

The *Schotia* Species of Southern Africa.

By

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Schotia is essentially a genus of southern Africa and the species occurring in Southern Rhodesia, the southern part of Mocambique, the Union of South Africa and South West Africa form a closely related group. An examination of available material led to the conclusion that only four species, namely *S. afra* (L.) Bodin, *S. latifolia* Jacq., *S. brachypetala* Sond. and *S. capitata* Bolle, can be upheld in this region out of some 15 specific names published.

The specimens seen include those of the National Herbarium, Pretoria, and of the following Herbaria, whose assistance in sending their material on loan is gratefully acknowledged: Bolus Herbarium; South African Museum Herbarium; National Botanic Gardens, Kirstenbosch; Albany Museum Herbarium, Grahamstown; and Natal Herbarium, Durban. When citing specimens seen, the abbreviation indicating the Herbarium is omitted where the gathering is represented in the National Herbarium, Pretoria. Otherwise, only one Herbarium is cited, though this is not necessarily the only Herbarium with representative material.

Among the specimens examined were eight which presented difficulty because they showed floral characters intermediate between those of *S. afra* and *S. latifolia*. Three resembled *S. latifolia* in general appearance but, unlike that species, possessed stamens free to the base; the remaining five showed a close similarity to *S. afra*, but the stamens were united to a variable extent at the base. These two groups were not themselves very uniform and did not convey the impression of being worthy of specific or varietal rank. They are treated here as hybrids and it may be of significance that they occur in the area where both *S. afra* and *S. latifolia* are found. However, it is desirable that they should be subjected to further study in the field and from a cyto-genetical view-point in order that a reliable evaluation of their status can be made.

One of the published species, *S. alata* Thunb., proved, on examination of a fragment of the type kindly sent to us by the Director of Uppsala Herbarium, not to be a *Schotia*, but is identifiable as *Erythrophysa alata* (E. & Z.) Hutch.

The *Schotia* species of southern Africa have little economic value. The wood is described as being hard and close grained with a pleasing finish when worked, but stems suitable for timber purposes are seldom found. The leaves of *S. afra* are browsed by livestock, while the young seeds, roasted or boiled, formed an article of diet of primitive tribes and early settlers. It is said to be in reference to this property that the popular name Boerboon (literally, "farmer's bean") came to be applied to the species. *S. latifolia* has since been called the Bosboerboon (Forest Boerboon) and *S. brachypetala* the Huilboerboon (Weeping Boerboon), the latter containing copious quantities of nectar in the flowers. *Schotias* have attractive flowers in shades of pink and red, but their slow growth reduces their value as horticultural subjects.

The generic description which follows is based on the species included in this treatment. It has not been possible to form an opinion on the species described from the more tropical parts of Africa owing to the scanty material of them in South African herbaria. The few specimens seen give the impression of having a somewhat distant relationship with the typical species. Baker (1926) suggested that the genus should be limited to plants with an obconical or cylindrical receptacle and broad, imbricate sepals which are not reflexed at flowering time. It is probable that closer study will indicate that some tropical species at present in *Schotia* are, in fact, generically distinct.

SCHOTIA.

Jacq., Coll. 1: 93 (1787), *nomen conservandum*; Schreber, Gen. Plantar. 279 (1789); Lam., Ill. 2: t. 331 (1797); Bodin in Thunb. Gen. Nov. Pl. (as "Scotia"), 9: 130 (1798); Thunb., Fl. Cap. ed. Schult. 388 (1823); DC., Prod. 2: 507 (1825); Harv., Gen. S.A. Pl. ed. 1: 92 (1838); Endl., Gen. 6785 (1839); Harv. in Fl. Cap. 2: 273 (1861); Benth. & Hook., Gen. Pl. 1: 581 (1865); Oliv. in Fl. Trop. Afr. 2: 309 (1871); Marloth, Fl. S. Afr. II. 1: 56 (1925); Baker, Leg. Trop. Afr. 708 (1926); Phillips, Gen. S.A. Fl. Pl. ed. 2: 394 (1951).

Guajacum Linn., Sp. Pl. ed. 1: 382 (1753), *pro parte*.

Theodora Medik., Theod. (1786); Harv., Gen. S.A. Pl. ed. 1: 92 (1838); Taub. in Engl. & Prantl, Pflanzenfam. III. 3: 138 (1894); Pflanzenw. O.-Afr. C 198 (1895); Harms in Veg. der Erde, 9: 454 (1915).

Omphalobium Jacq. f. ex DC., Prod. 2: 508 (1825).

Shrubs or trees, unarmed. *Leaves* paripinnate, alternate; stipules small, caducous; leaflets coriaceous, often oblique, entire, rarely less than 3 pairs and not exceeding 18 pairs, the lower usually smaller than the upper. *Inflorescence* many-flowered in short lateral or terminal panicles, in some species produced from the old wood; branches of inflorescence stout, often woody. *Bracts* small, membranous, caducous. *Pedicels* usually short. *Calyx* leathery, often red in colour; tube obconical, subcampanulate or cylindrical, persisting in the fruiting stage; lobes 4 (rarely 5), often unequal, imbricate, longer than the calyx tube, broad and not reflexed at flowering, deciduous. *Corolla* pink or red in colour; petals 5 or, in one species, some or all petals may be reduced to linear filaments, imbricate, inserted in the mouth of the calyx tube, early deciduous. *Stamens* 10, inserted with the petals, free or connate below; filaments linear, usually of two lengths, alternating, often coloured; anthers elliptic, attached medially, versatile, 2-celled, dehiscing longitudinally. *Ovary* oblong, oblique, stipitate, the stipe attached to one side of the calyx tube; ovules several to many; style terete; stigma terminal, capitate. *Pod* woody, 1 to several seeded, oblong or broadly linear, compressed, sometimes curved, beaked, sub-indehiscent, with a hard, peripheral margin which persists, often with the seeds attached, after the eventual dehiscence of the valves; seeds ovoid to globose, slightly compressed, light brown, with or without a yellow aril.

TYPE SPECIES: *S. afra* (L.) Bodin.

The genus is named in honour of Richard van der Schot, Chief Gardener of the Imperial Garden of Schönbrunn, and friend and travelling companion of Jacquin's, during the latter's travels in America.

Key to the Species of Southern Africa.

- | | |
|--|--|
| Stamens free to the base..... | |
| Leaflets usually exceeding 5 pairs and less than 1 cm. in width. | |
| Leaflets 6-12 pairs, 3-10 mm. wide..... | 1 (a). <i>S. afra</i> var. <i>afra</i> . |
| Leaflets 11-18 pairs, 1.5-3 mm. wide..... | 1 (b). <i>S. afra</i> var. <i>angustifolia</i> . |
| Leaflets 4 or 5 pairs, usually exceeding 1 cm. in width..... | 5. Hybrid Form A. |
| Stamens connate at the base..... | |
| Petals 5, normally developed..... | |
| Inflorescence subglomerate on abbreviated lateral branchlets; leaflets rarely exceeding 2.5 cm. in length..... | |
| Staminal tube not forming a distinct sheath..... | 6. Hybrid Form B. |
| Staminal tube forming a distinct sheath which projects as a narrow rim..... | 2. <i>S. capitata</i> . |
| Inflorescence relatively lax, terminal; leaflets usually exceeding 2.5 cm. in length..... | 3. <i>S. latifolia</i> . |
| Petals all, or some, reduced to linear filaments..... | 4. <i>S. brachypetala</i> . |

1. *S. afra* (L.) Bodin, aggregate species.(a) var. *afra*.(b) var. *angustifolia*.

Shrub or small tree up to 7 m. high, often with a twisted trunk; branchlets glabrous to tomentulose. *Leaves* paripinnate, 2.5–8 cm. long and 2–3 cm. broad, tending to fold along the rachis, glabrous to tomentulose; stipules ovate, acuminate, 2 mm. long, caducous; petioles 2–4 mm. long; rachis channelled above, rarely narrowly winged; leaflets 6 (rarely less) to 18 pairs, usually opposite, sessile, linear or oblong to elliptic, 5–25 mm. long and 2–10 mm. broad, rounded and often oblique or gibbous at the base, apex obtuse, usually mucronate. *Inflorescence* a congested panicle, subglobose, 4–8 cm. in diameter, borne on short lateral branchlets or, rarely, terminal, composed of many flowers; inflorescence branches abbreviated, usually hidden by the flowers, semi-woody, glabrous to tomentulose. *Bracts* small, scale-like, caducous. *Pedicels* 3–9 mm. long. *Calyx* red, leathery; tube obconical to cylindrical, 3–8 mm. long and 3–5 mm. broad; lobes usually 4, sometimes one lobe emarginate, rarely divided to the base producing 5 lobes, obovate to oblong, concave, 6–11 mm. long and 5–10 mm. broad. *Corolla* red to pink; petals 5, oblanceolate, slightly clawed, veined, 10–18 mm. long and 3–7 mm. broad. *Stamens* 10, free to the base; filaments 15–20 mm. long, exceeding the corolla by 3–8 mm.; anthers elliptic, 2 mm. long. *Ovary* oblong, compressed, 5–7 mm. long and 2 mm. broad, oblique, stipitate; stipe 5–6 mm. long; style 8–14 mm. long; stigma capitate. *Pod* as in generic description, 5.5–12 cm. long and 3–3.5 cm. broad. *Seeds* ovoid to roundish, slightly compressed, 12–15 mm. long and 8–12 mm. broad, pale brown, aril very small or absent.

