

Nephlyctis elegans (Schroet.) Arthur nom. nov.

Puccinia elegans Schroet., Hennings in Hedw. 35:238, 1896.
On *Stenolobium Stans* (L.) Don (*Tecoma Stans* Juss.), Argentine, Brazil.

Nephlyctis transformans (E. & E.) Arthur nom. nov.

Puccinia transformans E. & E., Erythea 5:6, 1897; *Puccinia exitiosa* Syd. & Holw., Sydow Monog. Ured. 1:245, 1902.
On *Stenolobium Stans* (L.) Don, Lower California, Mex., Cuba, Bahama Islands. On *Stenolobium molle* (H. B. K.) Seem. (*Tecoma mollis* H. B. K.) Mexico.

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THE GENUS CORTINARIUS WITH KEY TO THE SPECIES.

BY C. H. KAUFFMAN.

The editor of the JOURNAL has asked me to furnish an account of the genus *Cortinarius* with Key to the species. What follows is given in response to this invitation. I desire to call attention to what was published in the *Bulletin of the Torrey Botanical Club*, based mainly on my study of the species found at Ithaca, N. Y. The cuts prepared for the illustration there have been kindly loaned for use here.

I quote from the same article the following:

"It is absolutely useless to pick up an old, dried specimen of *Cortinarius*, and ask any one to recognize it. Once in a while some easily known plant may be recognized in that way, but in the majority of cases old plants of different species look so much alike that it is mere guessing to say anything about them. The first thing to remember is that young, unexpanded plants must be examined as well as mature ones. Next a careful description must be made, *with special reference to the difference in the color of the gills in the young and old plants*. Then a similar comparison of the color of pileus and stem; and then a search for an annulus or universal veil, and its character. Finally, a careful test of the pileus and stem for gluten or viscosity. (One must remember that old, dry plants may lose this character.) These points are absolutely essential. In addition to the above, the following characters are often useful: the shape of the pileus; the size of the parts; the smoothness of the surface of pileus and stem; the character of the edge of the gills; the nature of the bulbous base of the stem; the appearance of the flesh. In fact, the notes can-

not be too full, *provided they contain the essential facts mentioned first.*" (*Bulletin of the Torrey Botanical Club.*)

THE KEY.

The key which is here presented is a revision, with many additions, of the key printed in the Bulletin of the Torrey Botanical Club, June, 1905. It is based on the study of fresh plants; but there have been added a few which the writer has not seen, but which have characters so easily recognized, and so different from others, that they were thought worthy of inclusion. This key, like its predecessor, necessarily has many shortcomings. As long as we are not sure what American plants are really identical with European ones, and so long as good figures or photographs of the species described for North America, are lacking, we are easily able to mistake the meanings of the descriptions, which are often of the very briefest. Hence this list is merely offered as a slight forward step towards opening up for amateurs the study of this interesting genus.

Six species, which the writer believes to be undescribed, have been included, although their descriptions have not yet been published. All of them have been collected or been received from various places more than once, and by inserting them in the key, we may be able to help those who continue to come across them. It is hoped soon to publish descriptions of them elsewhere.

It is to be noted that the key has been built largely on the size of the spores. This will necessitate, it is hoped, the study of the plant under the microscope, and so initiate the beginner at once into the proper study of these fungi. We know that two different species of mushrooms have again and again been placed under one name because of similar external appearances, when an examination of the spores would have shown a difference of as much as 8 microns in some cases. In deciding on the size of spores, the measurement of mature spores only should be taken, which may be recognized by the dark wall or the roughness of the exospore; even in plants with yellowish spores a difference between young and mature spores can be made out.

KEY TO THE COMMON SPECIES OF *CORTINARIUS* OF EASTERN NORTH AMERICA.

- A. Pileus with a gelatinous cuticle, more or less viscid or glutinous when moist, as is also the stem in some species. [Myxacium and Phlegmacium.]
- a. Pileus coarsely corrugate.....*C. corrugatus* Pk.

