

## NOTES ON CLAVARIOID FUNGI—IX

### Addendum to *Clavulinopsis* in North America<sup>1, 2</sup>

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(With Plate 8 and four Text-figures)

This paper constitutes an addendum to a previous paper by the author on the genus *Clavulinopsis* in North America. One new species is described, *Clavulinopsis subaustralis* Petersen, and one new combination made, *Clavulinopsis laeticolor* f. *coccineo-basalis* (Joss.) Petersen.

The manuscript for a monograph of *Clavulinopsis* in North America (Petersen, 1968) was finished in early 1966, but remained in press nearly three years. During that time, and in the period thereafter, a number of field trips to the northwestern United States were accomplished and specimens were received from several correspondents. Especially collections from the upper central states and Pacific northwest have helped to clarify distributional patterns in the genus, and have produced two taxa new to the continent, and a new species. The collecting seasons of 1966, 1967 and 1969 were disappointing in the northwest, but 1968 was an extremely prolific year for Basidiomycetes. Most of the collections herein reported were collected in northern Idaho in that year.

Two patterns emerge more clearly because of these collections. First, the species shared by Europe and eastern North America are also present in the far west. Most of these represent species whose spores are prominently apiculate, including *C. laeticolor* and *C. corniculata*, as well as the somewhat anomolous *C. gracillima*. Second, the species whose spores are inconspicuously apiculate either do not occur in this region or are so rare as to be unreported. This group seems to be shared between

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<sup>2</sup> Since the initial writing of this manuscript, Corner's (1970) 'Supplement to "A monograph of *Clavaria* and allied genera"' has appeared. Although lengthy remarks cannot here be made, suffice to say that I consider his present treatment of the genus far less adequate than that in 1950.

eastern (predominantly southeastern) North America and Asia. All this supports the distributional patterns of higher plants and green cryptogams.

The relative abundance of the inconspicuously apiculate-spored group in the southern regions, and its rapidly diminishing occurrence northward would surely not indicate a movement from Asia to North America via a northern route. Instead it might indicate that the group entered from the south, via South and Central America. A second explanation could make use of the primary northern route, a southward compression during the ice ages, and a secondary reentry during more recent temperate times. The relatively arid climate of the southwestern United States and northern Mexico may have prevented reentry to that area or eliminated the species after their invasion. Such conjecture on fungal distribution makes study of southeastern Mexico and Central America imperative.

In the discussion of taxa below, all colors enclosed in quotes are taken from Ridgway (1912). The abbreviation RHP indicates the herbarium of the author at the University of Tennessee. Other herbarium abbreviations are taken from Lanjouw & Stafleu (1964). My thanks are extended to Drs. Alexander Smith and Daniel Stuntz for helping arrange the western field trips involved in this project, and to the U.S. Forest Service (especially Mr. Cal Carpenter) which made available the facilities of Priest River Experimental Forest headquarters.

The addition of taxa listed below as new for North America makes the key to North American species by Petersen (1958) obsolete. That key may be brought up to date as follows.

#### KEY TO CLAVULINOPSIS IN NORTH AMERICA

1. Individual fruit bodies usually and regularly branched; spores globose to subglobose, with prominent apiculus . . . . . 2
1. Fruit bodies simple or rarely furcate toward the apex; gregarious, cespitose or fascicled, but rarely branched in the usual condition . . . . . 6
  2. Fruit bodies yellow to deep ochre, stem portion attenuate or fascicled; spores mostly 5–7.5  $\mu$  diam. . . . . \**C. corniculata*
  2. Fruit bodies not of these colors . . . . . 3
3. Hymenium negative in guaiac tincture; fruit bodies white to pale yellowish; spores 4–6.5  $\times$  3–5.6  $\mu$  . . . . . *C. subtilis*
3. Hymenium blue in guaiac tincture; spores globose . . . . . 4
  4. Fruit bodies white, more or less dichotomously branched. . . . . \**C. dichotoma*
  4. Fruit bodies not white . . . . . 5
5. Fruit bodies grey to dull drab, with apices purplish; basidia 45–70  $\mu$  long; taste sweet at first, tardily bitter. . . . . \**C. holmskjoldii*
5. Fruit bodies grey to pale umber; basidia 50–110  $\mu$  long; taste disagreeable, bitter to nauseating . . . . . *C. umbrinella*
  6. Spores angular-warted or spinous. . . . . *C. helvola*
  6. Spores smooth . . . . . 7
7. Spores ellipsoid to amygdaliform, multiguttulate to uniguttulate; fruit bodies small, delicate, pinkish salmon to apricot color, single, gregarious . . . . . \**C. gracillima*

