A COPRINUS FROM WHITE ROT OF SUGAR MAPLE

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ABSTRACT. A description of a species of *Coprinus*, related to *Coprinus exstinctorius* Fries is given; the fungus was originally isolated from a white rot of sugar maple.

INTRODUCTION

A culture of an unknown *Coprinus* was sent to Edinburgh from the Forest Disease Laboratory in Laurel, Maryland, U.S.A., to see if fruiting could be induced and the fruit-bodies matched with known European species. The culture was originally isolated by Dr Fred Barry from the butt of a sugar maple (*Acer saccharum* Marsh.) in Jackson Co., Illinois.

The culture was inoculated onto a paper pulp substrate which is described below. Ten days after inoculation primordia formed and subsequently developed to maturity. At first the fruiting bodies were thought to be similar to *Coprinus exstinctorius* Fries which grows on wood. Comparisons were made with specimens found near Edinburgh growing from wound tissue on an old oak (hybridised *Quercus petraea* (Mattuschka) Lieblein). It was apparent that the new isolate was not *Coprinus exstinctorius* and, as far as can be ascertained, is an undescribed species of *Coprinus*. We hesitate to describe this fungus formally as new because the only fruit-bodies studied were the ones obtained under artificial conditions. It is our hope that the species may be recognized from our description and collected in its natural habitat.

METHODS

The use of paper pulp is based on a method originally described by Watling (1963). Paper pulp** is shredded in warm water and macerated until it forms a loose mass. The pulp is then partially squeezed dry and a pad about 10 cm in depth placed in a wide-mouth bottle. The agar is covered with 2% malt extract agar prepared from actual malt extract and sterilized at 20 lbs pressure for 15 minutes. Sufficient agar is added to form a 10–20 mm layer at the bottom of the bottle and a thin coat over the paper pulp. The alveolate nature of the substrate so formed presents a larger aerated surface for fungal colonization than normally met with when using a Petri dish or agar slant. On cooling after sterilization the bottles contain a system of pockets of air, liquid and nutrient media which vary in composition from one place to another within the system. It is believed that it is this mosaic of microenvironments which favours fructification.

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** Ford paper pulp blocks were initially used when the method was originally described. The supply of this paper pulp is no longer available. A substitute supply of Eucalyptus pulp, a pulp which is frequently used in British pulp mills, has been located and has equal potential.

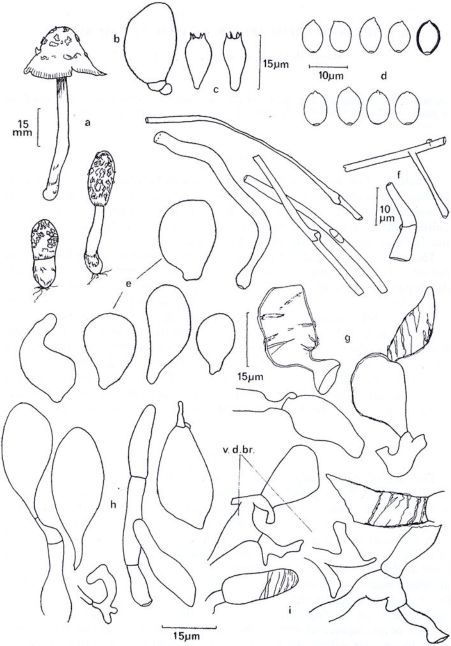

FIG. 1. *Coprinus* sp.: a, habit sketch; b, brachycystidium; c, basidia; d, basidiospores; e, cheilocystidia; f, glassy oleiferous hyphae from gill-trama; g, thin-walled hyphae of veil with clamp connections; h, thick-walled, ornamented and inflated cells of veil; i, cells of veil with very dark brown contents (v.d.br.). Magnification as indicated.

