

Type studies in the Clavariaceae¹⁾.

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In the several years, I have published descriptions of several species of the „Clavariaceae“ especially species occurring in North America. In all cases, appropriate synonymy was stated, but in no instance was the type specimen described. This paper is presented to remedy this situation and to elucidate the type specimens of a number of species in synonymy. A number of type specimens are herein designated for the first time.

Clavaria alccicornis Zollinger & Moritzi. 1844. Flora Arch. Neerl. Indien, p. 382.

Holotypus: FH- Planta Javanica Exs. no. 1125, Tjikoya, Marz, 1843; ex herb. Patouillard.

Macroscopic: Fruiting body about 3 cm tall. Stem portion smooth, 3 mm thick, 1 cm long, producing polychotomous branches. Branches smooth, subcylindric, 3—4 ranks, polychotomous at first, dichotomous toward the apices, axils rounded-acute. Apices 2—4 mm long, bicuspidate, somewhat recurved. Color of stem dark ochre, branches slightly darker, apices deep ochraceous rose or orange ochraceous. Microscopic: Contextual hyphae strictly parallel, now inseparable (through poisoning ?), slightly inflated, clamped. Hymenium thickening; basidia short (22—30 μ long), clamped at base, 4-sterigmate.

Spores of two types; 1) spiny spores of Fungi Imperfecti, 2) smooth, refractile spores with no apiculus.

Corner (1950) accepts the species as *Clavulinopsis alccicornis* (Zoll. & Mor.) Corner. The type specimen was probably poisoned, resulting in what appear as agglutinated contextual hyphae, almost complete lack of basidial and hyphal detail, and a total lack of basidiospores. The parallel clamped contextual hyphae, and the 4-sterigmate, clamped basidia both indicate Corner's correct choice of genus.

Clavaria appalachiensis Coker. 1923. Clav. United States & Canada, p. 53.

Holotypus: NCU- C o k e r 5650, Blowing Rock, N. C.; Aug. 21, 1922.

Macroscopic: Fruiting bodies fragmented, originally up to 2,5 cm tall, 1—1,5 mm thick. Stem smooth, appearing subcartilaginous, base

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naked. Hymenial portion minutely velvety, macroscopically distinct from stem portion by color and texture. Color of stem portion orange-ochraceous, hymenial portion dark ochraceous, apex ochraceous. Fruiting bodies single, not caespitose or fascicled; on wood. Microscopic: Contextual hyphae subparallel, inflated up to $8\ \mu$, thin-walled, often clamped at the septa, the clamps small; with many unclamped septa. Subhymenial hyphae $2-4\ \mu$ wide, cells up to $20\ \mu$ long, tortuous, thin-walled, pigmented. Basidia clavate, $35-60 \times 5,5-8\ \mu$, 4- (rarely 2) sterigmate, the sterigmata up to $9\ \mu$ long. Sterile hyphal tips present in young hymenium.

Spores subglobose, slightly thick-walled, uniguttulate, hyaline, with a small rounded apiculus. Dimensions: (6,0) $6,4-7,4 \times (4,9)\ 6,0-7,5\ \mu$.

This species is distinguished by the presence of many unclamped septa on the contextual hyphae. Coker (1947) reported a possible synonymy with *Clavaria globospora* Kauff. That species bears nonclamped septa and two-sterigmate basidia. Corner (1950) transferred the species as *Clavulinopsis appalachiensis* (Coker) Corner. Leathers (1956) reports it from Michigan.

Clavaria asperulospora Atkinson. 1908. Ann. Myc. 6: 55.

Holotypus: CUP- ex herb. Atkinson, 13182. Ground Fall Creek Woods, Aug. 3, 1902.

Macroscopic: Fruiting bodies fragmented, originally simple but "clustered". Clubs up to 5 cm tall, 1-2 mm thick, appearing quite cartilaginous. Base of stem naked, but holding a small ball of soil presumably in a small reticulum of mycelial strands. Color uniformly very dark brown to brownish-black (poisoned?). Microscopic: Contextual hyphae strictly parallel, not agglutinated, slightly inflated ($7-10\ \mu$ thick), without clamp connections, slightly thick-walled at the base of the fruiting body, but thin-walled throughout the length of the fruiting body; interwoven with narrower ($2-2,5\ \mu$ thick), thin-walled, long-celled, branching hyphae. Subhymenium of tightly packed, pseudoparenchymatous hyphae; cells slightly inflated, tightly packed, generally parallel. Basidia narrowly clavate, $45-65\ \mu$ long, 4-sterigmate; sterigmata short, slightly incurved, easily collapsed. Hymenium thickening. Basidia with simple septum beneath.

Spores globose to broadly ovate, slightly thick-walled, hyaline (or very pale yellowish?), strongly apiculate; with numerous, closely set, small sharp warts arising from the exosporium. Dimensions: $4,9-7,1 \times 4,9-6,3\ \mu$.

Fruiting bodies apparently bearing hyphae and spores of imperfect fungus related to *Helminthosporium*.

The disposition of this species is very difficult. The contextual hyphal configuration is indicative of *Clavaria*, including the narrower interweaving generative hyphae, as are the basidia and short, weak sterigmata. Although the spores are grossly like those of *Clavulinopsis*

(subglobose, uniguttulate, strongly apiculate), the ornamentation is not like that found in any species of that genus. Corner's (1950) placement of the species in *Ramariopsis* is also incorrect, because the spore ornamentation is too coarse, the basidia too long, and the hyphae lack clamp connections throughout. It would appear to be the only species of *Clavaria* with rough spores, and therefore stands as a valid species.

Clavaria brunneola Berkeley & Curtis. 1869. J. Linnaean Soc. London, Bot. 10:338.

Holotypus: FH — Fungi Cubensis Wrightiana no. 462. Isotype at K.

Macroscopic: Fruiting bodies simple or branched in 1—2 ranks. Stem base smooth, slightly longitudinally cracked, not unlike tree bark; nakedly inserted into clay soil; about 1 cm long. Branches (when present) arising midway between base and apex, or within 2—3 mm of the apex; apices filiform. Fruiting bodies up to 2,5 cm high, up to 1 mm thick. Color now dull tannish brown, with the apices slightly darker. Microscopic: Contextual hyphae almost strictly parallel, thin-walled, straight, without clamp connections, pigmented in pale brown shades, encrusted in animal (insect ?) excrement. Subhymenium and hymenium impossible to examine accurately.

