up to 40 cm high. *Roots* many, somewhat swollen near the rhizome, tapering to the tips, often felted. *Rhizome* compact, vertical. *Squamae* surrounding shoot forming a collar, outer firm, brownish, inner many, irregularly fimbriate, very thin, white, membranous. *Leaves* many, linear, up to 18 cm long, 5 mm wide, long tapered to the apex which is loosely curled when young, glabrous or minutely muricate or ciliate, apparently erect, glaucous. *Inflorescence* a divaricately branched raceme, laxly flowered; scape terete, slender, arcuate near the base, glabrous; bracts small, ovate, auriculate, mucronate, edges minutely ciliate; pedicels up to 15 mm long in fruit, erect. *Flowers* with a white, spreading, maculate perianth, segments 14 mm long; stamens uniform, filaments very shortly papillate, inner apparently connivent (no live flowers seen); ovary with 12 ovules per cell. *Capsule* oblong, rounded, 6 mm long. *Seeds* with sharp ridges.

FLOWERING PERIOD: May–November, probably after good rains.

DISTRIBUTION: South West Africa, north western Cape; known from the coastal sand near Lüderitz Bay to Port Nolloth, Steinkopf and Goechas in Namaqualand.

SOUTH WEST AFRICA.—Luederitz: on road to Nautilus, *Kinges* 2597 (PRE); Luederitz Bay 1 m S. of Lagoon, coarse sandy soil, mountainous country, *Giess & van Vuuren* 672 (PRE).

CAPE.—Namaqualand: sandy plain North of Ugrabis, *Marloth* 2666 (PRE); Steinkopf, *Marloth* 6753 (PRE); Port Nolloth, 26 miles East, *Theron* 1263 (PRE); Karroid hills 3 miles S. of the Orange River Mouth, *Pillans* 5608 (BOL); Kookfontein, *Bolus* 6604A (BOL).

Anthericum odoratissimum Dinter inhabits the same area as *T. bulbinifolia* and flowers at the same time. *Giess & van Vuuren* 867 from Aus may prove to be *A. odoratissimum* as the squamae are large, membranous and gaping, not fimbriate, and therefore unlike those of *T. bulbinifolia*. But no other differences were detected. Here further observations in the field and more collections will be necessary to settle this problem.

27. *T. lanata* (Dinter) Oberm., comb. nov.

Anthericum lanatum Dinter in Fedde, Rep. 29: 261 (1931). Poelln. in Fedde, Rep. 52: 251 (1943). Dinter in Fedde, Rep. App. 23: 57 (1923) name only. Type: South West Africa: Diamond Area 1, Klinghardt Mountains, *Dinter* 3901 (B, holo.! PRE, iso.!). *A. sublanatum* Dinter in Fedde, Rep. 29: 262 (1931). Poellnitz in Fedde, Rep. 52: 25 (1943). Type: South West Africa, Lüderitz: Halenberg, *Dinter* 6628 (B, holo., PRE, photo.).

Small plants up to 30 cm. *Roots* many, felted, up to 22 cm long. *Squamae* membranous, many, loosely arranged; outer squamae apparently absent or small. *Leaves* many, linear, up to 25 cm long, 2 mm wide, tortuous, lanate with long, soft, retrorse hairs. *Inflorescence* longer than the leaves, umbellate, with about 9 branches arising out of the apex of the scape, secondary branches with unequal accessory branches, many flowered; scape lanate or glabrous, firm, up to 14 cm long, about as long as the umbel; bracts small, membranous, apiculate, auriculate; pedicels up to 8 mm in fruit, erect, thin. *Flowers* with perianth white, brown-keeled, maculate, segments 6 mm long; filaments shortly papillate, uniform, inner erect, connivent? (no live flower seen); ovary with ca. 10 ovules per cell. *Capsule* globose, black, 5 mm n diam. *Seeds* (unripe) with hyaline ridges.

FLOWERING PERIOD: August–September.

DISTRIBUTION: South West Africa, Namib

SOUTH WEST AFRICA.—Diamond Area 1: Pomona, S. of Lüderitz Bay, *Schaefer* in herb. *Marloth* 6597 (PRE).

The differences mentioned between *T. lanata* and *A. sublanatum* by Dinter, are not important.

28. *T. thyrsoides* (Bak.) Oberm., comb. nov.

Anthericum thyrsoides Bak. in J. Bot. Lond. 1872, 139; Fl. Cap. 6: 393 (1897). Type: Cape, Tulbagh, Yuk River Hoogte, *Burchell* 1231 (K, holo.).

Small plants up to 18 cm long, hirsute. *Roots* many, somewhat swollen but not bulbous. *Rhizome* small. *Squamae* membranous, broadly oblong, loosely arranged around the shoots, leaf- and scape-bases. *Leaves* many, linear, up to 16 cm long, 2 mm broad, tapering gradually to the apex, covered with long, tawny, retrorse hairs. *Inflorescence* a many flowered, fairly compact raceme, in some plants sub-umbellate at the base; scape short, firm, ca. 7 cm long, setose with tawny, retrorse hairs; bracts conspicuous, white, membranous, deltoid, cuspidate, margin irregularly dentate; pedicels filiform, hirsute, firm in fruit up to 8 mm, about as long as the bracts. *Flowers* with a mauve or pink, maculate perianth (maculae near the middle of segment), segments 8 mm, spreading (or recurved?); filaments shortly papillate, inner connivent? (no live flower seen); ovary with 10 ovules per cell. *Capsule* globose, 5 mm in diam. glabrous. *Seeds* not seen.

FLOWERING PERIOD: August.

DISTRIBUTION: Cape: originally collected by *Burchell* in the Tulbagh district; recently found in the White Hill Karroo Garden.

CAPE.—Laingsburg: White Hill Ridge, *Compton* 3228, 13397 (NBG); Matjiesfontein, *Beattie* (NBG 2562/14, BOL).

29. *T. tortilis* (*Bak.*) *Oberm.*, comb. nov.

Anthericum tortile *Bak.* in Bull. Herb. Boiss. Ser. 2, 4: 996 (1904). Type: Cape: Tulbagh, Saron, *Schlechter* 4846 (Z, holo.! PRE, photo.). *A. salteri* *Leighton* in Flow. Pl. of A. 18; t. 687 (1938). Type: Cape: Namaqualand, Springbok, *Salter* 966 (BOL, holo.). *A. oocarpum* *Schlechter* ex *Poelln.* in Bol. Soc. Brot. 16, 2: 75 (1942). Type: Cape, Namaqualand, Zuurfontein, *Schlechter* 8525 (B, holo.! PRE, photo.).

Small plants up to 15 cm. Roots fused into a few long tubers and with some straggling thin, branched rootlets at the apex and tips. Rhizome small. Squamae membranous, broad surrounding shoot, leaf- and scape-base. Leaves 3–6, linear, up to 10 cm long, 6 mm broad, flat, long tapering to the apex, transversely, plicately folded, glabrous or minutely pubescent, glaucous, margin prominent. Inflorescence a divaricate panicle overtopping the leaves, side branches short 1–5; scape arcuate at the base, firm; bracts broad, auriculate, apiculate, membranous, shorter than the pedicels; pedicels up to 5 mm, recurved in fruit. Flowers with pale pink, maculate, spreading perianth segments, 1 cm long; filaments scabrous above, fimbriate below, declinate; ovary with 10 ovules per cell. Capsule narrow ovoid, 7 mm long. Seeds ridged.

FLOWERING PERIOD: June–August. Flowers scented.

DISTRIBUTION: Cape, South-western districts, Namaqualand, Vanrhynsdorp-Tulbagh and Hopefield.

CXPE.—Namaqualand: Mesklip, *Esterhuysen* 5953 (PRE, BOL). Vanrhynsdorp: Nieuwerust, *Esterhuysen* 5982 (BOL). Hopefield: *Bolus* 12871A (NH).

The leaves of this species are most unusual. They are folded in a compressed, transversely plicate manner like a concertina.

30. *T. jacquiniana* (*Roem. & Schult.*) *Oberm.*, comb. nov.