Thunberg published the binomial *Schotia afra* without supporting description or citations in his Prodr. (1794), but this *nomen nudum* does not invalidate the later effective publication of the combination by his student, Bodin, in Thunberg's Gen. Nov. Pl. 9: 130 (1798). Some authorities credit Thunberg with the combination, e.g. *S. afra* (L.) Thunb. in Juel's Plantae Thunbergiana (1918). However, Bodin is clearly cited as the author of the work on *Schotia* in Thunberg's Gen. Nov. Pl. and so it seems reasonable to accept him as the author of the combination. It may be noted that Thunberg, in his Flora Capensis (1823), reverts to the epithet *S. speciosa*.

According to Acocks (Veld Types of South Africa, 1953), *S. afra* is a common species of the Karroid Valley Bushveld and the allied Fish River and Sundays River Scrub of the eastern Cape Province. It also occurs in the Noorsveld, the Succulent Mountain Scrub or Spekboomveld, the Little Karoo and, further north, in the Orange River and Namaqualand Broken Veld. In a personal communication he expresses the opinion that the variation seen in plants occurring in these various veld types could well be included within the limits of one species.

Harvey in Flora Capensis upheld three varieties in addition to the typical form, namely: var. *angustifolia*, var. *tamarindifolia* and var. *ovalifolia*. In the present treatment, only one variety is separated as distinct from typical *S. afra*, namely *S. angustifolia*, with leaflets more numerous and narrower than the typical form. Var. *tamarindifolia* is recognisable in flowering specimens by the calyx tube being cylindrical instead of obconical but otherwise it appears to be identical with typical *S. afra* and is not considered to be varietally distinct. Var. *ovalifolia* shows characters intermediate between *S. afra* and *S. latifolia* and evidence points to its being a hybrid between these two species. It is discussed more fully under the heading Hybrid Form A (p. 529).

Var. (a). *S. afra* (L.) Bodin var. *afra*. *S. afra* (L.) Bodin in Thunb. Gen. Nov. Pl. 9: 130 (1798) (as "*Scotia*"); Thunb., Prodr. Pl. Cap. 79 (1794), *nomen nudum*. *Guajacum afrum* L., Sp. Pl. ed. 1: 382 (1753); Mill., Gard. Dict. ed. 8: (1768).

- S. speciosa* Jacq., Coll. 1: 93 (1787); Icon. Pl. Rar. 1: 8, t. 75 (date ?); Schreber, Gen. Plantar. 279 (1789); Willd., Sp. Pl. 2: 537 (1799); Andr., Bot. Rep. 5: t.348 (1804); Thunb., Fl. Cap. ed. Schult. 388 (1823); DC., Prod. 2: 508 (1825); E. & Z., Enum. Pl. Afr. 261 (1836); Harv. in Fl. Cap. 2: 274 (1861); Sim, For. Fl. Cape Col. 207, t.57 (1906); Marloth, Fl. S.Afr. II. 1: 57 (1925). Var. *tamarindifolia* (Afz. ex Sims) Harv., l.c.
- Theodora speciosa* Medik., Theod. 16 (1786); Harv., Gen. S.A. Pl. ed. 1: 92 (1838); Taub. in Engl. & Prantl, Pflanzenfam. III. 3: 138 (1894).
- S. tamarindifolia* Afz. ex Sims in Bot. Mag. t.1153 (1809); DC., Prod. 2: 508 (1825); E. Mey., Comm. Pl. 161 (1836).
- Citations prior to 1753.—Boerh., Lugd. 2: 57 (1727); Walth., Hort. Leipzig, 2: t.2 (1735); Linn., Hort. Cliff. 489 (1737); Van Roy., Hort. Lugd. 536 (1740).

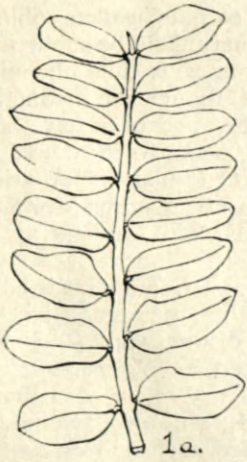
FIGS. 1 and 2.

TYPE.—No. 532·4 in the Linnaean Herbarium. Of the two specimens in the Linnaean Herbarium, both sterile, numbered 532·3 and 532·4, respectively, the latter, being more characteristic of the species, is chosen as the *lectotype*. Types of synonyms: *S. speciosa* Jacq., the plate in his Collecteana; *S. tamarindifolia* Afz. ex Sims, *Masson*, "Africa australis prope bon. spei", in the British Museum; *Theodora speciosa* Medik., no information is available as to whether a corresponding specimen exists.

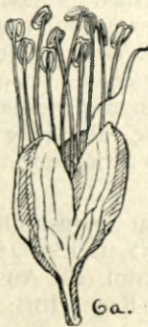
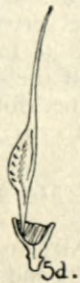
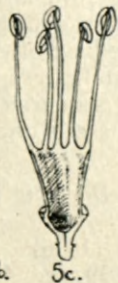
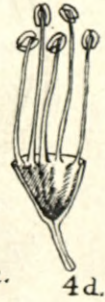
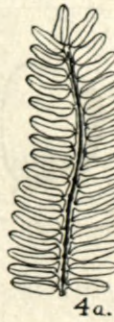
CAPE.—Albany: 16 miles E. of Grahamstown, *Codd* 9237; Fraser's Camp, *Maguire* 633 (NBG). Bathurst: Port Alfred, *Rogers* 16637; *Tyson* s.n.; *White* 57 (GRA); *Schonland* s.n. (GRA); Kowie, *Salisbury* 121 (GRA). Alexandria: Debega Valley, *Galpin* 10661; Bushmans River Poort, *Johnson* 863. Uitenhage: *Ecklon and Zeyher* 47 (BOL); *Theron* 232; Swartkops River Valley, *Zeyher* 2447; Aloes, *I.L. Drège* 3126; Addo, *Brynard* 202; *Gill* 10 (BOL); *Lang* in Hb. Marloth 6840; *Despatch, Holland*, 337 (GRA). Port Elizabeth: Redhouse, *Marloth* 13040; *Patterson* 524 (BOL); Enon, *Thode* A2643; Perserverance, *Rodin* 1282 (BOL); Coegakamma to Addo, *I. L. Drege* 584 (GRA). Humansdorp: *Phillips* 3350; Slang River, *Fourcade* 1795 (BOL). Knysna: Keurbooms River, *Taylor* 29. Oudtshoorn: Between Calitzdorp and Oudtshoorn, *Barker* 628 (NBG). Mossel Bay: *McGaffin* s.n. (GRA). Laingsburg: Seven Weeks Poort, *de Jager* s.n. (BOL). Ladismith: *Pole Evans* H19101; Swartberg, *Marloth* 2945. Riversdale: Still Bay, *Muir* 92; *Taylor* 92; Skilpadgat, 5 miles N.W. of Albertina, *Taylor* 209 (NBG). Swellendam: Eierpoort, *Compton* 11920 (NBG); Anysberg, *Stokoe* 8390. Montagu: *Marloth* 8129; between Dobbelaarskloof and Karreevlakte, *Hall* 881 (NBG). Robertson: Along Komas River, *Acocks* 8618.

Jacquin's plates of *S. speciosa* are among those whose dates of publication are not known with certainty. The subject is discussed by Schubert in *Contrib. Gray Herb.* 154: 3–23 (1945), who tentatively places the date of plate 93 of the *Collecteana* (accepted as the earlier) as 1787. The date of publication of Jacquin's *Icones Plantarum Rariorum*, Vol. 1, is frequently accepted as 1781, the date of the title page to that work but, on page 8, in the text relating to plate 75, he refers to the plate in his *Collecteana*, and to the publication of *Theodora speciosa* by Medikus. Therefore plate 75 of the *Icones* is undoubtedly the later of the two.

FIG. 1.—*Schotia afra* var. *afra*, a, leaf; b, flower; c, longitudinal section; d, petal; e, ovary. FIG. 2.—*S. afra* var. *afra*, form with cylindrical calyx tube, a, leaf; b, flower; c, petal; d, longitudinal section. FIG. 3.—*S. capitata*, a, flower; b, petal; c, longitudinal section. FIG. 4.—*S. afra* var. *angustifolia*, a, leaf; b, flower; c, petal; d, longitudinal section. FIG. 5.—*S. latifolia*, a, flower; b, petal; c, longitudinal section; d, ovary. FIG. 6.—*S. brachypetala*, a, flower; b, flower with calyx lobes removed, showing reduction of all petals; c, form with petals partially reduced. All life size.



