# TWO NEW GERANIUM SPECIES ENDEMIC TO MADEIRA

By P. F. Yeo *

With 2 plates

Since the early 1950's Major C. H. C. Pickering, a British resident in Madeira, has been aware of the existence of an apparently distinct *Geranium* growing at a single locality in Madeira. He introduced the plant into cultivation in Madeira, and repeatedly sent seeds to England, and in 1960 he collected dried specimens for the Kew Herbarium. In 1965 I agreed to study the plant with a view to deciding its taxonomic status. At that time all the plants at Cambridge which had been raised from Major Pickering's seed had died without flowering, through exposure to frost However, I heard that Lord Talbot de Malahide, of Malahide Castle, County Dublin, Ireland, had succeeded in flowering Major Pickering's *Geranium*, and he very kindly sent me seeds and a plant. From this material three plants flowered at Cambridge in 1967 and have contributed largely to the following account, in which I describe this plant as a new species. In studying the allies of the «Giant Geranium», as it has provisionally been known, I at first experienced some difficulty in distinguishing in the herbarium *G. palmatum (G. anemonifolium)* from the large form of *G. robertianum* which also occurs in Madeira. This plant had long been grown in the Cambridge Botanic Garden under the name *G. anemonifolium*, and I decided to bring it into the greenhouse for comparison with the other two species. In 1966 I wrote to Professor H. G. Baker, of the University of California, Berkeley, about this plant, as he had earlier worked on *G. robertianum* and *G. purpureum*. As a result of information which he supplied I got in touch with Mr William Jackson who had been a research student under him, and who had written a thesis (Jackson, 1957) on *G. palmatum*, *G. canariense* and the large form of *G. robertianum*. Mr Jackson

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had concluded that the last-named was a distinct species and, as he generously gave me permission to use his results, I am here publishing a description of it under the name which he proposed for it. I myself have studied living plants of all six species so far mentioned and I hope to write about them in more detail in the future, combining my own observations with those of Mr Jackson; the purpose of the present paper is mainly to describe the new species and make names available for them.

1. ***Geranium maderense*** P. F. Yeo, nov. sp.

*Species nova* G. palmato *Cav.* (G. anemonifolio *L'Hérit. ex Ait.*) *valde affinis, sed caulibus elongatis, petiolis brunneis, pilis longis glandulosis destitutis, stipulis minoribus, appressis, axibus monocarpicis, inflorescentia maiore, floribus irregulariter disposita, sepalis minus appressis, petalis brevius unguiculatis, conspicue venulosis, staminibus et stylis brevioribus (sepalis vix excedentibus), antheris saturate sanguineis, foraminibus nectariis trullatis (nec linearibus), carpellis maioribus grossius costatis, facile distinguenda.*

*Herba monocarpica vel perennans.* Cotyledones *usque 13 mm longae, 18 mm latae, marginibus minute ciliatis.* Caulis *usque 50 cm altus, 5 cm diam., plerumque simplex, raro ramis paucis praeditus, vel post anthesin interdum e basi ramificiens. Axes omnes in rosulas terminantes; quapropter bases petiolorum inter se contingentur. Rosula post anthesin marcescens.* Folia *odore* Pelargonii x hortorum *leviter redolentia.* Stipulae *usque c. 12 mm longae, 25 mm latae, petiolis foliorum superiorum appressae, vulgo rubiginosae, extus obscure carinatae, pustulis prominentibus et pilis minutis glandulosis vel eglandulosis obtectae; intus praeter pilos perpaucos, minutos, glandulosos submarginales glabrae, leviter pustulatae, margine translucido albido vel viridulo, interdum eroso, juventute sparse ciliato, cinctae.* Petioli *ad c. 50 cm longi, teretes, apice c. 9 mm diam., basi dilatati et leviter applanati ad 25 mm lati, ferrugineo-tincti vel uniformiter sordide ferruginei, pilis glandulosis minutis plus minusve appressis ut videtur pulverulenti, laminis marcidis deflexi sed turgidi manentes, et caulem adminiculorum instar evidenter* sustinentes. Lamina *c. 45 cm lata, pallide viridis, palmatim 5-lobata, lobis lateralibus utrinque e basi usque 3 mm connatis, lobo medio petiolulato, petiolulo longitudine 1/7-1/4 laminae aequanti; lobi omnes irregulariter bipinnatim fissi, segmentis ultimis plus minusve excurvatis, inciso-dentatis, dentibus obtusis vel acutis, mucronatis, ornati; pagina supra pilis parvis glandulosis appressis vestita, ad venas sparse tomentosa pilis tenuibus eglandulosis curvatis plus minusve appressis obtecta, subtus pilis parvis*

