

EAST AFRICAN SUCCULENTS.

PART VI.

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(DRAWINGS AND PHOTOGRAPHS BY THE AUTHOR.)

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N.O. COMPOSITAE.

The *COMPOSITAE* with more than 800 genera and over 13,000 species is the largest family of Dicotyledons; its distribution extends all over the globe and over all altitudes and climatic conditions where plants can subsist. They are mostly herbaceous, rarely woody, plants and it may be mentioned in passing that East Africa harbours one of the largest of the woody species, *Brachylaena Hutchinsii*, the Muhugu tree which attains a height of 100 feet and which is one of our most valuable timber trees.

Other remarkable members of this family are the tree-like giant groundsels which give the higher alpine zones of the African mountains a character all of their own.

It is surprising that this large family of plants whose immense range of distribution speaks for its high adaptability has evolved comparatively few true succulent forms.

The "flowers" of the Compositae are composed of numerous individual florets, assembled on a common base, the "receptacle"; they are surrounded by involucre bracts which bear a close resemblance to the sepals of the calyx in a true flower; this assemblage of flowers and bracts is called a "capitulum."

Fig. 1 shows the flower of a composite (*Notonia*) and its various parts.

In a very large Order such as the Compositae differentiation between species is often difficult, and intermediate forms are continually being discovered which tend to obliterate clear-cut distinctive characters.

The result is that the nomenclature is in constant fluctuation; a few words on botanical nomenclature may therefore be not out of place here.

The generic name usually includes a group of plants which all have certain common and constant characters; the specific name—which always comes second—is affixed to plants belonging to the same genus but which differ from one another by minor, but equally constant, characters.

The name of the botanist who has described the plant is added for reference.

So far there is nothing confusing in this, but the difficulty comes in with the definition of generic and specific characters as such. Botanists disagree widely upon this subject, some tending to split up plants over-much into genera and species, others inclining to over-simplify nomenclature by disregarding minor generic and specific characters.

For this reason—and also because of added knowledge, more detailed study, or a different view on relationship or for convenience—re-naming of plants takes place very frequently.

Any such alteration—and indeed the initial giving of a name—is subject to certain rules laid down in an international convention to the effect that botanical names are valid throughout the civilised world.

Though plant names under such circumstances tend to become very unwieldy, an analysis of one of them will show the reader that in spite of their apparent clumsiness they are perfectly suited for their purpose.

However, misleading or even erroneous plant names must often be maintained for the sake of their priority; for, unless a name has been altered in an officially accepted revision, it must stand as it is.

EXAMPLE:

Senecio longiflorus (DC) Oliv. et Hiern., var. *violacea* (A. Berg.) E. A. Bruce and Hutchinson.

This very lengthy designation tells the following tale: The plant was described by A. Berger as *Kleinia violacea* Berg. Schultz and Bip. gave it the name of *Notonia kleinioides* Schultz Bip. M. R. F. Taylor, in his revision, placed the plant again into the genus *Kleinia*; he retained—for reasons of priority—Schultz Bip.'s specific name; it read now: *Kleinia kleinioides* (Schultz Bip.) M. R. F. Taylor. Oliver and Hiern, thereafter incorporated the genus *Kleinia* into that of *Senecio*, so that our plant now became *Senecio kleinioides* (Sch. Bip.) Oliv. et Hiern.

In a later revision E. A. Bruce and Hutchinson decided that the plant was not sufficiently distinct from *Senecio longiflorus* (DC) Oliv. et Hiern. to let it stand as a separate species, and they described it as a variety of the latter plant.

The fact that a very closely allied plant from Somaliland was described by E. Chiovenda as *Kleinia polycotoma* Chiov., which is its present valid name, is bewildering, but without being in possession of all dates of publications and revisions the writer cannot satisfy the reader as to this apparent illogism. Possibly Chiovenda does not agree with the sinking of the genus *Kleinia*; on the other hand, it is possible that Oliver and Hiern. had no material available to enable them to include Chiovenda's species in their revision.

TRIBE: *SENECIONIDAE*.

GENUS: *Gynura*.

A genus of the Old World, with few species occurring in East Africa, mostly herbaceous, erect plants, sometimes scandent. They are characterised by long, subulate, puberulous style branches.

Some of the plants described hereunder can hardly be termed true succulents but they are included here as examples of the beginning stages of succulence.

Gynura scandens O. Hoffm.

A scandent herb which climbs high into trees. Stems turgid and fleshy. Leaves slightly fleshy with incised margins.

Texture of leaves large-celled, surface covered with tapering, soft, turgid hairs, about 1 mm. long, giving it a velvety appearance.

Capitula arranged in corymbose heads at the end of the branches.

Florets all tubular, bright orange. Pappus about as long as the florets.

G. scandens occurs in Tanganyika and in Kenya Colony. Records in the Coryndon Museum show it to be distributed all over the Kenya Highlands at 5,000 feet to 6,000 feet altitude. It is usually found at the edge of forests. Fig. 2.

Gynura valeriana Oliv.

An erect herb up to 2 feet high with a very fleshy stem and fleshy, petiolate leaves with lyrate-pinnatifid margin. Appearance of surface smooth with few, scattered, short, soft hairs. Inflorescence in loose, corymbose cymes. Capitula of numerous, orange-yellow, tubular florets. The long, protruding, subulate style branches lemon yellow.

Scent strong, reminiscent of Valerian. The plant is known from Kenya and from Tanganyika. In the Chyulu Hills, where it is common at 6,000 feet to 7,000 feet altitude, it frequently grows epiphytically on mossy tree-trunks in mist forest. Fig. 3.

Gynura sp. nov. (Coryndon Museum, 6799).

An erect, somewhat succulent herb, 1 foot to 2 feet high, with a large, tuberous root. Leaves pinnatifid with incised lobes, petiolate, to 15 cm. long, slightly fleshy and covered with a coarse tomentum, arranged in a whorl at the base of the stem.

Capitula in a few-flowered, loose cyme on an erect stalk, 30 cm. to 40 cm. long, tomentose, with sparse, small, bractal leaves.

Florets numerous, all tubular, bright yellow. Style branches much protruding beyond the florets.

The only known locality of this plant is the Game Reserve between Nairobi and the Ngong Hills and the adjacent Escarpment, where it grows on rocky soil. It was first collected by Miss Evelyn Napier in 1934. Fig. 4.

GENUS: *Kleinia*.

Kleinia polycotoma Chiov.

A small, straggly shrub with cylindrical, fleshy, striated branches; branchlets 5 to 6 mm. diameter. Leaves fleshy, linear-obovate, 6 to 8 mm. long, shortly petiolate. Inflorescence consisting of 3 to 5 few-flowered, cylindrical capitula on short (5 mm.) peduncles with sparse minute scale-like bracteoles. Bracts 5, elliptic-linear, 7 to 9.5 mm. long and 2 to 2.3 mm. wide, with a blunt tip, reddish brown. Margins membranous, transparent. Florets 5, tubular, 12.5 to 14 mm. long, narrow at the base, inflated at the top, inflated part 1.5 mm. wide, with 5 triangular, blunt-tipped lobes, bright magenta. Anthers slightly exerted above corolla.