\* Treated herein.

7. Spores broadly ellipsoid to subglobose or pear-shaped to subtriangular . . . . . 8
8. Spores with small, abrupt apiculus  $0.5\ \mu$  or less in length . . . . . 9
8. Spores with large, conical apiculus usually over  $1.0\ \mu$  long . . . . . 13
9. Septa of tramal hyphae often without clamps; hymenium cream to creamy yellow; stipe deep ochre. . . . . *C. appalachiensis*
9. Septa of tramal hyphae invariably clamped . . . . . 10
10. Hymenium hyaline, pigmentation resident in subhymenial and tramal portions of the fruit body . . . . . *C. miniata*
10. Color resident in the subhymenium and hymenium. . . . . 11
11. Hymenium clear pink; stipe orange . . . . . *\*C. subaustralis*
11. Fruit bodies not of two colors. . . . . 12
12. Fruit bodies clear orange to blood red . . . . . *\*C. aurantio-cinnabarina*
12. Fruit bodies pinkish orange to apricot . . . . . *C. aurantio-cinnabarina* var. *amoena*
13. Spores ellipsoid, pear-shaped or subtriangular. . . . . 14
13. Spores globose to subglobose . . . . . 16
14. Septa of tramal hyphae often without clamps; basidia often 2-sterigmate; otherwise typical . . . . . *\*C. laeticolor* form
14. Septa of tramal hyphae invariably clamped. . . . . 15
15. Spores pear-shaped to subtriangular . . . . . *C. laeticolor* f. *bulbispora*
15. Spores ellipsoid to ovoid . . . . . 16
16. Fruit bodies golden yellow, orange to orange-red, paler downward *\*C. laeticolor*
16. Colors same, stipe deep red to scarlet . . . . . *\*C. laeticolor* f. *coccineo-basalis*
17. Fruit bodies canary yellow to golden yellow, fascicled . . . . . *C. fusiformis*
17. Fruit bodies golden yellow to orange above, paler below *C. laeticolor* var. *antillarum*

CLAVULINOPSIS CORNICULATA (Schaeff. ex Fr.) Corner—Figs. 1, 3

*Clavulinopsis corniculata* (Schaeff. ex Fr.) Corner in Ann. Bot. Mem. 1: 362. 1950.

Collections have been reported very occasionally from the northwestern states and British Columbia, but the species is abundant in that area at times, and exhibits all the variability of eastern material. Three wide variations in stature are illustrated in Figure 1, and none of these represent the fastigate forms in which the stipes are cespitose, and which parallel the illustrated forms completely. I am informed by European mycologists that the true *C. corniculata* of northern Europe always possesses blunt, cornute branch apices, and an egg yellow coloration. Our specimens often exhibit such apices, but I have never seen such a coloration. The species passing under this name in North America, therefore, may well be a closely allied, but distinct species.

Several specimens (RHP 4072, 4075, 4136) have been collected in which well-developed gloeoplerous hyphae have been observed. These hyphae are identical to those described for certain collections of *C. laeticolor* below, and one such hypha from the latter is illustrated (fig. 2). The occasional occurrence of such hyphae, up to now only reported from western material, and all collected in the same year, is unexplained, but surely is not enough on which to base a distinct taxon.

