

B O C A G I A N A

Museu Municipal do Funchal

Madeira

20. III. 1975

No. 38

CONTRIBUTION TO THE KNOWLEDGE OF THE ORCHIDS OF MADEIRA AND THE AZORES

By G. Frey and C. H. C. Pickering

PREFACE (By G. Frey)

Thanks to the kind assistance of Peter Hunt, of the Royal Botanic Gardens, Kew, I got in touch with Harold Pickering, in Madeira, who sent me the live material which forms the basis of this paper. In June 1970 I had the opportunity of visiting Madeira and the Azores together with Pickering.

Orchis scopulorum is a very interesting species, as it was first discovered — quite accidentally — in the mountains of Madeira by G. E. Maul as recently as 1959. In 1960 Pickering presented dried material of it at the 3rd World Orchid Conference; in 1961 he handed over this material together with some living specimens to Dr. V. S. Summerhayes, at the Royal Botanic Gardens Kew, who then in the same year described it as a new species. The very rich material being at my disposal made it possible for me to observe, describe, paint and photograph it. In the following paper I have recorded my observations and sketches and their descriptions.

MADEIRA

Orchis scopulorum Summerhayes *

Figs. 1, 2, 8a.

Stout perennial, 55-65 cm. «Tubers» globular or oblong-ovate, 3-3 1/2 cm. or even up to, 4 1/2 cm. long, papillose. Roots stout, ca. 1 1/2-2 mm. thick and 6-9 cm. long, papillose. Sheath-leaves 2-4, mem-

*) 1961. A new orchid from Madeira. *Bol. Soc. Brot.* 2. Sér. 35: 55-57.

braneous, with brown tips. Stem-leaves 4-5, stout, erect, somewhat shiny, green ovate-lanceolate, with the greatest width in their lower third, 3-3.2 cm. broad and 11-15 cm. long, all with a sheathing base; uppermost one often violet tinged. Leaf-structure: middle-nerve prominent, several parallel-nerve and between them several fine, irregular nerves. The leafless part of the stems from the uppermost leaf to the inflorescence 7-8 1/2 cm. long, slightly grooved and often violet tinged. Inflorescence 7-8 1/2 cm. long, 6-7 cm. broad, not elongated. Flowers compact and irregularly arranged.

Flowers: Lateral segments of outer perianth 3-nerved, oblong-ovate, in the lower third 5-6 × 10-12 mm. extended, never curved backwards. Median segment oblong-ovate, 4 1/2 × 11 mm. erect. Lip large, 1.4-1.5 mm. trilobed, extended forwards in a slight curve. Lateral lobes somewhat dentate, broad, nearly rhombic; median lobe bipartite, extending forwards, faintly dentate. Flower-colour bright lilac-pink. A white zone of oblong-rectangular shape is spread from base to the foremost third of the lip, supplied with small purple spots in 4-6 rows. Pollinia violet-olive. Spur remarkably small and short, straight; only 1/3 of the length of the ovary (1/2 × 6-7 mm.). Ovary in the lowest flower about 2.5 cm. long, in rest of the flowers 1.7-2.2 cm., stout, twisted and violet-tinged. Bracts as long as, or rarely longer, than ovaries, membranaceous and violet-tinged (3-6 × 15-22 mm.).

Madeira, central mountains, at about 1800 m. The plants grow in humid soil on small rock-terraces, in clumps. As far as known this species is distributed over a small area often on inaccessible basalt-rocks. In association with *Armeria maderensis*, *Saxifraga pickeringii*, *Anthyllis lehmanniana*.

Dactylorhiza foliosa (Verm.) Soó

Syn.: *Orchis foliosa* Soland. ex Lowe non Swartz, *O. maderensis* Summerh. nom. nov. et superfl. [see *Bot. Mag.* Curtis 50-74, *O. maderensis*, in cultivation in England].

Figs. 1, 3.

A stout plant, 40-70 cm. Tubers large, divided, 3-4-palmately lobed, single lobes ending in long apex (up to 10 cm.). Roots stout and somewhat papillose. Base of stem surrounded by 2-4 membranaceous sheath-leaves, upper one especially well developed. Lowest stem-leaf small, oblong-ovate, stem with leaves up to the inflorescence. Lower stem-leaves 12-20 × 2-3 cm. linear-lanceolate with greatest width in the middle; upper 3-4 leaves linear-lanceolate. All bracts linear-lanceolate, longer than ovaries, shining-green, on margins often violet. Ovaries slightly twisted and violet-tinged. Flowers large, segments of outer perianth ovate-lanceolate, 3-nerved, median segment above the slightly double-bent segments of inner perianth. Inner perianth-segments a little

smaller than outer ones. Pollinia olive-violet, often orange-rose-tinged; lip 3-lobed, broad, never folded, apex of the lateral lobes never shorter than apex of the median one. Lips often without markings, but sometimes with some lines and dots at base or with characteristic annular markings (like *D. maculata*).

