

## Four new species of Orchidaceae from Western Australia

By A. S. George

### Abstract

Three species of *Caladenia* are described—*C. corynephora* sp.nov., *C. crebra* sp.nov. and *C. graminifolia* sp.nov.—and one species of *Pterostylis*—*P. angusta* sp.nov.

### Introduction

As a result of checking the correct application of all the names which have been applied to Western Australian Orchidaceae, it has become clear that a number of taxa are undescribed. While many belong to confused groups which require detailed revision the four described here are quite distinct and are published so that the Checklist which follows this paper may be more complete.

### *Caladenia corynephora* A. S. George, sp.nov. (Figure 1)

Planta gracilis ad 45 cm alta. Folium lineare, 15–30 cm longum, supra glabrum infra hirsutum. Caulis hirsutus bracteis duobus acutis 20–25 mm longis. Flores 1–2, citrino-viridis et atro-ruber. Perianthium parce glanduloso-hirsutum segmentis rubri-nervosis et glanduloso-clavatis omnibus. Sepala 22–32 mm longa; dorsale erectum, leviter incurvum, lineare, clava 5–8 mm longa; lateralis patentia vel saepe ad apices unum super alium transitum, lineari-falcata, clavis 8–11 mm longis. Petala 20–25 mm longa, patentia, linearia, leviter falcata, clavis 4–7 mm longis. Labellum pallide viride antice atro-rubrum, late-ovatum, acutum, 13–17 mm longum, 8–10 mm latum (sine fimbriis), in ungue 1–2 mm. longo insertum; margines fimbriis laevibus filiformibus ad 9 mm longis antice brevioribus claviformibus ornati, apex integer glandulosus ochraceus (clavis perianthii similis); calli 4-seriales, ex ungue labelli per 8–10 mm extensi, crassi, fere carnosi, parum clavati. Columna 14–16 mm longa, erecta, incurva, ad basin anguste-alata, supra medium late-alata, ad basin glandulis duobus flavis. Anthera  $\pm$  4 mm longa, mucronata. Stigma ovatum. Ovarium dense glanduloso-hirsutum.

Type: Banks of the Donnelly River  $\pm$  15 miles west of Pemberton, W.A., A. S. George s.n. Dec. 7, 1957—holo.: PERTH, iso.: MEL, K.

A slender plant to 45 cm tall. Leaf linear, 15–30 cm long, glabrous above, hirsute below. Stem hirsute, with a bract near the middle and one below the ovary, both acute, 20–25 mm long. Flowers one or two, yellow-green and dark red. Perianth sparsely glandular-hirsute, all segments with red nerves and glandular clubs. Sepals 22–32 mm long; dorsal sepal erect, slightly incurved, linear, with a club 5–8 mm long; lateral sepals spreading or crossed in front, linear-falcate, with clubs 8–11 mm long. Petals 20–25 mm long, spreading, linear, slightly falcate, with clubs 4–7 mm long. Labellum pale green, anteriorly dark red, broadly ovate, acute, 13–17 mm long, 8–10 mm broad (without the fringe), on a claw of 1–2 mm; margins fringed with smooth, filiform fimbria up to 9 mm long, the fimbria shorter and clavate anteriorly; apex entire, glandular, golden-brown (like the clubs of the perianth); calli in 4 rows extending for 8–10 mm from the claw, thick, almost fleshy, somewhat clavate. Column 14–16 mm long, erect, incurved, narrowly winged at the base, broadly winged above the middle, with two yellow glands at the base. Anther  $\pm$  4 mm long, mucronate. Stigma ovate. Ovary densely glandular-hirsute.

The affinities are with *Caladenia radiata* Nicholls, *C. longiclavata* Coleman and *C. dilatata* R.Br. The species differs from these in the long leaf which is glabrous on the upper surface, the club-like apex of the labellum and the

