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BOTANY OF THE DEATH VALLEY EXPEDITION.

A REPORT ON THE BOTANY OF THE EXPEDITION SENT OUT
IN 1891 BY THE U. S. DEPARTMENT OF AGRICULTURE
TO MAKE A BIOLOGICAL SURVEY OF THE REGION
OF DEATH VALLEY, CALIFORNIA.

BY

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1893.

Cryptanthe barbiger (Gray) Syn. Fl. ii. pt. i. 194 (1878), under *Eritrichium*; Greene, Pittonia, i. 114 (1887). Type locality not given; range, "S. California, from Santa Barbara Co. to S. Utah and Arizona."

In Mill Creek Cañon, Panamint Mountains (No. 803).

Cryptanthe cycloptera Greene, Bull. Cal. Acad. i. 207 (1885), under *Krynitzkia*; Greene, Pittonia, i. 120 (1887). Type locality, "Arizona, at Tucson."

The characters originally assigned to this plant, "Nutlets all winged; wings * * * continuous across the base [of the nutlet]; ventral face not muricate," distinguish it clearly from the original of *C. pterocarya*. In that plant one of the nutlets is uniformly wingless, while the wing in the others does not extend across the base of the nutlet, the inner face of which is usually muricate. In both plants, particularly *C. cycloptera*, the wings vary freely from entire to deeply crenate. Dr. Gray united the two plants under *C. pterocarya*, but I have not found a satisfactory series of intergrades. The species was seen in Furnace Creek Cañon (No. 444), and in Johnson and Surprise cañons (No. 720), Panamint Mountains.

Cryptanthe flaccida (Lohm.) Pug. ii. 22 (1830), under *Myosotis*—Dougl. MS.; Greene, Pittonia, i. 115 (1887). Type locality not given; plant collected by Douglas. Between Kernville and Havilah (No. 1054).

Cryptanthe intermedia (Gray) Proc. Amer. Acad. xvii. 225 (1882), under *Eritrichium*; Greene, Pittonia, i. 114 (1887). Type locality, "southern part of California to adjacent Arizona."

In the Vegas Wash (No. 423), in Furnace Creek Cañon (No. 442), in Johnson Cañon (No. 558), in Hall Cañon (No. 700), and between Kernville and Havilah (No. 1058). This is one of the most abundant species of the genus in the Lower Sonoran zone.

Cryptanthe pterocarya (Torr.) Bot. Wilkes Exped. xvii. 415 (1874), under *Eritrichium*; Greene, Pittonia, i. 120 (1887). Type locality, "Walla Walla River, Washington Territory."

Near Crystal Spring, Coso Mountains (No. 920).

Cryptanthe racemosa (Gray) Proc. Amer. Acad. xvii. 226 (1882), under *Eritrichium*—Wats. in herb.; Greene, Pittonia, i. 115 (1887). Type locality, "Mesquite Cañon, San Bernardino County, California."

This is the only suffrutescent *Cryptanthe* known. It occurred in a cañon of the Funeral Mountains, opposite Bennett Wells (No. 206), and in Surprise (No. 704) and Willow Creek cañons, Panamint Mountains. The species always grew in cañons and always within the limits of the Lower Sonoran. One specimen was collected, the woody base of which was 7 mm. in diameter.

Cryptanthe ramosissima Greene, Bull. Cal. Acad. i. 203 (1885), under *Krynitzkia*; Greene, Pittonia, i. 116 (1887). Type locality, "Mohave Desert."

Near Bennett Wells, Death Valley (Nos. 197, 480, 2150), in Furnace Creek Cañon, Funeral Mountains (No. 446), in Surprise Cañon, Panamint Mountains (No. 701). The specific name is probably untenable, since it was first proposed by Dr. Gray¹ as a substitute for the older *Eritrichium* (now *Cryptanthe*) *racemosum*, and at that time included only by an error the plant to which Professor Greene has limited it. The species is abundant on the open gravelly mesas of Death Valley, and probably in many other parts of the Lower Sonoran zone.

Cryptanthe recurvata sp. nov.

PLATE XVI.

