

homozygous and recessive for the pubescent fruit character. The presence or absence of pubescence on the siliques of *D. Wislizenii* is of no taxonomic significance.

—GRAY HERBARIUM OF HARVARD UNIVERSITY.

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A TAXONOMIC STUDY OF THE GENUS *PHYSALIS* IN NORTH AMERICA NORTH OF MEXICO

U. T. WATERFALL

(Concluded from p. 142)

Among the 481 sheets of 450 collections studied, material has been seen from Manitoba, Ontario (*Macoun 54525*, NY) and Quebec (*Marie-Victorin et al 46421*, GH) in Canada, and in the United States from: Alabama, Arkansas, Colorado (Boulder and El Paso Cos.), Connecticut, Delaware, Florida (Lafayette Co.), Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana (*Short*, NY), Maine (Cumberland Co.), Massachusetts, Michigan, Minnesota, Mississippi (University Campus), Missouri, Nebraska, New Hampshire (Coös and Merrimack Cos.), New Jersey (Middlesex Co.), New York (Staten Island), North Carolina, North Dakota, Ohio (Lorain Co.), Oklahoma, Pennsylvania (Chester Co.), Rhode Island, South Carolina (Aiken Co.), South Dakota, Tennessee, Texas, Utah (Washington Co.) Virginia, Washington D. C., West Virginia (Monroe Co.) and Wisconsin.

9b. *P. virginiana* Miller, var. *subglabrata* (Mackenzie and Bush) Waterfall, comb. et stat. nov., based on *P. subglabrata* Mackenzie and Bush, *Trans. Acad. Sci. St. Louis* 12: 86-87. 1902.

Plants nearly glabrous, or with a few short antrorse hairs; leaf blades mostly ovate to ovate-lanceolate, their margins usually entire, sometimes slightly sinuate-dentate; anthers tinged or margined with blue or violet; fruiting calyces mostly 25-35 mm. long and 20-30 mm. wide.

TYPE: *K. K. Mackenzie* collected at Sheffield, Jackson Co., Missouri, June 14, 1896 (NY).

This variety grows in woods, grassland, roadsides, fields, and other disturbed sites, primarily in the northeastern United States, but with scattered collections elsewhere; it flowers mostly from June to September.

Four hundred thirteen sheets of 267 collections have been studied. This taxon occurs in Ontario, Canada, and in Arkansas, Colorado (Gunnison and Routt Cos.), Connecticut, Delaware, Georgia (Wayne Co.), Idaho (Ada, Canyon and Payett Cos.), Illinois, Indiana, Iowa, Kansas (Douglas, Ellis and Shawnee Cos.), Kentucky, Louisiana (East Feliciana and Grant Parishes), Maryland, Massachusetts, Michigan, Mississippi (Coahoma Co.), Missouri, Nebraska (Kearney and Nemaha Cos.), New Jersey, New Mexico (Lincoln Co.), New York, North Carolina, Ohio, Oklahoma (Rogers and Tulsa Cos.), Oregon (Polk Co.), Pennsylvania, Rhode Island, South Carolina (Pickins Co.), Tennessee, Texas (Delta, Nueces and Potter Cos.), Utah (San Juan and Sanpete Cos.), Virginia, Washington D. C., West Virginia, Wisconsin.

Sometimes forms are found with larger fruiting calyces which are 4–5 cm. long and 3–4 cm. broad. These may be called *Physalis virginiana* f. *macrophysa* (Rydberg) Waterfall, comb. et stat. nov. based on *P. macrophysa* Rydberg, Bull. Torr. Bot. Club 22: 308. 1895.

TYPE: Since Rydberg cited several number without choosing a type, the author selects as LECTOTYPE A. A. Heller 1756 (NY); isoelectotypes: (NY, UC).

Although the latter name antedates *subglabrata*, the author has chosen to transfer the name *subglabrata* to varietal status, since it is associated with a large, wide-spread population, primarily of the northeastern United States. According to Article 70 of the Rules no name has priority outside its own rank. Article 71, Recommendation 71A suggests that in changing rank it is preferable to retain the original epithet unless it must be rejected under the rules. This particular choice of names seems to be in accordance with both articles, and keeps available the names now in usage, instead of either changing their application, or supplanting them with new names which would be permissible under the rules.

Selected specimens: ARKANSAS Marion Co.: *Demaree* 20645 (NY); ILLINOIS: Peoria Co.: *McDonald* Aug. 1903 (NY); Champaign Co.: *Gleason* Oct. 7, 1907 (DUKE); INDIANA: Lawrence Co.: *Kriebel* 1348 (DUKE); Iowa: Story Co.: *Hayden* 424 (GH); MISSOURI: Jackson Co.: *Bush* 12483A (NY) and 12483 (DUKE); NEBRASKA: Howard Co.: *Bates* 4910 (GH); New Jersey: Somerset Co.: *Lighthipe* Aug. 1, 1916 (TEX); TEXAS: Comal Co.: *Lindheimer* May 1847 (GH); Kerr Co.: *Heller* 1756 (NY, UC); Tarrant Co.: *Ruth* 746 (NY, PH); Travis Co.: *Tharp* May 6, 1931 (TEX).

9c. *P. virginiana* Miller, var. *texana* (Rydberg) Waterfall, comb. et stat. nov., based on *P. texana* Rydberg, Mem. Torr. Bot. Club 4: 339–340. 1896.

Plant usually several-branched from the base; herbage glabrous or nearly so; principal leaves ovate and usually entire; plant of the Gulf coast of Texas, apparently intergrading inland with contiguous varieties.

TYPE: The type is A. A. Heller 1507 NY; isotypes: ARIZ, GH, PH, UC.

This is primarily a taxon of the coastal area, but it extends inward through chaparral and other habitats nearly to central Texas, becoming more atypical as it does so. It usually flowers from March to June, but

flowering specimens have been seen that were collected in December and in August.

Selected from 35 sheets of 17 collections: TEXAS: Bexar Co.: *Metz* 73 (MICH, NY); Cameron Co.: *Parks* 17943 (GH); Gonzales Co.: *Tharp* 51-556 (TEX); LaSalle Co.: *Tharp* and *Tyson* 52-488 (OKLA, TEX); Nueces Co.: *Tharp*, *Johnston* and *Webster* 48-58 (TEX, ARK, OKLA); San Saba Co.: *Palmer* 11841 (TEX); Travis Co.: *Tharp* and *Scarborough* 51-399 (COLO, OKLA, TEX, UARK); Victoria Co.: *Tharp* 2516 (TEX); Washington Co.: *Tharp* July 9, 1929 (OKLA, TEX); Wilson Co.: *Palmer* 947 (GH, NY).

9d. *P. virginiana* Miller, var. *sonorae* (Torrey) Waterfall, comb. nov., based on *P. pumila* Nutt., var. *sonorae* Torr., Botany of the Mexican Boundary 153. 1859; *P. longifolia* Nutt., Trans. Am. Phil. Soc. (n.s.) 5: 193-194. 1836; *P. lanceolata* Michx., var. *laevigata* Gray, Proc. Am. Acad. Arts and Sciences 10: 68. 1875; *P. lanceolata* Michx., var. *longifolia* (Nutt.) Trelease, Rep. Ark. Geol. Surv. 4: 207. 1891; *P. rigida* Pollard and Ball, Proc. Biol. Soc. Wash. 13: 134-135. 1900.

Since, according to Article 70, "When the rank . . . of an infrageneric taxon is changed, the correct name or epithet is the earliest legitimate one available in the new rank," the well-known name *longifolia* must be replaced in the varietal status with the relatively unknown *sonorae*.

Plants usually single stemmed, often branching above; leaf blades usually lanceolate to lanceolate-linear, but rarely ovate, their margins entire to irregularly toothed; herbage sparsely covered with short antrorse hairs, which are more abundant on the younger parts, sometimes nearly glabrous; calyx often with ten lines of short antrorse hairs; anthers yellow. Sometimes this variety is difficult to separate from var. *subglabrata*. In such cases the bluish, or violet, anthers of the latter is considered a distinguishing characteristic since it occurs in a large population of the northeastern United States where the yellow-anthered var. *sonorae* is not found.

TYPE: *Geo. Thurber* 418, Fronteras, Sonora, Mexico, June 1851 in the Herbarium of the New York Botanical Garden. Two isotypes are in the Gray Herbarium.

Habitat, distribution and flowering time: This variety grows in prairies, plains, foothills, canyons, open woods, sandy areas and in various disturbed habitats. Its primary distribution is in the prairie region of central United States, but it extends into and west of the Rockies. It flowers in June, July and August in the northern part of its range, and from May through September in Texas and Arizona.

Four hundred sixty seven sheets of 385 collections have been studied. They were collected in Arizona, Arkansas, California (Trinity Co.), Colorado, Georgia (Whitfield Co.), Idaho, Illinois, Indiana, Iowa, Kansas, Nebraska, Nevada (Churchill and Storey Cos.), New Mexico, North Carolina, Oklahoma, Oregon (Malheur Co.), Pennsylvania (*Small*, 1889), South Dakota, Tennessee (Davidson Co.), Texas, Utah, Virginia (King George Co.), West Virginia (Mineral Co.), Wisconsin, and Wyoming (Park and Weston Cos.).

It is probable that the records from the far west represent introductions.

9e. *P. virginiana* Miller, var. *hispida* Waterfall, var. nov., foliis ovato-

lanceolatis vel *lanceolatis*, vel *spathulato-lanceolatis*, *crassis*, plus minusve *hispidis*.

This perennial rhizomatous variety has thick leaf blades varying from ovate-lanceolate to linear-lanceolate in shape. The herbage is subglabrous, but it has a varying amount of stiff, more or less divergent trichomes about 1 mm. long, at least on the flower buds or the margins of the leaves. It is found in sandy areas of the prairie and plains region. It has been passing as *P. lanceolata*, but that name was given to seemingly aberrant plants of the eastern United States which may very well be intergrades between *P. heterophylla* and *P. virginiana*.

The TYPE is *Waterfall* 7308, sand dunes, 1 mile east of Mangum, Greer Co., Oklahoma, June 28, 1947, in the Herbarium of Oklahoma State University; isotypes (TEX, OKL).

It usually grows in sandy situations, but is found also on dry hilltops, edges of fields and other disturbed areas, primarily in Oklahoma, Kansas, Nebraska and eastern Colorado; flowering in May, June and July.

