

A REVISION of the SOUTH AFRICAN SPECIES OF HYPERICUM

by
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The first reference to a South African species of *Hypericum* appears in *Thunb. Prod. Fl. Cap.* 139 (1800) where a concise description of *H. aethiopicum* Thunb. is given. In *DC. Prod. I*, 550 (1823) another species *H. Lalandii* Choisy is enumerated and is also described in the *Fl. Trop. Afr.* 1: 155 (1868). In *Fl. Cap.* 117 (1859–1860) only three species were enumerated and a few years later Wood & Evans described *H. natalense* from Natal (*Journ. Bot.* XXXV: 487 (1897)). In *Bull. Herb. Boiss* 179 Sér II, VIII, 1908, *H. Wilmsii* Rob. Keller appears in the author's key as a new species recorded from the Transvaal. Keller probably overlooked the description of *H. natalense* and described the same plant as *H. Woodii* in *Engl. Jahrb.* LVIII 193 (1923). The most recent revision of Tropical species appeared in *Journ. of Bot.* 329 (1927), where Good included the two South African shrubby species *H. leucoptychodes* Steud. and *H. Roeperianum* Schimper.

In the present revision only the South African species of the genus have been dealt with but as some species extend southwards from Tropical Africa, accounts of other species from this region have also been studied and compared with the South African plants. (Unfortunately most of the work has been carried out on dried specimens, fresh material of most species not being available at the time.) The large number of specimens investigated gave a good idea of the variability of most of the species and the search for constant specific characters in closely allied species proved to be a difficult task.

General Notes and Distribution.

South African species of *Hypericum* are recorded from South West Africa, the Cape Province extending inland and along the east coast as far north as Tropical Africa. Most of the species show an overlapping in distribution but others appear to be restricted to certain areas with the same climatic conditions. The variations and distribution of the different species are not only interesting from an ecological point of view but have proved useful in determining some of the species. In the accompanying maps the distribution of each species is shown.

Of all the species examined *H. Lalandii* Choisy (Fig. 1) shows the greatest range of variation in shape and structure of the vegetative parts. In almost every account of this species the authors refer to small plants ± 10 cm. high with very short leaves. According to Keller some forms are unbranched whereas others are branched from the middle. He also noticed the variations in size and shape of the leaves and showed that the typical form has the stems unbranched, medium-sized leaves (1 cm. long, 1-2 mm. broad) and flowers 1.5 cm. in diameter. Most of the specimens studied, fitted these earlier descriptions but a number of plants were different from the typical form. In plants branched from the middle, the leaves were usually larger, somewhat rigid in texture and more or less glaucescent. The specimen with the largest leaves *Payson* 33 collected at Tsolo (Tembuland) had some leaves which measured 3.7 cm. long and 1.7 cm. broad.

The varieties *lanceolata* and *latifolia* described by Sonder and the variety *lanceolatum* described by Keller are chiefly distinguished from the typical form by variations in leaf-size. Many of the specimens fitted these descriptions very well, but a number of successive transitional forms between the short, and long-leaved, narrow, and broad-leaved forms rendered it impossible to separate these extreme forms and to group them into the above varieties (Fig. 1, *a-h*). In the variety *macropetala* described by Sonder, the petals are twice as long as the sepals a character which after careful measurement and comparison of the relative length of the sepals and petals in almost all the specimens, does not seem to be constant in any group of similar plants within the species. In the writer's opinion all plants, exhibiting these varying characters would be better considered as forms of the typical *H. Lalandii* with the variation in leaf-size probably due to the influence of a changed habitat; some growing in open and some in sheltered places. It is interesting to note that most of the broad-leaved specimens were collected near and along the east coast of Natal. A few specimens recorded from the eastern Transvaal which differed remarkably from the rest in having rigid glaucescent leaves, with the stems and leaves densely and prominently yellowish pellucid-dotted have been described as a new variety *transvaalense*. These characters are very constant and no intermediate forms were found.

The species is widely distributed from the southern Cape, along the east coast and inland as far north as Southern Rhodesia and is also recorded from South West Africa.

H. aethiopicum Thunb. (Figs. 2, 7 and 9) may be distinguished from *H. Lalandii* by its round stems, ovate leaves and black-dotted sepals and petals. The variety *glaucescens* described by Sonder on characters such as dwarf erect stems, glaucescent closely-set black-dotted leaves longer than the internodes, cannot be upheld because all these characters proved to be very variable in the great number of specimens examined. Moreover, the glaucescent leaves present in a few specimens do not justify a separation of these from the others because this character cannot be correlated with any other constant feature. This species extends south of north eastern Cape (Matatiele) as far as the Riversdale district.

H. Sonderi Bredell sp. nov. (Fig. 6) is closely allied to *H. aethiopicum* but differs from it in having spotted stems and no stalked gland-like protuberances along the margins of some bracts and sepals. All plants exhibiting the above characters have been previously named *H. aethiopicum*. In the description of *H. aethiopicum* Sonder refers to the toothed sepals as being an outstanding characteristic of the species. It is also interesting to note that there is almost no overlapping in the distribution of the two species. *H. Sonderi* extends southwards only as far as the north eastern Cape (Aliwal North) and *H. aethiopicum* is not known to occur north of Matatiele. A few specimens collected in the Pietersburg district, Transvaal, and which I have described as a new variety, *transvaalense* of *H. Sonderi* exhibit characters which link with *H. aethiopicum* and *H. natalense*. The flowers resemble those of *H. aethiopicum* in almost every detail but the leaves are much more like those of *H. natalense* being slightly membranous but larger.

H. Wilmsii R. Keller of which I have seen the type, shows an affinity with *H. aethiopicum* (Figs. 8 and 10) but the plants are usually small and more or less procumbent. Characters such as the oblong rounded sepals and the presence of black dots along the margins of the sepals and petals also links the species with *H. natalense*. This species occurs on mountains in the northern Cape, Basutoland and Transvaal. In the Flora Capensis Sonder referred Drège 7530 in Herb. Sond. collected at the Cape without precise locality, to *H. humifusum* Linn., a typical European species. He also states that the Cape specimens of this species are taller than usual but not otherwise different from the species. At Kew Dr. H. G. Schweickerdt very carefully compared Drège 7530 with the typical *H. humifusum*, and came to the conclusion that Drège's plant is not *H. humifusum* and that it is the same species as *Dieterlen* 1222 cited under *H. Wilmsii* in this revision. The European plant does therefore not occur in South Africa.