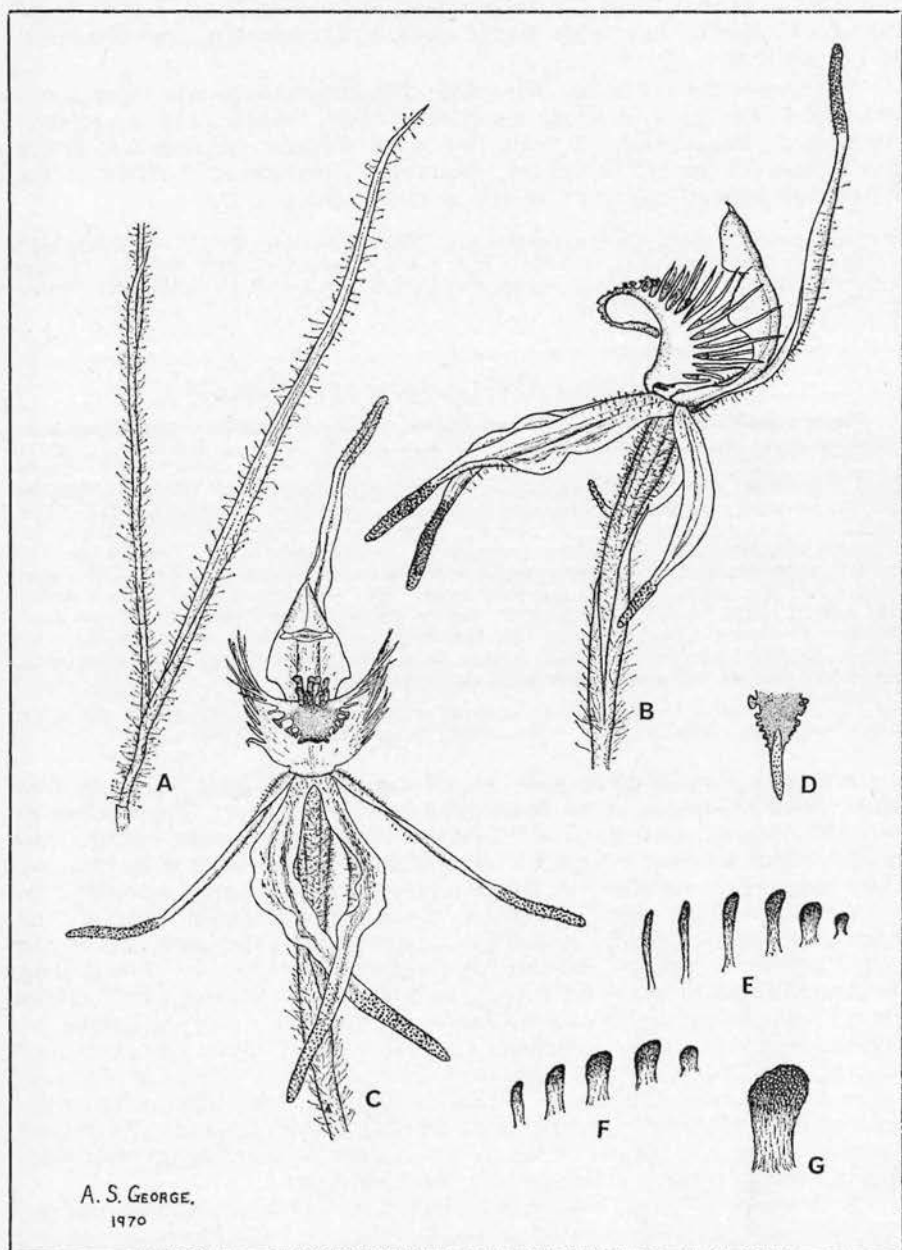


Figure 1—*Caladenia corynephora* sp. nov. A—Leaf and base of stem, x 0.5. B, C—Flower, x 1.5. D—Apex of labellum showing “club”. E—Calli, x 4. F—Calli, x 3. G—One callus, x 6. A to E from George 6466; F from Donnelly River, George, Dec. 7, 1957; G from Margaret River, Fletcher, Nov. 25, 1959.

thick, almost fleshy calli. *C. radiata* has longer perianth segments, the sepals being 35-55 mm long, and acuminate petals. All the varieties of *C. longiclavata* have a much shorter fringe on the labellum, and the fimbria are often finely scabrid. *C. dilatata* has larger lateral lobes on the labellum, and the petals are not clubbed.

The species flowers in late November and December two to three weeks later than *C. radiata*, at least one month later than *C. dilatata* and two months later than *C. longiclavata*. It is the last of the Western *Caladenias* to flower each season. The specific epithet, meaning "club-bearing", refers to the clubs on all perianth segments as well as the labellum.