108.



Included in var. *afra* are the plants with, normally, 6–11 pairs of leaflets, oblong to elliptical, 10–17 mm. long and 4–10 mm. wide. These plants may again be subdivided into two groups on the basis of calyx shape, one group with the calyx tube obconical in shape while, in the other group, the calyx tube is cylindrical, though the distinction is not always clear cut. The form with the obconical calyx tube appears to have been in cultivation in Europe from early in the 18th Century and is the form figured by Jacquin, so it can be fairly safely assumed that the specimens in the Linnaean Herbarium belong here. This form is centred mainly in the Little Karoo, occurring in the Montagu, Swellendam, Ladismith, Laingsburg and Oudtshoorn Districts, with outliers as far east as the Knysna District.

The second group with the calyx tube cylindrical in shape is indistinguishable vegetatively from the preceding, having much the same number, size and shape of leaflets. Thus no advantage can be seen in separating it as a distinct variety. It was described as *S. tamarindifolia* Afz. ex Sims and was placed as *S. speciosa* var. *tamarindifolia* by Harvey in *Flora Capensis*. Plants of this nature are distributed mainly to the east of the preceding group in the districts of Humansdorp, Uitenhage, Alexandria, Bathurst and Albany, but they are also recorded further west in the Riversdale District.

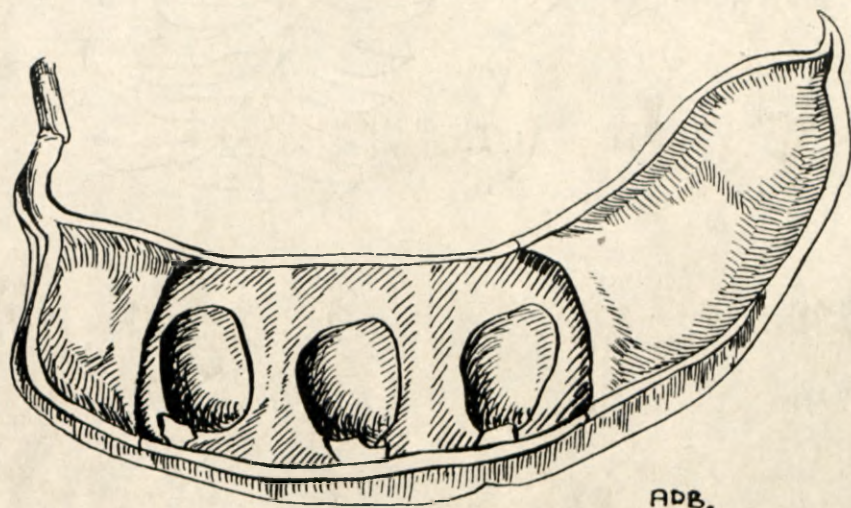


FIG. 7.—*S. afra* var. *angustifolia*, pod, life size.

S. tamarindifolia is described as having five calyx lobes. This is unusual but not unknown. The usual number is four but, occasionally, the largest lobe is notched or split at the apex. In extreme cases, which are very rare and apparently not constant even in one inflorescence, the division continues to the base of the lobe, with the result that five lobes instead of four are present. Of the 41 flowering specimens examined, 10 possessed flowers with one calyx lobe notched for a quarter or more of its length, while in two of these the division continued to the base of the lobe, resulting in five instead of four calyx lobes.

Var. (b). *S. afra* (L.) Bodin var. *angustifolia* (E. Mey.) Harv., in *Fl. Cap.* 2: 274 (1861).
S. parvifolia Jacq., *Fragm.* 85, t. 136 (1809).
S. angustifolia E. Mey., *Comm. Pl. Austr. Afr.* 161 (1836).
S. venusta Mason in *Journ. Roy. Hort. Soc. Lond.* 39: t. 14 (1913), *nomen nudum*.

FIGS. 4 and 7.

TYPE.—Drège, between Kunap and Kat Rivers. Of the two specimens cited by E. Meyer, this appears to be the more representative of the variety and is therefore chosen as the *lectotype*. An isotype is at the British Museum Herbarium.

CAPE.—Butterworth: Kei River, Bayer in N.H. 31017 (NH); Kei Bridge, Codd 9242. Komgha: Flanagan 1322. Queenstown: Saunders in N.H. 10602 (NH); Gwatyn, Galpin 8108; near Balotwa, Thorns s.n. (NBG). King William's Town: Sim 2139; north side of Mitchell's Pass, Esterhuysen 13235 (BOL). Keiskammahoek: Boma Pass, Acocks 9111. Middledrift: Salisbury 290 (GRA). Victoria East: Lewis in SAM 66637; 4 miles above Fort Cox, Gillett 4592; Curries Kloof, Bennie 441. Graaff Reinet: Bolus 621 (BOL). Prieska: 20 miles N.W. of Prieska, Bryant in Hb. Bol. 25613 (BOL). Kenhardt: 7 miles W. of Pofadder, Thorne s.n. (SAM). Namaqualand: Krapohl in Hb. Bol. 20589 (BOL); Groot Rozynbosch, Pearson 3824 (SAM). Gordonias: Bokputs, Marsh in Hb. Marl. 6527; Aughrabies Falls, Esterhuysen (BOL).

SOUTH WEST AFRICA.—Warmbad: Skunsberg Quelle, south of Warmbad, Dinter 5133; Eendoorn, Galpin s.n.

Var. *angustifolia* is distinguished from the typical by the more numerous, smaller and narrower leaflets, possessing 12–18 pairs of leaflets which are 5–12 mm. long and 1.5–3 mm. wide. The calyx tube is obconical, resembling the typical form, but the pedicels are slightly shorter. *S. parvifolia* Jacq. appears to belong here, though Jacquin's figure shows too few leaflets. The distribution of this variety is further east and more inland than the typical, occurring in the Districts of Butterworth, Komgha, King William's Town, Victoria East, Queenstown, Graaff Reinet and, further north, in Prieska, Gordonias, Kenhardt, Namaqualand and South West Africa, to mention the most important.

2. *S. capitata* Bolle in Peters Reise Mossamb. Bot. 18 (1862); Oliv. in Fl. Trop. Afr. 2: 310 (1871); Sim, For. Fl. Port. E. Afr. 51 (1909); Baker, Leg. Trop. Afr. 710 (1926).

S. tamarindifolia Afz. ex Sims var. *forbesiana* Baill. in Adansonia, 6: 197 (1865–66). *Theodora capitata* (Bolle) Taub. in Engl. & Prantl Pflanzenfam. III. 3: 108 (1894); Pflanzenw. O.-Afr. C 198 (1895).

S. transvaalensis Rolfe in Kew Bull. 248 (1906); Burt Davy, Fl. Pl. Ferns Tvl. Swaz. 2: 326 (1932); Phillips in Fl. Pl. S. Afr. 15: t. 574 (1935) excl. descr. "up to 30 ft. high"; Codd, Trees and Shrubs, Krug. Nat. Park, 68, t.63 (1951).

FIG. 3.

Shrub or slender tree up to 7 m. high, sometimes sub-scandent; branchlets glabrous to sparingly pubescent; bark grayish. *Leaves* paripinnate, 3.5–8 cm. long and 2.2–4.5 cm. broad, tending to fold along the rachis, glabrous to sparingly pubescent; stipules 2–3 mm. long, ovate, acuminate, caducous; petioles 1–6 mm. long; rachis narrowly winged, especially towards the apex; leaflets 3–5, rarely 6 pairs, opposite, sessile, elliptic or sub-rotund or obovate, 1.5–2.5 (rarely up to 3.5) cm. long and 1–1.8 (rarely 2) cm. broad, obtuse to acute at the base, often oblique, obtuse or acute at the apex, usually mucronate. *Inflorescence* a congested panicle, subglobose, 3–8 cm. in diameter, borne terminally or, more usually, on short lateral branchlets; inflorescence branches much abbreviated, semi-woody, glabrous to tomentulose. *Bracts* less than 1 mm. long, scale-like, caducous. *Flowers* scarlet, sessile or subsessile with pedicels rarely exceeding 1.5 mm. long. *Calyx* deep red, leathery; tube obconical, 3–4 mm. long, persistent; lobes 4, subequal, obovate to elliptic, concave, 6–9 mm. long and 3 mm. broad. *Corolla* scarlet; petals 5, oblanceolate, clawed, veined, 10–14 mm. long and 3–4 mm. broad. *Stamens* 10 united at the base for 3–4.5 mm. forming a sheath round the ovary stipe, the sheath being

split open on the side where the stipe is attached to the calyx tube, and projecting as a narrow, irregular rim; one or two stamens often free to the base on the split side; filaments linear, 12–16 mm. long, exceeding the corolla by 3–5 mm.; anthers elliptic, 1.5–2 mm. long. *Ovary* oblong, compressed, 4–5 mm. long and 2 mm. broad, stipitate; stipe 4–5 mm. long and 1 mm. thick, adnate to one side of the calyx tube; style terete, 13–15 mm. long; stigma capitate. *Pod* as in the generic description, 4–12 cm. long and 2.5–3.5 cm. broad. *Seeds* ovoid, slightly flattened, 8–12 mm. long, pale brown, with a large, compressed, yellow aril.

