

NOTES ON SOUTHERN APPALACHIAN FUNGI, X¹

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In this paper forty species of fungi are reported. Those which have been found in the Great Smoky Mountains National Park are marked by an asterisk (*). Color names within quotation marks are from Ridgway's *Color Standards and Color Nomenclature*, 1912.

AGARICACEAE

**CORTINARIUS ACUTUS* Fr. (Fig. 1). No. 19657, in spruce forest, Indian Gap, the Park, July 22, 1950. Three earlier collections from Highlands, North Carolina (see Hesler, 1943:292). *Pileus* 10-25 mm., acutely umbonate, conic



Fig. 1. *Cortinarius acutus* Fr. x 1

to conic-campanulate, not viscid, hygrophaneous, "ochraceous-tawny" (wet), pale ashy buff with umbo yellow (dry), striate to umbo when wet, even when dry, white silky-fibrillose, margin at first straight on stipe. *Flesh* fragile, thin, concolor; *odor* slightly unpleasant, *taste* of radish. *Lamellae* adnate to emarginate, seceding, "ochraceous tawny," slightly paler (color not matched) in very young "buttons," nearly close, ventricose, medium broad, edge entire. *Stipe* 4-6 cm. x 1.5-2.0 mm., concolor to pileus or paler, flexuous, not viscid, silky, somewhat glabrescent, tubular, equal. *Cortina* white rather copious. *Spores* 8-9.5 x 4.8-5.6 microns, ellipsoidal, smooth.

¹Contributions from the Botanical Laboratory, The University of Tennessee, N. Ser. No. 140. Preceding numbers of this series have appeared in this JOURNAL, as follows: I—11:107-122; II—12:239-254; III—16:161-173; IV—17:242-249; V—18:290-297; VI—20:233-238; VII—20:363-372; VIII—24:81-93; IX—26:4-14.

**CORTINARIUS CORRUSCANS* Fr. No. 18296, on humus in woods, Cades Cove, the Park, November 8, 1947; determination confirmed by Dr. A. H. Smith. *Pileus* 7 cm. broad, convex, slightly umbonate, fibrillose-rivulose, viscid, "warm buff," disk yellow, even. *Flesh* white, firm; *odor* slightly pungent, *taste* mild to sweet. *Lamellae* "warm buff," adnate, decurrent by a line, crowded, narrow. *Stipe* 14 cm. x 20 mm., firm, dry, white-shining, subradicate, no bulb, with apical ring (remains of cortina). *Spores* ellipsoidal, inequilateral, 8-9 x 4.5-4.8 microns, smooth, pale brown under microscope. *Pleurocystidia* none.

Kauffman previously (1917:164) reported this species from the Park (Elkmont), but other reports from North America have not come to my attention. It was originally described from Europe.

**FLAMMULA LENTA* Fr. (Fig. 2). No. 19668, under birch, Indian Gap, the Park, July 29, 1950. Four other collections have been taken from the Park (Clingmans Dome and Cades Cove), July-October. *Pileus* 3-6 cm. broad, convex-hemispheric, expanding-convex, usually broadly umbonate, viscid to



Fig. 2. *Flammula lenta* Fr. x 1

glutinous, often streaked or spotted by gluten, "pinkish buff" (when young), whitish tinted "pale ochraceous buff" and disk "cinnamon buff" (when mature), appressed-fibrillose, or squamulose, glabrescent, margin even but with veil-remnants. *Flesh* firm, white, thick on disk, thin on margin; *odor* and *taste* mild. *Lamellae* adnate-decurrent, becoming emarginate-uncinate, white at first, then "clay color" to grayish-tawny (not matched), medium-broad, close to crowded, abruptly narrowed in front, edge fimbriate. *Stipe* 3-7 cm. x 4-12 mm., white above, dingy or brownish below, dry, apex mealy, elsewhere fibrillose, nearly strict or flexuous, base at times curved, sub-bulbous, solid to spongy. *Cortina* white, webby, copious, leaving an evanescent, superior *annulus* and marginal remnants. *Spores* 6.5-8 x 4-5 microns, ovoid-ellipsoidal to ellipsoidal, ends rounded, smooth; color in mass varying with intensity from "cinnamon brown" to olive. *Pleurocystidia* numerous, ventricose, with a slender stalk, deeply imbedded, 43-72 x 9-14 microns; *cheilocystidia* few, similar, shorter, 36-43 x 11-13 microns.