*glandulosis appressis vestita, interdum basin versus pilis longis glandulosis ad venas sparsissime ornata; venae infra prominentes, petiolulus venaeque basin versus superficie inferiore porphyreae.*

Inflorescentia *terminalis, latitudine c.30-180 cm attingens, per plures menses persistens, e ramis axillaribus, 4 vel 5, verticillatis, apice internodii elongati (vix 10 cm longi) axis primarii exorta, interdum ramo ex rosulae axilla suprema addito, axibus infra colore et indumento petiolis simillimis, supra pilis purpureis glandulosis vestitis.* Rami *suberecti, folioso-bracteati, cymoso-ramosissimi, internodiis nonnullis carentes.* Pedunculi *c. 5-15 cm longi.* Pedicelli *plerumque bini, c. 1 - 14 cm longi.* Flores *leviter infundibuliformes, (3-) 3.5 (-4) cm diam., plerumque sursum spectantes, sed senectute irregulariter dispositi.* Sepala *viridia, basin rubescentia, viscide glanduloso-hirsuta, 10-12 mm longa (mucrone incluso), 2.5-3 mm lata, ex axe florali ad angulum c. 45° divergentia, post anthesin conniventia.* Petala *(14-) 19-21 mm longa, (10-) 13-18 mm lata, late cuneata, apice rotundata vel subtruncata, pagina supra carminea, venis elevatis, pallidioribus dense et conspicue reticulata, ad basin leviter excavata et in unguem nigro-purpureum angustata, pagina infra concolor, carminea; ungues ex axe florali ad angulam c. 45° divergentes, vix attenuati, unusquisque supra cristis carnosis geminatis usque 2-2.5 mm longis prominenter ornati; unguum margines reflexi, ita in floribus juvenilibus 5 foramina nectarea anguste trullata efformantes.* Stamina *8-10 mm longa, filamenta purpurascentia, aurantiaco-tincta, vel saturate rubra;* antherae *c.1.25-1.5 mm longae, saturate sanguineae; pollen aureum; stamina maturitate ad stylum appressa, apicibus recurvata, quamobrem antherae extrorsae extrorsus et deorsum spectant.* Nectaria *valde evoluta.* Styli *c.9 mm longi, intense purpureo-rubri,* stigmata *recurvata, c. 2.5 mm longa, stylis concoloria* Rostrum *fructus, stigmatibus et carpellis inclusis, c.26-30 mm longum.* Carpella *matura 4-4.5 mm longa, fusca, opaca, glabra, grosse reticulato-foveolata, apice carinis annularibus 1-3 instructa. 2n = 68.*

Holotype: «Paul da Serra, [Levada do Moiro (Mouro)]. 4000 ft. Apr. 1960. Plant very large; span 6 feet. Flowers purple. Major C. H. C. Pickering», K (two sheets, one bearing a leaf and one with part of an inflorescence, constitute the type specimen).

