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TWO NEW SPECIES OF *DROSERA* FROM WESTERN AUSTRALIA

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ABSTRACT

Two new species of *Drosera*, *D. marchantii* and *D. fimbriata*, are described and illustrated from collections made in Western Australia and both are assigned to the subgenus *Ergaleium*.

The two species described below were collected while researching the genus *Drosera* in Southwestern Australia for anatomical and morphological studies. Both species have unusual morphological features which necessitates their description before anatomical studies can be published.

Drosera marchantii L. DeBuhr, sp. nov. FIGS. 1A–C, 2

Herba perennis, tuberosa, stolonibus pluribus infirmis. Caulis erectus, simplex vel raro ramosus, 20–40 cm longus, glaber. Folia peltata, alterna; laminae rotundae, 2.5–3.5 mm diam.; petioli 5–6 mm longi. Inflorescentia 1–13-flora, terminalis, subinde semel ramosa; pedicelli 12–20 cm longi. Calyx et corolla quinquepartitus; sepala acuta, 3–4 mm longa, 1.5–2.5 mm lata, glandulosa, fimbriata pilis glandulosis; petala 12–15 mm longa, elliptica, obtusa, rosea, unguiculata. Stamina 5, 2.5 mm longa, versatilia, extrorsa. Ovarium roseum, circ. 1 mm longus, repetite ramosus. Capsula globulosa, circ. 2.5–3 mm diam., loculicida. Semina linearia, atra, circ. 1 mm longa, numerosa.

Holotype: AUSTRALIA. WESTERN AUSTRALIA. Fourteen mi N of Bunbury along the road to Waroona, Sept. 5, 1974, *DeBuhr 3491* (RSA).—*Isotypes*: CANB, K, PERTH, US, B, CAN, E, NSW.

Erect, perennial herb; producing several weak stolons several inches under the soil surface; perennating by tubers. Stems glabrous, 20–40 cm tall, unbranched except occasionally at base of plant. Insectivorous leaves 10–30, alternate, peltate, scattered on upper ¾ of stem, one leaf at each node; petioles 5–6 mm long and recurved near the blade with the blade directed outwardly or downwardly; leaf blades round, 2.5–3.5 mm in diam, forming a shallow cup. Scale leaves 5–20, narrow, linear, alternate, located on the lower ¼ of the stem, 3–4 mm long. Inflorescence 1–13-flowered, terminal, loose helical cyme, occasionally once branched; pedicels 12–20 mm long; bracts subtending pedicels of upper flowers only, narrow, linear, glandular, 1–2 mm long. Perianth pentamerous; sepals 3–4 mm long, 1.5–

