

NORTH AMERICAN SPECIES OF GALEROPSIS, GYROPHRAGMIUM, LONGIA, AND MONTAGNEA¹

S. M. ZELLER

(WITH 1 FIGURE)

The four genera, *Galeropsis*, *Gyrophragmium*, *Longia*, and *Montagnea*, along with *Secotium*, form a natural group in the Secotiaceae, which is one of the gasteromycetous families recognized as closely related to the Hymenomycetes.

The fructifications are stalked and more or less pileate, except in *Montagnea* where the pileous tissues are actually wanting. The gleba is mostly lamelloid but sometimes anastomosing until a more or less spongy, chambered condition results. In this group the gleba does not become a powdery spore mass at maturity, as in the Podaxaceae, nor does it rapidly decompose or deliquesce, as in certain closely related genera of the Agaricaceae. The stem is extended above as a percurrent columella. The spores are dark-colored in contrast to the echinulate or verrucose, hyaline or subhyaline ones in the *Elasmomyces-Macowanites* group.

The chief purpose of the present paper is to discuss these genera in relation to the species occurring in North America.

The writer acknowledges with appreciation the privilege of studying specimens made available by the herbaria of the University of California, Harvard University (Farlow), University of Michigan, and New York Botanical Garden, as well as the special aid rendered by Dr. W. H. Long and Dr. D. P. Rogers.

GALEROPSIS Velenovsky, *Mykologia* 7: 105. 1930.

Syn. *Psamatomyces* Lebedeva. *Trudy po Zashch. Rastjenij.*
V. 1932.

The following is an emended description.

¹ Published as Technical Paper No. 423 with the approval of the Director of the Oregon State Agricultural Experiment Station, Corvallis. Contribution from the Department of Botany.

Pileus cylindrical to conic, slender, acute above, dry, usually glabrous, drying tenacious, persisting, margin nude or with remains of cortina, stipe slender, tenacious, solid or hollow, mostly glabrous; gleba lamelloid, narrow, free, at first pale, then ochraceous; spores ovoid or ellipsoid, ochraceous, smooth, borne acrogenously.

This genus has affinities with the *Bolbitius-Galera* group of agaricaceous genera. Velenovsky considered it nearest to *Galera* through *G. hapala* Fries, while Singer² considers *Galeropsis* closely allied to his *Bolbitioideae*.

The type species is *G. desertorum* Velen. & Dvorak. (*Mykologia* 7: 106. 1930) from Moravia. Other species previously assigned to the genus are *G. plantaginiformis* (Lebedeva) Singer (Syn. *Psamatomyces plantaginiformis* Lebedeva), and *Galeropsis cucullata* (Shope & Seaver) Singer.³

There are two known species in North America as follows:

1. *Galeropsis cucullata* (Shope & Seaver) Singer.

Syn. *Bolbitius cucullata* Shope and Seaver, *Mycologia* 27: 649-650. *illus.* 1935.

Secotium longipes Zeller, *Mycologia* 33: 209-210. *illus.* 1941.

For a complete description of *G. cucullatus* reference may be made to either of the two citations above. Singer points out the similarity of this species with *G. plantaginiformis*, which has been reported from Turkestan and the Caucasian regions of Asia and Europe. This similarity is more apparent in the general stature and shape of the fructifications of the two species (See illustration of *G. cucullatus* in *Mycologia* 27: 648. 1935) than in their microscopic characters. Young specimens of *G. cucullatus* have pileus with fibrils from the margin, and the basidia are gasteromycetous.

The other North American species is:

***Galeropsis polytrichoides* comb. nov.**

Syn. *Secotium polytrichoides* Zeller, *Mycologia* 33: 211-212. *illus.* 1941.

G. polytrichoides has closer affinities with *G. desertorum* than *G. cucullatus* although it is definitely cortinate as the latter. The

² Singer, R. Studien zur Systematik der Basidiomyceten I. Beih. Bot. Centralbl. 56 Ab. B: 147-150. 1936. (See p. 149.)

³ Loc. cit., pp. 148 and 150.

spores of the type species are twice as long as those of this species, as may also be said of the pileus in proportion to its width.

GYROPHRAGMIUM Montagne, Ann. Sci. Nat. II. 20: 77. 1843.

Syn. *Polyplocium* Berkeley, London Jour. Bot. 2: 202. 1843.