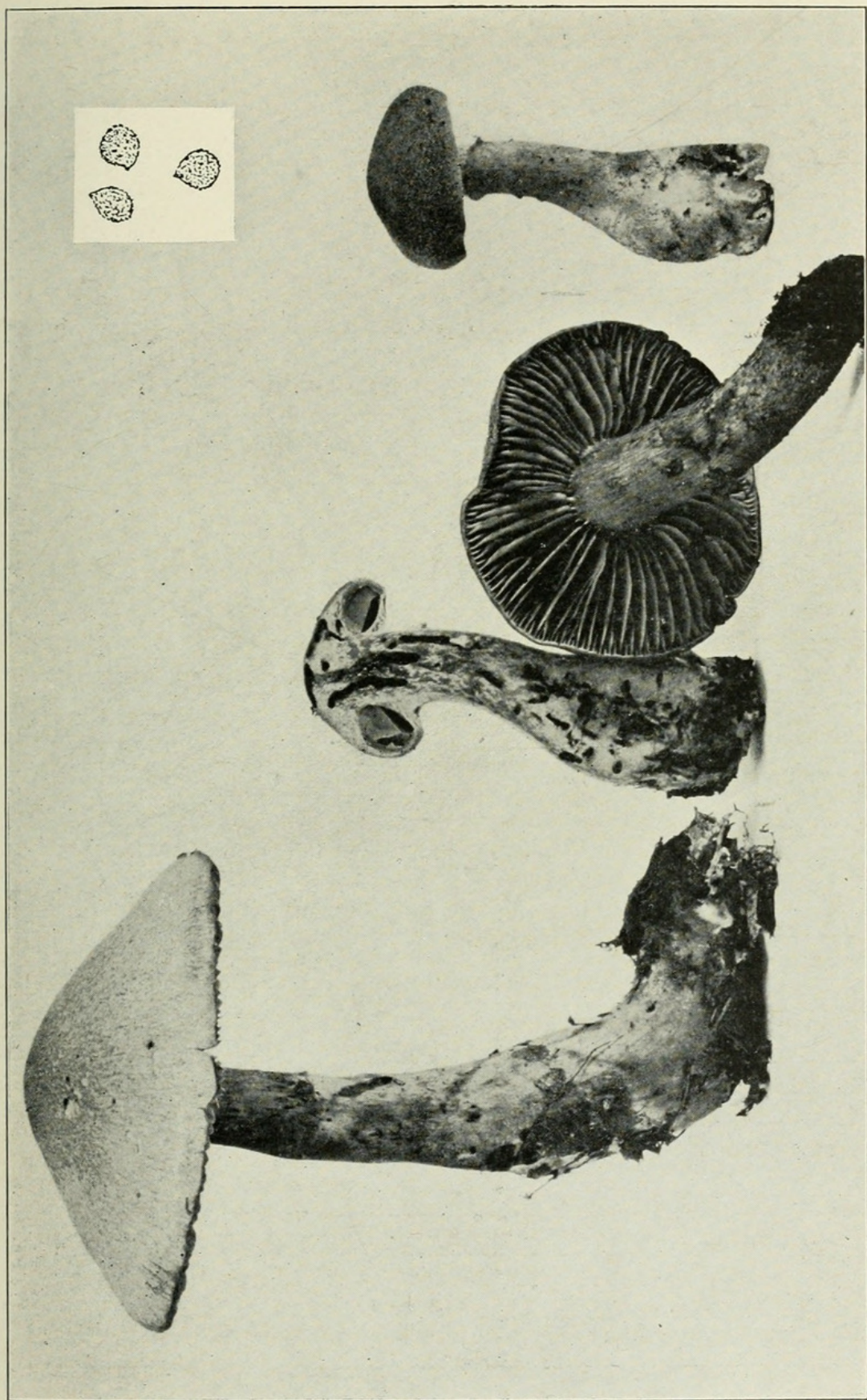
- aa. Pileus not coarsely corrugate
 - b. Surface of pileus or flesh distinctly bitter
 - c. Pileus yellow
 - d. Glutinous when young, very bitter; stem white.
C. amarus Pk.
C. vibratilis Fr.
 - dd. Not glutinous; stem and gills citron yellow;
flesh rather bitter; spores $14-17 \times 7-9\mu$
C. turbinoides sp. nov.
 - cc. Pileus dark olivaceous to fuliginous, surface bitter*C. infractus* Fr.
 - bb. Taste not distinctly bitter
 - c. Spores large, $9-16\mu$ long
 - d. Stem short, subequal or marginate-bulbous; spores $9-12\mu$ long.
 - e. Pileus heliotrope-purple; gills close, narrow and concolor; plant medium size...*C. heliotropicus* Pk.
 - ee. Pileus some shade of yellow or greenish
 - f. Gills whitish at first; pileus tinged greenish; stem not bulbous*C. olivaceo-stramineus* Kauff.
 - ff. Gills yellow to yellowish at first; stem marginate-bulbous
 - g. Bulb top-shaped; gills entire; flesh white..*C. turbinatus* Fr.
 - gg. Bulb truncate below; gills eroded, flesh yellow; whole plant citron-yellow*C. sulfurinus* Quel.
 - eee. Pileus whitish, no greenish tinge
 - f. Stem marginate-bulbous; plant whitish throughout
C. albidus Pk.
 - ff. Stem equal or subequal; pileus whitish or tinged red,
C. communis Pk.
 - dd. Stem long and bulbous; gills and stem violaceous at first
 - e. Spores $10-12.5\mu$ long; pileus pale brown; on sphagnum*C. sphagnophilus* Pk.
 - ee. Spores $13-16\mu$ long; pileus yellow; in woods....
C. Atkinsonianus Kauff.
 - ddd. Stem not bulbous, long and cylindrical, plant more or less glutinous
 - e. Stem with evanescent, patch-like scales
 - f. Gills pallid at first.....*C. elatior pallidifolius* Pk.
 - ff. Gills violaceous at first.....*C. cylindripes* Kauff.
 - ee. Stem with broken, concentric rings of floccose scales, usually somewhat narrowed at base.....*C. collinitus* Fr.
 - cc. Spores smaller, $6-9\mu$ long
 - d. Pileus olivaceous; stem bulbous