Other collections examined: Bank of the Margaret River, *K. Fletcher*, Nov. 25, 1959 (PERTH); Warren River near Jarnadup (now Jardee), *Miss I. Knox-Peden*, Dec. 29, 1918 (AD); 15 miles west of Albany, in jarrah forest near swamp, *A. S. George* 6466, Dec. 7, 1964 (PERTH); Albany *R. Oliver*, Dec. 12, 1962 (PERTH).

### *Caladenia crebra* A. S. George sp. nov. (Figure 2)

Planta gracilis 25-45 cm alta. Folium lineare,  $\pm$  20 cm longum, utrinque hirsutum. Caulis hirsutus, bracteis duobus acutis 17-25 mm longis. Flores 1-2, flavido-virides et atro-rubri. Perianthium extus glanduloso-hirsutum, etiam intus versus basin. Sepala 25-45 mm longa; dorsale erecto-incurvum, lineare, acuminatum, non clavatum; lateralia patentia, lanceolata-acuminata marginibus inferioribus saepe parum undulatis, apicibus non clavatis sed atro-glandulosis. Petala patentia, linearifalcata, acuminata, 25-35 mm longa. Labellum late rhombeum ad transverse ovatum,  $\pm$  15 mm longum, 10-12 mm latum (sine fimbriis), apice acuto recurvo; margines fimbriis filiformibus subtiliter scabridis ad 6 mm. longis antice brevioribus interdum uncinatis ornati; apex  $\pm$  integer, nudus; calli atro-rubri, zona lata ex ungue confertissimi, lineares, parum uncinati, 4 mm longi, antice breviores. Columna 15-18 mm longa, ad basin fere horizontalis anguste-alata, deinde sursum valde curvata late-alata; ad basin glandulis duobus flavis. Anthera 4-5 mm longa, mucronata. Stigma late-ovatum. Ovarium dense glanduloso-hirsutum.

Type: 24 miles south of Dongara, W.A., in sandy soil with *Eucalyptus erythrocorys* and scrub *A. S. George* 9621, Aug. 30, 1969—holo.: PERTH, iso.: K, MEL, NSW.

A slender plant 25-45 cm tall. Leaf linear,  $\pm$  20 cm long, hirsute on both sides. Stem hirsute, with two acute bracts 17-25 mm long. Flowers one or two, yellow-green and dark red. Perianth glandular-hirsute outside, and inside towards the base. Sepals 25-45 mm long; dorsal sepal erect-incurved, linear, acuminate, not clubbed; lateral sepals spreading, lanceolate-acuminate, lower margins often slightly undulate, apices not clavate but covered with short dark glands. Petals spreading, linear-falcate, acuminate, 25-35 mm long. Labellum broadly rhombic to transversely ovate,  $\pm$  15 mm long, 10-12 mm broad (without the fringe), with an acute, recurved apex; margins fringed with filiform, finely scabrid fimbria up to 6 mm long, the fimbria becoming shorter anteriorly, sometimes uncinately; apex  $\pm$  entire, bare; calli dark red, very crowded in a broad band from the claw, linear, somewhat uncinately, 4 mm long, shorter anteriorly. Column 15-18 mm long, almost horizontal and narrowly winged at the base, then strongly curved upwards and broadly winged; two yellow glands at the base. Anther 4-5 mm long, mucronate. Stigma broadly ovate. Ovary densely glandular-hirsute.

This species belongs to the Section *Calonema* and is at once distinguished from all other species of the Section by the very dense band of linear calli. It is also unusual to find the apices of the lateral sepals covered with glands while the dorsal sepal is not; in other species the sepals are either all glandular-clubbed or all smooth. The closest affinity appears to be with *Caladenia radiata* Nicholls, which has a longer, narrower labellum and thicker, less crowded calli. The only other species of the Section with crowded, linear calli is *C. lobata* R. Fitzg., but even there they are thicker and much less dense than in *C. crebra*, while the flower is larger, with upturned lateral sepals, and the labellum has large lateral lobes.

