

## AN ENUMERATION OF PLANTS COLLECTED IN THE NORTHERN TRANSVAAL.

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THE following list is a classified account of the names of ferns and flowering plants collected during two excursions to the farm "Zoutpan" at the western extremity of the Zoutpansberg range. Most of the specimens were collected around the salt pan on this farm or in the vicinity of it, such as on the slopes of the mountain on the eastern margin of the pan and the sandy flats stretching to the west of it. Some of the plants listed, however, were collected on the way to and from this area or on short excursions from the pan to neighbouring places.

A paper by H. G. Schweickerdt [*S.A. Journal of Science*, 30, 270 (1933)] gives an account, accompanied by a map, of the vegetation of the area surrounding this salt pan. Reference should be made to it when studying this list. Further a paper by Dr. C. E. B. Bremekamp "New and otherwise Noteworthy Plants from the Northern Transvaal" [*Annals of the Transvaal Museum*, 15, 11 (1933)] covers more or less the same ground but includes specimens collected during a general tour.

Our first excursion was undertaken in November, 1932, when 438 specimens were collected and numbered "Obermeyer, Schweickerdt and Verdoorn 1 to 438." The route taken on this occasion was from Pretoria to Pietersburg and thence via Kalkbank and Vivo to the farm Zoutpan. Camp was pitched just behind the homestead under *Lonchocarpus* trees and overlooking the salt pan. During 10 days spent there two short trips were made, one westward towards the Blaauwberg to the farm Eyem and the other via Booysen's farm Chapudi to Waterpoort. Otherwise the time was spent surveying the area around the pan. The route taken on the return journey was via Wylie's Poort and Louis Trichardt.

The second excursion made in April, 1934, was undertaken by Miss Verdoorn and Dr. Schweickerdt (Miss Obermeyer being in Europe at the time). While camping at the homestead for five days, further collections were made in the same area and one short trip was made to Duvenhage's Pan near Amisfort to collect water plants. On this second excursion 252 specimens were collected and numbered "Schweickerdt and Verdoorn 440 to 691." Consecutive numbers were used for the plants collected on the two excursions to avoid confusion. The route via Louis Trichardt and Wylie's Poort was taken both going and returning.

The farm Zoutpan appears to be the meeting place of at least four distinct types of vegetation, the Eastern Mountain Flora reaching to the very margin of the pan on the east, the Kalahari-desert Flora from the west, the Bushveld from the south and the sub-tropical plants from the north. For this reason a botanical survey of the area seemed to hold out prospects of interesting discoveries. We consider this assumption has been justified and hope that the following list and notes of our identified plants may help future workers in the study of plant geography in Southern Africa.

The specimens were first examined at the National Herbarium and Transvaal Museum, Pretoria, by the three authors and later were sent to Kew where Dr. H. G. Schweickerdt had been temporarily transferred. There he verified or corrected the identifications and his notes on some of the specimens in this list are initialed since they were the result of research done in the absence of the collaborators.



## FILICES.

1. **Marsilia ephippiocarpa** Alston.  
Along margin of Duvenhage's Pan near Amisfort, 628.
2. **Dryopteris thelypteris** (L.) A. Gray.  
In vlei at foot of mountain behind homestead, 218.
- D. **Pentheri** (Krass.) C. Christensen; [*D. elongata* (Sw.) Sim non O. Kuntze.]  
Along margin of stream in kloof near homestead, 240.

## MONOCOTYLEDONS.

## 8. APONOGETONACEAE.

1. **Aponogeton Rehmannii** Oliver.  
In semi-permanent pan on farm "Eyem," north of the Blaauwberg, 84.
- A. **gracilis** Schinz.  
In rock-pools on first plateau of northern slopes of the mountain, 317 a. [This species was collected only once before in the Transvaal, viz. in the eastern mountain area (Houtbosch).]
- A. **Holubii** Oliv. forma.  
Near Amisfort in Duvenhage's Pan; flowers deep yellow, 625. [This form is closely allied to, if not actually *A. Holubii* Oliv., in which the leaves are more acute and the inflorescences more robust, however, the leaves are markedly cordate in both. *A. Dinteri* Engl. and Krause, another close ally, the type of which I have seen, has narrower and more acute leaves, which are less cordate and the inflorescence is laxer than in our plant (H.G.S.).]

## 11. HYDROCHARITACEAE.

1. **Lagarosiphon muscoides** forma *longifolia* Wager.  
Near Amisfort in Duvenhage's Pan, 627.
2. **Ottelia ulvifolia** (Planch.) Walp. [*O. australis* Bremek., in Ann. Tvl. Mus., XV, ii 235 (1933).]  
Near Amisfort in Duvenhage's Pan, 623.

## 12. GRAMINEAE.

1. **Hyparrhenia Ruprechtii** (Hack.) Fourn.  
At foot of northern slopes of mountain, 590.
2. **Cymbopogon excavatus** (Hochst.) Stapf  
In camp near vlei at foot of mountain, 224.
- C. **validus** Stapf ex Burt Davy  
In drier parts of vlei behind homestead, 587.
3. **Bothriochloa pertusa** (Willd.) A. Camus.  
In shade of *Acacia* near margin of pan, 497.
4. **Tragus Berteronianus** Schult.  
Along margin of pan, 452, 485. This species apparently is a facultative halophyte.
5. **Paspalum scrobiculatum** L. var. **Commersonii** Stapf  
In marshy soil near foot of mountain, 223.

6. **Panicum maximum** Jacq.

In kloof above waterfall, 598 : in shade of trees near foot of mountain, 570 : near margin of pan in shade of *Acacia*, 471. [No. 471 has shortly pubescent spikelets which are smaller in size than those of plants from Rhodesia and Tanganyika. This may be due to the young state of our material. The east African plants placed under this species in Herb. Kew are on the whole more strongly pubescent and more robust in habit. Stapf, in Fl. Trop. Afr., IX, iv, 657, considers hairiness a variable character and thus includes plants such as the above under one species (H.G.S.).]

7. **Urochloa rhodesiensis** Stent

Growing luxuriantly in shade of *Acacia* and attaining a height of 120 cm., 483.

**U. panicoides** Beauv.

In shade of *Acacia* along margin of pan, 464. A rather small but very leafy plant.

8. **Brachiaria deflexa** (Schum.) C. E. Hubbard ex Robyns ; (*B. regularis* Stapf).

In moist places above waterfall in kloof behind homestead, 599.

**B. grossa** Stapf

On rocky slopes of the mountain, 525. [The spikelets are somewhat smaller and less turgid than those of typical sheets of this species (Angola). The inflorescence is less branched and on the whole our specimen is much weaker than any of the material under this species in Herb. Kew. This constitutes the first record of the species for the Transvaal (H.G.S.).]

**B. nigropedata** (Munro ex Hiern) Stapf

On mountain slopes behind homestead, 617.

9. **Echinochloa colona** Link

Near rocky pool on northern slopes of mountain, 618.

**E. stagnina** (Retz.) Beauv.

On grassy slopes near vlei behind homestead, 242.

10. **Digitaria debilis** (Desf.) Willd.

Very occasional in marshy ground, 219.

**D. eriantha** Steud.

On rocky ledges above kloof behind homestead, 607 : on lower northern slopes of mountain, 527.

**D. milanjiana** Stapf

Fairly frequent in very sandy area about 3 miles west of pan, 635.

11. **Rhynchelytrum villosum** Chiov.

On lower rocky slopes of mountain, 524 : in sandy area about 3 miles west of pan, 633.

12. **Tricholaena monachne** (Trin.) Stapf et Hubbard

At foot of mountain 589.

13. **Cymbosetaria sagittifolia** (A. Rich.) Schweickerdt

Fairly frequent but scattered in partial shade of *Lonchocarpus* belt, 578. [This constitutes the first record for the Transvaal. So far it has been recorded from Tropical Africa only, including northern South West Africa.]

14. **Setaria verticillata** (L.) Beauv.

Along margin of pan, growing in association with *Heliotropium*, 466. Our gathering is somewhat stunted, undoubtedly due to abnormal edaphic conditions.

15. **Cenchrus ciliaris** L.

Frequent but scattered in *Catophrates* belt, apparently grazed by stock, 179 : about 3 miles west of pan in very sandy soil, fairly frequent, 632.

16. **Aristida adscensionis** L.

In shade of *Acacia* near margin of pan, 472.

**A. meridionalis** Henr.

Very occasional between loose boulders on northern slopes of mountain, 604.

**A. junciformis** T. and R.

On grassy slopes east of pan, at foot of mountain, 572.

**A. barbicollis** T. and R.

On margin of pan, only one specimen found, 461.

**A. uniplumis** Licht.

Dominant in very sandy soil about 3 miles west of pan, 630.

17. **Sporobolus panicoides** Rich.

In shade of bushes at Wylie's Poort, 672.

**S. pyramidalis** Beauv.

In upper drier regions of vlei behind homestead, fairly frequent, 585 : in *Lonchocarpus* belt, 500.

**S. Smutsii** Stent

A fairly frequent markedly stoloniferous species near the margin of pan, 460 : in shade of bushes near margin of pan, 469.

18. **Danthoniopsis Dinteri** (Pilger) C. E. Hubbard (*Trichopteryx Dinteri* Pilger).

Fairly frequent on lower rocky slopes of mountain, 522. The tropical African specimens of this species in Herb. Kew are generally much more robust than our gathering.

19. **Loudetia filifolia** Schweickerdt

On lower rocky slopes of the mountain, subdominant, 523.

20. **Cynodon dactylon** (L.) Pers.

In shade of species of *Acacia* at foot of mountain, leaves distichous, 588 : frequent near vlei below mountain, 228.

21. **Chloris virgata** Sw.

In shade of species of *Acacia* near margin of pan, 484.

22. **Dactyloctenium aegyptium** (L.) Beauv.

Occasional near margin of pan, 457 : in shade of species of *Acacia* near margin of pan, 490. [No. 490 differs from typical *D. aegyptium* in being a taller plant and an annual, but a large range of flowering and fruiting material will be necessary before it will be possible to say whether more than one species of this genus occurs in South Africa (H.G.S.).]

23. **Enneapogon cenchroides** (Licht.) Hubbard

Fairly frequent on rocky ledges above kloof behind homestead, 608 : in shade of species of *Acacia* near margin of pan, 489, 538, 478.

**E. Pretoriensis** Stent

Fairly frequent on northern rocky slopes of the mountain, 605.

24. **Schmidtia bulbosa** Stapf forma ?

Among loose stones on northern slopes, 569, 606 : in very sandy area about 3 miles west of pan, 631. [Our plants differ somewhat from typical *S. bulbosa*. No. 631 differs

particularly in the relatively short awns which only just exceed the membranous lobes of the lemma and the palea being broader and more obovate. The glumes in all three specimens are 9-10-nerved whereas in true *S. bulbosa* they are 7-nerved (H.G.S.).]

This grass is locally known by the vernacular name "krulgras" on account of the very curly appearance of the old withered leaves.

25. **Phragmites communis** Trin.

In marshy soil east of pan along margin of periodic stream, 621.

26. **Trichoneura Schlechteri** Ekman (*Triodia Schlechteri* Pilger, nomen!).

On rocky ledge above kloof behind homestead, 609: among loose stones on northern slopes of mountain, 526.

These specimens are very similar to *Moisier* 135 from northern Nigeria in Herb. Kew, only differing in being somewhat less hairy. Furthermore they differ from typical *T. Schlechteri* by being annual and having narrower leaf-blades (H.G.S.).]