HYGROPHORUS ACUTOCONICUS (Clements) Smith. No. 19821, Knox County, September 23, 1950. Previously reported from Michigan and Tennessee as *H. Langii Kühner* (Smith and Hesler, 1942:55-56; also Smith 1947:472).

**LACTARIUS ATROVIRIDIS* Pk. Found each year in the Park; one collection from Knoxville; June-September.

**LACTARIUS CURTISH* Coker. No. 14427, near Mt. LeConte, the Park, August 12, 1942; No. 19703, Cades Cove, the Park, August 14, 1950; No. 13863, Knoxville, July 23, 1941.

LACTARIUS HELVUS Fr. No. 7936, Fentress County, July 7, 1935. Previously this species has been doubtfully reported from the southeastern United States.

**LACTARIUS MUTABILIS* Pk. No. 11349, Elkmont, the Park, collected by Dr. A. H. Smith, September 7, 1937; No. 13959, Mountain Lake, Virginia, August 17, 1941. Originally described from New York, it seems not to have been reported previously in other states.

**LACTARIUS PYROGALUS* Fr. Two collections from the Park, near the Park Office: No. 11351, September 3, 1937, and No. 14017, September 7, 1941. In my experience, not common.

**LACTARIUS REPRESENTANEUS* Britz. No. 11352, Indian Creek, the Park, determined by Dr. A. H. Smith, September 5, 1937. No earlier report of its occurrence in the Southern Appalachians has come to my attention.

**LACTARIUS TORMINOSUS* Fr. (Fig. 3). Collections have been made in the Park, Highlands, North Carolina, and Blount, Knox, and Campbell Counties, July-October.

**LACTARIUS TURPIS* (Weinm.) Fr. No. 12765, Mt. LeConte, the Park, August 4, 1940; No. 14019, Clingmans Dome, the Park, September 7, 1941.

**LEPTONIA PLACIDA* Fr. No. 20114, Gregory Bald, the Park; collected by Dr. A. J. Sharp, July 1, 1951; No. 12751, Mt. LeConte, the Park, August 4, 1940; No. 14438, Indian Creek, the Park, August 23, 1942. *Pileus* 2-4 (5.5) cm. broad, convex, finally expanded-convex to almost plane, dry, scarcely hygrophanous, color varying with age: when young "windsor blue" to "acetin blue," soon "dark plumbago gray," finally ashy-gray (not matched) with all traces of blue absent, black fibrillose-squamulose, scales flat and more dense on disk, finally rimose, edge incurved, margin even. *Flesh* thin, pallid-whitish; *odor* musty-fungoid, *taste* slightly fungoid, pleasant. *Lamellae* adnate, with a decurrent tooth, at first white, finally "vinaceous-buff," broad, ventricose, often broadest behind, close, edge concolor, eroded-undulate. *Stipe* 3-6 cm. x 3-6 mm., enlarged downward, longitudinally striate, concolor to pileus, with conspicuous blue to lavender fibrillose scales above, fibrillose below, base white-mycelioid, often curved, solid then with a tubule, dry. *Cortina* white-webby, sparse, observed in youngest specimens only, evanescent. Spores 8-10 x 5-6 microns, 5- to 6-sided, obtusely angular, obliquely apiculate, 1-guttulate. *Pleurocystidia* none; *cheilocystidia* clavate, 30-33 x 7-10 microns, not numerous.

Lange (1935-40; II:98, Tab. 76B) presents a good illustration of our fungus. Its occurrence in North America seems to be rare.

MARASMIUS OLNEII B. & C. No. 19662, on fallen leaves and twigs, Knoxville, July 24, 1950; No. 10860, Roan Mountain, Carter County, August 22, 1937.