Style branches recurved, much prolonged above the corolla, with truncate, minutely bristly tip, yellow. Achenes cylindrical, 2 to 3.5 mm. long, minutely hairy. Pappus consisting of numerous bristles, to 15 mm. long, white.

The plant occurs in Northern Somaliland and in Somaliland Protectorate.

The plant has not been recorded from Kenya. Fig. 15.

(The plant is very closely allied to *Senecio longiflorus* (DC) Oliv. et Hiern. which has been transferred from *Kleinia* into the genus *Senecio* together with *Kleinia kleinoides* (Sch. Bip.) M. R. F. Taylor. From the descriptions and illustrations it is obvious that all three plants belong to the same genus.)

GENUS: *Lopholaena*.

Primarily a South African genus it extends into Rhodesia, Angola, and South-Western Tanganyika Territory. Shrubs or herbaceous plants, leaves fleshy with entire margin, capitula few-flowered.

The writer has not seen living plants and the following sketchy descriptions and illustrations were based upon pressed material kindly lent

for the purpose by the Herbarium of the E.A.A.R. Institute, Amani, Tanganyika Territory.

Lopholaena dolichopappa (O. Hoffm.) S. Moore. (Syn. *Senecio dolichopappus* S. Moore.)

A more or less procumbent, shrubby herb with fleshy, narrow, oblanceolate leaves. Capitula solitary, produced on long peduncles set with scarce bractal leaves. Bracts 5, broadly linear, 9 to 10 mm. long, glabrous with membranous margin. Florets few (5 to 6) white, hardly exceeding calyx and pappus.

The plant occurs in Southern Tanganyika, on Mbeya Mountain, at 8,500 feet altitude.

Lopholaena Whyteana (Britt.) Phill. and C. A. Sm. (Syn. *Othonna Whyteana* Britten.)

A herb to 12 inches high with fleshy, lanceolate leaves 4 to 6 cm. long.

Capitula solitary, on slender peduncles produced from the leaf axils. Bracts 5, broadly lanceolate, pointed at the apex, margins membranous. Florets few (5 to 7) white, well-exserted above the bracts.

Occurs in Southern Tanganyika, Iringa Province, at 5,400 feet to 6,000 feet altitude. Fig. 5.

Lopholaena sp. (cf. *Senecio trianthemos* O. Hoffm.).

A shrubby, white-flowered plant up to 4 feet tall. Leaves fleshy, obovate.

Capitula in terminal, dense panicles. Bracts 5, broadly linear, 8 to 9 mm. long, florets 3 to 4, tubular, 10 to 11 mm. long.

Southern Tanganyika, Mbozi, 5,100 feet altitude, common in old abandoned native cultivations.

GENUS: *Notonia*.

This genus is predominantly African with a few species occurring in India. The African species are fleshy undershrubs or herbs with succulent or with rudimentary leaves and with comparatively large, solitary or cymose, generally brightly coloured, capitula.

The *Flora of Tropical Africa*, Vol. III, 1877, pp. 406-408, describes five species of *Notonia* from East Africa, including Abyssinia. A few other species have been described since, while several still remain undescribed.

On the following pages only the named species and a few of the more characteristic unidentified species are being described.

TENTATIVE KEY OF EAST AFRICAN NOTONIAS.

(A) Achenes glabrous, leaves persistent, comparatively large, stems uniformly green.

(I) Leaves with entire margin—

(a) Involucral bracts 13 to 15 *Notonia abyssinica* A. Rich.

(b) Involucral bracts 8 to 10—

(1) leaves elliptic, apex tapering *Notonia Hildebrandtii* Vatke.
N.sp. nr. *N. Hildebrandtii* Vatke.

(2) leaves elliptic, apex rounded ... *Notonia Grantii* Oliv. et Hiern.

(3) leaves oblanceolate, apex rounded—
robust, erect herb *Notonia amaniensis* Engl.
small, decumbent herb *Notonia petraea* R. E. Fries.

(4) leaves fusiform *Notonia coccinea* Oliv. et Hiern.

(II) Leaves with incised margin... *Notonia incisifolia* sp. nov.

(B) Achenes hairy, leaves deciduous and much reduced. Stems grooved, variegated.

(a) involucre bracts 12 to 13 (*Notonia pendula* Forsk.)
Senecio pendulus (Forsk.) Sch. Bip.

(b) involucre bracts 7 to 10—

(1) leaves subulate, fleshy *Notonia subulata* sp. nov.

(2) leaves scale-like, rudimentary *Notonia Gregorii* S. Moore.

Notonia abyssinica A. Rich.

A fleshy, glabrous perennial, up to 150 cm. high. Leaves thick, elliptical, narrowed at both ends, sessile, spreading, often marbled with purplish maroon, to 10 cm. long. Closely disposed at the base of the stem, more scattered and diminishing in size along the erect stems. Capitula in loose sparse cymes, hemispherical, 2.5 to 5 cm. in diameter. Involucre bracts 13 to 15. Florets tubular, with 5, narrowly triangular lobes. Style branches exerted with clavate, papillose tips. Achenes glabrous.

The plant is widely distributed in East Africa through Uganda, Kenya, and Tanganyika Territory; it is found at most altitudes from near sea-level to 4,500 feet; it prefers dry, stony, well-drained soil. Fig. 6 (a).

Notonia Hildebrandtii Vatke.

A fleshy, glabrous herb to 4 feet tall with tuberous rootstock. Leaves thick, elliptical, tapering towards the base and towards the mucronate tip, green and brown mottled, often purple flushed below.

Inflorescence in loose cymes. Capitula hemispherical, many-flowered.

Florets tubular, 5-lobed, lobes to 5 mm. long, crimson. Achenes glabrous.

Locally common and sometimes a dominant undergrowth on cliff tops in coastal bush between Mombasa and Pangani in Tanganyika Territory.

Occurs in Kenya in similar localities.

Notonia sp. nr. *N. Hildebrandtii* Vatke.

A glabrous, fleshy, robust herb, 90 to 150 cm. high with erect, stout stems and fibrous roots. Stems to 200 cm. long, decumbent at the base, to 3 cm. thick. Leaves elliptical, narrowed towards the base, retuse at the apex, to 25 cm. long and 10 cm. wide, pale glaucous green, underside covered with a waxy bloom, often tinged with pale purple. Along the flowering stem leaves scattered, small. Inflorescence cymose, with 2 to 5 hemispherical capitula on pedicels 7 to 10 cm. long. Involucre bracts 8, broadly linear with broad transparent margins, 1.5 cm. long.

Florets 40 to 50, tube 15 mm. long with five acute teeth. Pappus half as long as the tube. Style branches with tapering tips, recurved, sparsely papillose. Achenes glabrous, costate.