Anthericum jacquinianum *Roem. & Schult.* Syst. Veg. 7: 462 (1829) nom. nov. for *A. flexifolium* sensu *Jacq.* Ic. 2, t.412 (1786–1793); non L.f. Type: Iconotype, Cape, *Jacquin*, Ic. 2, 18; t.412. *A. elongatum* *Willd.* var. c, *flexifolium* sensu *Bak.* in Fl. Cap. 6: 389 (1897).

T. jacquinii *Kunth*, Enum. 4: 578 (1843).

Plants up to 50 cm high. Roots 1–7, bulbous, separate or fused above, becoming hard with age, often covered with many, thin, hard skins. Rhizome small, woody. Squamae large, membranous, surrounding shoot, leaf- and scape-base. Leaves ca. 12 per shoot, filiform or linear, flat, up to 15 cm long, 2 mm broad, wavy when young, later erect, straight, with lax, long, patent silky hairs, dull blue-green. Inflorescence a divaricate panicle with many short, accessory branches in the axils of the main branches, many flowered; scape terete, firm, straight, laxly silky haired below, glabrous with age; bracts short, auriculate, apiculate, membranous; pedicels short, 5 mm in fruit, erect; if flower is not fertilized the short pedicel recurves; buds sessile. Flowers with recurved, maculate perianth, segments 11 mm long; filaments erect, inner connivent, hirsute below, muricate above; ovary with 12–16 ovules per cell. Capsule oblong or, if few ovules are fertilized, obovoid. Seeds with ridges.

FLOWERING PERIOD: June–September. Sweet smelling. “Anysblom” (*Marloth*). “Flores odoratissimi, aemuli heliotropio peruviano” (*Jacquin*).

DISTRIBUTION: Western Cape; Laingsburg, Carnarvon, Williston, Clanwilliam, Calvinia, Namaqualand.

CAPE.—Laingsburg: near Ketting Station, *Acocks* 17136 (PRE). Williston: *Acocks* 14700 (PRE). Carnarvon: 3 m. S. of Carnarvon, *Acocks* 16426 (PRE). Clanwilliam: near Doorn Rivier, *Lewis* (SAM 64668, NBG); Agtertuin, *Schlechter* 10865 (BOL, PRE). Clanwilliam: *Esterhuysen* 5536 (BOL, PRE). Calvinia: Driefontein, Voor Hantam, *Marloth* 1280 (PRE); near Lokenburg, *Acocks* 18485 (PRE). Namaqualand: Brakdam, *Esterhuysen* 5688 (PRE); Bowesdorp, *Lewis* (SAM 55873, NBG); Garies, *Acocks* 16436 (PRE).

Although no type is preserved, the specimens cited agree with the Jacquin plate. They show the short, erect pedicel, the leaf has a lax pubescence of long silky patent hairs, the root is tuberous and the outer squamae form a collar around the base of the shoot.

The following specimen differs somewhat from typical *T. jacquiniana*; *Acocks* 19290 from near Van Rhynsdorp, succulent Karroo of hummocky flats, "rare" (PRE). The leaves are rather short, wavy, terete, striate, tapered at the apex, forming a neat flat rosette raised off the ground. This plant is glabrous and has the leaves spreading instead of erect.

31. *T. paniculata* Oberm., sp. nov. *T. muricatae* affinis, sed radicibus bulbosis, foliis hirsutis differt.

Radices tuberosae sed non inter se adnatae. *Folia* circ. 4, lanceolata pubescentia saepe undulata. *Racemus* multiflorus, ramis multis patentibus secundariis ferens; pedicelli erecto-patentes ca. 1 cm longi. *Flores* albi maculati; ovula in loculis 10. *Capsula* parva globosa.

Plants up to 30 cm high. *Roots* many, short, bulbous. *Rhizome* small. *Squamae* thin, loose, membranous. *Leaves* 3–4, linear-lanceolate, up to 20 cm long, 1 cm broad, flat, straight or wavy, glabrous above, pubescent below, margin slightly raised, sparsely fimbriate, tapered to the apex. *Inflorescence* a divaricate raceme with accessory branches in many of the axils, many flowered, overtopping the leaves; scape with a slight curve, about as long as the panicle, pubescent below; bracts small, ovate, apiculate, auriculate; pedicels erecto-patent, ca. 1 cm long in fruit. *Flowers* with a white, maculate perianth, segments 8 mm long; filaments papillate; ovary with 10 ovules per cell. *Capsule* globose ca. 4 mm in diam. *Seeds* not seen.

FLOWERING PERIOD: September–October.

DISTRIBUTION: Only known from the Clanwilliam district in the south western Cape.

CAPE.—Clanwilliam: Olifants River, Rondegat, *Schlechter* 10792 (PRE, holo., L, iso.). Pakhuis, *MacOwan* 1985 (NBG); east side of the Olifants River Valley in shady fissures in sandstone rocks, *Diels* 366 pro parte (B).

The species resembles *T. muricata* but the roots are few, tuberous and short. It differs from *T. tortilis* in that the root tubers are not fused, the leaves pubescent, the raceme much branched and the pedicels erect in fruit. The leaves may show some transverse folds when young.

32. *T. zebrina* (*Schlecht. ex Poelln.*) Oberm., comb. nov.

Anthericum zebrinum Schlechter ex Poelln. in Bol. Soc. Brot. 16, 2: 66 (1942). Type: Cape, Namaqualand, Brakdam, *Schlechter* 11128 (B, holo.! PRE, GRA, L, iso.!), Fig. 7.

Plants up to 20 cm high. *Roots* many, some short and bulbous, others longer and thinner, with swellings near the tips. *Rhizome* small. *Squamae* membranous, long, tubular forming a neck around shoot, often up to 4 cm long, usually transversely striped with dark brown lines; apex horizontal, irregularly toothed. *Leaves* about 4 per shoot, filiform to linear, ca. 18 cm long (occasionally up to 45 cm), 1–5 mm broad, wiry, glossy, bright green, straight or wavy when young, shortly pubescent or glabrous. *Inflorescence* a branched, many flowered raceme, side branches ascending, very short in young plants; scape terete, pubescent; side branches and pedicels with

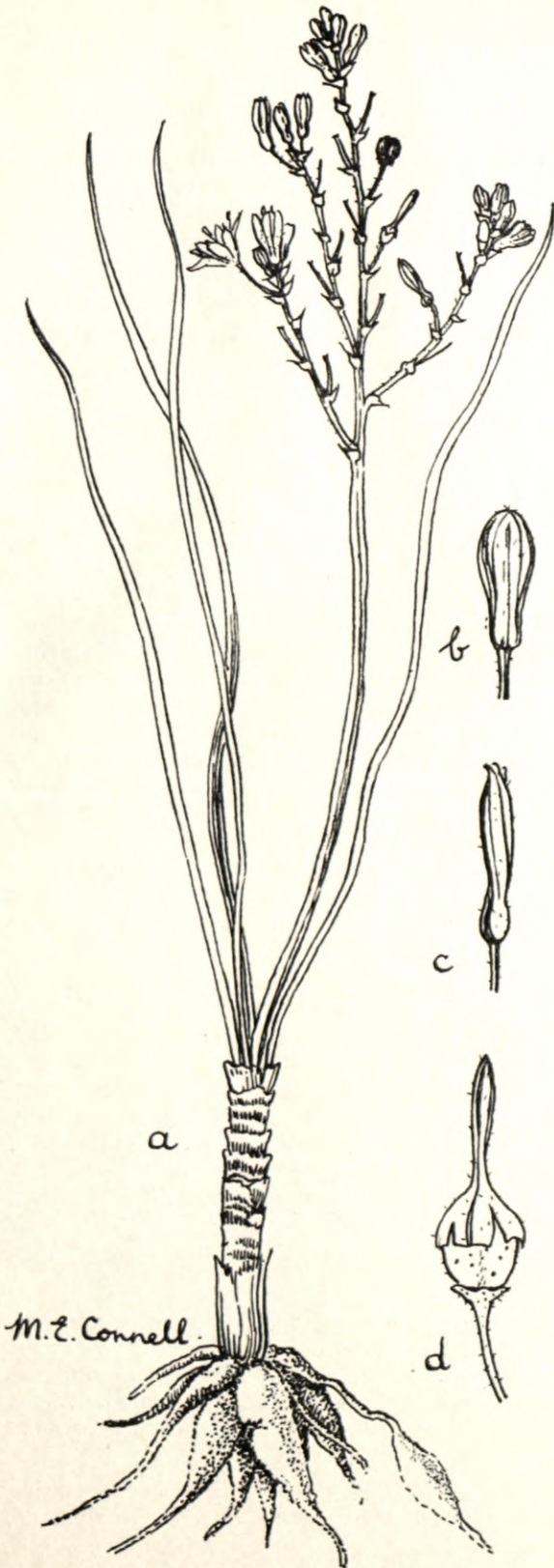


FIG. 7.—*Trachyandra zebrina* (Schltr. ex Poelln.) Oberm. a, habit. b, young bud, $\times 2$. c, closed flower, $\times 2$. d, young fruit, $\times 2$.

short, hard, patent bristles; bracts ovate, apiculate or subulate, auriculate, white, membranous, ciliate; pedicels patent-ascending, bristly, up to 8 mm long. *Flowers* with a white or pinkish-mauve perianth with brown keels and maculae, hispid on the outside, segments ca. 9 mm long; filaments with short papillae; ovary with 8 ovules per cell, glabrous when young, becoming hispid with sparse, short, reflexed hairs when capsule develops. *Capsule* globose, hispid. *Seeds* not seen.