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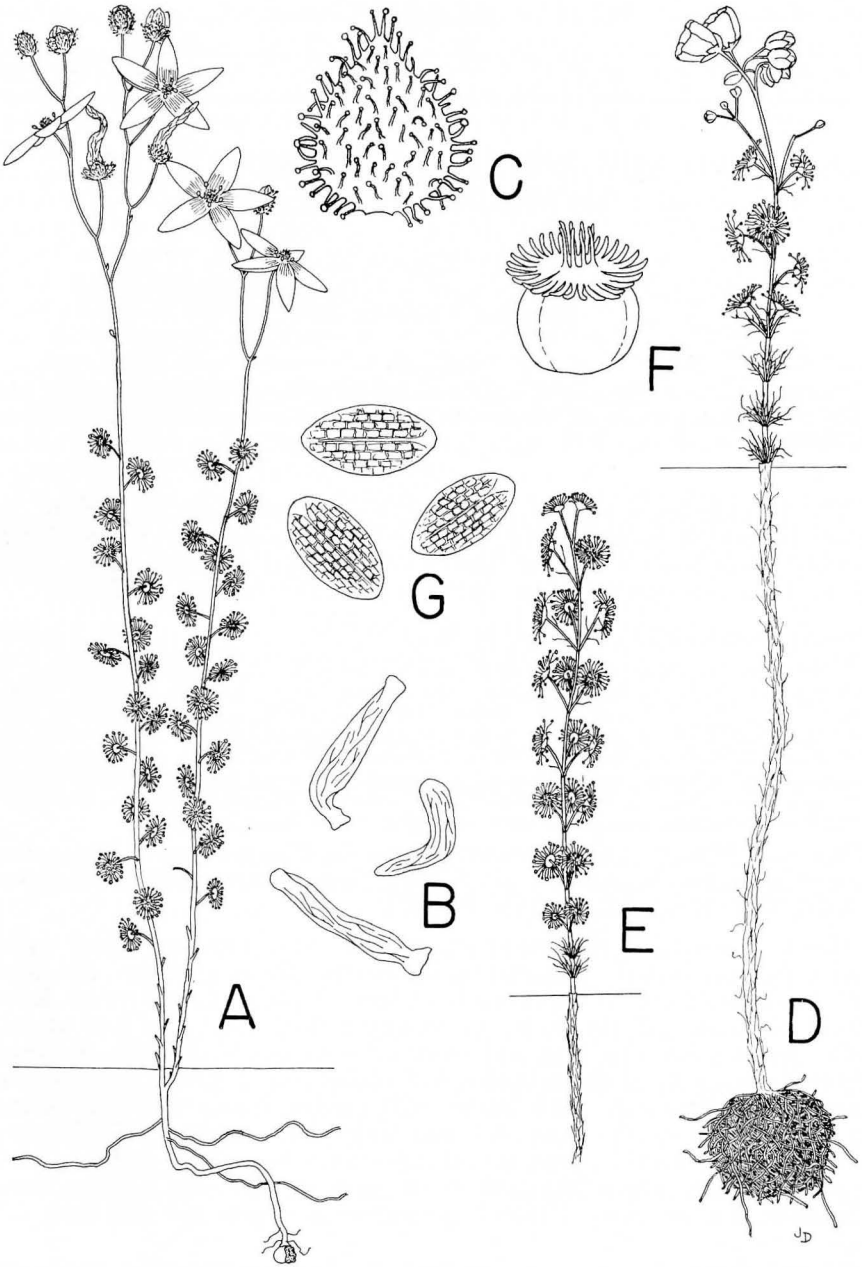
A
B
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2.5 mm wide, glandular, acute, fringed with glandular hairs; petals 12–15 mm long, pink, clawed, ellipical, obtuse. Stamens 5, 2.5 mm long, versatile, extrorse. Pistil with 3-carpellate ovary, ca. 1 mm in diam, pink; style ca. 1 mm long, repeatedly branched. Fruit a globose capsule 2.5–3.5 mm in diam. Seeds linear, black, ca. 1 mm long, numerous.

Distribution and habitat: *Drosera marchantii* is endemic to Western Australia and is apparently restricted to the Bunbury area south of Perth. It grows most commonly in very moist, humus-rich, almost swampy soil on the floor of *Eucalyptus* forests. However, this species was also seen in small numbers and very rarely on laterite hills between Donnybrook and Collie. *Drosera marchantii* is unusual in that in the upper few inches of the soil it sends out several weak stolons which produce tubers later in the season. These stolons are probably a response to the high moisture-holding capacity of the soil and thereby the longer growing season, similar to the condition found in *D. modesta* Diels, which occupies similar habitats in the Stirling Range and along the south coast.

Other collections: AUSTRALIA. WESTERN AUSTRALIA. Along the road to Boyanup ¾ mi W of Stratham (Stratham is at the jct. of the road to Boyanup and the Bunbury-Busselton Road), Sept. 4, 1974, *DeBuhr 3477* (RSA).