This very showy and freely flowering plant with bright vermilion flowers is common in Kenya Colony; specimens have been recorded from the Nairobi area, the Chyulu Hills and from Thomson's Falls. Fig. 6 (b) and Fig. 10.

Notonia Grantii Oliv. et Hiern. (Syn. *Kleinia Grantii* Hook f.)

A short, fleshy, glabrous perennial, rising 10 cm. high from a tuberous root. Basal leaves elliptical, rounded and retuse at the apex, tapering towards the sessile base, 1.5 to 2 cm. long. The one to two hemispheric capitula are produced from the flowering stem on pedicels 2.5 cm. long or less. They are composed of 20 or more blood-red or wine coloured florets. Involucre bracts 10, pappus slightly shorter than the bracts; achenes glabrous.

Occurs in Kenya Colony and in Tanganyika.

PLATE XIX.

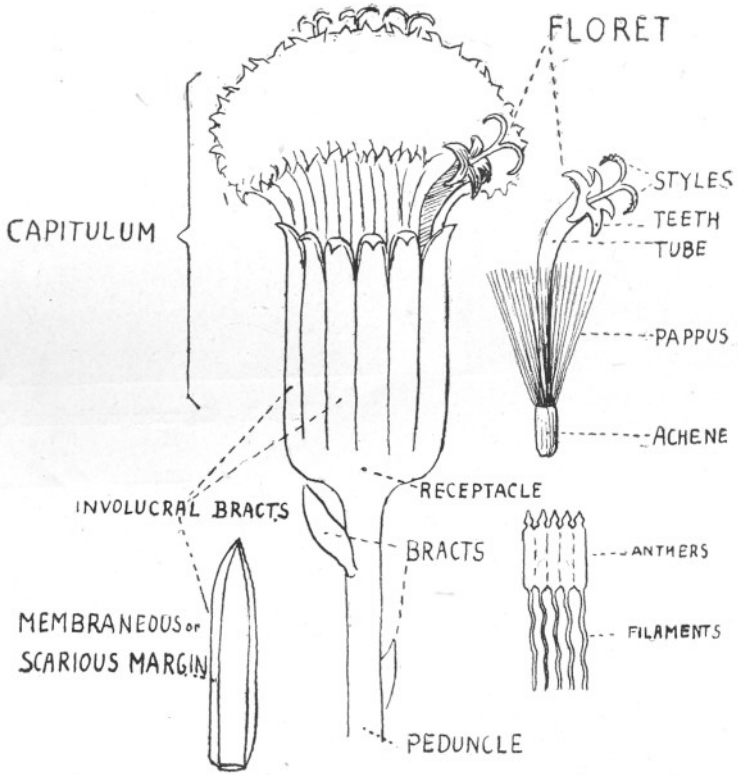


Fig. 1. Capitulum of a composite and its various parts.

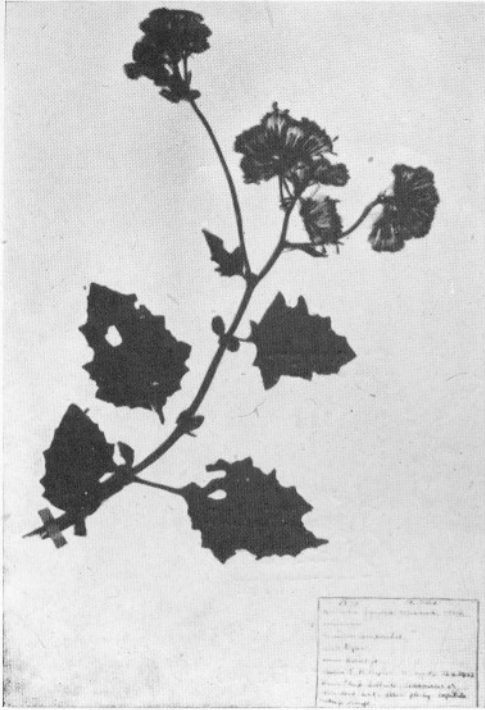


Fig. 2. *Gynura scandens* O. Hoffm.



Fig. 3. *Gynura valeriana* Oliv.

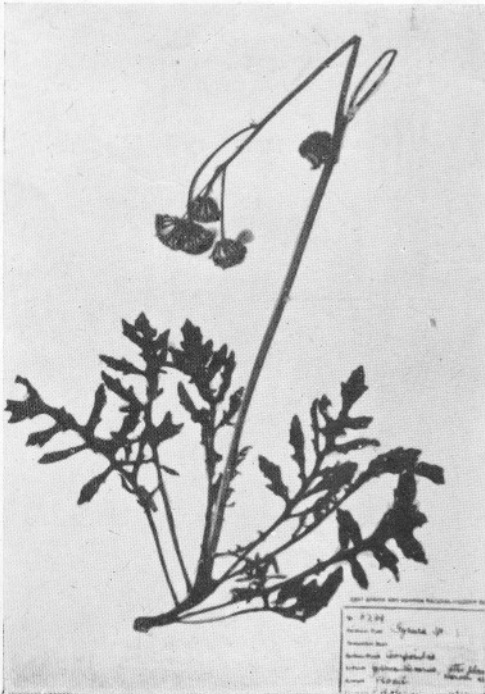


Fig. 4. *Gynura* sp. nov.

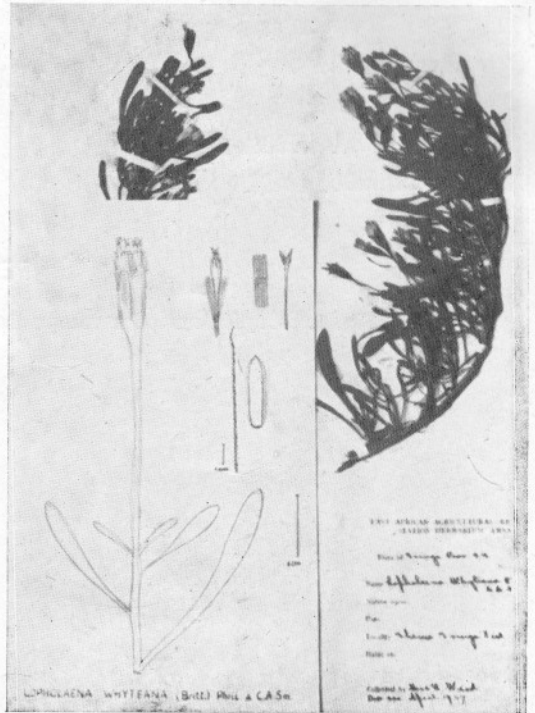


Fig. 5. *Lopholaena Whyteana* (Britt.) Phill.
at C.A.S.

