

Colombian and Costa Rican species of stipitate stereoid fungi

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Abstract. Fourteen taxa of stipitate stereoid fungi are known from Colombia, or Costa Rica, or both. This represents about 20% of the world's species and about 40% of the New World's species. These percentages seem too low since other taxa occur in adjacent or nearby regions. Intensive collecting by resident mycologists will undoubtedly increase these percentages. A review of the genera and species of these fungi and their general distribution is presented.

Key words: Stipitate stereoid fungi, Colombia, Costa Rica

To begin there are two interesting facts about the Stipitate Stereums: (1) they are not Stereums, and (2) they are not all stipitate. Their study reduces the student to such fundamental questions as: What is a stipe? Mycology suffers (if that is the word) from the same history as ecology; both were invented in the temperate zone or, as my major professor G.W. Martin called it, the intemperate zone. Mycology is further burdened (if that is the word) by beginning with agaricology. But we are not here to discuss history, morphology, or taxonomy, all amusing subjects, but to discuss distribution.

Most Stipitate Stereums are small, but not the smallest, carpomycetes. They do not have startling colors, or bizarre shapes. In point of fact they command almost but not quite the same level of attention as Little Brown Mushrooms. Once dried they are even less prepossessing. But they do sometimes occur in goodly numbers and that is what attracted me to them in Panamá in 1952. Rather than present photographs of more or less indistinguishable reddish brown, brownish yellow, black, fuzzy red, or dirty white basidiocarps, I show reproductions of colored ink drawings which more or less represent the real thing. Most rarely exceed 5 cm in length, although some may be spectacular.

Among the earlier investigators of these fungi were Burt (1920, 1924), Lloyd (1913), and Patouillard (1900) who laid much of the foundation upon which present day studies are based.

A word about interrelationships. Except for *Podoscypha* and *Cymatoderma*, none are closely related and each possibly represents a different phylogenetic line.

DISCUSSION

Aquascypha Reid (Fig. 1) is trimitic and xanthocroic but has clamp-connections. Its species grow on wood and have inanyloid spores.

There are two species in the genus, both of which occur in Colombia but are unreported from Costa Rica. *Aquascypha hydrophora* (Berk.) Reid appears to grow only in northern South America, including Panamá. The sessile pileate, *A. vibrans* (Berk. & Curt.) Welden, is also known to occur in Guatemala, Cuba, and Hainan, China (Reid 1965; Welden 1967).

Coralloderma Reid (Fig. 2) is monomitic and produces a purple brown to blackish hyphal incrusting pigment giving the flesh a blackish