According to Medley Wood and Maurice Evans who described *H. natalense* (Figs. 3, 4, 8, 10) this species "has much the appearance of *H. aethiopicum* for which it has doubtless been mistaken; but it differs in having more numerous stems from the root . . . leaves which are subsessile and not amplexicaul, flat not revolute edges, sepals which are not lanceolate or acute; in the absence of black dots from the sepals, petals and anthers and by its 5 styles and 5-celled capsule." These observations were based on the type *Medley Wood* 4034 of which I have seen two duplicate specimens. After a careful examination of these it was found that some leaves showed revolute margins, at least in the dry state, that a few black dots are present along the margins near the apex of at least some petals and sepals, that the anthers are furnished with black dots and that the number of styles and chambers in the ovary may vary from 3 to 5. All the characters were confirmed in subsequent examinations of a number of specimens which undoubtedly are the same as *Medley Wood* 3034. These characters probably had been overlooked by the authors. Robert Keller overlooked the description of *H. natalense* and described a new species *H. Woodii* from *Medley Wood* 3034. In the description of *H. Woodii* Keller showed that the number of styles and chambers in the ovary may vary from 3 to 5 and remarks that the species "nimmt . . . innerhalb der Subsectio Homataenium durch die Veranderlichkeit in der Zahl der Fruchtblätter eine Sonderstellung ein". Although the species appears to be mostly confined to the province of Natal it occurs south as far as the Kentani district.

A specimen collected at Camperdown by Franks (Government Herb. Natal 12968) resembles specimens of *H. natalense* in most respects but the leaves are obovate with a short but distinct petiole. I have described this specimen as a new variety *petiolatum* (Fig. 4).

H. leucoptychodes Steud (Fig. 5) and *H. Roeperianum* (Fig. 11) Schimper differ from the other South African species of *Hypericum* in being shrubby with large flowers and relatively large leaves. Good in his account on the shrubby species of *Hypericum* of Tropical Africa pointed out that the best characters for primary classification are those of leaf-features, particularly the type of venation as seen on the under side of the leaf. *H. leucoptychodes* may therefore be distinguished from *H. Roeperianum* in having the tertiary venation slightly conspicuous giving the effect of small striae and pellucid veins; the tertiary venation in the leaves of *H. Roeperianum* is closely reticulated so as to form small but distinct meshes. According to Good the styles are almost united to the tip in *H. Roeperianum*. I have seen *Eyles* 795 and *Teague* 214 cited by him under *H. Roeperianum* and in neither of these could partly free styles be found. Subsequent investigations of a great number of specimens belonging to this species showed that the styles are always connate to the tip, with the stigma distinctly 5-lobed. Of the two species, *H. leucoptychodes* appears to have the wider range in South Africa, extending southwards from the tropics as far as north-eastern Cape. In South Africa *H. Roeperianum* is only recorded from the Lydenburg district of the Transvaal.

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I have to acknowledge with thanks the loan of specimens from the Transvaal Museum, Pretoria; the Herbarium of the South African Museum, Capetown; the Herbarium of the Albany Museum, Grahamstown; and the Natal Herbarium, Durban.

The following symbols accompanying the citations indicate the different herbaria where the specimens are kept.

- A. Albany Museum, Grahamstown.
- C. The Herbarium of the South African Museum, Capetown.
- P. National Herbarium, Pretoria.
- G. Galpin's Herbarium in P.
- M. Marloth's Herbarium in P.
- N. Natal Herbarium, Durban.
- T. Herbarium of the Transvaal Museum, Pretoria.

DESCRIPTION OF THE GENUS.

Shrubs or perennial herbs from a woody base. *Leaves* opposite, sessile, amplexicaul or shortly petiolated, entire, mostly pellucid-dotted, with or without reticulated veins. *Stipules* 0. *Inflorescence* a loose or compact cyme or flowers terminal on short lateral branches. *Flowers* yellow, bisexual, regular. *Sepals* 5, equal or subequal, acute or rounded at the apex, pellucid-dotted, with or without glandular stalked protuberances along the margins. *Petals* 5, twisted in bud, distinctly veined with black spots on the surface and margins or along the margins only. *Stamens* indefinite. *Filaments* thread-like, free or connate at the base into 3-5 distinct or indistinct groups. *Anthers* with or without black or yellow spots. *Ovary* superior, sessile, ovate to subround in outline, 3-5 chambered, with few to many ovules on parietal placentas; styles 3-5, free, or connate to the tip; stigmas small, capitate. *Fruit* a capsule with few to many seeds.

KEY TO THE SPECIES.

A¹ Stems 4-sided or 4-ribbed; sepals and petals without black dots.

a¹ Leaves and stems very prominently and distinctly yellowish pellucid-dotted; leaves linear-lanceolate, glaucescent. *H. Lalandii* var. *transvaalense*.

a² Leaves and stems variously dotted but not as in var. *transvaalense*; leaves linear to ovate-lanceolate, glaucescent or not. 1. *H. Lalandii*.

A² Stems round and smooth; sepals and petals usually black-dotted.

b¹ Herbs or half-woody plants; flowers small, stamens connate at the base into 3 or 4 irregular groups.

c¹ Sepals linear or linear-lanceolate, acute to sub-acute, equal; petals always black-dotted on surface and along the margins.

d¹ Bracts and sepals without marginal stalked bodies; stems usually spotted, occasionally without spots.

e¹ Leaves membranous, prominently dotted on abaxial surface; tertiary venation very distinct to form small meshes. *H. Sonderi* var. *transvaalense*.

e² Leaves not membranous, variously dotted; tertiary venation absent or if present not conspicuous on both surfaces. 3. *H. Sonderi*.

d² Bracts and sepals (at least some) with marginal black-tipped protuberances; stems spotless. 2. *H. aethiopicum*.

c² Sepals oblong to obovate, rounded at the apex, unequal; petals usually with a few black marginal spots near the apex.

f¹ Leaves sessile, elliptic to elliptic-oblong.

g¹ Plants 30–40 cm. high, erect; leaves 1.5–2 cm. long.

5. *H. natalense*.

g² Plants less than 20 cm. high, more or less procumbent; leaves usually less than 1 cm. long.

4. *H. Wilmsii*.

f² Leaves shortly petiolated (especially on young branches), obovate.

H. natalense var. *petiolatum*.

b² Bush or shrub; flowers large; stamens connate at the base into 5 distinct groups opposite the petals.

h¹ Styles connate to the tip with the free branches 1–2 mm. long; leaves 1.5–3 × 0.3–0.9 cm., narrowly lanceolate.