Thick-walled basidia have been noted in *C. laeticolor* in the past, but these have been quite rare. One specimen of *C. corniculata* (RHP 4075) was examined in which extremely thick-walled basidia occurred in a ratio of about 1:100—1:150 with normal



FIG. 1. — Variation in stature in *Clavulinopsis corniculata*: a, RHP 3720; b, RHP 3017; c, RHP 1645.

thin-walled basidia. These are illustrated (fig. 3) and appeared to be functional, often bearing immature spores. The thickened walls are refractile under phase contrast and yellowish under bright field making these basidia very easy to observe.

SPECIMENS EXAMINED.—I d a h o: 9.ix.66, Binarch Creek, Near Nordman, *RHP* 1642 (TENN); 19.ix.68, Upper Priest River area, *RHP* 3720 (TENN); 25.ix.68, Upper Priest River, *RHP* 3904 (TENN); 1.x.68, Upper Priest River, *RHP* 4072 (TENN); 7.x.68, McAbee Falls Road, Priest River vic., *RHP* 4239 (TENN). — California: 11.xi.67, Jedediah Smith Redwoods State Park, *RHP* 3017 (TENN); 11.xi.67, John Stout Grove, Jedediah Smith Redwoods State Park, *RHP* 2983 (TENN). — Washington: 2.xi.67, Whidby Island, *Largent*, *RHP* 2898 (TENN).

#### CLAVULINOPSIS DICHOTOMA (Fr.) Corner

*Clavulinopsis dichotoma* (Fr.) Corner in Ann. Bot. Mem. 1: 391. 1950.

Recently, Corner (1970) has restated that *C. dichotoma* and *C. subtilis* are distinguishable, the former bearing spherical spores, the latter ellipsoid. Although I seriously wonder whether Fries used this character in his separation, and although I can find no reliable authentic specimens on which to base this judgement, I am willing to follow Corner's opinion in this case. Moreover, because of the distinct color reaction in guaiac tincture of white fruit bodies resembling those of *C. umbrinella*, I became convinced that the species was simply very variable in this regard. I must now consider that the specimens of *C. umbrinella* with white fruit bodies reported in my summary of the genus in North America (Petersen, 1968: 12) are really *C. dichotoma* (spherical spores; branched, white fruit bodies), and that this species also gives a blue reaction with guaiac tincture. Thus *C. umbrinella* (branched, gray or umber fruit bodies), *C. holmskjoldii* (branched, gray or umber fruit bodies with purplish apices; taste and smell of anise), and *C. dichotoma* (white, branched fruit bodies) all give this reaction. The obvious similarity in spore and basidial morphology to *C. corniculata*, as well as the absence of carotenoid pigments (Fiasson & al., 1970) in *C. corniculata* and *C. fusiformis*, make the strongly apiculate-spored group even more closely united than hitherto reported.

#### CLAVULINOPSIS HOLMSKJOLDII (Oud.) Corner

*Clavaria holmskjoldii* Oud. in Beih. bot. Cbl. 11: 525. 1902. — *Clavulinopsis holmskjoldii* (Oud.) Corner in Ann. Bot. Mem. 1: 373. 1950.

HOLOTYPE.—September and again in December. The Netherlands, Bergen op Zoom (leg. N. La Fontijn) (L!); also cited by Donk (1933).

Fruit bodies up to 5 cm high, branched repeatedly from very near the base, "cartridge buff" very near base, "tilleul buff" to "vinaceous buff" through the

branches, with the branch apices "vinaceous drab". Lower branches round to somewhat flattened in cross-section, somewhat lax, with hymenium minutely plushy and decurrent almost to the very base. Stipe very short, distinct, smooth to innately silky. Branch axils crescentic to lunate throughout; apices obtuse, blunt, short and somewhat cornute. Odor mild but piercing, of anise; taste mild, sweet, distinctly of anise, very pleasant, but leaving a disagreeable aftertaste in rear of mouth.