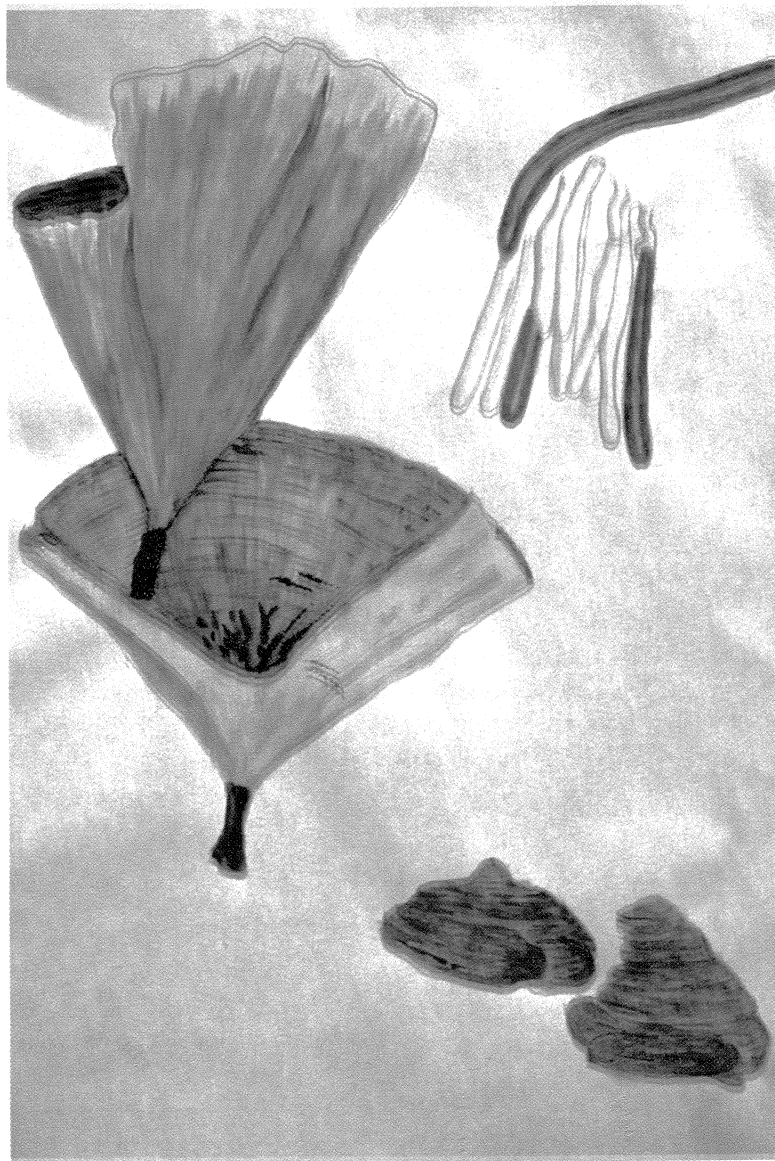


Fig. 1. *Aquascypha*. Note about this and following figures: all values refer to observation magnifications (i.e. before reduction by the printer). Basidiocarp ca. 1x; Hyphae ca. 1000x.

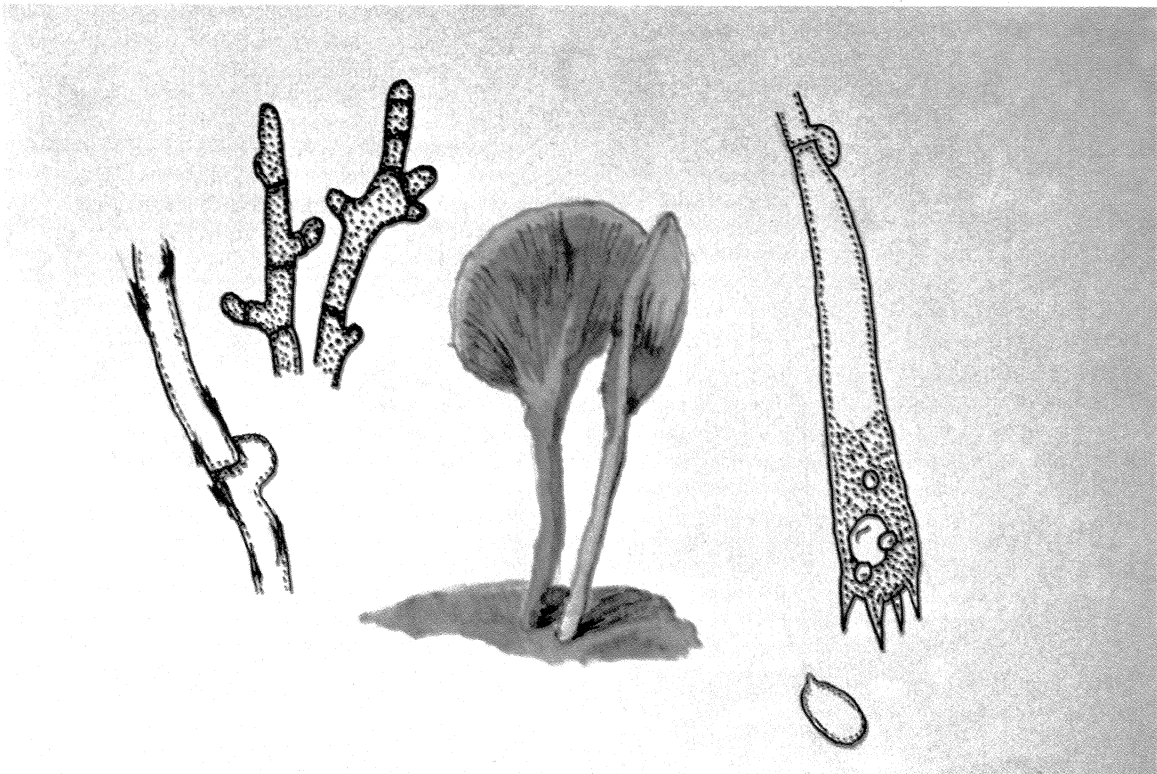


Fig. 2. *Coralloderma*. Basidiocarp ca. 2x ; Hyphae ca. 2500x ; Basidium ca. 2000x ; Spore ca. 1200x

color. The hyphae may be clamped or not, and the cutis is composed of sometimes agglutinated coralloid hyphae. The spores are inamyloid and its species grow on wood or soil.