FLOWERING PERIOD: July–November.

DISTRIBUTION: South-western Cape; known only from Namaqualand.

CAPE.—Namaqualand: near Garies, *Acocks* 19314 (PRE), *Theron* 1265 (PRE); Karrachas Pass, between Springbok and Kubus, *Verdoorn* 1823 (PRE); Brackdam, *Esterhuysen* 5678 A (BOL, PRE).

Typical of this species are the usually striped squamae and the hispid raceme and capsule.

33. **T. karrooica** *Oberm.*, sp. nov., distincta, nullis e specibus notibus propinqua.

Plantae parvae ad 15 cm altae. *Radices* tuberosa, superne inter se adnatae. *Folia* filiformia. *Racemus* ramis patentibus 1–3 ramo principali aequilongis, scapo brevi, pedicellis patentibus 2·5 cm longis. *Flores* maculati; ovula in loculis 6.

Plants up to 15 cm high. *Roots* fused above with rhizome, split below into 2–3 tubers or entire, soft when young, becoming hard and brown skinned when old. *Rhizome* small. *Squamae* small, thin, transparent, white, membranous. *Leaves* about 7 per shoot, filiform, 7–15 cm long, 1 mm broad, glabrous or with a few silky hairs, apex apiculate. *Inflorescence* with 1–3 spreading branches nearly as long as the main branch, about as long as the leaves; scape short, up to 5 cm, shortly pubescent; rachis glabrous; bracts small subulate; pedicels patent up to 2·5 cm long, apex occasionally somewhat recurved in fruit. *Flowers* with a white perianth, maculate with yellow spots, segments 8 mm long; filaments retrorsely papillate; ovary with 6 ovules per cell. *Capsule* globose, 4 mm. *Seeds* (immature) with hyaline ridges.

FLOWERING PERIOD: February–March. There is one record of it flowering in October (*Bolus* 13830 from Richmond). Bryant noted that the flowering season was short. At Vogelstruisbult in the Prieska district, he found it to be fairly common but he could not find more than 3 specimens in flower.

DISTRIBUTION: Apparently a rare, short flowering Karroo species collected only once in each of the following districts, Calvinia, Richmond, Prieska and Kimberley. *Merxmüller* 1719, from South West Africa, Namib, 35 miles East of Henties Bay, also seems to belong here.

CAPE.—Richmond: False Karroo, 17 m west of Richmond, *Acocks* 16341 (PRE, holo.); Vlakplaats, *Bolus* 13830 (BOL). Calvinia 56 m. west of Fraserburg (locally abundant) *Acocks* 14153 (PRE). Prieska: Vogelstruisbult, *Bryant*, J.256 (PRE). Kimberley: Mauritsfontein, *Acocks* 5759 (KMG, with a very young inflorescence). SOUTH WEST AFRICA.—Omaruru: 35 m east of Henties Bay, *Merxmüller* 1714 (M, PRE).

34. **T. patens** *Oberm.*, sp. nov. *T. flexifoliae* affinis sed pedicellis longioribus patentibus differt, etc.

Plantae ad 40 cm altae. *Radices* lanatae tuberosae, superne inter se adnatae. *Squamae* firmas brunneae collum longum formantes, interiores pallidae membranaceae. *Folia* filiformia terna surculo, juvenia spiralia. *Racemus* divaricatus patens globosus multiflorus ramis multis secundariis ferens; pedicelli patentes ca. 1 cm longi. *Flores* maculati; filamenta biformia; ovula in loculis 10. *Capsula* globosa. *Semina* verrucosa.

Plants up to 40 cm high. *Roots* forming one tuber in young plants increasing to many separate tubers with age, often narrowed above where attached to rhizome,

with numerous straggling, lanate rootlets. *Rhizome* small. Older plants producing 4–7 shoots. *Squamae*, the outer firm, brown, forming a long, narrow neck around shoot; inner thin, pale membranous. *Leaves* about 3 per shoot, filiform, up to 35 cm long, $\frac{1}{2}$ –1 mm broad, erect, straight or wavy (especially so when young when the upper half forms a corkscrew curl), sparsely pubescent or glabrous. *Inflorescence* a patent, divaricate, many flowered raceme with accessory branches in many of the axils; at first overtopping the young leaves, later, when the latter are full grown, more or less equal in length; scape up to 24 cm long, minutely pubescent below; bracts small, ovate, apiculate, membranous, white; pedicels patent or patent-ascending up to 1 cm long. *Flowers* with brown keeled, maculate perianth segments up to 1 cm long; filaments white, scabrous, the 3 inner bearded at the base, yellow in lower half (*vide Marloth*); ovary with 10 ovules per cell. *Capsule* globose, 3 mm. *Seeds* verrucose.

FLOWERING PERIOD: August–November. Sweet scented (“like a Rève d’or rose,” *Marloth*).

DISTRIBUTION: Western Cape, apparently abundant in Namaqualand, also collected at Piketberg, possibly also Sutherland and Swellendam districts.

CAPE.—Piketberg: Boschkloof, *Leighton* 114 (BOL); Plateau on Kapiteins Kloof Mountain, *Pillans* 8016 (BOL), *Stokoe* 8512 (BOL); stony slopes on Twentyfour River Mts. above Porterville, *Esterhuysen* 16196 (BOL). Namaqualand: *Scully* 104 (PRE, holo.!, BOL, iso!); between Khamieskroon and Springbok, *Pillans* 6351, 6355 (BOL); Mesklip, *Esterhuysen* 5831, 5832, 5847 (BOL), *Leighton* 1367 (BOL); Goechas near Steinkopf, *Schlechter* 11373 (BOL); Kookfontein, *Bolus* 6605 (BOL, NBG).

Recognized by its rounded divaricate, many flowered raceme with many accessory branches and the pedicels which are patent and arranged fairly close together at short, regular intervals.

A specimen, *Bolus* in herb. BOL, 19605, from Nieuwoudtville, Calvinia district, has a nearly simple raceme. This may have been the result of an injury which prevented the side branches from developing normally. As a result the apical growth is stimulated to form more flowers than usual. An analogous development was noted in *T. affinis* Kunth.

The following specimens collected more to the East, Sutherland: Klein Roggeveld, *Marloth* 10399 (PRE); foot of Komsberg Pass, *Leistner* 268 (PRE); Swellendam, *Marloth* 8608 (PRE), seem to be near *T. patens* but the racemes are simple or with 1–2 short, basal branches. The root tubers formed purple stains on the sheets around the area where they were mounted. They were poisoned with mercury-chloride and the combination of this and a chemical in the tubers must have caused the colour patches.

35. *T. oligotricha* (*Bak.*) *Oberm.*, comb. nov.

Anthericum oligotrichum Bak. in Bull. Herb. Boiss. Ser. 2, 4: 996 (1904). Type: Cape, Piketberg, *Schlechter* 4857 (Z, holo., GRA, PRE, iso!). The number was erroneously published as 4887. *A. filiforme* δ Thunberg, nom. tant. ex Juel, Pl. Thunb. 120 (1918). Cape Thunberg (UPS, holo. PRE, photo.). *A. elongatum* sensu Duthie in Ann. Stell. Univ. 4, A: 11, t.III (1926); non Willd.