- e. Universal veil present; spores $8-9\mu$ long.....
C. olivaceodes sp. nov.
- ee. No remains of a universal veil; spores $6-7\mu$ long....
C. olivaceus Pk.
- dd. *Pileus violaceous or purple, or at least tinged violaceous*
- e. Pileus glutinous when young and moist
 - f. Stem marginate-bulbous; gills very narrow and crowded; whole plant violaceous, large
C. Michiganensis sp. nov.
 - ff. Stem subequal or clavate; gills subdistant, adnate; whole plant violaceous-purple, medium size.....
C. iodes B. & C.
- ee. Pileus not glutinous
 - f. Flesh and gills turning purple when bruised.....
C. purpurascens Fr.
 - ff. Flesh not turning purple
 - g. Stem marginate-bulbous; pileus yellowish or brownish, tinged violaceous; medium size.....
C. coerulescens Fr.
 - gg. Stem not marginate-bulbous
 - h. Pileus yellow; gills violaceous to cinnamon; stem white with violaceous apex.....
C. Berlesianus Sacc. & Cub.
(Syn. = *C. tricolor* Pk.)
 - hh. Pileus and gills lilac; plant small.....
C. croceo-coerulius (Pers.) Fr.
 - ddd. *Pileus with neither olivaceous nor violaceous tints (except the first)*
- e. Pileus glutinous
 - f. Gills olivaceous; pileus brownish-ochraceous.....
C. glutinosus Pk.
 - ff. Gills whitish at first
 - g. Pileus bay-red.....*C. maculipes* Pk.
 - gg. Pileus pale ochraceous, spores globose
C. spherosporus Pk.
 - fff. Gills violaceous at first, spores as in preceding
C. delibutus Fr.
- ee. Pileus not glutinous
 - f. Stem marginate-bulbous
 - g. Gills at first whitish.....*C. multiformis* Fr.
 - gg. Gills at first blue.....*C. glaucopus* Fr.
 - ggg. Gills at first yellow...*C. fulgens* (Alb. & Schw.)
 - ff. Stem not marginate-bulbous, clavate to subequal
 - g. Gills and stem pallid at first, soon tinged brown
 - h. Pileus watery-cinnamon to brick-red on disk; in woods*C. glabrellus* sp. nov.