27. **Odysea paucinervis** (Nees) Stapf

Along margin of pan, 453, 463, 498, 499. This species is dominant along the margin of the pan. It is a typical halophyte and forms a dense sward surrounding the greater part of the pan. The spikelets are very variable with regard to the number of florets. No. 499 has up to 20-flowered spikelets. The leaves are rigid and pungent.

28. **Eragrostis cilianensis** Link

In shade of species of *Acacia*, east of pan, 540.

**E. aspera** (Jacq.) Nees

In Wylie's Poort in shade at foot of rocky ledges, 449.

**E. curvula** Nees

In very deep sandy soil about 3 miles west of pan, 629.

**E. chloromelas** Steud.

In drier parts of vlei west of homestead, 586.

**E. gummiflua** Nees

On grassy slopes at foot of mountain, east of pan, 573, 574.

### 13. CYPERACEAE.

1. **Cyperus sexangularis** Nees

Eastern margin of pan under small *Acacia*, 287.

2. **Pycneus lanceus** (Thunb.) Turrill

Frequent in vlei behind homestead, 196.

**P. polystachyus** Beauv.

Occasional in vlei behind homestead, 211.

3. **Mariscus dregeanus** Kunth

Along margin of stream leading from vlei behind homestead, 241.

4. **Kyllinga melanosperma** Nees

Frequent in vlei behind homestead, 212, 197. No. 212 appears to be a somewhat dwarfed specimen, but otherwise agrees in essential characters with this species.

5. **Fuirena chlorocarpa** Ridley

Occasional in vlei behind homestead, 210.

6. *Scirpus muricinux* C.B. Cl.

Frequent in semi-permanent pan on farm "Eyem," north of the Blaauwberg, growing in association with *Marsilia ephippiocarpa* and *Aponogeton Rehmannii*, 82.

7. *Fimbristylis complanata* Link

Frequent in vlei behind homestead, 199.

**F. diphylla** Vahl.

In vlei behind homestead, 221.

## 20. XYRIDACEAE.

1. *Xyris capensis* Thunb.

Occasional in vlei behind homestead, 198.

## 22. COMMELINACEAE.

1. *Commelina Forskalaei* Vahl.

East of pan under cover of *Acacia*; flowers blue, 533. The capsules of this specimen are constantly 1-seeded.

## 24. JUNCACEAE.

1. *Juncus lomatoxyllus* Spreng.

Very frequent in vlei behind homestead, 208.

## 25. LILIACEAE.

1. *Anthericum elongatum* Willd. var. *holostachyum* Bak.

On southern slopes of mountain about 6 miles west of Louis Trichardt, 343.

2. *Aloe rubro-lutea* Schinz

Between Waterpoort and Zoutpan, 451a: farm "Stafford," north of Blaauwberg, very frequent in open grassland, 647.

Typical plants from S.W. Africa have more densely bracteate inflorescences and appear to flower in December. Our specimens do not differ sufficiently to warrant the creation of a separate species.

3. *Albuca* sp.

Occasional on stony east fringe of the pan, 139. This is probably an undescribed species.

4. *Urginea Langii* Bremekamp

Farm "Kromhoek," north of Blaauwberg; flowers white with greenish keel, gregarious, 80.

This species is fairly frequent in sandy areas in the vicinity of the Zoutpan. Whether it is correctly placed in the genus *Urginea* is somewhat doubtful. In appearance it resembles an *Albuca* more closely and is apparently allied to *Albuca hereroensis* Bak. (Schinz 2 in Herb. Kew!). It differs from this in the shorter pedicels and smaller flowers. Fruiting material, however, is necessary to decide its true affinity. (The species has recently been collected at Rust-der-Winter, Pretoria district, by Dr. I. B. Pole Evans.)

5. *Dipcadi glaucum* (Burch.) Baker

Occasionally gregarious near margin of pan, 29, 259.

**D. sp.**

Between Zoutpan and Waterpoort, numerous plants in patches; flowers greenish, 268. This is probably an undescribed species.

6. *Scilla megaphylla* Baker

Frequent in shade above rocky ledges near waterfall on farm "Elsteg," about 6 miles west of Louis Trichardt, 367.

7. *Asparagus exuvialis* Burch.

In open patches of *Acacia* belt, on north side of pan, 51: farm "Eyem," north of Blaauwberg, 97.

## A. sp.

Creeping in species of *Acacia* on fringe of pan; stems pubescent; fruits small, green, globose, 141.

## 27. AMARYLLIDACEAE.

8. *Crinum buphanoides* Baker

Farm "Eyem," north of Blaauwberg, 86. This is a gregarious species commonly met with in deep sandy soil. The perianth varies in colour from whitish to dark pink; the tube is 10 cm. long, very narrow and greenish in colour while the segments are only about 5 cm. long and spread abruptly.

## 28. VELLOZIACEAE.

1. *Vellozia equisetoides* Baker.

On northern slopes of mountain, 318. This plant has branched stems reaching a height of 1 metre. It was the first record of the species for the Transvaal Province but has since been collected in Sekukuniland.

## 29. DIOSCOREACEAE.

1. *Dioscorea cotinifolia* Kunth (*D. malifolia* Bak.).

Liane in bush above waterfall on farm "Elsteg," about 6 miles west of Louis Trichardt, 360.

## DICOTYLEDONS.

## 36. SALICACEAE.

1. *Salix Wilmsii* Seem.

A tree, about 8 metres high, with slender branches; very frequent along stream in Wylie's Poort, 442.

## 38. ULMACEAE.

1. *Trema guineensis* (Schum.) Ficalho

On slopes of mountain of farm "Elsteg," about 6 miles west of Louis Trichardt, 350.

## 39. MORACEAE.

1. *Ficus capensis* Thunb.

In kloof behind homestead; fruit borne on branches at foot of tree, 598a.

F. *Pretoriae* Burt Davy

On rocky ledge at top end of kloof behind homestead, 614, 281; near foot of mountain; small shrubby tree, 104.

F. *Smutsii* Verdoorn

On lower rocky slopes of mountain, 600.

**F. soldanella** Miq.

Northern rocky slopes behind homestead, 280 : at foot of mountain, east of pan, 571. The fruits of 571 are about 1.5 cm. in diam. and thus larger than usual.

**F. Sonderi** Miq.

On northern rocky slopes of pan, 230 : east of pan, 560 : on rocky slopes along roadside in Wylie's Poort, 669.

No. 230 was a very tall umbrageous tree with a canopy about 30 metres in diameter and with conspicuously whitish to light brown stem and branches. The branches arch downward and touch the ground, but were not found to root as in *F. Pretoriae*.

**F. sycomorus** L.

At foot of mountain ; fruit with felty pubescence, 593.

**F. sycomorus** L. *forma* ?

Along stream leading from kloof to homestead, 110. This specimen resembles *F. sycomorus* closely but differs in having larger and almost glabrous fruits. It may represent an undescribed species and requires further study in the field.

**40. URTICACEAE.**1. **Pouzolzia hypoleuca** Wedd.

Frequent along streams in Wylie's Poort, 337.

**42. LORANTHACEAE.**1. **Loranthus Breyeri** Bremekamp

North side of pan ; parasitic on *Acacia* sp., flowers yellowish, 52. This species is evidently of limited geographic range.

**L. Dregei** E. and Z. var.

Parasitic on species of *Acacia*, north of pan ; flowers yellow and green, 47 : on species of *Ptaeroxylon* behind homestead, 17.

**L. kalachariensis** Schinz

At foot of mountain behind homestead, 517. The clusters of bright red flowers are very striking.

**L. oleaefolius** var. **Leendertziae** Sprague

Parasitic on malvaceous shrub on northern slopes of mountain ; flowers brownish-red with the reflexed petals green within, 282.

2. **Viscum combreticola** Engl.

Parasitic on *Pseudolachnostylis* sp., on northern slopes of mountain, 311 : on *Combretum* sp. on northern slopes of mountain, 166.

**V. verrucosum** Harv.

Parasitic on *Acacia* sp., near margin of pan ; fruit stippled, 492.

**45. OLACACEAE.**1. **Olox dissitiflora** Oliv.

Very frequent on northern slopes of mountain, 153, 236.

2. **Ximenia americana** var. **microphylla** Welw. ex Oliver (*X. Rogersii* Burt Davy).

Very frequent at foot of mountain behind homestead, 530, 111.

**X. caffra** Sond.

Near margin of pan, 295 : at foot of mountain in association with *Dichrostachys sp.*, 5.

**50. POLYGONACEAE.****1. Polygonum lapathifolium** var. **glabrum** Burt Davy

Hydrophyte, in association with *Nymphaea*, *Ottelia*, etc. in Duvenhage's pan near Amisfort, 626.

Burt Davy in Flora of Transvaal, I, p. 169, states that this variety has glabrous peduncles. The specimen collected by Holub, however, cited under this variety, shows the presence of scattered glands on the peduncles.

**P. serrulatum** Lag.

In vlei behind homestead ; flowers whitish to heather pink ; bracts pink, 215.

**51. CHENOPODIACEAE.****1. Chenopodium ambrosoides** L.

Margin of pan, occasional, 456.

**2. Suaeda fruticosa** Forsk.

Along margin of pan, 38, 462. This characteristic halophyte together with *Odysea paucinervis* is one of the dominant species surrounding the pan.

**52. AMARANTACEAE.****1. Celosia scabra** (Schinz) (*Hermbstaedia scabra* Schinz).

In shade of *Acacia* near margin of pan ; flowers pink, 481. [This species formerly placed under *Hermbstaedia* by Schinz has now been transferred to *Celosia* on the grounds that the anthers are inserted on the lobes between the sinuses of the staminal-tube (see Engl. Pflanzenfam., ed. II, 16c (1934). Schinz has furthermore placed *H. linearis* under this genus and following him *H. Rogersii* Burt Davy should also be transferred to *Celosia* (H.G.S.).]

**2. Cyathula crispa** Schinz

In *Acacia* belt north of pan, 46 : occasional near *Catophractes* belt, 505.

**C. uncinulata** (Schrad.) Schinz (*C. globulifera* Moq.).

Along margin of pan, 496.

**3. Pupalia lappacea** (L.) Juss.

Near stream in vlei behind homestead, 238.

**4. Alternanthera repens** (L.) O. Ktze.

In open ground east of pan, 548.

**A. sessilis** (L.) R. Br.

In stream leading from vlei behind homestead, 207.

**53. NYCTAGINACEAE.****1. Commicarpus plumbagineus** (Cav.) Standley. (*Boerhaavia plumbaginea* Cav.).

Growing under cover of shrubs near margin of pan ; herb 3 ft. high ; flowers white to pale mauve ; stamens 2, pink, long, exserted, 19, 451.

**C. fallacissimus** (Heim.) Heim. forma **pilosa** Heim. differt a typico *C. fallacissimo*: indumento subdenso, pilis scabridulis, brevissimus patulis formato, verticillis summofero 6-floris, florum (pulchre purpureorum) pedicellis valde brevibus, usque solum 2.5 mm. long., haud capillaribus.

Frequent in sandy soil, growing in association with *Tribulus Zeyheri* Sond., near Vivo; flowers pink; stamens long exerted; fruits glandular, 653 (type): on northern slopes of mountain behind homestead, 103.