Selected from 212 sheets of 147 collections: COLORADO: Baca Co.: *Rogers* 6436 (COLO); Boulder Co.: *Ramaley* 11624 (COLO); Denver Co.: *Eastwood* 23 (COLO, GH, UC); El Paso Co.: *Williamson* July 10, 1901 (PH); Fremont Co.: *Brandegge* 392 (NY, PH, UC); Jefferson Co.: *Greene* 323 (GH); Larimer Co.: *Smith* July 15, 1944 (UC); Las Animas Co.: *Rogers* 6003 (COLO); Lincoln Co.: *Ownbey* 1318 (COLO, GH, NY, UC); Phillips Co.: *Weber* 5040 (COLO); Weld Co.: *Ramaley* 15138 (ARIZ, COLO, OKL, TEX, UC); Yuma Co.: *Harrington* 5036 (COLO); INDIANA: Lake Co.: *Bebb* 499 (OKL); Tippecanoe Co.: *Ek* June 10, 1942 (GH, NY, TEX, UC); KANSAS: Barton Co.: *Rydberg* and *Imler* 1330 (KANU, NY); Cheyenne Co.: *McGregor* 9433 (KANU); Clark Co.: *Rydberg* and *Imler* 768 (KANU); Clay Co.: *Kellerman* July 2, 1888 (GH); Comanche Co.: *Rydberg* and *Imler* 1109 (KANU, NY); Finney Co.: *Rydberg* and *Imler* 996 (KANU, NY); Grove Co.: *Hitchcock* 572 (GH); Hamilton Co.: *Wilson* and *Miller* (KANU); Meade Co.: *Horr* and *McGregor* 3841 (KANU); Reno Co.: *Rydberg* and *Imler* 563 (KANU, NY); Riley Co.: *Norton* 368 (GH, NY); Rooks Co.: *Horr* 5005 (KANU); Sedgwick Co.: *Coll. unknown* Aug. 20, 1933 (KANU); Wyandotte Co.: *Mackenzie* 1159 (NY); MINNESOTA: Isanti Co.: *Rosendahl* and *Butters* 5051 (GH); MISSOURI: Jackson Co.: *Bush* 4970 (GH, NY, OKL); Johnson Co.: *Stevens* 4166 (NY); Nebraska: Banner Co.: *Rydberg* 473 (NY); Cherry Co.: *Tolstead* 550 (GH); Custer Co.: *Bates* June 15, 1901 (GH); *Hapeman* June 7, 1928 (DUKE); Lincoln Co.: *Porter* 2059 (GH, OKL); NEW MEXICO: Santa Fe Co.: *Tracy* and *Evans* 110 (NY); OKLAHOMA: Beckham Co.: *Pennell* 10556 (NY, PH); Beaver Co.: *Goodman* 5332 (OKL, TEX); Blaine Co.: *Waterfall* 7070 (OKL, OKLA, TEX); Cleveland Co.: *Little* 396 (OKL); Custer Co.: *Mericle* 318, 328, 703, 1866 (OKL); Ellis Co.: *Waterfall* 11891 (OKLA); Garvin Co.: *Andrews* 97 (OKL); Grady Co.: *McFarland* 15 (OKL); Greer Co.: *Bull* 219 (OKL); Harper Co.: *Stevens* 3322 (GH, NY, OKL); Jackson Co.: *Stevens* 1176 (GH, OKL); Kay Co.: *Stevens* 1919 (GH); Kingfisher Co.: *Byers* 211 (OKLA); Logan Co.: *Goodman* 2126 (GH, OKL); Oklahoma Co.: *Waterfall* 2350 (GH, NY); Payne Co.: *Abernathy* 32 (OKLA); Pushmataha Co.: *Waterfall* 11397 (OKLA); Roger Mills Co.: *Smith* 607 (OKLA); Texas Co.: *Waterfall* 7961 (OKL, OKLA); Woods Co.: *Waterfall* 7857 (OKL, OKLA); Woodward Co.: *Nelson* and *Goodman* 5301 (OKL); South Dakota: Meyer Co.: *Wallace* (NY); TEXAS: Collingsworth Co.: *Cory* 16151 (GH); Hall Co.: *Reverchon* 4311 (GH); Hemphill Co.: *Cory* 16236 (GH); Wichita Co.: *Tharp* 535 (NY, TEX); UTAH: Sanpete Co.: *Ward* 676 (GH); WYOMING: Albany Co.: *Nelson* 7358 (GH, NY);

Converse Co.: *Nelson 8366* (GH); Platte Co.: *Porter 4894* (COLO, GH, OKL, PH, TEX, UC).

9f. ***P. virginiana*** Miller, var. ***polyphylla*** (Greene) Waterfall, comb. et stat. nov., based on *Physalis polyphylla* Greene, *Pittonia* 4: 150–151. 1900.

Plants simple or branched near the base, nearly glabrous, the few hairs short and antrorse; longer leaves mostly 3–5 cm. long, lanceolate or linear-lanceolate.

TYPE: *C. F. Baker 576* Piedra, southern Colorado, July 12, 1899 (isotypes: GH, NY, UC).

The only other collection seen is *Waterfall 11115*, collected on a shale hillside, opening in pine forest 12 miles west of Chama, Rio Arriba Co., New Mexico, Aug. 25, 1952. (OKLA).

9g. ***P. virginiana*** Miller, var. ***campaniforma*** Waterfall, var. nov., caulibus parvis, curtis retrorso-pilosis; foliis ovatis; corollis maculatis; calycis campaniformis, ad basin 4–5 mm. latis, ad apices 1.5–2 cm. latis.

This variety is characterized by the combination of ovate leaves, short retrorse hairs and campanulate calyx, 4–5 mm. wide at its base, and 1.5–2 cm. wide at the tips of its divergent lobes.

TYPE: *P. C. Standley 4556*. Mouth of Indian Creek, altitude 8000 ft.; in Pecos National Forest, New Mexico, July 25, 1908. Two sheets are in the Herbarium of the New York Botanical Garden. At present this distinctive variety is known only from the type collection.

10. ***Physalis hederacfolia*** Gray, Proc. Amer. Acad. Arts and Sciences 10: 65. 1875.

Plants erect or spreading from a perennial base, simple or many-stemmed; herbage with a mixture of long jointed hairs and short trichomes, or with short hairs only, which may be viscid or not, glandular or not, antrorse or spreading; leaf blades subreniform to ovate, or rarely ovate-lanceolate; corollas 10–15 mm. long, yellow or yellowish green, usually darker on the base of the limb, but sometimes obscurely so; limb of the corolla often reflexed when fully open; anthers usually yellow, 1.5–4 mm. long; flowering calyx about one-half as long as the corolla, on peduncles usually 3–8 mm. long; fruiting calyx 2–3 cm. long and 1.5–2.5 cm. wide on peduncles 1–2 cm. long.

10a. ***P. hederacfolia*** Gray, var. ***hederacfolia*** *P. hederacfolia* Gray, var. *puberula* Gray, loc. cit. supra; *P. Palmeri* Gray, Synoptic Flora 2 (1): 235. 1888.

Herbage vestite with one or some combination of long jointed hairs, short divaricate or retrorse hairs, or glandular hairs; leaf blades subreniform to ovate; calyces at anthesis usually 3–4 mm. wide; anthers mostly 3–4 mm. long, yellow

TYPE: *Charles Wright 528*, in part, Turkey Creek, western Texas to El Paso, Oct. 1849 (GH). It has a few long hairs, a few short hairs and a few sessile, or subsessile spherical glands; the type of var. *puberula* has many short hairs on the stems, and short hairs and a few spherical sessile glands on the leaves.

Variety *hederacfolia* grows in desert plains, desert scrub, canyons, mountains and valleys, primarily in southwestern Texas, New Mexico and adjacent Arizona; it flowers in May, June and July, sometimes in August, September and October.

Selected from 243 sheets of 180 specimens: ARIZONA: Cochise Co.: *Harrison* 8259 (ARIZ); Coconino Co.: *Hanson* 133A (COLO, TEX); Gila Co.: *Gould* and *Hudson* 3742 (ARIZ, GH, UC); Pima Co.: *Gould* 3952 (ARIZ); Pima Co.: *Toumey* 404 (ARIZ); Yavapai Co.: *Wolf* 2311 (GH); CALIFORNIA: San Bernardino Co.: *Wolf* 10772 (UC); San Diego Co.: *Abrams* 3703 (GH); NEVADA: Clark Co.: *Clokey* 8107 (GH, NY); Lincoln Co.: *Ripley* and *Barneby* 6405 (NY); NEW MEXICO: Bernalillo Co.: *Koelz* June 28, 1926 (MICH); Dona Ana Co.: *Wooton* 136 (NY); Grant Co.: *Greene* Sept. 31, 1880 (NY); Lincoln Co.: *Wooton* 634 (NY); San Miguel Co.: *Rose* and *Fitch* 17606 (NY); TEXAS: *Cory* 16628 (GH); Bandera Co.: *Palmer* 12253 (TEX); Brewster Co.: *Mueller* 8154 (GH, MICH, NY, TEX, UC); Warnock 341 (GH, NY, TEX); Burnet Co.: *Rogers*, *Albers* and *Barksdale* 6864 (OKLA, TEX); Camerod Co.: *Chandler* 7064 (GH, NY, UC); Culberson Co.: *Waterfall* 4059 (GH, NY); Duval Co.: *Croft* 11 (MICH, NY); El Paso Co.: *Warnock* 4100 (TEX); Gonzales Co.: *Smith* and *LeSueur* 42-42 (GH, TEX); Grimes Co.: *Tharp* April 11, 1936 (TEX); Hidalgo Co.: *LeSueur* 442 (TEX); Hudspeth Co.: *Waterfall* 4875 (GH, NY); Jeff Davis Co.: *Palmer* 31935 (TEX); Kenedy Co.: *Cory* 28408 (GH); Leon Co.: *Cory* 21810 (GH); Mason Co.: *Whitehouse* Sept. 1, 1929 (TEX); McLennan Co.: *Smith* 620 (TEX); Maverick Co.: *Pringle* 8324 (GH, NY, UC); Pecos Co.: *Tharp* 256 (OKL, UC); Presidio Co.: *Hinckley* 2753 (GH); Real Co.: *Cory* 42778 (GH); Reeves Co.: *Tracy* and *Earle* 126 (GH, NY, TEX); Smith Co.: *Cory* 25881 (GH); Taylor Co.: *Cory* 7393 (MICH, UC); Terrell Co.: *Webster* 190 (TEX); Tom Green Co.: *Reverchon* 3922 (GH); Travis Co.: *Tharp* Aug. 18, 1941 (GH, TEX); Upton Co.: *Cory* 53482 (GH); Webb Co.: *Mackenzie* 86 (NY); UTAH: Kane Co.: *Boyle* 208 (UC); Millard Co.: *Garrett* 2969 (NY).

10b. *P. hederacfolia* Gray, var. *comata* (Rydb.) Waterfall, RHODORA 52: 171. 1950; *P. comata* Rydb., Bull. Torr. Bot. Club 22: 306. 1895; including *P. rotundata* Rydb., Mem. Torr. Bot. Club 4: 352. 1896.

Herbage with long jointed hairs more or less abundantly mixed with shorter hairs, which may, or may not, be viscid or glandular; flowering calyx 8-11 mm. wide; leaf blades ovate to rotund, toothed to nearly entire.

TYPE: *P. A. Rydb.* 269, under the cliffs, south side of Scott's Bluff, Nebraska, July 20, 1891, in the Herbarium of the New York Botanical Garden.

Variety *comata* is found on plains, mountains slopes, dry hills, gravel banks and sandhills, principally in western Nebraska, western Kansas and eastern Colorado; it usually flowers in June, July, August and September.

