

NUMBERED FORMS

1. *YOUNGIA JAPONICA GENUINA*, but very reduced; leaves spatulate, lacking lateral lobes; stem or stems very slender, sometimes semiprocumbent, 1- to 4-headed. These depauperate specimens are obviously the result of very unfavorable environment. They are not to be confused with *Y. terminalis*, as they have heads, flowers, fruits, and indumentum of *japonica*. *Chung 433* (UC 420273), growing in cracks of pavement, Fukien, China; *Handel-Mazzetti 6222* (UC 259887), cold temperate region west of Dsolinho River, central Yunnan, China; *Maire 489* (UC 223238), near Yunnansen, Yunnan, China.
2. *YOUNGIA JAPONICA GENUINA*, but leaves densely pubescent with the same peculiar hairs as those found generally in this subspecies; plants only 8 to 12 cm high; stems slender, few-headed; achenes 1.5 to 2 mm long; pappus 2.5 to 3 mm long. *Morse 413a, 1, 2, 3, 4* (NY), Szechwan. Besides the four plants cited above, on same sheet are fragments of another plant which may be subspecies *longiflora*, although Szechwan is far removed from the type region of this subspecies.
3. *YOUNGIA JAPONICA GENUINA*, but plant 60 to 75 mm high; stem rather stout, lower branches elongate. Leaves, heads, flowers, and fruits as in *genuina*. On account of the unusually large size of the plants this might be mistaken for subspecies *Elstonii*, but the cauline leaves are abruptly reduced as in *genuina*. *Kolthoff 194, 214* (Upsala), Wuokowsan, Chinkiang, Kiangsu, China.
4. *YOUNGIA JAPONICA GENUINA*, but caudical leaves unusually broad (up to 9 cm) with congested lateral lobes, finely puberulent under lens but apparently glabrous, bright green, midrib and veins paler, prominent; outer involucrel bracts variable, in most heads quite typical, but in some heads the longest more than 2 mm long, oblong, obtuse. Otherwise the heads and florets appear to be typical. But in one partly mature head all the achenes appear to be sterile. The pollen is very irregular and smaller than typical (17 to 25 μ). This plant may be a hybrid between *japonica* and some other species. *Lin Pi 6331* (UC 308337), Hinghwa and vicinity, Fukien, China.

RELATIONSHIP

The two subspecies *longiflora* and *Elstonii* seem without question to have been derived from *genuina*. But their genetic relationships, like their chromosome numbers, are at present unknown. They may be polyploids or they may have arisen entirely through gene mutations. Some specimens of *longiflora* were found to have irregular pollen-grains, but in both subspecies size of pollen-grains and size of stomata are the same as in *genuina*. Certain specimens with irregular pollen-grains may be hybrids between two of the subspecies, or the irregularity might be due to a gene for asynapsis.

Y. japonica is most closely related to *Y. heterophylla* and *Y. Rosthornii*, but is very distinct from them in leaf and floral characters.

25. *Youngia rubida* sp. nov. (Fig. 30)

Herba annua, ramosa a basi, rami divaricati, cum 3-4 ramulis remotis, ramuli cymosi cum 4-7 capitulis; folia lyrata vel integra, acuminata vel linearia, pubescentia; capitula parva, 13-15-flora; involucreum et receptaculum glabratum; corolla 9-10 mm longa, aurea; antheræ circa 3 mm longæ, virides; achænia rubra, valde sed breviter rostrata, paululum compressa, cum costis inæqualibus; pappus albus, involucreo æquali, persistens vel deciduus.

Annual, about 20 cm high; root slender; caudex 1 mm long, 3 mm wide, leafy; caudical leaves up to 9 cm long, 3.5 cm wide, oblanceolate, lyrate-pinnately divided, terminal segment narrow, triangular, acu-

minate, acutely 2-lobed at the truncate base, lateral segments in 2 pairs, upper pair longer, all segments sinuate-denticulate, pubescent on both sides with many-celled piliform trichomes, these longer and broader on lower face especially along veins and petiole; lower and middle cauline