TYPE.—Peters, Inhambane. The holotype in Berlin-Dahlem Herbarium appears to have been destroyed and enquiries have thus far failed to reveal the existence of an isotype. Types of synonyms: *S. transvaalensis* Rolfe, P. Oranje s.n., Barberton District, in Herb. Kew; *S. tamarindifolia* var. *forbesiana* Baill., Forbes 32, Delagoa Bay.

MOCAMBIQUE.—Sul do Save: Mutamba, near Inhambane, *Gomes e Sousa* 2171; Moambo, *Pedrogao* 25, 26, 218; between Inharrime and Panda, *Pedro and Pedrogao* 1887; between Matola and Umbeluzi, *Pedro and Pedrogao* 897, 901; between Unianga and Mazivila, *Pedro and Pedrogao* 1441; between Chamusca and Nalasi, *Pedro and Pedrogao* 1271, 1294; Canissado, *Pedro and Pedrogao* 1297; between Ginja and Chibuto, *Pedro and Pedrogao* 1536; Ginja, *Pedro and Pedrogao* 2133; Lourenco Marques, *Borle* 18, 88, 597; *Torre* 6370; *Bremekamp* in T.M. 30198; Bela Vista, *Swierstra* in T.M. 16390; near Goba, *Torre* 6470; Maziminhama, *Myre* 1247; Maputo, *Hornby* 2537.

TRANSVAAL.—Pilgrims Rest: 7½ miles N.E. of Skukuza, *Codd and de Winter* 5063. Nelspruit: Skukuza, *Stevenson-Hamilton* s.n.; 21 miles N.E. of Pretorius Kop, *Story* 3934; Klokwe, *van der Schyff* 196; Sigaas, *van der Schyff* 774. Barberton: Komatipoort, *Rogers* 12609; Kaapmuiden, *Thorncroft* 611.

SWAZILAND.—Flats below Stegi, *Rodin* 4559; Sitilo River, near Golle, *Pole Evans* 3395 (4).

NATAL.—Ingwavuma: Ndumu, *Gerstner* 4004 (NH); Pongola River, *Boocock* 47. Ubombo: *Gerstner* in NH 22865; between Otobotini and Ubombo, *McClellan* in NH 18472. Ngotshe: Candover, *Galpin* 13608. Hlabisa: False Bay, *Gerstner* 4761; *Ward* 697, 690. Mahlabatini: 6¼ miles N. of Mahlabatini, *Codd* 1932; near Mahlabatini, *Acocks* 11666; Black Umfolosi, *Swynnerton* 47. Lower Umfolosi: Umfolosi River, *Wager* in T.M. 22386; Umfolosi Game Reserve, *Ward* 1468 (NH); Nagana Research Station, *Kluge* 18 (NH); Umhlatuzi Valley, *Lawn* 795, 1744 (NH).

The holotype of *S. capitata* was apparently lost with the partial destruction of Berlin-Dahlem Herbarium and our liaison officer at Kew has been unable to locate an isotype in any of the British Herbaria. Thus, in the absence of a type specimen, circumstantial evidence had, to some extent, to be relied upon in deciding to place *S. transvaalensis* as a synonym of *S. capitata*. All the *Schotia* specimens seen from Mocambique can be placed in two species, namely, *S. brachypetala* and the species here outlined. Gatherings made in the neighbourhood of Inhambane, the type locality of *S. capitata*, fail to reveal a third species. The description of *S. capitata* by Bolle is based on a flowering specimen without leaves; it could apply to our present conception of the species and, fortunately, the description of the five petals excludes *S. brachypetala*. The name *S. capitata* was taken up by Oliver in the Flora of Tropical Africa and subsequent authors, for example, Taubert (1894), Sim (1909) and Baker (1926), usually with the opinion expressed that *S. tamarindifolia* var. *forbesiana* is probably a synonym. There is a specimen at Kew of Forbes 32, type of the latter variety, and it has been reported as being conspecific with Oranje s.n., type of *S. transvaalensis*.

S. capitata shows a superficial resemblance to some of the specimens cited under the heading "*S. latifolia* X *S. afra*, Form B" but is distinguished from this group and, in fact, any other species, by the characteristic and relatively specialised staminal sheath which encloses the stipe of the ovary. The sheath is composed of, usually, 8 stamens fused at the base for 3-4.5 mm., being open to the base on the side to which the stipe is attached to the calyx tube. The sheath is smooth on the inside and is projected as an uneven rim about 1 mm. above the junction of the stamens. One or two stamens are usually free to the base on the open side of the sheath. The leaf rhachis is usually more distinctly winged in *S. capitata* than in any of the other species.

In the absence of flowers, it is often difficult in the herbarium to separate *S. brachypetala* from some forms of *S. capitata* because there is overlapping in the size of leaflets. In the field, they can be distinguished by the difference in habit, *S. brachypetala* forming a round-topped tree from 25 to 40 feet or more in height, with a trunk up to 18 inches in diameter. *S. capitata* is normally a shrub with several slender, ascending branches, frequently intertwined in thorn scrub, with which it is frequently associated. More rarely it forms one to several slender, erect stems up to 20 feet in height and 4 to 6 inches in diameter.

3. *S. latifolia* Jacq., Fragm. 23, t.15, f.4 (1809); DC., Prod. 2: 508 (1825); Jacq. f., Ecl. Pl. 2: t.126 (1844), in textu; E. Mey., Comm. Pl. 162 (1836); E. & Z., Enum. Pl. Afr. 262 (1836); Harv., Gen. S.A. Pl. ed. 1: 92 (1838); Harv. in Fl. Cap. 2: 274 (1861); Sim, For. Fl. Cape Col. 206, t.57 (1906); Marloth, Fl. S. Afr. II. 1: 57 (1925).

Omphalobium Schotia Jacq. f. ex DC., Prod. 2: 508 (1825), in synonymy.

S. diversifolia Walp. in Linnaea, 13: 541 (1839).

S. cuneifolia Gandoger in Bull. Soc. Bot. Fr. 60: 462 (1913).

FIGS. 5 and 8.

Tree up to 10 m. high; trunk up to 25 cm. in diameter; branchlets glabrous to tomentulose; bark smooth, dull grey to reddish brown. Leaves paripinnate, 6-10 cm. long and 5-8 cm. broad, glabrous or pubescent; stipules ovate, acuminate, 4 mm. long, caducous; petioles 0.5-2 cm. long; rhachis slightly channelled above, winged in the juvenile state; leaflets 3-5 pairs, usually opposite, sessile, elliptic-oblong to obovate, 2.5 (rarely less)-6 cm. long and 1.4-3 cm. broad, cuneate to rounded at the base, oblique, rounded or acute at the apex, rarely mucronate, the upper leaflets the largest. Inflorescence a relatively open panicle, terminal to main or lateral branches, 8-15 cm. long and 6-10 cm. wide; inflorescence branches patent, semi-woody, 3-8 cm. long, glabrous to tomentulose. Bracts scale-like, caducous. Pedicels less than 2 mm. long. Calyx reddish brown, leathery; tube very short, turbinate, 1.5-2 mm. long, persistent; lobes 4, subequal, obovate, concave, 5-7 mm. long and 4-5 mm. broad. Corolla pink to flesh colour; petals 5, equal or, occasionally, 1 slightly reduced, oblanceolate, veined, 9-11 mm. long and 2.5-3 mm. broad. Stamens 10, connate at the base for 0.5-3 mm., the staminal sheath split open on the side to which the ovary stipe is attached to the calyx tube; filaments linear, 10-14 mm. long, exceeding the corolla by 2-3 mm.; anthers elliptic, 1.5-2 mm. long. Ovary oblong, compressed, 4-5 mm. long and 2 mm. broad, stipitate; stipe 2 mm. long, adnate to one side of the calyx tube; style terete, 10-11 mm. long; stigma scarcely differentiated. Pod as in the generic description, 5-14 cm. long and 3-4.5 cm. broad. Seeds ovoid, flattened, 11-14 mm. long, pale brown with a large, compressed, yellow aril.

TYPE.—The plate in Jacquin's Fragmenta. Types of synonyms: *S. diversifolia* Walp., syntypes, Ecklon and Zeyher from "Uitenhage and Albany" and three Drège specimens collected at Glenfilling, Keiskamma and Zandplaat, respectively. *S. cuneifolia* Gand., Penther 2516 (or 2561, see later discussion), Cape of Good Hope.