Madeira: *D. foliosa* prefers moist, shady places under shrubs, but also grows among grass along the levadas at 500 m. yet it is sensitive to direct sunshine. This very handsome orchid is in fact a Madeira treasure and should be protected everywhere, even if it is still rather abundant in many localities. Endemic.

Goodyera macrophylla Lowe

Syn.: *Epipactis m.* Eaton, *Peramium m.* Soó, *Orchioides m.* O. Ktze. [See Latin description in *Primitiae et Navitiae Faunae et Florae Maderae et Portus Sancti* 1851, by R. T. Lowe and Portuguese Flora do Archipelago da Madeira by C. A. Menezes 1914.]

Figs. 4, 5, 8c.

For many years botanists have been waiting to see this rare and interesting plant in flower. Since Lowe deliniated it in 1830, one of us (Pickering) had once seen a poor specimen in 1959, but so slug-eaten as to be useless for study. Endemic to Madeira, and well nigh extinct, this orchid is considered to be a relict species from a former Atlantic vegetation. We possess a living plant in Switzerland, and know of two others, but none have flowered though they thrive well in cultivation. However, the Forestry Service in Madeira at last succeeded in flowering a single specimen in their collection of indigenous plants at Ribeiro Frio in Oct. 1973, and we have drawn it from a photograph and can now describe the flower in greater detail from a specimen in alcohol.

An upright spike springs from the centre of the basal leaves to a height of 50 cm., bearing a loose cylindrical inflorescence (*not* secund as Lowe stated), 19 cm. long, of over 60 flowers, opening from the base in series over a period of 8 weeks, during which the basal leaves die back. Each flower measures approximately 1.25 cm., is a dirty white in colour, bell-like, scentless, outer perianth pubescent, the two upper inner segments arch to form a wide helmet, the lip is entire, lanceolate, fleshy, concave; 2 pollinia linear clavate, and bear two remarkable little horns ca. 1 mm., the floral divisions are arched, almost at right angles to the swollen ovary which runs into a short stalk, which is much shorter than the narrow bracts which are situated on the side, and appears to be longer than ovary and perianth together. All five segments and the lip are of equal length. There is no spur.

The rhizome is stout, 1 cm. in diam., rooting laterally and below. Roots stout, ca. 8 mm., with corky bristle-like thickenings on the surface near the base.

The stem is smooth, green, and round; each leaf cast produces a thickened ring, and the stem is prolonged 2-3 cm. towards the next withering leaf. 6-8 large leaves 12-15 × 3-5 cm. are carried, deep green, oblong-elliptic, acute, somewhat wavy, network of smaller veins are distinct. Above these basal leaves large bract-like leaves extend alternately up the stem to the inflorescence.

This species prefers moist shady places in ravines on the north side of the Island. Fl. Aug. - Oct.

Gennaria diphylla (Link) Parl.

Syn.: *Satyrium d.* Link, *Orchis cordata* Willd., *Herminium c.* (Willd.) Lindl., *Peristylus c.* (Willd.) Lindl.

Figs. 1, 6, 8d.

Plant 15-30 cm., tubers brown, oblong. Roots few, slender. Sheath-leaves 2, upper one covering about 3 cm. of stem. Stem with 2 suborbicular-cordate leaves placed in a horizontal position, the lower one in the middle of the stem, upper one in its upper third. Very characteristic of this plant is the yellow-green, secund spike.

Outer segments of perianth small, oblong-elliptic; segments of inner one longer and broader than segments of outer one. Lip 3-lobed. lateral lobes small, acute, median lobe distinctly broader and longer. Bracts nearly as long as ovaries. Spur short and curved downwards, somewhat constricted in the middle.

This species occurs in the West Mediterranean area: Sardinia, Algiers, Morocco, Iberian Peninsula, Madeira with Porto Santo Island and the Canary Islands. It prefers shady places in the evergreen forests. Flowering time in Madeira is January-March. It is one of the commonest orchids of Madeira, and the only one recorded in Porto Santo, 240-250 m. No orchids have been found on the Desertas.

Neotinea intacta (Link in Schrad) Rchb. f.