Spores amygdalin, smooth, hyaline, multiguttulate to foamy-appearing, thick-walled, with a distinct but not enlarged asymmetrical apiculus. Dimensions: $12,0\text{--}18,8 \times 8,2\text{--}11,3 \mu$.

In most instances, a specimen so degenerate could be placed only with difficulty, but the large, thick-walled spores and the unclamped hyphae of the context indicate almost without doubt the genus *Aphelaria*. Corner has transferred it as *Aphelaria brunneola* (B. & C.) Corner (1950). Corner's spore measurements ($13\text{--}15 \times 8\text{--}10 \mu$) are slightly small, but the spores intergrade in size, so the probability of an occasional "giant spore" can be discounted.

Clavaria cardinalis Boudier & Patouillard. 1888. J. de Bot. 2: 341, 342.

Neotypus: FH — ex herb. Patouillard, "sur in tronc de *Toddea barbara*. Feb'y. 1888."

Macroscopic: Fruiting bodies simple, caespitose to gregarious, 2—2,5 cm high, 4—5 mm thick near the apex; apex truncate or rounded-blunt. Color ochre, resident in the hymenium and subhymenium, but obscured by contaminant molds. Microscopic: Contextual hyphae subparallel to subinterwoven, thin-walled, clamped at every septum with a distinct, conspicuous clamp connection; branching and anastomoses common; 4—8 μ thick, virtually hyaline. Subhymenial hyphae uninflated, 1,5—3 μ thick, clamped, tortuous, tightly interwoven, pigmented. Basidia elongate-clavate, basally clamped, mostly very straight, $40\text{--}65 \times 4\text{--}6 \mu$, slightly pigmented watery yellow, 4-sterigmate; sterigmata straight, somewhat divergent.

Spores globose to subglobose, thin-walled to very slightly thick-walled, uniguttulate to aguttulate (through age?), hyaline, with a small, abrupt apiculus. Dimensions: $4.9-6.4 \times 3.6-6.4 \mu$.

The spore measurements are slightly small for *Clavulinopsis miniata* var. *sanguinea* Corner (his measurements, $6-7 \times 5-6 \mu$), and the pigmentation is resident in the hymenium and subhymenium, not fulfilling the description of that species. I have placed the species in synonymy under *Clavulinopsis aurantio-cinnabarina* var. *amoena* (Zoll. & Mor.) Pet. (Petersen, 1966a) (his measurements, $5-7 \times 4-5.5 \mu$). The orange-red color originally described for *C. cardinalis* is an extension of the color range of *C. amoena* as delineated by Corner (1950), but not for *C. aurantio-cinnabarina* as described by Schweinitz.

Clavaria cineroides Atkinson. 1909. Ann. Myc. 7: 367.

Holotypus: CUP — Atkinson 22640. On ground, Chapel Hill, N. C.

Macroscopic: A single fruiting body. Five cm high, 3 cm broad, branched in several ranks, generally obconic in configuration. Base nakedly inserted in soil. Branching from substrate level, generally dichotomous with some trichotomy; branches cylindric, apices slightly expanded-cuspidate, axils lunate to rounded. Color uniformly dull grey, with abundant greyish superficial contaminant mycelium at the base up to about 3 cm high. Microscopic: Contextual hyphae generally parallel, slightly inflated (up to 10μ thick), hyaline, thin-walled, with clamp connections at every septum; branching and anastomoses rare. Subhymenial hyphae narrow, $1.3-1.8 \mu$ thick, tortuous, highly branched, clamped throughout, hyaline, rarely secondarily septate. Basidia in clusters, elongate-clavate, hyaline, heterogeneous in contents, clamped at the base, $45-85 \times 6-9 \mu$, 4-sterigmate; sterigmata $6-9 \mu$ long, stout, straight. Sterile elements in the hymenium hyphal, pseudoparaphysoid, arising from the basal basidial clamps and not protruding beyond the hymenium.

Spores globose to subglobose, thin- to very slightly thick-walled, uniguttulate, hyaline, with a long, stout, lateral apiculus. Dimensions: $(5.2) 6.0-7.9 (10.5) \times 6.0-7.5 (9.0) \mu$.

Coker (1923) accepted this species, but Corner (1950) transferred it as *Clavulinopsis cineroides*. Petersen (1966a), after examination of both types, placed it under *Clavulinopsis umbrinella* (Sacc.) Corner (1950).

Clavaria clara Berkeley & Curtis. 1869. J. Linnaean Soc. London, Bot. 10: 338.

Holotypus: K — On ground, Cuba. Isotypes at FH and NCU (bearing the annotation, "on shaded banks."). Fungi Cubensis Wrightiana, no. 557.

Macroscopic: Fruiting bodies slender, simple, up to 3 cm high, 2-3 mm thick in the middle, tapering slightly at the acute tip and attenuated base. Base inserted nakedly in sandy soil bearing filaments of *Lyngbya* sp. (Cyanophyta). Color now dull ochraceous orange to

dull darkish orange, with reddish orange shades toward the tip. Microscopic: Contextual hyphae strictly parallel, thin-walled, $2-3.5 \mu$ thick, long-celled, with a small, inconspicuous clamp connection at each septum; hyaline. Subhymenial hyphae narrow, $1-2 \mu$ thick, thin-walled, pale watery yellow under the microscope, tortuous, highly branched, collapsing easily. Basidia $12-24 \times 3-5 \mu$, basally clamped, hyaline, arising as subglobose hyphal tips; sterigmata number not ascertained. Sterile hymenial elements abundant, hyphal, subcapitate, $1-1.5 \mu$ thick.

Spores smooth, thin-walled, hyaline, aguttulate, ellipsoid, with a small lateral apiculus. Dimensions: $6.5-8.0 \times 3.5-4.5 \mu$.

Corner (1950) placed this species under *Clavulinopsis amoena*, but Petersen (1966b) transferred it as *Multiclavula clara* (B. & C.) Petersen, as a phycophilous clavarioid fungus. Burt (1922) incorrectly stated spore measurements as $4-4.5 \times 3-3.5 \mu$. *Clavaria flavella* Berkeley & Curtis is synonymous.

Clavaria compressa Schweinitz. 1832. Trans. Amer. Phil. Soc. n. s. 4: 182 (nec *C. compressa* Berkeley, 1842; *C. compressa* Schroeter, 1888).

Holotypus: PH — Syn. Fung. 1039, New Jersey.