Selected from 80 sheets of 63 collections: COLORADO: Bent Co.: *Osterhout* 4118 (NY); Boulder Co.: *Ewan* 12258 (UC); Cheyenne Co.: *Ownbey* 1357 (COLO, GH, NY); Denver Co.: *Eastwood* Sept. 10, 1910 (GH, UC); El Paso Co.: *Ehlers* 7764 (ARIZ, GH); Fremont Co.: *Ewan* 14248 (COLO); Larimer Co.: *Nelson* Aug. 31, 1900 (NY); Las Animas Co.: *Rogers* 4843 (COLO); Weld Co.: *Osterhout* 2309 (NY); KANSAS: Barber Co.: *Rydb.* and *Imler* July 5, 1929 (NY); Cheyenne Co.: *McGregor* 9425 (KANU); Ellis Co.: *Rydb.* and *Imler* 1228 (KANU, NY); Finney Co.: *Wilson* and *Miller* July 22, 1912 (KANU); Kiowa Co.: *Hitchcock* 774 (GH, NY); Osborne Co.: *Shear* 221 (GH, NY); Riley Co.: *Gates* 14537 (MICH); Rooks Co.: *Bates* 4563 (GH); NEBRASKA: Adams Co.: *Bates* 4607 (GH); *Rydb.* Aug 8, 1891 (NY); Buffalo Co.: *Bates* 4903 (GH); Custer Co.: *Bates* 2403 (GH); Garfield Co.: *Bates* 4634 (NY); Lincoln Co.: *Rydb.* Sept. 1895 (UC); Webster Co.: *Bates* July 3, 1907 (NY); NEW MEXICO: Lincoln Co.: *Skehan* July 7, 1898 (GH, NY, UC); OKLAHOMA: Cimarron Co.: *Waterfall* 7902, 9122, 9240 (OKL, OKLA); Texas Co.: *Waterfall* 7867 (OKL, OKLA, TEX); Woods Co.: *Ward* 54 (NY); SOUTH DAKOTA: Lawrence Co.: *Bennett* 3259 (UARK).

10c. **P. hederacfolia** Gray, var. **cordifolia** (Gray) Waterfall, comb. nov., based on *P. Fendleri* Gray, var. *cordifolia* Gray, Synop. Flora N. Amer. 2(1): 395. 1878. *P. Fendleri* Gray, Proc. Amer. Acad. Arts and Sciences 10: 66. 1875.

Indument of short reflexed hairs with many to few short, somewhat flattened branched hairs, which are sometimes present only on the calyx; leaf blades ovate to ovate-lanceolate (2) 3–6 cm. long and 1–3 cm. wide, from (1.2) 1.4–2.5 times longer than wide.

TYPE: The type of *P. Fendleri* is *Fendler 683*, New Mexico (GH). That of var. *cordifolia* is *Palmer 363*, St. George, southern Utah (GH).

This taxon grows in mountains, canyons, mesas, plains, in juniper-pinon pine areas, and in disturbed habitats, principally in southwestern Texas; it flowers mostly in July, August and September.

Selected from 196 sheets of 146 collections: ARIZONA: Apache Co.: *Goodman and Payson 3167* (GH, NY); Cochise Co.: *Blumer 2104* (ARIZ, GH, NY); Coconino Co.: *Thorner 2088* (ARIZ); Gila Co.: *Parker, McClintock and Robbins 6125* (ARIZ); Maricopa Co.: *Rusby 775* (MICH, NY); Mohave Co.: *Kearney and Peebles 12761* (ARIZ); Navajo Co.: *Jones 1109* (ARIZ); Pima Co.: *Parker, McClintock and Haskell 5885* (ARIZ, UC); Santa Cruz Co.: *Peebles and Loomis 7019* (ARIZ); Yavapai Co.: *Kearney and Peebles 9719* (ARIZ); CALIFORNIA: San Bernardino Co.: *Wolf 10722* (NY, UC); San Diego Co.: *Palmer 1875* (GH); COLORADO: Archuleta Co.: *Weber and Livingston 6254* (COLO); El Paso Co.: *McCosh and Greene 1877* (NY); Fremont Co.: *Waterfall 11503* (OKLA, TEX); Huerfano Co.: *Ramaley 16236* (COLO); La Plata Co.: *Jones 503* (MICH); Las Animas Co.: *Rogers 5416* (COLO); Mesa Co.: *Rollins 1915* (GH, NY); Montezuma Co.: *Baker, Earle and Tracy 823* (NY); Montrose Co.: *Payson 3927* (GH); Otero Co.: *Paull 87* (COLO); Pueblo Co.: *Pammel Aug. 24, 1913* (GH, TEX); NEVADA: Clark Co.: *Train 2003* (ARIZ); *Clokey 8204* (ARIZ, DUKE, NY, OKL, OKLA, TEX); NEW MEXICO: Colfax Co.: *Standley 14012* (NY); Dona Ana Co.: *Wootton and Standley 3157* (ARIZ, NY); Grant Co.: *Blumer 49* (GH, NY); Luna Co.: *Shreve 8343* (ARIZ); Otero Co.: *Schulz 297* (GH); San Miguel Co.: *Standley 4945* (GH, NY); Santa Fe Co.: *Robbins 8244* (COLO); Sierra Co.: *Metcalfe 945* (GH, NY); Taos Co.: *Wootton 2693* (NY); Torrance Co.: *Parker and McClintock 6526* (ARIZ); Valencia Co.: *Vogt 27* (ARIZ); OKLAHOMA: Cimarron Co.: *Waterfall 7915* (OKL, OKLA); TEXAS: Brewster Co.: *Marsh 261* (GH); El Paso Co.: *Lee, Berkman and Tharp 46192* (TEX); Hudspeth Co.: *Waterfall 6694* (GH); Jeff Davis Co.: *Hinckley 574* (NY); UTAH: Piute Co.: *Tidestrom 2942* (MICH); San Juan Co.: *Rydberg and Garrett 9390* (NY); Washington Co.: *Gould 2028* (ARIZ, COLO, GH, NY).

11. **Physalis caudella** Standley, Field Mus. Publ. Bot. 17: 273. 1937.

Plants simple or branched, apparently from a deep rhizome which is not collected; indument usually villous, of long jointed hairs (1) 2–3 mm. long, dense or sparse, or of long and short hairs intermixed in varying proportions; leaf blades 4–7 cm. long and 1.5–4 cm. wide, usually lanceolate, rarely ovate-lanceolate or linear-lanceolate, on petioles 0.5–2 cm. long (this amount of variation in length of petioles may be found in the same plant, with the longer petioles below and the shorter ones above); margins of the leaf blades entire to irregularly undulate to saliently few-toothed; corollas 14–18 mm. long, yellow, with prominent deep reddish-blue or purplish spots on the limb; anthers blue or blue-green, about 3 mm. long, on slender filaments much

narrower than the anthers; calyx 7–10 mm. long, its lobes 3–8 mm. long; flowering peduncles usually about 5 mm. long, sometimes as much as 8 mm. long; fruiting calyx (2.5) 3–5 cm. long and (2) 2.5–3 cm. wide, with calyx lobes (6) 10–15 (17) mm. long.

TYPE: *Howard Scott Gentry 2710*, on oak-pine slope, 2,160 meters elevation, Cajurichi, Rio Mayo, Chihuahua, Mexico, Sept. 13, 1936 (F). An isotype is at UC. The isotype has lobes of the flowering calyx 3–8 mm. long, and a calyx cup only about 2 mm. long; the fruiting calyx also has lobes at the extreme limit of length, being 14–17 mm. long. One of the Arizona specimens approaches the type, having a flowering calyx with lobes 7 mm. long and a calyx tube 3 mm. long. However most of them have calyx lobes somewhat shorter than the calyx tube; the lobes of the fruiting calyx in the Arizona material are usually 10–15 mm. long, rarely as short as 6 mm.

Habitat, range and flowering time: Growing in canyons, pine woods and oak woods in the mountains of southern Arizona (with one collection from southwestern New Mexico) and adjacent Sonora and Chihuahua; flowering in June, July and August.

Selected from 31 sheets of 19 collections: Arizona: Cochise Co.: *Benson 10448* (ARIZ, NY, UC); *Gooding 843* (ARIZ, GH, NY); Pima Co.: *Kearney and Peebles 10504* (ARIZ, UC); Santa Cruz Co.: *Parker 7683* (ARIZ, COLO, NY, UC); NEW MEXICO: Socorro Co.: *Wootton* Aug. 6, 1900 (NY).

12. *Physalis crassifolia* Benthham, Botany of the Voyage of the Sulphur 40. 1844.

Stems usually several from a ligneous base, each stem branched, sometimes several times; herbage minutely puberulent, sometimes slightly glandular; principal leaf blades (1.5) 2–3 (5) cm. long, and (1.5) 2–2.5 (3.5) cm. wide, usually broadly ovate; leaf margins entire to sinuately or repandly few-toothed to dentate; petioles two-thirds the length of the blade to equalling it; corolla yellow, sometimes becoming bluish in age, or when dried and pressed, 10–15 mm. long, its limb reflexed when fully open; anthers yellow, 2.5–3 mm. long; filaments having a few long hairs growing on them; calyx at anthesis usually 3–6 mm. long on peduncles 5–10 times their length; fruiting calyx usually 2–3 cm. long and 1.5–2 cm. wide.

12a. *P. crassifolia* Benthham, var. *crassifolia*. *P. cardiophylla* Torrey, Bot. Mex. Bound. 153. 1859; *P. crassifolia* var. *cardiophylla* (Torr.) Gray, Synoptic Flora 2(1): 235. 1878; *P. muriculata* Greene, Bull. Calif. Acad. 1: 209. 1885.

Leaves thick, entire to sinuately or repandly few-toothed; flowering calyx usually 4–6 mm. long on peduncles 6–7 times their length; corollas yellow, sometimes with brownish centers.

TYPE: Bay of Magdalena, Lower California, Mexico; not seen.

Variety *crassifolia* grows on deserts, canyon floors, rocky hillsides, and mountains, principally in Arizona, and California; it flowers from March through October.

Selected from 185 sheets of 157 collections: ARIZONA: Cochise Co.: *Blumer 90* (ARIZ); Mohave Co.: *Harrison, Kearney and Fulton 7549* (ARIZ); Pima Co.: *Harrison and Kearney 7238* (NY); Pinal Co.: *Gillespie 8919* (NY, UC); Yavapai

Co.: Peebles, Harrison and Kearney 7431 (NY); Yuma Co.: Benson 10807 (ARIZ); CALIFORNIA: Imperial Co.: Rose 36830 (OKL, MICH); Inyo Co.: Clokey and Templeton 5776 (NY, UC); Kern Co.: Munz, Johnston and Harwood 4034 (NY); Riverside Co.: Clokey 6881 (NY, UC); Mason 4185 (GH, UC), Rose 36001 (GH, UC); San Bernardino Co.: Munz 11720 (ARIZ, COLO, NY); San Diego Co.: Abrams 3160 (GH, NY); NEVADA: Clark Co.: Clokey 8577 (COLO, NY, UC); Clover 8235 (MICH); Lincoln Co.: Kennedy and Gooding 10 (ARIZ, NY, UC).

