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I. GEOCAULON, A NEW GENUS OF THE SANTALACEAE

EVER since I first met *Comandra livida* Richardson, in 1894, I have had a strong conviction that it is out of place in the genus *Comandra* Nutt. Many times subsequently in the field, as I have gathered the juicy scarlet false-drupes from the filiform axillary peduncles or have examined the bronze or green, often unisexual, flowers, I have made a mental protest against the inclusion of this plant of the moss and damp humus in the same genus with *Comandra umbellata* (L.) Nutt. or with *C. elegans* (Rochel) Reichenb. f. Finally, in August, 1923, with the intention of settling the question, an abundant series of inflorescences was collected on the Shickshock Mountains; but not until the present time have they been closely studied. It now becomes quite clear that in essentially all its characters *C. livida* departs from all the species of *Comandra* proper: *C. umbellata* (L.) Nutt., *C. Richardsiana* Fernald, *C. pallida* A.DC., *C. elegans* (Rochel) Reichenb. f., *C. californica* Eastw., and perhaps others.

In true *Comandra* the stoutish creeping or sprawling superficial or subterranean stems or rootstocks are covered with a loose and freely exfoliating corky to papery whitish-brown cortex; in *C. livida* the very slender and cord-like reddish to dark-brown subterranean stems have a tight and smooth cortex. In true *Comandra* the inflorescences are terminal panicles or corymbs of numerous small umbels, each umbel subtended by a tardily deciduous or persistent foliaceous involucrel; in *C. livida* the 1-3 simple mostly 3-flowered umbels are borne on



filiform peduncles from the axils of the middle leaves, and the brown, scarious involucre are caducous. The flowers of true *Comandra* are perfect, the calyx-tube free from the summit of the ovary and in fruit slightly prolonged as a neck; and the ascending turbinate limb consists of petaloid whitish lobes. The flowers of *C. livida* are androdioecious, the central 1 (rarely 2) perfect, the lateral mostly staminate and promptly dropping after anthesis, or sometimes all the flowers staminate; the calyx-tube is completely adnate to the ovary, not prolonged above it, and the rotate limb consists of bronze or green herbaceous lobes. In true *Comandra* the elongate disk is shallowly lobed, its lobes much shorter than the filaments, and it reaches the summit of the prolonged tube; in *C. livida* the salverform disk arises from the base of the throat and its long lobes about equal the filaments. In true *Comandra* the style is filiform and prolonged; in *C. livida* conical and very short. Finally, the fruit of true *Comandra* is a dry nut with only the lower half or two-thirds of the coriaceous calyx-tube adherent to it, the upper portion forming a free neck below the erect lobes; in *C. livida* the fruit is a scarlet and juicy false-drupe, with the succulent calyx-tube completely surrounding the nut.

Differing in every fundamental character (of rootstock, flowering habit, involucre, fertility of flowers, shape and texture of perianth, adnation of tube, position and lobing of disk, form and length of style, and, above all, in the very different fruit), and restricted to the Hudsonian to arctic-alpine regions of North America, *Comandra livida* does not seem to be congeneric with the species of true *Comandra*, plants of more southern range in America, with an isolated species in southeastern Europe.

In many characters *Comandra livida* is much closer to the monotypic *Nestronia* (or *Darbya*) of the southeastern United States. Like staminate *Nestronia umbellula* Raf., *Comandra livida* has the simple few-flowered umbels on filiform axillary peduncles, borne always below the terminal leaves, the involucre bracts caducous (in all material of *Nestronia* examined completely absent), and the calyx herbaceous and with spreading limb. The pistillate or perfect flower of *Nestronia*, like that of *Comandra livida*, has the ovary quite inferior and ripening into a false-drupe with completely adnate calyx-tube. But in many characters *Comandra livida* departs from *Nestronia*. The latter is a branching shrub, with opposite leaves; *C. livida* at most suffruticose, with simple herbaceous flowering stems and



alternate leaves. *Nestronia* is dioecious or polygamo-dioecious, the pistillate flowers solitary (not umbellate) and with the limb a mere crown; *C. livida* with the perfect flower central in the umbel with the staminate and with a spreading limb. In *Nestronia* the calyx-lobes are normally 4, in *C. livida* 5; in *Nestronia* the calyx-tube of the staminate flower is elongate and lined by the elongate, shallowly lobed or undulate disk; in *C. livida* short-campanulate or salverform, with the lobes of the disk prolonged.

It is thus clear that in some of its technical characters *Comandra livida* is nearer *Nestronia* than it is to *Comandra*; yet it is not satisfactorily placed with either. It is, therefore, here proposed as

**Geocaulon** (*Santalaceae*), gen. nov. Flores andro-dioici, centrales plerumque hermaphroditi, laterales masculi. Calyces herbacei, priores et masculi inferne turbinato, feminei campanulati; lobis ovato-acutis, aeneis vel viridibus, patentibus persistentibusque. Fasciculus pilorum e basi interna lobi cujusve ad antheram tendens ubique adhaerens. Stamina lobis opposita, filamentis subulato, anthera ovoidea, biloculari. Discus epigynus hypocrateriformis, lobis elongatis filamenta subaequantibus. Ovarium inferum, tubo calycis inclusum. Stylus conicus, brevis. Stigma capitellatum. Drupa ovoideo-globosa coccinea, vestigiis loborum et disci coronata.—Fruticulus caulibus sarmentiformibus, valde repentibus, brunneis vel rufescentibus; ramis floriferis erectis; foliis alternis integris; umbella solitaria axillaris pedunculata 3 (2–4)-flora; bracteis involucri scariosis brunneis caducis; floribus masculis caducis. (Γῆ, *earth*, and καύλος, *stalk*, from the long, slightly subterranean but scarcely modified stems.)—A single species.