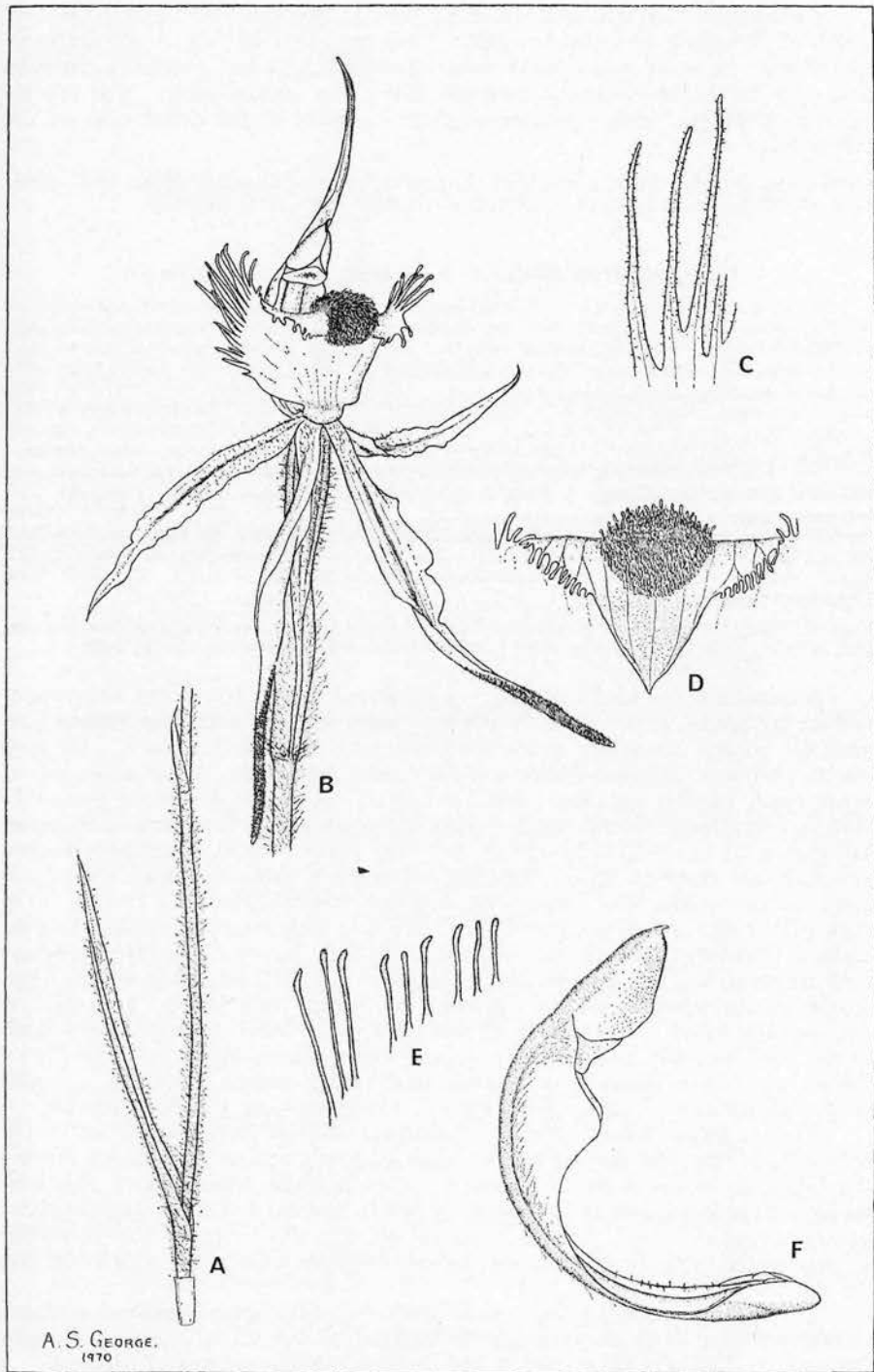


Figure 2—*Caladenia crebra* sp. nov. A—Leaf and base of stem, x 0.6. B—Flower, x 1.5  
 C—Marginal fimbria of labellum. D—Apex of labellum. E—Calli, x 4. F—Column, x 3.  
 All from George 9621.

*Caladenia crebra* was discovered by Mrs. E. Summers of "Green Grove" south of Dongara, and was brought to my attention by Mr. A. C. Burns of Geraldton. It is known from a relatively small area but is locally common and may be found in similar habitats along this coastal strip. The specific epithet, meaning "close, pressed together", refers to the dense calli on the labellum.

Other collections examined: Arrowsmith River area, south of Dongara, W.A., *A. C. Burns*, Sept. 10, 1967; loc. id. Sept. 15, 1968; loc. id. Aug. 28, 1969 (all at PERTH).