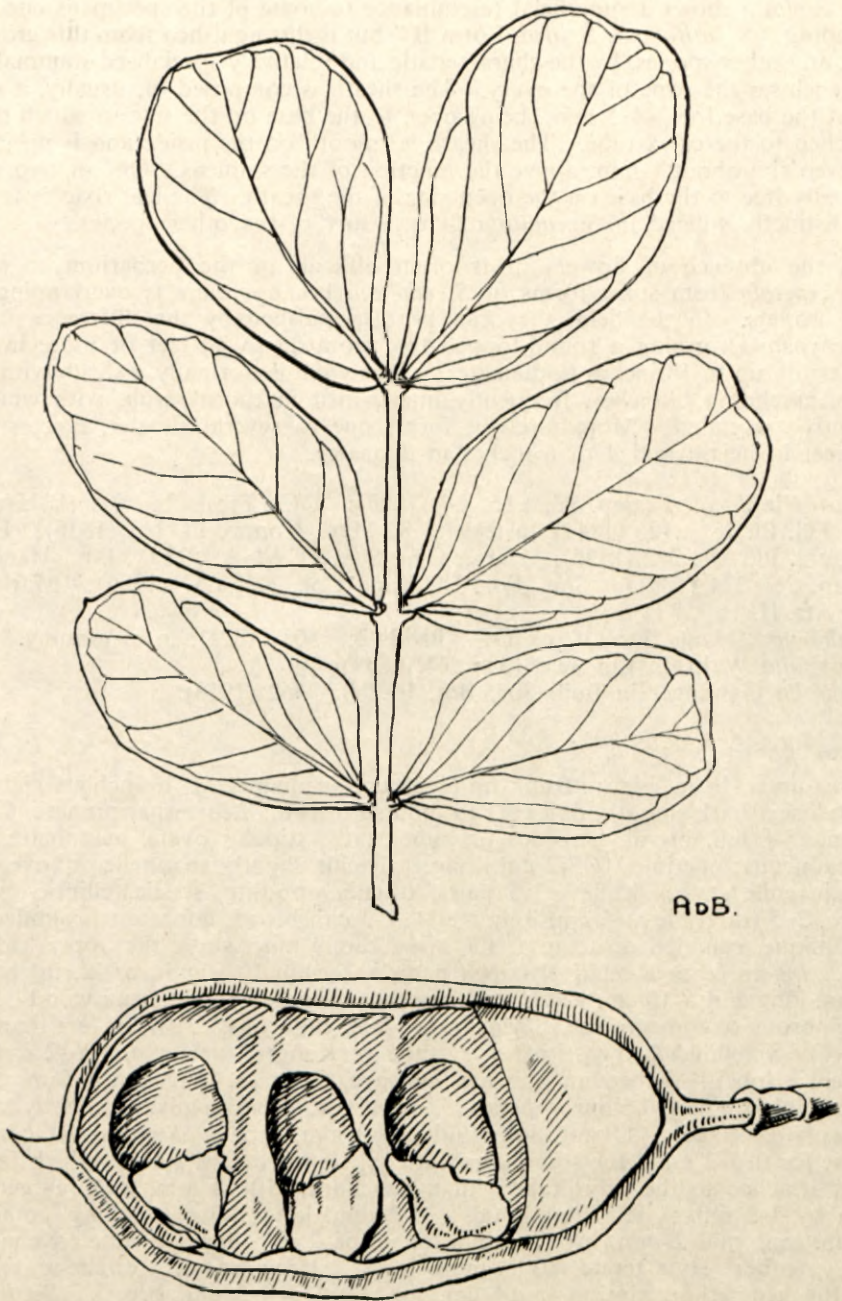


FIG. 8.—*S. latifolia*, leaf and pod, life size.

CAPE.—Engcobo: 2 miles N. of Engcobo, *Codd* 7981a. Kentani: *Pegler* 593. Komgha: *Flanagan* 712; Queenstown: Junction Farm, *Galpin* 8109. Stockenström: Brambledene, between Alice and Seymour, *Barker* 2898 (NBG). Stutterheim: Dohne, *Acocks* 8955, 9501. East London: *Penther* 2561 (W); *Galpin* 3141; *Nanni* 152; Blind River Valley, *C. A. Smith* 3841; mouth of Keiskamma River, *Galpin* 7695. Peddie: Ebb and Flow, *Maguire* 619 (NBG). Albany: *Marloth* 10877; Howieson's Poort, *MacOwan* 77 (BOL); Gowieskloof, *Bennie* 669 (GRA); 1½ miles S.W. of Grahamstown, *Comins* 983; 15 miles N. of Grahamstown, *Maguire* 661 (NBG). Bathurst: Fish River Valley, *Schlechter* 6104; Port Alfred, *Rogers* 959; *Potts* 169 (GRA); Kowie West, *Burt Davy* 7887. Uitenhage: *Gill* 16 (BOL); *Patterson* 2209 (GRA); "Uitenhage and Albany", *Ecklon and Zeyher* 1701; Paarde Poort, *Bolus* 1547 (BOL); Kamachs, *Long* 1277; Enon, *Thode* 22644; Zuurberg, *Holland* 300 (GRA). Port Elizabeth: *Kensit* 7 (BOL); between Coega and Sundays River, *Zeyher* 672 (BOL) in part (?); Van Staadensberg Gorge, *MacOwan* 2458 (GRA), Baakens River, *I. L. Drege* 659; Van Staadens Kloof, *Taylor* 832; Bethelsdorp; *Paterson* in T.M. 12299, 25844; Swartkops River, Springfield, *Forest Dept.* 150 (GRA). Humansdorp: Loerie, *Dix* 208. Uniondale: 9 miles from Joubertina. *Fourcade* 5079 (BOL). Knysna: Keurbooms River, *Fourcade* 169 (BOL); *Compton* 4457 (NBG); Keurbooms River Pass, *Fourcade* 1992 (BOL). George: *Pappe* s.n. (GRA).

CULTIVATED.—Kirstenbosch, *Henderson* 1891 (NBG); Botanic Garden, Durban, *Medley Wood* 1891, 5017, 8689 (NH); near Durban, *Medley Wood* 9260 (NH); Barberton (?), *Thorncroft* ex hort NBG; Cape Town, *Marloth* 9315.

Jacquin's plate lacks flowers and was made from an immature plant stated to be five years old, grown from seed sent by Georg Scholl, who collected in the Cape Province for the Imperial Gardens at Schönbrunn from 1785 to 1797. As far as is known, his travels did not take him further eastward than East London, which would not bring him into the area of distribution of *S. brachypetala*, a species indistinguishable vegetatively from *S. latifolia*. Fortunately this is not the only evidence we have relating to the identity of this plate. De Candolle, *Prod.* 2: 508 (1825), gives a description of the flowers of *S. latifolia*, based on an unpublished plate (published later in *Ecl. Pl.* 2: t.126, 1844) by Jacquin fil., who had given it a manuscript name of *Omphalobium Schotia*. It may be presumed that this is the same plant as that figured by the elder Jacquin, and subsequent authors have accepted its identity. It is not known if herbarium specimens corresponding to the plates are in existence.

S. diversifolia Walp. is based on Ecklon and Zeyher 1701 (represented in Grahamstown, South African Museum and the National Herbarium, Pretoria) and three Drège specimens collected respectively at (a) Glenfilling, Albany District; (b) Keiskamma; and (c) between Zandplaat and Komga. The Drège specimens have not been seen, but all the localities fall within the distribution range of *S. latifolia*, and the description by E. Meyer in his *Comm. Pl.* 162 (1836) agrees with this species.

The following is a copy of the description of *S. cuneifolia* Gandoger: "Foliola ampla oblonga, apice subrotundata, mucronata nec retusa, basi cuneata, marginibus undulatis, rami floriferi glaberrimi, patentes, late angulosi, cymae laxiflorae. HAB.: Cap. (Penther n. 2516). A *S. latifolia* Jacq. recedit foliolorum coriaceorum forma staminibusque longioribus. Legumen maximum, 9–10 cm. longum, 3 cm. latum, glabrum." In response to an enquiry made to the Naturhistorisches Museum, Vienna Dr. Rechinger informs me that he was unable to find a *Schotia* specimen with the Penther number 2516. There is, however, a sheet of *S. latifolia* labelled Penther 2561 from "Distr. East London". A portion of this specimen was kindly sent to us on loan and was confirmed as being *S. latifolia* Jacq. Whether Gandoger's No. 2516 is a typographical error is not certain, but it seems possible that the type may in fact be No. 2561. In any case, the description gives no adequate grounds, in the light of modern information on *Schotia* species, for separating this species from *S. latifolia*.

Sim in his Forest Flora of the Cape Colony, page 206, states that “. . . it grows to a tree 30 to 50 feet and is common throughout the Eastern and Transkei Conservancies and Natal.” Acocks (Veld Types of South Africa, 1953), in addition to recording the presence of *S. latifolia* in the Fish River Scrub, Southern Valley Bushveld and Alexandria Forest, cites it as occurring in the Zululand Thornveld (pp. 39, 40). In the absence of flowers, it is practically impossible to distinguish *S. latifolia* from *S. brachypetala* and thus the two might be confused in the field. *S. brachypetala* is known to occur as far south as Umtata, but no herbarium specimens identifiable as *S. latifolia* are known from the wild to the east of Engcobo and Kentani Districts in the Transkei. The Medley Wood specimens from Durban and the Thorncroft specimen from Barberton are considered to be from cultivated trees. Thus there is need for more collecting to be done in the Transkei and Pondoland areas in order to demonstrate clearly whether the two species overlap or not.