Macroscopic: Fruiting bodies simple, fasciculate with about 30 individuals. Bases smooth, nakedly inserted in soil, about 2 mm thick. Hymenial portion 3–4 mm thick, apex rounded to rounded-acute. Color now dull ochraceous throughout, with the very base slightly lighter (perhaps below substrate ?); stem portion not distinct from hymenial portion. Microscopic: Contextual hyphae generally parallel, but with much branching and anastomoses; of two widths. Wider hyphae $5-7 \mu$ thick, hyaline, slightly inflated, clamped; narrow, about 1μ thick, hyaline, highly branched, interweaving, clamped. Subhymenial hyphae narrow (up to 3μ thick), thin-walled, short-celled, clamped, tortuous, highly branched. Basidia elongate-clavate to clavate, basally clamped, $2-4$ —sterigmate; sterigmata up to 8μ long, stout, slightly incurved. Basidia and subhymenium slightly pigmented.

Spores subglobose or (rarely) globose, thin- to slightly thick-walled, smooth, uniguttulate to aguttulate (in age ?), with a long, pronounced apiculus. Dimensions: $5.2-7.5 \times 5.2-6.8 \mu$.

The spores, context and general habit are all those of *Clavulinopsis fusiformis* (Sow. ex Fr.) Corner, to which the species has been synonymized by Corner (1950) and Petersen (1966a). Burt (1922) indicates this, and Coker (1923) concurs.

Clavaria constans Coker. 1939. J. Elisha Mitchell Sci. Soc. 55: 383.

Holotypus: NCU — Coker 10451, Highlands, N. C.

Macroscopic: Fruiting bodies 3–5 mm high, 2 mm thick at top, 1–1.5 mm thick at base, simple. Base widening slightly on insertion into clay soil. Color now about medium yellow ochre in hymenial area,

slightly more orangy toward the base. Stem portion appearing slightly cartilaginous, hymenial portion minutely plushy or velvety. Microscopic: Contextual hyphae interweaving, thin-walled, with abundant branching and anastomoses, hyaline, bearing small, inconspicuous clamp connections; $6-10\ \mu$ thick. Subhymenial hyphae pseudo-parenchymatous, hyphae very thin-walled, easily collapsed, very tortuous, hyaline. Basidia $12-17 \times 4-6\ \mu$, hyaline, clamped at the base, arising as a subglobose or stoutly clavate hyphal tip, 4-sterigmate; sterigmata short (up to $3,5\ \mu$ long), slender, straight, easily collapsed. No differentiated hymenial sterile elements present.

Spores elongate-ellipsoid to cylindrical, aguttulate, some slightly curved, hyaline, thin-walled, with a small lateral apiculus. Dimensions: $8,2-12,8 \times 2,2-3,0\ \mu$.

Coker (1939) states the spore dimensions as $7,5-11,0 \times 1,8-2,5\ \mu$, which is slightly small. Corner (1950) transferred the species as *Clavulinopsis constans* (Coker) Corner, but Petersen (1966b) included it as *Multiclavula constans* (Coker) Petersen. It appears to be the only free-living species of an otherwise lichenoid genus.

Clavaria coronilla Martin. 1940. Lilloa 5: 194.

Lectotype: NY — Martin 3452, Sierra Nevada de Santa Maria, Colombia.

Macroscopic: Fruiting bodies simple, slender, $4-6\ \text{mm}$ high, less than $1\ \text{mm}$ thick. Color now straw throughout. Associated with algae on rotting wood. Microscopic: Contextual hyphae parallel, straight, with frequent anastomoses, tightly packed, slightly inflated especially near septa, walls often thickened somewhat, bearing a small clamp connection at each septum, $4-8\ \mu$ thick, hyaline. Subhymenial hyphae thin-walled, tortuous, very easily collapsed, somewhat pseudoparenchymatous, $1-2\ \mu$ thick, hyaline. Basidia arising as side branches of contextual hyphae at first, then in cymose bouquets, slightly swollen in youth, short-cylindrical in age, basal clamp small and inconspicuous, hyaline, homogeneous in content, $6-8$ sterigmate; sterigmata short ($2,5-4\ \mu$ long) slender, tenuous, easily collapsed. Hymenium thickening.

Spores ovoid to ellipsoid, thin-walled, smooth, aguttulate, hyaline, with a small lateral apiculus; often adherent in clusters of $6-8$. Dimensions: $5,2-7,5 \times 2,6-3,8\ \mu$.

Corner (1950) regarded this as a species of *Clavulinopsis*, but Petersen (1966b) transferred it as *Multiclavula coronilla*, indicating relationships with *Clavaria mucida* Fr. and other species of lichenoid habit.

Clavaria fellea Peck. 1898. Rep. N. Y. State Mus. 51: 292.

Holotypus: NYS — C. H. Peck, Under oak trees, Gansvoort, N. Y.

Macroscopic: Fruiting bodies $1-2,5\ \text{cm}$ high, branched dichotomously in $2-3$ ranks, with rounded to lunate axils and acute apices. Stem portion distinct, $0,5-1\ \text{cm}$ long, smooth, inserted nakedly into sub-

strate. Color now dull light ochraceous throughout, pigmentation resident in hymenium and subhymenium. Microscopic: Contextual hyphae generally parallel, slightly inflated, $5-7\ \mu$ thick, thin-walled, bearing a clamp connection at every septum; interwoven with narrow, thin-walled, clamped, somewhat tortuous, highly branched hyphae $1.5-2.5\ \mu$ thick. Subhymenial hyphae narrow, $1-2.5\ \mu$ thick, thin-walled, clamped, tortuous, pigmented slightly in the yellow shades, producing basidia in clusters. Subhymenial hyphae with rare secondary septa. Basidia clavate to elongate-clavate, $35-75 \times 7-10\ \mu$, clamped at the base, yellowish, 4-sterigmate; sterigmata $6-10\ \mu$ long, stout, slightly incurved.

Spores globose to subglobose or slightly flattened adaxially, thin- to very slightly thick-walled, hyaline, uniguttulate to aguttulate (in age?). Dimensions: $5.7-7.2 \times 5.2-7.5\ \mu$.

All authors agree that this is simply a form of *Clavaria corniculata*, which is accepted by Corner (1950) and Petersen (1966a) as *Clavulinopsis corniculata*.

Clavaria flammans Berkeley. 1875. J. Linnaean Soc. London, Bot. 14: 350.