Macrochemical reactions: Branch sections including hymenium pale yellowish in  $\text{FeSO}_4$ , becoming pale yellow green with added ethyl alcohol; no change in KOH; blue in gum guaiac with ethyl alcohol.

Hyphae of context all hyaline, clamped, generally parallel, somewhat thick-walled toward stipe base, but all thin-walled in branches, of two widths;  $5.6\text{--}10.5\ \mu$  diam., constricted at septa;  $1.8\text{--}2.4\ \mu$  diam., uninflated, commonly interwoven with inflated hyphae. Hymenium thickening; basidia  $45\text{--}70 \times 6.5\text{--}8\ \mu$ , clavate to elongate-clavate, clamped, homogeneous in content when immature, becoming multiguttulate at maturity, 4-sterigmate; sterigmata  $8.5\text{--}10\ \mu$  long, stout, straight, slightly divergent.

Spores globose to subglobose,  $6.6\text{--}7.6 \times 6.3\text{--}7.0\ \mu$ , smooth, hyaline, thin-walled, uniguttulate; apiculus conical, prominent.

Petersen (1968) conjectured that this species was quite close to *C. umbrinella*, as Corner (1950) had indicated before. *C. holmskjoldii* is apparently quite rare in Europe, as reported by Corner, and has never been reported from North America. It is a distinctive species in the following characters: 1) purplish branch tips; 2) odor and taste of anise; and 3) blue color reaction with guaiac in alcohol. Only *C. umbrinella* shares the latter character, so far as I know, strengthening the presumed relationship between the two species.

The discovery of this species from the northwest again ties the flora of that area to that of Europe. The species is so rare on both continents, however, that it cannot be made the basis for any generalities.

SPECIMEN EXAMINED.—I d a h o : 3.x.68, Tule Bay, Priest Lake, Idaho. RHP 4116, (TENN).

#### CLAVULINOPSIS GRACILLIMA (Peck) Petersen

*Clavulinopsis gracillima* (Peck) Petersen in Mycol. Mem. 1: 30. 1968.

Reported from northern Europe as *Clavaria* (*Clavulinopsis*) *luteoalba* Rea, this species was included by Petersen (1968) as relatively common in eastern North America. Specimens have now been examined from Idaho and Washington, with the latter having been reported previously. This may be taken as a further indication that the northern European species are largely circumboreal, extending southward only where cool temperatures and lack of climatic barriers permit. Such a thrust would account for distributions into the southern Appalachian mountains.

SPECIMENS EXAMINED.—I d a h o : 25.ix.68, Upper Priest River area, RHP 3887 (TENN); 27.ix.68, Tule Bay, Priest Lake, RHP 3993 (TENN); 1.x.68, Upper Priest River area, RHP 4070 (TENN). — Washington: 16.x.68, Seattle, RHP 4317 (TENN).

**Clavulinopsis subaustralis** Petersen, *sp. nov.*—Plate 8

Receptacula ad 8 cm alta, 2–5 cm lata, simplicia, gregaria vel fasciculata, elongato-fusiformi vel sublanceolata; caro spongiosa, saepe cava. Clavula punicea (“safrano pink”); stipes aurantius (“orange buff”). Hymenium spissatum, hyalinum; basidia  $50\text{--}68 \times 6\text{--}7\ \mu$ , elongato-clavata, fibulata, 4 sterigmatibus praedita. Hyphae fibulatae, hyalinae, tenui-tunicatae, aspectu *Clavulinopsis miniatae*. Sporae  $6.6\text{--}8 \times 5.5\text{--}7\ \mu$ , subglobosae vel ovoideae, hyalinae, uniguttulatae; apiculus parvulus, subitus.

HOLOTYPE.—North Carolina: 12.vii.67, Macon Co., RHP 2291 (TENN 29834).