Fructifications epigeous, stalked; stem percurrent as a columella and continued above as an expanded, cap-like pileus; peridium at first turbinate, then rupturing around the circumference, leaving the lower half as a funnel-shaped volva at the base of the stem and sometimes partially sheathing the latter and the upper part covering the pileus; annulus usually present; gleba suspended from the under surface of the pileus-like expansion of the stem, composed of radial, ventricose, crowded, wavy, sometimes anastomosing lamella, free, at first tough, flexible, at maturity fuscous or black; spores spherical or subspherical, smooth, brownish.

The type species is *Gyrophragmium Delilei* Montagne (1843). Montagne based the genus on *Montagnites Dunalii* Fries (1836) and according to the present International Rules of Botanical Nomenclature undoubtedly the combination for the type species should be **Gyrophragmium Dunalii** (Fries) but doubtless *G. Delilei* Montagne should be conserved.

As indicated above *Polyplocium* is reduced to synonymy with *Gyrophragmium* following the able discussion of this point by Lloyd.⁴ From these notes and Lloyd's illustrations as well as the fragmentary specimens studied from South Africa and North Africa, *G. Delilei* and *G. inquinans* (Berk.) Lloyd are doubtless congeneric but because of spore color, shape, and color of fructifications, the two species can hardly be construed as identical.

A study of the morphological development of the early stages of the fructifications of a species in this genus is much to be desired. It would appear from remnants of fundamental tissues in mature stages that the peridium is double. The outer layer partially or entirely remains at the base of the stem as a volva which is free or more or less sheathing. Sometimes a portion remains as a partial coating on the upper surface of the pileus, which has rather indefinite origin. The origin of the annulus, which appears to be

⁴Lloyd, C. G. *Gyrophragmium* and *Polyplocium*. Mycological Writings Vol. 1, Brochure 18 No. 291: 195-196. 1904.

double in *G. californicum*, is of considerable conjecture. Is it composed of an upper layer (partial veil) extending from the margin of the pileus to the stem and a lower layer which was the extension of the inner peridial layer above the pileus or does its lower portion sheath the stem as an innate superficial layer? A study of the developmental morphology should throw light on such questions and indicate relationships between *Gyrophragmium* and *Longia* and *Montagnea*.

Two species have been named from North America, i.e. *Polyplodium californicum* Harkness and *Gyrophragmium texense* (Berk. & Curt.) Masseur. *P. californicum* Harkness therefore becomes

1. ***Gyrophragmium californicum*** (Harkness) Morse comb. nov. in Herb. Univ. Calif.

Syn. *Polyplodium californicum* Harkness, Calif. Acad. Sci. Bull. 1: 159, 1885.

Polyplodium Curranii Harkness in Herb. N. Y. Bot. Gard.

The following is an emended description of *G. californicum*.

Fructifications tall, slender with a pileus formed from the discoid expansion at the apex of the stem; pileus expanding to flat or depressed, 2–4 cm. broad, covered by remains of the universal veil or peridium, grayish, drying, yellowish to buff or straw-colored; stem 1–1.5 cm. in diam., elongating to 10–20 cm., concolorous; volva at base of stem, white, free, 1–1.5 cm. broad, remains of the ruptured universal veil or outer peridium; annulus sometimes evanescent, sometimes persisting, ample, double, papery above, heavy below, white drying straw-colored; gleba rusty-black, lamelloid, free, suspended from the lower surface of the pileus; spores dark reddish brown smooth, subglobose to irregular, angular to ellipsoid, 6–8.75 \times 4–5 μ .

Sandy locations in central California. January to June.

As Lloyd⁵ has suggested it is unfortunate that Dr. Harkness did not use the greatest care in distributing his specimens. The specimen at the Berlin Imperial Museum is *Montagnea arenarius* and Hollos⁶ cites it as a specimen from Harkness himself and that it

⁵ Loc. cit.

⁶ Hollos, Ladislaus. Die Gasteromyceten Ungarns. Leipzig, 1904. (See pp. 30–32 and T. 1–2.)