The description of this new form was sent by Dr. Anton Heimerl of Vienna. In the letter he states:—

“In den Abhandl. Bot. Ver. Prov. Brandenb. XXXI, 223 (1890) habe ich die der *Boerhaavia verticillata* Poir. nahestehende *B. fallacissima* (eine ebenfalls bistaminate Art) beschrieben, die jetzt in die durch Standley abtrennte Gattung *Commicarpus* Standley (Contrib. U.S. Nat. Herb.) XII, 373 (1908) einzureihen ist. Von diesem *Commicarpus fallacissimus* Heim., den ich aus Arabien (Aden) vom Somali-gebiete und aus dem Hererolande kenne, unterscheidet sich die (im schönsten Blüten aufgesammelte) Nr. 653 durch das rauhe, ziemlich dichte, ganz kurze Haarkleid, durch die höchstens 6-blütige quirle und durch sehr kurze, bis 2.5 mm. lange, nicht haardünne Blütenstiele. Der Arttypus ist fast kahl, die Quirle sind bis 8-blütig und die ganz dünnen Blütenstiele erreichen schon zur Anthese 5–17 mm. an Länge; vielleicht würden reife Anthocarpn (sie fehlen Nr. 653) auch Unterschiede bieten. Ich möchte daher die Transvaal-pflanze als eine bemerkenswerte Form abtrennen und sie als f. *pilosa* anführen.”

## 2. *Boerhaavia diffusa* L.

In open veld east of pan, forming tussocks; flowers small, purplish-pink, 551. With regard to this gathering Heimerl remarks as follows:—

“Wenn ich die *Boerhaavia* einfach als *B. diffusa* L. bezeichne, glaube ich, keinen argen Verstoß zu begehen; in den Formenkreis dieser weitverbreiteten und sehr formenreichen Art gehört sie sicher, ebenso wie die von mir vor, langer zeit aufgestellte *B. Schinzii*, die freilich durch einige Merkmale aus der Formenmenge vorragt; das Fehlen von Anthocarpn macht die Sache natürlich auch schwieriger!”

## 54. PHYTOLACCACEAE.

### 1. *Limeum Meyeri* Fenzl.

Frequent in very sandy area about 3 miles west of pan; flowers white, 639.

### L. *Dinteri* Schell.

Between Waterpoort and Zoutpan, 264.

[In foliage and habit this gathering is a good match of *Dinter* 998 and *Lüderitz* 161 in Herb. Hort. Bot. Berol. The inflorescence in our specimen, however, is more compact and abbreviated, but this difference alone does not warrant its exclusion from the above species (H.G.S.).]

### 2. *Semonvillea fenestrata* Fenzl.

Very sandy area about 3 miles west of pan, 636.

### 3. *Gisekia pharnaceoides* L.

Very frequent in sandy area near Vivo; petals purple-pink, 654: east of pan; petals pink-tipped; stamens white, 545.

## 55. AIZOACEAE.

### 1. *Mollugo nudicaulis* Lam.

In shade of trees south-east of pan, 584.

**M. Cerviana** (L.) Ser.

Frequent in open spaces among *Acacia* trees near margin of pan, 532.

**2. Pharnaceum salsoloides** Burch. (*P. verrucosum* E. and Z.).

In sandy soil on eastern margin of pan; flowers white, 298: in shade of *Acacia* trees east of pan, 534.

**3. Orygia decumbens** Forsk.

In open sandy soil between Zoutpan and Waterpoort, not very frequent, 269.

**4. Trianthema pentandra** L.

Very frequent along eastern margin of pan, 546.

**T. erectum** Schlechter

Along margin of pan; flowers very small in sessile clusters; perianth-segments 5, white; stamens 5 with pink anthers, 459.

[In Herb. Hort. Bot. Berol. four sheets of *Schlechter* 11790 (from Komatipoort, Tvl.) are not unlike our plant. The specimens, however, were collected in a young and sterile stage. In foliage and branching they agree with our plant, but appear to be of an upright habit—in fact they closely resemble the right-hand specimen of our 459 in *Nat. Herb. Pretoria*—whereas the remaining specimen on this sheet has a semi-prostrate habit (H.G.S.).]

**5. Sesuvium digynum** Welv. ex Oliver (*Trianthema salarium* Bremekamp).

Western side of pan, *Bremek.* and *Schweickerdt*, 232; under *Acacia* shrubs near margin of pan; flowers sessile purple-pink; stamens 9; styles 2, 488.

**56. PORTULACACEAE.****1. Talinum Arnotii** Hook. f.

Common in sandy soil between Zoutpan and Waterpoort, 260.

**T. caffrum** (Thunb.) E. and Z.

Fairly frequent in sandy soil on farm "Eyem," north of Blaauwberg, 93.

**T. transvaalensis** von Poellnitz

In cover of shrubs in *Catophractes* belt, 193.

**2. Portulacaria afra** Jacq.

In Wylie's Poort, decumbent on rocks or arborescent, up to 5 metres high, 332.

**P. oleracea** L.

Occasional along margin of pan; flowers yellow, 31.

**P. quadrifida** L.

Fairly frequent on eastern side of pan, 294.

**P. trianthemoides** Bremekamp

Frequent along margin of pan; flowers deep yellow, 458.

**59. NYMPHAEACEAE.****1. Nymphaea caerulea** Sav.

In Nyl River about seven miles north of Nylstroom; flowers white with yellow centre, 440.

**N. capensis** Thunb.

Near Amisfort in Duvenhage's Pan; flowers blue with yellow centres, 624.

The flower-stalk of these specimens is always exerted from 15–30 cm. beyond the surface of the water, whereas in the foregoing species the flower almost floats on the surface of the water.

## 62. MENISPERMACEAE.

1. *Cocculus hirsutus* (L.) Diels

Liane, common on trees in *Lonchocarpus* belt, 284.

2. *Desmonema caffrum* Miers.

Liane, frequent in *Lonchocarpus* belt; berries scarlet, 136.

This plant was observed to reach the tops of fairly tall trees such as *Albizzia*, etc. The stems are extremely succulent and very brittle. This is the first record of the species for the Transvaal.

## 63. ANNONACEAE.

1. *Hexalobus glabrescens* Hutch. and Dalz.

Small spreading tree on upper slopes of mountain, 155, 315.

2. *Artabotrys brachypetalus* Benth.

Tree about 2 metres high, on upper slopes of mountain, 321, 160.

## 70. CAPPARIDACEAE.

1. *Cleome diandra* Burch. (*Dianthera Petersiana* Klotszsch; *D. burchelliana* Klotszsch).

On ledge on slopes of mountain; flowers yellow, 612.

2. *Capparis tomentosa* Lam.

In *Lonchocarpus* belt near margin of pan, 13. A robust sprawler with festooning branches inclined to cover completely smaller trees and shrubs such as *Acacia* and *Salvadora*.

3. *Boscia Rehmmaniana* Pest. forma.

In *Catophractes* belt, leaves and fruit shortly pubescent, 182a.

[This tree is fairly frequent in the sandy area north of the pan where it reaches a height of 4-5 metres. It differs from typical *B. Rehmmaniana* in having pubescent leaves, whereas in the latter species they are always glabrous. *Lugard* 27 from Kwebe Hills, Ngamiland in Herb. Kew, resembles our gathering, but has glabrous leaves. The fruits, however, are pubescent and the flowers fasciculate (not a pedunculate inflorescence!) in which points it agrees with our gathering. Furthermore our specimen agrees in habit and in fruit with *Seiner* 78 from Bechuanaland in Herb. Hort. Bot. Berol. but in this specimen also the leaves are glabrous (H.G.S.).]

**B. albitrunca** Gilg et Benedict.

Between Zoutpan and Waterpoort, 276.

4. *Courbonia glauca* (Kl.) Gilg and Benedict (*C. camporum* Gilg and Benedict).

Between Waterpoort and Wylie's Poort, 328; between Zoutpan and Waterpoort, 247.

[Gilg and Benedict in Engl. Bot. Jahrb., 53, 217 (1915) distinguish between *C. glauca* and *C. camporum* on the grounds that the former is a woody shrub, whereas the latter is a herbaceous plant. Knowing our plant well in the field, these characters in my opinion are of no taxonomic value. *C. glauca* may either be a herbaceous plant 25 cm. or so high, or may reach a height of nearly 3 metres. It then is a shrub with a fairly lignified base. I have compared our gatherings with the types of *C. glauca* and *C. camporum* and have come to the conclusion that only one species is concerned (H.G.S.).]

5. *Cadaba termitaria* N. E. Br. (*C. macropoda* Gilg).

Very occasional near margin of pan, 34, 286.

[The shape and size of the leaves of this species is variable, a character of many plants growing in arid regions. Our specimens have much smaller leaves than the type of *C. termitaria*, but this difference alone does not justify specific distinction. Several small-leaved specimens in Herb. Kew were considered by Dr. J. Burt Davy to represent a distinct species, but in my opinion are merely forms of the above species (H.G.S.).]

6. *Maerua maschonica* Gilg

North of pan, 2.5-3 m. high, scrambling in *Salvadora sp.*, 43. Cattle are very fond of this plant.

M. *Legatii* Burt Davy

Shrub about 1 m. high in *Catophractes* belt, north of pan, 182.

## 76. CRASSULACEAE.

1. *Kalanchoe paniculata* Harv.

East side of pan at foot of mountain; flowers, yellow-green; leaves crenate, 561; scattered in *Catophractes* belt, north of pan, 184.

[The following described species are very closely allied: *K. paniculata* Harv., *K. multiflora* Schinz, and *K. pyramidalis* Schönl. In the descriptions they are distinguished by having either entire or crenate, sessile or petiolate leaves. Whether those characters are of taxonomic value is doubtful, since in our 561 both sessile and petiolate leaves are found on the same plant. There are a few sheets in Herb. Kew from Ngamiland and Rhodesia named by N. E. Brown as *K. multiflora* Schinz. Those specimens have crenate leaves, whereas Schinz describes the species as having entire leaves. It is somewhat doubtful whether the three species mentioned above, differing in leaf-shape only, a variable character in many succulents, should occur in the same geographic region. Study of plants in the field will probably show that the above view is correct (H.G.S.).]

## 77. SAXIFRAGACEAE.

1. *Vahlia capensis* Thunb.

In shade of shrubs above vlei behind homestead, 232a.

## 80. MYROTHAMNACEAE.

1. *Myrothamnus flabellifolia* (Sond.) Welw.

On northern rocky slopes of mountain, 615, 616, 171. This plant is perhaps one of the most remarkable found in Southern Africa. It is a dioecious shrub reaching a height of about 75 cm. and is usually gregarious. The male and female plants grow side by side. Some branches are decumbent and root adventitiously. Fragments of the plant which are shrivelled and dead will resurrect even after many years when soaked in water and assume colour and habit as in the living state (probably an imbibition movement).

## 85. LEGUMINOSAE.

1. *Albizzia Rogersii* Burt Davy

On rocky northern slopes of mountain, 170, 601; a tall tree with markedly spreading branches, locally fairly abundant.

2. *Acacia Benthamii* Rochebr.

In *Lonchocarpus* belt close to pan, 9; small tree, only about 1.5-2 metres high, on the very margin of pan, 470.

A. *heteracantha* Burch. (*A. litakunensis* Burch.; *A. spirocarpoides* Engl.).

Between Zoutpan and Waterpoort, 274: along eastern margin of pan, 150.

A. *karroo* Hayne

Frequent in *Lonchocarpus* belt between foot of mountain and pan, 11.

A. *pennata* Willd.

Above stream leading from the kloof behind homestead, 108.

**A. permixta** Burt Davy var. **glabra** Burt Davy

North side of pan forming dense patches, 41, 60. Plants reaching a height of 1-2 metres and forming dense scrub adjoining the halophytic fringe flora of the pan.

**A. Senegal** Willd. (*A. rostrata* Sim).

East side of pan, 300. Only a few specimens of this low-spreading tree about 5 metres high were found scattered along the eastern margin of the pan.