Monocarpic or perennating herb. *Cotyledons* up to 13 mm long and 18 mm wide, minutely ciliate on the margins. *Stem* up to 50 cm high and 5 cm thick, usually unbranched, occasionally bearing one or several branches, sometimes branching from the base after flowering terminally, each axis terminating in a rosette, the petiole-bases of which are contiguous on

the axis. Rosette dying after flowering. *Leaves* smelling weakly of *Pelargonium* x *hortorum*. *Stipules* up to c. 12 mm long and 25 mm wide, appressed to the petioles above them, mainly reddish brown, obscurely carinate outside, outer surface prominently pustulate and with a few minute glandular or eglandular hairs, inner surface glabrous except for a few minute glandular hairs near the margin, sparsely pustulate, margin translucent, whitish or greenish, sometimes erose, sparsely ciliate when young. *Petioles* up to c 50 cm long, terete, up to c. 9 mm thick at the apex and 25 mm wide at the swollen and slightly flattened base, tinged reddish brown or dull reddish brown throughout, hoary with minute, more or less appressed glandular puberulence, deflexed in age and remaining turgid for some time after the death of the lamina, and apparently propping up the stem. *Lamina* up to c. 45 cm wide, light green, palmately 5-lobed, the lateral lobes of each side united at the base for a distance of about 3 mm, middle lobe petiolulate, its petiolule 1/7 - 1/4 as long as its lamina, the lobes irregularly bipinnately cleft, the ultimate divisions more or less excurved, incisely toothed, teeth obtuse or acute, mucronate, upper surface with small, appressed glandular hairs on lamina, thinly tomentose over the veins with fine, more or less appressed, curved eglandular hairs, lower surface with small appressed glandular hairs and sometimes a very few long erect glandular hairs on the veins towards the base, veins prominent beneath, petiolule and veins towards the base brownish red, especially beneath.

*Inflorescence* terminal, attaining c. 30 — 180 cm in width and continuing in flower for several months, consisting of axillary shoots arising in a whorl of 4 or 5 at the apex of an elongated internode (less than 10 cm long) of the primary axis, and sometimes an addititonal branch from the uppermost axil of the rosette, axes below with the same colouring and indumentum as the petioles, densely clothed above with viscid purple glandular hairs. *Inflorescence-branches* suberect, leafy-bracteate, cymose, much-branched, with some of the internodes suppressed. *Peduncles* c. 5-15 cm long. *Pedicels* usually paired, c. 1 — 14 cm long. *Flowers* shallowly funnel-shaped, (3 -) 3.5 (- 4) cm in diameter, orientation generally upwards, but in all directions in old inflorescences. *Sepals* green with reddish base viscidly glandular-hairy, 10 - 12 mm long (including mucro), and 2.5 - 3 mm wide, diverging at c. 45° from the floral axis, connivent after anthesis. *Petals* (14 - ) 19 - 21 mm long and (10 - ) 13 - 18 mm wide, broadly cuneate, apex rounded to subtruncate, lamina purplish pink with a