12b. *P. crassifolia* Benth. var. *versicolor* (Rydberg) Waterfall, comb. et stat. nov., based on *P. versicolor* Rydb. Bull. Torr. Bot. Club 22: 307. 1895; *P. genucaulis* Aven Nelson, Bot. Gaz. 47: 430. 1909.

Leaves thinner, usually dentate, but sometimes nearly entire; calyx usually 3–4 mm. long on peduncles 5–10 times their length; corolla yellow, usually some, or all, of them turning bluish in drying.

TYPE: Rydberg selected no type, therefore Edward Palmer 622, collected at Guaymas, Mexico in 1887 is selected as the LECTOTYPE (NY); isolectotype (GH).

Its habitat, distribution and flowering time are apparently similar to the above, but it is not so widespread.

Selected from 71 sheets of 55 collections: ARIZONA: Gila Co.: King and Belden 2439 (ARIZ); Mohave Co.: (?) : Clover 6009 (ARIZ); Pima Co.: Toumey June 1, 1896 (GH, NY), Gould and Macbride 4128 (ARIZ, GH, NY, UC); Pinal Co.: Thornber 5517 (ARIZ, NY); Yuma Co.: Parker, Parker, Wright and Lowe 7816 (COLO, NY, UC); CALIFORNIA: Imperial Co.: Wiggins 9606 (GH, UC); Riverside Co.: Wiggins 9673 (GH, NY, UC); Nevada: Clarke Co.: Train 1366 (NY, UC).

13. *Physalis ixocarpa* Brotero ex Hornemann, Hortus Regius Botanicus Hafniensis, Supplement 26. 1819; *P. aequata* Jacq. f. ex Nees, Linnaea 6: 470. 1831.

Annual, 15–60 cm. tall, branched, glabrous to rather sparsely vestite with short appressed hairs; leaf blades 2–7 cm. long, ovate to ovate-lanceolate; margins of the leaves dentate to sinuate-dentate to entire, on petioles about one-half as long as the blade to equalling it in length; corolla 7–15 mm. long, with 5 bluish-tinged dark spots on its limb which is recurved when fully open; anthers blue, about 3 mm. long, strongly twisted after dehiscence; flowering peduncles 3–5 mm. long; fruiting calyx usually 2–2.5 (3) cm. long, nearly globose, often well-filled with the fruit; fruiting peduncles usually 3–8 mm. long.

Fruiting material may often resemble *P. virginiana* var. *subglabrata*. It can be distinguished by its shorter peduncles.

TYPE: None was selected by Hornemann, and no material was cited. Presumably a neotype should be selected, probably from Mexican collections since the species seems to be native there. However the author prefers to defer this action until a more detailed study of the species from that area may be accomplished. The concept of the species is based upon the material cited later, which seems to be conspecific with Mexican material seen.

This species is cultivated and escapes; it flowers through much of its growing season.

Selected from 95 sheets of 81 collections: CANADA: Ottawa, Marie-Victorin, et al. 43923 (GH); UNITED STATES: CALIFORNIA: Butte Co.: Yates 6127

(UC); Fresno Co.: *Bacigalupi, Ferris and Wiggins 2491* (GH, NY, UC); Los Angeles Co.: *Fosberg 53036* (GH, NY); Riverside Co.: *Conger* Oct. 1909 (UC); San Bernardino Co.: *Parish* Sept. 1888 (UC); San Luis Obispo Co.: *Miossi* Aug. 5, 1840 (UC); Santa Barbara Co.: *Bingham 29* (NY); Ventura Co.: *Pollard* Oct. 27, 1945 (COLO); DELAWARE: New Castle Co.: *Commons* Nov. 2, 1898 (GH); Sussex Co.: *Churchill* Sept. 11, 1908; Illinois: Adams Co.: *Seymour* Aug. 1878 (DUKE); DuPage Co.: *Moffett 3197* (GH, OKLA); Fulton Co.: *Vasey 1862* (GH); MARYLAND: *McVaugh 134543*, cult., originally from Mexico (MICH); MASSACHUSETTS: Middlesex Co.: *Deane* Sept. 24, 1884 (NEBC); Norfolk Co.: *Fernald* Sept. 26, 1908 (GH); MICHIGAN: Emmet Co.: *Hoover 1943*, seeds from the Orange Free State (DUKE, TEX, UC); MINNESOTA: Herb. *Canby* Sept. 1868 (NY); NEW JERSEY: Hunterdon Co.: *Dodge* July 18, 1899 (MICH); NEW MEXICO: Rio Arriba Co.: *Wootton 2697* (NY); Santa Fe Co.: *Fendler 680* (GH); NEW YORK: Ontario Co.: *coll. unknown* Aug. 2, 1887, raised from seeds from Palmer from Mexico (GH); Tompkins Co.: *Hoisington 340*, cultivated (OKLA); OREGON: Multnomah Co.: *Nelson 3325* (GH); PENNSYLVANIA: *Fretz 1881* (UC); Philadelphia Co.: *Parker* Sept. 9, 1874 (NY); TEXAS: Bexar Co.: *Jermy 1904* (NY); Brewster Co.: *Marsh 163* (GH); Crockett Co.: *Cory 29703* (GH); Refugio Co.: *Tharp* Sept. 7, 1929 (MICH); Webb Co.: *Mackenzie 85* (NY); VERMONT: Chittenden Co.: *Flynn 4* (GH); VIRGINIA: Clarke Co.: *Young 485*, raised in experimental plots (TEX); WASHINGTON: Klickitat Co.: *Suksdorf 2284* (GH, UC); Washington D. C.: *Steele* Sept. 20, 1899 (DUKE); WEST VIRGINIA: Rawleigh Co.: *Tosh 650* (UC).

14. *Physalis Wrightii* Gray, Proc. Amer. Acad. Arts and Sciences **10**: 63. 1875.

Annual 30–90 cm. tall, nearly glabrous, the few hairs short, stiff and appressed; leaf blades ovate-lanceolate to linear-lanceolate, the principal ones usually 4–12 centimeters long on petioles 1.5–7 cm. long; leaf margins usually irregularly and often coarsely dentate, sometimes regularly and saliently dentate; corolla a light yellow color, sometimes with a greenish tinge, rotate with very little tube, 15–23 mm. wide when fully open, with five hairy pads on its limb near the base, alternating with the stamens; anthers (2.8)3 (3.8) mm. long, yellow with a blue or blue-green tinge; filaments slender, somewhat exceeding the anthers in length; flowering calyx usually 4–5 mm. long on peduncles 5–12 times its length; fruiting calyx usually 2–2.5 cm. long and 1.7–2 cm. wide, on peduncles usually 2.5–6 cm. long, sometimes nearly filled by the fruit.

TYPE: *Charles Wright 1602*, prairies along the San Pedro River, southwestern Texas, 1851–52 (GH); isotype (NY); no other collections have been seen from Texas.

Habitat, distribution and flowering time: Growing in deserts and mountains, but particularly in fields and other disturbed habitats, primarily in Arizona and California; flowering from July to November.

Selected from 46 sheets of collections: ARIZONA: Cochise Co.: *Griffiths 1579* (ARIZ, NY); Gila Co.: *Collom* Sept. 15, 1934 (MICH); Graham Co.: *Richardson 437* (ARIZ); Maricopa Co.: *Wiggins 3860* (MICH); Navajo Co.: *Zuch 49* (ARIZ); Pima Co.: *Pringle* Aug. 1, 1894 (GH, NY); *Gould 3938* (ARIZ, TEX, UC); Pinal Co.: *Arnold and Darrow* Sept. 13, 1936 (GH, UC); Yuma Co.: *Thorner* Sept. 24, 1912 (ARIZ); CALIFORNIA: Imperial Co.: *Munz 11523* (NY); Kern Co.: *Yates 6839* (UC); Los Angeles Co.: *Wheeler 964* (UC); San Diego Co.: *Brandege* July 1895 (UC); TEXAS: *Wright 1602*. (GH, NY).

15. **Physalis angulata** Linnaeus, *Species Plantarum* 1: 183. 1753; other synonymy under the varieties.

Annual, 15–90 cm. tall, glabrous, or with a few short appressed hairs especially on the younger parts; blades of principal leaves usually 4–10 cm. long, ovate to lanceolate, or sometimes linear-lanceolate; margins of the leaves irregularly and sometimes coarsely or saliently toothed, or entire, on petioles 1–4 cm. long; corolla yellowish, not dark spotted, usually 4–10 mm. long; anthers usually 1–2.3 mm. long, bluish, on slender filaments; flowering calyx usually 3–5 mm. long with calyx lobes 1–2.5 mm. long; flowering peduncles 5–40 mm. long; fruiting calyx usually 2–3 cm. long and 1.5–2.5 cm. wide on peduncles 10–40 mm. long.

15a. **P. angulata** L., var. **angulata**. *P. Linkiana* Nees, *Linnaea* 6: 471–472. 1831; *P. angulata* L., var. *Linkiana* (Nees) Gray, *Proc. Amer. Acad. Arts and Sciences* 10: 64. 1875.

Leaves ovate to ovate-lanceolate; corolla usually 6–10 mm. long; flowering calyx usually 4–5 mm. long with calyx lobes 2–2.5 mm. long; flowering peduncles usually 5–15 mm. long; fruiting calyx on peduncles usually 20–30 mm. long, shorter than to equalling the length of the fruiting calyx.

Variety *angulata* grows in open woods, pastures, ditches, fields, and various disturbed habitats in the extreme eastern states, and in the southeastern states as far west as eastern Oklahoma and Texas; it flowers from May to September.