Plants up to 30 cm long. *Roots* swollen, pale, short, covered with old skin flakes with many straggling rootlets, spreading horizontally. *Rhizome* short, vertical. *Squamae* surrounding shoot yellow or white. *Leaves* usually about 7, erect, filiform, ca. 15 cm long, 1 mm in diam., soft, usually with some reflexed bristlelike hairs occasionally glabrous, rarely densely hairy. *Inflorescence* usually overtopping the leaves, up to 30 cm high, simple or with a few, short, ascending branches, few flowered; scape slender, glabrous or minutely scabrid; bracts small, ovate, auriculate, ending in a long, soft awn, membranous; pedicels short, ascending, up to 6 mm in fruit, buds sessile. *Flowers* with a spreading perianth, white or pale pink, brown keeled, maculate with yellow dots near the base; segments about 10 mm long, filaments subequal,

muricated, flattened below and there with dorsal and lateral fringes; ovary with 10 ovules per cell. *Capsule* oblong, apiculate, 3–6 mm long, touching rhachis. *Seeds* tetrahedral, dark brown, verrucose.

FLOWERING PERIOD: July–November, “Odour heavy, musklike” (*Duthie*).

DISTRIBUTION: Cape, confined to a few south western districts, Piketberg, Ceres, Stellenbosch, Cape. “In clay soil, rare in sand” (*Duthie*).

Duthie notes that it is the most abundant species around Stellenbosch. In favourable conditions the plants are closely crowded, the horizontal roots interlacing in a striking manner. Vegetative reproduction by means of root-buds is worth noting. The pubescence is variable. *Duthie* found juvenile plants to be glabrous. One plant of *Schlechter* 10712 (L) was found to be densely hispid.

CAPE.—Cape Town: Phesantekraal, *van Niekerk* 160 (PRE). Stellenbosch: *Duthie* 522 (J. 15617, J, STE); Faure, *Strey* 523 (PRE). Piketberg: Kapitein’s Kloof Mountain, *Pillans* 8016 (BOL); Boschkloof, *Leighton* 114 (BOL); Piketberg Road, *Schlechter* 10712 (L.) (PRE). Ceres: Ceres Road, *Schlechter* 8982 (PRE, L.).

36. *T. flexifolia* (L.f.) *Kunth*, Enum. 4: 579 (1843).

Anthericum flexifolium L.f., Suppl. 201 (1781). Thunb. Prod. 62 (1794) et in Fl. Cap. edit. Schult. 318 (1823). Roem. & Schult. in Syst. Veg. 7: 461 (1829). Bak. in J. Linn. Soc. 15: 307 (1876). Type: Cape, *Thunberg* (LINN, holo., UPS, iso. PRE, photo.). *A. serpentinum* Bak. in Flor. Cap. 6: 387 (1897). Adamson & Salter, Flora of the Cape Peninsula 1950; 180. Type: Cape, Riet Valley near Cape Town, *Ecklon & Zeyher* (K, syn.! PRE photo.). Malmesbury, *Bachmann* 870 (K, syn.). *A. cirrifolius* Schinz, in Bull. Herb. Boiss. Ser. 2, 2: 937 (1902). Type: Cape: Piketberg, Piquenierskloof, *Schlechter* 4921 (Z, holo.! PRE, GRA, BOL, NBG, iso.!). *A. pappei* Bak. in Flor. Cap. 6: 388 (1897); *Duthie* in Ann. Stell. Univ. 4, A: 13 t.I, fig. 6, 8 (1926). Type: Cape, Tulbagh, *Pappe* (K, holo.! PRE, photo.).

Plants up to 25 cm high, rarely up to 60 cm. *Roots* tuberous short, about 4–8, not fused, spreading, with some straggling rootlets, sometimes covered with old skin flakes. *Squamae* surrounding the shoot short, membranous, dirty white. *Leaves* variable, 5–12 per shoot, straight or wavy, filiform, 7–30 cm long, about 1 mm in diam. (seldom flat and up to 5 mm wide), wiry, bright green, glossy, striate, with a minute rough pubescence or glabrous, sometimes with some white bristles near the base on the lower surface. *Inflorescence* an ascending panicle with 2 to many branches, as long as the leaves or overtopping them; flowers fairly close together, more lax in the taller forms; peduncles slender, straight, minutely scabrid or glabrous; bracts small, deltoid, cuspidate or aristate; pedicels short, erect, up to 8 mm in fruit, buds sessile. *Flowers* with a white, dark-keeled perianth, maculate with yellow spots, segments 1 cm long; filaments dimorphous, outer stamens scabrid, inner forming a tube, conspicuously muricated above, flattened and fringed below; ovary with 6–10 ovules per cell. *Capsule* globose, 5 mm in diam., glabrous, touching rhachis or ascending. *Seeds* black.

FLOWERING PERIOD: July–October.

DISTRIBUTION: The typical, small form is found on or near the Cape Peninsula, the larger form (*Anthericum pappei* Bak.) is found around Tulbagh and further north to Namaqualand. The *A. cirrifolius* *Schlechter* form with wider leaves, is from the Piketberg and Clanwilliam districts.

CAPE.—Cape Town: lower slopes of Devil’s Peak near Blockhouse, *Leighton* 2062 (BOL); Lion’s Head near Camps Bay, *Wolley Dod* 2331 (BOL); near Melkbosch Strand, *Esterhuysen* 2841 (BOL). Malmesbury: Riebeeck Kasteel Mt. near Botmanskloof, *Esterhuysen* 6028 (BOL, PRE). Tulbagh: Tulbagh, *Esterhuysen* 17405 (BOL), *Duthie* (BOL. 25716). Ceres: slopes below old Witzenberg Pass, *Esterhuysen* 20663 (BOL). Clanwilliam: Olifants River Barrage, *Esterhuysen* 5375 (BOL, PRE), 5802 (BOL); The Rest near Grey’s Pass, *Gillett* 3714 (BOL); N. of Pakhuis, *Esterhuysen*

25715 (BOL). Vanrhynsdorp: Giftberg, *Esterhuysen* 21976 (BOL); Klaver, *Andreae* 443 (PRE); Attys, *Schlechter* 8327 (BOL, L). Namaqualand: near Springbok, *Acocks* 19331 (PRE).

Duthie who studied the species at Stellenbosch and at Tulbagh, noted their variability in size and amount of branching in the inflorescence and suspected that she was dealing with one variable species (cf. *Ann. Stell. Univ.* 4, A: 14, 1926). Dr. C. G. Alm of Uppsala kindly compared a specimen, *Leighton* 2062, from Devils Peak, Cape Town, with the type of *Anthericum flexifolium* L.f. in the Thunberg Herbarium and found them to be identical. This specimen also agreed closely with the type of *A. serpentinum* Bak. preserved at Kew. This typical form, found around Cape Town and Stellenbosch, is a small form; apparently the climate does not suit it. The more luxuriant forms are found around Tulbagh; they are taller with the much branched inflorescence overtopping the leaves which moreover are often nearly straight. They agree with *A. pappei* Bak. which must also be regarded as a synonym. The type of *A. cirrifolius* Schinz from Piquenierskloof, has flat wavy leaves, up to 8 mm in width but one plant from the type collection, on the BOL sheet shows the typical, narrow *T. flexifolia* leaf. It can also be considered a synonym of *T. flexifolia*.

37. *T. dissecta* Oberm., sp. nov., distinctissima, nullis e specibus notibus propinqua.

Plantae parvae glabrae ad 30 cm altae. Radices inter se adnatae tuberosae durae. Squamae collum durum brunneum formantes, interiores membranaceae dissectae. Folia 1-4 filiformia. Racemus floribus paucis ramosus; pedicelli breves tenues in fructu ad 5 mm; ovula in loculis 10. Capsula erecta rhachidi attingens.