6. *H. leucoptychodes*.

h² Styles connate to the tip with the stigma 5-lobed; leaves 4–7 × 1.5–2.5 cm., elliptic-lanceolate.

7. *H. Roeperianum*.

1. *H. Lalandii* Choisy. in DC. Prod. 1: 550 (1823); Fl. Cap. 1: 118 (1859–1860); Fl. Trop. Africa 1: 55 (1868); Bull. Herb. Boiss. Sér II, VIII: 187 (1908); Engl. Jahrb. LVIII: 197 (1923); Engl. & Prantl. Nat. Pflanzenfam. ed. 2, XXI: 181 (1925). *H. Lalandii* Choisy. var. *lanceolata*, var. *latifolia* and var. *macropetala* of Sond. in Fl. Cap. 1: 118 (1859–1860); *H. Lalandii* var. *lanceolatum* Rob. Keller in Bull. Herb. Boiss. Sér II, VIII: 187 (1908).

Semiherbaceous, 6–55 cm. high. *Stems* from a woody underground rootstock, erect or decumbent below, branched or unbranched, 4-ribbed, glabrous. *Leaves* sessile, ascending, 0.5–3.6 cm. long, 0.2–1.5 cm. broad, linear to ovate-lanceolate or oblong-elliptic, obtuse to sub-acute, entire, with numerous more or less translucent dots, 1- to 7-nerved, glabrous. *Flowers* few to many in terminal cymes. *Bracts* 1–9 mm. long. *Sepals* 2–10 mm. long, 1.5–3 mm. broad, linear-lanceolate, subacute. *Petals* 3.5–12 mm. long, 1.5–5 mm. broad, oblong to oblong-spathulate, distinctly veined. *Stamens* indefinite, 2.5–7 mm. long; filaments thread-like, free or connate at the base into a few irregular groups; anthers 0.25–1 mm. long. *Ovary* 1.5–8 mm. long, 1.5 mm. broad, 3- to 4-chambered; ovules many; styles 3–4, free, 1–4.5 mm. long; stigmas capitate.

SOUTH WEST AFRICA.—Waterberg Plateau: *Boss* in T. 34997! 34998! 34999!.

CAPE PROVINCE.—Caledon district: Sir Lowry's Pass, farm Knoshoek, *Marloth* 4866! P. Mosselbay district: Vryersberg, May, *Muir* 2043! P. George district: In humid places, *Schlechter* 2373! A, C; *Paterson* 1236! A; *Marloth* 2545! P. Knysna district: Hackerville, March, *Breyer* in T 23914!. Humansdorp district: Zitzikamma, May, *Fourcade* 173! A; Flats Ratelsbosch, Nov., *Fourcade* 539! A; *Britton* 1167! A. Uitenhage district: In Van Stadesbergen and on swarded places on the hills of Adow and Krakamma, Sept.-Nov., *Zeyher* 361! A, C. Bathurst district: Trapps Valley, Dec., *Daly* 588! A. Albany district: Grahamstown, Hill slopes, Nov., *Galpin* 381! P; *Mac Owen* 192! A, N. and in Herb. MacOwanianum; *Daly* and *Sole* in T 12953!; Hill other side of Douglas Reservoir, April, *Daly* and *Sole* 141! A. Stockenstrom district: Katberg, *Galpin* 2072! P. East London district: Ovuton, very common in lands, growing in sandy soil, Dec., *Hilner* 379! A; June, *Rattray* 66! A. Komgha district: Komgha, among rocks, *Flanagan* 795! C, P. Kentani district: Sheltered damp places, *Pegler* 117! P in part. Port St. Johns district: Port St. Johns, *Wager* in P 21072!. Tsolo district: Tsolo, *Payne* 33! A. Flagstaff district: Fort William, Dec., *Tyson* 2828! A. Steynsburg district: Zuurberg, April, *Schonland* 3212! P, 3213! A. Maclear district: Maclear, *Murray* 25! A. Matatiele district: Cedarville, Mvenyani, near stream among rocks, Nov., *Bandert* 46! A. Griqualand without precise locality, *Tyson* 1230! C. *Prior* in P 21065! without locality.

ORANGE FREE STATE.—Fouriesburg district: Farm Dunelm, on mountain side in wet soil, *Potts* in Grey Univ. Coll. Herb. 3111! P. Bethlehem district: Bethlehem, railway enclosure in village, grassy and sandy places, common, Dec., *Phillips* 3215! P. Bothaville district: Bothaville, common in damp places, Jan., *Goossens* 1216! P. Heilbron district: Viljoensdrift, Jan., *Rogers* 4825! A, T.

BASUTOLAND.—Leribe district: Leribe, slopes, banks, damp spots, *Dieterlen* 678! P; south slopes of Leribe Plateau, *Phillips* 792! 905! 914! C.

NATAL.—Pinetown district: Durban, in humid places, *Medley Wood* 187! P and in N 852!. Polela district: Bulwer, Jan., *Bayer* 356! N. Pietermaritzburg district: Mount Ashly, *Mogg* 6375! P; Tweedie, *Mogg* 1192! P; Impolweni, Nov., *Rump* in N 20327!; Lidgetton, Jan., *Mogg* 6670! P, 6719! P; Allerton, Dec., *Mogg* 6536! P; *Dimock-Brown* 275! N. Umvoti district: Greytown, Nov., *Wylie* in N 21697! 21698! 20456! T 34130! 34131!. Eshowe district: Entumeni, Oct., *Wylie* in N 9253!. Entojaneni district: Ulundi, Jan., *Evans* 432! 19602! N; Melmoth, Dec., *Mogg* 6052! 4533! P. Estcourt district: Giant's Castle, Dec., *Symons* 290! T. Bergville district: National Park, Dec., *Galpin* 10177! P. Utrecht district: Farm Glen, Atholl, near Charlestown, Jan., *Smith* 5697! P.

SWAZILAND.—Mbabane district: Dalriach Mbabane, in swampy places, Dec., *Bolus* 11702! A.