Selected from 104 sheets of 77 collections: ALABAMA: Coosa Co.: *Pollard* and *Ball* 263 (GH, NY); Lee Co.: *Earle* and *Baker* Aug. 11, 1897 (NY); Tuscaloosa Co.: *Pollard* and *Maxon* 330 (MICH, NY); ARKANSAS: Arkansas Co.: *Moore* 32748 (OKLA, UARK); Ashley Co.: *Demaree* 16362 (NY); Chicot Co.: *Demaree* 18567 (ARIZ, NY); Hempstead Co.: *Buckholz* 388 (UARK); Jefferson Co.: *Demaree* 13987 (NY); Pulaski Co.: *Merrill* 672 (UARK); CONNECTICUT: Hartford Co.: *Bissell* Aug. 19, 1904 (GH); DELAWARE: *Commons* Aug. 15, 1877; FLORIDA: Collier Co.: *Moldenke* 5761 (NY); Columbia Co.: *Straub* 36 (GH); Duval Co.: *Curtiss* 5737 (GH, NY, UC); Gadsden Co.: *Berg* (NY); Gulf Co.: *Chapman* 4345 (GH, NY); Hillsborough Co.: *Deam* 2746 (GH); Lake Co.: *Nash* 1052 (GH, MICH, UC); Lee Co.: *Hitchcock* 238 (GH, NY); Leon Co.: *Godfrey* 52385 (DUKE); Pinellas Co.: *Deam* 2905 (GH); Polk Co.: *McFarlin* 6569 (MICH); Volusia Co.: *Hood* 9 (GH); GEORGIA: Decatur Co.: *Thorne* 4629 (GH); De Kalb Co.: *Small* Sept. 11, 1894 (NY); McDuffie Co.: *Bartlett* 1662 (MICH); LOUISIANA: Baton Rouge Parish: *Chamblis* 17 (NY); *Correll* 9567 (DUKE, GH, NY); Tangipahoa Parish: *Correll* 9240 (DUKE); MISSISSIPPI: Harrison Co.: *Tracy* 6476 (GH, NY); Jackson Co.: *Pollard* 1123 (GH, NY); NEW JERSEY: Brunswick Co.: *Godfrey* 10083 (TEX); Camden Co.: *Beringer* Sept. 1891 (MICH); NORTH CAROLINA: Moore Co.: *Oosting* 34777 (DUKE, PH); New Hanover Co.: *Williamson* Sept. 1, 1900 (NY, PH); Wilson Co.: *Randolph* and *Randolph* July 7, 1922 (GH); OKLAHOMA: Delaware Co.: *Wallis* 2728 (OKLA); Oklahoma Co.: *Waterfall* 2349 (OKL); Pottawatomie Co.: *Barkley* 395 (OKL); SOUTH CAROLINA: Charleston Co.: *Moldenke* 5196 (NY); in cultis *Curtis* (GH); TEXAS: Angelina Co.: *Cory* 10665 (GH); Brazos Co.: *Parks* Dec. 1, 1946 (TEX); Gonzales Co.: *Tharp* Nov. 23, 1935 (MICH); Harris Co.: *Boon* 481 (TEX); Houston Co.: *Cory* 26121 (GH); Jefferson Co.: *Tharp* Sept. 9, 1937 (TEX); Wood Co.: *Cory* 57671 (COLO); VIRGINIA: Princess Anne Co.: *Fernald* and *Long* 10881 (GH); Southampton Co.: *Fernald* and *Long* 13742 (GH).

15b. *P. angulata* L., var. *pendula* (Rydberg) Waterfall, comb. et stat, nov., based on *P. pendula* Rydb. in Small, Flora of the Southeastern United States 983. 1903.

Similar to var. *angulata*, but leaves sometimes narrower; flowering calyx usually 3 mm. long, sometimes 4 mm. long; with calyx lobes about 1 mm. long; flowering peduncles usually 15–40 mm. long; fruiting peduncles usually 20–40 mm. long, equalling the fruiting calyx (which is usually 20–25 mm. long) to three times its length.

TYPE: In describing this species, Rydberg did not select a type, stating that it was the taxon that he had originally called *P. lanceifolia*, or at least the part of it occurring from Illinois to Texas. He cited several collections in his treatment of the genus (1896), and from among these *F. L. Harvey 65* "central and southern Arkansas" (UARK) is selected as LECTOTYPE.

This variety grows in river valleys, bottom woods, fields and various disturbed sites, primarily in Oklahoma and Texas, but extending north to Illinois; it flowers from June through September.

Selected from 125 sheets of 104 collections: ARKANSAS: Conway Co.: *Moore 420449* (UARK); Garland Co.: *Demaree 20471* (NY, UC); *Harvey 65* (MICH); Little River Co.: *Moore 510682* (UARK); Prairie Co.: *Demaree 15498* (NY); Pulaski Co.: *Merill 725* (UARK); ILLINOIS: Alexander Co.: *Palmer 16628* (PH); Cook Co.: *Umbach Aug. 3, 1897* (MICH, NY, PH); St. Claire Co.: *Eggert Sept. 16, 1893* (GH); Union Co.: *Vasey 1862* (GH); *Vasey* (NY); KANSAS: Douglas Co.: *McGregor 607* (KANU); Geary Co.: *Hitchcock 775* (GH, NY); Linn Co.: *Rydberg and Imler 77* (NY); Miami Co.: *McGregor 11048* (KANU); Sedgwick Co.: *Horr 6191.1* (KANU); LOUISIANA: *Hale* (GH); MASSACHUSETTS: Middlesex Co.: *Perkins Oct. 22, 1880* (NY); MISSOURI: Jackson Co.: *Mackenzie May 10, 1896* (NY); Jasper Co.: *Palmer 3093* (NY); St. Louis Co.: *Eggert Sept. 7, 1887* (PH, UC); *Engelmann 324* (GH); OKLAHOMA: Alfalfa Co.: *Waterfall 9970* (OKLA); Blaine Co.: *Waterfall 2387* (OKL, UC); Cherokee Co.: *Wallis 1468, 1891* (OKLA); Creek Co.: *Bush 397* (GH); Custer Co.: *Palmer 12555* (TEX, UC); Garvin Co.: *Andrews 133* (OKL); Logan Co.: *Smith 889* (OKL); Murray Co.: *Robbins 2729* (OKL); Muskogee Co.: *Little 188* (OKL); Oklahoma Co.: *Waterfall 2091* (OKLA, GH); Osage Co.: *Stevens 2115* (GH, NY, OKL, OKLA); Payne Co.: *Coryell 388, 596* (OKLA); Pittsburg Co.: *McClary 66* (OKL); Pontotoc Co.: *McCoy 852, 1267, 1915* (OKLA); Pottawatomie Co.: *Van Vleet July 12, 1905* (OKL); TEXAS: Bexar Co.: *Metz 64* (NY, UC); Bowie Co.: *Plank May 9, 1891* (NY); Brazos Co.: *Reeves 62* (GH); Calhoun Co.: *Gentry 49* (TEX, LIL); Colorado Co.: *Bush 333* (GH, NY); Dallas Co.: *Hall 504* (GH, NY); DeWitt Co.: *Riedel Aug. 3, 1941* (TEX); Harris Co.: *Boon June 22, 1943* (TEX); Jackson Co.: *Tharp Aug. 8, 1941* (TEX); Lamar Co.: *Strandtman 10* (TEX); McLennan Co.: *York 46232* (OKL, TEX); Refugio Co.: *Tharp Dec. 4, 1928* (TEX); San Patricio Co.: *Cory 45389* (GH); Tarrant Co.: *Ruth 1242* (NY); Titus Co.: *Jones 10* (TEX); Travis Co.: *Tharp 1717* (TEX); Washington Co.: *Brackett July 15, 1938* (GH, TEX).

15c. *P. angulata* L., var. *lanceifolia* (Nees) Waterfall, comb. et stat. nov., based on *P. lanceifolia* Nees, Linnaea 6: 473. 1831.

Similar to var. *pendula*, but leaves lanceolate to linear-lanceolate, and corolla usually only 4–5 mm. long; anthers often only 1–1.5 mm. long.

TYPE: No collections were cited by Nees who said "Habitat in Peruvia

(Ruiz et Pavon); in Mexico (Herb. Hort. Reg. Ber.)". A Neotype should be selected, but preferably after a study of Peruvian and Mexican material. Specimens cited below appear to be similar to a number of Mexican collections seen by the author.

Variety *lanceifolia* grows in wet areas, river valleys, fields and other disturbed habitats in California, Arizona, New Mexico and to a lesser extent in Texas and southern Oklahoma, often being atypical in the latter two states, probably due to gene interchange with var. *pendula*; a few Florida collections are also referred here; it flowers usually in June to September, or as late as November in the warmer parts of its range.

Selected from 64 sheets of 41 collections: ARIZONA: Cochise Co.: *Thornber 2627* (GH), put here because the anthers are only about 1 mm. long, even though the leaves are broad; Pima Co.: *Pringle Aug. 5, and Sept. 5, 1884* (NY, PH, UC); Pinal Co.: *Kearney 15067* (ARIZ); Yuma Co.: *Schott 2* (NY); CALIFORNIA: Butte Co.: *Heller 13355* (GH); Fresno Co.: *Bacigalupi, Ferris and Wiggins 2488* (GH, NY, UC); Imperial Co.: *Parish 8337* (GH); Los Angeles Co.: *Wheeler 965* (UC); Merced Co.: *Hoover 1599* (UC); San Diego Co.: *Spencer 1014* (GH); Stanislaus Co.: *Hoover 2442* (UC); Tulare Co.: *Michener and Bioletti 1893* (NY); FLORIDA: Dade Co.: *Small and Carter 649* (NY, PH); Kevy Co.: *Small, Small and DeWinkeler 10036* (NY); Monroe Co.: *Eyles 8213* (GH, OKL); NEW MEXICO: Dona Ana Co.: *Archer 489* (MICH); *Kearney and Peebles 15073* (ARIZ); OKLAHOMA: McCurtain Co.: *Waterfall 7604* (OKL, OKLA); Oklahoma Co.: *Waterfall 2893*, near var. *pendula* (OKL); Payne Co.: *James 37* (OKLA); TEXAS: Brewster Co.: *Cory 31275* (GH); Cameron Co.: *Runyon 4243* (TEX); Llano Co.: *Bray 10* (NY); Presidio Co.: *Warnock T164* (GH, TEX); Refugio Co.: *Tharp Sept. 7, 1929* (TEX); Travis Co.: *Tharp, Warnock and Barkley Nov. 31, 1945*, atypical material, perhaps intermediate with var. *pendula* (COLO, DUKE, GH, NY, OKL, OKLA, UARK, UC).

16. ***Physalis pubescens*** Linnaeus, *Species Plantarum* 1: 183. 1753. Synonymy listed under the varieties.

Plants annual, 15–60 cm. tall, villous or viscid-villous vestite, sometimes with granular glands, sometimes glabrate; blades of principal leaves usually 3–10 cm. long, narrowly to broadly ovate, on petioles half as long to about equal them in length; margins of the leaves toothed to entire; corolla 6–10 mm. long, yellow with 5 prominent dark spots on the limb near its base; anthers 1.5–2 (2.4) mm. long, blue; flowering calyx 4–7 mm. long, its lobes 2–4 mm. long; flowering peduncles 3–12 mm. long; fruiting calyx 2–4 cm. long and 1.5–2.5 cm. wide, 5 angled, on peduncles 5–20 mm. long.

16a. ***P. pubescens*** L., var. ***pubescens***. *P. turbinata* Medicus, *Academia Theodora-palatina* 4: 188–192. 1780; *P. barbadensis* Jacquin, *Miscellanea Austriaca Sive Plantarum Selectarum* 360. 1781; *P. obscura*, var. *viscido-pubescens* Michx., *Flora Boreali-Americana* 1: 149. 1803; *Alicabon barbadense* (Jacq.) Rafinesque, *Sylva Telluriana* 56–57. 1838; *P. viscido-pubescens* (Michx.) Dunal, in DeCandolle's *Prodromus* 13(1): 442. 1852; *P. floridana* Rydberg, in Small, *Flora of the Southeastern United States* 983. 1903.

Plants more or less villous; leaf blades usually with 5–8 teeth on each side, usually not translucent; flowering peduncles 3–7 mm. long; fruiting calyces 2–3 cm. long on peduncles usually 5–9 mm. long.