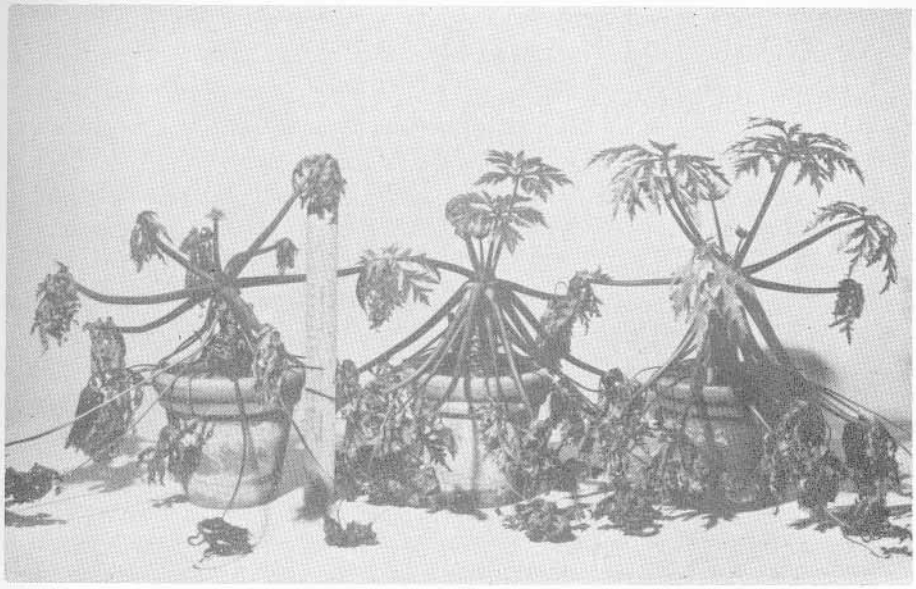
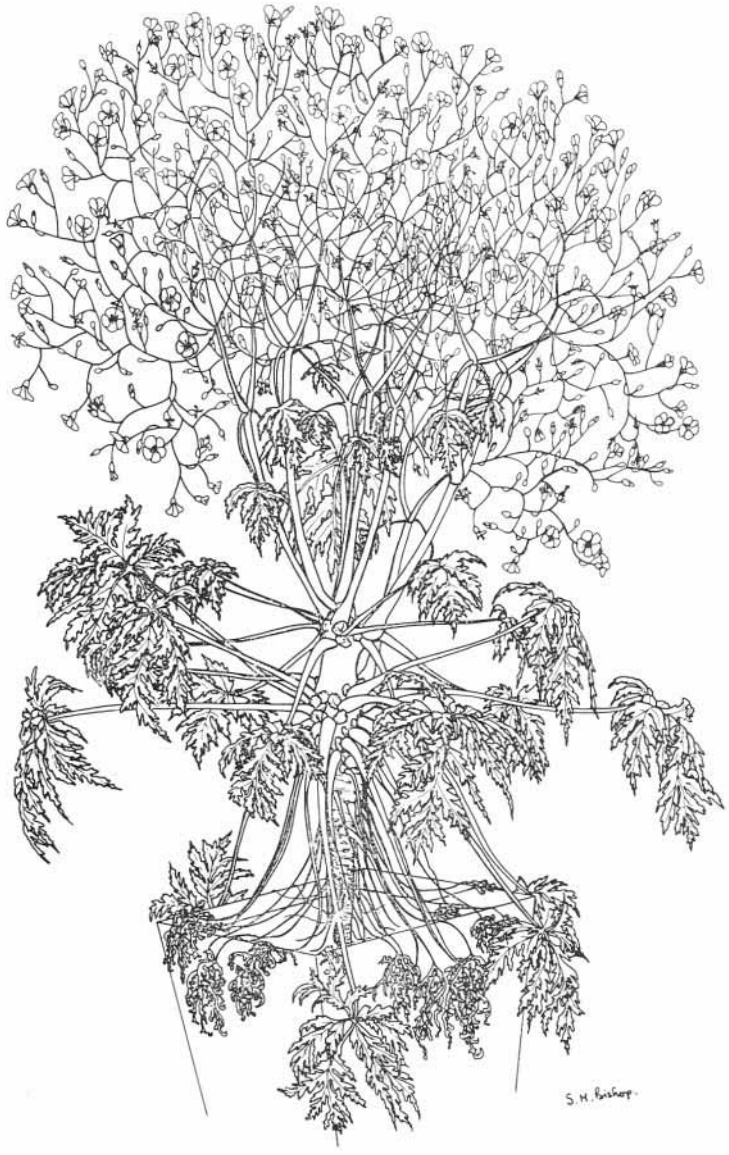


Fig. 1. — Three plants of *G. maderense* photographed on 29 July 1966. The plant on the left had not been watered since 26 April and its leaf-laminae have withered; the middle one had been watered once a week since 26 April; the right hand one had been wateerd normally.

Fig. 2. — The same three plants as in Fig. 1, in the same order, photographed on 22 August 1966. All had been watered normally since 29 July.




Flowering plant of *G. maderense* grown in a tub and drawn at the end of March, 1967. Above the rosette can be seen the extended internode, at the top of which the main branches of the inflorescence are borne in a whorl.

dense network of paler, prominently elevated veins on the upper surface, lower surface uniform purplish pink; upper surface slightly hollowed towards the base of the lamina and becoming darker in colour towards the blackish purple claw; claws diverging at c. 45° from the floral axis, scarcely narrowed in outline, each bearing a prominent double fleshy ridge, 2 - 2.5mm long; margins of claws reflexed so as to form, except in old flowers, 5 narrowly trullate nectar-passages. *Stamens* 8 - 10 mm long, filaments purplish, tinged orange, or dark red; *anthers* c. 1.25-1.5 mm long, dark red, pollen yellow; stamens appressed to the style when mature and curving outwards at the tips, so that the extrorse anthers face obliquely downwards. *Nectaries* well-developed. *Styles* c. 9mm long, dark purplish red, *stigmas* c. 2.5 mm long, the same colour, recurved. *Beak* of fruit, including stigmas and carpels, c. 26 - 30 mm long. Mature *carpels* 4 - 4.5 mm long, dark brown, dull, glabrous, coarsely reticulate-foveolate, the ridges forming 1 - 3 annular keels at the apex. 2n = 68.