**A. Woodii** Burt Davy

In *Lonchocarpus* belt, 12. Large round-topped trees with rough bark and clustered branches, growing among *A. karroo*.

**3. Dichrostachys glomerata** (Forsk.) Hutch. and Dalz.

On northern slopes of mountain, 226.

**4. Elephantorrhiza Burkei** Benth.

In depression on northern slopes of mountain: small shrubs, occasional, fruiting specimens only, 175.

**5. Burkea africana** Hook.

On upper slopes of mountain, flat-topped trees, 319.

**6. Copaifera mopane** Kirk

Between Waterpoort and Wylie's Poort, 329.

**7. Cassia delagoensis** Harv.

Fairly frequent at foot of mountain east of pan, 563.

**C. arachoides** Burch. forma ?

Frequent in sandy soil, between Zoutpan and Waterpoort, 265: fairly frequent in very sandy area about 3 miles west of pan, 642.

[Our specimens match *Moss* and *Rogers* 36 from Messina, N. Transvaal, placed under *C. holosericea* Fresen. by Burt Davy in his Flora of the Transvaal, ii, 325 (1932). The flowers and fruits of true *C. holosericea* are much smaller and more hairy than those of our 265 and 642. *C. obovata* Collad. has fruits which differ by the conspicuous median crest on the lateral surfaces. Our plants are most closely allied to *C. arachoides* Burch. of which species they may be merely a pubescent form (H.G.S.).]

**8. Pterolobium exosum** (Gml.) Bak. f. (*P. lacerans* R. Br.).

Frequent in Wylie's Poort, 450. A conspicuous liane on account of its showy brilliant-red winged fruits, climbing to the tops of the highest trees in the forest-clad ravines.

**9. Peltophorum africanum** Sond.

Frequent on lower slopes of mountain; tree with erect racemes of bright yellow flowers, 107.

**10. Pseudocadia zambesiaca** (Bak.) Harms

At foot of mountain east of pan, 596: north-western slopes of mountain, 65. Frequent in area around pan; one of the tallest and most umbrageous trees with dark shiny foliage and stems up to 2 metres in diameter.

**11. Calpurnia subdecandra** (L'Herit.) Schweickerdt comb. nov.; [*Robinia subdecandra* L'Herit. in Stirp., Nov., 157, t. 75 (1784); *Calpurnia lasiogyne* E. Mey].

Farm "Elsteg," about 6 miles west of Louis Trichardt, 353.

**12. Lotononis Bainesii** Bak.

Frequent along furrow leading from large vlei west of homestead, 235.

**13. Crotalaria Schinzii** Bak. f.

Frequent in shade of trees at foot of mountain, south-east of pan, 580.

**C. longistyla** Bak. f.

Between Louis Trichardt and Pietersburg, frequent in sandy soil, 664.

**C. inhabilis** Verdoorn sp. nov.

*Affinis C. australi sed pubescentia appressa et ovario tomentosa differt; affinis C. athrophyllae sed racemis laxioribus elongatioribusque, calyce brevior, floribus omnino flavis (nec purpureo-striatis), et suffrutice circiter 1 m. alto differt.*

*Suffrutex* erectus,  $\pm$  1 m. altus, supra ramosissimus; ramuli petioli et pendunculi breviter griseo-appresso-pubescentes. *Folia* exstipulata, longe-petiolata, trifoliolata; petioli 6 cm. longi, internodiis et foliolis valde excedentes; foliola lineares vel anguste-oblonga, 1-3 cm. longa, 2-7 mm. lata, infra appresse pubescentes, supra glabrescentes, apicè minute mucronata vel retusa, basi leviter cuneata, breviter petiolulata. *Racemi* oppositifolii vel terminales, elongati, 15-23 cm. longi, laxi, 10-15-flori. *Bractee* subulatae, 2 mm. longae. *Flores* flavi,  $\pm$  2 cm. longi, in medio racemorum plerumque 2 cm. distantes (*C. athrophyllae* 1 cm. distantes). *Pedicelli* circiter 10 mm. longi, breviter appresse griseo-pubescentes, infra medium 2-bracteolati. *Calyx*  $\pm$  8 mm. longus, appresse pubescens vel glabrescens, lobis deltoideis circiter 3 mm. longis. *Vexillum* dorso glabrum; carina dorso rotundata, 2 cm. longa, 7 mm. lata. *Ovarium* longe-stipitata, argenteo-tomentosa.

*Transvaal.*—Zoutpansberg distr.: On sandstone outcrop about 10 miles east of Waterpoort, Nov., Obermeyer, Schweickerdt and Verdoorn, 323.

*C. inhabilis* was found abundantly on a sandstone outcrop about 10 miles east of Waterpoort on the road to Wylie's Poort. It is an erect half-shrub up to about 4 ft. high and is densely branched above, which gives it a top-heavy or broom-like appearance. The clustered ultimate branchlets, which are much more slender than those from which they arise, and the very long-petioled leaves, the petioles being about three times as long as the leaflets, accentuate the broom-like appearance. The pure yellow flowers are borne on the branchlets in lax elongated racemes which may be either terminal or opposite the leaves.

**14. Argyrolobium transvaalense** Schinz

Fairly frequent on farm "Elsteg," about 6 miles west of Louis Trichardt, 351.

**15. Indigofera circinnata** Benth.

Between Zoutpan and Waterpoort, 275. A spiny slender shrub reaching a height of about 1 metre.

**I. egens** N. E. Br.

On upper slopes of mountain, 307.

**I. flavicans** Bak.

Frequent in sandy area east of pan, 296, 549.

**I. Holubii** N.E. Br.

Growing in cover and shade of bushes; flowers attractive, rosy pink or red, 480: east of pan, 544.

**I. tettensis** Klotzsch (*I. Baukeana* Vatke).

In shade of bushes along margin of pan; flowers pink; calyx small, 487.

**I. sp.** allied to *I. adenoides* Bak. f.

Common on north-western slopes of mountain, 154: frequent on rocky slopes east of pan, 566.

[Our specimens from *I. adenoides* having 3-5-foliolate leaves, minute stipules, fruits set with a few short glands and stems covered with minute almost sessile glands (H.G.S.)]

16. *Psoralea pinnata* var. *latifolia* Harv.

Vlei behind homestead; slender shrub attaining a height of about 5 metres, 202.

17. *Sylitra contorta* (N.E. Br.) Bak. f.

In sandy area north of pan near *Catophractes* belt, 508: between Zoutpan and Waterpoort, in open sandy soil, 267.

18. *Tephrosia zoutpansbergensis* Bremekamp

Very occasional, shrub 1-1.5 metres high, on northern slopes of mountain, 174.

**T. capensis** (Thunb.) Pers.

On lower slopes of the mountain, 531.

**T. purpurea** Pers. *forma* ?

East of pan in shade of *Acacia*, 543.

**T. euchroa** Verdoorn sp. nov. ab *T. noctiflorae* floribus multo majoribus differt et ab specibus omnibus Transvaale valde distincta.

*Suffrutex* parvus plus minusve 30 cm. altus, multiramis, erectus vel rami decumbentes. *Rami* cano-pubescentes, glabrescentes, internodiis 2.5-3 cm. longis. *Folia* imparipinnata 2-6-juga, foliolis oblanceolata-oblongis vel oblongis, 1.5-3 cm. longis, 5-9 mm. latis utrinque cano-pubescentibus, superne ultimo glabrescentibus, apice minute mucronatis vel retusis petiolatis, petiolulis 3 mm. longis, dense cano-pubescentibus. *Stipulae* lanceolatae, acutae, 5 mm. longae, cano-pubescentes, 3-nervatae. *Racemi* folia longiores, laxiflori. *Flores* 1.5-2 cm. longi, rubicundi. *Bractae* lanceolatae, acutae, 4 mm. longae, cano-pubescentes. *Calyx* cano-pubescentis, in toto 5 mm. longus, lobis triangularibus 1-3 mm. longis. *Vexillum* extus appresse pubescens, suborbiculare, 1.5-2 cm. longum et latum; carina circiter 1.6 cm. longa, 1 cm. lata, quam vexillum paullo brevior et quam alae paullo longior. *Legumen* immaturum lineare, appresso-cano-pubescente.

*Transvaal*.—Zoutpansberg distr: On lower slopes of the Zoutpansberg, on farm "Zoutpan," among rocks, flowers pinky-red, April, 1934, *Schweickerdt* and *Verdoorn*, 529; on rocky N.W. slopes of the Zoutpansberg, November, 1932, *Obermeyer*, *Schweickerdt* and *Verdoorn*, 73 (type).

This is very distinct from all the known Transvaal species of *Tephrosia*. The silvery-grey colour of the bush and the pinkish-red flowers suggested the specific name. It is somewhat like *T. noctiflora* but has much larger flowers. The flowers of each raceme develop at different intervals and one finds several large open flowers while the buds above are still very immature.

19. *Sesbania aculeata* Pers.

Herbaceous, about 60 cm. high, near margin of pan, 454.

20. *Ormocarpum trichocarpum* (Taub.) Harms (*O. setosum* Burt Davy).

Small tree at foot of mountain, south-east of pan, 582.

21. *Stylosanthes mucronata* Willd.

In dry rocky soil between Waterpoort and Wylie's Poort, 336.

22. *Lonchocarpus capassa* Rolfe

Dominant, large tree in area between pan and foot of mountain, 8.

23. *Abrus laevigatus* E. Mey.

In vlei behind homestead, 206.

24. *Glycine javanica* L.

Twinner on trees along stream leading from kloof; flowers white in long erect racemes, 597.

25. **Neorautanenia edulis** C.A. Sm.

Sandy area about 3 miles west of pan, 645 ; in *Catophractes* belt, 183 : farm "Kromhoek," north of Blaauwberg, 81 : between Zoutpan and Waterpoort, 271.

26. **Rhynchosia minima** DC.

Twining in *Capparis* near margin of pan, 473.

27. **Eriosema psoraleoides** (Lam.) Don (*E. cajanooides* Benth.).

In vlei soil behind homestead, 594.

28. **Otoptera Burchellii** DC.

Frequent in sandy area about 3 miles west of pan, 643 : farm "Eyem," north of Blaauwberg, 100.

29. **Dolichos Schlechteri** (Harms) Burt Davy

Creeping in small shrubs in *Catophractes* belt, 185.

[This species was originally described as *Phaseolus Schlechteri* Harms in Engl. Bot. Jahrb. XXX, 91 (1901). In the type description Harms makes no mention of the shape of the stigma, although at some time or other he apparently was somewhat in doubt as to which genus to refer it to. Burt Davy in his Flora of the Transvaal cites this species under *Dolichos Schlechteri* Harms MS apparently not having been aware of the fact that Harms had described it under another name. The penicillate stigma is not characteristic of *Phaseolus* and Burt Davy has correctly aligned this plant with others at present under *Dolichos* (H.G.S.)]

30. **Alistilus bechuanicus** N.E.Br.

On upper slopes of mountain, a creeping procumbent herb, peduncles erect, flowers pink, 317.

## 86. GERANIACEAE.

1. **Monsonia glauca** Knuth

Very sandy area about 3 miles west of pan, 640.

## 90. ZYGOPHYLLACEAE.

1. **Tribulus terrestris** L.

Under cover of *Acacia* east of pan, 539.

**T. zeyheri** Sond.

Along roadside, Vivo, 650 : between Zoutpan and Waterpoort, 263 : under thorn fence of kraal east of pan, 299.