TYPE: "In India utraque." A photograph of the type is in the Arnold Arboretum's collection of photographs of specimens in the Linnaean Herbarium, London.

Variety *pubescens* grows in swamps, margins of lakes, sand dunes, brush, fields and other disturbed habitats, primarily from Florida to Texas in our area; it flowers from May through November. It is a widespread pantropical taxon.

Selected from 81 sheets of collections: FLORIDA: Broward Co.: *Moldenke* 480 (NY); Dade Co.: *Small* and *Small* 4632 (DUKE, NY); Franklin Co.: *Chapman* 3055b (GH, NY); Highlands Co.: *Moldenke* 5417 (NY); Hillsboro Co.: *Churchill* March 28, 1936 (GH); Lake Co.: *Nash* 1251 (GH, MICH, NY, UC, PH); Lee Co.: *Tracy* 7612 (GH, NY); Monroe Co.: *Killip* 41456 (NY, UC); Pinellas Co.: *Williams* Mar. 12, 1926 (DUKE); Polk Co.: *McFarlin* 5924 (MICH); St. Lucie Co.: *Small* 8507 (GH, NY); ILLINOIS: Jackson Co.: *Vasey* (GH); LOUISIANA: *Hale* (GH); TEXAS: Bexar Co.: *Metz* 771 (MICH); Brazos Co.: *Moncreif* 1476 (TEX); Gonzales Co.: *Tharp* Aug. 12, 1940 (TEX); Harris Co.: *Fisher* Oct. 9, 1917 (UC); Hidalgo Co.: *Walker* 8 (GH, TEX); Jackson Co.: *Warnock* 105 (TEX); Jefferson Co.: *Tharp* Sept. 10, 1937 (GH, TEX); McLennan Co.: *Smith* 59 (TEX); Newton Co.: *Tharp* 52141 (GH); Nueces Co.: *Tharp* and *Brown* 48-165 (TEX); Travis Co.: *Tharp* Nov. 8, 1929 (GH, OKLA, TEX); Willacy Co.: *Johnston* 542221 (TEX); Williamson Co.: *Wolcott* 314 (TEX).

16b. *P. pubescens* L., var. *glabra* (Michx.) Waterfall, comb. nov., based on *P. obscura* Michx., var. *glabra* Michx. *Flora Boreali-Americana* 1: 149. 1803. *P. obscura* Michx., l.c. *P. hirsuta* Dunal, var. *repandodentata* Dunal, in DeCandolle's *Prodromus* 13(1): 445. 1852; *P. barbadensis* Jacq., var. *obscura* (Michx.) Rydb., *Mem. Torr. Bot. Club* 4: 327. 1896; *P. barbadensis* Jacq., var. *glabra* (Michx.) Fernald, *RHODORA* 51: 82. 1949.

When Michaux described *P. obscura* he immediately divided it into two varieties, var. *glabra* and var. *viscido-pubescens*. The present author interprets var. *glabra* as being the "typical" variety.

This material has been referred recently, by some American authors, to *P. turbinata* Medicus, *Academia Theodora-palatina* 4: 188-192. 1780. However, in describing this species Medicus says "Die Hauptstamme und nebenaste sind vierkandigt, haarich und rotlich violet-braun." One might dismiss the reddish violet-brown color, as either not necessarily being a characteristic of the whole taxon, or as possibly not being retained in herbarium specimens, but it seems dubious if the term "hairy" would be used to describe nearly glabrous, or slightly puberulent specimens. It seems that the taxon described by Medicus, at least as the name has been applied in our flora, is more likely referable to var. *pubescens*.

Plants glabrous or sparingly puberulent, but not villous as in the other varieties; blades of the principal leaves usually 2-7 cm. long, ovate, often rather broadly so, acuminate in many specimens; margins of the leaves irregularly toothed, sometimes saliently so; petioles about equalling the blades in length; anthers 1.8-2.4 mm. long, bluish; flowering calyx 5-7 mm. long with narrow lanceolate-acuminate lobes 2.5-4 mm. long; flowering peduncles 5-12 mm. long; fruiting calyx 3-4 cm. long, ovate or broader in outline, often acuminate at the apex, on peduncles 1-2 cm. long.

TYPE: In the Herbarium of Michaux, Mus. Hist. Nat., Paris; photograph in the Gray Herbarium.

Variety *glabra* grows in open woods, creek sides, valleys, yards and other disturbed habitats, mostly in southeastern coastal states from North Carolina to Texas, and inland in Arkansas and Missouri; it usually flowers from July through October.

Selected from 47 sheets of 34 collections: ALABAMA: Crenshaw Co.: *Reed 2103* (TEX); Mobile Co.: *Mohr Aug. 1883* (MICH); ARKANSAS: Drew Co.: *Demaree 16498* (NY); Fulton Co.: *Bush 961* (NY); Hot Springs Co.: *Demaree 19471* (NY); Logan Co.: *Palmer 24209* (UARK); Saline Co.: *Moore 53-311* (UARK); FLORIDA: Dade Co.: *Tatnell 620* (PH); Gadsden Co.: *Curtiss 5896* (GH, UC); GEORGIA: Calhoun Co.: *Thorne 7338* (GH); CALIFORNIA: San Diego Co.: *Jones March 1882* (PH); LOUISIANA: Calcasieu Parish: *Correll and Correll 9566* (DUKE, GH, NY, PH); Natchitoches Parish: *Palmer 8777* (PH); Vermilion Parish: *Tharp July 27, 1929* (TEX); MISSISSIPPI: Oktibbeha Co.: *Pollard 1338* (GH); MISSOURI: Barry Co.: *Bush 547* (NY); Butler Co.: *Eggert July 1893* (NY, UC); Madrid Co.: *Bush 189* (GH, NY); NORTH CAROLINA: *Curtis* (GH); PENNSYLVANIA: Bucks Co.: *Moyer* (PH); TEXAS: Bowie Co.: *Heller and Heller 4253* (GH, NY, PH); Harris Co.: *Hall 503* (GH, NY); Newton Co.: *Tharp 42-141* (GH, TEX); Orange Co.: *Tharp 2518* (TEX); Rusk Co.: *Reverchon 3239* (NY).

16c. ***P. pubescens* L., var. *integrifolia* (Dunal) Waterfall, comb. nov.**, based on *P. hirsuta* Dunal, var. *integrifolia* Dunal, in DeCandolle, *Prodromus* 13(1): 445. 1852.

Plants more or less villous; leaf blades often entire, sometimes 3-4 (rarely more) more or less prominent teeth on each side, translucent or semitransparent; fruiting calyx 2-3 cm. long on peduncles 5-9 mm. long.

Included here are the plants, primarily of the northeastern United States, which have been referred to *P. pubescens* by recent American authors.

TYPE: "Physalis, n. 30, un. itin., Frank e sylvaticis agri Cincinnati civ. Ohio," presumably in the De Candolle collection in the Conservatoire et Jardin Botaniques, Genève, Switzerland.

Variety *integrifolia* grows on creek banks, lake shores, woods, hills and various disturbed habitats, mostly from Pennsylvania to Iowa and south to Florida and south central Texas, but also in southern New Mexico, Arizona and California; it is less frequent in southeastern United States than var. *pubescens*.

Selected from 166 sheets of 132 collections: ALABAMA: Jefferson Co.: *Karle June 18, 1899* (NY); Tuscaloosa Co.: *Pollard and Mazon 331* (GH); ARIZONA: Pima Co.: *Toumey Aug. 30, 1895* (UC); ARKANSAS: Baxter Co.: *Moore 510540* (OKLA, UARK); Clay Co.: *Demaree 20311* (OKLA, NY, UC); Crawford Co.: *Demaree 15300* (NY); Garland Co.: *Demaree 16190, 21841, 20422* (NY); Newton Co.: *Moore 430237* (OKLA, UARK); Perry Co.: *Demaree 20168* (NY); Polk Co.: *Moore and Williams Aug. 15, 1951* (UARK); Pulaski Co.: *Demaree 16640* (NY); Sevier Co.: *Demaree 9913* (NY, UC); Union Co.: *French 500150* (UARK); Washington Co.: *Giles 429* (UARK); Yell Co.: *Demaree 20109* (NY); CALIFORNIA: Colusa Co.: *Stinchfield 460* (NY); Imperial Co.: *Thomas* (GH, NY); Lake Co.: *Baker 11226* (UC); San Diego Co.: *Orcutt Mar. 6, 1883* (MICH); Tulare Co.: *Congdon Oct. 8, 1881* (UC); FLORIDA: Dade Co.: *Small and Moiser 5902* (GH,

NY); Leon Co.: *Godfrey* 52473 (DUKE); ILLINOIS: Adams Co.: *Seymour* Sept. 26, 1876 (DUKE); Massac Co.: *Gleason* 2630 (GH); INDIANA: Grant Co.: *Deam* 15287 (NY); Lawrence Co.: *Kriebel* 2564 (DUKE); Putman Co.: *Banker* 1499 (NY); Tippecanoe Co.: *Boot* Oct. 6, 1895 (GH); Whitely Co.: *Friesener* 16539 (GH, NY); KANSAS: Riley Co.: *Norton* 366 (GH, NY); KENTUCKY: Bell Co.: *Lloyd* Aug. 10, 1888 (NY); Hickman Co.: *McFarland* and *Anderson* 2223 (NY); MARYLAND: Montgomery Co.: *Blanchard* Aug. 12, 1892 (NY); Worcester Co.: *Canby* Sept. 1863 (NY); MASSACHUSETTS: Suffolk Co.: *Perkins* Sept. 6, 1881 (NEBC); MISSOURI: Butler Co.: *Eggert* July 1893 (UC) on sheet with var. *obscura*; Jackson Co.: *Bush* 6423 (GH, NY); Jasper Co.: *Demaree* 4424 (OKLA, UARK); Moniteau Co.: *Steyermark* 70814 (UARK); Newton Co.: *Palmer* 32492 (NY); Osage Co.: *Jeffrey* 366 (GH); Phelps Co.: *Kellogg* 196 (NY, TEX, UC); St. Louis Co.: *Eggert* Aug. 14, 1891 (TEX, UC); NEW MEXICO: *Rusby* 310, Burro Mts. (GH, NY); NORTH CAROLINA: Brunswick Co.: *Blomquist* 4811 (DUKE); Carteret Co.: *Lewis* 234 (NY); Washington Co.: *Correll* 1921 (DUKE); OHIO: *Moldenke* 13543 (OKLA); Franklin Co.: *Gleason* Sept. 5, 1904 (GH); Hamilton Co.: *Lloyd* 2209 (MICH); Lake Co.: *Werner* 141 (GH); OKLAHOMA: Cherokee Co.: *Waterfall* 9661 (OKLA); Delaware Co.: *Wallis* 2732 (OKLA); Johnston Co.: *Houghton* 3572½ (NY); Murray Co.: *Hopkins* and *Cross* 6429 (OKL); Muskogee Co.: *Waterfall* 10139 (OKLA); Ottawa Co.: *Stevens* 2530 (GH, NY); Payne Co.: *Thompson* 82 (OKLA); PENNSYLVANIA: Allegheny Co.: *Porter* Aug. 28, 1896 (GH, NY); SOUTH CAROLINA: Berkeley Co.: *Godfrey* and *Tryon* 622 (GH, NY); TENNESSEE: Cheatham Co.: *Svenson* 10395 (UC); Davidson Co.: *Svenson* 9494 (GH); Hamilton Co.: *Clalmgh* 101 (DUKE); TEXAS: Cameron Co.: *Johnston* 542210 (TEX); Dallas Co.: *Reverchon* 382 (GH); Gonzales Co.: *Tharp* 51-467 (OKLA, TEX); Jackson Co.: *Warnock* 105 (NY); Travis Co.: *Armor* 5508 (OKLA) approaching var. *pubescens*; Willacy Co.: *Davis* and *Johnston* 53256.15 (TEX); VIRGINIA: Henrico Co.: *Fernald* and *Long* 12794 (GH); Isle of Wight Co.: *Fernald* and *Long* 13442 (GH); James City Co.: *Fernald* and *Long* 13441 (GH); Loudon Co.: *Holms* Aug. 1888 (ARIZ, NY); Nansemond Co.: *Fernald* and *Long* 10810 (GH); Northampton Co.: *Canby* Sept. 1878 (NY); Page Co.: *Steele* and *Steele* 197 (GH, NY); Princess Anne Co.: *Fernald* and *Long* 4167, 4168, 10809 (GH); WEST VIRGINIA: *Mertz* Sept. 22, 1878 (NY).