***Caladenia graminifolia* A. S. George, sp. nov. (Figure 3).**

Planta gracilis 12–30 cm alta. Folium lineare, acutum, 10–15 cm longum, supra glabrum infra sparsim pilosum. Caulis hirsutus duobus bracteis, altera ad medium, altera infra ovarium idemque saepe amplectente inserta. Flores 1–2, pallide citrino-virides et atrorubri. Sepala 22–35 mm longa clavata; dorsale erectum, leviter incurvum, lineari-subulatum, clava 3–5 mm longa atroglandulosa; lateralia  $\pm$  leviter pendula, saepe ad apices unum super alium transitum, falcata—linearia, apicibus clavatis 5–8 mm longis. Petala patentia, lineari-subulata, non clavata, 18–25 mm longa. Labellum pallido-viride apice atrorubro, angustevatum, 10–14 mm longum, 4–6 mm latum (sine fimbriis) in ungue 1–2 mm longo insertum; margines supra basin fimbriis laevibus subulatis ad 6 mm longis ornati; apex obtusus, non recurvus, marginibus incurvis  $\pm$  integris; calli atrorubri, 2 vel 4-seriales, in quoque serie 6–8 callis per 2/3 longitudinis labelli extenso, basales angusti, antice crassiores, clavati (interdum conjuncti). Columna 12–13 mm longa, erecta, incurva, ad basin anguste-alata, supra medium late et obtuse alata alis ad 3 mm latis; ad basin columnae glandulis duobus flavis. Anthera  $\pm$  3 mm longa, mucronata. Stigma parvum, ovatum. Ovarium dense glanduloso-hirsutum.

*Type:* Culham Inlet, west of Hopetoun, W.A., in sandy soil under *Eucalyptus platypus* var. *heterophylla*, *A. S. George* 9468, Aug. 1, 1969—holo.: PERTH, iso.:K, MEL, NSW.

A slender plant 12–30 cm tall. Leaf linear, acute, 10–15 cm long, upper surface glabrous, lower sparsely pilose. Stem hirsute, with two bracts, one near the middle, the other below the ovary and often embracing it. Flowers one or two, pale greenish-cream and dark red. Sepals 22–35 mm long; dorsal sepal erect, slightly incurved, linear-subulate, with an apical dark-glandular club 3–5 mm long; lateral sepals somewhat pendulous, often crossed in front, falcate-linear, with clubbed apices 5–8 mm long. Petals spreading, linear-subulate, not clubbed, 18–25 mm long. Labellum pale green with a dark red apex, narrow-ovate, 10–14 mm long, 4–6 mm wide (without the fringe), on a claw of 1–2 mm; margins fringed above the base with smooth, subulate fimbria up to 6 mm long; apex obtuse, not recurved, with incurved  $\pm$  entire margins; calli maroon, in 2 or 4 rows, each row with 6–8 calli extending for 2/3 the length of the labellum; basal calli narrow, upper ones thicker and clavate, occasionally fused. Column 12–13 mm long, erect, incurved, narrowly winged at the base, broadly and obtusely winged above the middle with wings up to 3 mm broad; two yellow glands at the base of the column. Anther  $\pm$  3 mm long, mucronate. Stigma small, ovate. Ovary densely glandular-hirsute.

This is most closely allied to *Caladenia dilatata* R.Br., differing in the following points: the slender leaf which is glabrous above; the smaller flower; the labellum which is much narrower, without large lateral lobes, the apex being not recurved, and the calli usually in two rows of 6–8 each; and the more gently curved column. At one locality, near Kundip south of Ravensthorpe, *C. graminifolia* and *C. dilatata* var. *falcata* Nicholls occur near each other but do not intergrade.

The species is common in coastal areas or a little inland between Culham Inlet (just west of Hopetoun) and Esperance, on the south coast of Western Australia. The specific epithet refers to the grass-like aspect of the leaf.

Other Collections examined: Ravensthorpe, *Mrs. V. M. Bennett*, Aug. 1968; Culham Inlet, west of Hopetoun, *A. S. George* 60, Aug. 17, 1958; 3 miles E. of Hopetoun, *Mrs. V. M. Bennett*, Aug. 1969; South of Kundip, south of Ravensthorpe, *A. S. George* 5778, Aug. 31, 1963; Circle Valley-Red Lake, *C. F. Davies* 97, Dec. 1962 (in seed) (all at PERTH).