*G. maderense* is closely related to *G. palmatum* Cav. *(G. anemonifolium L'Hérit. ex Ait.)*, differing in its tall stems, brown petioles devoid of long glandular hairs, smaller, appressed stipules, monocarpic axes, larger inflorescence, indefinite flower-orientation, less closely appressed sepals, less distinctly clawed, but more prominently veined, petals, shorter stamens and style (about equalling the sepals), dark-coloured anthers, trullate (not linear) nectar-passages and larger, more prominently ribbed carpels.

Endemic to Madeira; known only from the type locality.

An account of *G. maderense (as G. palmatum?)*, accompanied by an excellent colour-photograph, has already been published by Lord Talbot (1966). Lord Talbot reports that in County Dublin some plants reached the flowering stage out of doors, but others died even in mild winters. Two of my plants were grown in a cool greenhouse and began to flower near the end of February. A third was in a frame with winter protection; it produced some flowers from weak branches below the rosette in late summer. The larger of the two plants flowering in the greenhouse was raised from seed sown in August 1965; seeds germinated promptly and growth was at first rapid. Two plants were transferred to pots $6^1/_2$ inches (16.5 cm) in diameter on 2 February 1966; they did not make much response to their re-potting and did not flower, whereas *G. palmatum* flowers readily in the second year (first spring) in pots of this size or smaller. In late May one of the seedlings was transferred to a pot $10^1/_2$ inches (28

cm) in diameter, and at the beginning of January 1967 to a tub, 18 inches (45 cm) cubed; its inflorescence was first found on 9 February. It seems clear that *G. maderense* requires to be allowed to reach a considerably larger size before flowering than *G. palmatum*.

It further differs from *G. palmatum* in its ability to withstand drought. In 1966 three 1965 seedlings in $5^1/_2$ inch (13 cm) pots were treated as follows: on 26 April one was placed under the greenhouse bench and deprived of water, though it received sun in the morning and evening; the other two were left on the bench, one being watered weekly and one normally (i.e. usually once or twice a day). The laminae of the leaves of the first plant scarcely wilted, but gradually they dried out; the petioles, however, remained turgid. The plants were photographed (Plate I, Fig. 1) on 29 July 1966, and from then onwards all were watered normally. Within a week a developing leaf was visible on the desiccated plant, and by 22 August it had the largest leaves of the three plants (Plate I, Fig. 2). In 1967 a plant in a $5^1/_2$ inch pot (received from Mrs B. C. Rogers, of Bromley, Kent) was desiccated in the same way from 4 April until 20 September, on which date it still had five petioles partly fleshy. Also it had begun to put out a somewhat stunted new leaf, probably in response to a spell of cool humid weather. Seven days after the resumption of watering three more leaves were expanding and growth continued normally thereafter. For comparison the same treatment was given to a plant of *G. palmatum* of similar size which had not yet produced visible inflorescence-shoots or flower buds. This plant wilted more conspicuously than *G. maderense* but on 29 June it still had three green leaves. By 25 July, however, the plant appeared to be dead; this was confirmed by the resumption of watering, after which no new growth occurred.

The petioles of *G. maderense* therefore appear to have two special functions, water storage and support for the stem (as explained in the formal description). It is noticeable that in early summer the petioles are relatively short and appear disproportionately stout in relation to the size of the lamina which they carry. In winter the laminae are large and the petioles are very long (Plate II), being able to reach the ground when reflexed and thus apparently able to prop up the stem. The use of petioles as storage organs also occurs (as I have been reminded by Mr G. D. Rowley) in succulent members of the related family Oxalidaceae.