Holotypus: K — Berkeley.

Macroscopic: No fruiting bodies remain intact. Tips of individual fruiting bodies up to 5 mm wide (but pressed) are the only remaining portions of the specimen. Color almost uniformly sordid ochraceous grey shades, with a superficial contaminant dark mycelium, and copious growth of *Aspergillus* sp. Individuals are assumed to have been simple, but gregariousness or fasciculation cannot be determined. Microscopic: Contextual hyphae parallel, short-celled (up to $75\ \mu$ long), $4-8\ \mu$ thick, only slightly inflated, clamped throughout, hyaline. Subhymenial hyphae tortuous, interwoven, narrow, no clamps observed. Basidia clavate to elongate-clavate, $40-50\ \mu$ long, with no observed clamps, 4-sterigmate; sterigmata long ($5-8\ \mu$ long), straight, slightly divergent.

Spores generally ovate, hyaline, slightly thick-walled, angular-warted to angular-echinulate, bearing a pronounced apiculus $1.5-2.5\ \mu$ long. Dimensions: $7-8 \times 4-5.5\ \mu$.

Berkeley considered this a close relative to *Clavaria inaequalis*, which he considered a rough-spored, simple yellow club. In this conclusion he was correct, for *C. flammans* is synonymous with his concept of *C. inaequalis*. Corner (1950) has reduced *C. inaequalis* to a *nomen ambiguum*, but Petersen (1965) has redescribed *C. inaequalis* as a smooth-spored *Clavaria*. Corner and Petersen agree that *C. flammans* is synonymous with *Clavulinopsis helvola* (Pers. per Fr.) Corner.

Clavaria flavella Berkeley & Curtis. 1869. J. Linnaean Soc. London, Bot. 10: 338.

Lectotypus: K — Berkeley; Isotypi: FH — C. wright 465, Cuba, NCU — ex type, same data.

(The following description is taken from the isotype specimen at NCU).

Macroscopic: A single fruiting body remains; 2,4 cm high, 2—3 mm thick at the widest point, apex acute, stem portion slightly attenuate, nakedly inserted in soil. Color now dull tan to dull ochraceous cream in the stem portion, hymenium dull reddish brown. No apparent sign of fasciculation. **Microscopic:** Contextual hyphae parallel, hyaline, thin-walled, 4—6 μ thick, bearing small, somewhat inconspicuous clamp connections throughout. Subhymenial layer very thin, of thin-walled, narrow, tortuous hyphae. Basidia short-clavate, very thin-walled, homogeneous in content, 18—24 μ long; 4-sterigmate, sterigmata short, slender, easily collapsed.

Spores ellipsoid to subreniform, thin-walled, hyaline, with a small lateral apiculus. Dimensions: 6,5—8,0 \times 3,5—4,5 μ .

There can be little doubt that this is the same as *C. clara* Berk. & Curtis, described in the same publication. No immediate indications of association with algae or mosses can be seen on this specimen or the isotype at FH but other specimens which agree morphologically and anatomically do show such an association. Corner's (1950) disposition as *Clavulinopsis flavella* is incorrect, and Petersen (1960b) has transferred it as *Multiclavula clara*.

Clavaria fusiformis var. *antillarum* Patouillard. 1903. Doass. Enum. Champ. Guadeloupe p. 14.

Holotypus: FH — Herb. Pat., Pointe Noire, Guadeloupe, no. 593.

Macroscopic: Fruiting bodies caespitose to subfascicled, usually united by the soil substratum, 1—3,5 cm high, 2—2,5 mm thick (a single fruiting body is furcate about half way up its length, the axil lunate), nakedly inserted in soil. Color of hymenial portion dull orange to dull dark orange, bases slightly lighter but not white. Contextual portion apparently stuffed with silky whitish hyphae. **Microscopic:** Contextual hyphae generally parallel, but with much interweaving; of two different widths, wider 6—8 μ thick, slightly inflated, thin-walled, clamped throughout, generally parallel; narrower 2—3,5 μ thick, thin-walled, highly branched, interweaving, clamped throughout. Subhymenial hyphae tortuous, narrow (1,5—2,5 μ thick), thin-walled, clamped throughout, pigmented pale watery yellow under the microscope, producing basidia in clusters. Basidia elongate-clavate to clavate, pigmented pale watery yellowish under the microscope, clamped at the base, 4-sterigmate; sterigmata 6—9 μ long, usually straight, slightly divergent.

Spores globose to subglobose, occasionally broadly ovate, hyaline to very pale yellow, smooth, thin- to slightly thick-walled, with a pronounced apiculus up to 2,4 μ long. Dimensions: 6—7,5 \times 5,2—6,8 μ .

Corner's (1950) placement of this variety under *Clavulinopsis miniata* has been discussed elsewhere (Petersen, 1966a). Petersen (1966a) transferred it as *Clavulinopsis laeticolor* var. *antillarum*, follo-

wing Leathers' (1956) description of *Clavaria pulchra* var. *globulina* to which the above is synonymous.

Clavaria globospora Kauffman. 1927. Pap. Michigan Acad. Sci. Arts Letters 8: 148.

Holotypus: MICH — On very rotten conifer log, Lake Quinalt, Washington.

(Coker — 1947 — reports that the type specimen and all other authentic material from MICH was overheated. The specimens have been rendered almost completely unsuitable for examination, and the following description refers only to those characters which are still observable).

Macroscopic: Fruiting bodies simple to branched once, up to 3 cm high, up to 3 mm thick, inserted by small patches of mycelium to the woody substratum. Fruiting bodies now completely hollow, with only a very thin shell of flesh remaining. Apices acute to rounded-acute, axils (when present) rounded to lunate. Color now dark ochraceous throughout. Microscopic: Contextual hyphae slightly inflated, 10–15 μ thick, slightly thick-walled, long-celled (50–200 μ long), without clamp connections. Subhymenial hyphae narrow, thin-walled, somewhat tortuous, not clamped. Basidia 2-sterigmate.

Spores globose to slightly compressed, thin-walled, aguttulate to granular, smooth, hyaline with a somewhat pronounced apiculus. Dimensions: 5.2–6.3 \times 4.5–6.0 μ .