None of the three species has been reported from Colombia or Costa Rica. One species occurs in southeastern Asia, a second, *C. guzmanii* Welden has been recently described from Mexico. A possible third species was collected from bamboo by E. J. H. Corner in Trinidad but was too fragmented to name. It will probably be found again (Reid 1965; Welden 1993).

Cotylidia Karst. (Fig. 3) is monomitic, usually pale yellow and papery in texture. There are no clamp connections and some species have large leptocystidia. The spores are inamyloid and the species grow on wood or soil.

There are nine species and the genus is principally temperate in distribution. Two species, *C. aurantiaca* (Pers.) Welden found in the lowlands and *C. cyphelloides* (Berk. & Curt.) Welden in the highlands, are neotropical. *Cotylidia aurantiaca* grows in Costa Rica and *C. cyphelloides* in Colombia, although it is quite likely that each occurs in both countries. *Cotylidia aurantiaca* has also been reported from Samoa and South Africa. As an aside it should be mentioned that Reid considers *C. cyphelloides* a member of *Cyphellostereum* Reid, as *C. pusiolum* (Berk. & Curt) Reid (Reid 1965; Welden 1958; Welden Davalos & Guzmán 1979).

Cymatoderma Jungh. (Fig. 4) is dimitic with skeletal and has a tendency toward trimity. Clamps and prominent gloeocystidia staining uniformly with phloxine are present. Some species produce metuloids as well. The spores are inamyloid and all species occur either on wood or from buried sclerotia.

There are ten species. To date only *C. dendriticum* (Pers.) Reid, a pantropical species, and *C. caperatum* (Berk. & Mont.) Reid, a tropical and warm temperate New World species, are known from both Costa Rica and Colombia. Recently Luis Diego Gómez sent me a specimen of *C. africanum* Boidin from Costa Rica. It is about 30 cm tall and the pileus is about 20 cm wide. The dark tomentose stipe and large undulate pileus develop from an underground sclerotium about the size of a baseball. It is a spectacular fungus. This is the first report from the New World and demonstrates, as do some other species, a connection with Africa. *Cymatoderma*

sclerotioides (Lloyd) Reid, found in nearby Panamá, is similar to *C. africanum* in that it too arises from a sclerotium but the structure of its sclerotium is different (Boidin 1960, 1961; Reid 1965; Welden 1960; Welden & Guzmán 1978; Welden, Davalos & Guzmán 1979).

Dichopleuropus Reid (Fig. 5) is dimitic with dextrinoid hyphae that are dichophyses. There are no clamps, and the gloeocystidia have abundant oil-like material or bacilliform rods but do not react to sulfobenzaldehyde. The spores are inamyloid or faintly amyloid and the species is terrestrial. It may be confused with *Dicantharellus* Corner which differs in the distribution of dichophyses within the basidiocarp among others (Corner 1965, 1968; Reid 1965; Welden 1993).

The only species, *D. spathuloides* Reid, poses a puzzle in mycogeography. Until last year it was known only from Malaysia and Florida. Recently E. J. H. Corner sent me a collection from Brazil, which indicates that it is only a matter of time before it is discovered in Colombia.

Inflatostereum Reid (Fig. 6) which may be synonymous with *Trogia* (Corner 1968), is monomitic or dimitic with skeletal toward the base of the basidiocarp in some species. Clamps are present and some generative hyphae are markedly inflated with secondary, unclamped septa. The spores are inamyloid, and the two species grow on wood.

One of the species is neotropical, the other paleotropical. Neither is reported from Costa Rica or Colombia (Reid 1965; Corner 1968).

Podoscypha Pat. is dimitic with skeletal and has a tendency toward trimity. In all microscopic features: clamps, uniformly staining gloeocystidia, metuloids in some species, and inamyloid spores, *Podoscypha* is identical with *Cymatoderma*. They differ mainly in such superficial features as size and sometimes color. The adhymental surface in *Cymatoderma* is often folded while that of *Podoscypha* is almost always smooth. The two may well be treated as congeneric. Unfortunately *Cymatoderma* is the older name and *Podoscypha* is the larger genus.