## Note by the Discoverer

This new species of *Geranium* described above by P. F. Yeo grows on the North Coast of the island between 4000 and 5000 ft in a limited area on the Levada do Moiro (Mouro) in association with a very large thornless form of *Rosa canina* and a large form of *Cirsium latifolium* Lowe. I have only found it in this small area though it may well occur in more inaccessible places.

The soil is acid, — there is no lime in the island. Original vegetation at this height is mainly Tree heath *(Erica arborea* and *E. scoparia), Genista maderensis* and other original vegetation (Laurisilva).

It grows easily and is biennial where I live at 350 ft in Funchal and seeds itself all over the garden. It is curious that it is so rare in the wild and has never before been reported, as far as I know.

It is now in cultivation in Funchal and has in some places been planted by the roadsides and in cottage gardens.

This remarkable plant was first pointed out to me by Mrs. George Welsh of this island growing in a cottage garden. It took me a year to find it in the wild.

I have distributed seed to the Republic of Ireland, Australia, Switzerland, Kenya and the U. S. A.

2. ***Geranium rubescens*** P. F. Yeo, nov. sp.

G. rubescens *W. Jackon ined. (1957, p. 87).*
G. robertianum *var.* maritimum *sensu Lowe (1868, p. 85) non Babington.*

*Species nova* G. robertiano *L. simillima, sed statura omnino robustiore, corolla fauce saturate purpurea nec albida, stigmatibus conspicue atropurpureis, carpellis emissis haud fibrilliferis, chromosomatium numero 2n = 128 (nec 2n = 64 vel 32) inter alia differt.*

*Herba biennis.* Cotyledones *ad 11 mm longae, 16 mm latae, petiolo et lamina sparse, margine dense, pilis glandulosis longis obtectae.* Caulis *simplex, haud elongatus, ad 5 cm altus, folia in rosulam congesta, leviter aromatica.* Stipulae *c. 9 mm longae, 4 mm latae, non appressae, rubro-purpureae, praeter margines longe glanduloso-ciliatos glabrae.* Petioli *usque 28 cm longi, basin versus c. 4 mm diam., teretes, nitidi, rubro-purpurei, maturitate ad solum appressi, pilis glandulosis erectis longissimis brevioribusque immixtis laxe vestiti, et pilis minutis glandulosis incurvatis sparse vestiti.* Lamina *usque c. 23 cm lata, intense viridis, plus minusve rubiginoso-tincta vel -marginata, senectute vivide rubra et lutea, palmatim 5-lobata, lobis lateralibus utrinque e basi usque 5-12 mm connatis, petiolulo communi loborum lateralium elevatim alato, lobo mediano petiolulato, petiolulo longitudine 1/3 - 2/5 aequanti, lobis basalibus retrorsis; lobi omnia irregulariter bipinnatim fissi, segmentis ultimis incisodentatis, dentibus obtusis vel acutis, prominenter mucronatis, instructi; lamina utrinque pilis glandulosis erectis sparsis primo vestita, supra pilis eglandulosis minoribus incurvatis ad venas strigosa; petiolulus venaeque basin versus rubro-purpureae.*