Spore measurements stated by Coker (1947), Doty (1944) and Corner (1950 sub. *C. appalachiensis*) all approximate mine. In spite of the lack of detail observed, the specimen undoubtedly belongs in *Clavaria*. It is not synonymous with *Clavulinopsis appalachiensis* (Coker) Corner. Petersen (1966 a) has reduced it to a nomen ambiguum because of the lack of hyphal detail of the type.

Clavaria laeta Berkeley & Broome. 1875. J. Linnaean Soc. London, Bot. 14: 76.

Lectotypus: K — Berkeley, no. 679 (Berkeley originally used no. 685, but also included 679 with a figure, probably accounting for the change of specimen number). Peradeniya, Ceylon.

Macroscopic: Fruiting bodies now fragmented; 5–7.5 cm high, 3–5 mm wide, fasciculate, with bases connate at the substratum level; apparently branched once or twice, the branch apices acute, the axils acute. Color now uniformly dark olive brown with some orange shades. Microscopic: Contextual hyphae uninflated, 5–8 μ thick, thin-walled, bearing small inconspicuous clamp connections at every septum, generally parallel with abundant branching and anastomoses. Subhymenial hyphae narrow, short-celled (5–25 μ long), thin-walled, clamped. Hymenium missing.

Spores hyaline, globose, thin-walled, aguttulate; ornamented with numerous, closely set, short, papillate warts not more than 0.5 μ long. Dimensions: 4–5.7 μ in diameter.

The complete lack of hymenium, and the dubious presence of the spores led Petersen (1966 a) to reduce *C. laeta* to a nomen ambiguum. Corner (1950) placed the species under *Clavulinopsis miniata*, a correct genus designation, but I have been unable to verify the species identification.

Clavaria luteo-tenerrima var. *borealis* Leathers. 1956. Mycologia 48: 285—286.

Holotypus: MICH — Leathers 540, Pellston hills, Mich.

Macroscopic: Fruiting bodies single or rarely clustered, up to 4.5 cm high, 3—4 mm thick, simple, inserted nakedly into soil. Stem portion and apex now orange to dull dark orange, hymenial portion now ochre or deep buffy ochre, longitudinally channelled or rugulose throughout. Microscopic: Contextual hyphae strictly parallel, tightly packed, rarely branching or anastomosing, thin-walled, slightly inflated, 10—17 μ thick, hyaline, without clamp connections. Subhymenial hyphae narrower (2—3.5 μ thick), thin-walled, parallel with contextual hyphae in the inner subhymenium, becoming perpendicular and interwoven toward the outer portion, producing basidia in clusters. Basidia cylindrical to subclavate, digitate, 30—35 μ long, simple-septate at base, 4-sterigmate; sterigmata slender, easily collapsed.

Spores ovate to ellipsoid-ovate, slightly flattened adaxially, smooth, thin-walled, aguttulate to granular, bearing a small but distinct lateral apiculus. Dimensions: $6.3-7.3 \times 3.5-4.2 \mu$.

Corner (1950) stated that *C. luteo-tenerrima* belonged in *Clavulinopsis*, but Leathers' taxon is a *Clavaria*. I can find no difference between this and *Clavaria inaequalis* Mull. ex Fr. (Petersen, 1965), under which name I have placed it.

Clavaria macouni Peck. 1894. Rep. N. Y. State Mus. 47: 150.

Holotypus: NYS — Peck; among mosses under cedar trees, Canada.

Macroscopic: Fruiting bodies simple, single, up to 1 cm high, 2—3 mm thick, growing with plants of Polytrichaceae; base disappearing into very small mycelial mass. Stem portion dull orange to dull tan, hymenial portion dull yellow to dull ochre; somewhat distinct from each other. Microscopic: Contextual hyphae strictly parallel, thin-walled, slightly inflated, 7—10 μ thick, hyaline, without clamp connections, occasionally secondarily septate. Subhymenial hyphae narrow (1.5—2.5 μ thick), thin-walled, without clamps, tortuous, interweaving, lightly pigmented in yellowish shades, bearing basidia in clusters. Basidia subcylindrical to subclavate, $34-47 \times 5.2-6.8 \mu$, simple-septate at base, 1—2—4-sterigmate; sterigmata 4—6 μ long, slender, straight, easily collapsed.

Spores ellipsoid, slightly flattened adaxially, smooth, thin-walled, aguttulate, hyaline, with a small lateral apiculus. Dimensions: $4.5-6.0 \times 3.0-3.8 \mu$.

Corner (1950) placed this species in *Clavulinopsis* incorrectly. It is evidently a *Clavaria*, and appears very closely related to *C. inaequalis* (see Petersen, 1965), but with slightly smaller spores and different colors. Peck's designation in subgenus *Syncoryne* was correct.

Clavaria miltina Berkeley. 1852. Hooker's J. Bot. 4: 140.

Holotypus: K — herb. Berkeley — Khasya no. 3, Brisbane, Bailey, no. 241.

Macroscopic: Fruiting bodies simple, single, clavate to elongate-clavate, 2—3.5 cm high, 2—3.5 mm thick, apices rounded; nakedly inserted in soil. Color now uniformly very dark red to reddish purple with orange shades, the stem often slightly darker. Microscopic: Contextual hyphae parallel, not tightly packed together, thin-walled, 2.5—8 μ thick, slightly inflated, with abundant branches and anastomoses; without clamp connections. Subhymenial hyphae perpendicular to the contextuales, interwoven, narrow (2—3 μ thick), thin-walled, without clamps. Basidia clavate, 25—45 μ long, very fragile, arising as stoutly clavate hyphal tips, 4-sterigmate; sterigmata weak, easily collapsed.

Spores ovoid to ellipsoid, thin-walled, hyaline, aguttulate, smooth, with a small lateral apiculus. Dimensions: 5.5—8.0 \times 3.0—4.0 μ .

The species is not a *Clavulinopsis*, as stated by Corner (1950, sub *C. miniata*), but the configuration of the contextual hyphae and the short basidia arising as stout hyphal tips would indicate *Multiclavula* Pet. (see Petersen, 1966 b). *M. fossicola* (Corner) Pet. is presently the only species in that genus without clamp connections.

Clavaria miniata Berkeley. 1843. Hooker's J. Bot. 2: 416.

Holotypus: K — Berkeley; on sandy soil, Malaya.