Syn.: *Orchis i.* Link in Schrad., *Tinea i.* (Link) Boiss., *Aceras densiflora* Boiss.

Figs. 1, 7, 8e.

Plant slender, 10-25 cm. Tubers ovoid, the new one often at the end of a long, root-like prolongation. Lower part of stems closely surrounded by 1-2 brownish sheath-leaves. Stem-leaves 2-3, oblong-ovate or broadly ovate-lanceolate, deep green and often reddish-tinged and with a few purple spots. Upper leaves (1-2) surround stem, often almost reaching the spike. Several small flowers in a loose or dense, somewhat secund spike. Outer and inner perianth form a pointed helmet, which is whitish-green or whitish-pink coloured on the outside.

Lip 3-lobed, directed downwards. Lateral lobes usually distinctly shorter than the somewhat broader median one; base of the lip and especially the median lobe with a few violet lines and spots; however the lip is highly variable. Bracts small, about $1/5$ of the length of the capsule. Spur stunted.

The Madeira plant varies somewhat in growth-form and in number of flowers. It occurs sparingly in Madeira on humid slopes in the evergreen forest-belt. It is distributed all over the Mediterranean region, in W. Ireland and the Canary Islands. Mar. - Ap. - May.

AZORES

Serapias cordigera L.

Figs. 10, 14a.

By Kell & Schlecht (1928, 1933) still given as a distinct species: *S. azorica* Schlecht. The chief characteristic of *Serapias azorica* is said to be the broader Epichilium rather than the Hypochilium. On the islands of São Miguel, Graciosa, São Jorge and Pico we observed large colonies of this plant; here the plants have a more compact growth than their relatives in Italy, but the afore-mentioned character varies so much from one plant to another that we think *S. azorica* is in fact identical with *S. cordigera*. The changes in colour of the normal dark-redbrown flowers seem to me more interesting. a) The flesh-coloured form: these plants have a compact growth and the \pm unfolded lips are very striking; hairy zones of the lips bear long, bright hairs. b) Still more striking is the white-flowered form: this plant is always very compact, ca. 10-18 cm. high; the leaves are oblong-lanceolate and placed close to each other up to the flowers. Flowers small, outer perianth segments whitish-cream with olive-green nerves, inner perianth segments whitish with green «Speculum» at base. Connective-process green, Epichile concave, tongue-shaped and extended forward, not spread. The hairs are white and dense. Bracts are longer than ovaries, whitish-green, and with dark-olive green nerves. São Miguel, São Jorge and Pico; on Graciosa only «normal» plants have been observed. In about 100 plants 20 specimens belong to the flesh-coloured type, and only 6 are of the whitish type. May-June. Recorded from the whole of the archipelago except Flores and Corvo.

Platanthera micrantha (Hochst. ex Seub.) Schlecht.

Syn.: *Habenaria micrantha* Hochst. ex Seub.

Figs. 9, 11, 14b.

«Pseudo-bulbs» rope-like, acute, whitish-yellow. Bracts 1-2. Leaves bright yellow-green, obovate-ovate, usually 2-4. Lateral segments of

outer perianth ovate, bright yellow-green, spread sideways, middle segment broad-circular. Inner perianth-segments small, ovate. Lips from broad base extending forwards and ending in a rounded tip. Bracts lanceolate, shorter than or as long as the ovaries (sometimes also longer!). Spur short, curved downwards, about 1/4 of the length of the ovary. Populations exist of this plant with more slender growth and smaller flowers, with only two basal leaves, or the stem sometimes with a small leaf in its upper part (f. *gracilis*) (Figs. 12, 14 b *). Growing among mosses in shady, steep slopes of crumbled volcanic soil, e. g. in large colonies on São Miguel at about 800 m.

On Faial it is now very rare in the main-crater owing to grazing. On Pico it grows in old bogs, even on moss-covered trunks, and on overgrown, crumbled rocks; also found in pastures together with *Serapias cordigera* at about 800-1000 m. but very scattered. Recorded from the whole archipelago. Endemic.

Platanthera azorica Schlecht.

Syn.: *Habenaria longibracteata* Hochst., *P. micrantha* var. *longibracteata* Soó.

Figs. 10, 14a.

Plant 30-40 cm. high, with whitish «tubers». Bracts 2-3. Leaves bright-green, lanceolate-obovate, 3-5. Stems bearing leaves up their whole length, the leaves spirally arranged. Lateral segments of outer perianth oblong-ovate, whitish-green, directed downwards, nearly touching each other under the lip; median segment from a broad base, sub-orbicular. Segments of inner perianth whitish-green, triangular. Lip tongue-like and always curved upwards. Bracts lanceolate, never shorter than ovaries. Spur as long as or longer than ovaries, thin and slender, curved downwards.