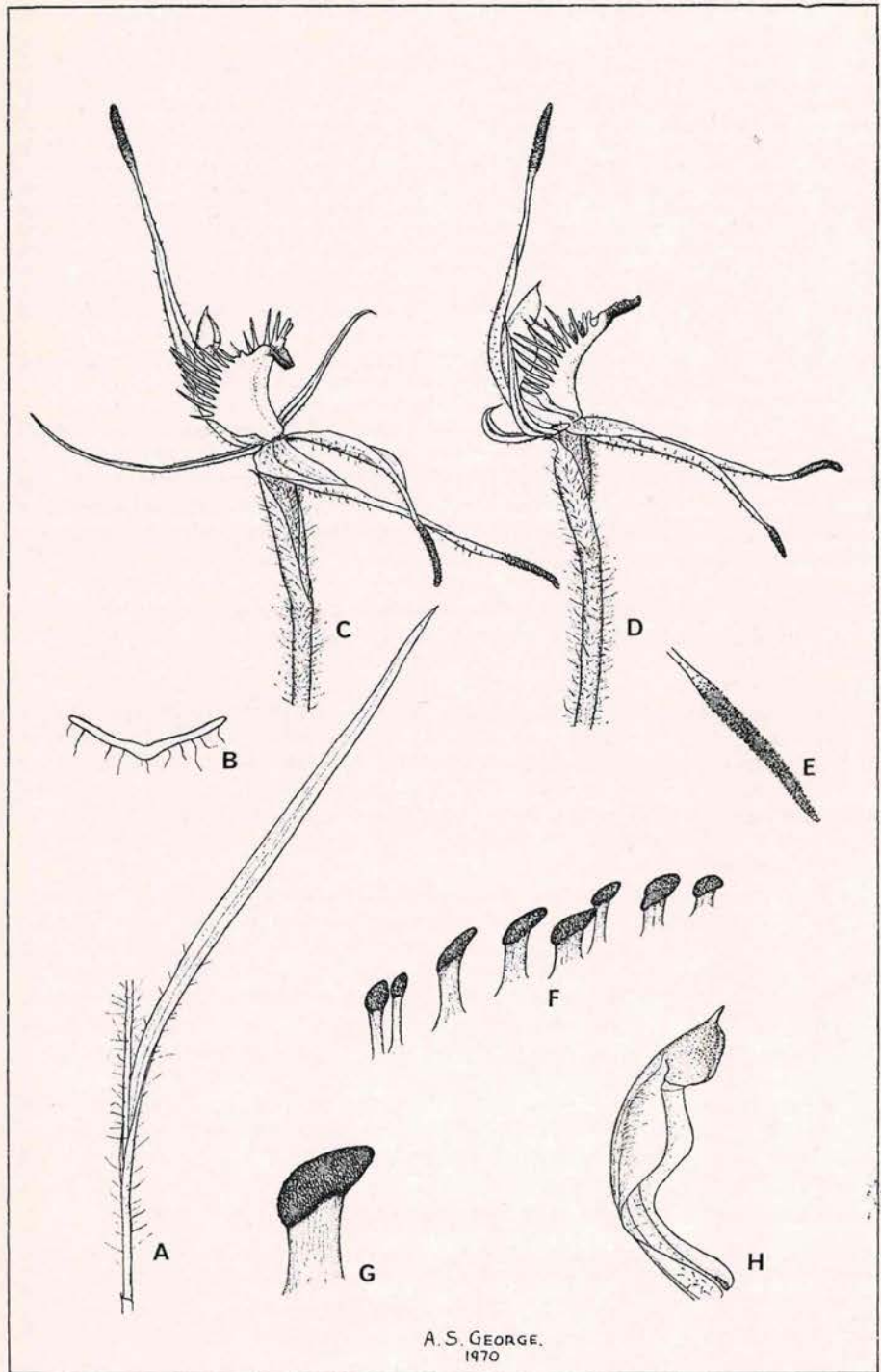


Figure 3—*Caladenia graminifolia* sp. nov. A—Leaf, x 0.6. B—T.S. lower part of leaf to show distribution of indumentum. C, D—Flower, x 1.4. E—Apex of lateral sepal. F—Calli. G—One callus. H—Column, x 3.5. All from George 9468.