2. **Balanites australis** Bremekamp

West of pan, scattered but frequent, 479 : near margin of pan, 15, 33. A small, very thorny tree.

## 91. RUTACEAE.

1. **Toddaliopsis Bremekampii** Verdoorn

Frequent on northern slopes of mountain behind homestead ; a shrub or small tree with tri-foliolate leaves ; flowers small, greenish ; fruits warted, 66, 156, 567.

2. **Fagara capensis** Thunb.

Farm "Elsteg," about 6 miles west of Louis Trichardt, in shade on rocky slopes, 346, 347. Two trees growing near together, one 3 or 4 ft. high with small leaves (probably a young tree) and the other about 8 ft. high with larger leaves (I.C.V.).

3. **Clausena anisata** (Willd.) Hook. f. (*C. inaequalis* var. *abyssinica* Engl.).

Farm "Elsteg," about 6 miles west of Louis Trichardt ; small tree, bad odour, 356.

## 92. SIMARUBACEAE.

1. *Kirka pubescens* Burt Davy

Large spreading tree, fairly frequent on northern slopes of mountain, 163.

## 93. BURSERACEAE.

1. *Commiphora pyracanthoides* Engl.

North of pan in *Catophractes* belt; shrub; flowers red and yellow, 48, 49, 512: on slopes of mountain; small tree with greenish stems, 159.

**C. Marlothii** Engl.

In dry parts of kloof behind homestead; tree with papery bark, 121: frequent on northern slopes of mountain, 165.

**C. calciicola** Engl.

North side of pan near *Catophractes* belt; flowers red; leaves 3-foliolate; fruit red, oblique, 180, 511: between Louis Trichardt and Pietersburg, 663.

**C. cinerea** Engl.

On lower slopes of mountain behind homestead, tree about 8 metres high, 152.

**C. sp.** near *C. mollis* and *C. Welwitschii* but material insufficient for specific identification.

Farm "Eyem," north of Blaauwberg, 95.

## 94. MELIACEAE.

1. *Ptaeroxylon obliquum* (Thunb.) Radlk.

In upper drier parts of kloof behind homestead; small slender tree, 118.

2. *Entandophragma caudatum* Sprague

On northern slopes of mountain; tree about 10 metres high; leaves with long drip-points, 306.

3. *Ekebergia Meyeri* Presl

Above stream leading from kloof behind homestead; spreading tree, 112.

## 98. EUPHORBIACEAE.

1. *Pseudolachnostylis maprouneaefolia* Pax

Northern slopes of mountain, 74, 75, 117.

2. *Fluggea virosa* Baill.

Near foot of mountain in *Lonchocarpus* belt, 6, 10, 521.

3. *Phyllanthus reticulatus* Poir

At foot of mountain, east of pan; tree about 8 metres high, 620.

4. *Bridelia mollis* Hutch.

In kloof behind homestead, 599b; northern slopes of mountain, 243.

5. *Androstachys Johnsonii* Prain

Tree, 5-8 metres high, very frequent in Wylie's Poort, 327.

6. *Croton gratissimus* Burch.

Fairly frequent on northern slopes of mountain; small tree, 157, 169.

**C. megalobotrys** Müll. Arg. (*C. Gubouga* S. Moore).

Tree, about 5 metres high, near homestead, 4: beside stream leading from kloof, 106.

**C. pseudopulchellus** Pax

On upper slopes of mountain, locally abundant; small shrub, about 1 metre high, 303, 316.

**7. Acalypha glabrata** Thunb.

Farm "Elsteg," about 6 miles west of Louis Trichardt; shrub, about 2.5 metres high, 348.

**A. indica** L.

In shade of *Acacia*, east of pan, 535.

**8. Tragia Okanyua** Pax

Northern slopes of mountain, twining in *Croton sp.*, 283.

**9. Plukenetia africana** Sond.

Climber, in *Acacia sp.*, east of pan, 552.

**10. Jatropha erythropoda** Pax et Hoffm.

In *Catophractes* belt, 194: on farm "Zoutpan," on road to Waterpoort, 262.

**J. zeyheri** Sond. forma.

Near farm "Eyem," north of Blaauwberg, 101.

[This specimen differs from *J. Schlechteri* Pax in the more strongly lobed, less pubescent and shorter petioled leaves and the glabrous calyx. In the latter character our plant also differs from *J. zeyheri* Sond. but approaches it with regard to leaf-shape and length of petiole. Since the last two characters appear to be of some importance in the delimitation of the S. African species of this genus, I place our gathering under the above species and regard it as a form until more material becomes available for study (H.G.S.).]

**11. Spirostachys africana** Sond.

In *Lonchocarpus* belt near homestead, tree 5-7 metres high, 77: almost on margin of pan, 35.

**12. Euphorbia aeruginosa** Schweickerdt.

On northern rocky slopes of mountain, 151, 688.

**E. Cooperi** N.E. Br.

On northern slopes of mountain near homestead, 649.

**E. Gürichiana** Pax

In *Catophractes* belt; small bush, branched at base, up to 50 cm. high; flowers yellow or green, 178, 513.

**E. Tirucalli** L.

Plentiful in parts of Wylie's Poort, 676.

**E. transvaalensis** Schltr.

On rocky slopes in Wylie's Poort, 369.

**13. Monadenium Lugardae** N.E.Br.

On mountain slopes east of homestead, forming patches; stems decumbent, rooting where they touch the ground, about 40 cm. high, 648.

**14. Cluytia pulchella** var. *obtusata* Sond. ?

Shrub, near waterfall on farm "Elsteg," about 6 miles west of Louis Trichardt, 366.

**101. ANACARDIACEAE.****1. Rhus Gueinzii** Sond.

On margin of vlei, west of homestead, 231.

**R. pyroides** var. **gracillis** (Engl.) Burt Davy

In marshy soil near vlei, 222.

**R. transvaalensis** Engl.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 365.

**103. CELASTRACEAE.**1. **Cassine Schlechteri** (Loes.) Davison

Small tree, in *Lonchocarpus* belt beyond vlei, bearing somewhat pointed ripe fruits, 577: same locality, tree, ripe fruits globose, 576: small tree, on northern slopes; fruits immature, 237.

*Rehmann*, 6459 from Houtbosch, Transvaal, referred to the above species in Herb. Kew has oblong apiculate fruits as in our No. 577. In the latter sheet the apiculus of the fruits is more pronounced. No. 576 has spherical fruits without an indication of an apiculus, but does not differ from 577 in other respects. Until more material, both flowering and fruiting, has been studied, it is impossible to decide whether the above specimens represent distinct varieties (or even species) or whether only one species variable with regard to leaf size and shape of fruits is involved. In the type description of *Mystroxydon Schlechteri* [Loes in Engl. Bot. Jahrb., 28, 159 (1901)] no mention of the fruits is made.

**104. HIPPOCRATEACEAE.**1. **Hippocratea longipetiolata** Oliv.

Between Zoutpan and Waterpoort; small shrub, with long spreading branches, 254.

**106. SAPINDACEAE.**1. **Cardiospermum alatum** Bremekamp and Obermeyer

East of pan, climber, on *Gossypium*, 559.

**109. RHAMNACEAE.**1. **Zizyphus mucronata** Willd.

Between Waterpoort and Wylie's Poort, 326.

2. **Berchemia discolor** (Kl.) Hemsl.

Northern slopes of mountain, 279: frequent in *Lonchocarpus* belt, 278.

**111. VITACEAE.**1. **Cissus lonicerifolius** C. A. Smith

Farm "Eyem," north of Blaauwberg; shrub, 2 metres high; leaves folded, pungent odour, 96.

Usually a shrub, varying from 1-3 m. high, much branched; tendrils usually only found near end of branches.

**C. quadrangularis** L.

Between Zoutpan and Waterpoort, climbing in small shrubs, 261.

**C. simulans** C. A. Smith

Farm "Elsteg," about 6 miles west of Louis Trichardt, luxuriant climber, 361.

**C. unguiformifolius** C. A. Smith

Between Waterpoort and Wylie's Poort, abundant, procumbent, 330.

## 112. TILIACEAE.

1. *Corchorus pongolensis* Burt. Davy and Greenway ?

On lower slopes of mountain behind homestead, 67. A slender shrub, up to 130 cm. high, differing from the type by having somewhat shorter bracts, but otherwise agreeing fairly well.

[Our plant is allied to *C. Kirkii* N. E. Br. but may be readily distinguished by the indumentum (H.G.S.).]

*C. asplenifolius* Burch.

Under *Acacia*, east of pan, 536, 541.

2. *Grewia flava* DC.

In open parts of *Catophractes* belt, 56.

*G. hexamita* Burr.

Shrub, about 3 metres high, near margin on east of pan, 149.

*G. retinervis* Burr.

Near homestead, under cover of *Terminalia*, 2: on slopes of mountain behind homestead, 244.

*G. occidentalis* L.

Tree, 7-8 metres high, in Wylie's Poort, 341.

*G. Schweickerdtii* Burr. sp. nov.

*Frutex* 8-10 pedes altus. *Rami* cortice rubro, ramuli breviter virgati, superne pilis stellatis multi-ramosis, sat longis, flavidis plus minus interrupte villosi. *Stipulae* lanceolatae. *Petiolus* in latere longiore usque 6 mm. longus, validus, flavido-villosus; lamina basi valde obliqua, in altero latere rotundata, in altero auriculari formiter producta, cordata, praeterea ambitu elliptica vel elongato-elliptica, maxima visa 5 cm. circ. longa, 3-4 cm. lata, supra glabra, nitens, rugosa, nervis nervulisque impressis, sat dense reticulata, subtus pallide flavido-velutina, costa atque nervis lateralibus minus pilosis i.e. colore brunneo notalis, nervatione ulteriore vix conspicua, margine revoluta, leviter crenato, apice plerumque rotundato, rarius subapiculato. *Cymae* floriferae axillares, solitariae, 1-3-florae, in modo ramulorum pallide fusco-flavido-villosae. *Pedunculus* 0.5-1.0 cm. circ. longus. *Pedicelli* bracteis oblongo-lanceolatis vel lanceolatis, intus glabris, extra pubescentibus suffulti, pedunculo subaequilongi. *Albastra* oblonga. *Flores* speciosi. *Sepala* 2.4 cm. longa, linearia, extra pilis stellatis brevissimis atque longis fusco-flavidis multiramosis interrupte sequentibus vestita. *Petala* ungui subcircularia 4 mm. in diam. circ. metiente, dorso pilosulo, antice supra aream glanduligerum squamiformiter libero, dense, late, minus late in lateribus flavido-tomentoso; lamina late obovata vel potius suborbicularis, apice leviter excisa. *Androgynophorum* supra petalorum unguem flavide villosum conspicue productum, dein stamina numerosa, 1.5 cm. fere longa, atque gynaeceum flavido-villosum obovatum praebens. *Stylus* longitudine staminum, glaber, gynaeceo subito impositus; stigmata dilatata, applanata, late rotundata. Ovula pro loculo 8, biseriata, pro serie 4.

*Transvaal*.—Zoutpansberg distr. : Farm "Zoutpan 193," in kloof behind homestead, shrub, 8-9 ft. high, November, 1921, Obermeyer, Schweickerdt and Verdoorn, 120.

*G. Schweickerdtii* is closely allied to *G. hexamita*, but differs in having much longer petioles, large flowers and much larger leaves.

*G. sp.* near *G. flava* DC. (Material too poor for description.)

Shrub, about 3 metres high, near homestead, 147.

## 113. MALVACEAE.

1. *Abutilon austro-africanum* Hochr.