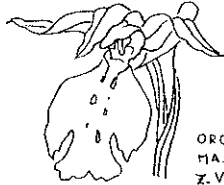
São Jorge, at about 500 m. growing in wet places, in small, mossy ravines, often hidden in low thickets with only the upper part of the plant visible. A rare plant. Recorded from Santa Maria, S. Miguel, S. Jorge, Pico and Flores.

Differences between *P. azorica* and *P. micrantha*:

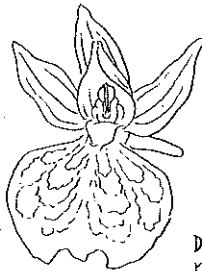
Colour:	Perianth whitish	yellowish-green
Bracts:	As long as or longer than ovaries	shorter than or as long as ovaries.
Lateral segments of outer perianth:	Oblong-ovate directed downwards	ovate, extended
Lip:	Tongue-like, curved upwards	curved downwards
Spur:	As long as or longer than ovary, slender.	1/3 - 1/4 of the ovary
Height:	25-40 cm.	12-30 cm.



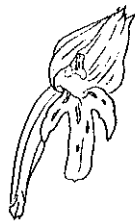
ORCHIS SCOPHYLLUM.



ORCHIS
MASCULA
Z. VERGLEICH
T. SCHNEIZ.



DACTYLORHIZA
MADERENSIS.



NEOTINEA INTACTA.



GENARIA
DIPHYLLA



Fig. 1.



Fig. 2. — *Orchis scopulorum* Summerhays



Fig. 3. — *Dactylorhiza maderensis* Soland



Fig. 4. — *Goodyera macrophylla* Lowe



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Fig. 5. — *Goodyera macrophylla* Lowe



Fig. 5. — *Gennaria diphylla* Parl.

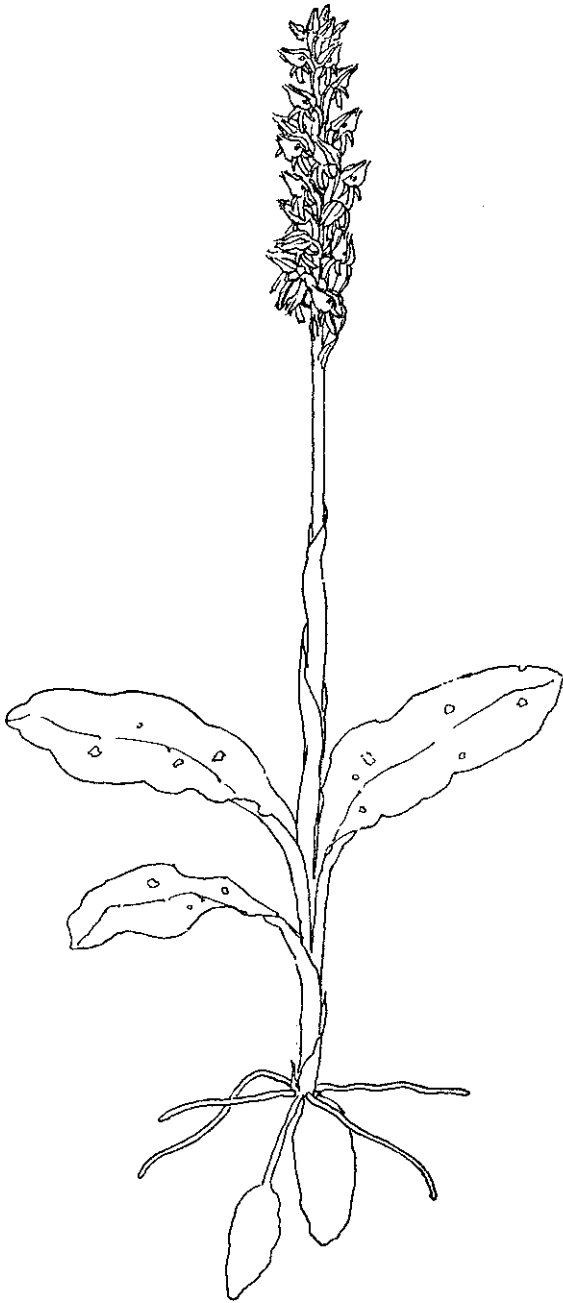


Fig. 7. — *Neotinea intacta* Rchb. F.

