

dant and prominent cystidia, the long basidia, the solid stem and the taste could hardly have been overlooked by these writers. It differs from *C. purpurea* Fr. by its spore-sizes, solid stem and habitat; also by tints of lavender which are diffused in the otherwise dark gray color. The minute pruinosity is caused by the projecting cystidia.

**Clavaria piperata, sp. nov.**

FRUCTIFICATION fleshy, slightly toughish, pallid to cinnamon-brown, paler upwards, 4-6 cm. high, from a single stem or slender trunk, which is about 2-3 mm. thick, dichotomously to polychotomously branched; secondary branches pyxidate, at times candelabra-form, curved-spreading at maturity, loosely arranged; primary and secondary branches dilated upwards, with rounded, obtuse sinuses, branching repeated four or five times, terminal branchlets acutely pointed.

Microscopic characters: SPORES suboval to subglobose,  $4 \times 3 \mu$ , smooth, slightly ochraceous-tinted under the microscope. BASIDIA elongate, slender,  $45 \times 4 \mu$ , 4-spored. CYSTIDIA or cystidia-like conducting organs are present; these project about 12-15  $\mu$  above the hymenium, slender, 2-3 (5)  $\mu$  thick, narrowly lanceolate, subhyaline, extending deeply into the trama. TASTE peppery, leaving a distinct burning sensation in back of throat; ODOR none.

Growing on conifer logs, gregarious-scattered, in virgin forest of Douglas fir, Western hemlock and spruce. Type collected at Lake Quinault, Washington. November 2, 1925. Collected by C. H. Kauffman.

This has the growth habit and general appearance of *C. pyxidata* Fr., but differs from the latter by the colored, differently shaped spores, its peppery taste, different color when fresh, and its coniferous substratum. *C. pyxidata* seems to be largely limited to poplar and willow around Ann Arbor. Fries, who collected in a coniferous region, says (*Hymen. Europaei*) "ad ligno putrida. Speciosa in Populo tremula." European notices are scanty with reference to its substratum. Schroeter (7), however, reports it as if on pine alone. Does this mean that

two species occur also in Europe? In all accounts accessible, no mention is made of a peppery or acrid taste in *C. pyxidata* except by Coker (2). An examination of my collections of *C. pyxidata* in the herbarium failed to reveal any cystidia. Here too, Coker seems to report them for the first time. It is entirely probable that the two species occur in the Appalachians, and that some of Coker's plants, those with acrid taste and cystidia, grew on coniferous wood-remains. The spores of the species on poplar are narrow, subfusiform-oblong, hyaline,  $4-5 \times 2-2.5 \mu$ . The spores of *C. acris* Pk. are echinulate and ochraceous, and the plant has a different growth habit.

*Clavaria cystidiophora*, sp. nov.

FRUCTIFICATION fleshy, moderately fragile, 10-12 cm. high, inclusive of immersed stem, branched, color varying between "buff yellow" and "warm buff" (R.),<sup>1</sup> apices of the ultimate branches "citron yellow," paler towards the extreme base of stem which is white. MAIN STEM long, immersed and sometimes tufted at very base, 5-8 cm. long, 10-12 mm. thick just below first branching, tapering downwards, ascending or decumbent; primary branches 5-6 or less in number, elongated, solid, whitish within; secondary branches about 3-4 mm. diam., terete or nearly so, becoming repeatedly short-branched, apices of ultimate branchlets acute or subacute, sinuses of all branching obtusely rounded.

Microscopic characters: SPORES oblong,  $5.5-7 \times 3.5 \mu$ , smooth or obscurely punctate under highest power, tinged ochraceous-buff. BASIDIA elongate,  $75-80 \times 5-6 \mu$ , 4-spored; sterigmata slender. CYSTIDIA scattered in hymenium, cylindrical upwards, narrowed below, obtuse,  $50-70 \times 5-8 \mu$ , variable in length and thickness, collapsing in older plants and then hard to recognize. ODOR of anise, very noticeable; TASTE mild or slight.

Growing in deep banks of humus in virgin forest of Douglas fir, cedar and hemlock, Lake Quiniault, Washington. October 17, 1925. Collected by C. H. Kauffman.

<sup>1</sup> Ridgway's *Color Standards and Nomenclature*, 1912.