S. latifolia grows in forest margins and dry scrub and forms a small, round-topped tree 15 to 30 feet in height (Marloth's reference to a 50 foot tree in the Pirie Forest must be regarded as exceptional). It is probably evergreen or, like some other species of *Schotia*, the leaves may be shed for a very short period before the flowers appear. The flowers are relatively small, pinkish in colour and are borne in profusion in terminal panicles.

4. *S. brachypetala* Sond. in Linnaea, 23: 39 (1850); Harv., Thes. 21. t.32 (1859); Fl. Cap. 2: 274 (1861); Wood, Natal Pl. 4: t.390 (1906); Marloth, Fl. S.Afr. II. 1: 57 (1925); Baker, Leg. Trop. Afr. 709 (1926); Burt Davy, Fl. Pl. Ferns Tvl. Swaz. 2: 326 (1932); Dyer in Fl. Pl. S.Afr. 20: t. 777 (1940); Codd, Trees and Shrubs Krug. Nat. Park, 66, t.63 (1951). Var. *pubescens* Burt Davy, l.c., xxx, 326 (1932).

S. rogersii Burt Davy, l.c., xxx, 326 (1932).

S. semireducta Merxm. in Mitt. Bot. Munchen, 6: 199 (1953).

FIG. 6.

Tree up to 16 m. high; trunk up to 45 cm. in diameter; branchlets glabrous to tomentulose; bark rough, reddish brown. *Leaves* paripinnate, 6–16 cm. long and 5–8 cm. broad, glabrous or pubescent; stipules ovate, acuminate, 4–5 mm. long, caducous; petiole 5–25 mm. long; rhachis slightly channelled, often narrowly winged, especially towards the apex; leaflets 4–7 pairs, opposite or subopposite, sessile or with petiolules up to 2 mm. long, elliptic, oblong, ovate-oblong, ovate or obovate, 2.5–8.5 cm. long and 1.2–4 cm. broad, obtuse or rounded at the base, oblique, often with a gibbosity near the base, rounded at the apex, rarely mucronate, the upper leaflets the largest. *Inflorescence* a congested panicle, subglobose, 6–13 cm. in diameter, usually cauliflorous on older branches, occasionally borne terminally; inflorescence branches woody, abbreviated, glabrescent or tomentulose. *Bracts* ovate, 6 mm. long and 4 mm. wide, early caducous. *Flowers* deep red, pedicellate; pedicels 5–11 mm. long, glabrous or pubescent. *Calyx* deep red, leathery; tube obconical to subcampanulate, glabrous or sparingly pubescent, 3–5 mm. long; lobes 4, subequal, ovate to elliptic, 8–12 mm. long and 4–6 mm. broad, concave, the largest often emarginate. *Corolla* reduced to 5 linear filaments 2–6 mm. long, or 1–4 petals developing per flower, in which case petals red, spatulate to oblanceolate, clawed, 1.3–1.8 cm. long and 3–6 mm. broad. *Stamens* 10, connate at the base for 1.5–3.5 mm., forming a staminal tube which is entire, or split at one side; filaments linear, red, 1.8–2 cm. long, exceeding the calyx by 8–10 mm.; anthers elliptic, 2–2.5 mm. long. *Ovary* oblong, compressed, 4–6 mm. long and 2 mm. broad, tuberculate along the margins, stipitate; stipe 4 mm. long, straight, adnate to one side of the calyx tube; style terete, 9–11 mm. long; stigma capitate. *Pod* as in generic description, 5–11 cm. long and 3.5–4 cm. broad. *Seeds* ovoid or oblique, flattened, 10–14 mm. long, with a large, compressed, yellow aril.

TYPE.—Gueinzus 33, Port Natal, at the Stockholm Natural History Museum Herbarium. Types of synonyms: var. *pubescens* Burt Davy, Junod 635, Shilouvane, Transvaal; *S. rogersii* Burt Davy, Rogers 21246, Waterpoort, Soutpansberg District; *S. semireducta* Merxm., syntypes, Dehn 42, Rusape, and Wild in Salisb. Hb. 40239, Rusape, S. Rhodesia.

SOUTHERN RHODESIA.—Salisbury: *Brain* 9503; *Eyles* 844; *Twentydales*, *Wild* 4122. Umtali: *Chase* 1602.

MOCAMBIQUE.—Maputo: *Gomes e Sousa* 3854; near Salamanga, *Hornby and Pedro* 19.

TRANSVAAL.—Soutpansberg: Waterpoort, *Rogers* 21246 (isotype of *S. rogersii*, PRE); *Smuts and Gillett* 3149; *Pole Evans* H18282; *Smitsdrift*, *Burt Davy* 1697; *Wylliespoort*, *von Wolff* in T.M. 34861; *Codd* 4443, 4444; *Erens* s.n.; *Repton* 689; 28 miles west of Louis Trichardt, *Codd* 4442; Soutpan, *Galpin* 15143; Dongola area, *Codd* 4332a, 4453; Punda Maria area, *Rowland Jones* 23. Pietersburg: *Blauwberg*, Leipzig Mission, *Leipoldt* 2; *van Dam* in T.M. 23998; *Tscheuschner* in T.M. 29521; *Munnik*, *van Rensburg* s.n.; near Boyne, *Gerstner* 5376; Chuniespoort, *Obermeyer* in T.M. 34676, 34677; *Pole Evans* H19450; *Repton* 451. Letaba: Shilouvane, *Junod* 635 (isotype of var. *pubescens*, PRE); *Tzaneen*, *Pole Evans* H15819; *Altenroxel* in Hb. *Burt Davy* H3065; *Charter* in Hb. *Burt Davy* H3182; between *Munnik* and *Duivelskloof*, *Mogg* in Hb. *Burt Davy* H10684; near *Leydsdorp*, *Dist. Forest Off.* LD5; *Codd* 1672. Waterberg: 25 miles N.W. of Vaalwater, *Smuts* 351; near *Hermanusdoorns*, *Codd* 1005, 4426. Potgietersrus: *Leendertz* 1249; *Pruizen*, *Burt Davy* 2218; Pyramid Estate, *Galpin* 9135. Lydenburg: *Excelsior*, *Keet* 1110; *Sekukuniland*, *Schoonoord*, *Barnard* 115; *van Warmelo* 12; *Lulu Mts.*, *Mogg* 16975; 10 miles S.W. of Penge Mine, *Codd* 6695. Pilgrim's Rest: *Bushbuckridge*, *Pritchard* 43. Nelspruit: *Kruger National Park*, near *Skukuza*, *Letty* 96; *Codd* 4386; 18 miles N. of *Malelane*, *Codd* 4375; *Numbi*, *van der Schyff* 63; *Crocodile Bridge*, *van der Schyff* 3893. Barberton: *Thorncroft* 3010; *Hyslops Creek*, *Thorncroft* 727 (NH); *Lampogwane River*, *Galpin* 653; *Malelane*, *Pole Evans* H15767; *Louws Creek*, *Wager* in T.M. 22442; *Kaapmuiden*, *Prosser*; *Greenheart*, *Oranje* in Hb. *Burt Davy* 1124.

SWAZILAND.—Near Mbabane, *Rodin* 4534; between *Bremersdorp* and *Stegi*, *Miller* S/69; *Lebombos*, *Hornby* 2832.

NATAL.—Zululand: *Watt and Brandwyk* 1004; *Curson* s.n. Ubombo: near *Mkuzi*, *Galpin* 13342; s.n. (BOL); *Utrecht*: *Thode* A1287. Estcourt: *West* 324. Msinga: *Fabene Halt*, *C. A. Smith* s.n. Hlabisa: *Hluhluwe Game Reserve*, *Ward* 1499 (NH). Lower Umfolosi: *Umhlatuzi*, *Lawn* 508 (NH). Mapumulo: *Darnall*, *Schmidt* 55, NH37707 (NH). Durban: *Gueinzus* in SAM 15632; *Medley Wood* 9943; *MacOwan* in Hb. *Bolus* 1106; *Rogers* 1457; *Inanda*, *Medley Wood* 1367. Umzinto: *Dumisa*, *Rudatis* 686; *Umkomaas River*, *Allan* in Hb. *Norm.* 70; *Lansdell* in NH 37519. Port Shepstone: *Lower Umzimkulu*, *Medley Wood* 9575 (NH). No locality: *Flanagan* s.n.; *Sanderson* s.n.

CAPE.—Tabankulu: near *Welsh Bridge*, *Story* 4211; *Acocks* 13844. Umtata: *Commonage*, *Miller* B/95. Ngqeleni: *Buntingville*, *Conservator of Forests* 2058.