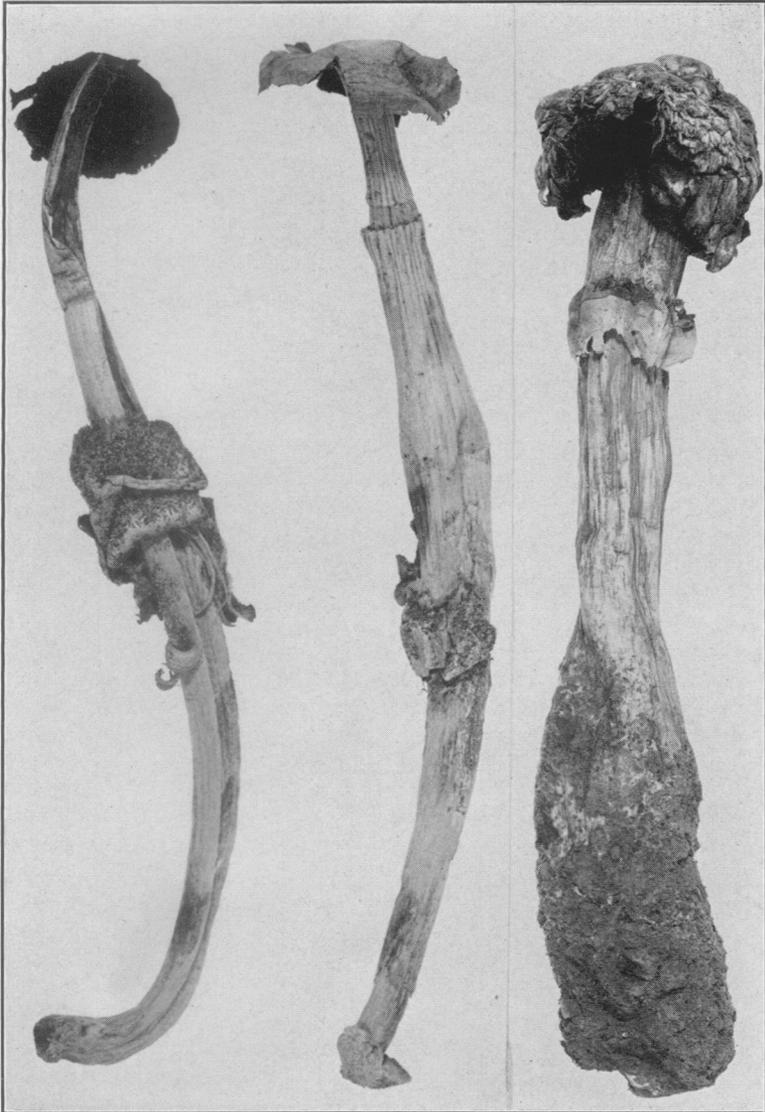


FIG. 1. Left, *Gyrophragmium californicum* (Harkness) Morse (from dried specimens in Univ. Calif. Herb.). Right, the type specimen of *Longia texensis* (Berk. & Curt.) Zeller var. *major* Zeller, $\times \frac{1}{2}$ nat. size.

agrees completely with *Montagnites radiosus* (Pall.) Hollos. As cited below the specimens at the New York Botanical Garden and the University of California fit the Harkness description of *G. californicum*.

This species is very limited in its distribution, having been reported only from the area near San Francisco Bay (FIG. 1).

Specimens examined: California: *H. W. Harkness*, Jan., 1882 (in N. Y. Bot. Gard. Herb. under the name *Polyplodium Curranii* Harkn.); San Mateo County, San Francisco, *H. W. Harkness*, May (in N. Y. Bot. Gard. Herb.), Presidio, *Cleone Wetherbee*, April 6, 1929 (in Univ. Calif. Herb. under the name *Gyrophragmium californicum* (Harkn.) Morse).

Gyrophragmium texense (Berk. & Curt.) Mass. is considered not to be congeneric with *Gyrophragmium* as treated above and therefore has been transferred to the following new genus.

Longia gen. nov.

Fructifications agaricoid with stem and capitate peridium; peridium subglobose or depressed globose to broadly convex; surface smooth or rupturing into scales; partial veil leaving a more or less permanent annulus; stem percurrent as a columella, more or less widening above to underlie the upper peridium; gleba black at maturity, lamelliform and variously anastomosing; hymenium of paraphyses and basidia; spores black, subglobose to ellipsoid.

Type species, *Secotium texense*.

The writer is dedicating this new genus to Dr. W. H. Long who has contributed materially to our knowledge of gasteromycetes in the semiarid sections of the southwestern United States.

1. **Longia texensis** (Berk. & Curt.) comb. nov.