There are about 37 species of *Podoscypha*. Six of these have been reported from Costa Rica and Colombia. It is a tropical genus with only a few presumably exclusively temperate species, one in Europe and two or three in North America. Eleven species are in the Paleotropics; the remaining 18

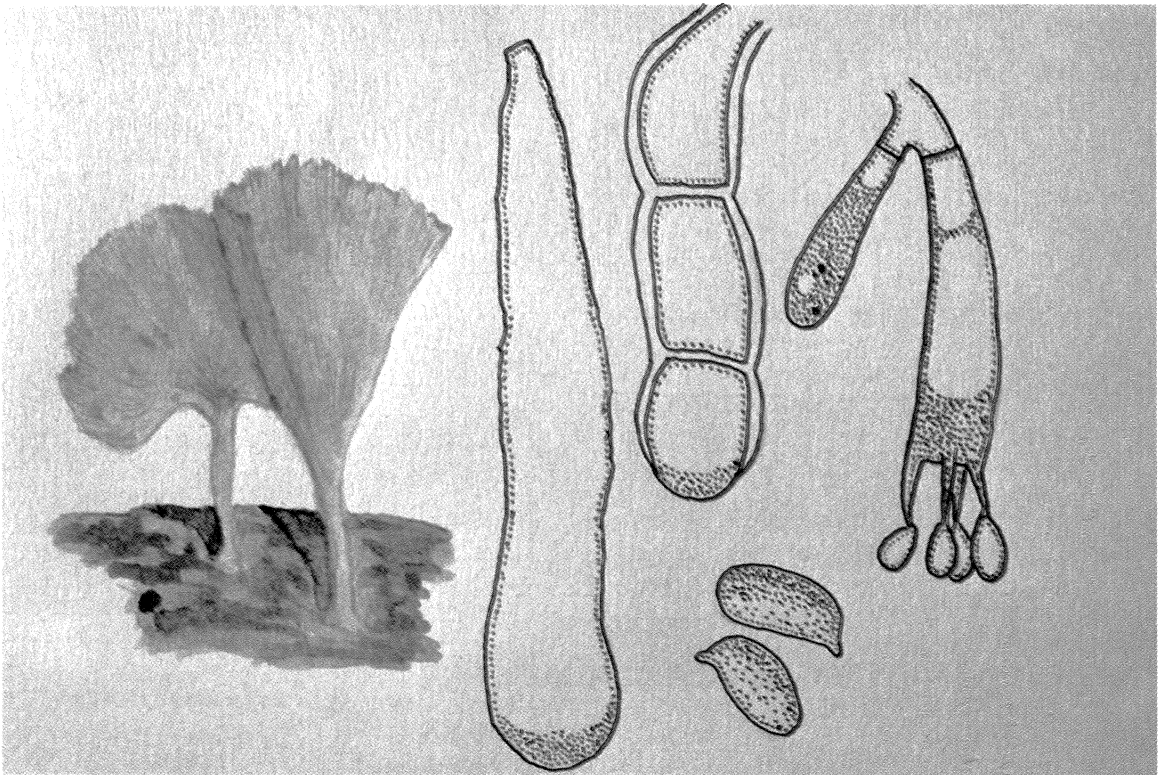


Fig. 3. Cotylidia.. Basidiocarp ca. 2x; Cystidium ca. 1500x; Basidium ca. 2000x; Spores ca. 2500x