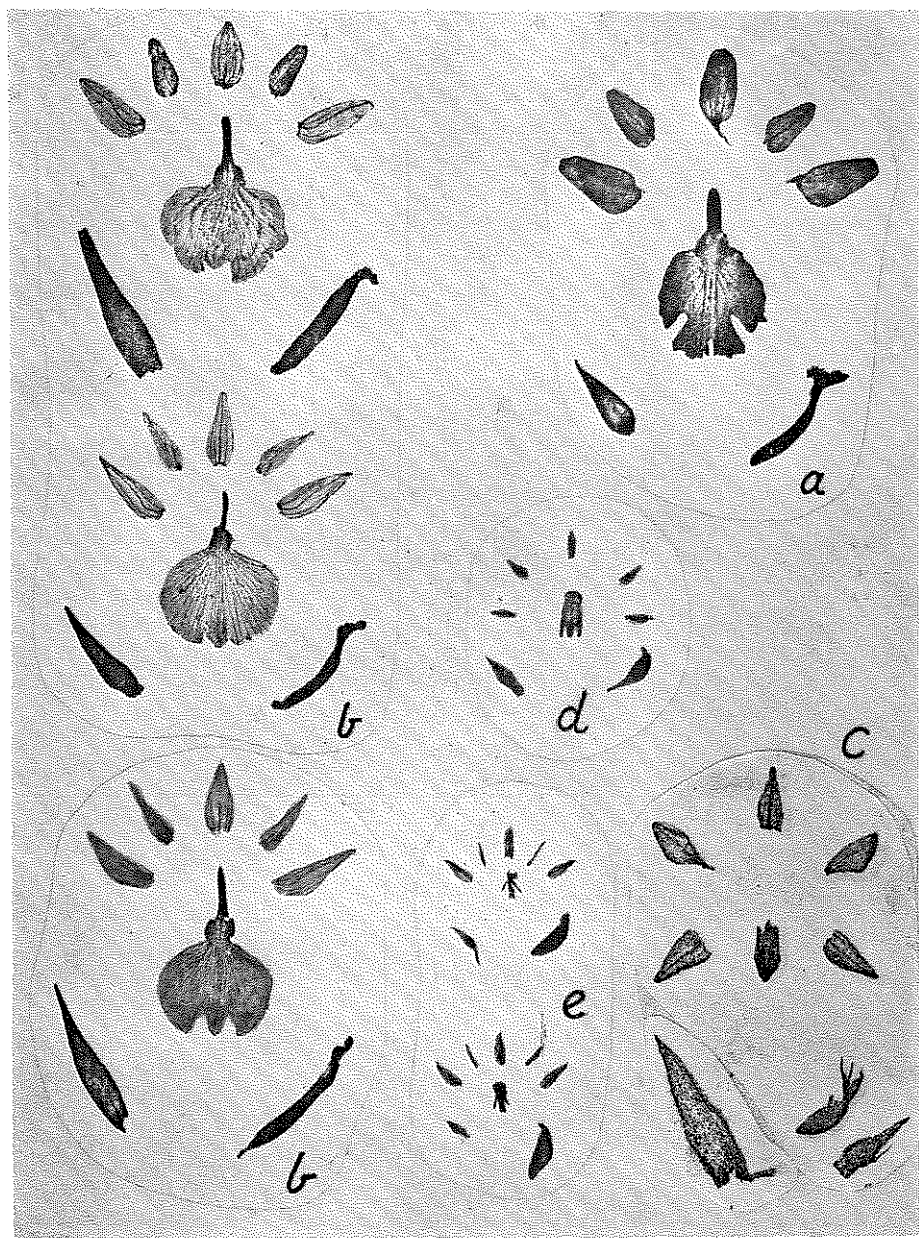
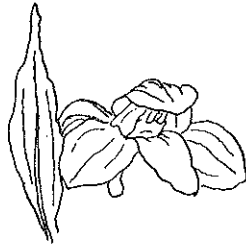
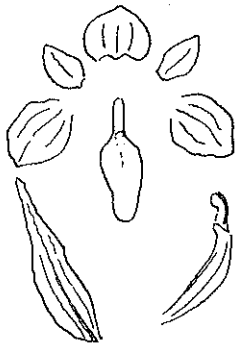
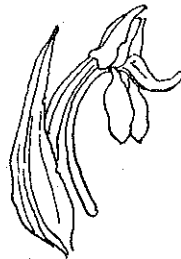


Fig. 8. — Analyses of Madeiran Orchids: a) *Orchis scopulorum*; b) *Dactylorhiza foliosa*; c) *Goodyera macrophylla*; d) *Gennaria diphylla*; e) *Neotinea intacta*.