Of the four species recognised in southern Africa, *S. brachypetala* has the widest distribution, occurring in dry savannah and scrub forest in Southern Rhodesia, Mocambique, Transvaal, Swaziland, Natal and extending as far south as Umtata and Ngqeleni in the eastern Cape Province. As here envisaged, the species exhibits a certain amount of variation in characters such as pubescence, number and size of leaflets, and degree of suppression of the petals. Plants from the extremes of the distribution range may give the impression of being distinct, but an examination of ample material shows a series of intermediates, making the separation of even varieties of doubtful value.

Of the above variable characters, pubescence has the least significance, showing complete gradation from a persistent tomentum to a practically glabrous condition. Burt Davy's var. *pubescens*, which is equal to typical *S. brachypetala* in every other respect, is therefore not upheld.

S. rogersii Burt Davy, based on Rogers 21246 from Waterpoort in the Soutpansberg, was separated mainly on the grounds that two or three normal petals develop in each flower while, in typical *S. brachypetala*, the petals are all reduced to linear filaments. In all other respects, the two species are practically identical. The significance of the petal character is a problem that has been given particularly careful attention both in the field and in the herbarium. In the first place, the suppression of all petals is not invariably complete even in typical *S. brachypetala*, as will be seen from the description given by Wood (Natal Plants, 4: 390) and from reference to Table I. Further evidence bearing on the question was gathered in the Soutpansberg, the type area of *S. rogersii*. Here most of the trees examined showed the development of one to three normal petals per flower but, growing among these trees, and indistinguishable from them, are trees whose flowers have all the petals suppressed as in typical *S. brachypetala*. The reasons for the suppression or non-suppression of petals on adjacent and otherwise identical trees are not known, but the character appears to be constant for a particular tree. Another fact emerging from this study is that the tendency to produce normal petals becomes more marked toward the northern limits of the species. This is indicated by Table I which summarises the examination of 54 herbarium specimens.

TABLE I.
Relation between Geographical Distribution of *Schotia brachypetala* and number of Normal Petals per Flower.

Region.	Number of Specimens Examined.	Number of Normal Petals per Flower.		
		0.	1.	2-4.
Eastern Cape.....	3	2	1	—
Natal.....	15	14	1	—
Central and Eastern Transvaal.....	21	19	2	1
Soutpansberg and Blauwberg.....	12	2	1	9
Southern Rhodesia.....	3	—	—	3

It is of interest to note that no case has yet been found of a flower with 5 normal petals. On the basis of the petal character alone, it is evident that a separate species or even variety cannot be upheld, and the conclusion is unavoidable that *S. rogersii* must be relegated as a synonym.

The status of *S. semireducta* Merxm. is not as easy to decide. Most of the specimens seen from Southern Rhodesia show a combination of deviations from typical *S. brachypetala*. There is the development of 2 to 4 normal petals per flower and, in addition, most specimens differ in having up to six or, rarely, seven pairs of leaflets, which are often more markedly and persistently tomentose.

In describing his species, Merxmuller contrasts it with *S. brachypetala*, *S. brachypetala* var. *pubescens* and *S. transvaalensis*, but he fails to consider *S. rogersii*. Thus the character which he stresses most, namely, the development of two or three petals per flower, has already been used as a distinguishing feature for the separation of a species and, on the basis of the findings here reported, the character must be considered to have practically no taxonomic value in this particular group. The remaining characters to consider in evaluating the status of *S. semireducta* are number

of leaflets and pubescence. Of these, pubescence has already been shown to have the least meaning and, in fact, one specimen from Southern Rhodesia, Brain 9503, has leaves and twigs that are glabrous, though the inflorescence branches are pubescent. Regarding number of leaflets, typical *S. brachypetala* has almost consistently 4 pairs or, rarely, 5 pairs. In the Transvaal, some specimens have up to 6 pairs, though this is exceptional and the usual number is 4 pairs. In Southern Rhodesia the specimens appear normally to have 6 pairs, rarely 5 or 7 pairs. Thus there is a progressive change from south to north and the three main characters deviating from typical *S. brachypetala* are found in *S. semireducta*, though the combination is not yet constant. This is, no doubt, an evolutionary trend and, on available evidence, it is considered that the differences are not sufficient to sustain *S. semireducta* as distinct.

S. brachypetala is an attractive, round-topped tree usually about 25 to 35 feet high, though known to grow up to 45 or 50 feet. As pointed out by Wild, Rhod. Agr. Journ. 49: 3-9 (1952), it is often associated with termite mounds while, in the Lowveld, it is one of the species found on river banks. It is practically evergreen, the leaves usually being shed for a short while immediately before the clusters of red flowers appear in October.

5. *S. latifolia* Jacq. X *S. afra* (L.) Bodin, Form A.

S. stipulata Ait., Hort. Kew. ed. II. 3: 33 (1811); DC., Prod. 2: 508 (1825); E. & Z., Enum. Pl. Afr. 261 (1836).

S. speciosa var. *ovalifolia* Harv. in Fl. Cap. 2: 274 (1861).

FIGS. 9 and 11.

Shrub or small tree. *Leaflets* 3-5 pairs, 1.7-4.2 cm. long and 1.2-2.3 cm. broad, sessile, elliptic-oblong to obovate, oblique, base rounded to cuneate, apex obtuse or acute, often mucronate. *Inflorescence* terminal, more or less lax; inflorescence branches semi-woody, patent. *Pedicels* 1-5 mm. long. *Calyx* leathery; tube 3-4 mm. long; lobes 8-9 mm. long and 5-6 mm. broad, concave. *Corolla* reddish; petals 5, 12-13 mm. long and 3-4 mm. broad. *Stamens* 10, free to the base. *Ovary* oblong, compressed, 4-5 mm. long, stipitate. *Pod* as in generic description. *Seeds* ovoid, flattened, pale brown, with a yellow aril.

CAPE.—Uitenhage (?): "Between Winterhoeksberge and Zwartberge", Ecklon and Zeyher 1700 (SAM); "Zwartkopsriver near Addo", Zeyher 2446 (SAM). Port Elizabeth: Redhouse (on Swartkops River), Paterson 662 (GRA).

The description given above is based mainly on Paterson 662, which is complete with leaves, flowers and fruits. Superficially, this specimen looks like *S. latifolia*, with its 3-5 pairs of leaflets which vary considerably in size, its terminal, relatively lax inflorescence and arillate seeds. However, it also possesses characters which normally belong to *S. afra*, namely, pedicels 4-5 mm. long, calyx tube 4 mm. long and stamens free to the base. There is thus evidence to suggest that it is of hybrid origin.

Two further specimens in the South African Museum Herbarium show a resemblance to Paterson 662. These are Ecklon and Zeyher 1700 and Zeyher 2446 which are remarkably similar to one another and, in spite of the different localities given, lead to the suspicion that they may be from the same gathering. They consist of two twigs and one twig, respectively, having immature inflorescences which are terminally placed and relatively lax. The leaflets are in 3-5 pairs, intermediate in size between *S. afra* and *S. latifolia* while, as far as can be determined from the flower buds, the stamens appear to be free.

It seems that the name *S. stipulata* Ait. is applicable to this small group of specimens intermediate between *S. afra* and *S. latifolia*. This supposition is based on information supplied by Mr. D. J. B. Killick, our Liaison Officer at Kew, who was asked for a description of the type of Aiton's species, if it could be found. Aiton based his species, published in 1811, on a plant cultivated at Kew and said to have been grown from seed supplied by Francis Masson in 1794. The only specimen found that comes close to Aiton's description is one in the British Museum, labelled "Hb. Kew 1808" with no further details. Two names are on the sheet: "*S. macrophylla*" and "*S. stipulata*". It has 4 or 5 pairs of large leaflets, 2.5–3.0 cm. long and 1.2–1.6 cm. broad, conspicuously mucronate, while the rhachis is distinctly winged (both these conditions are found in the juvenile state of all *Schotia* species). The pedicels are short, about 1 mm. in length, but the flowers are larger than those of *S. latifolia* and the stamens are free to the base. The plant has conspicuous stipules 7 mm. long and 4 mm. wide but, as very few herbarium specimens have stipules, the significance of this character cannot be judged. It may be inferred that this is probably Aiton's type.

Masson travelled with Thunberg as far east as the Uitenhage District and was at the Swartkops River, more or less the locality of Zeyher 2446 and Paterson 662, on 15th December, 1773 (Phil. Trans. Roy. Soc. Lond., 66: 297, 1776). It would have been useful corroborative evidence if Masson had made a herbarium specimen corresponding to the seeds supplied to Kew, but no such specimen has been found. Three *Schotia* specimens collected by Masson are at the British Museum; two of these are clearly *S. afra* while the third, endorsed in pencil "*S. macrophylla*" is equal in every respect to *S. latifolia*.

In Flora Capensis, Harvey reduced *S. stipulata* Ait. to *S. speciosa* var. *ovalifolia* citing, in addition, "E. & Z. 261". No *Schotia* specimen with this number has been found and it is thought that Harvey cited, by mistake, the page number of Ecklon and Zeyher's Enumeratio because, on page 261 of that work, is listed "1700. *S. stipulata* Ait."