Plants small, up to 30 cm high, glabrous. Roots short, hard, few, tuberous, rough in old plants where the outer skins flake off. Rhizome small. Squamae up to 3 cm long, forming a neck, outer hard, brown, inner membranous, split into shreds. Leaves 1-4, filiform, 6-16 cm long, wiry, erect or curved outwards, bright green, glossy. Inflorescence a divaricate, few flowered panicle with about 3 branches; scape thin, terete, about as long as the leaves or slightly shorter; bracts minute, black or colourless, apiculate; pedicels short, thin, up to 5 mm in fruit, erect. Flowers with a white, brown keeled, maculate perianth, segments 8 mm long, spreading or somewhat recurved; filaments subequal, inner surrounding the ovary at the base; ovary with 10 ovules per cell. Capsule oblong, 5 mm long, touching rhachis. Seeds (unripe) small, with hyaline ridges.

FLOWERING PERIOD: August-October.

DISTRIBUTION: Cape, Ceres, Calvinia, Vanrhynsdorp and Namaqualand districts; apparently found in stony, karroid surroundings.

CAPE.—Ceres: Bokkeveld Karroo, Paardekop near Spes Bona, Dwyka Rocks, *Marloth* 12531 (PRE, holo.); Ceres Karroo, Zwartkoppies near Spes Bona, *Marloth* 10471 (PRE). Calvinia: 53 m. S. of Calvinia, stony succulent karroo (locally fairly frequent), *Acocks* 18989 (PRE). Carnarvon: Karee desert, Klipkolk, *Stephens* 6518 (BOL). Vanrhynsdorp: Salt River, *Stokoe* 8509 (BOL).

Section 3. GLANDULIFERA Oberm., nov. sect.

Radices tenues longae, acumen versus anguste fusiformia. Folia uniformia; basi saepe reliquiis fibrosis. Racemi ramosi rarius ad racemum simplicem redacti, leviter vel dense glandulosi. Capsula tuberculis glanduliferis. Semina verrucosa.

38. *T. scabra* (L.f.) Kunth, Enum. 4: 585 (1823).

Anthericum scabrum L.f. Suppl. 202 (1781). Thunb. Prod. 63 (1794) et in Fl. Cap. ed. Schult. 320 (1823); Bak. in J. Bot. Lond. 1872, 137, in J. Linn. Soc. 15: 310 (1876), and in Fl. Cap. 6: 392 (1897). Type: Cape, sandy plains between Cape Town and Hottentotsholland, *Thunberg* (UPS, sheet 2, holo., PRE, photo.).

Bulbine scabra (L.f.) Roem. & Schult. Syst. Veg. 7: 451 (1829). Fig. 8.



FIG. 8.—*Trachyandra scabra* (L.f.) Kunth. a, habit, $\times \frac{1}{2}$. b, flower, $\times 7$. c, capsule, $\times 4$. d, stamen, $\times 10$. e, tubercle tipped with a stipitate gland, enlarged.

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Slender plants up to 40 cm high. *Roots* thin, wiry. *Stem* woody, branched near the base into about 5 very short, woody contracted shoots, which are densely covered with the congested tubular, membranous leaf-bases. *Leaves* many per shoot, lamina contracted above the base, linear, up to 40 cm long, 2 mm broad, triquetrous, somewhat leathery, muciculate or glabrous. *Inflorescence* an elongated, simple or few-branched, glandular-scabrid raceme; flowers laxly arranged; scape muricate, the scabrid points gland-tipped when young; bracts small, deltoid, apiculate; pedicels up to 2 cm long, patent with the apex recurved in fruit. *Flowers* with a maculate perianth, segments 7 mm long; filaments with long retrorse bristles; ovary glandular, with 2 ovules per cell. *Capsule* obtriangular, trisulcate, stipitate, 5 mm long, the apical tubercles larger; persistent perianth-cup forming a frill at the base. *Seeds* usually 2 per loculus, ovoid, 5 mm in diam., grey, flattened, coarsely verrucose and with hard ridges.

FLOWERING PERIOD: September–December.

DISTRIBUTION: South Western Cape, on sand dunes near the coast. Apparently absent on the Cape Peninsula, where the closely related *T. sabulosa* takes its place.

CAPE.—Wynberg: Cape Flats near Stickland Siding, *Acocks* (BOL 24270). Malmesbury: near Darling, *Esterhuysen* 3877 (PRE), *Bolus* 12869 (BOL). Hopefield: near Hopefield, *Leighton* 2446 (BOL); near Vredenburg in sand between Hoetjies Bay and Saldanha Bay, *Bolus* (BOL 12868). Clanwilliam: Olifants River Valley, Keerom, sandy hills, *Esterhuysen* 17857 (BOL); Pakhuis, *Esterhuysen* 3195 (BOL); Lange Vallei, *Leighton* (BOL 21618); Nortier Reserve, Lamberts Bay, *Acocks* 15191 (PRE). Vanrhynsdorp: Klaver, *Bolus* (BOL 20652).

39. *T. sabulosa* (*Adamson*) *Oberm.*, comb. nov.

Anthericum sabulosum Adamson in Journ. S.A. Bot. 1941, 99. Type: Cape, Cape Town, Retreat Flats, *Adamson* 2631 (BOL, holo., PRE, iso!).

Plants up to 40 cm high. *Roots* thin, reddish. *Stem* forming a short, vertical, woody base giving rise to several short, woody branches which end in congested, leafy shoots, densely covered by membranous tubular leaf-bases. *Leaves* many per shoot, lamina linear, up to 30 cm long, ca. 5 mm broad, keeled, glabrous or slightly muricate, soft in texture, tapering to an elongated point. *Inflorescence* about as long as the leaves or overtopping them, simple or with a few short, basal branches, glandular-hispid, laxly flowered; scape arcuate below terete, fairly stout; bracts small, deltoid, cuspidate; pedicels up to 2 cm long at first erect and short, later curved downwards, with the fruit facing the scape. *Flowers* with a white, dark keeled, maculate perianth, glandular hispid on the outside, segments 1 cm long; filaments muricate; ovary with 2 ovules per cell. *Capsule* globose, 8 mm in diam., densely covered with dendroid, gland-tipped excrescences, with a short stipe, hidden by covering. *Seeds* grey, 3 mm long, ovoid, flattened, verrucose with hard, rough, irregular ligulae and wings around the sides.

FLOWERING PERIOD: September–October.

DISTRIBUTION: Cape, on sand dunes on the Peninsula, to Bredasdorp in the east, Hopefield in the west.

CAPE.—Bredasdorp: Cape Agulhas, *Esterhuysen* 4386 (BOL). Caledon: Onrust River, near coast, *Esterhuysen* 4247 (BOL). Peninsula: Kommetjie, *Wolley Dod* 3604 (BOL); Retreat near Flora Road, *Salter* 8484 (BOL); *Adamson* 2628 (BOL). Hopefield: near Hopefield, *Wilman* 2446 (BOL), *Leighton* 456 (BOL).

In appearance this species resembles *T. scabra* very much but the round, densely covered capsule, which is also larger, separates it from that species. A small stipe is

present at the base of the capsule but it is not visible, being hidden by the dense covering. The plants also seem somewhat taller and the pedicel and the outside of the perianth are more densely glandular-hispid than in *T. scabra*.

40. *T. glandulosa* (Dint.) Oberm., comb. nov.

Anthericum glandulosum Dint. in Fedde, Rep. 29: 266 (1931); Poelln. in Fedde, Rep. 52: 236 (1943); includ. var. *montis-ruschii* Poelln. in Fedde, Rep. 52: 236 (1943). Type: South West Africa, Windhoek: Ruschberg, *Rusch* in herb. Dinter 4381 (B, holo.! PRE, photo.). Type of var.: from the same locality, *Rusch* Jnr. in herb. Dinter 7921, (B! PRE, photo.).

Plants glandular, up to 30 cm high. *Roots* many, hard, stout but not swollen, about 2 mm in diam. *Stem* short, lateral, woody, covered with old leaf fibres, forming short branches which end in leafy shoots. *Leaves* linear up to 20 cm long, 4 mm broad, keeled, hard, glaucous, covered with gland-tipped, scabrid points, the glands disappearing with age, raphides many, distinct; tubular leaf-base membranous and with hard dorsal nerve-bundles disintegrating into fibres. *Inflorescence* a divaricate raceme, glandular hispid, many flowered; scape up to 7 cm long, much shorter than raceme, the latter overtopping the leaves; bracts ovate, subulate, up to 6 mm long; pedicels up to 12 mm long, patent, erect. *Flowers* with a white, brown keeled maculate perianth with a few glands on the outside, segments 9 mm long; filaments retrorsely scabrid; ovary few ovuled. *Capsule* small, 5 mm long, sparsely and shortly glandular-hispid, contracted at the base into a short stipe. *Seeds* verrucose, 1-2 per loculus.