Small shrub, near eastern margin of pan, 144 : between Zoutpan and Waterpoort, 270 : in shade of *Acacia sp.*, east of pan, 558.

2. *Sida cordifolia* L.

Small shrub, about 60 cm. high, frequent in open patches east of pan, 556 : frequent in vlei soil and in shade of trees in *Lonchocarpus* belt, 234.

S. *flexuosa* Burttt Davy

Frequent in sandy soil between Zoutpan and Waterpoort, 253.

S. *Hoepfneri* Guerke.

Shrub, about 1 metre high, along eastern margin of pan, 148.

3. *Pavonia Burchellii* (DC.) R. A. Dyer

Small shrub, about 20 cm. high, in sandy soil of *Catophractes* belt, 506, 189.

P. *dentata* Burttt Davy

On rocky ledges in drier upper parts of kloof behind homestead, 126 : on rocky mountain slopes, 167 : in Wylie's Poort, on rocks, 671.

4. *Hibiscus micranthus* L.

Shrub, about 1 metre high ; flowers small, white, turning pink or red when folding up again ; in *Catophractes* belt, 504, 195.

H. *dongolensis* DC.

On northern slopes of mountain near pan, 575a.

H. *physaloides* G. and P.

Near homestead, in *Lonchocarpus* belt ; flowers yellow with red blotch at base of petals, 25.

H. *physaloides* G. and P. forma ?

Frequent along eastern margin of pan, flowers red or yellow with red blotch at base of petals, 145, 555. [In foliage and habit the above gatherings resemble *H. Schinzii* Guerke very closely but have flowers twice the size. In Herb. Hort. Bot. Berol. several sheets named *H. physaloides forma* matched our gatherings. I am inclined to think that our specimens and those in Berlin Herb. represent a distinct variety with *H. Schinzii* as closest affinity, since the latter as well as our plants are prostrate in habit, whereas *H. physaloides* apart from having much larger leaves is usually an erect under-shrub (H.G.S.)]

H. *praeteritus* R. A. Dyer

Foot of mountain, east of pan, in shade of trees ; about 2 metres high, 575 ; between Zoutpan and Waterpoort, 257 : at northern end of Wylie's Poort, 338. This plant had white flowers, which, however, turned red on drying : in all other respects it agreed with the typical form.

H. *intermedius* A. Rich. var. *aristaevalvis* Guerke

Under small *Acacia*, on margin of pan ; flowers creamy-yellow, 32, 476. These specimens agree well with *Lüderitz* 82 from S.W. Africa in the Herb. Hort. Bot. Berol.

5. *Gossypium africanum* Watt (*G. transvaalense* Watt).

Frequent in scrub and bush east of pan, 564, 135.

[I find no specific difference between *G. africanum* and *G. transvaalense*. Both occur in the same geographic area (H.G.S.)]

## 114. BOMBACACEAE.

1. *Adansonia digitata* L.

On northern rocky slopes behind homestead, 69.

The South African material which we have so far examined differs from true *A. digitata* L. from West Africa in the following characters: The flowers and fruits are shortly pedunculate and the petals never reflex as shown in the figure in *Memorias de Sociedade Broteriana* I, 50 et t. 5 (1930). The plant figured was from Portuguese Guinea which is near the type locality and thus may be considered to be true *A. digitata* L. If any value is to be attached to the differences recorded above the South African form may deserve varietal rank. Further investigation, however, is necessary before any decisive step can be taken.

## 115. STERCULIACEAE.

1. *Melhanianthus Rehmannii* Szyszyl.

Near homestead, 188a.

2. *Hermannia boraginiflora* Hook.

Lower slopes of mountain, east of pan; flowers pale mauve, 142, 562.

*H. Holubii* Burt Davy

In sandy soil near Vivo; flowers brick red, 652; in shade of *Acacia* trees near margin of pan, 486.

*H. grisea* Schinz

In open soil, east of pan; flowers pale pink to brownish, 553.

3. *Waltheria americana* var. *indica* K. Schum.

In open soil, east of pan, common, 554.

4. *Sterculia Rogersii* N. E. Br.

In sandy area west of pan, 87. A small (stunted?) shrub with a succulent bole.

## 116. OCHNACEAE.

1. *Ochna atropurpurea* DC.

Near summit of northern slopes of mountain, 312.

2. *O. sp. nov.*

Between Waterpoort and Wylie's Poort, 335.

[This specimen matches *Rogers* 19398 from Messina and *Baines* s.n. from "S.A. Gold Fields" in Herb. Kew. It is very probably an undescribed species. *Rogers* 19398 is quoted under *O. pretoriensis* by Phillips in *Bothalia* I, ii, 95 (1922) but does not belong to that species, differing from it in leaf character as well as the articulation of the pedicel (H.G.S.).]

## 117. GUTTIFERAE.

1. *Hypericum Lalandii* Choisy.

Along stream leading from vlei behind homestead, 204.

2. *Garcinia Livingstonei* And.

Occasional trees, on lower rocky slopes of mountain; flowers sweetly scented; fruits orange-coloured, oblique, fleshy, edible, 71, 62.

## 123. FLACOURTIACEAE.

1. *Trimeria grandifolia* (Hochst.) Warb.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 354.

## 124. TURNERACEAE.

1. *Piriqueta capensis* (Harv.) Urb.

Between Waterpoort and Wylie's Poort, 339.

## 125. PASSIFLORACEAE.

1. *Adenia repanda* (Burch.) Engl.

Between Zoutpan and Waterpoort, in open sandy soil, climbing over small bushes, not very frequent; tuber subterranean, 246.

## 137. COMBRETACEAE.

1. *Combretum apiculatum* Sond.

In upper drier parts of kloof behind homestead, 603.

C. *mossambicense* (Klotzsch) Engl.

Near eastern margin of pan, liane on *Lonchocarpus*; flowers white; anthers red, 143. This constitutes the first record of the species for the Transvaal.

2. *Terminalia prunioides* Laws.

Tree,  $\pm$  8 metres high, frequent in *Catophractes* belt, 191.

T. *Rautanenii* Schinz

Adjoining farm "Zoutpan," near Vivo, 83. A shrubby tree, attaining a height of 4-5 metres with much the habit of an *Ehretia*. It is fairly frequent in the sandy areas adjoining the pan. This is the first record of the species from the Transvaal.

T. *sericea* Burch.

In *Lonchocarpus* belt adjoining the homestead, 1.

## 138. MYRTACEAE.

1. *Syzygium cordatum* Hochst.

On slopes behind homestead, 63.

## 140. ONAGRACEAE.

1. *Jussiaea augustifolia* Lam.

Growing in bed of periodic stream leading from mountain to south-eastern margin of pan, 559a.

## 143. UMBELLIFERAE.

1. *Hydrocotyle asiatica* L.

Near vlei to west of homestead, 225.

H. *verticillata* Thunb.

Frequent along stream leading from kloof, 200.

2. *Steganotaenia araliacea* Hochst.

In Wylie's Poort, fairly frequent; chasmophyte, 331.

## 146. MYRSINACEAE.

1. *Maesa lanceolata* Forsk.

Along water-course leading to kloof, 113.

## 147. PRIMULACEAE.

1. *Samolus Valerandi* L.

Farm "Elsteg," about 6 miles west of Louis Trichardt, abundant on banks of stream, 363.

## 149. SAPOTACEAE.

1. *Chrysophyllum magalismsontanum* Sond. (*C. Wilmsii* Engl.).

Near summit of northern slopes of mountain, 305.

2. *Mimusops Zeyheri* Sond.

Farm "Elsteg," 6 miles west of Louis Trichardt, 361a.

## 150. EBENACEAE.

1. *Royena* sp. (not matched at Kew).

Near camp; fruit small, 277.

2. *Euclea divinorum* Hiern

Farm "Eyem," north of Blaauwberg, 98.

**E. Guerkei** Hiern

Farm "Elsteg," about 6 miles west of Louis Trichardt, 358.

**E. lanceolata** E. Mey. ex Drège ?

Farm "Elsteg," about 6 miles west of Louis Trichardt, 371.

**E. multiflora** Hiern

In deep sandy soil, east of pan, 622.

## 151. OLEACEAE.

1. *Jasminum stenolobum* Rolfe

Farm "Eyem," north of Blaauwberg; small erect bush, about 1 m. high, 92.

## 152. SALVADORACEAE.

1. *Salvadora australis* Schweickerdt sp. nov.

*Affinis S. persicae* Garcin ex Linn. et *S. oleoidi* Decne, sed ab illa indumento persistente calyce valde lobato antheris multo minoribus stylo distincto, ab hac antheris maioribus connectivo haud producto stylo distincto indumento persistente differt.

*Frutex* divaricato-ramosus vel arbor usque ad 8 m. alta; rami iuniores minute et dense cinereo-puberuli, teretes; internodia ad 2 cm. longa, 2 mm. diametro. *Folia* breviter petiolata vel fere sessilia, spatulata vel oblanceolata, obtusa, basin versus sensim attenuata, usque ad 5 cm. longa, et 1 cm. lata, integra, utrinque minute sed dense puberula, nervis infra prominentibus supra inconspicuis. *Flores* viridi-flavi, in paniculis terminalibus vel axillaribus dispositi. *Paniculae* circiter 2 cm. longae, multiflorae. *Bractea* minutae, 0.75 mm. longae, ovatae, dense cinereo-puberulae, minute ciliolatae. *Calyx* circiter 2 mm. longus, extra dense et minute puberulus, dimidio lobatus, lobis reflexis obtusis dense et minute ciliolatis. *Corolla* plus minusve 3 mm. longa, profunde lobata; lobi triangulares, acuti, sub anthesi reflexi. *Stamina* corolla breviora; antherae minutae, fere 0.75 mm. longae, glandulis interstaminalibus distinctis sed minutis. *Ovarium* circiter 1 mm. diametro, globosum, minute puberulum; stylus circiter 0.25 mm. longus, distinctus, stigmatibus inconspicuis. *Fructus* 6 mm. diametro, semitranslucens, globosus, minute puberulus.

PORTUGUESE EAST AFRICA.—Mapae: Guija, in bush country in sandy soil, about 1 mile from the Limpopo River, July, *Lea*, 5 (syn-type flowers).

TRANSVAAL.—Zoutpansberg distr.: Farm "Zoutpan 193," on northern slopes of Zoutpansbergen, tree about 8 m. high, November, Obermeyer, Schweickerdt and Verdoorn, 18 (syn-type fruits); *Keet in Forest Dept. Herb.*, 6833; Messina, *Pole Evans*, 1453.

NATAL.—Zululand: Mkuzi, on Lebombo Flats, *Galpin*, 13320.

This is closely related to the Indian species *S. oleoides* Dec. from which it may be distinguished by having larger anthers, a connective which is never produced and columnar style. I have not observed the latter in either *S. persica* or *S. oleoides*. The persistent indumentum on branches, leaves and floral parts is a character by which the southern African species may be at once recognised.

### 153. LOGANIACEAE.

1. **Strychnos Schumanniana** Gilg

On rocky ledges behind homestead, 64.

**S. innocua** Del. (*S. Quaqua* Gilg; *S. dysophylla* Benth.).

Occasional on northern slopes of mountain, 161.

2. **Anthocleista zambesiaca** Bak.

In kloof behind homestead, 115.

This is probably one of the most conspicuous of South African forest trees, always growing in very damp situations, usually in ravines. It is more or less 30 metres high and is not much branched. The branches are erect and bear a crown of large simple leaves near their apex. The flowers are gardenia white.

3. **Lachnopylis montana** C. A. Smith

Farm "Elsteg," about 6 miles west of Louis Trichardt, 344.