Inflorescentia *terminalis, latitudine c. 60 cm attingens, odore foetido* G. robertiani *redolens; rami primarii, c. 3, ex axillaribus supremis rosulae enascentes, rami secundarii ex axillaribus inferioribus postea enascentes, omnes nitidi, rubro-purpurei, infra pilis glandulosis minutis plerumque appressis densius obtecti, pilisque glandulosis longissimis hyalinis sparse immixtis, supra similiter induti sed pilis eglandulosis brevibus leviter recurvatis serialiter ornati; pili omnes supra densiores.* Inflorescentiae rami *valde divergentes, ad basin usque 20 mm lati, teretes, leviter applanati, cymosi, folioso-bracteati, ad quemque nodum bini, inaequales, vel ad nodos superiores uno carente, sed eo suppresso hieme ut rosula nonnunquam emergente.* Pedunculi *terminales, 2-12 cm longi.* Pedicelli *plerumque bini, 2-12 mm longi.* Flores *late infundibuliformes vel hypocrateriformes, 2.2-2.8 cm diam., irregulariter dispositi.* Sepala *nitentia, brunneo-viridia, basi rubiginosa, c. 10-13 mm longa (mucrone incluso), 2.5 — 3 mm lata, imbricata, sub anthesi paullo divergentia, postea conniventia.* Petala *c. 18.5-20 mm longa, lamina 11-14 mm longa, 7-12 mm lata, cuneata, apice rotundata vel truncata vel retusa, pagina supra purpureo-rosea, obscure venosa, venis pallidis sparse ramosis ornata et depressione mediali saturate purpurea notata, infra concoloria, pallidiora; ungues erecti, 6.5-7 mm longi, marginibus hyalinis et cristis geminatis saturate rubris, superne conjunctis, instructi, apice intense rubri, et corollam velut ocellatam efformantes; foramina nectarea orbicularia.* Nectarea *valde evoluta.* Stamina *10-12 mm longa, unguibus petalorum c. 4.5 mm longiora, maturitate stylum amplectentia, filamenta alba;* antherae *c. 0.7 mm longae, roseo-aurantiacae, post dehiscentiam brunneae, pollen luteum.* Styli *c. 11 mm longi, intense purpureo-rubri,* stigmata *recurvata, c. 2.5 mm longa, stylis concoloria. Fructus* rostrum, *stigmatibus et carpellis inclusis, 26-32 mm longum.* Carpella *matura c. 3.3 - 3.7 mm longa, fusca vel brunnea, glabra, fibrillis destituta, dense reticulato-costata, costis basin versus plerumque longitudinaliter dispositis, apice carinis annularibus 1-2 instructa. 2n = 128.*

Holotype: R. do Seixal, 1500 ft., June 1865, F. M. Norman, as *G. robertianum* var. *maritimum* (CGE).

Biennial herb. *Cotyledons* up to 11 mm long and 16 mm wide, bearing long glandular hairs sparsely on the petiole and lamina, closely on the lamina-margins. *Stem* unbranched, not elongating, up to c. 5 cm. high, leaves crowded into a rosette. *Leaves* faintly, not disagreeably, scented. *Stipules* up to c. 9 mm long and 4 mm wide, not appressed, subacute, dark red, margins long-glandular-ciliate, surfaces glabrous. *Petioles* up to 28 cm long, up to c. 4 mm thick near the base, terete, glossy, dark red,

appressed to the soil in age, loosely clothed with very long and shorter erect glandular hairs and with scattered, minute, incurved glandular hairs. *Lamina* up to c. 23 cm wide, dark green, more or less flushed and bordered with dull brownish red, turning brilliant red and yellow when dying, palmately 5-lobed, the lateral lobes of each side united at the base for a distance of 5-12 mm, their common petiolules bordered with upturned wings decurrent from the lamina, middle lobe petiolulate, petiolule 1/3-2/5 as long as its lamina, basal lobes retrorse, all the lobes irregularly bipinnately cleft, the ultimate divisions incisely toothed, teeth obtuse or acute, prominently mucronate; both surfaces clothed with scattered long erect hairs which are gland-tipped initially, veins above strigose with smaller incurved eglandular hairs; petiolule and veins towards the base dark red.