Plant annual, 10 to 15 cm. high, sometimes depauperate and smaller; stem erect, usually branching, appressed-hirsute, the hairs on the lower part of the stem some-

¹ Proc. Amer. Acad. xx. 277 (1885).

times divergent; leaves linear-oblanccolate, the larger ones about 1.5 cm. long, divergently hirsute; inflorescence racemiform; false racemes terminating the main axis and the branches, in fruit 2 to 4 cm. long, secundiflorous; flowers 2 mm. long; corolla minute, barely exerted from the calyx; fruiting calyx 3 to 4 mm. long, recurved; sepals linear-filiform, slightly dilated and keeled near the base, hirsute with a few small hairs like those of the stem, and hispid toward the base with stiff divergent hairs half as long as the calyx; nutlet single, 1.5 to 1.8 mm. long, muriculate on both faces, ovate-lanceolate or ovate with an acumination, apex slightly incurved, angles rounded, a faint median line visible on the back, the inner face with a closed groove dilated into a small triangular areola at the base.

Type specimen in the United States National Herbarium, No. 713, Death Valley Expedition; collected April 21, 1891, at an altitude of 800 meters, in Surprise Cañon, Panamint Mountains, Inyo County, California, by Frederick V. Coville.

The sheet of No. 850, King Survey, in the National Herbarium, distributed as *Eritrichium angustifolium*, contains a specimen of this plant. It was collected in the Trinity Mountains, Nevada, at an altitude of 5,000 feet. In the Gray Herbarium is a sheet of the same plant, collected at Candelaria, Nevada, in 1886, No. 260, by W. H. Shockley. Dr. Gray referred it doubtfully to *C. angustifolia*. The species may be distinguished at sight from all the related ones by its recurved fruiting calyx.

Cryptanthe submollis (Gray) Proc. Amer. Acad. xiii. 374 (1878), as *Eritrichium holopterygium submolle*. Type locality, "St. George, S. Utah."

Surprise Cañon, Panamint Mountains (No. 714). This is the *Krynitzkia utahensis* of Gray. The species is now for the first time reported from California. It has been collected also at Yucca, Arizona, by Jones, and at Candelaria, Nevada, by Shockley, No. 347, of 1886.

Amsinckia spectabilis Fisch. & Mey. Ind. Sem. Petrop. ii. 26 (1835). Type locality not given.

Near San Bernardino (No. 35).

Amsinckia tessellata Gray, Proc. Amer. Acad. x. 54 (1874). Type localities, "Contra-Costa Mountains near Monte Diablo" "Fort Tejon," "near Carson City," "Sierra County," "Humboldt Mountains," "and Pahranaagat Mountains."

This desert annual is confined to the Lower Sonoran zone of the desert. It was seen first in the Vegas Wash, near its mouth (No. 408), and afterward was found to be a common spring flower. It occurred in Johnson Cañon and the wash leading from it (Nos. 484, 517); in Surprise Cañon; near the Summit Station, on the road from Mohave to Searles's; in Mill Cañon, and Willow Creek Cañon, Panamint Mountains; and near Crystal Spring, Coso Mountains. No. 484 only is in fruit.

Pulmonaria sibirica L. Sp. Pl. i. 135 (1753). Type locality, "in Siberia."

Near Mineral King, Sierra Nevada (No. 1398). This is the *Mertensia sibirica* of most post-Linnean authors. Our plant has larger flowers and more nearly glabrous calyx lobes than is usual in the American plant.

CONVOLVULACEÆ.

Convolvulus longipes Wats. Amer. Nat. vii. 302 (1873). Type locality, "southern Nevada."

Between Kernville and Havilah (No. 1065).

Convolvulus villosus (Kellogg) Proc. Cal. Acad. v. 17 (1873), under *Calystegia*; Gray, Proc. Amer. Acad. xi. 90 (1876). Type locality, "on hillsides at Cisco, C. P. R. R., 6,000 feet high on Sierra Nevada mountains."

Near Mineral King, Sierra Nevada (No. 1441). The blades of the leaves reach 4.5 cm. in breadth.