If one follows the classification in the monograph of the genus by Diels (1906), *D. marchantii* should be placed in the subgenus *Ergaleium* DC. which has underground perennating structures and which lacks stipules, and in the section *Polypeltes* Diels which has cauline, peltate leaves and minute, ovoid or flattened, seeds. In the section *Polypeltes*, *D. marchantii* has its affinities with *D. microphylla* Endl., *D. heterophylla* Lindl., and *D. huegelii* Endl. All of these species have erect, stout, seldom branched stems, alternate leaves with only one leaf at each node, and a repeatedly branched style. *Drosera marchantii* differs from the above three species in producing horizontal stolons and in having the sepals covered with glandular hairs (Fig. 1C). It is a very distinct species which can easily be distinguished from the others by the following characteristics: *D. heterophylla* has slightly lobed leaves, white petals, sepals nonglandular except for glandular fringed margins, eight or more perianth segments and stamens, a larger fruit, larger scale leaves, and generally a smaller number of flowers; *D. huegelii* has much longer leaf petioles, very deep cups on the insectivorous leaves, generally a smaller number of leaves, longer sepals which are nonglandular but fringed, and white petals; and *D. microphylla* has petals the same size as the sepals and deep purple-red in color, nonglandular and nonfringed sepals, longer leaf petioles, and leaf blades which are not entirely round but are slightly lobed.

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Fig. 1. A–C. *Drosera marchantii* DeBuhr.—A. Habit of plant, × ¾.—B. Seeds, × 25.—C. Sepal showing glandular nature, × 10.—D–G. *Drosera fimbriata* DeBuhr.—D. Habit of plant, × ½.—E. Habit of plant when not flowering during that season, × ½.—F. Ovary and style, × 10.—G. Seeds, × 35. (Drawings by John Deliani.)