TRANSVAAL.—Wakkerstroom district: Jan., *van Dam* in T 24643!. Ermelo district: Nov., *Collins* in T 12201!; on farm Nooitgedacht, not frequent, Dec., *Henrici* 1348! and 1551! P. Heidelberg district: Dec., *Leendertz* 1030! T. Potchefstroom district: Losberg, *Theron* 768! T. Krugersdorp district: Krugersdorp, *Jenkins* in T 9229!. Johannesburg district: Jeppetown Ridge, Nov.-Dec., *Gilfillan* 6087! A, P in part, 6088! A, P; Houghton Estate, in low grassy places, April, *Bryant* C 30! P; Turffontein, *Bryant* D 10! D 34! P; *Jenkins* in T 10310!. Benoni district: *Bradfield* T 225! P; *Gilmore* 2186! P. Rustenburg district: Groenkloof, *van Dam* in T 10283!; Vlakfontein, ten miles west of Koster, in vlei, Feb., *Liebenberg* 126! P. Pretoria district: On open grassy veld below the Wonderboom, Jan., *Smith* 2291! P, 2252! P; Oct., *Leendertz* 3730! T; Oct., *Pole Evans* 408! P. Middelburg district: Klein Olifants River, along river banks, Nov., *Young* A 91! T; *Hewitt* in T 10443!; Dec., *Gilfillan* 7163! A. Carolina district: *Rademacher* in T 7284!. Belfast district: *Leendertz* 2688! T; *Jenkins* in T 6800!.

Barberton district: Umlomati Valley, Feb., *Galpin* 1284! A, P; Berlin, Godwan River, Jan., *Hofmeyer* in P 21070!; Kaapsche Hoop, *Gilmore* 2229! P; Nelspruit, Nov., *Rogers* in T 2389! A, T. Pilgrims Rest district: Sabie, Tweefontein Experimental Area, Feb., *Wagner* A 84! P; Pilgrims Rest, Dec., *Smuts* and *Gillett* 2318! P. Lydenburg district: Graskop, in vlei ground, damp and marshy places, not common, *Irvin* 3! P; Nov., *Wilms* in T 5836!; Mac-a-Mac Falls, Jan., *Burt Dary* 5368! P. Waterberg district: Nylstroom, *van Dam* in T 19690! P; Naboomspruit, Mosdene, in grassy, sandy glades, *Galpin* R 257! P; Moorddrift, *Leendertz* 2148! T; Palala River, *Breyer* in T 21448!. Pietersburg district: Damp places, Shiluvane, *Junod* 4289! T, P; Woodbush, *Mogg* 14705! P, 14675! P; *Rehman* 6340! P; *Wager* in T 23087!; *van Dam* in T 25641!. Zoutpansberg district: Vlei plant, soil very moist, common, *McCallum* in P 21068!; farm Zoutpan, vlei behind homestead, *Obermeyer*, *Schweikerdt* and *Verdoorn* 204! P, T.

SOUTHERN RHODESIA.—Matopos: *Eyles* 3767! C. Bulawayo: Nov., *Eyles* and *Johnson* 1098! A, 1100! A. Marandellas: Grass plots, Govt. Farm, Nov., *Rattray* 343! P.

H. Lalandii Choisy var. *transvaalense* Bredell var. nov. Caules foliaque valde prominenter et pellucido punctati.

TRANSVAAL.—Standerton district: Near Volksrust, *Gray* in P 22267!. Ermelo district: Feb., *Leendertz* in T 7779!; Jan., *Collins* in T 6345!; Govt. School, *Nel* 35! P; Farm Nootgedacht, in veld, common, Feb., *Henrici* 1538! P. Bethal district: Hoggeveld, Trichardsfontein, Feb., *Rehmann* 6608! P. Middelburg district: Witbank, Zondagsfontein, Dec.—March, *Thode* A 2789! P, N; near Witbank station, Dec., *Gilfillan* 7162! P in Part.

2. *H. aethiopicum* Thunb. in Thunb. Prod. Pl. Cap. 138 (1800); DC. Prod. 1: 552 (1823); Engl. & Prantl. Nat. Pflanzenfam. ed. 2. XXI: 179 (1925). *H. aethiopicum* Thunb. var. *glaucescens* Sond. in Fl. Cap. 1: 118 (1859–1860).

Semiherbaceous, 10–40 cm. high. Stems few to many from a persistent rootstock, erect, branched, round and smooth, glabrous, *without black dots*. Leaves sessile, 0.5–2.4 cm. long, .03–1.7 cm. broad, oblong to elliptic-ovate, rounded at the apex, entire, prominently veined; tertiary venation absent, if present meshes conspicuous on upper surface only. Flowers in terminal lax or compact cymes. Bracts 3.7–7 mm. long, ovate to linear-lanceolate, acute or obtuse and with stalked, black-tipped protuberances along the margins. Sepals 4.5–7.5 mm. long, 3.5–5 mm. broad, oblong to linear-lanceolate, acute and with stalked black-tipped protuberances along the margins. Petals 0.6–1.5 cm. long, 3.5–0.5 mm. broad, oblong to oblong-spathulate, black-dotted along margins and on the surface. Stamens indefinite, 4.5–9 mm. long, filaments thread-like, free or usually connate at the base into 3 or more irregular groups; anthers 0.5 mm. long with or without black spots. Ovary 2.5–4 mm. long, ovate in outline, 3- or very occasionally 4-chambered: styles 3 or occasionally 4, free; 2.5–6 mm. long; stigmas capitate.

CAPE PROVINCE.—Riversdale district: Corente Riv., *Muir* 855! C, P; 4774! C. George district: Nov., *Prior* in P 21066!. Knysna district: Gully, N.E. of Royal Hotel facing west, Dec., *Schonland* 3498! A; March, *Breyer* in T 23357!; Plettenbergs Bay, without name of collector in C 29506!. Humansdorp district: Assegaiibos, Nov., *Marloth* 10931! P. Uitenhage district: Oct., *Zeyher* 149! C, 360! C in part. Albany district: Grahams-town, Howisons Poort, *McOwan* 397! A, N; grassy slopes Elandskloof, *Galpin* 382! A, P. Bedford district: Dec., *Bennie* 213! A. Fort Beaufort district: Adelaide, Great Winterberg, Jan., *Ford* 11410! P. Stockenstroom district: Katberg, Nov., *Sole* 383! A. Victoria East district: Victoria East, *Rattray* 130! P. Kingwilliamstown district: Grassy places at foot of perie, *Flanagan* 2142! C, P. Cathcart district, In sandy spots along the Kabousie Riv., Dec., *Flanagan* 794! A, C; Fairford, Nov., *Cotterrell* 96! A. Herschel district: Sterkspruit, May, *Hepburn* 380! A. Griqualand without locality, Feb., *Tyson* 1376! P in part and Kaffraria without locality, *Cooper* 238! P.

3. **H. Sonderi** Bredell sp. nov., affinis *H. aethiopico* Thunb. sed foliorum margine haud dentato-glandulo, caulibus plerumque nigro-punctatis differt.