FLOWERING PERIOD: January.

DISTRIBUTION: Only known from the type locality, Ruschberg, district Windhoek in South West Africa.

41. *T. asperata* Kunth, Enum. 4: 574 (1843); aggregate species.

Plants up to 1 m high, variable in size and amount of glandular pubescence. *Roots* many, firm, sometimes slightly fusiform near the tips. *Rhizome* compact, woody, sometimes forming a very short, woody stem, covered with fibres from old leaf-bases. *Leaves* many, filiform, linear and keeled or triquetrous 20-40 cm long, 1-5 mm broad, glabrous or minutely glandular pubescent and with some sparse setae in some; with minutely papillate ridges, soft, glabrous, long tapered to the apex, base membranous, tubular, the dorsal nerve bundle persisting as fibres. *Inflorescence* a divaricately branched raceme, often with unequal accessory branches or vestiges of these in the lower axils, seldom simple through reduction, overtopping the leaves: scape terete, glabrous or sparsely glandular scabrid or with some sparse setae; bracts small, deltoid, subulate; pedicels up to 12 mm long, erect, patent, recurved or contorted in fruit, usually glabrous. *Flowers* with a spreading perianth, white or pink, dark keeled, maculate with green spots, these occasionally faint, sometimes sparsely glandular outside, segments 1 cm long; filaments scabrid the same colour as the perianth; ovary verrucose, each wart capped with a rod-like, unicellular gland; with 4-6 anatropous ovules (embedded in a fold of the placenta) in each loculus. *Capsule* 5 mm globose or obtriangular, with some transverse ridges, constricted below, sparsely to densely covered with simple, elongated, gland-tipped tubercles. *Seeds* verrucose, grey, ridges winged.

FLOWERING PERIOD: September-December.

DISTRIBUTION: Eastern Cape, Natal, Orange Free State, Swaziland, Transvaal. Found in marshy ground or on stony hills.

KEY TO VARIETIES

- Capsule densely and evenly covered with short, gland-tipped tubercles, or occasionally nearly glabrous, globose; leaves flat and keeled or triquetrous, glabrous or with a pubescence of short or long hairs; usually found in marshy places:
 Pedicels scabrid, twisted in fruit; inflorescence divaricately branched or simple through reduction; plants up to 25 cm high (eastern Cape, Orange Free State, Swaziland):
 Inflorescence laxly flowered; leaves straight or twisted (eastern Cape, Orange Free State) (a) var. *asperata*
 Inflorescence densely flowered, densely glandular-hairy; leaves straight (Swaziland, eastern Transvaal)..... (b) var. *swaziensis*
 Inflorescence simple or branched, nearly glabrous, few to many flowered; leaves straight, filiform, minutely pubescent (glabrous to the naked eye); small plants (Orange Free State, eastern Transvaal)..... (c) var. *carolinensis*
 Pedicels glabrescent, erecto-patent up to 15 mm long in fruit; inflorescence with ascending branches; plants up to 50 cm high (Natal, Swaziland, eastern Transvaal) (d) var. *nataglencoensis*
- Capsule sparsely covered with short, gland-tipped tubercles, obtriangular in outline, with some transverse ridges; leaves terete, plants grasslike, nearly glabrous; usually found on mountain grasslands:
 Pedicels erect up to 15 mm long:
 Inflorescence divaricately branched (eastern Cape, Orange Free State, Transvaal) (e) var. *macowanii*
 Inflorescence simple or few-branched, flowers many, at first congested, pedicels thin and long (Natal, East Griqualand)..... (f) var. *stenophylla*
 Pedicels twisted, up to 7 mm long (Basutoland, Orange Free State, eastern Cape, Transvaal highveld)..... (g) var. *basutoensis*
- (a) var. *asperata*.

T. asperata Kunth, Enum. 4: 574 (1843). Type: Cape, Albert: New Hantam Mountains, in stony places, 4500–5000 ft. Feb. Drege 8735 (G, iso. ! PRE, photo.).

T. humilis Kunth, Enum. 4: 574 (1843). Type: Cape, Albany, Drege 8734 (P, iso, PRE, photo.).

Anthericum kunthii Bak. in Fl. Cap. 6: 392 (1897). As there is an Abyssinian species, *Anthericum humile* Hochst., Baker changed the epithet to *A. kunthii*. He could not trace the locality but the Paris sheet bears an original label with "Albany" on it which must be correct.*

CAPE.—Mount Currie: Kokstad, Tyson 1983 (PRE).

ORANGE FREE STATE.—Bethlehem: Phillips 3115 (PRE), Potgieter 85 (PRE). Kroonstad: Pont 395 (PRE).

(b) var. *swaziensis* Oberm., var. nov. Racemus densus, dense glanduloso pubescens, folia stricta.

SWAZILAND.—Mbabane, Compton 25240 (PRE, holo.; Swaziland Herb. iso.).

TRANSSVAAL.—Ermelo, Gunn (PRE, 28726).

(c) var. *carolinensis* Oberm., var. nov. Racemus glabrescens, folia stricta minute pubescentia, planta minora.

TRANSSVAAL.—Carolina: Galpin 12212 (PRE, holo.). Ermelo: Ermelo, Convent pupils 85 (PRE), Louw 23 (PRE); Mavrieriestad, Pott 5177 (PRE). Middelburg: Klein Olifants River near Middelburg, Young A119, A8 (PRE).

(d) var. *nataglencoensis* (O. Kuntze) Oberm., stat. et comb. nov.

Anthericum nataglencoense O. Kuntze, Rev. Gen. 3, 2: 315 (1898). Type: Natal, Glencoe, Kuntze (K, holo.). *A. aggericolum* Poelln. in Bol. Soc. Brot. 16, 2: 50 (1942). Type: Natal, New Hanover: Dalton, Rudatis 7 (B, holo. ! PRE, photo.). *A. monticolum* Poelln. in Bol. Soc. Brot. 16, 2: 56 (1942). Type: Natal, Estcourt: mountains near Estcourt, Schlechter 3349 (B, holo. ! PRE, photo.). *A. natalense* Poelln. in Bol. Soc. Brot. 16, 2: 58 (1942). Type: Natal, Inanda: Verulam, Phoenix, Schlechter 2920 (B, holo. ! PRE, photo.).

* Add to synonymy: *Anthericum asperatum* (Kunth.) Bak. in J. Bot. Lond. 1872, 138; J. Linn. Soc. 15: 310 (1876); in Fl. Cap. 6: 392 (1897). *A. sub-contortum* Bak. in Fl. Cap. 6: 390 (1897). Type: Cape, Griqualand East, MacOwan & Bolus (Bol. 1206, holo.).

NATAL.—Weenen: Estcourt Pasture Research Station, *Acocks* 10815 (NH, PRE). Inanda: *Wood* 457 (NH). Pietermaritzburg: Scottsville, *Allsop* 140 (NH). Zululand: Mtunzini, Gingindhlovu, *Lawn* 1195 (NH).

ORANGE FREE STATE.—Kroonstad: *Pont* 486 (PRE, SRGH). Harrismith: vlei near Harrismith, *Schweikerdt* 867, 868 (PRE).

TRANSVAAL.—Pretoria: Fairy Glen near Pretoria, *Leendertz* 1636 (PRE). Johannesburg: marsh, *Moss* 6041, 17768 (PRE). Ermelo: Ermelo, *Convent Sisters* 7 (PRE); Nooitgedacht, *Henrici* 1668 (PRE) *Gunn* (PRE). Witbank: Steenkoolspruit, *Kies* 389 (PRE), *Rogers* 24304 (NH).

(e) var. *macowanii* (Bak.) Oberm., stat. et comb. nov.

Anthericum macowanii Bak. in J. Linn. Soc. 15: 309 (1876) et in Fl. Cap. 6: 390 (1897). Type: Cape: Albany, Grahamstown, *MacOwan* 64 (K, holo.).

