

## A new species of *Conidiobolus* with distended conidiophores.

By Charles Drechsler (Horticultural Crops Research Branch, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland, U.S.A.).

With Plate VII and VIII.

The fungus here described as a new member of the genus *Conidiobolus* came to light among various other readily culturable *Entomophthoraceae* that I isolated by canoping Petri plates of maize-meal agar with mealy detritus sifted from leaf mold gathered in northern Wisconsin during the third week of November, 1954.

### *Conidiobolus eurypus* sp. nov.

Mycelium incoloratum, ramosum; hyphae steriles 2–15  $\mu$  (saepius 8–11  $\mu$ ) latae, mox septatae, postea hic illic disjunctae vel inanitae, e cellulis 30–250  $\mu$  (vulgo 50–100  $\mu$ ) longis constantes; hyphae fertiles incoloratae, simplices, in aerem vulgo 30–100  $\mu$  ad lucem protendentes, in parte aerea sursum inflatae, plerumque 5–15  $\mu$  subter apicem latissimae, ibi 8–15  $\mu$  latae, apice unum conidium ferentes; conidia violenter absilientia, incolorata, globosa sed basi papilla 4–13  $\mu$  lata et 3–8  $\mu$  alta praedita, plerumque ex toto 16–34  $\mu$  longa, 13–28  $\mu$  lata.

Habitat in foliis arborum (*Aceris*, *Betulae*, *Ulm*i) putrescentibus prope Butternut, Wisconsin.

Mycelium colorless, branched; assimilative hyphae 2 to 15  $\mu$  (often 8 to 11  $\mu$ ) wide, soon becoming divided into segments 30 to 250  $\mu$  (commonly 50 to 100  $\mu$ ) long, which in many places become disjointed and in other places remain connected only by empty tubular membrane; conidiophores colorless, unbranched, commonly extending 30 to 100  $\mu$  into the air toward the main source of light, in the aerial portion rather markedly inflated, usually attaining a greatest width of 8 to 15  $\mu$  at a distance of 5 to 15  $\mu$  below the attachment of the single apical conidium; conidia colorless, springing off forcibly, globose, mostly 13 to 28  $\mu$  wide, 16 to 34  $\mu$  in total length inclusive of a papilla 4 to 13  $\mu$  wide and 3 to 8  $\mu$  high.

Isolated from decaying leaves collected in deciduous woods near Butternut, Wisconsin, on November 18, 1954.

In a mycelium of *Conidiobolus eurypus* that is growing unimpeded in a Petri plate of maize-meal agar the terminal segments (Pl. I, A, a) of the elongating hyphae at the advancing margin com-

monly measure 8 to 9  $\mu$  in width. As most hyphal cells in a mycelium originate by being cut off one after another (Pl. I, A, b—d) from the proximal end of the individual elongating terminal segments, the width of these segments is of much importance in determining the relative coarseness of a species, even though the cells derived from them may soon become widened in varying measure, and though many narrower cells may subsequently be formed in lateral branches or in germ tubes. In comparison with other abundantly segmented species *C. euryypus* may be reckoned among the more robust members of the genus. It is conspicuously coarser than *C. pumilus* Drechsler (1955 a) and *C. nanodes* Drechsler (1955 b), in both of which the terminal segments are usually about 5  $\mu$  wide; and it is only slightly less coarse than *C. chlamydosporus* Drechsler (1955 c), a large species in which the terminal segments commonly have a diameter of approximately 10  $\mu$ . However, while its mycelium is much coarser than the virtually unsegmented delicate assimilative mycelium of *C. adiaeretus* Drechsler (1953 a), that strongly aberrant species gives rise to markedly stouter conidiophores and larger conidia.