Synonyms:

Secotium texense Berk. & Curt. *Grevillea* 2: 34-35. 1873.

Polyplodium columnare Ellis & Galloway. 1889. in Herb. N. Y. Bot. Gard.

Gyrophragmium texense (Berk. & Curt.) Masee, *Grevillea* 19: 96. 1891.

Polyplodium striatum Ellis & Ev. 1893. in Herb. N. Y. Bot. Gard.

Secotium decipiens Peck, Bull. Torrey Club 22: 492. 1895.

Gyrophragmium decipiens (Peck) Lloyd, Myc. Writ. 1: 62. 1901.

Podaxon strobilaceous Copeland, Ann. Myc. 2: 4. 1904.

Fructifications agaricoid in form with stem and capitate peridium, 5–12 cm. tall; peridium subglobose or depressed globose to broadly convex, 3–9 cm. broad, 2–7 cm. deep, at first closed below by a “partial veil,” rather closely appressed to the stem below, lower part sometimes splitting longitudinally but usually forming a double annulus, the upper part left in the form of a pileus; surface smooth or rupturing into loose or appressed scales, cream- or buff-colored becoming darker (dark warm brown) and sordid grayish at maturity; stem stout, 2–3.5 cm. in diam. below usually tapering upward, abruptly narrowed above into a percurrent columella widening above to underlie the upper pileate peridium, firm becoming woody on drying, solid, internally yellowish or pinkish, externally smooth, usually becoming striate, colored like the peridium; gleba lamelliform to variously united and anastomosing forming irregular cavities, free from the stem, 1–2 cm. deep, ventricose, becoming bone brown to black; hymenium smooth, blackish; basidia broadly clavate, tetrasporous; sterigmata slender, long; spores subglobose to slightly obovoid, sterigmatal scar prominent, smooth, dark brown, $5-6.3 \times 6.2-7.5 \mu$.

Usually in semiarid, waste places. February to November. Central Texas, westward to San Diego county, California and north to Josephine county, Oregon.

The distinctions between *Gyrophragmium* and *Longia* are very well paralleled by those between *Amanita* and *Lepiota* in the Agaricaceae. *Longia* lacks the persistent universal veil or volva, but is annulate. The gleba or gills are free in all four genera mentioned. *Longia* perhaps provides closer affinities with the smooth-spored members of the Agaricaceae than any other gasteromycete. Barnett⁷ who has had opportunity to study all stages of development of the fructifications of *Longia* has shown the close parallelism to the development of certain species of *Agaricus*. Barnett has included good illustrations of *L. texensis*.

⁷ Barnett, H. L. The development and structure of *Longia texensis* (in a current issue of MYCOLOGIA).

Specimens examined:

Texas: In mesquite flats, no locality given, *W. H. Long, Jr.* No. 3, 1901 (in *N. Y. Bot. Gard. Herb.*). Eastland county, Cisco, *E. A. Smith*, May–June, 1935 (in *Zeller Herb.*), June 5–10, 1935 (in *U. Mich. Herb.*), Eastland, *E. A. Smith*, April 8, 12, 20, 23 (2 coll.), 1934, May 6 (2 coll.), 1934; Hudson county, *E. Clover*, No. 806, May 3, 1933 (all in *U. Mich. Herb.*); La Salle county, 105 mi. S.W. of San Antonio (in *Farlow Herb.*); Travis county, Austin, *F. McAllister* (in *N. Y. Bot. Gard. Herb.*), *A. M. Ferguson*, 1902 (in *Patouillard Herb. at Farlow Herb., ex. W. H. Long Herb. No. 1825*).

New Mexico: Dona Ana county, Las Cruces, *E. O. Wooton*, Feb. 22, 1893 (type of *Polyplocium striatum* E. & E. herb. nom.), Oct., 1893, *F. Garcia*, Apr., 1894 (No. 102, *J. B. Ellis*) (All in *N. Y. Bot. Gard. Herb.*), *H. L. Barnett*, during the year, 1941 (in *Zeller Herb.*).

Oregon: Josephine county, Wilderville, *S. M. Zeller*, July 28, 1941.