To give this small group of intermediate specimens specific rank is clearly not justified. To place them as a variety of either *S. afra* or *S. latifolia* would be equally illogical as it would mean an undesirable widening of the conception of one of these species. It is therefore preferred to keep them apart as an "intermediate" or "hybrid" form, as has also been done with the specimens listed under the following heading.

6. *S. latifolia* Jacq. X *S. afra* (L.) Bodin, Form B.

FIG. 10.

Shrub or small tree. *Leaflets* 4–10 pairs, 0.9–2.5 cm. long and 4–10 mm. broad, oblong to elliptic-oblong, rounded at the base, often oblique, usually obtuse at the apex, sometimes mucronate. *Inflorescence* usually on abbreviated side branchlets, more or less glomerate; inflorescence branches abbreviated, semi-woody. *Pedicels* 3–3.5 mm. long. *Calyx* leathery; tube obconical, 3–4 mm. long; lobes 7–9 mm. long and 5–7 mm. broad, concave. *Corolla* pink to reddish; petals 5, 13–17 mm. long and 3–4.5 mm. broad. *Stamens* 10, united at the base for 1–3 mm. with the sheath split open on one side. *Ovary* oblong, compressed, 4–5 mm. long, stipitate. *Pod* as in generic description. *Seeds* ovoid, flattened, pale brown, with a small or large aril.

CAPE.—East London: Amabele Siding, Flanagan s.n.; Bonza Bay, East London Museum in NBG. Bathurst: Lower Kariega Valley, Acocks 13280; Port Alfred, R. Verdoorn 10. Alexandria: Between Alexandria and Grahamstown, Burt Davy 12130.

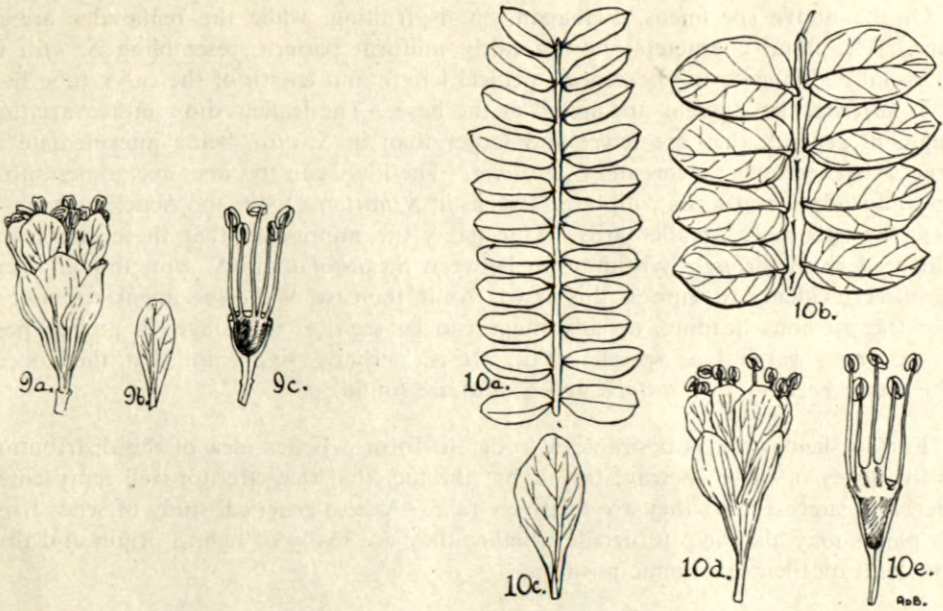
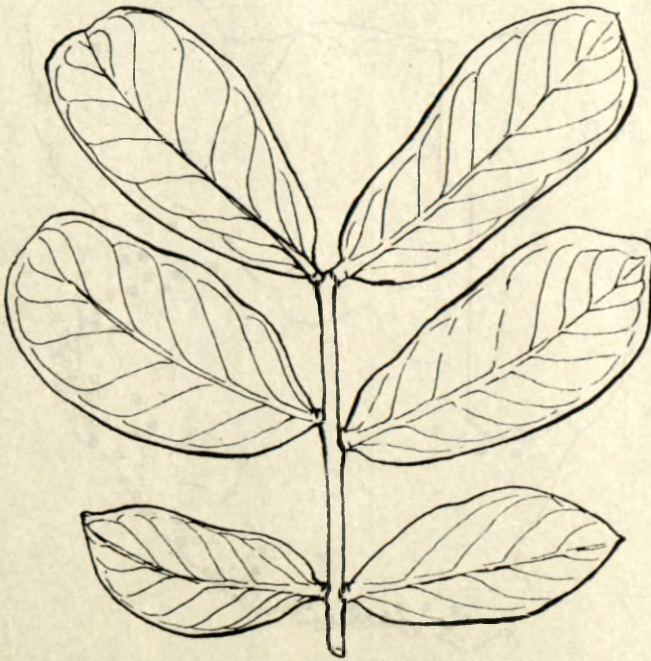


FIG. 9.—Hybrid Form A, a, flower; b, petal; c, longitudinal section. FIG. 10.—Hybrid Form B, a and b, leaves; c, petal; d, flower; e, longitudinal section. All life size.



ADB.

FIG. 11.—Hybrid Form A, leaf, life size.

Of the above specimens, Flanagan s.n. is fruiting, while the remainder are in flower. The floral characters show a fairly uniform pattern, resembling *S. afra* in their usually glomerate inflorescences, pedicel length and length of the calyx tube but, like *S. latifolia*, the stamens are united at the base. The leaflets show more variation though, in general, they are fewer and larger than in *S. afra*, being intermediate in character between this species and *S. latifolia*. The Flanagan specimen has tomentulose twigs and leaflets, and seeds with large arils as in *S. latifolia*, while the Acocks specimen has seeds with much smaller arils. One gains the impression that these characters could be derived through hybridisation between *S. latifolia* and *S. afra*, though there is no direct evidence to support this view. As in the case of the specimens considered under the previous heading, no advantage can be seen, at this stage, in giving these few specimens varietal or specific rank. It is, perhaps, significant that they occur in the area where both *S. latifolia* and *S. afra* are found.

Further field work is desirable in order to form a better idea of the distribution and frequency of these aberrant forms, but the fact that they are not well represented in herbaria suggests that they are relatively rare. A cyto-genetical study of seeds from such plants may also help to decide whether they are really of hybrid origin and thus throw light on their taxonomic position.

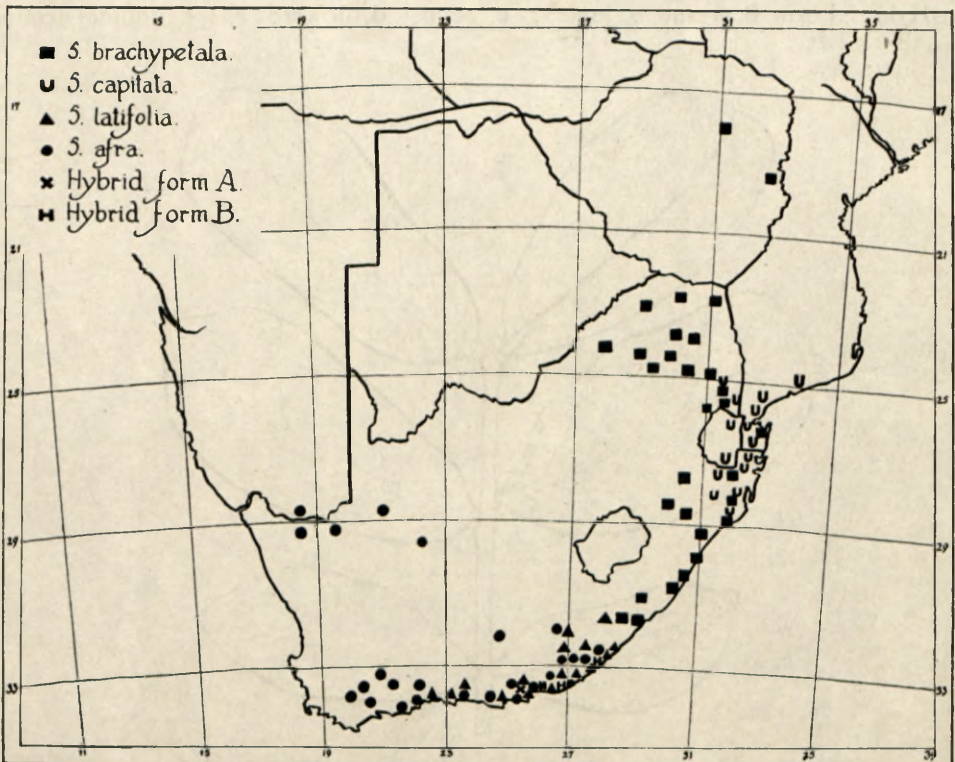


FIG. 12.—Map showing distribution of *Schotia* species in southern Africa.

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