***Pterostylis angusta* A. S. George sp. nov. (Figure 4)**

Planta gracilis 10–20 cm alta. Caulis foliatus, parum flexuosus, subtiliter scabridus. Folia 3–7, amplexicaulia, late lineari-lanceolata, acuta, 15–30 mm longa. Folia plantarum juvenilium rosulata, petiolata, late trullato-ovata, acuta, ad 25 mm longa. Flos 1 (raro 2) albo-translucens atro-fuscoviridi vittatus. Galea 13–16 mm alta ad apicem prorsum et leviter deorsum curvata. Sepalum dorsale supra basin gibbosum (ubi 5.5–6.5 mm latum), superne angustatum naviculare (ubi 3–3.5 mm latum) apice acuto non mucronato. Petala longa fere quam sepalum dorsale, falcata, acuta, supra basin margine postice obtuse-angulato. Sepala lateralia erecta, 18–30 mm longa, per 9–11 mm connata ubi anguste oblongo-rhombea ad 7 mm lata, in apices filiformes angustata; sinus inter sepala parum acutus marginibus involutis. Labellum breviter unguiculatum, lineare, planum vel parum concavum, non constrictum, ad apicem acutum sensim angustatum etiam prorsum et deorsum per sinum sepalorum curvatum; appendix basalis cristata. Columna 12–13 mm alta, cum sepalo dorsale per 2–3 mm connata, alis oblongo-auriculatis auriculis basalibus obtusis intus barbatis, auriculis superis acutis. Anthera 1 mm longa. Stigma oblongum, 2 mm longum, ad basin obtusum supra angustatum.

*Type:* West of Mt. Trio, Stirling Range, W.A., in clay-quartzite soil in wandoo woodland, *A. S. George* 9480, Aug. 2, 1969—holo.: PERTH, iso.: K, MEL, NSW.

A slender plant 10–20 cm tall. Stem leafy, slightly flexuose, finely scabrid. Leaves 3–7, amplexicaul, broadly linear-lanceolate, acute 15–30 mm long. Leaves of juvenile plants rosetted, petiolate, broadly trullate-ovate, acute, up to 25 mm long. Flower one (rarely two), translucent-white banded with dark brownish-green. Galea 13–16 mm tall, curved forwards and slightly downwards towards the apex. Dorsal sepal gibbous above the base where 5.5–6.5 mm broad, narrowed and navicular above where 3–3.5 mm broad, with an acute, not mucronate apex. Petals almost as long as the dorsal sepal, falcate, acute, with an obtusely angular lobe on the posterior margin above the base. Lateral sepals erect, 18–30 mm long, united for 9–11 mm where narrowly oblong-rhombic, up to 7 mm broad, narrowed into filiform apices; sinus between the sepals rather acute with involute margins. Labellum shortly clawed, linear, flat or slightly concave, not constricted, gradually narrowed to an acute apex, curved forwards and downwards through the sinus of the sepals. Column 12–13 mm high, united with the dorsal sepal for 2–3 mm, with oblong-auriculate wings, basal auricles obtuse and bearded inside, the upper ones acute. Anther 1 mm long. Stigma oblong, 2 mm long, obtuse at the base, narrowed above.

This species has affinity with *Pterostylis alata* (Labill.) Reichb. f., *P. scabra* Lindl., and related species but may be distinguished by the small flower and the very narrow galea. The petals are much narrower in their upper half than those of *P. alata* and *P. scabra*, and it is largely this which gives the galea its narrow form. The lateral sepals are also narrower than in the other species. *P. alata* has a shorter, erect, non-protruding labellum, as do some forms of *P. scabra*, while in the typical variety of *P. scabra* the labellum has a constriction where it bends forward.

The species has been found in the Bunbury district, between Broomehill and Kendenup, and in the Stirling Range. The Staer specimen from "Perth" probably has a general locality given to a collection from the south-west of Western Australia.

The specific epithet refers to the narrow aspect of the flower.

Other Collections examined: Perth, *J. Staer*, Aug. 1905 (E); Bunbury, *Mrs. F. M. Coate* (PERTH); 9 miles south of Bunbury, *A. S. George* 5, July 5, 1959 (PERTH, MEL); loc. id., *A. S. George* 866, July 2, 1960 (PERTH, AD); 11 miles south of Bunbury, *A. S. George* 9, July 5, 1959 (PERTH); Broomehill, *T. Carter* (PERTH); 12 miles S.W. of Broomehill, *A. S. George* 9493, Aug. 3, 1969 (PERTH); 6 miles N.E. of Kendenup Siding, *A. S. George* 9483, Aug. 2, 1969 (PERTH); W. Australia, *Brewer* 1878 (K).