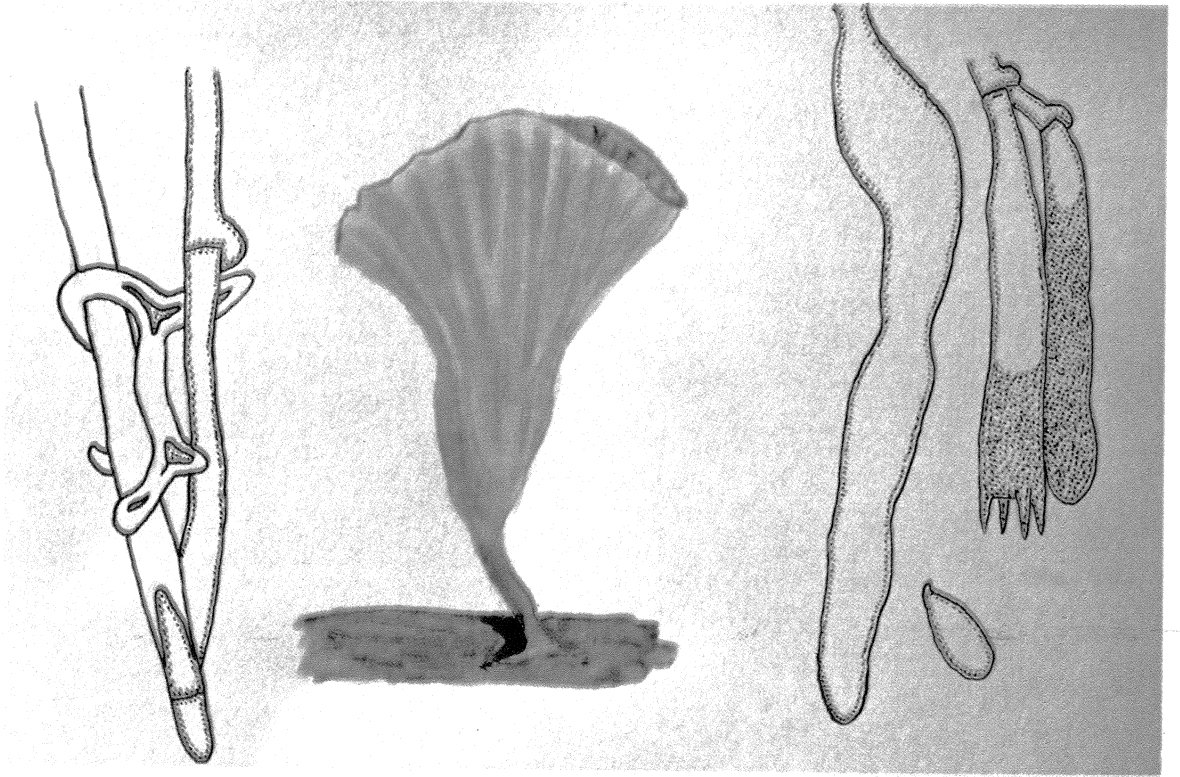


Fig. 4. *Cymatoderma*. Basidiocarp ca. 2x ; Hyphae ca. 1000x; Basidium ca. 1000x ; Spore ca.1500x