### 155. APOCYNACEAE.

1. **Landolphia Kirkii** Dyer var. **delagoense** Dew.

Upper slopes of mountain, fairly common; shrub, 1.5 metres high, 304, 172.

2. **Pachypodium Saundersii** N. E. Br.

Near roadside among rocks in Wylie's Poort, 668.

3. **Strophanthus Gerrardii** Stapf

Frequent in bush, west of homestead, 579. This interesting liane is fairly common in the dense bush at the foot of the mountain. It climbs to the tops of tall trees and not much of its foliage is visible. The two-winged, twisted stems, however, attract one's attention immediately (two opposite wings run vertically throughout the length of the internode with the plane of the wings at right angles to those of the internodes above and below).

### 156. ASCLEPIADACEAE.

1. **Cryptolepis obtusa** N. E. Br.

Twiner in *Cassia*, in bush west of homestead, 591.

2. **Stomatostemma Monteiroae** (Oliv.) N. E. Br.

On upper slopes of mountain; liane on *Commiphora* sp., 320.

3. **Asclepias Burchellii** Schltr.

In open veld near homestead, 23.

4. **Secamone Gerrardi** Harv.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 352.

**S. zambesiaca** var. **parvifolia** N. E. Br.

Twiner on *Euphorbia Cooperi*, east of homestead, 138.

**5. Ceropegia cimiciodora** Obermeyer

Farm "Chapudi," between Waterpoort and Zoutpan, creeping in low bushes, 322. A fleshy-stemmed creeper with striking flowers.

**6. Tavaresia grandiflora** (K. Schum.) Berger

Between Waterpoort and Zoutpan, in sandy soil under cover of *Acacia* scrub, 413.

**7. Caralluma atrosanguinea** N. E. Br.

Farm "Chapudi," between Zoutpan and Waterpoort, 446.

**C. Schweickerdtii** Obermeyer sp. nov. (*C. carnosa* Schweickerdt in Flowering Plants of South Africa, XV, plate 592, *non* Stent).

*Caules* carnosi, erecti vel adscendentes, basi ramosi, 4-angulati, 17 cm. alti, 3-4-5 cm. diam. (dentibus inclusis), glabri, virides, brunneo-maculati; anguli dentibus patentibus. deltoideis, 1.5 cm. longis, compressis instructi. *Flores* ad apicem ramorum, 1-3 aggregati. *Pedicelli* ad 3 mm. longi. *Sepala* 4 mm. longa, lanceolata, acuta, sini flagellis instructi. *Corolla* 1 cm. longa, 1-2 cm. in diam., campanulata, extus glabra, viridia, intus purpureo-rubra, paullum cremeo-maculata, papillosa, aliquando pilis bulbosis, clavatis indutis; tubus annulo pentagono, parvo, instructis; lobi deltoidei, 5 mm. longi, 7 mm. lati, paullum patentes. *Corona* exterior crateriformis, lobi aliquando lyrati, patentes, ad apicem paullum concavi vel bifidi roseo-cremei; lobi interior supra antherarum incumbenti, maculati, dorso, carnosogibbosi.

TRANSVAAL.—Zoutpansberg distr.: Farm "Chapudi," near Waterpoort, in sand, Obermeyer, Schweickerdt and Verdoorn, 411 (*National Herbarium, Pretoria*, 19597; *Herb. Transvaal Museum*, 34945).

This species is closely related to *C. Keithii* Dyer but may be distinguished as follows: In *C. Keithii* the corolla tube is thin and minutely verrucose, different to the fleshy, densely papillate lobes. There is, however, no sharp distinction between the corolla-lobes and the tube in *C. Schweickerdtii*. The very peculiar bulbous-based clavate unicellular hairs tipping some of the long papillae are smaller and fewer, while the margin of the corolla-lobes is not fringed with a row of minute hairs; there are, however, some scattered over the whole inner surface. The outer corona-lobes of *C. Schweickerdtii* bend outwards and are more or less lyre-shaped, while in *C. Keithii* they are bifurcate and somewhat incumbent over the staminal column. The inner corona lobes are mottled with purple, while the minute emarginate lobe, spreading slightly between the outer corona-lobes, present in *C. Keithii*, is absent. The five intersepalary flagellae are present in both species, but absent from *C. carnosa* Stent. From this species it may be distinguished by the different colour and smaller size of the corolla, etc.

Between Waterpoort and Zoutpan, 411. This specimen was figured in Flowering Plants of South Africa (plate 592) as *C. carnosa* Stent; Miss Obermeyer, however, rediscovered *C. carnosa* in the type locality and found that our plant differed considerably from it. She has therefore given the above name to our specimen.

**C. maculata** N. E. Br.

Near Waterpoort, fairly frequent but scattered, 660. This species is rather remarkable as it has horizontal rhizomes at a depth of about 10 cm. below the surface of the soil. Aerial shoots arise from these at some distance from each other. This plant was figured in Flowering Plants of South Africa as *C. grandidens* Verdoorn but was found by Dr. Schweickerdt at Kew to be *C. maculata* N. E. Br. (See *Kew Bull.*, 1935.)

**8. Stapelia clavicornona** Verdoorn

Growing on rocky ledges in Wylie's Poort, 414. Apparently a very rare species since only a few plants have so far been found and only from that locality.

**S. Getlieffii** Pott

Along margin of pan, fairly frequent, 477 : between Zoutpan and Waterpoort, fairly common, 444.

The colour of the flowers of this species is rather variable. Flowers with dark wine-coloured markings and hairs on the corolla and others with very pale, almost yellow corollas and but faint markings were observed on plants growing in the same patch. The inner corona wings also vary but this variation is not constantly associated with the variations in the colour of the corolla.

**S. gigantea** N. E. Br.

On rocky ledge on slopes behind homestead, 70.

**S. nobilis** N. E. Br.

Growing in large patches under a large *Acacia* tree near Zoutpan, 445.

**S. kwebensis** N. E. Br.

At "Vivo," west of Zoutpan, 406 : between Zoutpan and Waterpoort, 662.

**9. Huernia zebrina** N. E. Br. var **magniflora** Phillips.

Near farm "Chapudi," between Zoutpan and Waterpoort, 416, 443, 657, 658, 659. Colour forms were noted among these specimens such as black disk and yellow lobes marked with red stripes, and red disk and red lobes with yellow stripes. The outer corona varied too, sometimes appearing pincher-like and on flowers in close proximity (not obviously the same plant) with outer corona not pincher-like.

**10. Pergularia extensa** (Jacq.) N. E. Br.

Climber, on shrubs and bushes, fairly frequent in sandy areas around pan ; petals green, with densely ciliate margins, 3, 90.

**11. Fockea augustifolia** K. Schum. ?

In *Catophractes* belt, north of pan, 187 (poor specimen).

**157. CONVULVULACEAE.****1. Seddera suffruticosa** (Schinz) Hall. f. var. **hirsutissima** Hall. f.

In sandy soil of *Catophractes* belt, 177, 509.

**2. Ipomoea adenioides** Schinz.

Fairly frequent in *Catophractes* belt ; flowers exquisite, white with wine-coloured throat, opening at sundown, 181.

**I. quinquefolia** var. **purpurea** Hall. f.

On sandy soil, climbing over low scrub, between Louis Trichardt and Pietersburg, 665.

**I. Lugardi** var. **parviflora** Rendle

In shade of *Acacia*, east of pan ; flowers bluish-pink with dark pink throat, 542.

**3. Merremia pinnata** (Hochst.) Hall. f.

On north-east side of pan, in shade of *Acacia* ; flowers bright yellow, 568.

[The specimens from Trop. Afr. in Herb. Kew are more robust and more pubescent than the above gathering (H.G.S.).]

**159. BORAGINACEAE.****1. Cordia ovalis** R. Br.

Small tree, in *Catophractes* belt, very occasional, 192. First record of the species for the Transvaal.

2. **Ehretia rigida** (Thunb.) Druce  
North side of pan, fairly frequent, 44, 45.
3. **Heliotropium curassavicum** L.  
On very margin of pan, a typical halophite, 288, 465.
- H. lineare** C. H. Wright  
Between Zoutpan and Waterpoort, in open sandy soil, 248.
- H. Nelsoni** C. H. Wright  
Very occasional under *Acacia*, near margin of pan, 20, 482, 510.

#### 160. VERBENACEAE.

1. **Lippia asperifolia** Rich.  
In *Lonchocarpus* belt and on northern slopes of mountain, 7, 129, 519, 520.
2. **Clerodendron myricoides** R. Br.  
At upper end of kloof behind homestead, 602. The leaves of this specimen are more coarsely serrate than in the material from Trop. Africa.
- C. ternatum** Schinz  
Very sandy area, about 3 miles west of pan, 641.
- C. simile** Pearson  
Undershrub, on farm "Chapudi," between Zoutpan and Waterpoort, 252.

#### 161. LABIATAE.

1. **Leonotis dysophylla** Benth.  
Under tree in vlei area on slopes above pan, up to 3 metres high, 229.
2. **Leucas glabrata** R. Br.  
Farm "Elsteg," about 6 miles west of Louis Trichardt, 364.
- L. sexdentata** Skan  
In shade and in open veld near margin of pan, 491.
3. **Aeolanthus Rehmannii** Guerke  
On rocky slopes, rooting in fissures, Wylie's Poort, 670.
4. **Endostemon tereticaulis** (Poir) Ashby (*E. ocimoides* Bremekamp).  
Frequent among loose stones on eastern margin of pan; flowers purple, 140.
5. **Pycnostachys reticulata** Benth.  
In shade along bank of stream, behind homestead; flowers a beautiful blue, 518.
- P. densiflorus** Cooke  
In sandy soil, between Louis Trichardt and Pietersburg, 447.
6. **Ocimum americanum** L.  
Near margin of pan; flowers small, pink and white, 494.
7. **Becium obovatum** N. E. Br.  
Near margin of pan under cover of *Acacia*; flowers dirty white with mauve markings; stamens long exerted, 475.
8. **Hemizygia canescens** (Guerke) M. Asbhy (*Orthosiphon canescens* Guerke).  
On slopes of mountain behind homestead; small bush with strong odour, 613.

## 162. SOLANACEAE.

1. *Solanum incanum* L.

Near margin of pan, growing in association with *Acacia* scrub, 134.

S. *panduriforme* E. Mey.

East fringe of pan, common, 547.

S. *kwebense* N. E. Br.

In *Catophractes* belt; flowers white, 54: flowers purple, 57. First record of this species for the Transvaal.

2. *Lycium* sp.

Five collections were made (22, 39, 42, 474, 503) which have not been specifically identified and a revision of the genus appears very necessary.

## 163. SCROPHULARIACEAE.

1. *Aptosimum lineare* Marl. and Engl.

In sandy soil, between Louis Trichardt and Pietersburg, 666: between Zoutpan and Waterpoort in open sandy soil, 266: Vivo, 655.

A. *patulum* Bremekamp

Under *Acacia*, east of pan, 565: at foot of mountain, near upper vlei, 581.

2. *Peliostomum leucorrhizum* E. Mey.

Farm "Eyem," north of Blaauwberg, 94.

3. *Limosella maior* Diels

In stream leading from kloof and vlei, 216.

4. *Ilysanthes dubia* (L.) Bernh. (*I. capensis* Benth; *I. riparia* Raf.).

Near vlei behind homestead; flowers white, 217.

5. *Ramphicarpa tubulosa* (Linn. f.) Benth.

In grassy patches on slope of mountain, 233.

6. *Striga gesnerioides* (Willd.) Vatke (*S. orobanchoides* Benth.).