*Inflorescence* terminal, attaining c. 60 cm in width, with the foetid smell of *G. robertianum;* consisting of about 3 main branches arising in the uppermost axils of the rosette, and other, smaller ones, arising later in axils immediately below; axes glossy, dark red, bearing below only sparse, colourless, very long glandular hairs and more numerous minute and mostly appressed glandular hairs; above with a band of short, slightly recurved, eglandular hairs in addition; all types of hair more abundant upwards. *Inflorescence-branches* rather widely divergent, up to 20 mm thick at the base, terete, slightly compressed, cymose, leafy-bracteate, the two branches of a dichotomy usually unequal, one of them sometimes suppressed at the higher nodes, suppressed branches sometimes emerging as leafy rosettes in plants surviving until winter. *Peduncles* terminal, 2-12 cm long. *Pedicels* usually paired 2-12 mm long. *Flowers* widely funnel-shaped to salverform, 2.2-2.8 cm in diameter, orientation inconstant. *Sepals* glossy, brownish green with red base, c. 10-13 mm long (including mucro) and 2.5-3 mm wide, overlapping, very slightly divergent at anthesis, connivent afterwards. *Petals* c. 18.5-20 mm long, lamina 11-14 mm long, 7-12 mm wide, cuneate, apex rounded, truncate or retuse, upper surface purplish rose (Petunia Purple, H. C. C. 32/2) with darker central depression, the whole traversed by paler, sparingly branched, poorly defined, veins, lower surface uniformly coloured and slightly paler; claws erect, 6.5-7 mm long, with colourless translucent margins and dark red double keel, the two ridges joining at the apex, apex of claw dark red, forming a dark throat to the flower, nectar passages circular in cross-section. *Stamens*

10-12 mm long, exserted c. 4.5 mm, filaments white; *anthers* c. 0.7 mm long, pinkish orange, brown when dehisced, pollen yellow; mature stamens appressed to the style. *Nectaries* well-developed. *Styles* c. 11 mm long, dark purplish red; *stigmas* c. 2.5 mm long, the same colour, recurved. *Beak* of fruit (including stigmas and carpels) 26-32 mm long. Mature *carpels* c. 3.3-3.7 mm long, medium to dark brown, glabrous, devoid of fibres derived from the beak, closely and reticulately ribbed, ribs predominantly longitudinal in the basal half of the carpel, ridges forming 1 - 2 annular keels at the apex. 2n = 128.

*G. rubescens* is very closely related to *G. robertianum* L., differing in the larger size of all its parts, in the dark purple instead of whitish corolla-throat, darker-coloured stigmas, absence of fibres attached to the discharged carpels, and in its chromosome number (2n = 64, and possibly 32, in *G. robertianum*).

The type cited here is not the one which Mr. Jackson proposed in his thesis, but has been chosen instead because it is a much better specimen.

It may be mentioned that the name *Geranium lowii* has sometimes been applied to this plant. *G. lowii* was described very briefly by Nicholson (1901, p.388), but it seems impossible to identify the plant from the description and I have never come across any authentic specimens. A plant said to be *G. lowii* is illustrated in Catalogue 94 of Gauntlett's Nurseries, Chiddingfold, Surrey (c. 1912), but the photograph clearly shows a plant of *G. palmatum*. The spelling of the epithet suggests a possible connection with the London nursery firm of Hugh Low & Company, rather than with R.T. Lowe.

*G. rubescens* behaves as a biennial in Britain, where it seems to be fairly hardy out of doors.

### Note by C. H. C. Pickering

The species described above, *G. rubescens*, is fairly common on the North coast of Madeira in thickets and shady glens. It is not in cultivation in Madeira.

## CHROMOSOME COUNTS

The chromosome count of *G. maderense* was made by Dr. C. Marchant at the Royal Botanic Gardens, Kew, from a plant bearing the cytological serial number 65-940. It had been grown from seed received at Kew from Mr. P. F. Parker of Aberystwyth, having been sent to him by Major

Pickering. It was seen and identified by me in October 1966; it flowered in 1968 and fresh flowering shoots, intended for a voucher specimen to be placed in the Kew Herbarium, were shown to me on 11 March when I was at Kew.

The chromosome number of $2n = 128$, $n = c.64$, for *G. rubescens*, was counted by Mr. Jackson from plants obtained from the Royal Botanic Gardens, Kew, and the University Botanic Garden, Oxford. A count of $2n = 128$ was also obtained from plants supplied to Mr. Jackson by Professor T.G. Tutin, University of Leicester. Some of these counts are illustrated by photographs and drawings in Mr. Jackson's thesis, and voucher specimens are preserved in Mr. Jackson's collection at 84, Graydon Avenue, Donnington, Chichester, Sussex, England but Mr. Jackson intends to deposit them in the Cambridge University Herbarium (CGE).

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