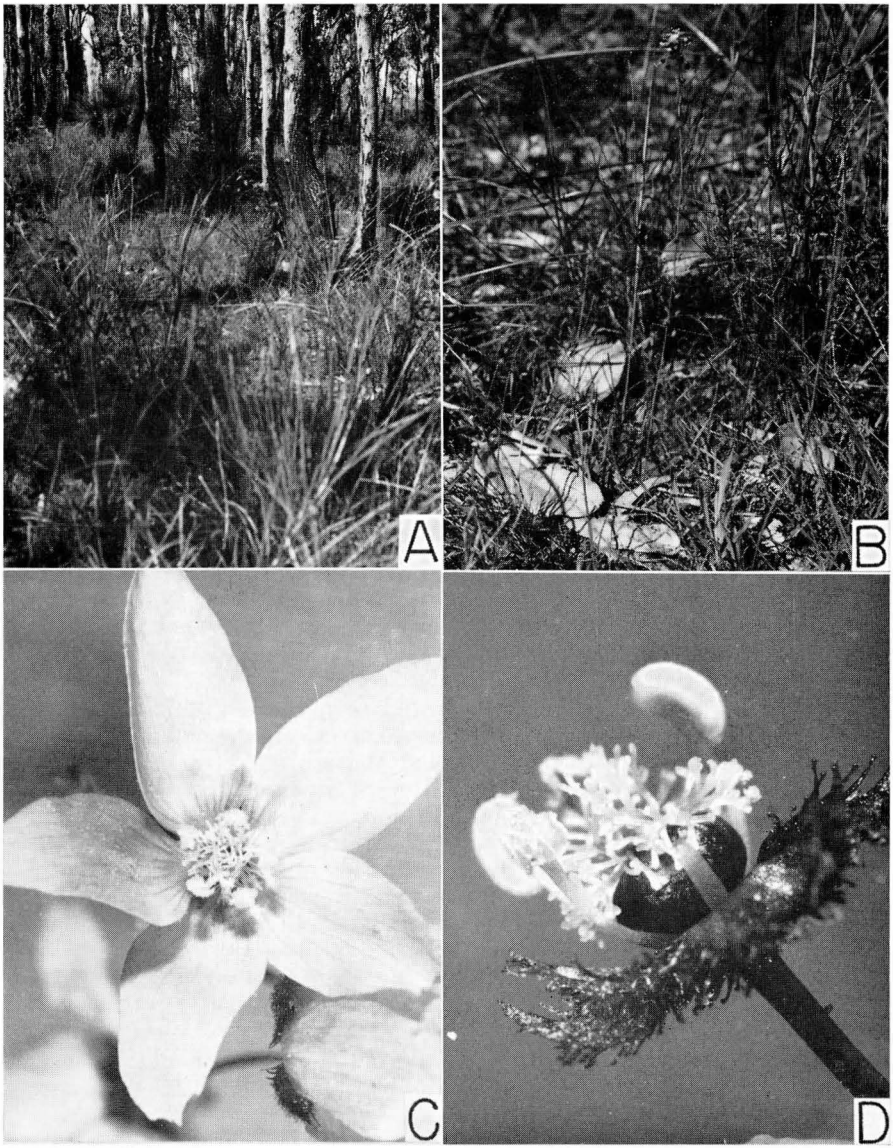

Fig. 2. *Drosera marchantii* DeBuhr.—A. Habitat ¾ mile west of Stratham, Western Australia, moist *Eucalyptus* forest.—B. Habit of plant (*DeBuhr 3477*), × ⅓.—C. Face view of flower (*Carlquist 5527*), × 6.—D. Floral dissection with petals and half of front stamen removed, showing nature of style (*Carlquist 5527*), × 20. (Pictures used in C and D were taken by S. Carlquist.)

This species is named for Dr. Neville Marchant of the Western Australia Herbarium in Perth, W. A. Dr. Marchant is currently working on the biosystematics of the species of *Drosera* in Southwestern Australia.

Drosera fimbriata L. DeBuhr, sp. nov. FIGS. 1D–G, 3, 4A

Herba perennis, tuberosa. Caulis erectus, simplex vel raro ramosus, 5–10 cm longus, glaber. Folia insectivora peltata, plerumque 1, raro 2–3, ad nodos; laminae leviter lobatae, 3–4 mm diam.; petioli 5–6 mm longi; trichomata 0–4, in petiolis dispersa, 2–3 mm longa. Folia non peltata, non insectivora, verticillata, 3–7 ad inferos 3–4 nodos, 4–6 mm longa, 0.5–1 mm lata, fimbriata; trichomata numerosa, 2–3 mm longa, aliquot glandulosa ad apicem. Inflorescentia 5–15-flora, terminalis, ramosa; pedicelli 2–3 mm longi. Calyx et corolla quinquepartitus; sepala 4–5 mm longa, 2–3 mm lata, acuta, ovalia, glabra; petala 5–6 mm longa, alba, cuneata, 5–6 mm lata ad apicem. Stamina 5, 3 mm longa, versatilia, extrorsa. Ovarium circ. 1 mm diam. Stylus 3-partitus, segmentatus circ. 1 mm longus. Semina numerosa, ovoidea.

Holotype: AUSTRALIA. WESTERN AUSTRALIA. Eighteen mi NE of Manypeaks along the road to Jerramungup, Oct. 14, 1974, *DeBuhr 4098* (RSA).—*Isotypes*: CANB, K, PERTH, US.

Erect, perennial herb; perennating by tubers; occasionally weakly branched from upper axils. Above-ground portion of stem glabrous, 5–10 cm long; underground portion of stem enclosed in remnants of growths of previous years, to 12 cm long. Insectivorous leaves peltate, usually 1, occasionally 2–3, at each node; blades not entirely round but very slightly lobed, 3–4 mm in diam; petioles 5–6 mm long; trichomes 0–4, scattered on petiole, 2–3 mm long, some with glandular tips. Modified leaves 3–7 in a whorl at the lower 3–4 nodes, 4–6 mm long, 0.5–1 mm wide, fimbriate, not insectivorous; trichomes numerous, 2–3 mm long, some with glandular tips. Inflorescence 5–15-flowered, terminal, helical cyme, sometimes branched; pedicels 2–3 mm long; bracts subtending pedicels narrow, linear, glabrous, ca. 1 mm long. Perianth pentamerous; sepals 4–5 mm long, 2–3 mm wide, acute, oval, glabrous; petals 5–6 mm long, white, cuneate, 5–6 mm wide at apex. Stamens 5, 3 mm long, versatile, extrorse. Pistil with 3-carpellate ovary, ca. 1 mm diam; style ca. 1 mm long, composed of three parts which are each divided into 6–10 linear segments; several of the segments are erect, and the remaining segments are fused at the base and radiate laterally with the tips slightly upturned. Seeds numerous, small, black, ovoid.