Macroscopic: Fruiting bodies about 1.5 cm high, caespitose or fasciculate, clavate, apex rounded; now encrusted with soil particles; nakedly inserted in soil. Color now dull orange to dull dark orange. Microscopic: Contextual hyphae generally parallel, 2—7 μ thick, thin-walled, clamped throughout, with common branching and anastomoses. Subhymenial hyphae pigmented in watery yellow shades, at first parallel with contextuales, then perpendicular, narrow (2—4 μ thick), thin-walled, clamped throughout, interweaving, producing basidia in clusters. Basidia narrowly clavate, 25—50 \times 6—9 μ , 2—4-sterigmate, basally clamped; sterigmata 6—8 μ long, stout, slightly incurved. Hymenial sterile elements abundant in young hymenium, paraphysoid or cystidiol-like, appearing as non-sterigmate basidia.

Spores globose to subglobose, smooth, hyaline, slightly thick-walled, uniguttulate, with a short, abrupt, truncate apiculus about 1 μ long. Dimensions: 4.1—6.8 μ in diameter.

It is not possible to positively ascertain the placement of the pigmentation in the fruiting bodies. The siliceous crust and the age of the specimen have made this detail obscure, but the spores, basidia and contextual hyphae all match the common concept of the species as

defined by Corner (1950) and so, although there is no positive reason to define the species as understood on the sole basis of this specimen, the specimen can easily fulfill the general description of the species. The diminutive size of the fruiting bodies I consider only an individual character. It is, unfortunately, the only specimen identified by Berkeley, *Clavulinopsis sulcata* van Over-is synonymous.

Clavaria misella Berkeley & Curtis. 1869. J. Linnaean Soc. London, Bot. 10: 339.

Lectotypus: K — herb. Berkeley; Isotypus — FH, Fungi Cubensis Wrightiani, 467; C. Wright, 222.

(The following description is taken from the Isotype specimen at FH.)

Macroscopic: Fruiting bodies simple, up to 5 mm high, less than 1 mm thick, gregarious on moss leaves and stems; narrowly clavate, attached by a spreading mycelial mat. Stem portion subcartilaginous, now pale dull orange; hymenial portion smooth, cream-colored to creamy ochre. Microscopic: Contextual hyphae narrow, 3–6 μ thick, very thick-walled, tightly packed, without clamp connections, not agglutinated, with frequent dichotomous branching and anastomoses in "H'-connections. Hyphal walls appear encrusted. Subhymenial hyphae thick-walled to thin-walled toward the outer layers, branching in a cymose pattern to produce single basidia as hyphal tips; without clamp connections. Basidia up to 40 μ long, thin-walled, easily collapsed, 4-sterigmate; sterigmata short, slender, weak. Hymenium apparently not thickening.

Spores ovoid to ellipsoid, thin-walled, slightly flattened adaxially, hyaline, with an inconspicuous, truncate, lateral apiculus. Dimensions: 7.2–7.7 \times 3.5–4.0 μ .

This seems quite closely related to the *Multiclavula* alliance by its growth habit, short basidia and spore morphology. However, the thick-walled, unclamped contextual hyphae are not typical of that genus. Its taxonomic position therefore remains in doubt.

Clavaria paludicola Libert. 1837. Plantae Crypto. Arduennes Fasc. IV: 322.

Lectotypus: BPI — Libert, Pl. Crypto. Ard. Exsiccata, 322; isotypi — others of the exsiccata distribution.

Macroscopic: Fruiting bodies small, 0.5–1 cm high, about 1–2 mm thick, simple, now deep dull orange. On soil with cyanophycean algae. Microscopic: Contextual hyphae slightly inflated, 2.5–5 μ thick, thin-walled, interweaving, abundantly branched, hyaline, clamped throughout. Subhymenial hyphae thin-walled, non-inflated, 2.5–3.5 μ thick, tortuous, clamped, densely packed, hyaline. Basidia 33–37 \times 4–7 μ , cylindrical-clavate to cylindrical, arising as slightly swollen hyphal tips, 4-sterigmate; sterigmata very thin, short, easily collapsed.

Spores smooth, very thin-walled, hyaline, aguttulate, ellipsoid to

subcylindrical, with a small lateral apiculus. Dimensions: $7-9.8 \times 2.8-4.2 \mu$.

Corner (1950) placed this in synonymy with *Clavulinopsis vernalis* (Schw.) Corner, following the conclusion of Coker (1923). Petersen (1966b) transferred *C. vernalis* as *Multiclavula vernalis* (Schw.) Pet., stating that *M. vernalis* and *C. paludicola* are indistinguishable.

Clavaria platyclada Peck. 1896. Bull. Torrey Bot. Club 23: 419.

Holotypus: NYS — Herb. Peck, Maine.

Microscopic: Fruiting bodies simple, fasciculate in clusters of 2—20 individuals, $2.5-6 \text{ cm} \times 3-5 \text{ mm}$, solid throughout, not significantly attenuate at these base or apex, apex rounded-acute to acute. Color bright ochraceous yellow at the tips, ochraceous orange in the middle, pale yellow toward the very bases; nakedly inserted in soil. Microscopic: Contextual hyphae thin- to very slightly thick-walled, slightly inflated, clamped throughout; wider hyphae $10-12 \mu$ thick, generally parallel; narrower $2-3.5 \mu$ thick, interweaving. Subhymenial hyphae pale yellowish under the microscope, narrow, $1.5-2.5 \mu$ thick, tortuous, tightly packed, producing basidia in clusters or bouquets. Basidia $35-60 \mu$ long, elongate-clavate to clavate, basally clamped, weakly pigmented, 4-sterigmate; sterigmata $5-7.5 \mu$ long, stout, slightly divergent and slightly incurved.

Spores globose to subglobose, slightly thick-walled, smooth, hyaline, uniguttulate, with a pronounced lateral apiculus. Dimensions: $4.8-7.2 \times 4.8-6.9 \mu$.

Coker (1923), Corner (1950) and Petersen (1966a) all agree that this is synonymous with *Clavulinopsis fusiformis* (Sow. ex Fr.) Corner.

Clavaria pogonati Coker. 1939. J. Elisha Mitchell Sci. Soc. 55: 384.

Holotypus: NCU — Coker 10907, Coweeta Exp. Forest, N. C.; lectotypus; NY — ex Coker 10907.