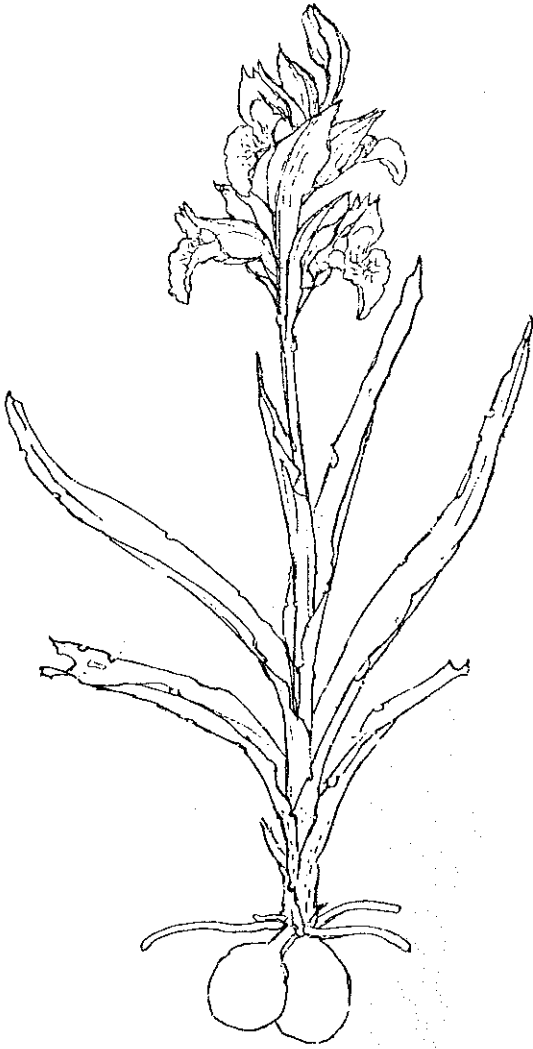
PLATANTHERA MICRANTHA SCHEUCHTER



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PLATANTHERA AZORICA SCHEUCHTER

Fig. 9.



G.F.

Fig. 10. — *Serapias cordigera* L.

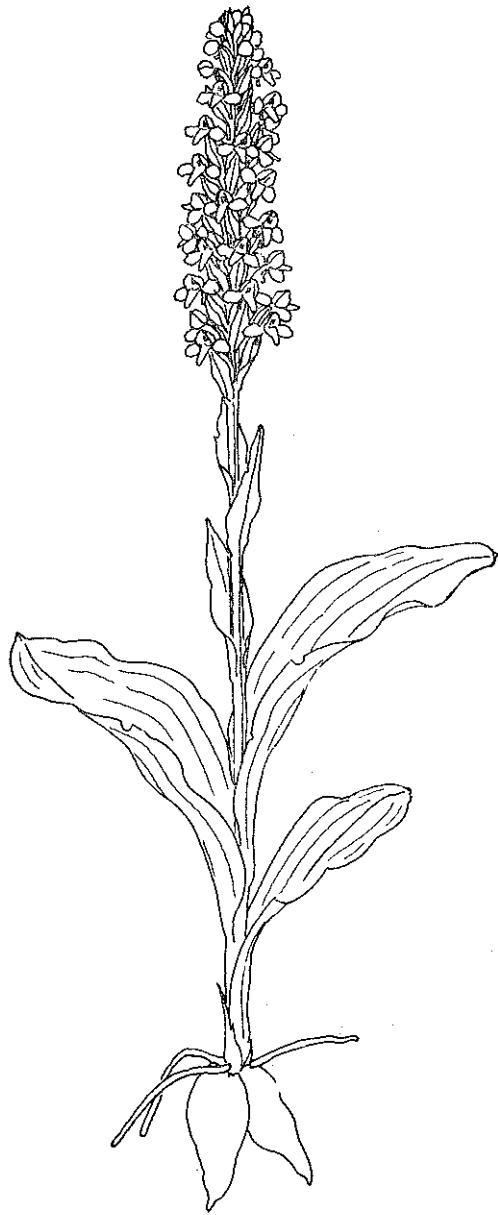
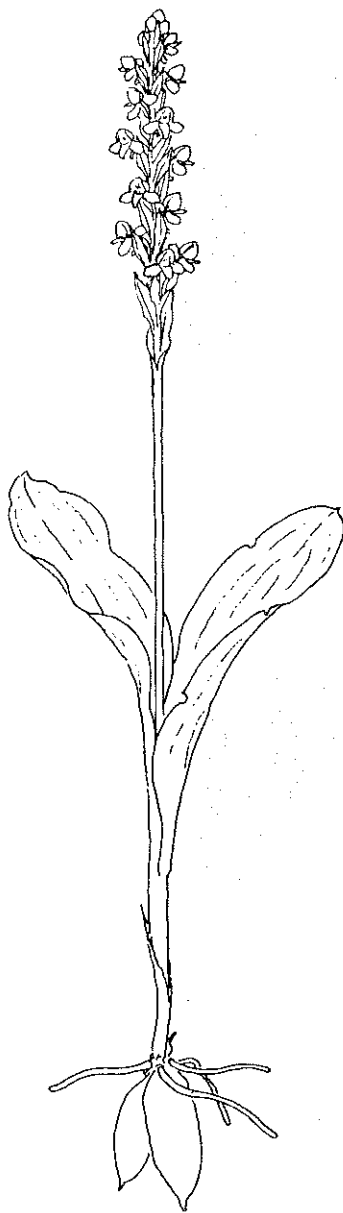