California: Central California, *H. W. Harkness*, Apr. to Aug. (*Ellis Herb. in N. Y. Bot. Gard. Herb.*); Butte county, Chico, *L. C. C. Krieger*, Autumn, 1912 (in *N. Y. Bot. Gard. Herb.*); Contra Costa county, Mt. Diablo near Antioch, *H. M. Hall*, Oct. 12, 1918 (in *U. Calif. Herb.*); Fresno county, near Auberry, *W. T. Shaw*, April 18, 1936 (in *U. Calif. Herb.*); Glenn county, Orlando, *Mrs. Bruno Koehler*, Nov., 1924 (in *U. Calif. Herb.*); Los Angeles county, Claremont, *C. F. Baker*, June, 1914 (in *N. Y. Bot. Gard. Herb.*), Lamanada Park, *E. A. Bonine*, May, 1897 (in *N. Y. Bot. Gard. Herb.*), Palmdale, *Ann Frey*, May 5, 1940 (in *U. Calif. Herb.*), Pasadena, *L. N. Gardner*, April, 1908 (in *U. Calif. Herb.*), *A. J. McClutchie*, Nov., 1894 (comm. by *A. P. Morgan* to *N. Y. Bot. Gard. Herb.*, Dec., 1894); Orange county, Santa Ana, *Miss Geis*, Apr., 1902 (in *N. Y. Bot. Gard. Herb.*), Plumas county, Quincy, *D. L. Burdick*, July, 1933 (in *U. Calif. Herb.*), Riverside county, Riverside, *C. O. Smith*, Jan. 15, 1935 (in *U. Calif. Herb.*); San Benito county, Pinnacles National Monument, *Nick McKibben*, May 7, 1939 (in *U. Calif. Herb.*); San Bernardino county, Mentone, *W. I. Teuch*, May 9, 1900 (in *U. Calif. Herb.*), Rattlesnake Canyon, *Mrs. C. P. Krauth*, Feb.,

1934 (in U. Calif. Herb.); San Diego county, Imperial Beach, Dr. E. A. Purer, Mar. 26, 1938 (in U. Calif. Herb.), San Diego, C. B. Orcutt, March, 1889 (type of *Polyplodium columnare* Ell. & Galw. herb. nom. in N. Y. Bot. Gard. Herb.); Solano county, Davis, F. H. Bolster, Jan., 1912 (in U. Calif. Herb.); Stanislaus county, Blakesley Beach, Empire, E. E. Morse, June, 1939 (in U. Calif. Herb.).

Longia texensis var. **major** var. nov.

Fructifications large, 15–30 cm. tall, tan to grayish; stems bulbose, 5–7 cm. in diam. at the base when fresh, drying 3–4.5 cm. below and 2.5–3.5 cm. above, smooth, sometimes scaly, wrinkled but not striate when dry, sometimes with reddish brown streaks, solid; annulus usually persistent, normally superior; peridium subglobose to expanded 6–12 cm. broad, 3–6 cm. deep, quite smooth to areolate when young, with large scales at maturity; gleba and spores as in species.

In semiarid locations. April to September. Distribution: From Yolo county, California, south into northern Mexico.

This is the large Pacific Coast plant to which Lloyd referred under *Gyrophragmium decipiens* as “much more obese . . . with a thick stem” (Myc. Writ. 1: 196. 1904) and beautifully illustrated in his pl. 23, fig. 1.

This is in contrast to *Longia texensis* itself which he illustrated in pl. 23, figs. 2 and 3 and in pl. 24, fig. 5. When the latter grows in the margins of cultivated, and especially irrigated, areas it attains larger size than in its usual arid or semiarid habitat, but variety *major* is distinctly larger even under semiarid conditions. The cap is more conspicuously scaly at maturity than the species (FIG. 2).

Specimens examined:

Mexico: Baja California, Zaragora, C. B. Orcutt, April, 1889 (in Zeller Herb., comm. by C. G. Lloyd).

California: A. J. McClatchie, no further data (in N. Y. Bot. Gard. Herb.); Kern county, Wasco, Mrs. Emma S. Keese, April 29, 1932 (in U. Calif. Herb.); Los Angeles county, near Lancaster, Richard Greer, April 24, 1940 (in U. Calif. Herb.); Solano county, Davis, F. H. Bolster, June and Sept., 1912 (U. Calif. Herb.); Yolo county, Woodland, Eugene Brauner, April 21, 1940, type (in U. Calif. Herb.).

MONTAGNEA Fries, Genera Hymenomycetum p. 7. (April) 1836;
not *Montagnaea* DC.