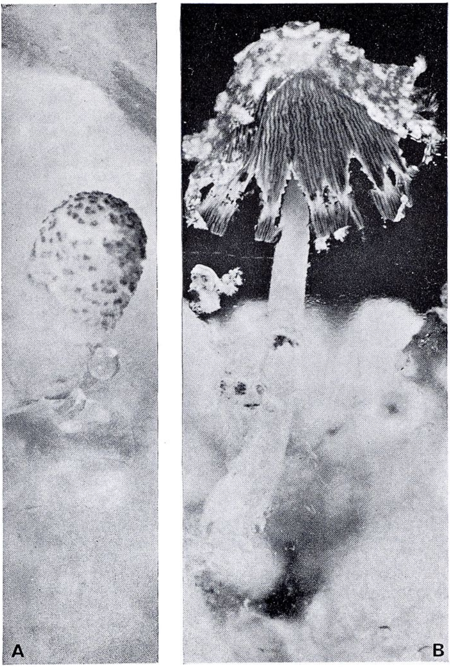

PLATE 12. *Coprinus* sp.: A, young button (primordium); B, fully expanded 3 day old fruiting body.

DESCRIPTION

Coprinus sp.

Pileus 7–16 mm broad, up to 16 mm high, ellipsoid, base expanding to become campanulate to convex with an irregular margin (Fig. 1, a), purplish-brown at disc, paler towards the margin with a whitish zone at the junction of stipe and pileus in the primordium (plate 12, A), the surface gradually splits into large, floccose, purple-brown scales with white or pale buff areas between the scales, retaining the dark purplish brown to purplish date-colour at the centre, margin paler and less strongly split in age (plate 12, B) with a few scattered floccules from the veil, disc in age covered with a concentric pattern of scales resembling *Leucocoprinus brebissonii* (Godey) Locquin; individual scales have white floccules towards their margin. *Lamellae* nearly free, thick, sometimes forked, whitish-grey to purplish-brown in age. Stipe 15–20 mm long, 1–1·5 mm thick, enlarging somewhat toward base, white with a flush of purple at the base in the form of a reticulum of purplish-brown floccules and fibrils. *Veil* white, fibrous on very young buttons but not leaving an annulus. *Flesh* white, soft; taste and smell not distinctive.

Basidiospores 7·5–9·5 × 6–7 × 5·5–6 μm, broadly elliptical to slightly ovate in face view, flattened to elliptical in side view, thick-walled, truncate because of a large germ-pore (Fig. 1, d), dark-brown to blackish in deposit. *Basidia* 11–13 (–16·5) μm broad, clavate, 4-spored, thin-walled, with a distinct or obscure pedicel (Fig. 1, c), slightly coloured in NH_4OH, among numerous, thin-walled, vesciculose (15–18 μm diam.) brachycystidia (Fig. 1, b). *Pleurocystidia* 30–75 × 7–22 μm, cylindric, narrowly clavate, to clavate-capitate, thin-walled, hyaline, soon collapsing; *cheilocystidia* similar or more pyriform (Fig. 1, e). *Pileus cuticle* covered with veil elements (Figs. 1, g-i), composed of flexuous, inflated cells 12–16·5 μm diam., thin-walled, smooth and hyaline intermixed with cells which are covered with brownish spirals or have dark brown, smooth walls and clamp-connections. *Cuticle* of loosely, interwoven, filamentous, thin-walled hyphae 1–3 μm in diam. *Trama of pileus* of interwoven hyphae 12–22 (–32) μm in diameter with scattered circular to pyriform cells giving way to large inflated cells near the centre of trama; scattered oleiferous cells and clamp connections present. *Gill-trama* similar to pileus trama (Fig. 1, f).

Autodigestion of the lamellae is very slow. Dr Fred Barry isolated the fungus from a logging wound on sugar maple (*Acer saccharum*) 30 cm above ground level. The decay column associated with the wound was hollow but the sample came from discoloured wetwood.

Material examined. Illinois: *Fred Barry* CS 66-113-1-A.

REFERENCE

WATLING, R. (1963). Germination of basidiospores and production of fructifications of members of the agaric family Bolbitiaceae using herbarium material. *Nature* 197, No. 4868, 266–267.