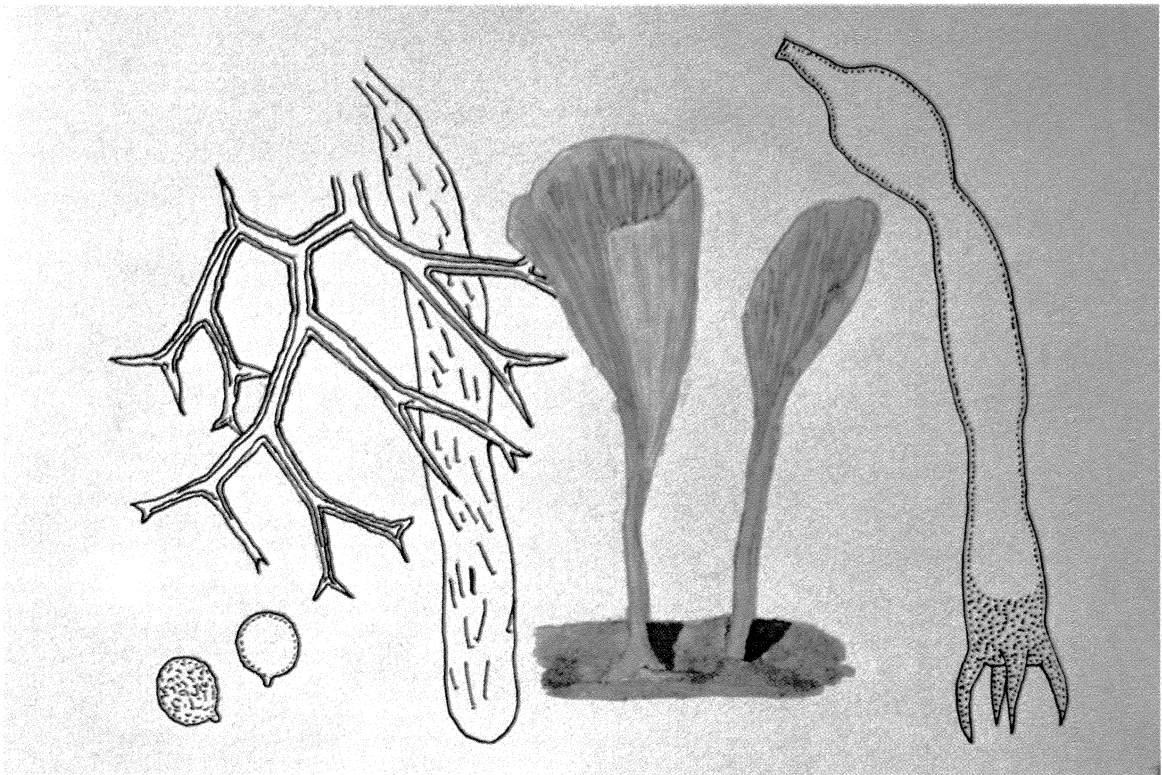


Fig. 5. *Dichopleuropus*. Basidiocarp ca. 3x ; Gleocystidium ca. 1000x ; Basidium ca. 1500x ; Spores ca. 1000x

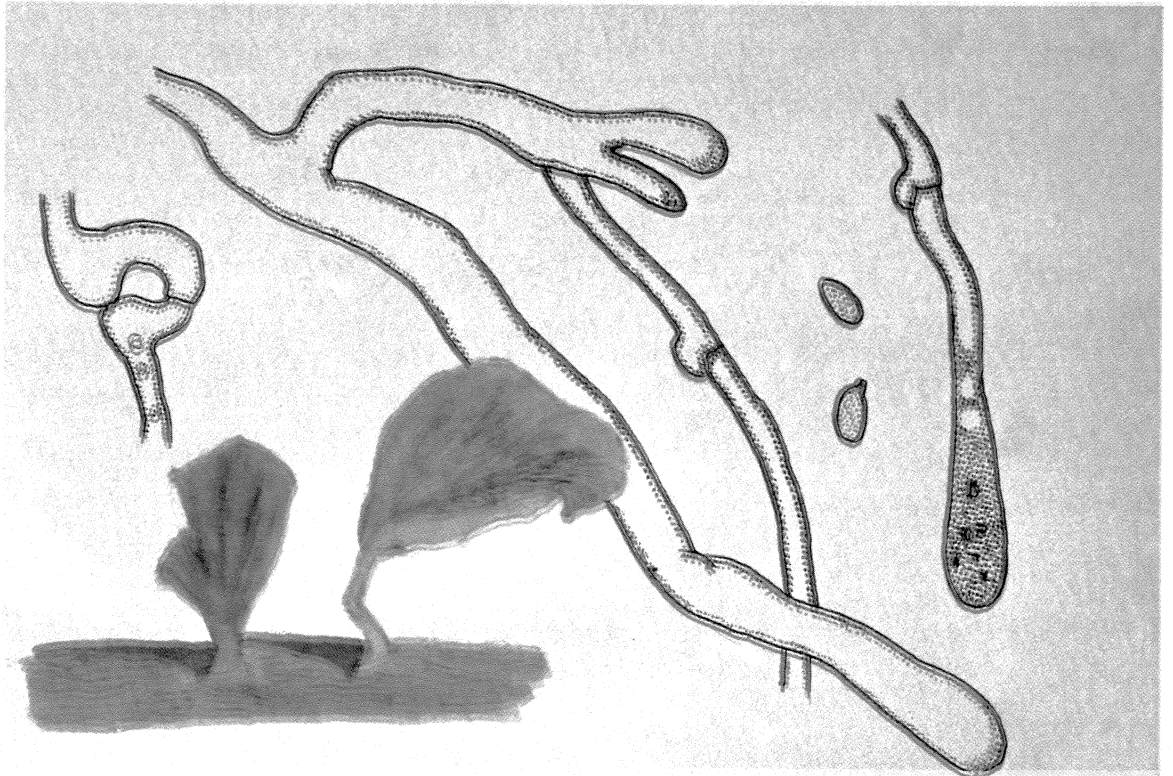


Fig. 6. *Inflatostereum* (*Trogia* ?). Basidiocarp ca. 2x ; wide Hyphae ca. 500x ; narrow Hyphae ca. 1000x ; Basidium ca. 2000x ; Spores ca. 2000x