The conidiophore of *Conidiobolus euryypus* (Pl. I, B—D; Pl. II, A, B) most closely resembles that of *C. thromboides* Drechsler (1953 a) in its distally swollen shape. From the surface of the substratum (Pl. I, B—D: s; Pl. II, A—B: s) the aerial part broadens gradually upward for approximately four-fifths of its length, and then most often tapers slightly toward the broad attachment of the conidium. In many of the smaller conidiophores, including some formed in prolongation of germ hyphae, the aerial portion widens from the surface of the substratum (Pl. II, R—S: s) clear to the arched base of the conidium. Similar widening to the very tip of the phototropic stalk is often observable in *C. rhysosporus* Drechsler (1954). The apical distention usual in *C. euryypus* and *C. thromboides* presents contrast with the median distention characteristic of the phototropic stalks of *C. brefeldianus* Couch (1939) and *C. osmodes* Drechsler (1954), as well as with the more nearly basal distention found especially in *C. polytocus* Drechsler (1955 c). It contrasts even more strongly with the relatively unmodified condition of the cylindrical shaft-like phototropic stalks that are figured in the original account of *C. utriculosus* Brefeld (1884) and are commonly produced also by *C. chlamydosporus*, by *C. firmipilleus* Drechsler (1953 b), and by the ubiquitous *Delacroixia coronata* (Cost.) Sacc. & Syd. emend. G a l l a u d (1905).

Owing to the marked apical distention of the phototropic stalk in *Conidiobolus euryypus*, the upcurved partition by which the globose conidium becomes delimited proximally is of comparatively wide circumference (Pl. II, A, B). Consequently after the conidium has sprung off forcibly through sudden eversion of its basal membrane

it is found provided with a relatively wide basal protrusion (Pl. I, E—N; Pl. II, C—L) a feature intended to be signaled by applying to the fungus an epithet compounded of two words (*ευρύς, πούς*) meaning "wide" and "foot", respectively. In general shape the detached conidia of *C. eurypus* appear most closely similar to the globose conidia of *C. rhysosporus*. They usually germinate on moist agar substratum by extending a vegetative germ tube that soon ramifies to form a new mycelium. On substratum already permeated by the fungus they commonly undergo repetitional development: each puts forth (Pl. II, M) a broad outgrowth which swells at the tip (Pl. I, O—Q; Pl. II, N) to form aloft a secondary globose conidium (Pl. II, O—Q). Such development not infrequently takes place also on unoccupied substratum. Now and then a conidium extends a germ hypha which after elongating procumbently some little distance grows upward into the air to develop terminally as a conidiophore (Pl. II, R, S)).

No spores other than globose conidia have come under observation in cultures of *Conidiobolus eurypus*.