CAPE.—Albany: Grahamstown, *Glass* 564 (GRA). Uitenhage: Baakens Valley, *Cruden* 353 (GRA, SRGH). Queenstown: mountain sides, near Queenstown, *Galpin* 1569 (PRE). Aliwal North: Elandshoek, *F. Bolus* (PRE, 176). Bathurst: Hopewell, *Acocks* 11052 (PRE). Middelburg: Gryskop, *Archibald* 3146 (GRA). Between Umtata and Maclear, *Bolus* 8710 (BOL).

ORANGE FREE STATE.—Philippolis: *Smith* 4589 (PRE).

TRANSVAAL.—Vereeniging: *Burt Davy* (PRE, 5569). Benoni: *Verdoorn*, 826 (PRE). Germiston: Elandsfontein, *Prosser* 1150 (PRE).

(f) var. *stenophylla* (Bak.) Oberm., stat. et comb. nov.

Anthericum stenophyllum Bak. in Bull. Herb. Boiss. Ser. 2: 781 (1901). Type: Natal Lion's River: Nottingham Road, *Wood* 5235 (Z, holo.! PRE, photo.).

CAPE.—Mount Currie: Kokstad, *Tyson* 1820 (BOL); Mt. Currie, *Hutchinson* 1824 (PRE).

NATAL.—Alfred: near Weza, *Killick & Marais* 2015 (PRE). Umzinto: Alexandra, Dumisa, *Rudatis* 446 (L.). Lion's River: Lidgetton, *Mogg* 834 (PRE).

(g) var. *basutoensis* (Poelln.) Oberm. stat. et comb. nov.

Anthericum basutoense Poelln. in Bol. Soc. Brot. 16, 2: 51 (1942). Type: Basutoland, *Dieterlen* 669 (B, holo.! NH, iso.! PRE, photo.).

CAPE.—Aliwal North: Doctor's Drift, *Gerstner* 249 (PRE). Barkly East: *Gerstner* 177 (PRE).

ORANGE FREE STATE.—Fauersmith: *Pont* in herb. *Henrici* 2880 (PRE), *Verdoorn* 1041 (PRE), *Smith* 5609, 5576 (PRE). Ficksburg: *Galpin* 13919 (PRE). Bloemfontein; *Potts* 1989 (BOL), *Bolus* (BOL 11179), *Dix* (BOL 17476).

BASUTOLAND.—Mokhotlong, *Liebenberg* 5678 (PRE); Mafeteng, Likhoele, *Dieterlen* 1221, 1220 (PRE); Mohales Hoek, *Marais* 1076 (PRE).

TRANSVAAL.—Lichtenburg: Hakboslaagte, *Kinges* 1982 (PRE). Pretoria: Irene, *Smith* 3520 (PRE).

The species is best treated as a very variable one. Although certain forms are very uniform in certain areas, intermediates were found which upset the idea of separate species. Moreover, it was observed that a certain form would crop up in a different area, e.g. var. *macowanii* from Grahamstown could not be separated from plants collected near Benoni and other localities. This happened repeatedly in all the varieties. Neither did a study of the habitat assist in separating them. It was seen that similar plants were reported to be growing on grassy mountain slopes or in marshy ground. The varieties with the twisted pedicels showed a parallel development to those that have erect pedicels; in both the degree of pubescence varied considerably.

42. *T. capillata* (Poelln.) Oberm., comb. nov.

Anthericum pilosum Bak. in Fl. Cap. 6: 395 (1897); non Jacq. *A. capillatum* Poelln. nom. nov. for *A. pilosum* Bak. in Fedde, Rep. 50: 232 (1941). Type: Cape, Mount Currie: Clydesdale, *Tyson* 2114 (K, holo., B. PRE, GRA, iso.!).

Plants up to 60 cm. *Roots* uniform, fibrous, many. *Rhizome* small covered with leaf fibres. *Leaves* linear, up to 45 cm, triquetrous, each face 6 mm wide, herbaceous, softly and patently pilose with long hairs, margins, prominent. *Inflorescence* branched or simple, flowers somewhat congested near the apex, many flowered, with a few scattered stipitate glands; scape terete, pilose, bracts small, subulate; pedicels patent, up to 17 mm long. *Flowers* with a spreading white, dark keeled, maculate perianth, segments 9 mm long, filaments swollen and retrorsely scabrid above, glabrous below, the 3 inner situated in the furrows of the triquetrous ovary; ovary with 4 ovules per cell, globose, with minute papillate glands. *Capsule* unknown.

FLOWERING PERIOD: February.

DISTRIBUTION: Only known from the type locality, Griqualand East and from the Alfred District of Southern Natal, at altitudes of $\pm 3,000$ ft.

CAPE.—Mount Currie: Clydesdale, *Tyson* 2114 (K, holo., B, PRE, GRA, iso!).

NATAL.—Alfred: near Harding "Nongoni Veld" *Acocks* 13439 (PRE); Harding, *Oliver* 71 (NH).

Possibly a form of *T. gerrardi* but this cannot be decided until the capsules are known.

43. *T. erythrorrhiza* (Conrath) Oberm., comb. nov.

Anthericum erythrorrhizum Conrath in Kew Bull. 1914, 135. Type: Transvaal, Germiston, Modderfontein *Conrath* 777 (K, GZU, holo.! PRE, photo.).

Plants solitary or gregarious, up to 80 cm high. *Roots* spreading, uniform, hard, stout, up to 4 mm in diam., white at first becoming orange-red. *Rhizome* creeping, woody, covered with fibres. *Leaves* somewhat distichous, young tubular leaf-bases pink; lamina flat, erect often with a twist, firm, somewhat fleshy, linear-lanceolate, up to 40 cm long, 6 mm broad, shortly and sparsely pubescent, striate, midrib prominent below and excentric. *Inflorescence* erect, simple or with 1–2 ascending basal branches, up to 80 cm high; scape minutely and patently pubescent below, glandular pubescent above when young; bracts small, membranous, apiculate; pedicels ascending in flower, patent-erect in fruit and then up to 18 mm long. *Flowers* with perianth glabrous, white with yellow maculae, segments 10 mm long; stamens spreading shortly scabrid; ovary glandular-pubescent with 4 ovules per cell. *Capsule* globose, ca. 6 mm in diam. stipitate, covered with short, glandular tubercles. *Seeds* grey, verrucose, globose, tetrahedral, 3 mm in diam.

FLOWERING PERIOD: October.

DISTRIBUTION: Transvaal Highveld, black turf marshes.

TRANSSVAAL.—Johannesburg: Wattles, *Moss* 13659 (J, PRE); Palmietfontein, *Gilliland* (Moss H. 26147); near Johannesburg, *Ommaneng* (in herb. *Galpin* 7156, PRE). Pretoria: Baviaanspoort, *Smith* 788 (PRE) *Leendertz* (TM 6439, PRE); Derdepoort, *Leendertz* (TM 4032, PRE).

44. *T. gerrardii* (Bak.) Oberm., comb. nov.

Anthericum gerrardii Bak. in J. Bot. Lond. 1872, 137; in Gard. Chron. 1876, 6: 100 et in Fl. Cap. 6: 395 (1897). Type *Natal*, Zululand, *Gerrard* 1527 (K, BOL, holo.! PRE, photo.). *A. tortifolium* O. Kuntze, Rev. Gen. 3, 2: 315 (1898). Type: Cape; Uitenhage, near Zwartkops River, *Ecklon & Zeyher*, *Asphod.* 110 (B, holo.! NBG, iso.! PRE, photo.). *A. montium-draconis* Poelln. in Bol. Soc. Brot., Sér. 2, 16: 57 (1942). Type: *Natal*, Charlestown, *Thode* (B, holo.! PRE, photo.).

Plants up to 60 cm. *Roots* long, spreading, thin near the rhizome but younger parts fusiform. *Rhizome* compact, woody, densely covered with fibres. *Leaves* triquetrous, variable in length and width, 10–40 cm long, each face 2–10 mm broad, with patent setae, margin prominent, often minutely glandular papillate. *Inflorescence* a divaricate raceme, often with accessory branches in lower axils; flower buds at first congested at the apex, rhachis elongating during anthesis, and the capsules eventually

laxly arranged; scape and side branches setose or with scabrid, obtuse tubercles, topped with stipitate, evanescent glands and often very densely glandular-pubescent; bracts variable in size, lowest up to 3 cm including the very long soft awn, upper floral bracts small, deltoid, subulate, keel glandular-pubescent; pedicels at first ascending, later patent, finally with the apex recurved or sometimes making a complete loop, up to 15 mm long, densely to sparsely scabrid-glandular, very seldom glabrous. *Flowers* with perianth glandular on the outside, white, dark-keeled, maculate with purple spots (*Munro*), segments spreading 10–15 mm long; filaments scabrid, erect; ovary densely glandular pubescent, with 4–6 ovules per cell. *Capsule* globose, 1 cm in diam. stipitate, densely covered with long pectinate tubercles which are gland-tipped. *Seeds* round, 2 mm in diam. shortly verrucose, dark, ridges suppressed except for a small ridge near hilum.