Syn.

Montagnea Fries, in litt. 1833.

Montagnites Fries, Epicrisis p. 240. 1836.

Fructifications, stipitate, with general *Coprinus*-like appearance; peridium remaining as a volva at the base of the stipe; stem expanded at apex into a flattish disk, from the margin of which fall radially the free (not anastomosing), nude, persistent (not deliquescent), lamelloid gleba; spores smooth, dark fuscous, black *en masse*, borne acrogenously.

Fries first published *Montagnea* in his "Genera Hymenomycetum," April, 1836, and later changed the name to *Montagnites* in the Epicrisis to make way for DeCandolle's *Montagnaea* which was a renaming of a genus, *Montañoa*, in the Compositae. *Montagnaea* was not published until October, 1836, and at any rate is regarded as invalid by the phanerogamic taxonomists (see Kew Index). These circumstances give the name *Montagnea* Fries clear standing, both on the basis of different spelling and from priority, against *Montagnaea* DC. *Montagnea* is a more desirable name for, according to the nomenclatorial system now generally recognized, *Montagnites* could more appropriately represent a fossil genus. Montagne⁸ emended Fries' description of *Montagnea* and indicated there was no legitimate reason for the name *Montagnites*.

The type species is *M. arenarius* (DC.) since *Montagnites Dunalii*, listed first by Fries, belongs in Montagne's genus, *Gyrophragmium*.

1. ***Montagnea arenarius*** (DC.) comb. nov.

Syn. *Agaricus* (*Boletus*) *radiosus* Pallas. Russ. Reis 2.
p. 744. 1777.

Agaricus arenarius DC. Flore Francaise 6: 45. 1815.

Montagnites Candollei Fries, Epicrisis p. 241. 1836.

Montagnites Pallasii Fries, Epicrisis p. 241. 1836.

Fructifications 8–30 cm. tall, *Coprinus*-like in general appearance; pileus merely an expanded disk of the summit of the columella

⁸ Montagne, J. F. C. Sylloge generum specierumque cryptogamarum. Paris, 1861. (See pp. 129–130.)

(stem), 1–3.5 cm. broad, tapered to a very thin edge, convex then plane to depressed, surface smooth, white or grayish, usually with remnants of the volva at the center and sometimes extending nearly to the margin; gleba lamelloid, entirely free from the main columella, attached to the margin of the discoid pileus, ventricos rounded below; lamella crowded, ventricose-rounded, black, of light fuscus hyphae, 1–3.5 cm. long, 4–12 mm. broad; columella-stipe 8–30 cm. long, 4–26 mm. in diam. above usually tapering downward, hollow, white fleshed, becoming almost woody on drying, surface smooth to striate, often becoming scaly or lacerate, white or whitish; volva usually double, the outer white more or less ample, usually covered with adherent sand, the inner lacerate, of tough fibrous strands; paraphyses broadly clavate, somewhat fuscus; basidia clavate or pyriform, somewhat fuscus, 4-spored, almost square at the distal end with blunt sterigmata at the corners, so to speak, $20\text{--}28 \times 10\text{--}14 \mu$; spores almost sessile, borne acrogenously, dark fuscus with a more or less hyaline germ pore at the distal end, ellipsoid to obovoid, $12\text{--}19 \times 6\text{--}11.2 \mu$.

This species as the name implies grows in sandy places, usually in the open sunlight. The plants are scattered or gregarious. Whole fields of thousands of specimens have been reported in eastern Oregon. Usually the stipe is about one-half to two-thirds buried in the sand. If the specimens are pulled up the volva is usually left in the ground.

The double volva is rather inconspicuous in some specimens. The inner portion is very lacerate and has some characteristics of columella (stem) tissue. A study of the developmental morphology through the young stages of the sporophore is needed to aid in an interpretation of origin of these fundamental tissues.

This one American species is extremely variable in stature according to the conditions under which it may be found. An attempt, however, to segregate slender growth forms which may be classed as approaching *M. tenuis* Pat. fails when the whole morphological picture is considered. Specimens from sandy dune-like ridges high up on the north side of Mt. Shasta, California, are small and rather slender, actually about 6–14 cm. tall. Nevertheless they do not attain the gracility or appearance of *M. tenuis*. From the broad, dry, plateau-like expanses of eastern Oregon or lower altitudes of California the specimens are intermediate in size, while in the southern range of *M. arenarius*, in Texas, New Mex-

ico, Arizona, and southern California, the fungus attains its greatest stature, with a stem up to a height of 25–30 cm., and diameter proportionate, up to 2.6 cm. above, tapering downward. But along with these larger specimens, however, will be smaller ones similar to those found in the northern range of distribution.