Fig. 11. — *Platantera micrantha* Schlecht



G.F.

Fig. 12. — *Platantera micrantha* Schlecht f. *gracilis* Frey

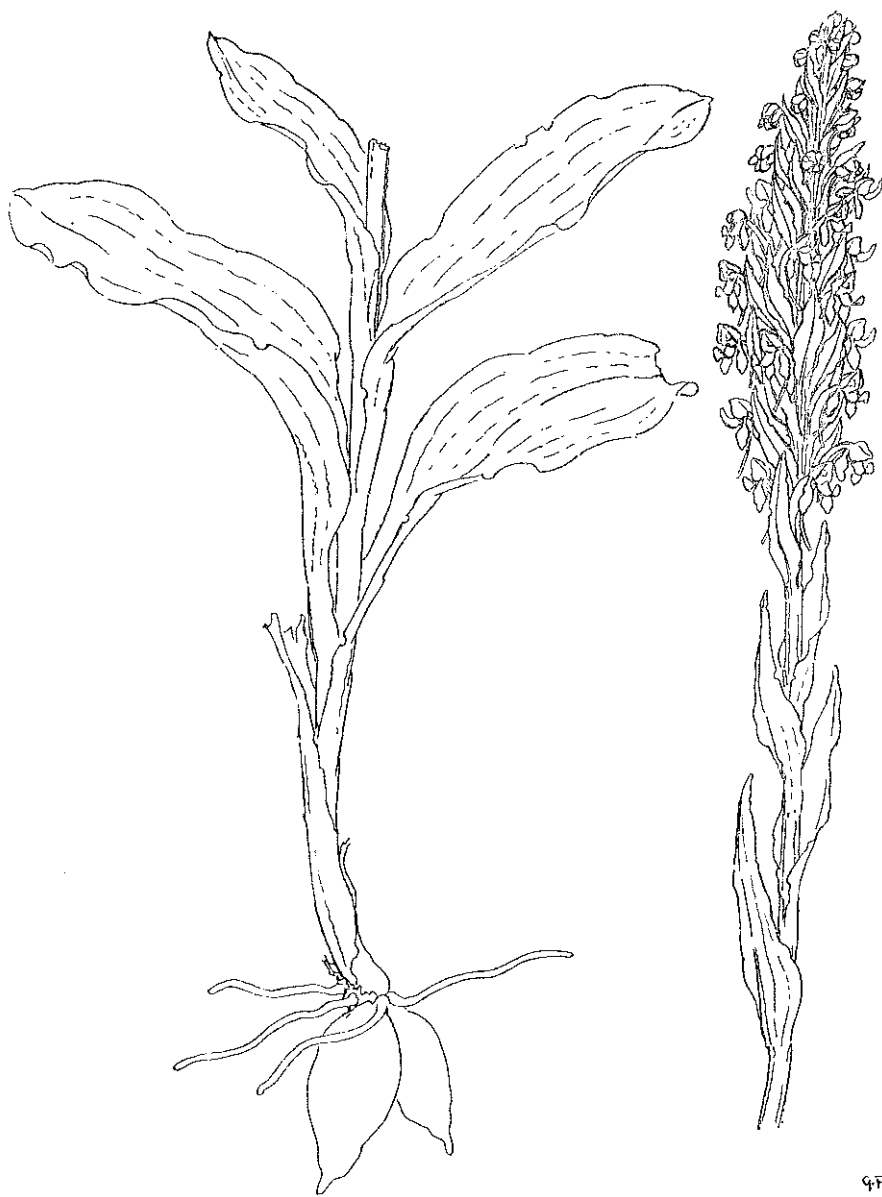


Fig. 13. — *Platantera azorica* Schlecht