16d. *P. pubescens* L., var. *grisea* Waterfall, var. nov., *Planta grisea*, nunc villosa nunc brevipilosa, nunc glandulari-farinacea; foliis ovatis sinuato-dentatis; calycibus fructu a pendunculis 5-9 mm. longis.

Stems densely covered with long, jointed hairs, or with long and short hairs mixed, or densely short viscid-hairy; leaves usually short hairy, sometimes with granular glands, the surfaces having a greyish appearance; leaf blades ovate, coarsely and irregularly 6-9 dentate, or sinuate dentate nearly to their bases; fruiting calyces on peduncles 5-9 mm. long.

This is the taxon, primarily of the northeastern United States, that has been passing as *P. pruinosa* L. However the photograph of the type of *P. pruinosa* in the Arnold Arboretum of Harvard University shows a plant with a more prominent acumination of the leaf blade, and a much longer flowering peduncle than is found in any of our material. The author has been unable to determine the application of the name, *P. pruinosa*. He has seen no material comparable with the photograph of the type.

TYPE: *Walter Deane* Sept. 24, 1884, Cambridge, Mass. (GH; isotype: NY).

Variety *grisea* grows on mountainsides, wooded slopes, roadsides, in gardens and various disturbed habitats, principally in northeastern United States; it usually flowers in August, September and October.

Selected from 114 sheets of 102 collections: CANADA—ONTARIO: *Macoun* 54524 (NY); UNITED STATES—ALABAMA: Baldwin Co.: *Dukes* 118 (NY); CALIFORNIA: Inyo Co.: *Roos* and *Roos* 6221 (UC); CONNECTICUT: New Haven Co.: *Blewitt* 1381 (NEBC); DELAWARE: New Castle Co.: *Latnall* 1882 (GH); FLORIDA: *Chapman* (NY); GEORGIA: DeKalb Co.: *Small* Aug. 1–6, 1895 (NY); ILLINOIS: DuPage Co.: *Umbach* 12484 (GH); Macon Co.: *Mills* Sept. 29, 1940; INDIANA: Lawrence Co.: *Kriebel* 2538 (DUKE, GH); KANSAS: *Imler* 68 (NY); KENTUCKY: *Short* 1840 (NY); MAINE: Cumberland Co.: *Chamberlain* 1127 (NEBC); MASSACHUSETTS: Barnstable Co.: *Collins* 950 (NEBC); Bristol Co.: *Hervey* (NEBC); Dukes Co.: *Bicknell* 7704, 7706, 7693 (NY); Essex Co.: *Morong* Aug. 1, 1868 (NY); Hampshire Co.: *Torrey* and *S.J.E.* Sept. 16, 1943 (DUKE); Middlesex Co.: *Fernald* Sept. 26, 1908 (GH); Nantucket Co.: *Flynn* July 30, 1904 (NEBC); Norfolk Co.: *Kidder* Aug. 23, 1888 (NEBC); Plymouth Co.: *Williams* Aug. 21, 1898 (NEBC); Suffolk Co.: *Young* Sept. 1878 (GH, NEBC); Worcester Co.: *Woodward* 2 (GH); MICHIGAN: St. Claire Co.: *Dodge* Aug. 25, 1906; MISSOURI: Barry Co.: *Bush* 564, 469 (NY); Christian Co.: *Blankenship* Aug. 1, 1895 (GH); Jackson Co.: *Mackenzie* 7 (MICH); Jasper Co.: *Bush* 10402 (GH, NY); Taney Co.: *Bush* 170 (GH); NEW JERSEY: *Hastings* Sept. 6, 1917 (NY) foot of Palisades; NEW YORK: Chemung Co.: *Lucy* 7825, 11098 (NY); Oswego Co.: *Sheldon* 6008 (UC); Tompkins Co.: *Hoisington* 312 (OKL); Washington Co.: *Burnham* Sept. 25, 1896 (GH); NORTH CAROLINA: Granville Co.: *Godfrey* 2060 (GH); Jackson Co.: *Thaxter* June–July 1887 (GH); Swain Co.: *Beardslee* and *Kofoed* Aug. 15, 1891 (GH); OREGON: Tillamook Co.: *Lloyd* Sept. 10, 1894 (NY); PENNSYLVANIA: Bucks Co.: *Fretz* Sept. 7, 1901 (GH); Lancaster Co.: *Small* Sept. 1889 (GH); Westmoreland Co.: *Shafer* and *Medayer* 182 (UC); RHODE ISLAND: Providence Co.: *Leland* Sept. 18, 1881 (NEBC); TENNESSEE: Knox Co.: *Ruth* 3411 (NY); TEXAS: De Witt Co.: *Riedel* Aug. 3, 1941 (TEX); VERMONT: Bennington Co.: *Ames* May 1885 (MICH); Chittenden Co.: *Flynn* 3 (GH); Rutland Co.: *Eggleston* 1510 (GH, NEBC); VIRGINIA: Bedford Co.: *Curtiss* Oct. 3, 1871 (GH); Page Co.: *Steele* and *Steele* Aug. 28, 1901 (GH, NY); WASHINGTON: Klickitat Co.: *Suksdorf* 2285 (NY); Yakima Co.: *Henderson* 2496 (GH).

17. **P. foetens** Poiret, var. **neomexicana** (Rydb.) Waterfall, comb. et stat. nov., based on *P. neomexicana* Rydb., Mem. Torr. Bot. Club 4: 325–326. 1895.

Plants annual, 10–60 cm. tall, usually branched; indument short (0.5–1 mm. long) and usually dense, more or less yellowish or brownish capitate-glandular; leaf blades 3–6 cm. long, ovate to oblong-ovate or lanceolate-ovate, their margins toothed, or sometimes sinuate-toothed; petioles one-half to three-fourths as long as the blades; corollas 6–7 mm. long, bluish spotted; anthers (0.3) 1–1.5 (2) mm. long, bluish, on filiform filaments; flowering calyces 3–4.5 mm. long, on peduncles usually 1.5–3 mm. long; fruiting calyces 2–3 cm. long, more or less ovate in outline, sharply 5-angled, on peduncles mostly 4–7 mm. long.

This variety differs from var. *foetens* of Mexico primarily in its shorter anther-length (2–3 mm. in var. *foetens*), usually shorter corolla (as much as 1 cm. long in some Mexican material) and in having fewer yellowish or brownish capitate glands than var. *foetens*.

TYPE: In describing *P. neomexicana*, Rydberg cited several collections, but designated none of them as type. From among those cited, *Fendler* 678 (GH) is selected as the LECTOTYPE. A second sheet of the same collection, an isolectotype, is in the same herbarium.

Variety *neomexicana* grows in the mountains, often with junipers and pines, and in adjacent areas, including cultivated fields, in New Mexico and adjacent Colorado and Arizona; it flowers in June through October.

Selected from 48 sheets of 40 collections: ARIZONA: Graham Co.: *Bohrer* 409 (ARIZ); Greenlee Co.: *Gould and Haskell* 4080 (UC); Maricopa Co.: *Rusby* 310 (MICH); Navajo Co.: *Wooton* September 13, 1913 (ARIZ); Pima Co.: *Toumey* Aug. 30, 1894 (NY); Yavapai Co.: *Wilcox* Sept. 1918 (ARIZ); COLORADO: *Porter* July 1872 (PH); El Paso Co.: *Livingston* 497 (DUKE); NEW MEXICO: Colfax Co.: *Standley* 13869 (NY); Bernalillo Co.: *Ellis* 287 (NY); Grant Co.: *Rusby* Oct. 1881 (MICH); Lincoln Co.: *Skehan* 60 (GH, NY); *Wooton* 633, 635 (NY); Rio Arriba Co.: *Parker and McClintock* 6449 (ARIZ, UC); San Miguel Co.: *Standley* 4920 (GH, NY), *Nelson* 11568 (UC); Santa Fe Co.: *Heller and Heller* 3803 (GH, NY); Sierra Co.: *Metcalfe* 1210 (GH, NY, UC); Socorro Co.: *Metcalfe* 425 (NY); Torrance Co.: *Parker and McClintock* 6529 (NY); Socorro or Grant Co.: *Rusby* 309, Mogollon Mts. (MICH).

18. *Physalis latiphysa* Waterfall, sp. nov. Planta annua, 15–45 cm. alta, ramosa, plus minusve villosa; foliorum laminis 5–7 cm. longis, ovatis vel ovatis-rotundis, integris vel paucidentatis, acuminatis; corollis maculatis, 4–6 mm. longis; antheris coeruleis, 1.5–2 mm. longis; calyceibus fructu (2.5) 3–4 cm. latis; pedunculis 1–1.5 cm. longis.

Annual, 15–45 cm. high, branched, more or less villous; blades of the principal leaves 5–7 cm. long, ovate to ovate-rotund, thin and translucent, their margins from entire to having a few teeth, acuminate; petioles 1.5–7 cm. long; corollas yellow, dark-spotted, small, 4–6 mm. long; flowering calyces 3–4 mm. long with lobes about half that long, on peduncles 3–8 mm. long; fruiting calyces sparsely appressed-hairy, strongly 5-angled, 2.5–4 cm. long and (2.5) 3–4 cm. wide; fruiting peduncles 1–1.5 cm. long; linear-subulate calyx lobes 7–10 mm. long, extending 5–7 mm. beyond the body of the inflated fruiting calyx.

TYPE: *T. H. Kearney* and *R. H. Peebles* 14425, Rondstadt Ranch, plain east of Baboquivari Mts., Pima Co., Arizona, Sept. 23, 1939. It is deposited in the Herbarium of the University of Arizona.