Herba perennis; caules 10–45 cm. alti, pauci vel plures, erecti, leviter ramosi, teretes levigati, nigropunctati vel haud-nigropunctati. *Folia* sessilia, 0.5–2.5 cm. longa, 0.3–1.5 cm. lata, oblonga vel late ovata, punctis nigrisve luteis, apice rotundata, nervis prominentibus; nervi tertii plus minusve conspicui vel absunt. *Flores* terminales in cymis laxis vel compactis dispositi. *Bractae* 3–8 mm. longae, 1.5–2 mm. latae, ovatae vel lineari-lanceolatae, acutae. *Sepala* 4.5–8 mm. longa, 1.5–3 mm. lata, lineari-lanceolatae, acuta, nigro-punctata. *Petala* 0.8–1.5 cm. longa, 2–6 mm. lata, oblonga vel oblongo-spathulata, nigro-punctata. *Stamina* indefinita, 5–9 mm. longa; filamenta filiformes libera vel basi polydelpha; antherae 0.5 mm. longae nigro-punctatae vel impunctatae. *Ovarium* 2.5–4.5 mm. longum, ovatum, 3-loculare; styli 3, liberi 3–6.5 mm. longi; stigmata capitata.

CAPE PROVINCE.—Aliwal North district: Doctors Drift, *Gerstner* 137! P in part. Matatiele district: Cedarville, on hillside, Nov., *Bandert* 102! A. Griqualand East without precise locality, *Tyson* 1376! C, N.

ORANGE FREE STATE.—Harrismith district: Platberg slopes, in grass, *Putterill* in C 16861!. Bethlehem district: Witzies Hoek, Feb., *Junod* in T 17321!.

BASUTOLAND.—Leribe district: *Dieterlen* 358! C, P; *Phillips* 921! C.

NATAL.—Pinetown district: Isipingo, *Medley-Wood* 12475! T, N; Amanzimtoti, June, *Forbes* 647!; Bothas Hill, Oct., *Medley-Wood* in N 6423!, 8004! C, C 11461! N, P. Camperdown district: *Schlechter* 3270! T, P, A. Pietermaritzburg district: Sept., *Rump* in N 20899! and 20316!. Impendhle district: Impendhle, Nov., *Levett* 83! N; Deepdale, in grass, Feb., *Maurice-Evans* 92! N. Estcourt district: Estcourt, *Mogg* 3516! P in part. Mooi Riv., Meteor ridge, Oct., *Mogg* 3235! P; Giant's Castle, *Symons* 132! T. Umvoti district: Greytown, Nov., *Wylie* in N 21699!. Entojaneni district: Melmoth, Sept., *Forbes* 733! N. Nongoma district: Nongoma, Nov., *Gerstner* in N 22257!. Bergville district: National Park, Drakensberg, Nov., *Oliver* 390! P; Mont-aux-Sources, near Tugela Drift, Nov., *Schweikerd* 823! T; Tugela Valley, grassland, common, Feb., *Bayer* and *McClellan* 212! P; Grantleigh, woody herb, *King* 9! P; grassy slopes, *Galpin* 11426! P. Kliprivier district: Ladysmith, Nov., *Rogers* in T 5146!. New Castle district: Charles-town, Boscobello, Jan., *Jenkins* in T 12486!. Utrecht district: Riversmoor, Viljoensdrift, Jan., *Parkhouse* in P 21064!; *Wahl* in T 15386!; grassy places, Spitzkop, Emangweni, Oct., *Thode* in Herb. Univ. Stellenbosch 9326! and in A.

SWAZILAND.—Hlatikulu district: Hlatikulu, *Stewart* 146! C, T.

TRANSVAAL.—Piet Retief district: Grassy slopes, Oct., *Galpin* 9638! P; *Jenkins* in T 10953!. Wakkerstroom district: Jan., *Beeton* 208! C; Dec., *van Dam* in T 24642!; Ermelo district: Spitzkop, Dec., *Pott* 5100! T. Carolina district: Dec., *Rademacher* in T 7470!. Barberton district: Plastron, Oct., *Holt* 74! P; on summit, Saddleback Mts., southern slopes, Oct., *Galpin* 1116! A; *Galpin* 1028! G. Belfast district: Machadodorp, grassy fields, Nov., *Galpin* 12522! P; *Jenkins* in T 10301!; Rietvlei, Crocodile Riv., June, *Smuts* 29! P; Waterval Boven, Nov., *Rogers* 18396! P; Waterval Onder, Jan., *Jenkins* in T 6760!. Johannesburg district: Dec., *Leendertz* 1737! T; *Hutton* in A 1039!. Ventersdorp district: Goedgedacht, Dolomite Fountain in black loam, occasional *Sutton* 502! P. Rustenburg district: Vlaktefontein, 10 miles west of Koster in red loam, Feb., *Liebenberg* 170! P. Pretoria district: Ashbury Fountains, Nov., *Smith* 1381! P; Koedoespoort, *Smith* 1529! P; on banks of Aapies Riv., near zoo, *Smith* 207! P; Derdepoort, Feb., *Quin* in P 12953!; near stream, occasional, straight stem from underground rootstock, Dec., *Verdoorn* 16! P; Fountains Valley, in grass on east side of magnetite koppie, Nov., *Verdoorn* 580! P; Waterkloof in valley near stream, Jan., *Verdoorn* 77! C, P; Wolwekloof, western hillside, Feb., *Mogg* 15929! P; Aapies River, *Rehmann* 4350! P; Meintjeskop, Feb., *Burt-Davy* 3958! P; small shrub, with straight stems from an underground rootstock,

Oct., *Phillips* 3038! A, P; south-western slopes of Wonderboompoort, Nov., *Pole Evans* 63! P; Fountains Valley, *Repton* 65! P; *Leendertz* 221! T in part, in T 3734! and T 4173!; Nov., *Forbes* 810! N. Lydenburg district: Farm Swagershoek, very common, Jan., *Obermeyer* in T 27901!. Pilgrims Rest district: Mauchsberg, Sabie, Dec., *Smuts and Gillett* 2320! P; Olifants River, *van Niekerk* in T 7561!. Pietersburg district: Woodbush, Mountain Home Farm, Dec., *Mogg* 14711! P; Duiwelskloof, in slopes of valley in burnt veld, July, *Galpin* 9401! P. Zoutpansberg district: Growing on hillsides, Pigeon Hole, Oct., *McCallum* 17! P; ravines, dry places, Feb., *Junod* 4288! P, T. Transvaal without precise locality *Pocock* 36! A.