Distribution and habitat: *Drosera fimbriata* was found to be very common at the type locality northeast of Manypeaks, W. A., in disturbed, deep, white sand areas with *Banksia speciosa* R. Br., *B. attenuata* R. Br., and *Drosera platypoda* Turcz. Several plants were found growing near Oyster Bay east of Albany in deep white sand with *Casuarina* sp. and *Banksia coccinea* R. Br. *Drosera fimbriata* is endemic to Western Australia and, until more collections are made, can be considered restricted in distribution to areas east of Albany.

Other collections: AUSTRALIA. WESTERN AUSTRALIA. Eighteen mi NE of Manypeaks along road to Jerramungup, Sept. 21, 1974, *DeBuhr 3707* (RSA);

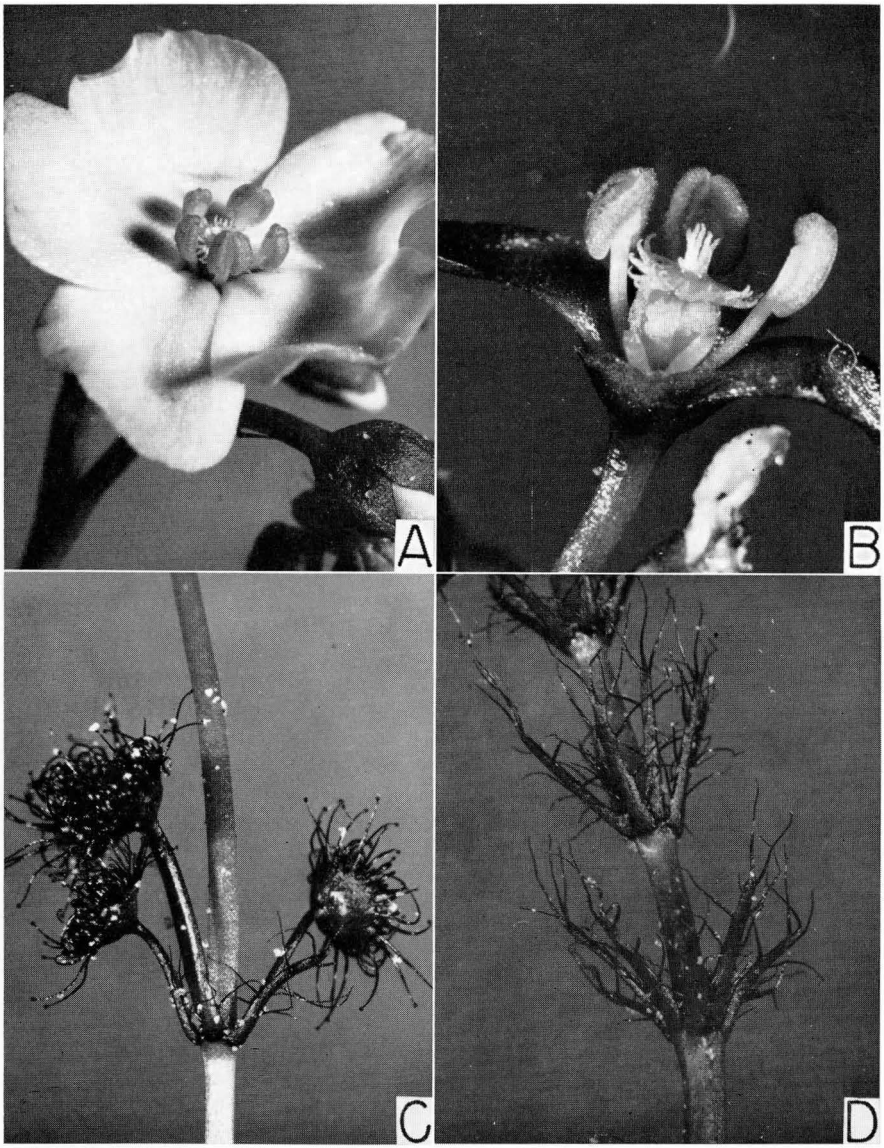

Fig. 3. *Drosera fimbriata* DeBuhr.—A. View of flower (*Carlquist 5731*), × 4.—B. Floral dissection of flower with petals, front sepal, and two front stamens removed, showing ovary and nature of style (*Carlquist 5731*), × 10.—C. Node showing three peltate leaves and one modified, nonlaminar leaf (*Carlquist 5731*), × 5.—D. Several nodes on lower stem showing modified nonlaminar leaves in whorls (*Carlquist 5731*), × 5. (All pictures used in Fig. 3 were taken by S. Carlquist.)