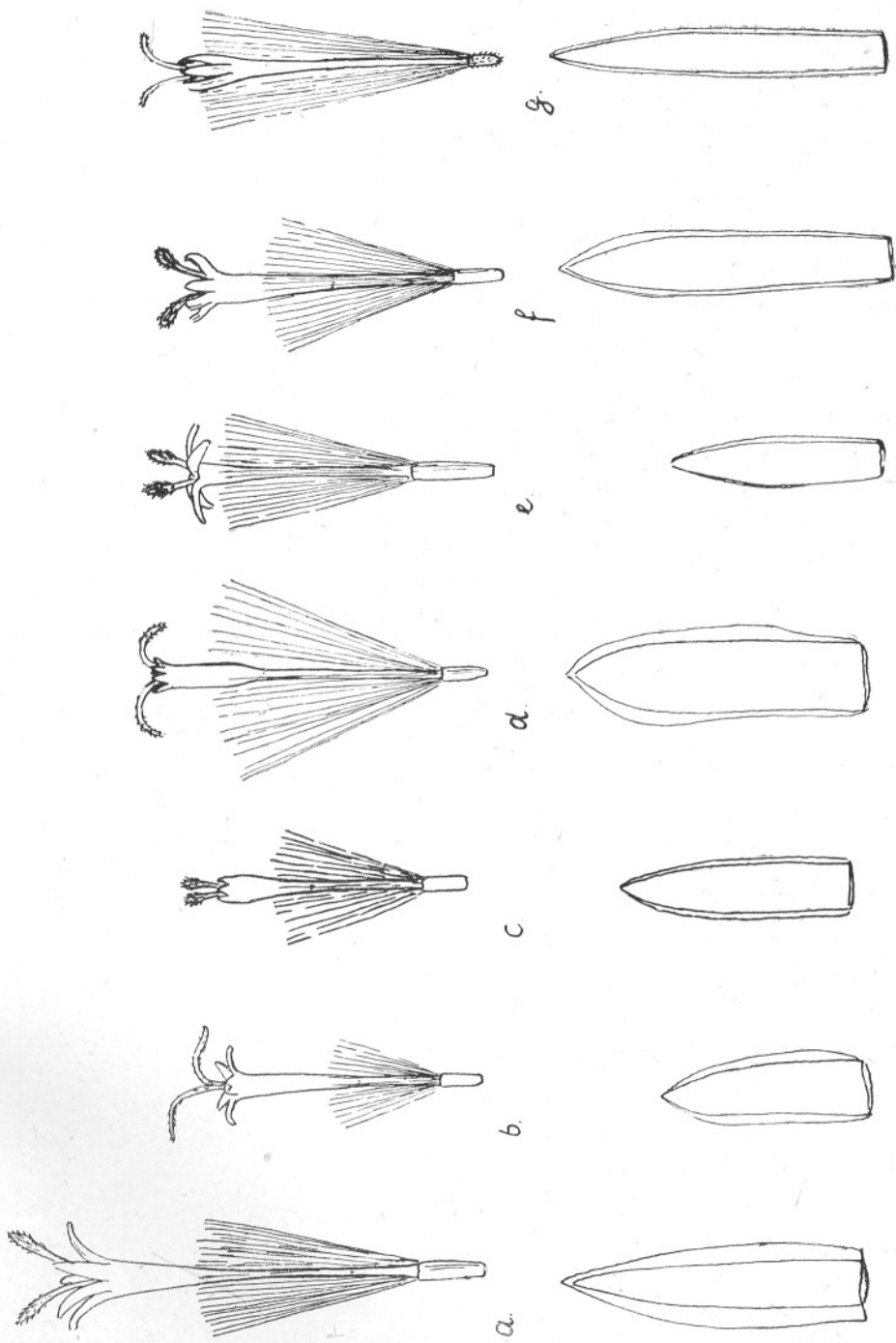


Fig. 6. Florets and involucral bracts of—
 (a) *Notonia abyssinica* A. Rich.
 (b) *Notonia* sp. n. r. *N. Hildebrandtii* Vatke.
 (c) *Notonia amaniensis* Engl.
 (d) *Notonia petraea* R. E. Fries.
 (e) *Notonia coccinea* Oliv. et Hiern.
 (f) *Notonia incisifolia* sp. nov.
 (g) *Notonia Gregorii* S. Moore.



Fig. 7. *Notonia amaniensis* Engl.

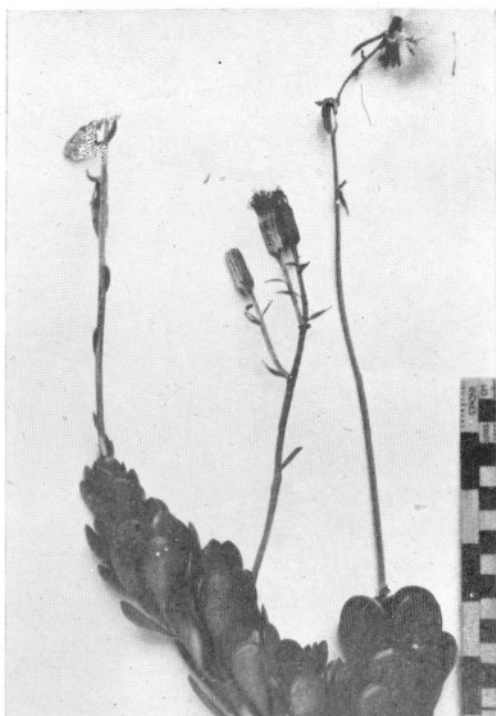


Fig. 8. *Notonia petraea* R. E. Fries.

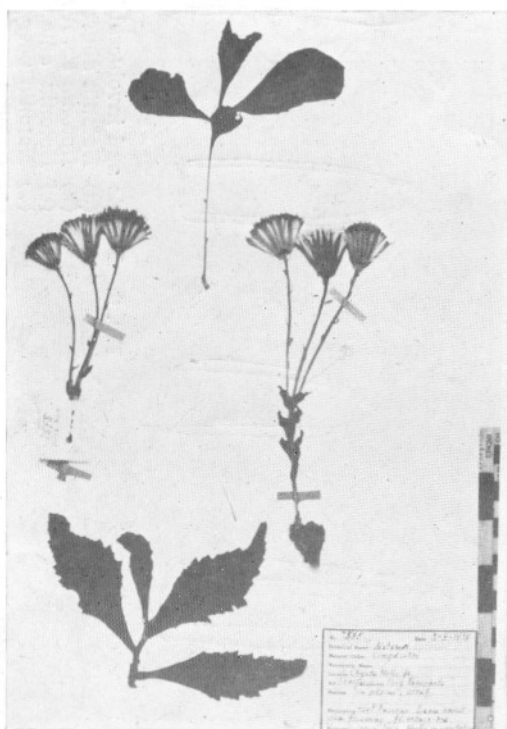


Fig. 9. *Notonia incisifolia* sp. nov.



Fig. 10. *Notonia* sp. n'r *N. Hildebrandtii* Vatke.