#### References.

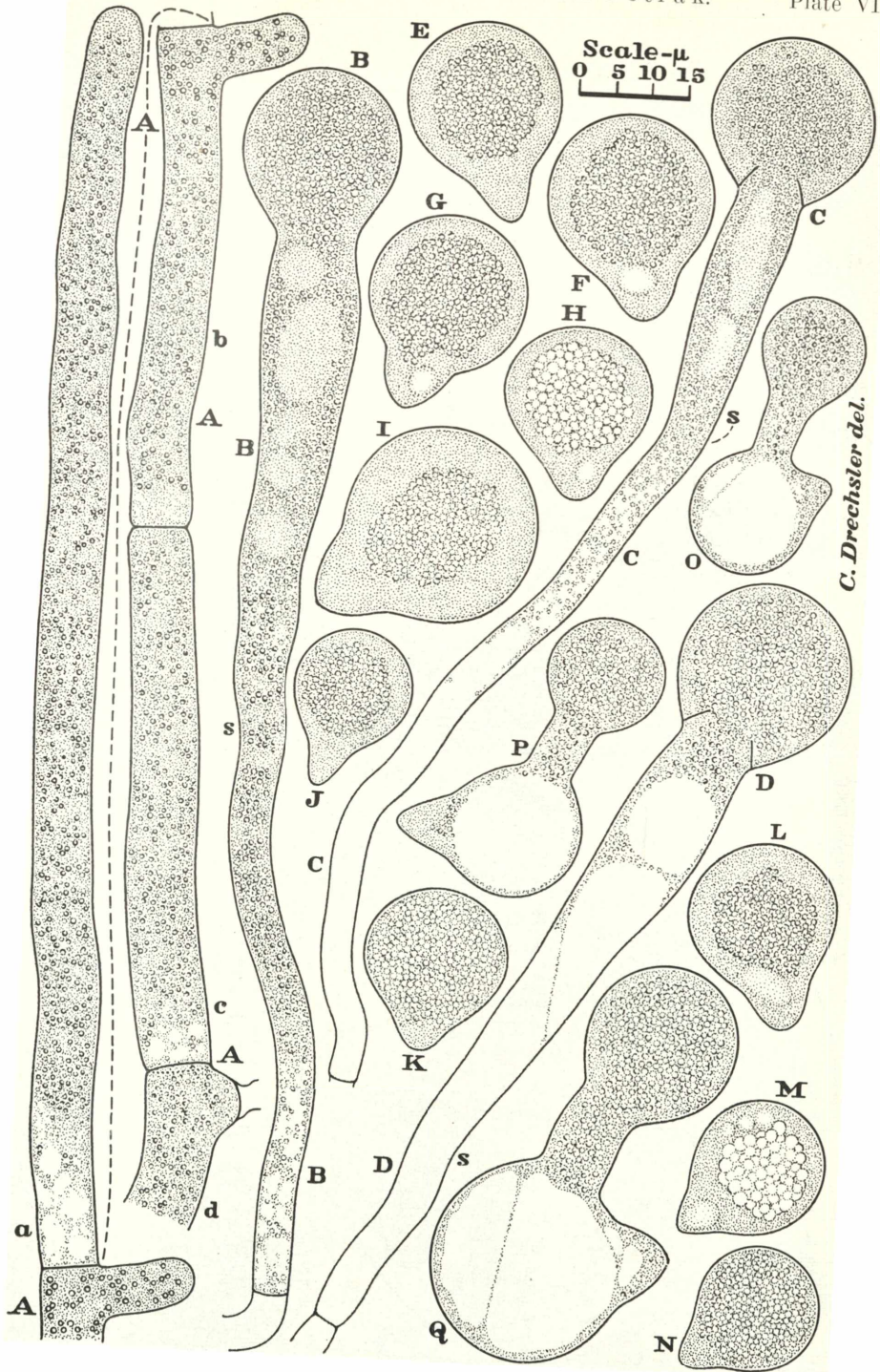
- Brefeld, O., 1884. *Conidiobolus utriculosus* und *minor*. Unters. Gesamtgebiete Mykol. **6**: 35—72.
- Couch, J. N., 1939. A new *Conidiobolus* with sexual reproduction. Amer. Journ. Bot. **26**: 119—130.
- Drechsler, C., 1953 a. Three new species of *Conidiobolus* isolated from leaf mold, Jour. Washington (D. C.) Acad. Sci. **43**: 29—43.
- 1953 b. Two new species of *Conidiobolus* occurring in leaf mold. Amer. Jour. Bot. **40**: 104—115.
- 1954. Two species of *Conidiobolus* with minutely ridged zygospores. Amer. Journ. Bot. **41**: 567—575.
- 1955 a. A small *Conidiobolus* with globose and with elongated secondary conidia. Jour. Washington (D. C.) Acad. Sci. **45**: 114—117.
- 1955 b. Three new species of *Conidiobolus* isolated from decaying plant detritus. Amer. Jour. Bot. **42**: 437—443.
- 1955 c. Two new species of *Conidiobolus* that produce microconidia. Amer. Jour. Bot. **42**: 793—802.
- Gallaud, I., 1905. Études sur une Entomophthorée saprophyte. Ann. Sci. Nat. Bot. IX, **1**: 101—134.