In addition to the type, the following collections have been seen: ARIZONA: Pima Co.: *Bartram* 237 Santa Catalina Mts., east of Pima Canyon, Jan. 16, 1920 (PH); *Kearney and Peebles* 10427, Toro Canyon, Baboquivari Mts., Sept. 30, 1934 (ARIZ, MICH); *Kearney and Peebles* 14932, South Canyon, Baboquivari Mts., Aug. 31, 1940 (ARIZ); Santa Cruz Co.: *Harrison and Hope* 9058, Forty miles south of Tucson on Sasabe Road, Sept. 11, 1932 (ARIZ); *Harrison and Fulton* 8158, Nogales, Aug. 30, 1931 (ARIZ); County undetermined; *Harrison* 9058, Robles to San Fernando, Sept. 10, 1932 (GH, MICH); *Harrison, Kearney and Hope* 8950 half-way from Sasabe to Robles, Aug. 21, 1932 (ARIZ); *Kearney and Peebles* 10576, Florida Canyon, Santa Rita Mts., Oct. 7, 1934 (ARIZ).

19. *Physalis missouriensis* Mackenzie and Bush, Trans. Acad. Sci. St. Louis 12: 84–85. 1902.

Annual, usually branched above, villous, sometimes with shorter hairs, often somewhat viscid; principal leaf blades 2–6 cm. long, ovate to narrowly ovate, dentate to sinuately dentate, or sometimes entire; petioles one-third the length of, to nearly as long as the blades; corolla yellow, not dark spotted, 7–10 mm. long; anthers (0.6) 1–1.2 mm. long, bluish, on slender filaments; flowering calyx 3–4 mm. long, its lobes 1–2 mm. long, on peduncles 3–6 mm. long; fruiting calyx 1.5–2.5 cm. long, ovoid, on peduncles 5–10 mm. long.

This species is easily distinguished from *P. pubescens* by its unspotted corollas and its smaller anthers.

TYPE: *K. K. Mackenzie 485*, Rocky soil, Red Bridge, Jackson Co., Missouri. The type was deposited in the "Herbarium of K. K. Mackenzie." Isotypes: GH, MICH, WIS.

P. missouriensis grows in rocky woods and limestone barrens, mostly in Missouri, northeastern Kansas, western Arkansas, with two collections from adjacent Oklahoma, and one collection, dubiously referred here, from southwestern Texas; it flowers from June through October.

Collections examined: ARKANSAS: Carroll Co.: *Palmer 29310* (UARK); Hempstead Co.: *Palmer 8955* (PH); Washington Co.: *Moore 3008* (UARK); *Moore and Iltis 430209* (OKLA, UARK); *Giles 404* (UARK); *J. T. B. 645* White River (UARK); KANSAS: Douglas Co.: *Snow 2210* (KANU); *McGregor 9703* (KANU); Marshall Co.: *Horr 4610* (KANU); Riley Co.: *Gates 18566* (GH, TEX, UC); *Hitchcock 402* (GH); Shawnee Co.: *Volle 737* (KANU); MISSOURI: Barry Co.: *Bush 162* (OKL); Jackson Co.: *Bush* June 27, 1887 (GH), Aug. 1888 (GH, NY); 772 (GH, NY), 4079 (GH), 7334 (GH), 7695 (GH, NY), 12298 (NY), 12298A (NY); *Mackenzie 360* (NY), Aug. 23, 1896 (GH, NY); 485 (MICH); Jefferson Co.: *Prince* July 4, 1883 (GH); Phelps Co.: *Kellogg* Oct. 22, 1913 (TEX); Platte Co.: *Bush 11804* (NY); St. Louis Co.: *Eggert* July 20, 1887 (GH), Aug. 21, 1891 (NY); *Pennell 11701* (PH); Taney Co.: *Bush 173* (GH, NY); County undetermined; *Blankenship 1893* (NY); *Nelson 5* (NY); OKLAHOMA: Muskogee Co.: *Little 2568* (OKL); Ottawa Co.: *Stevens 2351* (GH, on sheet with *Stevens 2530*, *P. pubescens*); TEXAS: Brewster Co.: *Cory 35570*, five and three-quarter miles east of Alpine, Sept. 19, 1940 (GH) is somewhat doubtfully referred to this taxon.

20. ***Physalis Greenei*** Vasey and Rose, Contr. U. S. Natl. Herb. 1: 18. 1890; *P. pedunculata* Greene, Pittonia 1: 268–269. 1899, non Mart. and Gal., Bull. Acad. Brux. 12: 132. 1842.

Annuals, villous or short pilose, glandular and viscid; principal leaf blades 2–4 cm. long, ovate; petioles one-half as long as to slightly longer than the blades; leaf margins dentate to sinuate-dentate, or rarely entire; corolla 8–10 mm. long, yellowish, or sometimes with a slightly darker tinge; anthers 1.5–2.5 mm. long, yellow, on slender filaments; flowering calyx 3–4 mm. long on peduncles 15–30 mm. long; fruiting calyx 2–2.5 cm. long, pointed-ovoid, on peduncles 15–40 cm. long.

The smaller anthers of this species will serve to distinguish it, and separate it from *P. crassifolia* in those instances in which they tend to resemble each other.

TYPE: *Charles F. Pond* Feb. 1889, Cedros Island, off the coast of Lower California; "southwest side of the island" according to Greene; type and isotype (US).

P. Greenei grows on hills and sea-cliffs, southern California; it flowers in February, March and April.

Collections examined: CALIFORNIA: Orange Co.: *Abrams* June 12, 1901 (NY); *Mason* 2933 (GH, UC); Placer Co.: *Jones* 88 (GH); San Diego Co.: *Abrams* 3309 (GH, NY, PH, UC, US); *Allen* 77 (GH); *Jones* March 1882 (GH, UC); *Wiggins* 1821 (UC).

21. *Physalis lobata* Torrey, Ann. Lye. Nat. Hist. New York 2: 226–227. 1828; *Quincula lobata* (Torr.) Rafinesque, Atlantic Journal, 1: 145. 1832; *P. sabeana* Buckley, Proc. Acad. Sci. Phil. 14: 6. 1863; *Chamaesaracha physaloides* Greene, Bull. Torr. Bot. Club 9: 122. 1882; *Quincula lepidota* Aven Nelson, Bot. Gaz. 47: 430. 1909.

Chamaesaracha physaloides is included here on the basis of Greene's phrase "flat scale-like hairs," which seems to be a good description of the appearance of the characteristic crystalline vesicles of *P. lobata* after they are dried. These structures are not found on *P. Wrightii*, the other species to which this name has been referred.

Perennial, branching from the base, the branches spreading or procumbent; indument consisting of a varying amount of crystalline vesicles, flattening when dried, which may be abundant enough to give the plant a scurfy appearance, or may be very sparse; principal leaves usually 4–10 cm. long, with blades usually 0.5–3 cm. wide, ovate-lanceolate to linear-lanceolate, cuneate at the base to a winged petiole, usually pinnatifid, rarely sinuate-toothed or entire; corollas blue or violet (rarely white), rotate, 1.5–2 cm. broad, with five hairy pads on its base near the point of attachment of the filaments and alternating with them; anthers about 1.5–2 mm. long, yellow, on slender filaments; style twisted and bent to one side; flowering calyx 3–4 mm. long, its lobes 1.5–2 mm. long, deltoid; flowering peduncle 1–3 (5) cm. long; fruiting calyx 1.5–2 cm. long, pentagonal-ovoid, inflated, on peduncles 1–2.5 (3) cm. long; seeds usually somewhat crenate on their backs.

TYPE: *James* "On the Canadian"; not seen.

P. lobata grows on plains, prairies, mesas, canyons, juniper barrens, desert areas and various disturbed habitats principally in western Kansas, Oklahoma and Texas, and eastern Colorado and New Mexico, and southern Arizona.

Three hundred forty seven sheets of 275 collections have been seen from: Arizona, California (Fremont's Expedition in 1845), Colorado, Kansas, Nevada (Clark Co.), New Mexico, Oklahoma and Texas.

A white-flowered forma is rarely found. It may be described as *P. lobata* Torr., forma *albiflora* Waterfall, f. nov., corollis albis. TYPE: *J. J. Thornber* Aug. 11, 1901, Experiment Station Range Reserve, Pima County, Arizona (ARIZ). Another collection is *B. C. Tharp* and *C. Havard* 49344, 5–6 miles west of Del Rio, Valverde Co., Texas, April 16, 1949 (TEX).

22. *Physalis Carpenteri* Riddell ex Rydberg, Mem. Torr. Bot. Club 4: 330–331. 1896; *P. Carpenteri* Riddell, N. Orl. Med. and Surg. Journ. 759. 1852, as a *nomen nudum*; Bot. Gaz. 3: 11. 1847 in synonymy.

Plant over two-thirds of a meter tall, widely branched; herbage short-hairy, the leaf blades sometimes nearly glabrous and the calyces sometimes with a few long hairs; principal leaf blades (3) 7–11 cm. long, ovate to lanceolate-ovate, acuminate; petioles one-third to two-thirds as long as the blades; leaf margins usually entire, sometimes repand; flowers from single to 3–6 in the axils of the leaves; the fascicled flowers apparently due to the presence of a

telescoped axillary branch, sometimes 2–4 cm. long and bearing reduced leaves (*Curtiss 6901*: UC, GH, NY) as well as flowers; corolla about 1 cm. long, yellow; anthers about 2 mm. long, yellow, on slender filaments; flowering calyx 4–5 mm. long on peduncles 5–8 mm. long; fruiting calyx about 1.5 cm. in diameter, nearly spherical, only slightly inflated; fruit having 1 to several plump, rounded, corky, seed-like bodies (possibly a peculiar development of unfertilized ovules) in addition to the normal, more or less reniform, flattened seeds.

The species may be annual, according to some collectors, or from a deep-seated "rootstock" according to others; all the specimens examined were branches only.

The author prefers to leave this species in *Physalis*, regardless of its peculiar characteristics, until a more thorough study of related genera, or possible subgenera, can be made.

Collections examined: ALABAMA: *S. B. Buckley*, April (NY); FLORIDA: Columbia Co.: *Geo. V. Nash 2503*, Aug. 29–31, 1895 (GH, MICH, NY); *Erdman West*, seeds from Fort White, raised by *Margaret Young Menzel* as her 508a (TEX); Escambia Co.: *Curtiss, 1886*, Pensacola (GH); Suwanee Co.: *A. H. Curtiss 6901*, annual 2 ft. high and widely branched, growing in a cultivated field near Wellborn, Sept. 14, 1901 (GH, NY, UC); County undetermined: *M. A. Curtis*, Florida?; LOUISIANA: East Feliciana Parish: *Riddell*, March 1878 (GH, one fruiting calyx); Orleans Parish: *Drummond* New Orleans (GH); *Ingals* in 1835, New Orleans (NY); West Feliciana Parish: *R. S. Cocks, 3603*, common in rich woods (NY).—DEPT. OF BOTANY AND PLANT PATHOLOGY AND THE RESEARCH FOUNDATION, OKLAHOMA STATE UNIVERSITY, STILLWATER, OKLAHOMA.

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