H. Sonderi Bredell var. *transvalense* Bredell var. nov. Folia membranacea infra prominente lepidota supra et infra reticulata nervis tertiis conspicuis.

TRANSVAAL.—Pietersburg district: Woodbush, Mountain Home Farm, erect “herb”, common in moist places in grassland, Dec., *Mogg* 13996! P; Shiluvane, *Junod* 4290! T, P. *Wager* in T 7223! without locality, in part.

4. *H. Wilmsii* Rob. Keller in Bull. Herb. Boiss. Ser. II. VIII: 179 (1908).

Semierhaceous, less than 20 cm. high. Stems many from a persistent tap root, more or less procumbent, branched, round and smooth, glabrous. Leaves sessile, 0.5–1.5 cm. long, 0.2–0.6 cm. broad, elliptic-oblong, rounded at the apex, entire, 1- to 3-nerved; tertiary venation inconspicuous or absent. Flowers in few-flowered cymes at the end of the branches. Bracts leaf-like, obtuse. Sepals 4.5–6 mm. long, 1.5–2.5 mm. broad, oblong, rounded at the apex, distinctly veined with black dots along the margins and yellowish spots on the surface. Petals 5–8 mm. long, 2–2.5 mm. broad, oblong to oblong-spathulate, sparsely black-dotted along the margins near the apex. Stamens indefinite, usually less than 30; filaments threadlike, free or connate at the base into a few irregular groups, 4–5 mm. long; anthers 0.25–0.5 mm. long, each with a black dot. Ovary 2.5–4 mm. long, ovate in outline, 4-chambered; styles 4 or very occasionally 3, free, 1.5–2 mm. long; stigmas capitate.

CAPE PROVINCE.—Murraysburg district: *Tyson* 413! A. Queenstown district: Mountain sides, Nov., *Galpin* 1629! P. Aliwal North district: Elandshoek, moist ground near water course, Oct., *Bolus* 153! C, P; Doctors Drift, *Gerstner* 137! P, in part. Herschel district: Majubanek, near Sterkspruit, Dec., *Hepburn* 92! A.

BASUTOLAND.—Mafeteng district: Slope of Ha-Muya-pela Mt., Likhoele, Jan., *Dieterlen* 1222! P; bank of Catai Riv., Ha-Ma-Khonofane, Nov., *Dieterlen* 1293! P.

TRANSVAAL.—Lydenburg district: Near town, Jan., *Wilms* 136! (fragment of the type in P).

5. *H. natalense* Wood & Evans in Journ. Bot. XXXV: 487 (1897); Engl. & Prantl., Nat. Pflanzenfam. ed. 2, XXI: 177 (1925); Burt Davy, Flow., Pl. and Ferns of the Transv. and Swaziland 1, 251 (1926) *H. Woodii* Rob. Keller in Eng. Jahrb. LVIII: 193 (1923).

Semierhaceous, 15–40 cm. high. Stems 1 to many from a persistent underground rootstock, erect, much branched, round and smooth, glabrous. Leaves sessile, 0.5–2 cm. long, 0.3–1.5 cm. broad, elliptic to oblong-elliptic, rounded at the apex, entire, 3- to 7-nerved; tertiary venation distinct, with the meshes small and punctate. Flowers terminal. Bracts leaf-like, obtuse. Sepals 4.5–7 mm. long, 1.5–4 mm. broad, oblong to oblong-spathulate or obovate, rounded at the apex, distinctly veined, densely dotted with yellowish spots. Petals 5–9 mm. long, 2.5–3.5 mm. broad, oblong to oblong-spathulate, distinctly veined with occasional black spots along the margins near the apex. Stamens indefinite, 3.5–7 mm. long; filaments threadlike, free or connate at the base into 3 or 4 irregular groups; anthers 0.25–1 mm. long, each with a black dot. Ovary 2.5–4 mm. long, ovate in outline, 3-, 4- or 5-chambered; styles 3, 4 or 5, free, 2–3 mm. long; stigmas capitate.

CAPE PROVINCE.—Kentani district: Damp valleys, Oct., *Pegler* 117! A, P in part. Tsolo district: *Payne* 14! A.

NATAL.—Pietermaritzburg district: Balgowan, Oct., *Mogg* 5610! P; April 3809! P; Allerton, Dec., *Mogg* 6567! P. Lions River district: Howick Falls, Nov., *Rogers* in T 5212!; St. Ives, Dargle Road, Oct., *Mogg* 5679! P. Estcourt district: Near bank of Mooi River, Oct., *Medley-Wood* 4034! N, A. Umvoti district: Greytown, Oct., *Wylie* in N 21576!, in N 21577!, in N 22378! and in T 34129!.

H. natalense W. & E. var. *petiolatum* Bredell var. nov. Folia petiolata obovata; petioli 0.5–1 mm. longi.

NATAL.—Camperdown district: *Franks* in N 12968!.

6. *H. leucoptychodes* Steudel ex Richard in Tent. Fl. Abyss. 1: 96 (1847); Engl. & Prantl. Nat. Pflanzenfam. ed. 2, XXI: 176 (1925); Journ. Bot. LXV: 330 (1927). *H. lanceolatum* Lam. ex Oliver in Fl. Trop. Afr. 1: 156 (1868); Burt Davy in Fl. Pl. and Ferns of Transv. and Swaziland 1: 251 (1926) and of Hutchinson and Dalziel in Fl. West. Trop. Africa 1: 230 (1927).

Woody shrub, 4–8 ft. high. Stems much-branched, round or almost so, glabrous; internodes very short. Leaves sessile, 1.5–3 cm. long, 0.3–0.9 cm. broad, narrowly lanceolate, sub-acute, narrowed towards the base; venation regularly but sparsely pinnate; the tertiary venation somewhat conspicuous and often having the effect of small striae. Flowers large and terminal. Bracts 0.4–1.5 cm. long, 3–7 mm. broad, ovate to ovate-lanceolate, acute or obtuse. Sepals 6–9 mm. long, 3.5–6 mm. broad, ovate to broadly-ovate, obtuse, with minute stalked protuberances on the margins. Petals 1.6–3.7 cm. long, 0.5–1.5 cm. broad, oblong-spathulate, distinctly veined and occasionally with stalked bodies along the margins. Stamens indefinite, 0.8–1.5 cm. long, filaments thread-like, connate at the base into 5 very distinct groups opposite the petals; anthers 0.5–1 mm. long, occasionally with yellow gland-like bodies between the thecae. Ovary 4–8 mm. long, ovate to broadly ovate in outline, 5-chambered; styles 5, 5–9 mm. long, connate almost to the tip, with the free branches 1.5–2 mm. long; stigmas capitate.