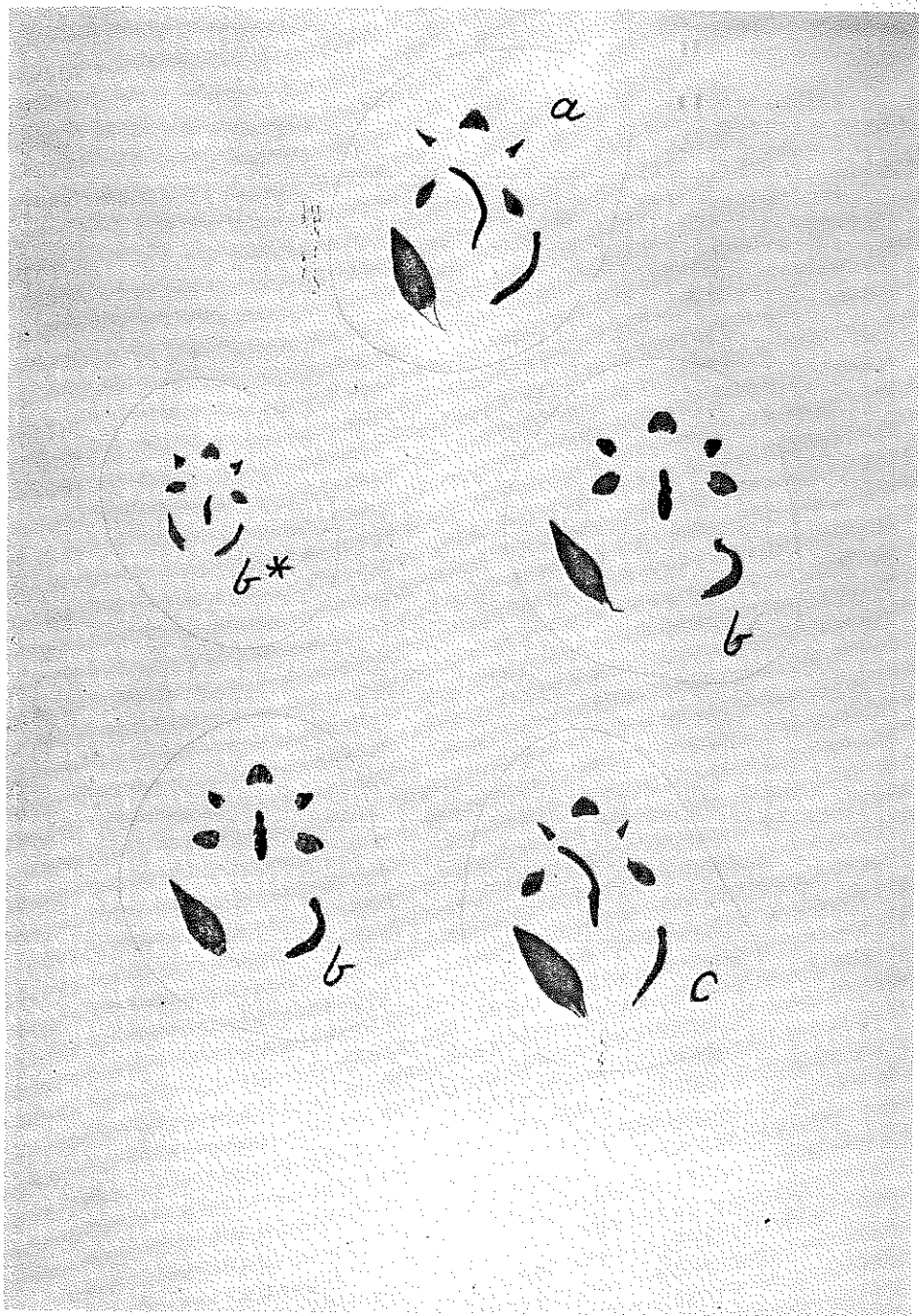


Fig. 14. — Analyses of Azorean Orchids: a) *Serapias cordigera*; b) *Platanthera micrantha*; b) *P. m. f. gracilis*; c) *P. azorica*.