FLOWERING PERIOD: October–February.

DISTRIBUTION: Eastern Cape, Natal, Zululand, Swaziland, Eastern Transvaal. On grassy mountain slopes or in marshes.

CAPE.—Alexandria: Bushmans River Poort, *Archibald* 5325 (PRE); Ghio Bridge, *Archibald* 5292 (PRE). Port Elizabeth: Port Elizabeth, St. George's Park, *Urton* 333 (GRA). Albany: Grahamstown, *MacOwan* 1454 (GRA); Trapp's Valley, *Daly* 618 (PRE). Komgha: near Komgha, *Flanagan* 576 (PRE). Kentani: *Pegler* 1379 (GRA). East London: *Ratray* 580 (GRA). Molteno: Boesmanshoek Pass, *Acocks* 18691 (PRE). Mount Currie: near Clydesdale, *Tyson* 2123 (BOL).

NATAL.—Weenen: South Downs, *Evans* 364 (NH). Estcourt: foot of Griffin's Hill, *Acocks* 11215 (PRE); Dalton Bridge, *Munro* (PRE). Inanda: *Wood* 432 (NH). Zululand: Lower Umfolosi: near Ntambanana *Codd* 1891 (PRE). Mtunzini: Inyesani, *Gerstner* (NH 22651); Amatikulu, *Mogg* 5794 (PRE).

SWAZILAND.—Mbabane, *Compton* 25212 (PRE).

TRANSVAAL.—Wakkerstroom: *van Dam* (TM 24348, PRE).

The following specimens have very narrow leaves:—

TRANSVAAL.—Barberton: *Pott* 5559 (PRE); Abbott's Hill, *Galpin* 1036 (PRE). Nelspruit: *Codd* 9393 (PRE). Ermelo: *Pott* (TM 15119, PRE); *Henrici* 1092 (PRE).

NATAL.—Giant's Castle: *Symons* (TM 25267, PRE).

The large round, rough capsule is typical for this species. Without it some specimens are not easily distinguished from *T. asperata* but *T. gerrardii* is usually a much coarser and more scabrid plant.

45. *T. giffenii* (*Leighton*) *Oberm.*, comb. nov.

Anthericum giffenii Leighton in J. S.A. Bot. 10: 59 fig. 2 (1944). Type: Cape, Victoria East, 23 miles from Alice, farm Naude's Hoek, shady places in kloof and on dry hillside. *Giffen* 783 (BOL, holo.), 783b (PRE, NH, iso.!).

Plants succulent up to 50 cm high, in clumps. *Roots* somewhat fleshy. *Rhizome* creeping, stout, without fibres. *Leaves* somewhat distichous, 10–12 per shoot, linear-lanceolate, triquetrous, up to 50 cm long, each face ca. 12 mm broad, tapering gradually to the apex, herbaceous, with a short, soft pubescence. *Inflorescence* a few-branched raceme or simple, varying in length, up to 150 cm high, glandular pubescent; scape pubescent; bracts small, ovate, acuminate, membranous; pedicels patent, up to 2 cm long, apex recurved in fruit. *Flowers* with perianth spreading, white, green-keeled, maculate, glandular pubescent on the outside, segments up to 15 mm long; stamens declinate, scabrid; ovary glandular, placed on a disk; ovules 2 in each cell. *Capsule* rough, glandular, producing lateral horns ca 5 mm long. *Seed* brownish with a well marked hilum.

FLOWERING PERIOD: September–March.

DISTRIBUTION: Eastern Cape.

CAPE.—Victoria East: near Alice, *Giffen* 783 (BOL, holo.), 783b (PRE, NH, iso.!). Somerset East: Middleton, False Karroid Broken Veld, on shale, occasional on S. aspect, *Acocks* 21687 (PRE).

The horned capsules are unusual.

THE FOLLOWING SPECIES FOUND OUTSIDE SOUTHERN AFRICA ARE HERE PUT UNDER
TRACHYANDRA*

T. pyrenicarpa (Welw. ex Bak.) Oberm., comb. nov.

Anthericum pyrenicarpum Welw. ex Bak. in Trans. Linn. Soc. Ser. 2, Bot. 1: 259 (1878) et in F.T.A. 7: 491 (1898). Type: Angola, Huilla, in damp pastures between Humpata and Gambas, *Welwitsch* (BM, holo.). Near *T. saltii* but capsules with one large seed in each locule.

T. malosana (Bak.) Oberm., comb. nov.

Anthericum malosanum Bak. in Flor. Trop. Africa 7: 492 (1898). Type: Nyasaland, Mount Malosa, *Whyte* (K, holo.! PRE, photo.). Southern Rhodesia: Inyanga, Mtenderere Source, *Wild* 1465 (SRGH). Very near *T. asperata* and may be conspecific.

UNCERTAIN SPECIES

Anthericum ensifolium Sölich in Mitt. Bot. Staatssamm. München II: 175, 1956. Type: South West Africa, Maltahöhe: Farm Friedland, *Walter* 2113 (M. holo.! PRE, photo.). The type consists of a rosette of leaves which emerge from a "neck" consisting of scaly leaf-bases. There is a detached part of a branched raceme which resembles that of *Trachyandra laxa*. I doubt whether the leaves belong to the inflorescence and am inclined to consider it a *nomen confusum*.

A. omissum Poelln. in Bol. Soc. Brot., Sér. 2, 16: 59 (1942). Type: Cape, locality and collector unknown (B, holo.). This is possibly *Trachyandra saltii* (Bak.) Oberm.

NOMEN CONFUSUM

A. praetermissum Poelln. in Bol. Soc. Brot. 16, 2: 62 (1942). In his description Poellnitz notes that the collector and locality were unknown. The type is preserved in the Berlin Herbarium and is an *Ecklon & Zeyher* specimen, Asphod. 106, from mountains near Simonstown, Cape. Mounted on this sheet is a sterile plant of *T. hirsuta* together with a loose inflorescence of an *Urginea* sp. As Poellnitz described the leaves of *T. hirsuta* and the flowers of an *Urginea*, his species is a *nomen confusum*. At Kew this *Ecklon & Zeyher* number is a syntype of *T. brachypoda* (Bak.) Oberm.

TYPES OF ANTHERICUM AT BERLIN

Dr. Buchheim, in a letter dated 29-11-58, writes that during the war the types were stored somewhere else and survived. In the Liliaceae however, the types and other material were sent to von Poellnitz in Thuringia. In this way much material was saved that would have perished otherwise in the fire of March 1943. On the other hand not all the material loaned to von Poellnitz came back to Berlin for his house was bombed and the material there, but for a few sheets, was destroyed. It is possible that amongst these were types of *Anthericum* and *Chlorophytum*.

**Anthericum zavatterii* Cuf., Miss. Biol. Racc. Bot. 4: 308, fig. 100 (1939). Type: Kenya, Moyale, *Miss. Biol.* 689 (RO, holo.). It was put in the section *Trachyandra* by Cufodontis. As the filaments are glabrous, the anthers basifixed and the perianth segments persistent, etc., it does not belong to the genus *Trachyandra*.

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<i>thyrsoidea</i> (<i>Bak.</i>) <i>Oberm.</i>	715, 744
<i>tortilis</i> (<i>Bak.</i>) <i>Oberm.</i>	715, 745
<i>undulata</i> (<i>Thunb.</i>) <i>Kunth</i>	732
<i>vespertina</i> (<i>Jacq.</i>) <i>Kunth</i>	734
<i>zebrina</i> (<i>Schltr. ex Poelln.</i>) <i>Oberm.</i>	716, 746
Urginea	759