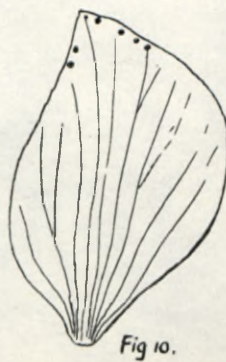
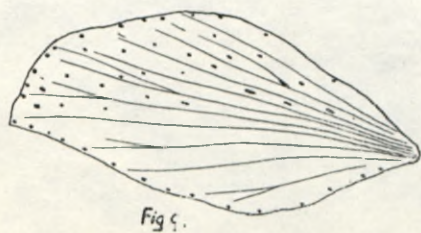
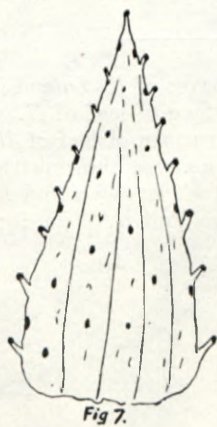
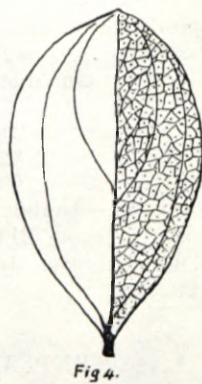
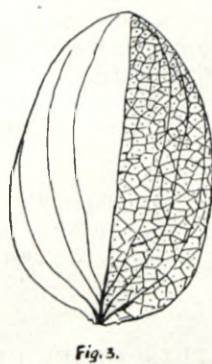
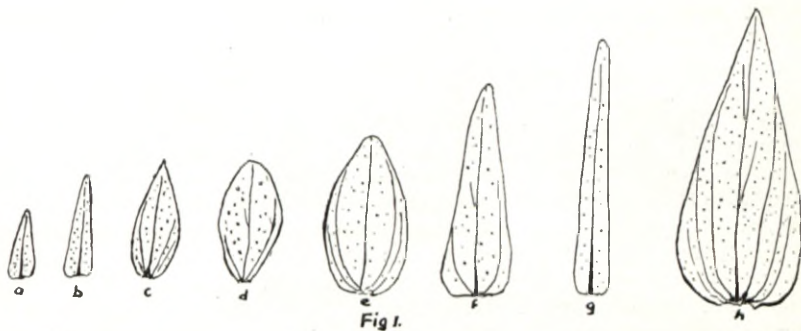
CAPE PROVINCE.—Umzimkulu district: Edge of Malowe forest, near Clydesdale, March, *Tyson* 3044! T, C, P.

NATAL.—Richmond district: Richmond, May, *Medley-Wood* 1995! N. Nkandhla district: Qudeni Forest, *Sim* 2942! N; Govt. Forester in Forest. Dept. Herb. 8637!; *Kotze* 113! P; *Gerstner* in N 23007!.

SWAZILAND.—Mbabane district: Jan., *Rogers* 11483! A, P.

TRANSVAAL.—Barberton district: *Thornicroft* 342! P and in T 3929!; banks of streams upper Moodies and also Devil's Kantoer, *Galpin* 658! C, A, P; Kaapsche Hoop, shrub, whole plant strongly scented, Oct., *Thode* 1565! N; Dec., *Gilmore* 2248! P. Lydenburg district: *Schlechter* 3942! A, C, N, P, T; farm Swagershoeck, Jan., *Obermeyer* 238! T; on bank of stream and edge of forest, common, Aug., *Keel* 1108! P; Sabie Falls in kloof and along streams, June, *Burt Davy* 442! P, N. Pietersburg district: Haenertsburg, *van der Merwe* in P 21060!; *Murray* 730! P; *Corlett* 142! P; Broederstroom farm, Nov., *Hodgson* in P 11416!; Magoebaskloof, March, *Potts* 3652! P; *Pole Evans* in P 21061!; New Agatha, June, *McCallum* in P 21060!; Woodbush, Kratzenstein, July, *Hoffman* 98! T; *Jenkins* in T 7181!; *van Dam* in T 25632!. Zoutpansberg district: Ntabini Forest, near Louis Trichardt, June, *Galpin* 10314! P; Nov., *Obermeyer* 1124! T; Laastgevonden, growing along rivers where the soil is damp, Sept., *Koker* 18! P; Cyprus Poin, edge of woods, *Junod* 4207! P.

SOUTHERN RHODESIA.—Inyananga: Common, *Henkel* 2568! P. Umtali: July, *Pardy* 5105! P. Stapleford, Oct., *Rattray* 126! P.



7. *H. Roeperianum* Schimper in Tent. Fl. Abyss. 1: 96 (1847); Engl. & Prantl., Nat. Pflanzenfam. ed. 2, XXI: 176 (1925); Journ. Bot. LXV: 331 (1927). *H. Quar-tinianum* Rich. ex Oliver in Fl. Trop. Africa 1: 156 (1868).

Woody shrub, 5-12 ft. high. *Stems* erect, slightly branched, almost smooth, glabrous. *Leaves* sessile, 4-7 cm. long, 1.5-2.5 cm. broad, elliptic-lanceolate, obtuse to sub-acute, cuneate at the base, dark on the upper surface, much paler beneath; venation almost reticulated, with the meshes small and punctate. *Flowers* large, terminal. *Bracts* 4.5-7 mm. long, 2.5-3 mm. broad, lanceolate to ovate, obtuse or sometimes acuminate, black-dotted or with gland-like bodies along the margins. *Sepals* 5-6.5 mm. long, 2.5-4 mm. broad, ovate to broadly-ovate, obtuse, with black dots and stripes near the margins and minute stalked bodies along the margins. *Petals* 2-3 cm. long, 1-1.5 cm. broad, oblong-spathulate, partly fleshy, with occasional black dots and stalked gland-like bodies along the margins. *Stamens* indefinite, 1.4-1.7 mm. long; filaments thread-like, connate at the base into 5 distinct groups opposite the petals; anthers 1 mm. long, occasionally with white gland-like bodies between the thecae. *Ovary* 5-6.5 mm. long, ovate to sub-round, 5-chambered; style 1, 0.6-1 cm. long; stigma distinctly 5-lobed.

TRANSVAAL.—Lydenburg district: Mariepskop, Nov., *Fitzsimons* and *van Dam* in T 26311!; April, *van Son* in T 32921!.