PLUTEOLUS RETICULATUS Fr. No. 3063, on oak log, Knox County, October 28, 1951. *Pileus* 23 mm. broad, expanded, umbonate, glutinous, grayish to violaceous gray ("french gray"), marginal third becoming pinkish-gray, disk strongly anastomose-reticulate, margin striatulate. *Flesh* thin, pallid; *odor* mild. *Lamellae* nearly free, "pinkish buff," ventricose, medium broad, crowded, edge fimbriate. *Stipe* white, dry, 3 cm. x 2.5 mm., glabrous, apex white-mealy to flocculose, easily splitting, slightly enlarged downward, curved, hollow. *Spores* (8) 9-12 x 4.5-5 (5.5) microns, smooth, ellipsoidal, brown. *Pleurocystidia* not differentiated; *cheilocystidia* clustered, cylindrical to bottle-shaped, 22-35 x 4-6 microns.

This is the first record for Tennessee, and reports of it in North America



Fig. 3. *Lactarius torminosus* Fr. x about $\frac{3}{4}$

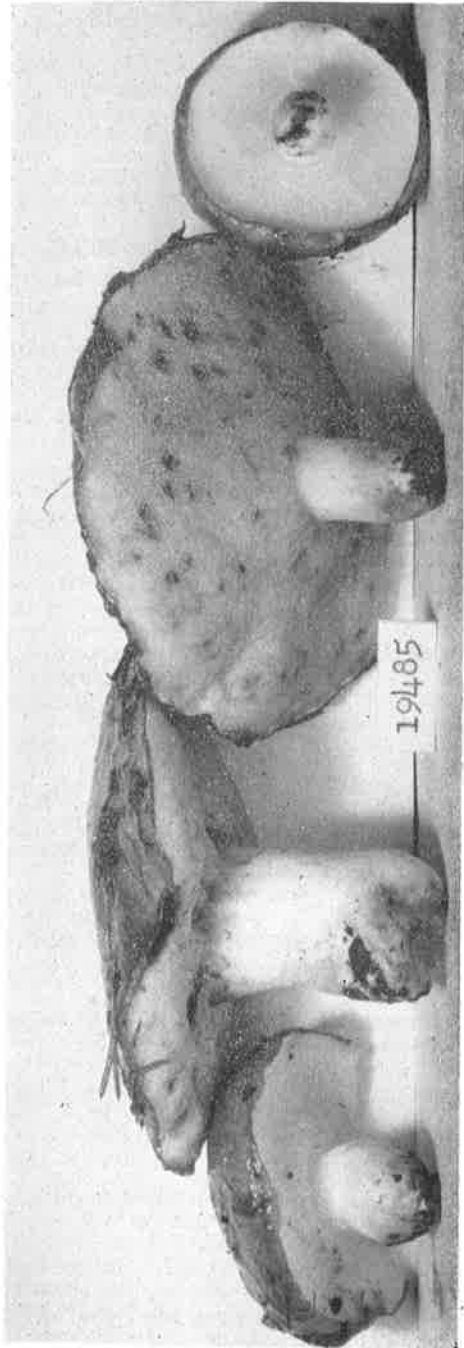


Fig. 4. *Boletus brevipes* Pk. x about $\frac{3}{4}$

seem to be infrequent. Kauffman (1929:206) found it in Michigan, and states that it is rare.

**PLUTEUS ADMIRABILIS* Pk. No. 19658, Indian Creek, the Park, July 22, 1950. Seven other collections from the Park, from Knoxville, and from Rabun County, Georgia, May-September. *Pileus* 15 mm. in diameter, brown (near "buffy brown"), disk blackish and radiately rugose, sub-velutinous under lens, striate (more so wet). *Stipe* white, base white-mycelioid. *Spores* subglobose, 5.5-8 x 5.5-6.5 microns, color in mass: "vinaceous-cinnamon." *Cheilocystidia* clustered, clavate, 25-48 x 10-13 microns; *pleurocystidia* ventricose, scattered, 60-72 x 19-22 microns.