near Oyster Bay E of Albany beside road to Two Peoples Bay, Oct. 16, 1974, *DeBuhr 4134* (RSA).

Drosera fimbriata is unique in having conspicuous leaves which appear to be modified petioles and which are not insectivorous (Fig. 3D). These leaves are arranged in whorls of 3–7 at the lower 3–4 nodes of the stem, and are flattened, linear, and fimbriate with numerous trichomes. The peltate, insectivorous leaves may have similar trichomes on the petioles. Both modified and insectivorous leaves occur in a whorl at the same nodes in a transistion zone between lower nodes containing only modified leaves and upper nodes containing only insectivorous leaves (Fig. 3C). Insectivorous leaves are usually borne singly on the upper half of the stem. Occasionally some plants of *D. fimbriata* do not flower. When this occurs, all of the insectivorous leaves apparently occur in whorls of three leaves at each node or sometimes two leaves at each node in an alternate manner (Fig. 1E).

Because of the tuberous, underground, perennating structure, *D. fimbriata* should be placed in the subgenus *Ergaleium* (Diels, 1906). However, affinities of *D. fimbriata* with either of the two sections of the subgenus *Ergaleium* are not obvious. *Drosera fimbriata* has cauline, peltate, insectivorous leaves, which indicates a position in the section *Polypeltes*. But *D. fimbriata* also resembles *D. stolonifera* Endl. in the section *Erythrorhiza* Planch. in having leaves in whorls (Fig. 4C). Whorled leaves were not previously known in the section *Polypeltes*, and no species in the section *Erythrorhiza* have peltate leaves. The sepals and inflorescence of *D. fimbriata* also resemble those of *D. stolonifera*.

Within the section *Polypeltes*, *D. fimbriata* most closely resembles *D. myriantha* Planch. Both of these species are erect and occasionally branched from the upper axils (Fig. 4A,B), and both have insectivorous leaves borne one at each node (at least in the upper half of the stem of flowering plants of *D. fimbriata*). They also have glabrous sepals, white cuneate petals, and leaf blades without lobed appendages (as in *D. gigantea* Lindl.). *Drosera fimbriata* is smaller and less branched than *D. myriantha*, and has modified leaves which are not present in *D. myriantha*.

Drosera fimbriata has an unusual style (Fig. 1F) which is divided into three parts; each part further divided into several (6–10) linear segments. Two or three segments are erect and positioned near the center of the style. The remaining segments are fused at the base and form a flattened structure in which the laterally directed free terminations are more or less upturned at their tips. A subspecies of *D. stolonifera* occurring in the Stirling Range has a style very similar in construction to the style of *D. fimbriata*. *Drosera myriantha* also resembles *D. fimbriata* in having a divided, 3-parted style, but its style consists of fewer (3–5), much longer, divergent segments that are not fused at the base (Fig. 4D).

At this time, the relative significance of leaf shape and arrangement, and stylar construction, is not fully understood. The habit and leaf characteristics of *D. stolonifera* are extremely variable, and since *D. fimbriata* has whorled leaves and a stylar construction similar to the style in *D. stolonifera*, *D. fimbriata* might be best placed, at the present time, in the section *Erythrorhiza*. However, based on the peltate nature of the leaves of *D.*