**G. lividum** (Richardson), n. comb. *Comandra livida* Richardson in Frankl. Narr. 1st Journ. App. 734 (1823).—Creeping stems very slender, 1.5–3 mm. thick, with close smooth cortex; flowering stems 0.7–3 dm. high: leaves flaccid, grayish-green to purplish, elliptic to narrowly obovate, 1.5–5 cm. long: peduncles 1–3, filiform, in fruit 1–2 cm. long: limb of perianth about 4 mm. broad: drupes solitary (rarely 2), 6–10 mm. in diameter, with juicy pulp; the stone (or nut) thin-walled, with a very fleshy and oily edible kernel.—Creeping in moss or damp humus, Labrador to Alaska, south to southern New Brunswick, eastern Maine, mountains of northern New England, northern Michigan, northern Minnesota, Saskatchewan, Alberta and British Columbia. Fl. late May–early August; fr. July–September. The following, selected from many specimens, are characteristic. LABRADOR: Makkovik, Stecker, no. 99; Hopedale, Bowdoin College Exped. no. 245; Square Island, 1864, B. P. Mann; Chateau Bay, Bowdoin College Exped. no. 75; Forteau, Fernald & Wiegand, no. 3284. NEWFOUNDLAND: Burnt Cape, Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss, no. 28,113; Mistaken Cove, Wiegand, Pease, Long & Hotchkiss, no. 28,112; Brig Bay, Fernald, Long & Dunbar,



no. 26,610; Deer Pond, *Wiegand, Gilbert & Hotchkiss*, no. 28,114; Port Saunders, *Fernald & Wiegand*, no. 3283; Bay of Islands, *Eames & Godfrey*, no. 6037; Sandy Lake, *Fernald & Wiegand*, no. 3282; Grand Falls, *Fernald, Wiegand, Bartram & Darlington*, nos. 5327, 5328; Tilt Cove, *Fernald & Wiegand*, no. 5331; St. John's, *Robinson & Schrenk*, no. 152. QUEBEC: Archipel du Petit Mécatina, *St. John*, no. 90,397; Ile à la Proie, Archipel de Mingan, *Victorin & Rolland*, nos. 18,506, 22,055; Baie Sainte-Claire, Anticosti, *Victorin*, no. 4270; Seven Islands, *C. B. Robinson*, no. 731; La Péninsule, Baie de Gaspé, *Victorin et al.* no. 17,331; Tabletop Mts., Gaspé Co., *Fernald, Dodge & Smith*, no. 25,713; New Carlisle, 1902, *Williams & Fernald*; Lac Saint-Jean, *Victorin*, no. 15,754; Tadousac, 1892, *Kennedy*; Rivière du Loup, *Victorin*, no. 134; St. Alexandre de Kamouraska, 1880, *Pringle*; Black Lake, *Fernald & Jackson*, no. 12,077. MAGDALEN ISLANDS: Brion Island, *St. John*, no. 1851. NEW BRUNSWICK: St. John, 1872, *T. P. James*. MAINE: Mt. Katahdin, 1900, *Fernald*; Mt. Saddleback, Franklin Co., 1894, *Fernald*, 1902, *Knowlton*; Mt. Abraham, *Knowlton*, no. 606; West Quoddy Head, Lubec, *Fernald*, no. 1715; Roque Bluffs, 1913, *Knowlton*. NEW HAMPSHIRE: Mt. Clinton, *Eggleston*, no. 2399, *Pease*, no. 12,303; Imp Mt., *Pease*, no. 16,766; Mt. Ingalls, *A. H. Moore*, no. 4096, *Pease*, no. 11,210. VERMONT: Mt. Mansfield, *Pringle et al.* ONTARIO: Pic River, *Loring*; Anvil Lake, Timagami Region, *Anderson & Anderson*, no. 26,100 B. MICHIGAN: Isle Royale, 1849, *Whitney*; Keweenaw Co., 1863, *Robbins*; Marquette Island, 1913, *W. H. Manning*. MINNESOTA: border of Lake of the Woods, south of 49°, *Richardson*. MANITOBA: Churchill, *J. M. Macoun*, no. 79,398; Lake Manitoba, 1881, *Macoun*. SASKATCHEWAN. 1857-8, *Bourgeau*. ALBERTA: Rocky Mts., *Drummond*; Banff, *Canby et al.* BRITISH COLUMBIA: Macleod's Lake, lat. 55°, *Macoun*, no. 1559; Revelstoke, *Shaw*, no. 31. YUKON: Dawson, *Eastwood*, nos. 117, 491. ALASKA: Lake Iliamna Region, *Gorman*, no. 174.

*Geocaulon lividum* was beautifully illustrated, as *Comandra livida*, in Hooker, *Flora Boreali-Americana*, t. clxxix B. Although the accompanying description indicates no difference between the central and lateral flowers, the artist noted the difference and showed the central perfect flower much larger than the others.

## II. THE AMERICAN AND EASTERN ASIATIC BECKMANNIA

It has often been pointed out that the plant of northwestern North America and northeastern Asia which has passed as *Beckmannia erucaeformis* (L.) Host is not identical with the true *B. erucaeformis* (*Phalaris erucaeformis* L.) of southeastern Europe and southwestern Asia; but not until Hultén's recent scholarly publication upon the





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