Mention should be made here of the very conservative attitude of Hollos⁹ who has included practically all described species under his *Montagnites radiosus*. For instance, *M. Elliotti* Mass. which was discovered by Scott-Elliott in the Nile Valley, Egypt (*not* "New Zealand" as erroneously stated in Sacc. Syll. Fung. 11: 79 and copied by Hollos and others), is a species distinct and apart from *M. arenarius*. The stem tissues are distinct, composed of silky longitudinal fibers not like those in *M. arenarius*. The spores in the type of *M. Elliotti* (in N. Y. Bot. Gard. Herb.) are ovate and $6-7.75 \times 4.5-5 \mu$, instead of "12 \times 7" as described by Massee (Grevillea 11: 1. 1892). Hollos has also included here *Polyplocium californicum* Harkness, which has already been discussed under *Gyrophragmium*, and *M. tenuis* Pat. The latter seems quite distinct from *M. arenarius* if Patouillard's description is accurate and it doubtless is, for specimens from the Galapagos Islands (in U. of Calif. Herb.) correspond to his description. In these the spores are ellipsoid, obovoid or angular, with thick rather clear walls, and measure $5-6.5 \times 4-4.5 \mu$.

Specimens examined:

Texas: *W. H. Long*, No. 4, 1901, no data (in Herb. N. Y. Bot.

Gard.); Travis County, Austin, *W. H. Long*, No. 317, 1901 (in Farlow herb. under the name *Montagnites texensis* Berk.).

New Mexico: Bernalillo county, Albuquerque, *W. H. Long*, Feb. 4, 1933 (in Herb. U. Calif.) and No. 10256, May, 1942 (in Zeller Herb.); Dona Ana county, Mersilla, *H. L. Barnett*, Aug., 1938 (in Zeller Herb.).

Arizona: Navajo county, Oraibi-Leupp road, *A. F. Whiting*, Aug. 24, 1936 (in Herb. Mus. N. Ariz. No. 814/2615, also in Herb. U. Mich.).

Oregon: Crook county, 6 miles E. of Redmond, *Max Doty*, May 5, 1938 (in Zeller Herb.); Deschutes county, *S. M. Zeller*, June 23,

⁹ Loc. cit. (See pp. 30–32 and *T*, 1–2.)

1929; Grant county, *R. E. Brooke*, May 27, 1940 (in Zeller Herb.).

California: Southern Calif., *A. J. McClutchie*, no data (in Herb. N. Y. Bot. Gard.); Los Angeles county, Dry Lake near Lancaster, *H. E. Bailey*; Apr. 3, 1942 (in Herb. U. Calif.); Riverside county, Elsinore, *A. J. McClutchie*, Mar. 28, 1896 (in Herb. N. Y. Bot. Gard.), *Mr. and Mrs. T. S. Brandegee* (in Zeller Herb.), Riverside, *C. O. Smith*, Mar. 26, 1937 (in Herb. U. Calif.); San Bernardino county, Forest Home, *H. K. Rusby*, Sept., 1909 (in Herb. N. Y. Bot. Gard.), *Kramer, T. S. and K. L. Brandegee*, May, 1914 (in Herbs. U. Calif. et N. Y. Bot. Gard.), Mohave Desert, *H. W. Harkness*, June, and San Bernardino, *John A. Anderson*, 1940 (both in Herb. N. Y. Bot. Gard.).

Mexico: Baja California, El Alamo, *James McMurphy & Wiggins*, April 28, 1931 (No. 46) (in Zeller Herb. and Lloyd collections).

U. S. S. R. (Russia): Transcaucasia, Elizavetopol, *G. Woronow*, No. 30 (Fungi Caucasicci, in Herb. N. Y. Bot. Gard.).

Africa: Algeria, *Trabut*, July, 1908 (in Herb. Patouillard at Farlow Herb., Harvard U.).

Nearly all specimens cited above are accessioned in herbaria under the name *Montagnites Candollei* Fries.

OREGON STATE COLLEGE,
CORVALLIS, OREGON