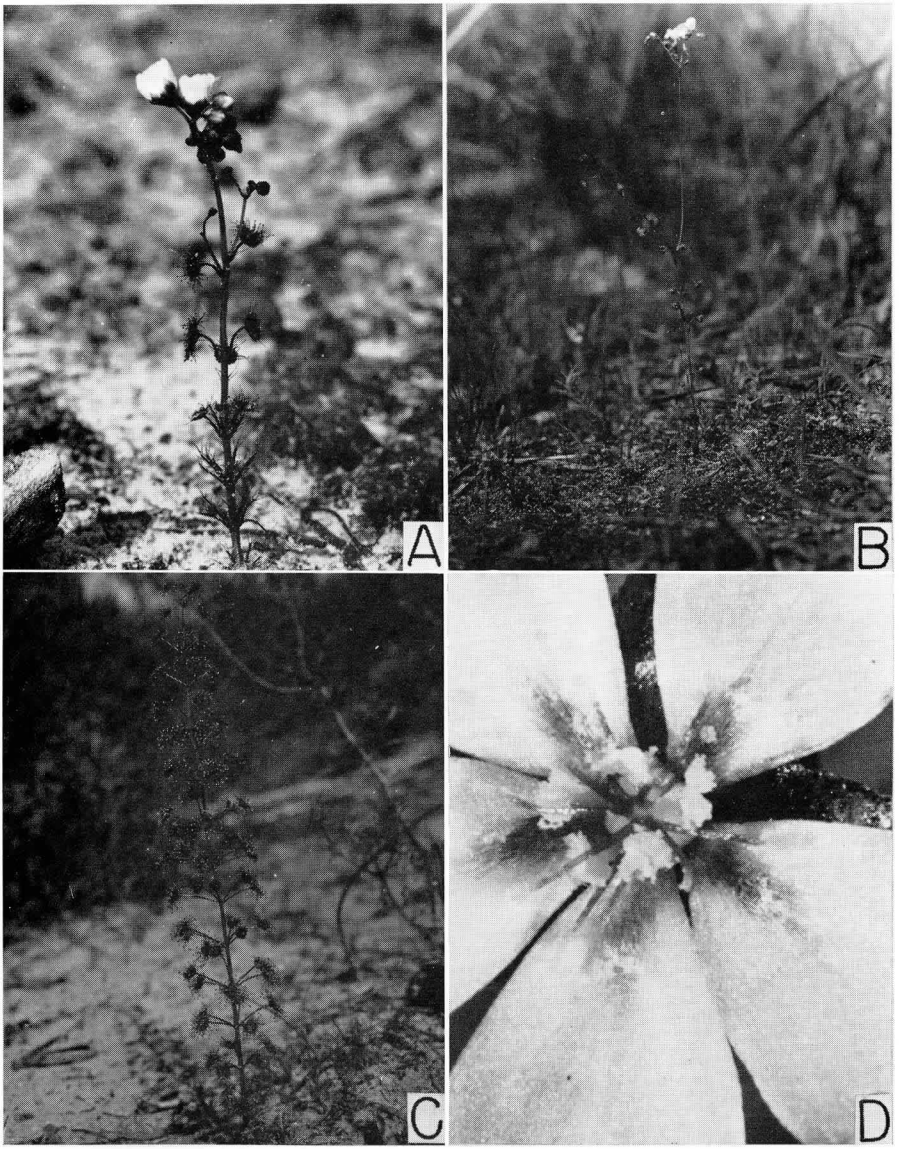

Fig. 4.—A. *Drosera fimbriata* DeBuhr. Habit of plant (*DeBuhr 4098*), × ½.—B. *Drosera myrianth* Planch. Habit of plant (*Carlquist 6054*), × ¼.—C. *Drosera stolonifera* Endl. Habit of plant (*DeBuhr 3376*), × ⅜.—D. *Drosera myriantha* Planch. Close-up of flower showing nature of style (*Carlquist 6054*), × 8. (Pictures used in B and D were taken by S. Carlquist.)

fimbriata, and the similarity of *D. fimbriata* to *D. myriantha*, I would suggest that the subgenus *Ergaleium* should not be divided into two sections. Anatomical studies of stems and leaves may contribute information relating to this problem.

The specific epithet refers to the fimbriate nature of the modified leaves on the lower portion of the stem.

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