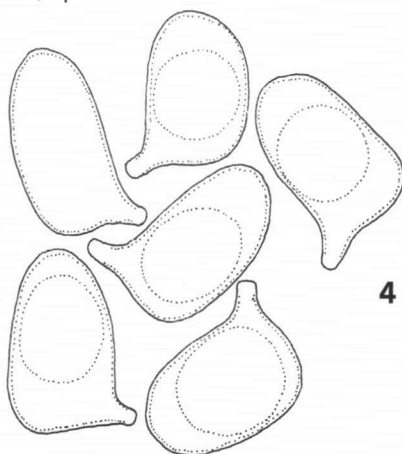
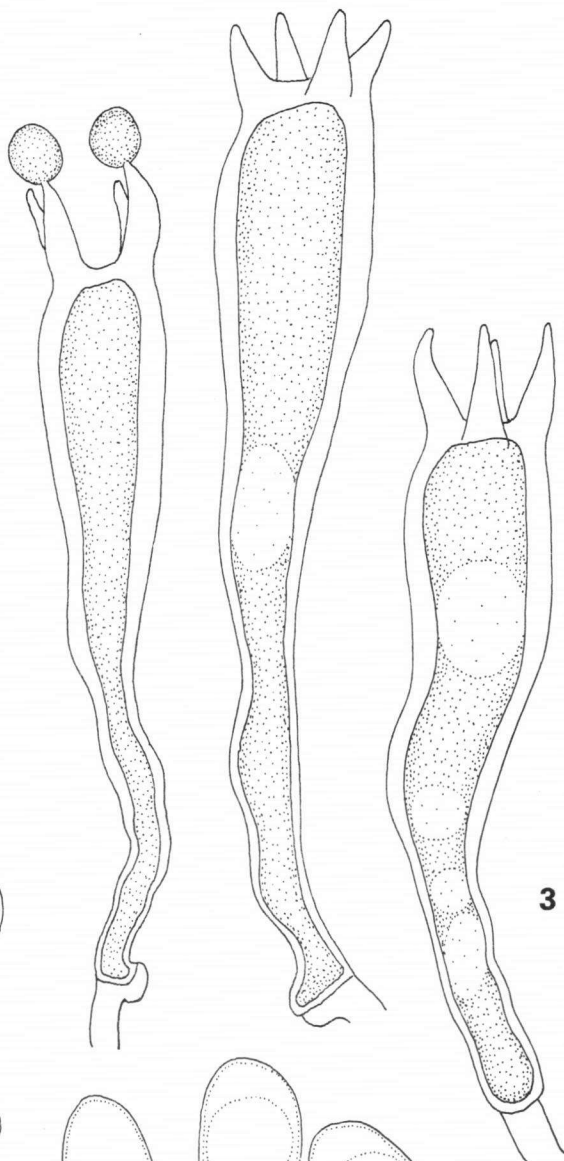
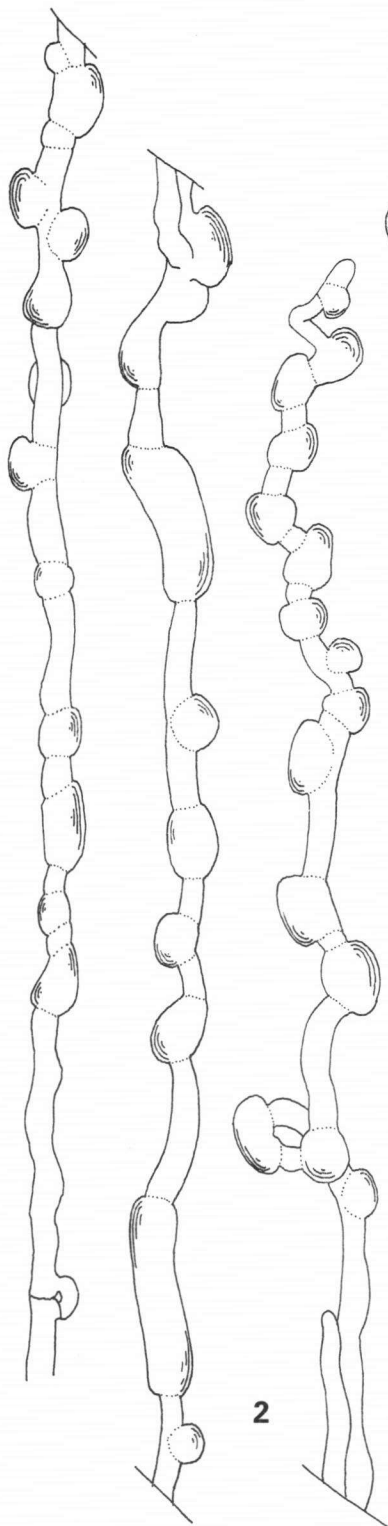
Fruit bodies up to 8 cm high, 2–5 cm broad, simple clubs, solitary, gregarious or fascicled in groups of 2–5 individuals. Stipe 1.5–3 mm thick, smooth above, but subtomentose toward the very base, disappearing into a very small white mycelial mass on insertion; “orange buff”, “light ochraceous buff”, or “warm buff”, becoming darker (near “cinnamon buff”) on handling; distinct from club portion in texture and color. Club portion 2.5–5 mm thick, smooth, minutely velvety, terete, hollow to (rarely) stuffed, the flesh white toward the center, becoming more pigmented toward the outside to “safrano pink”, “vinaceous pink”, “buff pink”, or “light vinaceous cinnamon”; hymenium very pale pinkish; apex rounded to broadly rounded; color of club fading to “cream buff” or “cream color” in drying.