PLATE XXIII.



Fig. 11. *Notonia Gregorii* S. Moore.



Fig. 12. *Notonia subulata* sp. nov.

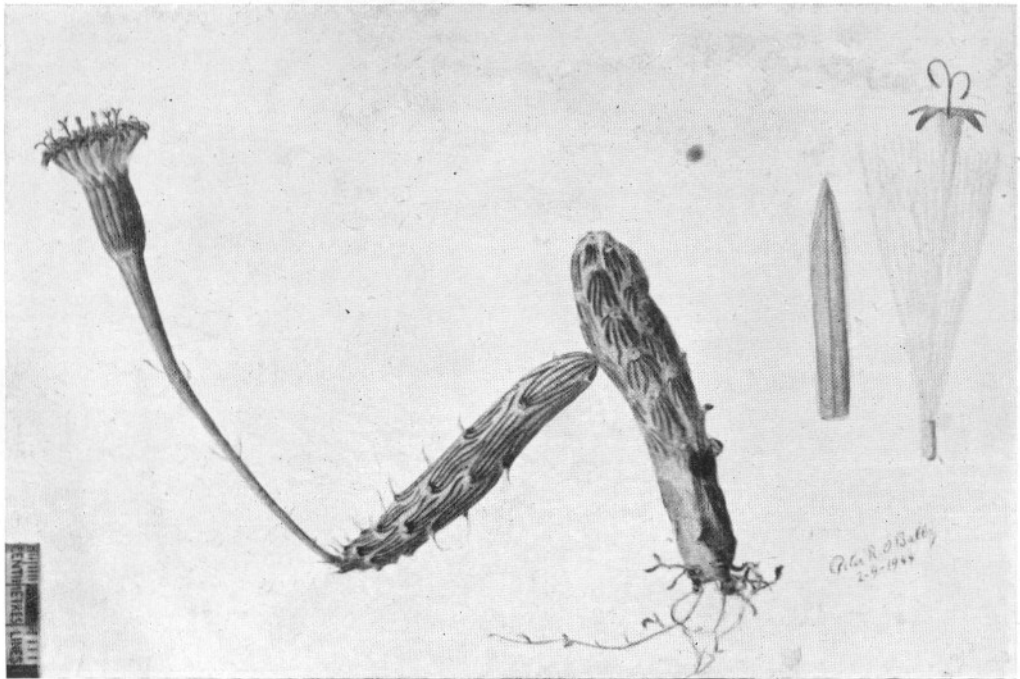


Fig. 13. *Notonia pendula* (Forsk.) Chiov.

PLATE XXIV.

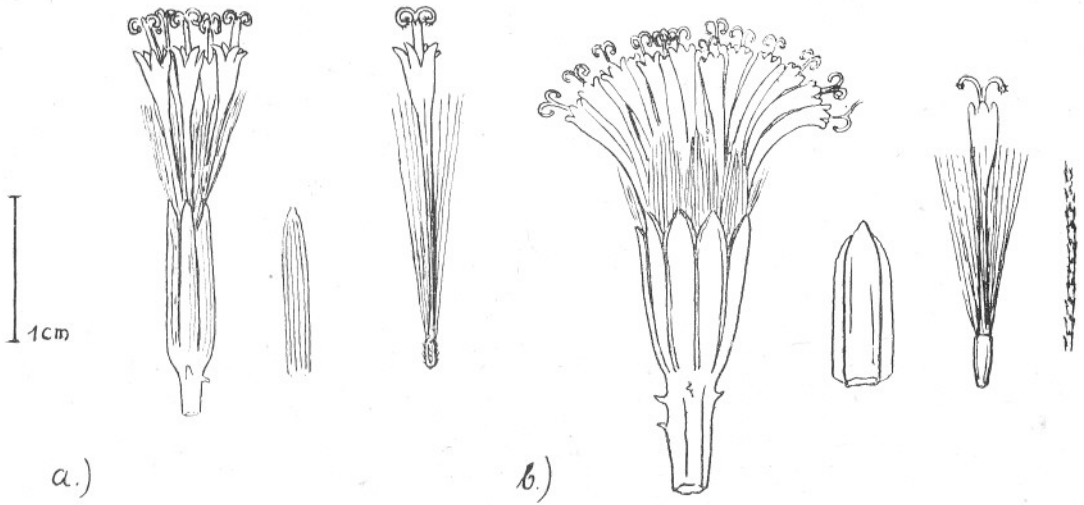


Fig. 14. Capitulum, floret, bract, of—
 (a) *Senecio longiflorus* (DC) Oliv. et Hiern.
 (b) *Senecio longiflorus* (DC) Oliv. et Hiern. var. *violaceus* Berg.)
 Hutch et E. A. Bruce.

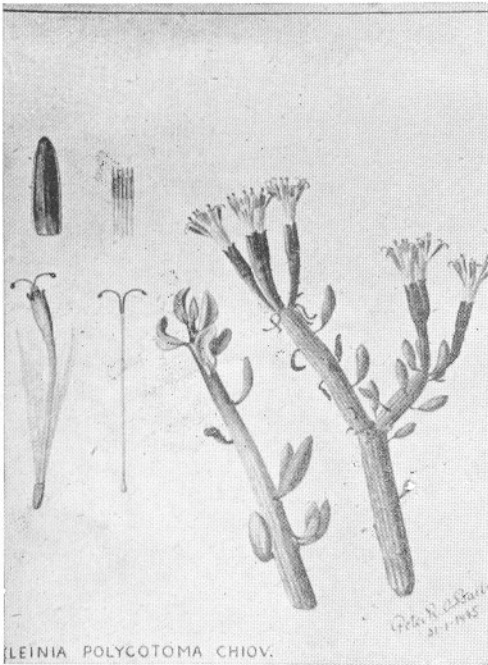


Fig. 15. *Kleinia polycotoma* Chiov.

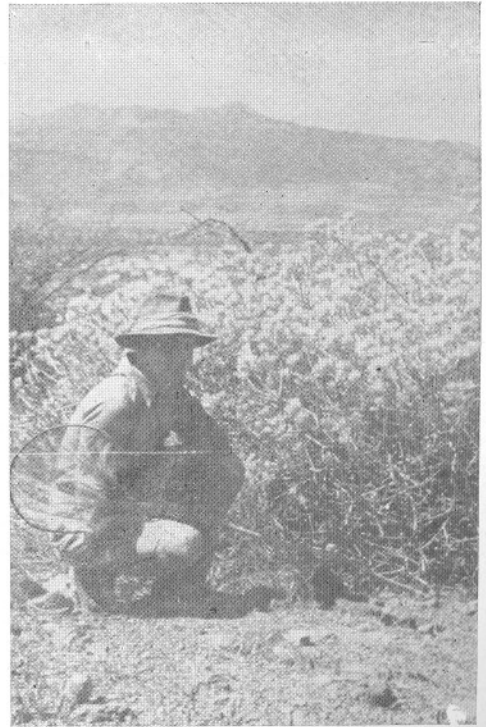


Fig. 16. *Senecio longiflorus* var. *violaceus*.

