TABLE 19—(*Continued*)

| *C. divaricata* | *C Noronhaea* |
|---|---|
| Mature heads | |
| involucre turbinate, shedding florets early, up to 7 mm wide at base | involucre sometimes turbinate, sometimes cylindric, shedding florets later, up to 6 mm wide at base |
| outer bracts 7–9, up to 4 mm long, closely appressed, glabrous, purple on margin | outer bracts 6–9, up to 3 mm long, somewhat lax, tomentose, entirely purple, somewhat purple, or green |
| inner bracts up to 15, up to 12 mm long | inner bracts up to 13, up to 10 mm long |
| Achenes and pappus | |
| achenes dark brown<br>5–7 mm long<br>beak 1.5–2.5 mm long<br>pappus 3.5–4.5 mm long, sordid white | achenes usually paler brown<br>4.5–6 mm long<br>beak 0.5–1.5 mm long<br>pappus 3–4 mm long, white |

*Minor Variant of C. Noronhaea*

1. More robust; caudical leaves numerous, runcinate-pinnate from apex to base of blade, but lateral segments broad. Probably an ecad or a variant caused by a transient chromosome deviation, since no plants resembling it appeared among the progeny reared from seed collected at Porto Santo. The more robust aspect and peculiar lower leaves probably caused Lowe to label this specimen var. A (= *C. divaricata*), although he also gave it the number, 67, which was his number for the original collection of this species in 1828. This earliest collection, however, he actually labeled *B. divaricata* nob., only giving it the varietal name, *pumila*, in his original description published in 1833. *Lowe* in 1855 (K), back of the beach, up the Rib. do Cochim ("or Cochino, near the town to the westward," Lowe, Fl. Mad. 1: 554. 1868), Porto Santo.

### *Relationship*

*Crepis Noronhaea* is close to *C. divaricata* and was merged with it by Lowe, who was misled by the reduced nature of the *C. Noronhaea* plants which he collected in Porto Santo in 1828 and by the occurrence of reduced forms of *C. divaricata* in the Desertas, a group of small islands about 48 km southeast of Madeira. Through the kind help of Sr. A. C. de Noronha, Director of the Regional Museum in Funchal, it has been possible to compare living plants of both species. From the study of this material the following outline, showing the differences in the two species, has been prepared. From this comparison it is clear that *C. Noronhaea* is smaller than *C. divaricata* in all its parts. The species differ also, as shown in table 19, in numerous morphological and physiological characters. Yet they are obviously closely related. Thus, it may logically be inferred that *C. Noronhaea* originated from *C. divaricata*, presumably, since the chromosomes of the two species are closely similar, through gene mutations which accompanied or followed isolation.

### 178. **Crepis Balliana** sp. nov.

(Pl. 29. Fig. 270.)

Herba perennis circa 3 dm alta; folia caudicalia circa 10 cm longa 2.5 cm lata oblanceolata acuta denticulata in petiolum alatum attenuata; folia caulina infera circa 7 cm longa lanceolata acuminata integra acute auriculata amplexicaulia altera gradatim reducta summa bracteiformia; caules 2 vel 3 robusti arcuati sulcati remote ramosi, ramis inferis elatis ad summitatem cymose ramosis cum 3–6 capitulis; pe-

dunculi 1–6 cm longi, arcuati; capitula erecta mediocria multiflora; involucra cylindrico-campanulata in fructu circa 8 mm longa 3 mm lata, squamis exterioribus circa 7 lanceolatis quam interioribus circa 3-plo brevioribus, interioribus circa 14 lanceolatis in fructu carinatis ultimo reflexis; achaenia biformia, exterioribus stramineis glabris circa 5 mm longis 0.75 mm latis columnaribus ad apicem gradatim attenuatis in ventrali planis 3-angularibus in dorso convexis et costatis, interioribus fuscis circa 7 mm longis 0.5–0.6 mm latis subteretis in rostrum breviorem et tenuiorem gradatim attenuatis 10-costatis costis crassuisculis spiculatis; pappus albus circa 5 mm longus involucrum excedens.