Macroscopic: Fruiting bodies up to 2.5 cm high, slender, dichotomously branched in one or two ranks, branch apices acute; color now dull dark ochraceous to dull brown. Nakedly inserted in soil with *Pogonatum brevicaulis* protonemata. Microscopic: Contextual hyphae strictly parallel, very consistent in width, thin- to very slightly thick-walled, long-celled, clamped throughout, hyaline, $1-2.5 \mu$ thick, not agglutinated. Subhymenial hyphae tortuous, clamped, hyaline, tightly packed, generally parallel with contextuales, producing basidia as side branches, then as a thickening hymenium. Basidia arising as bulbous hyphal tips, elongating to clavate shapes, $20-35 \times 5-8 \mu$, hyaline, slightly attenuate at the base, basally clamped, 4-sterigmate; sterigmata up to 7μ long, slender, spindly, slightly incurved.

Spores smooth, hyaline, thin-walled, ovoid to ellipsoid, densely granular in content, with a distinct, but not large lateral apiculus. Dimensions: $10-13 \times 4.5-5.7 \mu$.

Corner (1950) accepted this as *Clavulinopsis pogonati* (Coker) Corner, but Petersen (1966 b) transferred it as *Multiclavula pogonati* (Coker) Pet.

Clavulinopsis septentrionalis Corner. 1956. Friesia 5: 218—220.

Holotypus: CGE — Herb. Corner, Sweden.

Macroscopic: Fruiting bodies less than 1 cm high, simple to lobate to sublacerate, clavate, apices rounded to slightly expanded, stem portion subcartilaginous. Color of stem portion now dull orange, hymenial portion now yellow-orange to yellow ochraceous orange. Inserted in soil with moss (?) cover. Microscopic: Contextual hyphae slightly inflated, $3.5-15 \mu$ thick, thin- to slightly thin-walled, hyaline, interweaving, clamped throughout with small, inconspicuous clamps. Subhymenial hyphae narrow, $1.5-2.5 \mu$ thick, thin-walled, tightly packed, hyaline, clamped. Basidia $15-20 \times 3.2-5 \mu$, hyaline, thin-walled, basally clamped, often branching from basal clamp to form thickening hymenium; arising from a subglobose to pear-shaped hyphal tip, elongating into clavate or subcylindrical shapes; 4-sterigmate (reported by Corner as 4—6), sterigmata short, thin, easily collapsed.

Spores elongate-ovoid to subcylindrical, sometimes slightly curved, aguttulate, smooth, thin-walled, with a small, indistinct lateral apiculus. Dimensions: $5.6-8.2 \times 2.1-3.5 \mu$.

Corner reports that the species bears supernumerary sterigmata on its basidia, but Petersen (1966 b) was unable to verify this. Petersen also transferred the species as *Multiclavula septentrionalis* (Corner) Pet.

Clavaria similis Boudier & Patouillard. 1888. J. de Bot. 2: 406. (non Peck, 1890).

Neotypus: FH — Herb. Patouillard, Montmorency, 1890.

Macroscopic: Fruiting body simple, single, 3 cm high, 2—3 mm thick. Color now neutral ochre in hymenial portion, slightly darker toward the base, pigmentation residing in the hymenium and subhymenium. Microscopic: Contextual hyphae hyaline, of two different widths; wider $6-8 \mu$ thick, thinner $3-4 \mu$ thick, all clamped throughout, generally parallel with abundant branching and anastomoses. Subhymenium and hymenium largely collapsed, basidia elongate-clavate, basally clamped.

Spores generally ovate, slightly thick-walled, uniguttulate, grossly angular to angular-warted, with a pronounced lateral apiculus up to 2.5μ long. Dimensions: $5.5-6.3 \times 4.5-5.3 \mu$.

There can be no doubt that this is what Corner (1950) and

Petersen (1966 a) have called *Clavulinopsis helvola*. It has been mistaken generally for *Clavaria inaequalis* Müll. ex Fr.

Clavaria similis Peck. 1890. Rept. N. Y. State Museum 43: 24. (non *C. similis* Boud. & Pat., see above).

Holotypus: NYS — herb. Peck, Plattsburgh, N. Y.

Macroscopic: Fruiting bodies solitary or connate toward the base, 1.5—3.5 cm high, all branched to some extent. Stem portion slender, 0.7—1.5 mm thick, usually connate with 2—4 other individuals, and then covered with a strigose-felty whitish mycelium which disappears into the substrate as a diffuse, small felt. Branches slender, 0.6—1 mm thick throughout, branching dichotomously, the axils acute (and then decurrent by a line) to lunate, the apices rounded to rounded-acute, but not attenuate. Color of branches now dull buffy yellowish, stem portion (especially where bruised) now dull buffy orange or slightly darker. Microscopic: Contextual hyphae hyaline under the microscope (pigmentation is resident in the hymenium and subhymenium), thin-walled, clamped throughout, of two different widths; wider 5—9 μ thick, narrower 1.5—2.3 μ thick; generally parallel in configuration. Basidia elongate-clavate, attenuate toward the base, basally clamped, generally homogenous in contents, 46—70 \times 5.7—7.0 μ , 4-sterigmate; sterigmata up to 9.5 μ long, slightly incurved, often divergent.

Spores subglobose, smooth, slightly thick-walled, aguttulate (in age ?), with a prominent conical apiculus. Dimensions: 5.9—7.1 \times 5.6—6.5 μ .

Because of the earlier homonym, Saccardo (1891) changed the name of the above to *Clavaria peckii* (non *C. peckii* Sacc. & Syd., 1905). Corner (1950) accepted it as synonymous with *Clavulinopsis corniculata* (Fr.) Corner, as did Petersen (1966 a). It comes closest to the *fastigiata* form of *C. corniculata*.

Clavulinopsis similis Corner. 1950. Ann. Bot. Mem. 1: 387—388.

Holotypus: CGE — Herb. Corner, Malaya.

Macroscopic: Fruiting bodies simple to branched in 1—3 ranks, slender, no more than 0.5 mm thick throughout, up to 3 cm high; stem portion long, up to 2 cm, slender. Color dull brown through poisoning process. Microscopic: Contextual hyphae, subhymenial hyphae and basidia all indistinguishable through poisoning. Contextual hyphae perhaps agglutinated, narrow, clamped throughout. Basidia 18—22 μ long (hymenial measurement), subcylindrical.

Spores smooth, ovate to ellipsoid, uniguttulate, thin-walled, hyaline, with a pronounced, abrupt lateral apiculus. Dimensions: 3.1—4.5 \times 2.3—3.1 μ .