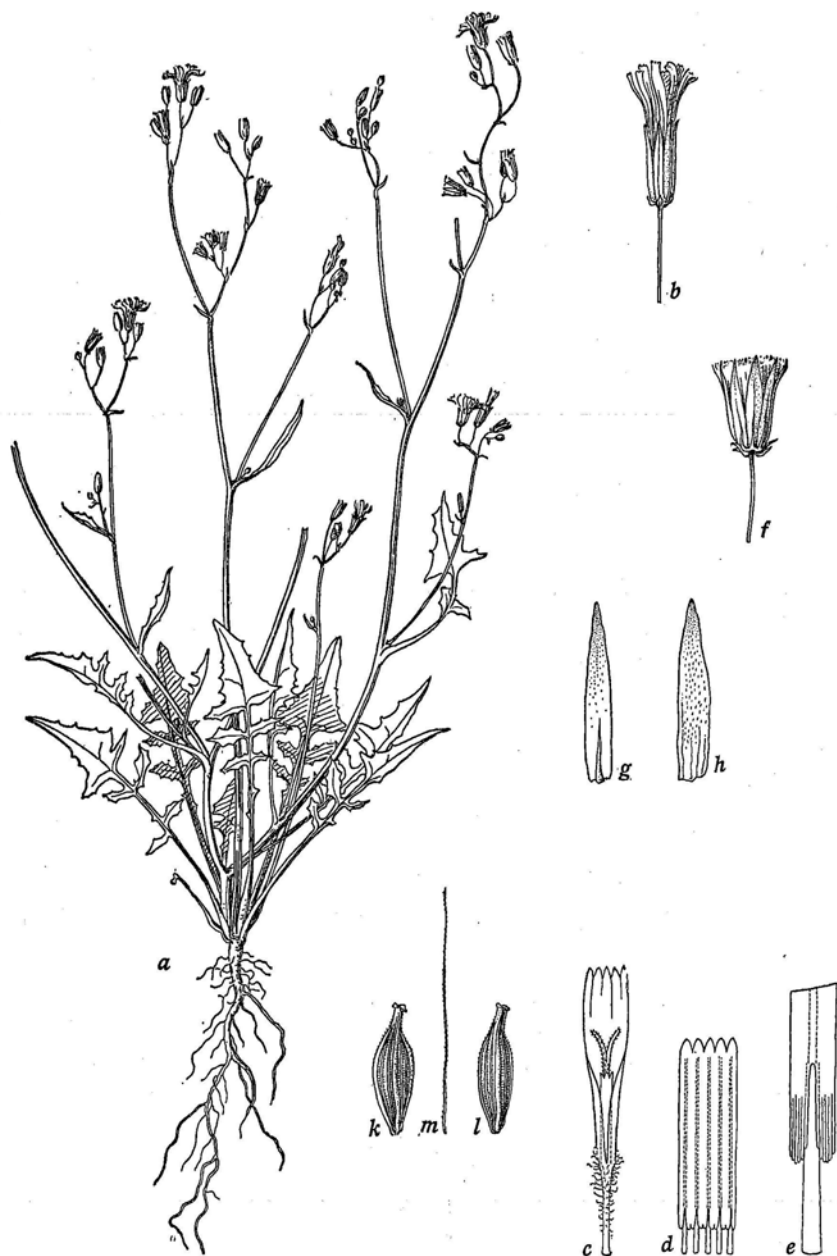


FIG. 30—*Youngia rubida*, from type (UC 482454): a, plant, $\times \frac{1}{2}$; b, flowering head, $\times 2$; c, floret lacking ovary, $\times 4$; d, anther-tube, $\times 8$; e, detail of appendages, $\times 32$; f, fruiting head, $\times 2$; g, h, two inner involucral bracts, dorsal and ventral, $\times 4$; k, l, m, marginal and inner achenes and a pappus-bristle, $\times 8$.

leaves similar to caudical, gradually reduced, upper cauline leaves linear or 2-lobed near base, short-petioled, uppermost bractlike, minute; stem short, divaricately 4-branched from near base, branches elongate, remotely 3-branched, secondary branches strict or arcuate, cymosely 4- to 7-headed, pubescent below especially at nodes with many-celled piliform trichomes, glabrescent or glabrous on upper parts; peduncles 5 to 10 mm long, slender, glabrous; heads erect, small, 13- to 15-flowered; involucre glabrous, 6.5 mm long, cylindric (2 mm wide) in anthesis, campanulate (about 3 mm wide) in fruit; outer involucral bracts 5, ovate, acute, about 0.5 mm long; inner bracts 7, lanceolate, acute, membranous-margined, appressed-pubescent on inner face with short shining hairs, mediodorsally nerved, becoming carinate, pale, spongy-thickened confluent with base; receptacle areolate, naked; corolla 9 to 10 mm long; ligule 1.5 mm wide; teeth 0.2 to 0.3 mm long, slightly gland-crested and hooded; corolla-tube 3 mm long, densely pubescent with very short papilliform hairs at base, these gradually transformed into tortuous pointed hairs up to 0.4 mm long at summit and on base of ligule; anther-tube 2.8×1 mm dis.; filaments extend beyond appendages about 0.4 mm; appendages 0.4 mm long, oblong, obtuse, united; style-branches 1.3 mm long, 0.1 mm wide, acute at tip, yellow; achenes dull scarlet (Ridgeway 5i, "Brazil red"), 2 mm long, 0.6 to 0.7 mm wide, marginal dorsoventrally subcompressed, inner 3- to 4-angled, strongly attenuate upward into a beak 0.3 to 0.4 mm long, 0.1 to 0.15 mm wide at summit, with slightly expanded pappus-disk, less attenuate downward, constricted at the hollow lightly calloused base 0.15 to 0.25 mm wide, 12- to 14-ribbed, ribs unequal, 4 to 5 stronger, all \pm salient, rounded at margin, obscurely spiculate from base to summit with extremely fine yellow spicules; pappus white, 3.5 mm long, 1-seriate, fine, soft, united at very base, coming away singly or in clumps, probably deciduous. Flowering October to November; flowers golden yellow, anthers green, style yellow; leaves pale yellowish green. Vernacular name, "hwang-hwa," "the yellow flower." Said to be used generally in the region as fodder for pigs.

Known only from the type locality. Collected November 6, 1930.

CHINA: Kweichow Province, Tsen-heng-hsien, Pumei, open waste places, 600 m alt., *Tsiang 9254* (UC 482454) *type*.

RELATIONSHIP

Closest to *Y. erythrocarpa* but very distinct in its habit, larger heads, longer florets, broader achenes with stronger ribs, longer and more persistent pappus. Although the achenes are so similar in color to those of *erythrocarpa*, yet they are almost scarlet, whereas those of *erythrocarpa* are nearer to vermilion. For comparison of the two species with *Y. japonica* see *Y. erythrocarpa*.

26. *Youngia erythrocarpa* (Vaniot) comb. nov. (Pl. 5; fig. 31)

Annual (or biennial?), 28 to 30 cm high, about 18 cm spread; root very slender, vertical; caudex 5 to 20 mm long, 3.5 to 7 mm wide, brown with bases of old leaves; caudical leaves up to 6 cm long, 3 cm wide,