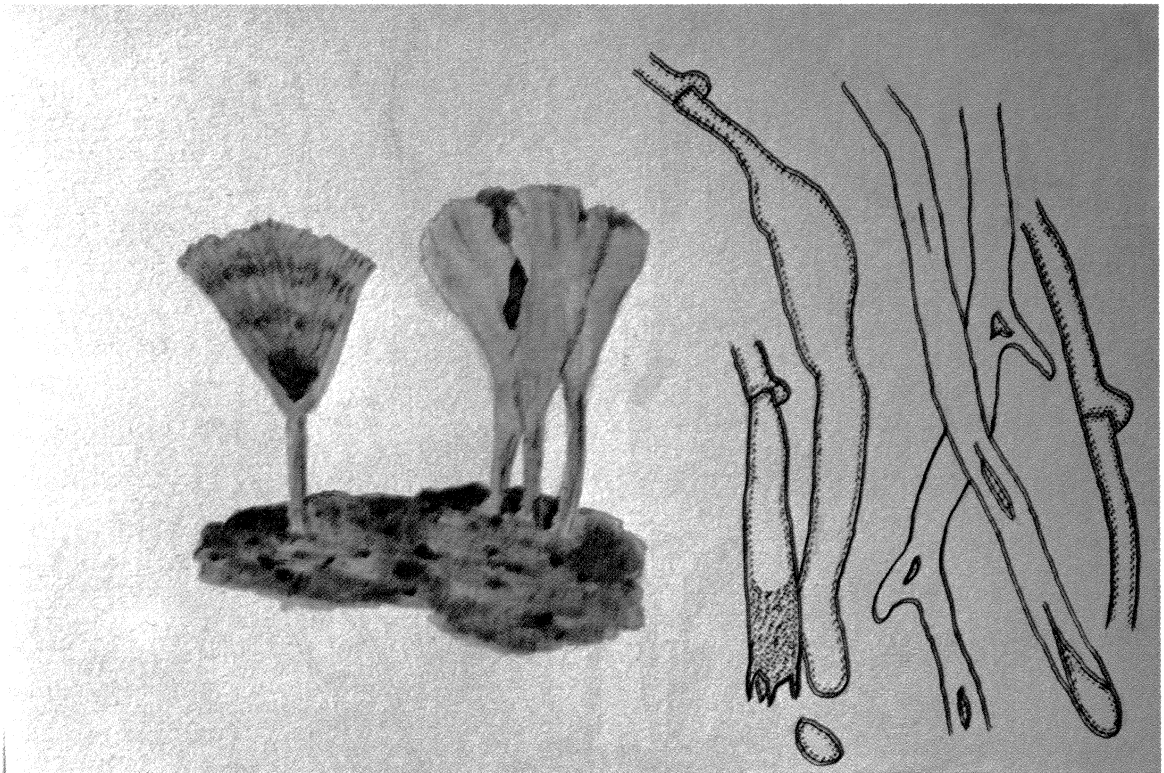


Fig. 7. *Podoscypha*. Basidiocarp ca. 2x ; Hyphae ca. 1000x ; Basidium ca. 2000x ; Spore ca. 2000x