Perennial (?), about 3 dm high; caudex 7 mm wide; caudical leaves about 10 cm long, 2.5 cm wide, oblanceolate, acute, sinuately denticulate, attenuate into a broadly winged petiole; lower cauline leaves about 7 cm long, lanceolate, acuminate, entire, acutely auriculate, amplexicaul, the others gradually reduced, uppermost bractlike; stem 2 or 3, robust, arcuate, sulcate, remotely branched from near base, lower branches elongated, cymosely few-branched above, 3–6-headed; peduncles 1–6 cm long, arcuate, somewhat thickened near the head; heads erect, medium, many-flowered; involucres cylindric-campanulate, about 8 mm long, 3 mm wide in fruiting heads; outer bracts about 7, lanceolate, about ⅓ as long as the inner; inner bracts about 14, lanceolate, becoming carinate in fruit, ultimately reflexed; achenes biform; marginal achenes stramineous, smooth, 5–5.5 mm long, 0.75 mm wide, columnar, gradually attenuate to the apex, with narrow pappus disk, ventrally flat with a median and lateral angles, dorsally convex and few-ribbed, with an oblique basal scar; inner achenes pale brown, 6.5–7.5 mm long, 0.5–0.6 mm wide, subterete, gradually attenuate into a rather fine beak less than ½ as long as the body, with expanded pappus disk, 10-ribbed, the ribs rather strong, close, rounded, spiculate; pappus white, about 5 mm long, exceeding the involucre.

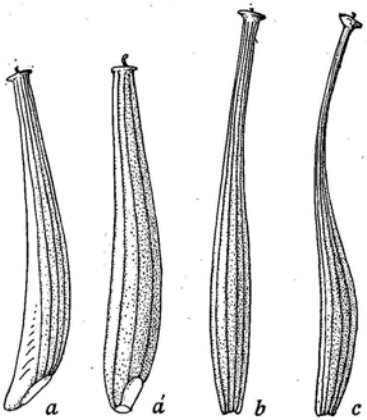


Fig. 270. *Crepis Balliana*, from type (K): *a*, *a'*, marginal achene; *b*, *c*, 2 inner achenes; all, × 8.

Known only from the type specimen which was seen by me in Herb. Kew in 1925. Unfortunately, when I inquired about this specicen in 1927, it could not be found; but it may still be in existence. I had, however, obtained a photograph of the plant, the negative of which, taken by Mr. G. Atkinson, was left at Kew. This photograph has been reproduced in pl. 29. Also, a print and a few achenes, taken from the type, are on file in the Herbarium of the University of California.

Monomorphic.

**Morocco**: Casablanca, *Hooker* in 1871 (K, UC) as *C. tingitana* det. J. Ball.

### *Relationship*

*C. Balliana* was at first mistaken by me for a variant, possibly a tetraploid, of *C. amplexifolia*. But it is apparently a perennial plant, and the achenes actually show greater similarity to those of *C. vesicaria* subspp. *typica* and *myriocephala* than to those of *C. amplexifolia*. Furthermore, the inner achenes are definitely like those of other species in this section rather than any species of sec. 26 (cf. fig. 270). They strongly resemble those of *C. vesicaria proleptica* except that the beak is finer and the ribs are not so broad. The marginal achenes, as well as the leaves and habit of the plant, might well be those of an ancestor of *C. vesicaria myriocephala*, which

has a perennial or biennial root. The fact that this species has been collected only once in a region which has been visited by a number of collectors over a period of 70 years may indicate that it is extremely rare or has become extinct. A thorough search for it in the region of the type locality should be made. Determination of its phylogenetic position in the section is complicated by the phyletic range represented within *C. vesicaria*. Its place between *C. Noronhaea* and *C. libyca* is based on its assumed perennial habit and the comparatively short beak of the inner achenes.