Surface of pileus composed of a palisade of brownish subglobose or globose cells, 26-34 microns in diameter.

BOLETACEAE

**BOLETUS AFFINIS* Pk. Several collections have been taken in the Park, and in the nearby counties of Knox, Cocke, and Carter; June-August.

**BOLETUS AFFINIS* var. *MACULOSUS* Pk. Although observed rather frequently in the Park, there are but two collections in our herbarium; August-September.

**BOLETUS ALBOATER* Schw. Found frequently in the Park, and at Highlands, North Carolina; July-September.

**BOLETUS BADIUS* Fr. From June through September, we have found this species, on each trip, scattered about at high elevations in the Park and on Roan Mountain under spruce and fir.

**BOLETUS BREVIPES* Pk. (Fig. 4). No. 19823, Cades Cove, the Park, November 7, 1950; No. 19485, Knoxville, October 26, 1949; No. 17266, Anderson County, November 25, 1945.

BOLETUS ILLUDENS Pk. No. 19707, on soil, mixed woods, Knoxville, July 25, 1950. *Pileus* 4-9 cm. broad, dry, densely matted-fibrillose, "saya brown," darker when rubbed. *Flesh* pale pinkish ("pale cinnamon pink"), becoming slightly darker when cut and exposed; *odor* pleasant (nutty), *taste* mild. *Tubes* at first bright yellow, greenish at maturity, turning blue-green on bruising, adnate, rather small, 6-9 mm. long. *Stipe* 4-5 cm. x 17-22 mm., ventricose or tapering downward, with prominent reticulations, "pale ochraceous salmon," base abruptly pointed, matted-fibrillose, solid, flesh "pale cinnamon pink." *Spores* 9.5-11.5 x 3.2-4 microns, "medal bronze" color in mass.

Specimens of *B. illudens* Pk. (No. 12523) from Mrs. Alma Beers, University of North Carolina, have been examined by me. The stipe characters were strikingly similar to those of my collection.

**BOLETUS NIVEUS* Fr. No. 17673, Cades Cove, the Park, August 11, 1946; determination confirmed by Dr. W. C. Coker. It has also been collected near Gatlinburg by Coker in August, 1939 (Coker and Beers, 1943:27).

**BOLETUS RUBINELLUS* Pk. Our four collections are from the Park, June-August.

**BOLETUS RUBROPUNCTUS* Pk. Collected in Cades Cove and Elkmont, the Park, and from Highlands, North Carolina, August-September.

**BOLETUS RUSSELLII* Frost. No. 17997 and No. 18591, from Cades Cove, the Park, and from Highlands, North Carolina, August-September. *Pileus* 5-7 cm. broad, convex, dry, (sub-viscid when wet), near "clay color," with numerous, scattered, dark fasciculate squamules. *Flesh* soft, white, rose when cut; *odor* slightly of ripe pears; *taste* mild. *Tubes* greenish, not changing when bruised, depressed around stipe, angular, 8 mm. long, about 2 per mm. *Stipe* 8-15 cm. x 6-8 mm., strongly reticulated throughout, fluted when wet, ground-color pallid, with granular dots, tapering upward (as in *B. gracilis*), dry. *Spores* 14.5-19 x 8-9.5 microns, ridged longitudinally.

**BOLETUS SUBGLABRIPES* Pk. No. 11305, Elkmont, the Park, September 6, 1937, and No. 11555, Cades Cove, the Park, June 30, 1938.

**BOLETUS SUBTOMENTOSUS* L. We have five collections from the Park, and others from Blount and Knox Counties, June-September.