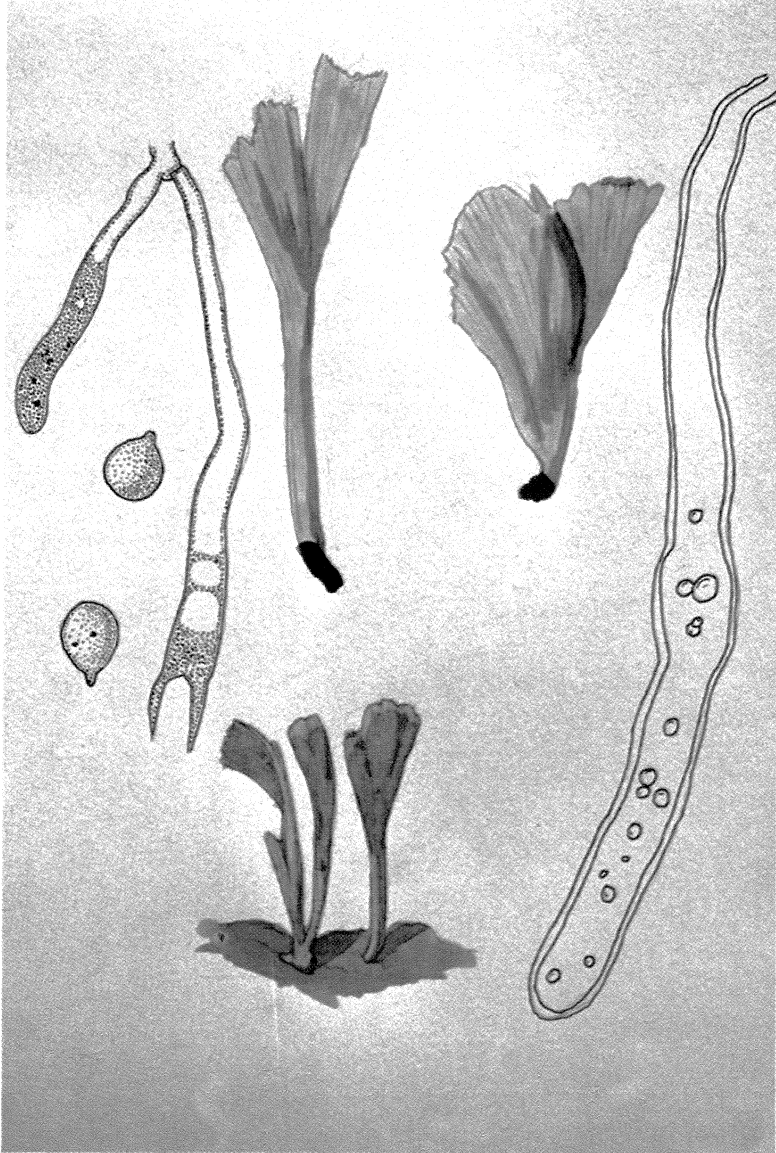


Fig. 8. *Stereopsis*. Basidiocarp ca. 2x ; Gloeocystidium ca. 1000x ; Basidium ca. 2000x ; Spores ca. 2000x

are known from regions adjacent to either Colombia or Costa Rica. I expect the number to increase significantly in the coming years. On hand are a number of collections made from Costa Rica by Clark Ovrebo and from Colombia made by Kent Dumont and others. Several of these appear to be additions to not only the flora of Colombia and Costa Rica but to the Western Hemisphere as well (Reid 1965; Welden & Guzmán 1978; Welden Davalos & Guzmán 1979).

Stereopsis Reid is monomitic with or without clamps. When fresh the basidiocarp is whitish and changes to a dark purplish brown when handled. Some are clavarioid at maturity, others stereoid. The gloecystidia, which are present in some species, are poorly developed. The spores are inamyloid and growth is on wood or soil.

Ten of the 12 taxa are tropical, seven paleotropical and three neotropical. Of the neotropical species, two, *S. hiscens* (Berk. & Rav.) Reid is in Costa Rica and *S. radicans* (Berk.) Reid is in Colombia and Costa Rica (Reid 1965; Welden 1966).

There are 8 genera and 72 species of stipitate stereoid fungi world-wide. Only 15 of these, or about 20%, are known to occur in Colombia or Costa Rica, or both. Yet, 37 species or 51% of this world mycoflora occurs in the New World. Of these about 40% occur in these two countries. Considering that most of the other New World taxa are known from adjacent or nearby regions, e.g. Brazil, Mexico, Panamá, Venezuela, these percentages appear too low. We can conclude, with some confidence, that Costa Rica and Colombia are mycologically rich countries. We would expect this to be the case, since both have not only a varied topography with mountains running north-south, posing no barrier to dispersal, and a rich vascular plant flora, but also occupy a cross-roads connecting two large land masses. What is needed, as we all know, is more intensive collecting. This can only be done by trained resident mycologists, who need much support in this endeavor. Visiting firemen cannot do the job. It is a lot of fun being a visitor but, after all, at best it is a hit-and-mostly miss proposition. I also venture to add that with the present trends in education and support, at least in my own country, the future of tropical

field mycology will be in the hands of those residents in the tropics for some time to come

RESUMEN

Catorce táxones de hongos estereoides estipitados han sido comunicados para Costa Rica o Colombia. Esta cantidad representa solo un 20% de las especies conocidas mundialmente y alrededor de un 40% de las especies comunicadas hasta el momento para el Nuevo Mundo. Este porcentaje parece ser muy bajo, ya que otros táxones han sido comunicados en regiones cercanas; sin embargo, es posible que si los micólogos locales intensifican las recolecciones, tales porcentajes aumentarán significativamente. En este trabajo se presenta una revisión de los géneros y especies comunicadas así como su distribución general.

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