On rich humus, leaf mold and very rotten wood in deciduous or mixed *Tsuga* forests, southern Appalachian mountains of North America.

Contextual hyphae hyaline, clamped, parallel, loosely arranged, of two definite types;  $5.6\text{--}12.0\ \mu$  diam, often inflated somewhat, with walls up to  $0.5\ \mu$  thick;  $2.1\text{--}2.4\ \mu$  diam, arising from thicker hyphae, parallel to interwoven with them, very thin-walled, long-celled. Subhymenium rudimentary; hyphae  $2.4\text{--}2.6\ \mu$  diam, tortuous, generally perpendicular to the contextual hyphae, clamped, producing basidia in bouquets. Hymenium thickening; basidia  $50\text{--}68 \times 6\text{--}7\ \mu$ , elongate-clavate, almost invariably narrowing to a long, equal, hyphal base; clamped, hyaline, 4-sterigmate; sterigmata up to  $10\ \mu$  long, very stout, somewhat divergent and incurved. Basidia hardly collapsing after spore discharge.

Spores  $6.6\text{--}8.0 \times 5.5\text{--}7.0\ \mu$ , subglobose to very broadly ovoid, somewhat thick-walled, hyaline, uniguttulate at maturity, and guttule highly refringent; with a small, abrupt apiculus.

The most striking characteristic of the species is its bright, contrasting coloration. The delicate bright pink of the club portion is quite distinct from the darkish yellow of the stem portion. In other features, it is quite close to *Clavulinopsis miniata*, with weakly apiculate spores, deeply pigmented flesh, light-colored hymenium and attenuate basidia (see Petersen, 1968, for illustration of basidia and spores of *C. miniata*). *Clavulinopsis miniata* was found very commonly throughout the southern Appalachians during the same time period, and no intermediate forms were observed. *Clavulinopsis aurantio-cinnabarina* and its variety *amoena*, although much more rare, were also collected during that time, and these were also noted as very distinct in coloration. Perhaps *C. subaustralis* is an intermediate between *C. aurantio-cinnabarina* var. *amoena* and *C. miniata*, but the quality of pink coloration is not at all the same as the apricot pink shades of these two species. *Clavulinopsis subaustralis* is truly a distinctive species, very easily recognized in the field.