SOUTHERN RHODESIA.—Umtali: July, *Pardy* in Govt. Herb., Salisbury 5092! and in P. Odzani Riv. valley, *Teague* 214! C. Vumba Mts., margins of forest, "Cloudlands", July, *Galpin* 9247! P. Melsetter, June, *Rump* in N 23094!; common shrub, large, showy, June, *Eyles* 795! C.

EXPLANATION OF FIGURES.

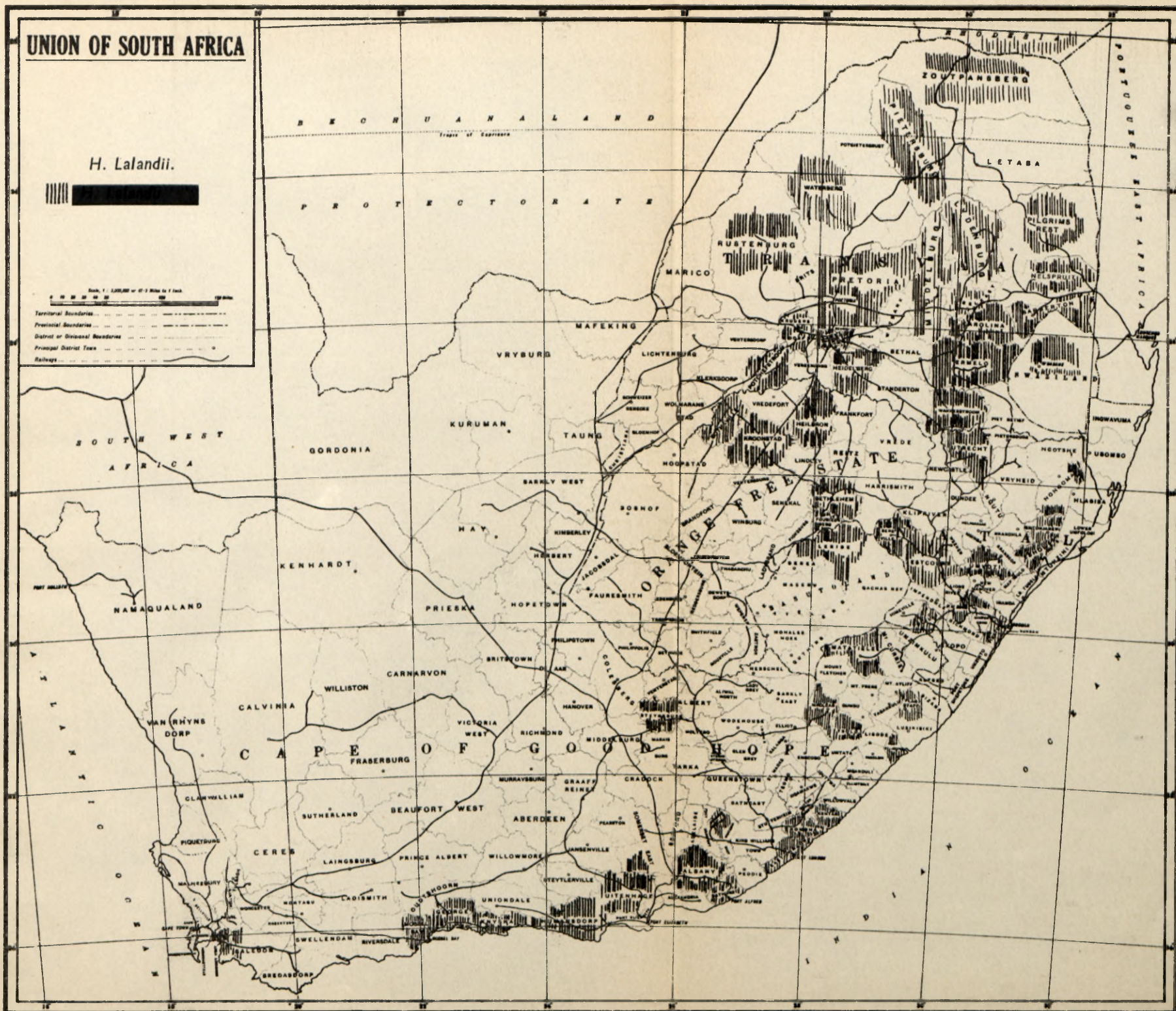
Fig. 1, *a-h*, different shapes and sizes of leaves of *H. Lalandii*; Fig. 2, abaxial surface of leaf of *H. aethiopicum*; Fig. 3, abaxial surface of leaf of *H. natalense*; Fig. 4, leaf of *H. natalense* var. *petiolatum*; Fig. 5, abaxial surface of leaf of *H. leucoptychodes*; Fig. 6, sepal of *H. Sonderi*; Fig. 7, sepal of *H. aethiopicum* showing the stalked gland-like protuberances along the margins; Fig. 8, sepal of *H. natalense* and *H. Wilmsii*; Fig. 9, petal of *H. aethiopicum*; Fig. 10, petal of *H. natalense* and *H. Wilmsii*; Fig. 11, abaxial surface of leaf of *H. Roeperianum*.

UNION OF SOUTH AFRICA

H. Lalandii.

Scale 1 : 2,500,000 or 17.5 Miles to 1 Inch

Territorial Boundaries
 Provincial Boundaries
 District or Divisional Boundaries
 Principal District Towns
 Railways



UNION OF SOUTH AFRICA

H. Lalandii var.



Transvaalense



H. Roeperianum

Scale 1 : 1,000,000 or 10-5 Miles to 1 Inch

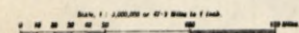
Territorial Boundaries
 Provincial Boundaries
 District or Divisional Boundaries
 Principal District Towns
 Railways



UNION OF SOUTH AFRICA

H. Sonderl

H. aethiopicum

[illegible]

UNION OF SOUTH AFRICA

||||| H. Wilmsii

⊙ H. Natalense


≡≡≡ H. Sonderi var.
Transvaalense

Scale: 1 : 1,000,000 or 1" = 100 Miles

Territorial Boundaries
Provincial Boundaries
District or Divisional Boundaries
Principal District Towns
Railways



UNION OF SOUTH AFRICA

 *H. leucoptychodes*

Scale, 1 : 2,000,000 or 1 : 2,000,000
 0 10 20 30 40 50 60 70 80 90 100 Miles
 0 10 20 30 40 50 60 70 80 90 100 Kilometers
 Territorial Boundaries
 Provincial Boundaries
 District or Divisional Boundaries
 Principal District Towns
 Railways

