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PRODUCTION OF LARGE SOLITARY SPORANGIOSPORES IN SOME SPECIES OF
THE MUCORALES

Several maize-meal-agar plate cultures to which had been added small pinches of leaf mold newly collected in a wooded area near College Park in central Maryland on July 15, 1955, showed 14 days later some

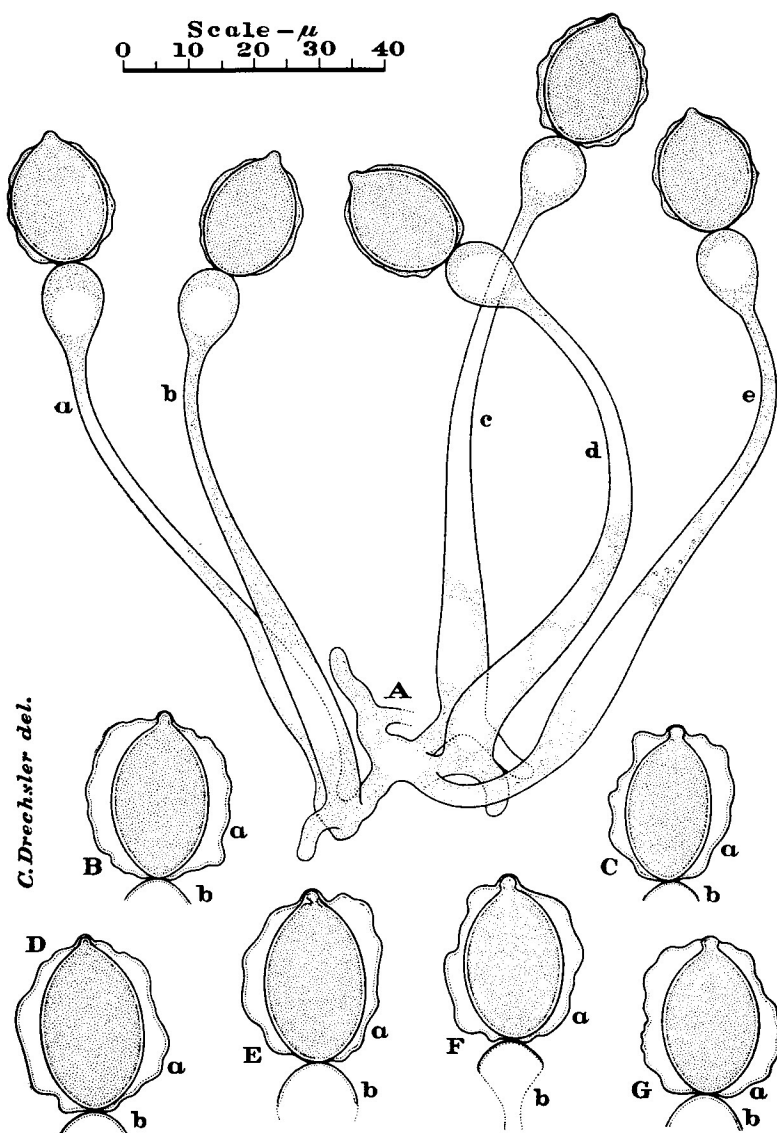


FIG. 1. Monosporous sporangial stage belonging presumably to *Syncephalis* sp., $\times 860$. A, Group of 5 sporangiophores, a-e, each bearing a monosporous sporangium. B-G, Six monosporous sporangia, a; each shown attached to a persistent apical portion of sporangiophore membrane, b.

few sporangiophores arising singly or in small groups (FIG. 1, A, a-e), each bearing on the apex of an obovoid distal enlargement a solitary ovoid spore loosely surrounded by a somewhat collapsed sporangial membrane. The sporangiophores ranged from 85 to 100 μ in length and in many instances were rather markedly curved. From a swollen basal portion usually 6 to 8 μ in diameter they tapered gradually upward to a width of approximately 2.2 μ . This width they maintained for a distance of 20 to 25 μ and then expanded rather abruptly into the obovoid distal enlargement, which commonly measured 12 to 14 μ in length and 8.5 to 10 μ in greatest diameter. The solitary spore borne in axial alignment with the enlargement was colorless or faintly brownish. Within its proper wall, about 0.6 μ thick, was contained dense protoplasm of finely granular or nearly homogeneous appearance. It usually measured 13 to 16 μ in greatest width and 19 to 27 μ in length inclusive of a wart-like apical protuberance 1 to 2 μ long and 2 to 2.5 μ wide. The loose sporangial envelope (FIG. 1, B-G: a), which often showed many parallel transverse striations, was affixed distally to the upper surface of the protuberance, while proximally it seemed attached not only to the tip of the sporangiophore (FIG. 1, B-G: b) but also to the base of the surmounting spore. In moist preparations a small apical portion of the sporangiophore (FIG. 1, B-G: b) usually persisted for some time after the tubular membrane had faded from sight.

Asexual reproductive apparatus of generally similar make-up has now and then come under observation also in Petri plate cultures inoculated with plant detritus from other localities in central Maryland, as well as in cultures to which had been added slowly decaying materials from more distant places in both the southeastern and northwestern regions of that State. In many cultures the sporangiophores bearing the solitary spores were found sparsely intermingled with other sporangiophores, which, though of rather similar stature and shape, differed markedly in that they bore circularly arranged on the shoulder of the distal enlargement from 4 to 6 digitate branches, or merosporangia, each containing a chain of 2 elongated spores. The inference could hardly be avoided that the monosporous sporangia represented accessory reproductive bodies of species of *Syncephalis* related especially to *S. tenuis* Thaxter (1897) and *S. nana* Dade (1938). However, owing to the decrepit condition of the underlying mycelium and to the presence of many other microorganisms—all of the cultures had been prepared primarily for the study of nematode-destroying fungi—it was never possible either to trace a hyphal connection between one-spored and many-spored sporangiophores or to ascertain that such connection was absent.

Because of its relatively dense contents, its somewhat thickened wall, and its usual failure to germinate on moist substratum, the solitary spore would seem adapted for survival through prolonged unfavorable periods. As it receives a quantity of protoplasm that elsewhere is manifestly sufficient for the development of a circlet of two-spored merosporangia, it must be considered a less elementary reproductive body than the unisporous sporangioles of *Chaetocladium* or of *Haplosporangium decipiens* Thaxter (1914). Except for the likelihood that in eventually germinating it might put forth a typical *Syncephalis* sporangiophore the solitary spore, together with the membrane loosely surrounding it, is perhaps nearly equivalent morphologically to the conidium of *Rhopalomyces elegans* Corda, which Boedijn (1927) found to be multinucleated and accordingly interpreted as a merosporangium incapable of forming sporangiospores. —CHARLES DRECHSLER, Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Plant Industry Station, Beltsville, Maryland.

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