2

3

4



## CLAVULINOPSIS AURANTIO-CINNABARINA (Schw.) Corner

*Clavulinopsis aurantio-cinnabarina* (Schw.) Corner in Ann. Bot. Mem. 1: 358. 1950.

A single specimen has been examined from Minnesota, extending the range of the species in North America significantly. Petersen (1968) reported the species only from eastern North America, although specimens from Asia were also seen. Although several hundred collections of clavarioid fungi have been seen from Minnesota, only one represents this species.

The weakly apiculate-spored group of *Clavulinopsis* seems missing from Europe. I have not seen material of *C. citrino-alba* (Møller) Corner, the spores of which are reported as weakly apiculate, but aside from *Clavaria cardinalis* Boud. & Pat., which was placed in synonymy under *Clavulinopsis miniata* by Corner (1950) and Petersen (1968), and which may well have come from Australia with an ornamental tree, no other species from Europe is reported as bearing weakly apiculate spores. The occurrence of this group in eastern North America and Asia again links the floras of these two regions, and the relative abundance of material in southern North America, in contrast to the relative rarity in the north, may indicate a northward movement of the group. The flora of southern Mexico and Central America becomes important as perhaps ancestral to that of eastern North America, therefore.

SPECIMENS EXAMINED.—M i n n e s o t a: 20.vii.62, Rice Co., Margaret Weaver RHP 3115 (TENN).

## CLAVULINOPSIS LAETICOLOR (Berk. &amp; Curt.) Petersen—Figs. 2, 4.

*Clavulinopsis laeticolor* (Berk. & Curt.) Petersen in Mycol. Mem. 1: 26. 1968.

This species has been discussed by me previously (Petersen 1965, 1968), and has held the more popular name *Clavaria* (*Clavulinopsis*) *pulchra* Peck. The species is widespread throughout eastern North America and northern Europe, but has not been reported from the northwestern United States before.

The fruit bodies are identical in habit and stature to those found in the eastern regions, and the colors, always brilliant, are also as variable. Most western specimens tend toward the bright orange to orange-red ("deep chrome", "apricot yellow", "orange chrome", "flame scarlet", "cadmium orange") with somewhat darker tips at maturity ("mars brown"). The usual dingy greenish color reaction with iron salts seems invariable.

Spores differ in shape and measurement within the same collection. Most spores are typical of the species, but in some cases, spores of narrower profile have been seen (extreme is RHP 1657, the spores of which are illustrated (fig. 4)).

A number of specimens (RHP 3964, 4137, 4141, 4263) were found to possess well-

FIGS. 2-4. — Microscopic structures in *Clavulinopsis* species. — 2. Gloeoplerous hyphae from context of *C. laeticolor*. — 3. Thick-walled basidia from *C. corniculata*. — 4. Elongate spores from *C. laeticolor*.

established gloeoplerous hyphae. These oleiferous hyphae occur as hyphal tips of variable (and sometimes quite significant) length, or one or more intercalary cells, terminated by a clamped septum at both ends. The hyphae are unique in their shape, with large numbers of bulbous swellings, not unlike those seen on "puff" chromosomes. One such hypha is illustrated (fig. 2).

Petersen (1968) reported that *C. laeticolor* was occasionally found with 2-sterigmate basidia and clampless hyphae, and Petersen & Olexia (1969) equated this form with *Clavaria longispora*. Two such specimens have been seen (RHP 3118, 1817).