### 179. **Crepis libyca** (Pamp.) Babc.

Univ. Calif. Publ. Bot. 19: 401. 1941. (Fig. 271.)

Perennial or biennial, 1–3 dm high; root strong, woody, tapering from the swollen caudex; caudex 1–2 cm wide, simple, leafy; caudical leaves 7–20 cm long, 2–6 cm wide, oblanceolate, acute, coarsely dentate to runcinate-pinnatifid or pinnately parted with triangular acute denticulate or dentate segments, gradually reduced into the short broadly winged petiole with broader clasping base, segments and teeth corneous-mucronate, ciliate at margin, glabrous or puberulent on both sides; lower cauline leaves similar or sessile, middle and upper ones lanceolate, acuminate, dentate or pinnatifid with narrow acuminate lobes or laciniate near base, uppermost reduced or bractlike; stem erect, robust, sulcate, puberulent, several-branched from below the middle or at the base, lower branches elongated, strict or arcuate, the branches bearing 1–7 heads in close clusters at summit, aggregate inflorescence a corymbiform compound cyme, upper stem, branches, and peduncles ± tomentulose and/or densely gland-pubescent with short fine pale or dark hairs; peduncles 1–6 cm long, rather stout, arcuate; heads erect, large, many-flowered; involucre cylindric-campanulate, 11–13 mm long, 6–8 mm wide at middle, ± canescent-tomentulose and gland-pubescent; outer bracts 8–16, nearly equal, ¼–⅓ as long as inner bracts, 1.5–3 mm wide, ovate to lanceolate, acute, with broad or narrow scarious margins, sometimes with a few very short black setules near tip; inner bracts 13–18, in 2 series, innermost with broader scarious margins, lanceolate, acute, pubescent on inner face, becoming dorsally carinate and spongy-thickened in fruit, ultimately reflexed; receptacle alveolate, fimbrillae low, densely ciliate, cilia 0.25 mm long; corolla 15 mm long; ligule 1.75 mm wide, pubescent at base with acicular hairs up to 0.5 mm long; teeth 0.2–0.6 mm long, gland-crested, with an anterior lip bearing large gland cells and a few stalked acicular hairs; corolla tube 5.5 mm long, pubescent from base to summit with stout acicular hairs 0.1 mm long; anther tube 3.75 × 1 mm dis.; appendages 0.7 mm long, oblong, acute; filaments 0.75 mm longer; style branches 1.75 mm long, 0.15 mm wide, yellow; achenes pale brown, 9–13 mm long, the body 0.5 mm wide, fusiform, attenuate into a very fine beak 1–2 times as long, with expanded pappus disk and a very narrow pale basal callosity, 10-ribbed, ribs narrow, rounded, muriculate; pappus white, 5 mm long, 2–3-seriate, very fine, soft, persistent, exceeding the involucre. Flowering Mar.–Apr.; flowers yellow. Chromosomes, $2n = 8$.

*Crepis taraxacifolia* var. *libyca* Pamp., Nuovo Gior. Bot. Ital. n.s., 24: 158. 1917.

Maritime Libya and N.W. Egypt.
Monomorphic.

**Libya**: Cirenaica, Bengasi, near Lake Bedafam, *Zanon 528* (Fl) type; *ibid.*, Raaba, Cafis, Giok Kebir, *Zanon 562c, 574, 606* (Fl, UCf); Bengasi, *Ruhmer 225* (B, UCf); *ibid.*, *Petrovich* in 1882 (B); Derna, *Vaccari* in 1912 (Fl); Wady Derna, *Taubert 332* (B); Marmarique, Mirsa Badia, *Schweinfurth 80* (Bo, UCf); Burgasino, *Cavara* in 1922 (UC); Tripolitania, Tripoli, *ex herb. Bentham* (K). **Egypt**: El Sellum, Wady El Ramla, *Shabetai* in 1934 (UC).