PLATE XXV.

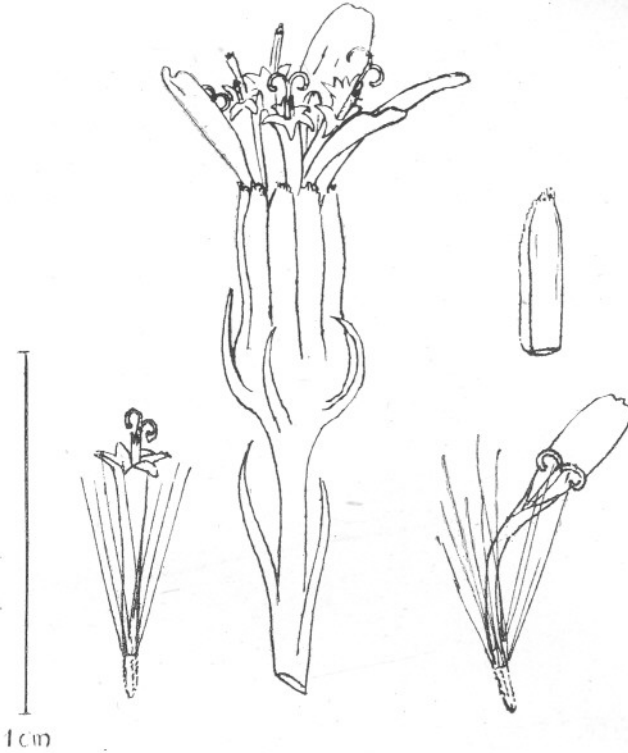


Fig. 17. *Senecio Petitianus* A. Rich., capitulum, involucre bract, and florets.



Fig. 18. *Senecio Petitianus* A. Rich.



Fig. 19. *Senecio subscandens* Hochst.

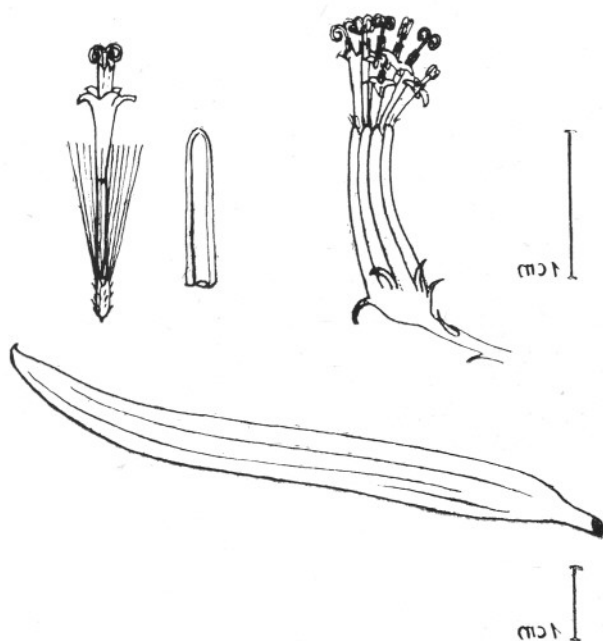


Fig. 20. *Senecio* sp. (Bally, 1013) drawing of capitulum, involucre bract, floret, and leaf.



Fig. 21. *Senecio* sp. (Bally, 1013).

PLATE XXVII.

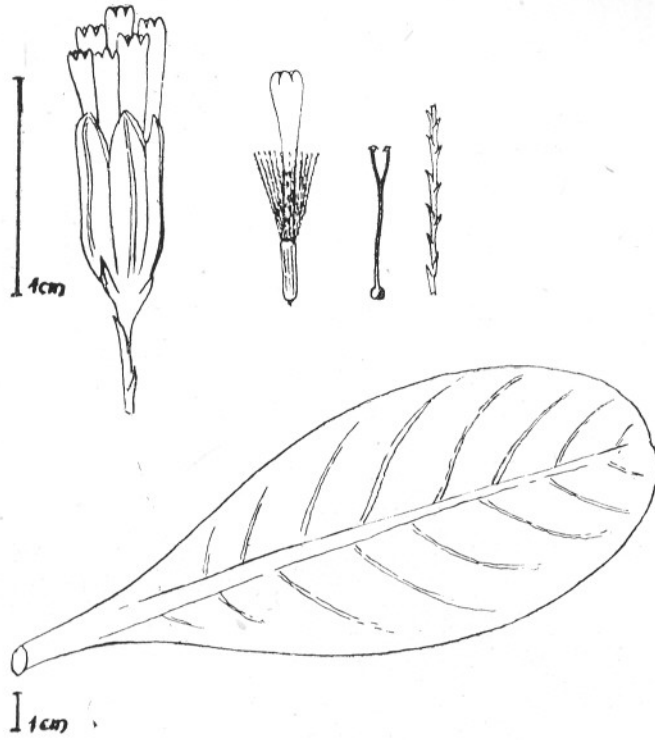


Fig. 22. *Senecio* sp. (Museum, 11283) drawing of capitulum, floret, pistil, part of pappus hair and leaf.

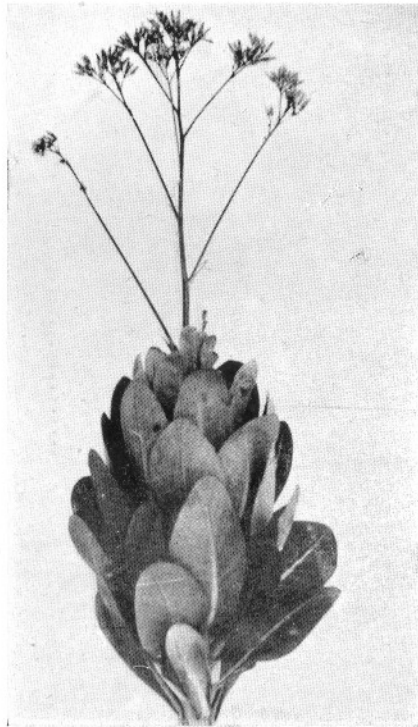


Fig. 23. *Senecio* sp. (Museum) flowering branch.

Notonia amaniensis Engl.

A robust, erect, fleshy, glabrous perennial, to 125 cm. high. Roots fibrous. Stems to 20 mm. thick. Leaves persistent, oblanceolate with rounded apex, tapering towards the sessile base, fleshy, to 18 cm. long and 6 cm. wide. Flowering stems sparsely branched, to 50 cm. high, secondary branches to 30 cm. long, each bearing a loose cyme of 2 to 5 capitula on peduncles 3 to 5 cm. long. Capitula 60- to 70-flowered, pendent.