**SPECIMENS EXAMINED.**—**British Columbia:** 12.xi.62 Teanook Lake, near Victoria, *Kuijt*, RHP 2246 (TENN); 16.x.64, Squamish area, *Bandoni*, RHP 2248 (TENN); 16.xi.60, Goldstream park, Victoria Island, *Foster*, RHP 3357 (DAVFP 12479) (TENN). — **California:** 11.xi.67, Jedediah Smith Redwoods State Park, RHP 3019 (TENN); 23.x.68, Jedediah Smith Redwoods State Park, RHP 4263 (TENN). — **Minnesota:** viii.65, *Margaret Weaver*, Rice Co., RHP 3118 (TENN). — **Idaho:** 9.ix.66, Binarch Creek, near Nordman, RHP 1648 (TENN); 14.ix.66, Binarch Creek, near Nordman, RHP 1680 (TENN); 11.ix.66, Tule Bay, Priest Lake, RHP 1657 (TENN); 1.x.66, Upper Priest River area, RHP 1836 (TENN); 13.ix.66, Tango Creek, near Priest Lake, RHP 1676 (TENN); 30.ix.66, Deception Creek, Coeur d'Alene National Forest, RHP 1817 (TENN); 28.ix.66, Hughes Meadows, Upper Priest River area, RHP 2499 (TENN); 24.ix.66, Priest River, RHP 2500 (TENN); 15.ix.68, Caribou Creek, Priest Lake, RHP 3622 (TENN); 19.ix.68, Upper Priest River area, RHP 3716 (TENN); 21.ix.68, Upper Priest River area, RHP 3757 (TENN); 24.ix.68, Granite Creek, Priest Lake, RHP 3862 (TENN); 27.ix.68, Tule Bay, Priest Lake, RHP 3964 (TENN); 27.ix.68, Tule Bay, Priest Lake, RHP 3969 (TENN); 1.x.68, Upper Priest River area, RHP 4071 (TENN); 3.x.68, Tule Bay, Priest Lake, RHP 4137 (TENN); 3.x.68, Tule Bay, Priest Lake, RHP 4141 (TENN); 3.x.68, Tule Bay, Priest Lake, RHP 4142 (TENN); 3.x.68, Tule Bay, Priest Lake, RHP 4146 (TENN); 7.x.68, McAbee Falls Road, Priest River vic., RHP 4213 (TENN); 7.x.68, McAbee Falls Road, Priest River vic., RHP 4234 (TENN). — **Washington:** Metalline Falls area, 16.ix.66, RHP 1694 (TENN); 2.xi.67, Whidby Island, *Largent*, RHP 2896 (TENN).

**CLAVULINOPSIS LAETICOLOR f. coccineo-basalis** (Joss.) Petersen, *comb. nov.*

*Clavaria pulchra* f. *coccineo-basalis* Joss. in Bull. Soc. Myc. Fr. 53: 224. 1937 (basionym). — *Clavulinopsis pulchra* f. *coccineo-basalis* (Joss.) Corner in Ann. Bot. Mem. 1: 385. 1950.

Petersen (1968) stated that this was only a minor variant which regularly occurred through the southern Appalachian mountains, but the single collection made in Washington surely renders that conclusion inaccurate. The collections from the southeast consisted of fruit bodies which were orange apically, with the remainder of the hymenial portion bright red to scarlet, but with the stipe more or less normal, bright orange to golden yellow. The fruit bodies from Washington were up to 3.5 cm

high, gregarious to cespitose, simple, rounded above, "orange" toward the tip, then either concolorous or deep red below (in a ratio of about 4:1) in colors near "Nepal red", "brazil red", to "flame scarlet", through the lower hymenium and through most of the stipe. Some fruit bodies were orange at the very base ("light cadmium") while others retained the red coloration throughout. All fruit bodies arose from a small basal tomentum which was about "maize yellow." The form is very distinct, and, once collected, cannot be mistaken for normal *C. laeticolor*.

The taxon was described and transferred under the more popular name *Clavaria* (*Clavulinopsis*) *pulchra* Peck. The synonymy of this with *Clavaria* (*Clavulinopsis*) *laeticolor* Berk. & Curtis was discussed by Petersen (1965).

SPECIMEN EXAMINED.—Washington: x.69, Lummi Island, RHP 4764 (TENN).

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#### EXPLANATION OF PLATE 8

Fruit bodies of *Clavulinopsis subaustralis* (TENN. 29834).