**BOLETUS VARIIPES* Pk. No. 13815, on lawn, near Knoxville, July 16, 1941; determined by Dr. W. H. Snell. *Pileus* 6-10 cm. broad, brown, near "Saccardo's umber," dry, tomentum in dense tufts. *Flesh* thick, firm, *odor* and *taste* mild, white, pinkish when cut. *Tubes* adnate, depressed at stipe, greenish-yellow, somewhat angular, greenish when bruised. *Stipe* 4-5 cm. x 12-25 mm., concolor, tomentose, glabrescent, reticulate all over (except basal third), solid. *Spores* subventricose, 12-16 x 3.5-5.5 microns, color in mass: "olive brown" to "brownish olive."

OTHER BASIDIOMYCETES

**CLAVARIA APICULATA* Fr. No. 19655, on decaying pine log, Anderson County, June 18, 1950; also several collections from the Park, June-September. When treated with ferric sulfate solution, the flesh assumes a dark slate color.

CLAVARIA BRUNNEA Zeller. No. 19388, Wayah Bald, North Carolina, September 12, 1949; determined by Dr. M. S. Doty. Color: "fawn color" to "wood brown." Color in ferric sulfate: dark green.

**CLAVARIA FENNICA* Karst. No. 19405, in frondose woods, Knox County, September 20, 1949. Other collections from the Park, and from Highlands, North Carolina, August-October. Color grayish-buff; in ferric sulfate: dark slate green.

CALVATIA RUBRO-FLAVA (Cragin) Lloyd. No. 19490, on lawn, Knoxville, October 22, 1949. Three other collections from Knox County, August-October.

**HYDNUM ALBO-MAGNUM* Banker. No. 19553, Knox County, November 29, 1949; No. 3140, Blount County, October 21, 1928; No. 13947, Indian Creek, the Park, August 24, 1941. Previously reported from Alabama and North Carolina (Coker and Beers, 1951:20-21).

**LYCOPERDON ATROPURPUREUM* Vitt. No. 19417, on soil, summit of Wayah Bald, September 12, 1949; determined by Dr. J. A. Stevenson. Other collections from the Park and from Knox and Blount Counties, determined by Mrs. Ruby Little, August-October.

**LYCOPERDON CURTISHI* Berk. No. 19555, on lawn, Knoxville; collected by Dr. A. J. Sharp, November 13, 1949. No. 14069, near Townsend, the Park, November 2, 1941. Determined by Dr. J. A. Stevenson.

LYCOPERDON MUSCORUM Morgan. No. 10850, in moss beds, Roan Mountain, Carter County, August 22, 1937.

**LYCOPERDON SUBINCARNATUM* Pk. No. 19383, Highlands, North Carolina, September 10, 1949; determined by Dr. J. A. Stevenson. Other collections from the Park, and from Rabun County, Georgia, August-September.

LYCOPERDON UMBRINUM Pers. No. 19554, on lawn, Knoxville; collected by Dr. A. J. Sharp, November 13, 1949; determined by Dr. J. A. Stevenson. Other collections from Knox County, August-November.

POLYPORUS VOLVATUS Pk. No. 19828, Calderwood; collected by Dr. A. J. Sharp, November 12, 1950. This is the first record for Tennessee.

LITERATURE CITED

- Coker, W. C., and Alma H. Beers. 1943. *The Boletaceae of North Carolina*. Pp. 1-96. The University of North Carolina Press.
- Coker, W. C., and Alma H. Beers. 1951. *The stipitate Hydnums of the Eastern United States*. Pp. 1-86. The University of North Carolina Press.
- Hesler, L. R. 1943. Notes on southern Appalachian fungi, V. *Jour. Tenn. Acad. Sci.*, 18:290-297.
- Kauffman, C. H. 1917. Tennessee and Kentucky fungi. *Mycologia*, 9:159-166.
- Kauffman, C. H. 1929. A study of the fungous flora of the Lake Superior region of Michigan, with some new species. *Mich. Acad. Sci. etc.*, 9:169-218.
- Lange, Jakob E. 1935-1940. *Flora Agaricina Danica*. 5 vols.
- Smith, A. H. 1947. *North American species of Mycena*. *Univ. Mich. Press*.
- Smith, A. H., and L. R. Hesler. 1942. Studies in North American species of Hygrophorus, II. *Lloydia*, 5:1-94.