Involucral bracts 8, broadly linear with narrow, transparent scarious edges, 24 mm. long. Florets tubular, 15 mm. long with five shortly triangular, rounded teeth, orange. Style branches protruding with club-shaped, densely papillose tips. Pappus 10 mm. long; achenes glabrous.

Known from Tanganyika only, where it was collected by the writer near Lembeni, 3,000 ft. approximately, in scrub country. Fig. 6 (c) and Fig. 7.

Notonia petraea R. E. Fries.

A glabrous, fleshy, prostrate perennial, freely rooting from the nodes. Stems fleshy, to 1 cm. thick and to 50 cm. long, sparsely branched, fleshy. Leaves persistent, very fleshy, oblanceolate with rounded apex, tapering towards the sessile base, 5 to 7.5 cm. long, 1 to 2.5 cm. wide, very closely arranged on the prostrate stems.

Flowering stems erect, to 25 cm. high, with few scattered small, narrowly elliptic leaves. Inflorescence bearing 1 to 3 capitula. Involucral bracts 10, broadly linear, 21 mm. long, with transparent, scarious margins. Florets tubular, with five, shortly triangular teeth, 24 to 24 mm. long, orange. Number of florets: 60 to 70. Style branches recurved, with tapering, papillose tips.

Achenes glabrous, striate.

The little plant occurs all over the Kenya Highlands and it is also found in Tanganyika Territory; a variety with scarlet flowers is found in Ngare Nairobi, on the western slopes of Kilimanjaro.

In view of its spreading habit and of its high resistance to drought *N. petraea* can be recommended for binding the soil on steep banks. Fig. 6 (d) and Fig. 8.

Notonia coccinea Oliv. et Hiern.

A fleshy, glabrous, decumbent or ascending herb to 30 cm. long, with narrow, fleshy, glaucous leaves, 2.5 to 7.5 cm. long and 1 to 2 cm. wide, tapering at both ends. Capitula many-flowered, two to three on a loose cyme. Involucral bracts 8 to 11; florets bright scarlet, tubular, 1.5 cm. long, with acute teeth. Style branches with club-shaped papillose tips. Pappus about as long as the florets; achenes glabrous, costate.

Occurs at altitudes from 3,000 feet to 6,000 feet. Localities recorded in Kenya Colony are: Voi, Kajiado, Machakos, and Nairobi. Fig. 6 (e).

***Notonia incisifolia* sp. nov.** (Coryndon Museum, 7595.)

A short, erect, glabrous, fleshy plant with perennial, tuberous root. The plant has two distinct growing periods. In the vegetative period, a short, erect stalk, 3 to 8 cm. long, is produced, bearing 4 to 10 fleshy, elliptic, sessile, leaves with deeply incised margin, to 10 cm. long and 4 cm. wide.

In the flowering period the plant develops an erect, fleshy stem, 12 to 15 cm. high and 1 cm. thick, bearing scattered, scale-like, incised bractal leaves. The stem bears usually three capitula on pedicels 6 to 8 cm. long. Involucral bracts: 13 to 16, linear, 24 mm. long, with narrow, transparent margins. Florets 50 to 53, tubular, equalling the involucre, with five acute

teeth, of a rich red-orange. Style branches protruding, with club-shaped, densely papillose tips. Achenes glabrous.

The plant was collected by the writer in Kenya Colony in the plains between Kibwezi and the Chyulu Hills, at 3,000 feet in dry bush country in 1938. Fig. 6 (f) and Fig. 9.

Notonia Gregorii S. Moore.

A glabrous, fleshy, prostrate or ascending herb with fibrous roots, developing rhizomes to 30 cm. long. Stems to 50 cm. long, rarely branching, 5-angled with prominent tooth-like leaf scars with 3 to 5 decurrent, linear, dark green markings. Leaves rudimentary, ensiform, to 3 mm. long, deciduous. Flowering stem erect, 15 cm. long and more, bearing few ensiform bractal leaves, and terminating in a solitary capitulum. Involucral bracts 10, linear, to 24 mm. long with membranous margin. Florets tubular 20 mm. long; with five acute teeth, 4 mm. long, bright scarlet. Style branches slender, recurved, sparsely papillose. Pappus as long as the florets. Achenes striate, hairy.

N. Gregorii is common in Kenya Colony; localities recorded in the Coryndon Museum are the Rift Valley, the Nairobi Area, Machakos, Ngong Hills, and Kavirondo Gulf, at altitudes from 3,000 feet to 6,000 feet. Fig. 6 (g) and Fig. 11.

Notonia subulata sp. nov. (Coryndon Museum, 11611.)

An erect, fleshy, glabrous herb to 20 cm. high with tuberous root. Stem solitary, to 2 cm. diameter at the base, fleshy, grooved, with slightly prominent, tooth-like leaf scars with decurrent, linear, dark green markings.

Leaves subulate, to 4 cm. long, glabrous, fleshy, sub-pedunculate, deciduous. Dried leaf base persistent, spine-like. Flowering stem erect, to 12 cm. high with few scattered, linear bractal leaves, 6 to 8 mm. long. Capitulum solitary, composed of 48 to 50 tubular florets. Florets 25 to 28 mm. long, inflated at the top, with five, narrowly triangular lobes, bright scarlet.

Style branches exerted, recurved, with thickened tips. Pappus 20 mm. long, white. Achenes 3 to 8 mm. long, striate, set with minute hairs or bristles.

The plant was discovered in Isiolo, Kenya Colony, by Mrs. Joy Bally in May 1943. Fig. 12.

Notonia pendula (Forsk.) Chiov. Syn. *Senecio pendulus* (Forsk.) Sch. Bip.; *Kleinia pendula* (Forsk.) DC; *Cacalia pendula* Forsk.; and *Notonia trachycarpa* Kotschy.

A fleshy, decumbent herb with a weak, fibrous root system. Plant to 10 cm. high with few articulated, sub-angular, compressed branches, often rampant, to 15 cm. long. Leaf scars only slightly raised, but conspicuous by spreading, decurrent, linear, dark green markings. Leaves filiform, to 7 mm. long, spine-like. Inflorescence terminal on an ascending peduncle 5 to 10 cm. long, with scattered, filiform leaves. Calyculus absent as in all *Notonias*. Capitulum solitary, composed of 68 to 70 florets. Involucral bracts 12 to 13, linear, with transparent, scarious margins, valvate, 20 mm. long. Florets tubular, 25 mm. long with triangular, acute teeth, bright scarlet. Style branches recurved with tapering, slightly papillose tips. Pappus as long as the tubes of the florets. Achenes cylindrical, striate, minutely hairy.

The plant is distributed through Somalia, Somaliland Protectorate, the Northern Frontier District of Kenya Colony, to Tanganyika (Lasa Hill).

It prefers rocky, well-drained soil. When not in flower it is very easily overlooked, as the flattened branches creep close to the ground, often hidden under stones. Fig. 13.

GENUS: *Senecio*.

Senecio longiflorus (DC) Oliv. et Hiern. (Syn. *Kleinia longiflora* D.C.)