Growing under cover of and parasitic on the roots of *Euphorbia Cooperi*, east of homestead, 127.

## 164. BIGNONIACEAE.

1. *Rhigozum obovatum* Burch.

Frequent in *Catophractes* belt; flowers yellow, 53.

R. *zambesiacum* Bak.

Between Waterpoort and Wylie's Poort, 340.

2. *Catophractes Alexandri* Don.

Dominant in a belt north of pan and owing to this the term "Catophractes belt" is spoken of in this paper, 514, 58.

## 165. PEDALIACEAE.

1. *Pterodiscus ngamicus* N. E. Br.

Along sandy western margin of pan, 427. (A poor plant of what might be another species of *Pterodiscus* was observed).

2. *Harpagophytum Zeyheri* Decne ?

In sandy soil, west of pan, 689. The specimen is not in fruit and hence it is impossible to name it specifically.

3. **Sesamothamnus Lugardii** N. E. Br.

Frequent in very sandy area, north of pan, 59. Comparison of our specimen with fruiting material from South West Africa named *S. Seineri* Engl. in Herb. Hort. Bot. Berol (see Engl. and Drude, Veg. der Erde, 9, I, 2, p. 586 and tab. 28, 2 (1910)] suggests that these two species are the same. Flowering material of *S. Seineri* is necessary to decide this question. In any case *S. Lugardii* (1906) has priority.

3. **Sesamum capense** Burm.

East of pan, occasional, 557.

4. **Ceratotheca triloba** E. Mey.

Very frequent at foot of mountain below upper vlei, 583.

5. **Pretraea zanguibarica** Gay

Along south-eastern margin of pan, frequent in patches, 690.

## 169. LENTIBULARIACEAE.

1. **Utricularia exoleta** R. Br.

Plentiful, but scattered in vlei behind homestead, 209.

## 170. ACANTHACEAE.

1. **Dyschoriste Fischeri** Lindau

Shrub, up to 1 metre high, between Waterpoort and Wylie's Poort, 333.

2. **Ruellia patula** Jacq.

Margin of pan, under cover of small *Acacia*; flowers white, 28, 467: between Zoutpan and Waterpoort, in shade of shrubs, 250.

3. **Barleria Bremekampi** Obermeyer

Very spiny bush, up to 1 metre high, in kloof behind homestead, 124.

**B. elegans** S. Moore

Foot of mountain, near *Euphorbia Cooperi*, 130.

**B. Galpinii** C. B. Cl.

In kloof behind homestead, 123.

**B. heterotricha** Lindau

In kloof behind homestead, 125.

**B. obtusa** Nees

On northern slopes of mountain, 162.

**B. transvaalensis** Obermeyer

In *Acacia* belt, north of pan, near *Sesamothamnus*, 50.

4. **Neuracanthus africanus** T. Anders. ex Sp. Moore

Between Zoutpan and Waterpoort, fairly frequent among *Acacia* scrub, 251.

5. **Blepharis Clarkei** Schinz

South-eastern side of pan, in stony surroundings, 291.

**B. diversispina** (Nees) C. B. Cl.

Farm Zoutpan, 251a.

6. **Asystasia atriplicifolia** Bremekamp

On farm "Eyem" near large baobab, on north-eastern boundary, 89.

7. **Ruspolia erypocrateriformis** (Vahl.) Milne-Redhead var. **australis** Milne-Redhead  
Wylie's Poort; shrub, with arching branches, 10 ft. long, hanging over stones; flowers scarlet; fruit green, turning black, 441.
8. **Dicliptera clinopodia** Nees  
Under *Acacia*, near eastern margin of pan, 297.
9. **Justicia flava** Vahl.  
Western margin of pan, in gravelly soil; flowers yellow; stems procumbent, 21.
- J. odora** Vahl.  
Frequent in *Catophractes* belt, up to 60 cm. high, 190.
- J.** (*Calophanoides*) **sp.**  
On ledge above kloof, behind homestead, 610.
- J.** (*Ansellia*) **sp.**  
Above bushman cave on upper slopes of mountain, 168.

### 173. RUBIACEAE.

1. **Oldenlandia cephalotes** (Hochst.) O. Kuntze (*O. sphaerocephala* Schinz).  
In vlei behind homestead, 201.  
[Comparison of the types of *O. cephalotes* and *O. sphaerocephala* has convinced me that they represent one species. The leaves are somewhat variable in shape and size as is very often the case in species of *Oldenlandia* (H.G.S.).]
- O. decumbens** (Hochst.) Hiern  
In shady forest patches at foot of mountain, 592.
2. **Randia sp.** near *R. rudis* E. Mey.  
Foot of hill, below a group of *Euphorbia Cooperi*, 128.
3. **Gardenia Neuberia** E. and Z.  
Small tree, among rocks at roadside in Wylie's Poort, 667.
- G. spatulifolia** Stapf and Hutch.  
Occasional on northern slopes of mountain; tree, about 5 metres high, 158.
4. **Empogona Kirkii** Hook. f. var. **australis** Schweickerdt var. nov. *A typo foliis multo maioribus glabrisque, pedicellis ovario et calyce multo minus pubescentibus differt.*  
In *Lonchocarpus* belt, 72 (type); on lower northern slopes of mountain behind homestead; flowers white, densely bearded in the throat, 528.  
[No 72 was collected during November, i.e. early summer and therefore shows the presence of well-developed young leaves which are of a thin texture. In shape and size those agree with leaves of 528 collected during April, which, however, are leathery in texture and somewhat shiny on the upper surface. Indumentum of branches, pedicels, ovary and calyx-lobes are similar in both gatherings (H.G.S.).]
5. **Vanguera tomentosa** Hochst.  
On northern slopes of mountain, 691.
- V. cyanescens** Robyns  
On northern slopes of mountain, 102.  
[Apart from the fact that *Dinter* 58 (type of *V. cyanescens*) has turned partly black on drying (indigo?), there appears to be no difference between this species and *V. floribunda* Robyns. *Rogers* 18214 (type of the latter) is a fairly robust specimen which is slightly more hairy in the inflorescence than our gathering. A wider range of material will probably prove the above-mentioned species to be identical (H.G.S.).]

6. **Canthium ventosa** (L.) Sp. Moore  
Farm "Elsteg," about 6 miles west of Louis Trichardt, 359.
- C. huillense** Hiern  
Northern slopes of mountain, 173: in kloof behind homestead, 122.
7. **Pavetta Harborii** Sp. Moore  
Between Zoutpan and Waterpoort, locally abundant, 255.
- P. Schumanniana** F. Hoffm. ex K. Schum.  
Farm "Elsteg," about 6 miles west of Louis Trichardt, 357.
8. **Plectroniella armata** (K. Schum.) Robyns  
In *Lonchocarpus* belt, west of homestead; tree, 5-6 metres high; flowers bearded in throat, 26.
9. **Anthospermum lanceolatum** Thunb.  
Farm "Elsteg," about 6 miles west of Louis Trichardt, 362. This gathering is somewhat more pubescent than the typical plant.

#### 176. CUCURBITACEAE.

1. **Corallocarpus sphaerocarpus** var. **scaberrimus** Cogn.  
On very margin of pan, climbing in *Acacia*, 30.
2. **Momordica Balsamina** L.  
Climbing in and over small *Acacia* in *Lonchocarpus* belt, 14.
3. **Citrullus naudinianus** (Sond.) Hook. f.  
Frequent in very sandy area, about 3 miles west of pan, known locally as "gembok-komkommer," 646.
- C. vulgaris** Schrad.  
Margin of pan, not very frequent, 455.
4. **Cucumis africanus** L. f. var. **Zeyheri** Burttt Davy  
In drier parts of vlei behind homestead, 213.
- C. hirsutus** Sond.  
Farm "Gaanspan," north of Blaauwberg, 245: between Zoutpan and Waterpoort, 258: farm "Eyem," north of Blaauwberg, 85. Reported to be a medicinal plant.
- C. myriocarpus** Naud.  
Along roadside, between Louis Trichardt and Pietersburg, 448.
5. **Coccinia Rehmannii** Cogn.  
Climbing in *Salvadora*, *Lonchocarpus* belt, 40.
- C. sessilifolia** (Sond.) Cogn.  
Farm "Eyem," north of Blaauwberg, 91.

#### 177. CAMPANULACEAE.

1. **Lobelia decipiens** Sond.  
In vlei behind homestead, fairly common, 214.

## 179. COMPOSITAE.

1. *Vernonia amygdalina* Del. (*V. Randii* Sp. Moore).

Along watercourse leading from kloof behind homestead; about 6-7 metres high, lounging, 116.

**V. cinerascens** Sch. Bip. (*V. Luederitziana* O. Hoffm.).

Between Zoutpan and Waterpoort: shrub, 60-100 cm. high, growing in exposed sandy soil, 249. First record of this species for the Transvaal.

[This plant has a wide distribution in Africa, occurring in Eritrea, Somaliland, Angola, Great Namaqualand and N. Transvaal. *V. Luederitziana* undoubtedly belongs to the same species. Our gathering differs from the Abyssinian plant only in having more robust and shorter peduncles (H.G.S.)]

**V. fastigiata** O. and H.

In low thorny scrub near *Catophractes* belt, 516.

2. *Ageratum conyzoides* L.

Along stream leading from large vlei, west of homestead, 227.

3. *Eupatorium africanum* O. and H.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 342a.

4. *Aster luteus* (N. E. Br.) Hutch. forma.

Between Zoutpan and Waterpoort, frequent in sandy soil, 256: Vivo, in sandy soil 656.

Our specimens are very similar to the typical form of *A. luteus* from northern Natal, differing from it in having blue ray-florets and slightly more pubescent achenes. The capitula of the Natal plants appear to be generally somewhat smaller. The wide range of material at the Transvaal Museum, however, seems to indicate that our specimens are merely forms of a variable species.

5. *Psiadia arabica* Jaub. and Spach.

Between Waterpoort and Wylie's Poort, 334.

6. *Nidorella resedifolia* DC.

In shade of trees near margin of pan, 495: between Zoutpan and Waterpoort, 272.

7. *Brachylaena* sp., probably *B. transvaalensis* Phill. and Schw.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 349.

8. *Blumea caffra* (DC.) O. Hoffm. (*B. natalensis* Sch. Bip.).

In open soil east of pan; heads globose; florets pinkish, 550.

**B. lacera** DC.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 205.

9. *Pluchea leubnitziae* (O. Hoffm.) N. E. Br. (*Pechuelloeschea leubnitziae* Hoffm.).

In *Catophractes* belt, north of pan, 55.

10. *Epaltes alata* Steetz.

In shade of trees near margin of pan, 501; north-east of pan, in grassland, 301.

11. *Helichrysum Kraussi* Sch. Bip.

Farm "Elsteg," about 6 miles west of Louis Trichardt, 345.

12. *Pegolettia senegalensis* Cass.

In open soil between stones near margin of pan, 502.

13. **Geigeria aspera** Harv. forma ?

Vivo, frequent in sandy soil, 651 : in sandy soil near *Catophractes* belt, 507 : between Zoutpan and Waterpoort, 273.

14. **Senecio polyanthemoides** Sch. Bip.

Scattered, in vlei behind homestead, 203.

**S. transvaalensis** Bolus

Between Louis Trichardt and Pietersburg ; flowers pink, 674.

15. **Kleinia longiflora** DC.

East of pan among species of *Acacia*, 537.

16. **Berkheyopsis bechuanensis** Sp. Moore

Fairly frequent in very sandy area, about 3 miles west of pan, 638.