I cannot distinguish between this and *Clavaria minutula* Bourd. & Galz., which also bears smooth small spores, and is exactly this stature and color. Corner (1950) states spore measurements as 4.5—5(—6)

$\times 2.5-3 \mu$, but I find only shorter spores. His spore measurements for *C. minutula* ($2.5-3 \times 2.5-3.8 \mu$) are not verifiable, because the type of *C. minutula* at P includes at least four spore types. Most probable are spores about $2.8-4.0 \mu$ in diameter, which would overlap my spore measurements for *C. similis*. I consider the species as synonymous with *Clavaria minutula* which Petersen (1966 c) has transferred as *Ramariopsis minutula* (Bourd. & Galz.) Pet.

Clavaria spathuliformis Bresadola. 1891. In Saccardo. Sylloge Fungorum 9: 250.

Neotypus: BPI — Leg. P. Hennings.

Macroscopic: Fruiting bodies very small, up to 1 cm high, about 0.7 mm thick, simple, scattered, inserted nakedly in soil, now longitudinally rugulose, subclavate to subspatulate. Color now dark dull ochraceous orange. Microscopic: Contextual hyphae thin-walled, slightly inflated, $7-9 \mu$ thick, tightly packed, longitudinally parallel, hyaline, totally without clamp connections. Subhymenial hyphae not observed. Basidia $13-20 \times 3-5 \mu$, hyaline, easily collapsed, homogeneous in contents, 4-sterigmate; sterigmata short, delicate, slender.

Spores broadly ovate to ellipsoid, smooth, thin-walled, aguttulate to obscurely uniguttulate, hyaline, with a distinct but small lateral apiculus. Dimensions: $5.2-9.1 \times 3.8-5.6 \mu$.

No holotype material of this species exists, so I am designating the above specimen as neotype. It represents a species of *Clavaria*, not *Clavulinopsis* as Corner (1950) states. It fulfills the description of *Clavaria tenuipes* sensu Corner almost exactly, but I have not seen type material of that species, and so synonymy cannot be accurately stated.

Clavulinopsis sulcata van Overeem. 1923. Bull. Jard. Bot. Buitenzorg Ser. III, 5: 279—280.

Neotypus: BO — Herb. van Overeem. Java Hortus Bogoriensis, no. 185.

Macroscopic: Fruiting bodies preserved in alcohol; simple, fasciculate in clusters of 6—8, 1—4 cm high, 5—7 mm thick, somewhat compressed transversely, longitudinally channelled or ridged, tips blunt to broadly obtuse, stem portions not markedly attenuate, 3—4 mm thick, tips becoming brownish in age. Color now watery dull ochre to pale ochraceous orange. Microscopic: Contextual hyphae generally longitudinally parallel, thin-walled to slightly thick-walled, especially toward the fruiting body base, clamped throughout, not inflated, but of two different widths, wider $4-7 \mu$ thick, narrower $2-3 \mu$ thick, all hyaline. Subhymenial hyphae tortuous, narrow, $1.5-3 \mu$ thick, clamped throughout, producing basidia in clusters or bouquets. Basidia $35-65 \times 4-7 \mu$, hyaline, basally clamped, elongate-clavate to clavate, 1—4-sterigmate; sterigmata of various lengths and placed in various positions on the

basidium, from sublongitudinally to coronately arranged. Sterile hymenial elements hyphal, paraphysoid, undifferentiated.

Spores subglobose to globose, uniguttulate, smooth, thin-walled, with a small, abrupt apiculus, hyaline. Dimensions: $4.5-7.5 \mu$ in diameter.

Corner (1950) stated this to be synonymous with *Clavaria miniata* Berk. & Curtis, and I agree. Because it was the basis for the monotypic genus *Clavulinopsis* van Overeem, the type of that genus remains *C. sulcata* van Over. however.

Clavaria umbrina Leveille. 1846, Ann. Sci. Nat. Ser. 3, 5: 155.

Lectotypus: FH — Herb. Patouillard 2077. No. 1311, ad terram, Tjikoya. In Java legit Zollinger, Scripfit Leveille.

Macroscopic: Fruiting body slender, dendritic, about 4 cm high. Stem portion about 3 mm thick, arising from a small mycelial mat on soil, about 1.5 cm high. Branches numerous, dense, slender, ascending, somewhat cartilaginous, 0.7—1.5 mm thick; apices blunt to rounded. Entire fruiting body now dark brown to dark fuscous brown. Microscopic: Contextual hyphae tightly packed, perhaps agglutinated, thin-walled, non-clamped, strictly parallel, pigmented pale brown microscopically. Hymenium now missing, totally collapsed; basidia probably thin-walled, small from remnants remaining.

Spores slightly pigmented (?), generally subglobose to broadly ellipsoid, grossly warted to angular-warted, so numerous as to obscure the outline of the spore body; with no distinguishable apiculus. Dimensions: $5.6-7.0 \times 4.2-4.6 \mu$ (not including spines).

The shape and probable pigmentation of the spores, the shape and habit of the fruiting body, and the structure of the context all indicate a member of the Thelephoraceae. Corner's disposition in *Clavulinopsis* cannot be correct based on the type specimen.

Clavaria umbrinella Saccardo. 1888. Syll. Fung. 6: 695.

Holotypus: K — (sub *Clavaria umbrina* Berk.), County Cork, 1859.

Macroscopic: Fruiting bodies now fragmented, branched, not more than 2 cm high; stem portion slightly attenuated, about 3 mm thick at point of primary branching; branches 0.5—2 mm thick, repeatedly branching dichotomously. Axils rounded to lunate, decurrent by a line. Stem portion felty tomentose at the base, now pale tan or pale buff; primary branches and branches now dark sordid umber. Microscopic: Contextual hyphae generally parallel, of different widths, the wider slightly inflated; clamped throughout, the clamp large and conspicuous. Basidia elongate-clavate, $55-90 \times 5-7 \mu$, hyaline; clamped at the base, often subgeniculate when young; 4-sterigmate, sterigmata up to 9μ long.

Spores globose to subglobose, smooth, slightly thick-walled, rarely uniguttulate (through age?), with a conspicuous, long, conical apiculus. Dimensions: $5.0-6.3 \times 4.8-5.6 \mu$.

Corner (1950) regarded this as a separate species of *Clavulinop-*

sis, and Petersen (1966a), while retaining the species epithet, placed *Clavulinopsis cineroides* in synonymy with it. The valid name was adopted by Saccardo because Berkeley's name was a later homonym of *C. umbrina* Leveille.

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