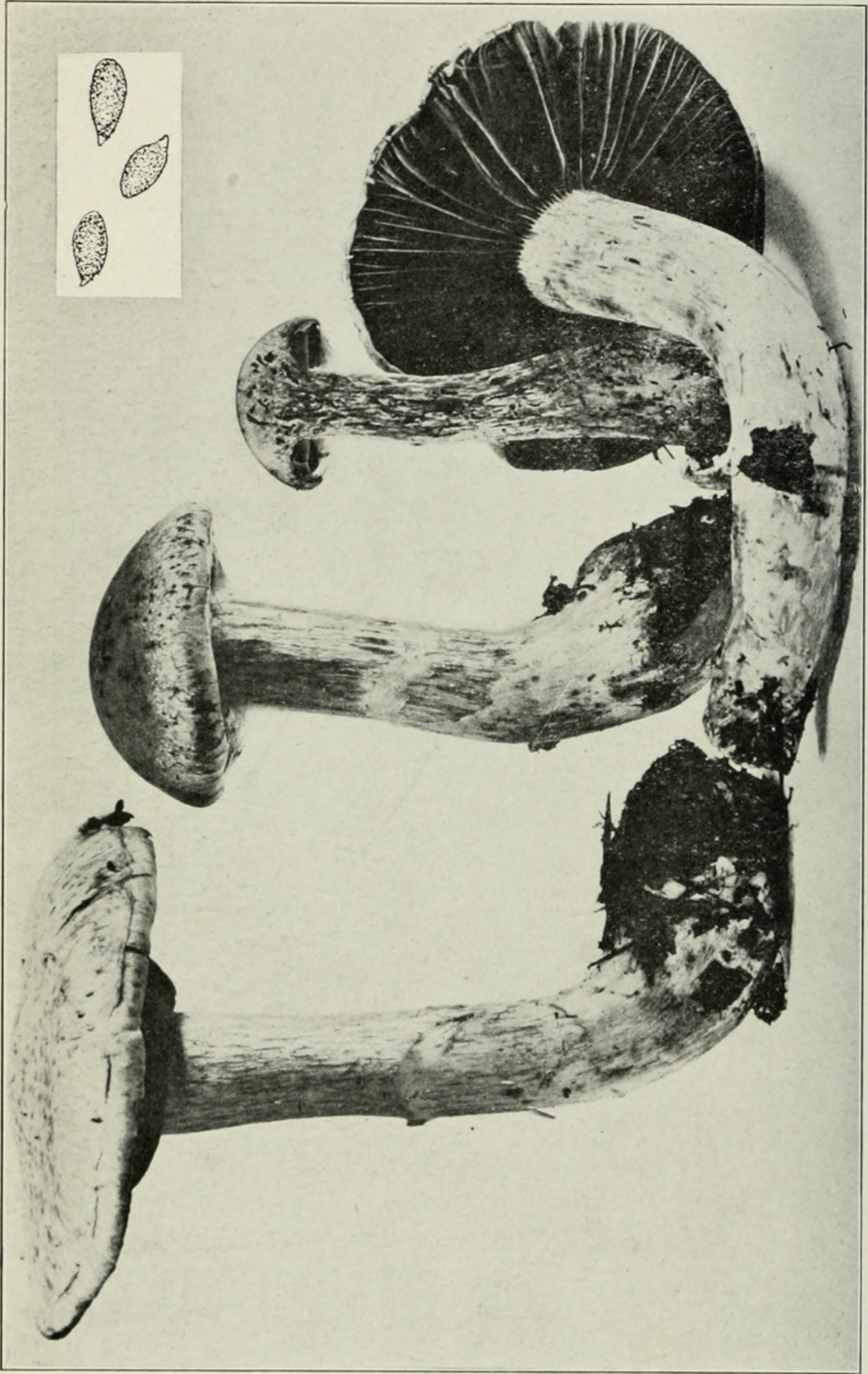
- hh. Pileus whitish to pale clay-color; in mushroom and flower-beds.....*C. intrusus* Pk.
- gg. Gills and apex of stem violaceous at first, soon brownish*C. lanatipes* Pk.
- ggg. Gills and pileus drab-gray; viscid universal veil present*C. sterilis* Kauff.

B. Cuticle of pileus not composed of gelatinous cells, hence never viscid nor gelatinous. [Inoloma, Talamonia, Dermocybe, and Hydrocybe.]

- a. Spores 12-16 μ long
 - b. Pileus rather large, squamulose; whole plant dark violaceous*C. violaceus* Fr.
 - bb. Pileus small, chestnut color; stem white; spores 16 x 11 μ *C. sericipes* Pk.
- aa. Spores 10-12 μ long
 - b. Plants small, 2-4 cm. tall
 - c. Pileus hygrophonous, glabrous, bay-red (moist); gills subochraceous*C. badius* Pk.
 - cc. Pileus not hygrophonous, densely fibrillose; gills yellow.....*C. aureifolius* Pk.
 - bb. Plants larger
 - c. Stem distinctly sheathed or ringed by the universal veil
 - d. Pileus tawny; stem with cinnabar-colored, persistent, concentric rings.....
C. armillatus (Alb. & Schw.)
 - dd. Pileus purplish-brown, copper-brown, etc., to drab; stem peronate, i. e., sheathed with a universal veil.....*C. torvus* Fr.
C. torvus nobilis Pk.
 - ddd. Pileus tinged yellow or rufous; stem peronate and annulate by a white universal veil...
C. canescens Pk.
 - cc. Stem not sheathed or ringed; the universal veil evanescent or absent
 - d. *Pileus hygrophonous, fibrillose-squamulose (like C. paleaceus)*
 - e. Pileus dingy chestnut (moist); stem long and slender..
C. gracilis Pk.
 - ee. Pileus grayish; stem stout and short, bulbous.....
C. griseus Pk.
 - dd. *Pileus not hygrophonous, merely silky or innately fibrillose*
 - e. Pileus reddish-gray, tinged purplish; gills purple or violaceous; spores 10-12 μ long....*C. pulchrifolius* Pk.
C. rubrocinereus Pk.



CORTINARIUS CROCEOCOLOR KAUFF. (From Bull. Torr. Bot. Club.)



CORTINARIUS UMIDICOLA KAUFF. (From Bull. Torr. Bot. Club.)



Kauffman, C. H. 1907. "The genus *Cortinarius* with key to the species." *Journal of mycology* 13(1), 32–39.

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