An erect, glabrous, perennial bush 60 to 120 cm. high with rigid branches. Branches grooved, fleshy, green, turning woody with age, green parts with distant, sausage-shaped leaves, 10 to 15 mm. long, deciduous. Inflorescence terminal, 2 to 5 cymes on short, fleshy peduncles bearing scale-like bracts.

Capitula sub-cylindrical, calyculus reduced to few minute scales.

Involucral bracts 5 to 6, narrowly linear, striate, 10 mm. long. Florets generally 5, occasionally up to 10, tubular, white, mauve or yellow, 20 cm. long, with 5 acute teeth. Styles protruding. Style branches recurved, sparsely papillose at the tips. Pappus 17 mm. long. Achenes 2 to 4 mm. long, costate, with short hairs between the ribs.

The distribution of this plant ranges from Abyssinia, British Somaliland, Kenya Colony, and Northern Tanganyika, to South Africa. In Kenya, it is found at altitudes from 200 feet to 3,000 feet., in semi-desert conditions. Fig. 14 (a).

Senecio longiflorus (DC) Oliv. et Hiern. var. *violacea* (A. Berg.) Hutch. et E. A. Bruce. (Syn. *Kleinia violacea* Berg.; *Kleinia kleinoides* (Sch. Bip.) M. R. F. Taylor; *Notonia kleinoides* Sch. Bip.; and *Senecio kleinoides* (Sch. Bip.) Oliv. et Hiern.)

An erect, glabrous shrub to 120 cm. high with rigid branches.

Branches grooved or striate. Leaves distant, fleshy, obovate-oblong, tapering towards the base, apex rounded, sub-petiolate, to 56 mm. long and 22 mm. wide, deciduous. Inflorescence terminal with numerous (20 and more) pedunculate capitula. Peduncles stout, bearing scale-like bracts, calyculus reduced to few minute scales. Involucral bracts generally 8, linear-oblong with wide, membranous margins, 12 mm. long. Florets 13 to 22, tubular, 16 mm. long with 5 short, rounded teeth, violet. Style branches protruding, recurved, with papillose, thickened tips. Pappus 13 mm. long, white, protruding over involucral bracts by half their length. Pappus hairs minutely barbed.

Achenes 3.5 to 5 mm. long, striate, minutely hairy, or villose.

This variety, distinguished from *S. longiflorus* by its dense heads of violet flowers and by its sturdier growth, is more common in Kenya and in Tanganyika; it occurs at altitudes up to 5,000 feet, in dry, open country. Fig. 14 (b) and Fig. 16.

Senecio nyikensis Baker.

A perennial, slightly fleshy herb with oblanceolate, oblong leaves, tapering towards the base, 13 to 15 cm. long and 25 mm. wide. Margin entire. Inflorescence a terminal, few-flowered corymb.

Capitula 25 mm. diameter, borne on long, erect peduncles, with 13 to 14 linear, glabrous, involucral bracts. Florets tubular, 20 mm. long, orange

Achenes cylindrical, glabrous, 4 mm. long. Pappus soft, white, 12 mm. long.

The plant occurs on the Nyika Plateau, Tanganyika Territory, at 6,000 feet to 7,000 feet altitude.

Senecio Petitianus A. Rich.

A glabrous, perennial, rampant or climbing herb, often reaching the top of trees. Leaves elliptical, to 10 cm. long and 4 cm. wide, very fleshy, shiny and bright green. Margin denticulate.

Inflorescence a terminal, rounded cyme, to 30 cm. diameter. Capitula very numerous, narrowly campanulate, about 20-flowered, 10 to 13 mm. long, on bracteolate peduncles, 9 to 18 mm. long. Involucral bracts 8 to 9, linear, pointed at the apex, with ciliolate tips. Florets bright yellow, ligule of ray florets oval-oblong, 4.5 to 5 mm. long.

Achenes costate, scattered with short, thick hairs. Fig. 17 and Fig. 18.

When in full bloom this climbing *Senecio* is a very striking sight with its dense mass of golden-yellow flower heads. It is widely spread in East Africa and has been recorded from Abyssinia down to Tanganyika Territory.

Senecio subscandens Hochst.

A glabrous, climbing herb with striate, or slightly grooved, branches. Leaves fleshy, mat glaucous green, oval in outline, with pinnatipartite margin, 3- to 5-toothed lobes on each side, auriculate at the base. Inflorescence terminal, cymose.

Capitula narrowly campanulate, 8 to 10 mm. long, on short, slender peduncles. Calyculus consisting of a few, narrow bracts. Involucral bracts 5, broadly linear, 6.5 to 8.5 mm. long. Florets 10 to 11, all tubular. Achenes costate, minutely hairy. Fig. 19.

Its distribution extends over most of East Africa and over a great range of altitudes; on the whole it favours dry country and it is often found to form thick covers overhanging rocky slopes.

Senecio sp. nov.? (Bally, 1013).

A stout, glabrous, much-branched fleshy shrub to 120 cm. high with rounded stems. Leaves linear, fleshy, sausage-like, to 8.5 cm. long and 7.5 mm. thick, sessile or sub-petiolate, with mucronate tip.

Inflorescence many-flowered, cymose. Capitula obconical. Calyculus consisting of 4 to 5 scale-like bracteoles. Involucral bracts 8, linear, with a narrow, membraneous margin, 11 mm. long. Florets 12, tubular, 8 mm. long, 5-lobed, golden yellow. Anthers and style exerted. Style branches recurved, glabrous. Pappus 9 mm. long, white.

Achenes costate, covered with short hairs, 3 mm. long.

Collected by the writer on the Escarpment South of the Ngong Hills on the old Kajiado Road, and on Mount Margaret in the Rift Valley, at 6,000 feet altitude, in 1940. No other localities known. Fig. 20 and Fig. 21.

Senecio sp. nov.? (Coryndon Museum, 11283.)

A robust, glabrous, much-branched, fleshy perennial, to 180 cm. high. Stems round, fleshy. Leaves obovate-oblong to 18 cm. long and 8 cm. wide, sessile, tapering at the base, apex rounded; margin entire; fleshy, dark glaucous green, crowded at the end of the branches. Flowering stems to 30 cm. high. Inflorescence terminal, cymose-corymbose. Stems and involucre purple. Capitula crowded in groups of 4 or 5. Involucral bracts 5, broadly linear, keeled with membraneous margins, 8.5 mm. long. Calyculus rudimentary or absent. Florets generally 9, tubular, with five-rounded teeth, 11 mm. long, orange. Style included in the tube, tips of style branches triangularly thickened, papillose. Pappus 4 mm. long, with barbed, white hairs. Achenes costate, glabrous, 4 mm. long.

The plant was collected by a native collector, Boy Joanna, on Mbololo Hill, Kenya Colony, in October, 1938. No other locality known. Fig. 22 and Fig. 23.

(TO BE CONTINUED)