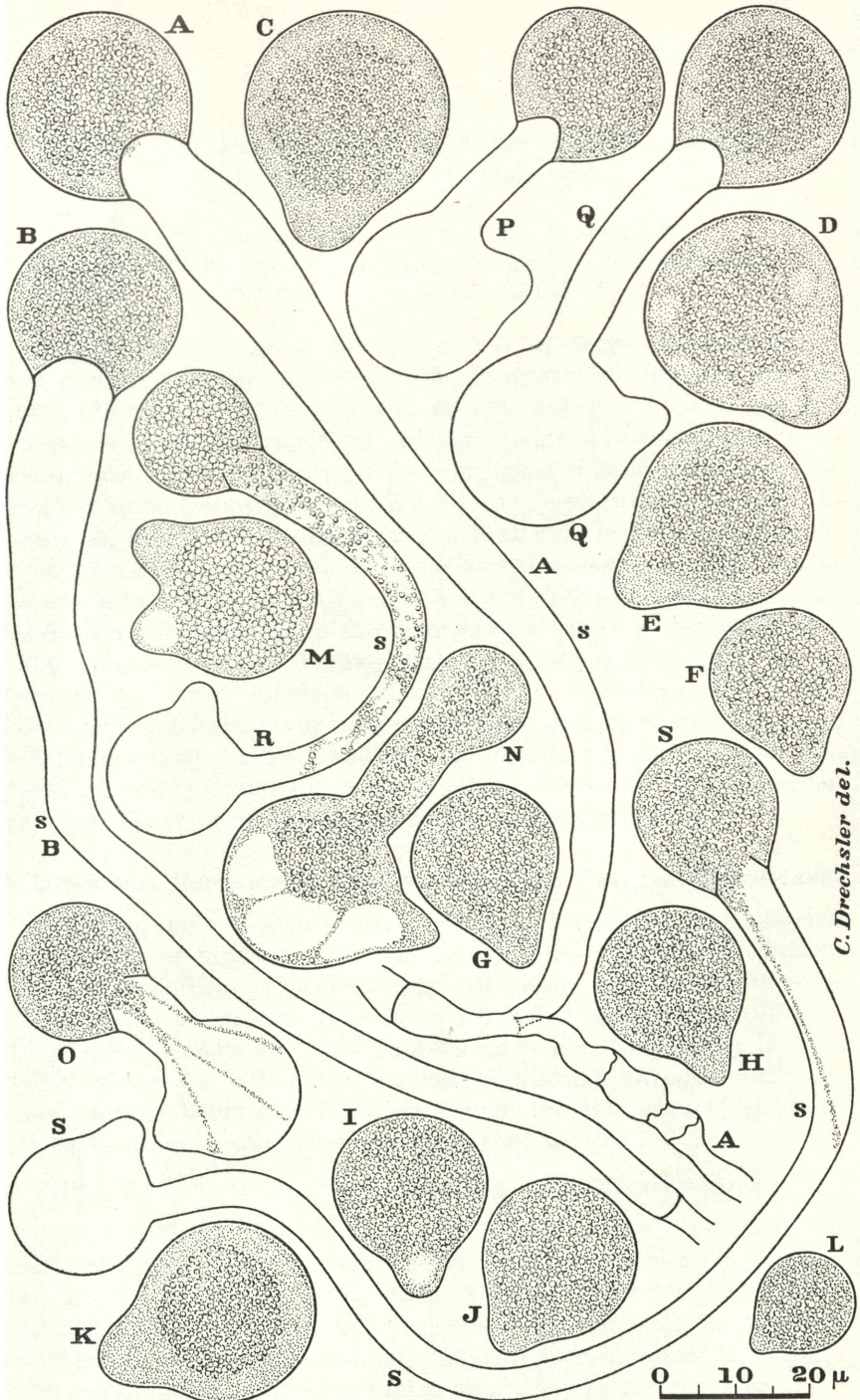
#### Explanation of Plates VII—VIII.

Plate VII. *Conidiobolus eurypus* as found in maize-agar plate cultures 5 days old; drawn with the aid of a camera lucida at a uniform magnification;  $\times$  1000. A) Distal portion of an elongating hypha at the margin of a growing mycelium; a, terminal segment; b—d, successively older subterminal segments; proper connection of the two parts is indicated by a broken line. B) Young conidiophore with its growing conidium; s, base of aerial portion. C) D) Two conidiophores from each of which a globose conidium has been partly delimited; s, base of aerial portion. E—N) Detached globose conidia showing usual variations in size, in shape,

and in texture of contents. O—Q) Globose conidia, each giving rise to a secondary globose conidium on a stout outgrowth.

Plate VIII. *Conidiobolus eurypus* as found in maize-meal-agar plate cultures 5 days old; drawn with the aid of a camera lucida at a uniform magnification;  $\times 1000$ . A) B) Two conidiophores, each bearing a fully delimited globose conidium; s, base of aerial portion. C—L) Detached globose conidia showing usual variations in size, in shape, and in texture of contents. M) Globose conidium from which a stout outgrowth has begun to push forth. N) Globose conidium with a stout outgrowth that has begun to swell at the tip in initiating the formation of a secondary conidium. O) Globose conidium with a stout outgrowth bearing a partly delimited secondary conidium. P) Q) Two empty globose conidia, each with an empty stout outgrowth bearing a fully delimited secondary globose conidium. R) S) Two conidia, each with a procumbent germ hypha that terminates in a conidiophore bearing a partly delimited secondary globose conidium; s, base of aerial conidiophore.





# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia Beihefte](#)

Jahr/Year: 1956

Band/Volume: [1](#)

Autor(en)/Author(s): Drechsler Charles

Artikel/Article: [A new species of Conidiobolus with distended conidiophores 189-192](#)