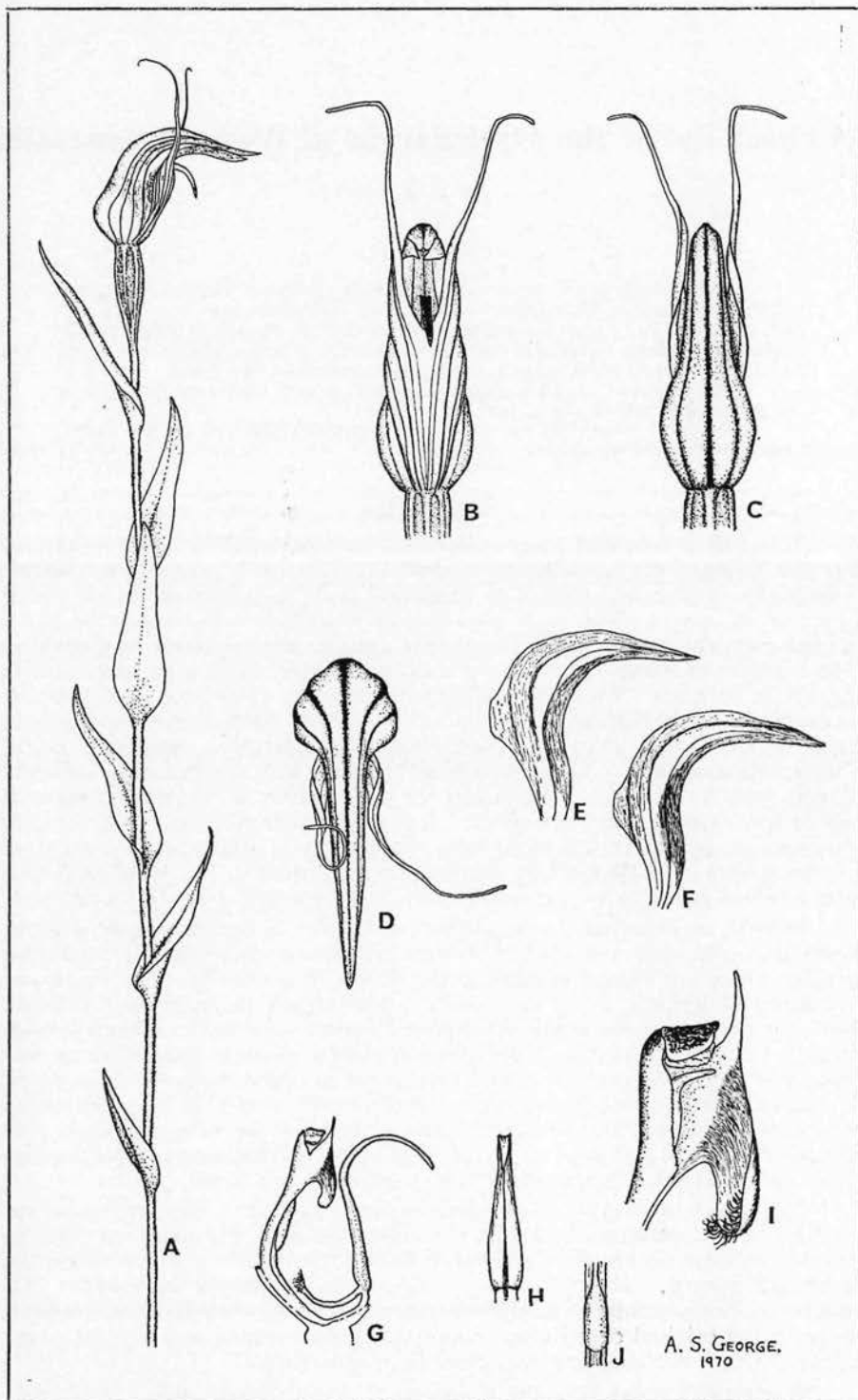


Figure 4—*Pterostylis angusta* sp. nov. A—Plant, x 1·2. B, C, D—Flower, x 2·3—B from front, C from rear, D from above. E, F—Petals, x 2·2. G—Column and labellum, x 1·7. H—Labellum from front, x 1·7. I—Apex of column with one wing removed. J—Stigma. All from George 866.