

PRODUCTION OF AERIAL ARTHROSPORES BY
HARPOSPORIUM BYSMATOSPORUM

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The curious nematode parasite I described several years ago (Drechsler 1946) under the binomial *Harposporium bysmatosporum* was more recently found developing abundantly in some maize-meal-agar plate cultures which after being overgrown with mycelium of *Pythium debaryanum* Hesse had been further planted with small quantities of decaying vegetable detritus collected on December 20, 1952, near LaPlace, Louisiana. It subsisted altogether by destroying numerous eelworms referable to a species of *Rhabditis* closely similar to the species that served as host in the earlier cultures prepared with decaying straw from Colorado. The more proximal segments of the procumbent hyphae extended from infected animals commonly bore grouped phialides (fig. 1, A, a-c) on whose slender sterigmata were borne conidia of distinctive humerus-like profile (fig. 1, B). When one of these conidia become lodged in the stoma of a host eelworm (fig. 1, C) it pushed into the fleshy tissues of the head a narrow germ tube from which developed an assimilative mycelium that again produced procumbent hyphae with grouped phialides (fig. 1, C, a-c) and conidia (fig. 1, D), thereby repeating the cycle made known in the original account of the fungus. In many infected animals the parasite showed no other kind of reproduction.

Sometimes, however, a procumbent hypha after putting forth phialides from its proximal segments would grow upward into the air at noticeably increased width and then would ramify several times at relatively wide angles. The axial prolongation (fig. 1, A, d) and the branches (fig. 1, A, e-h) soon were divided into cylindrical segments, which later became rounded at both ends. Chains of colorless rod-shaped spores were thus formed, the number of spores in a chain varying commonly from 3 to 6. Where ample nourishment was provided in a full-grown eelworm the accessory reproductive apparatus often included 10 to 15 catenulate branches. Sooner or later the stiffly ramifying chains became broken up under the jostling of large nematodes or of mites and springtails. The disjointed arthrospores (fig. 1, E) left strewn about on the substratum commonly measured 10 to 20 μ in length and 2.3 to 2.7 μ in width. They appeared to be filled with protoplasm of nearly homogeneous texture, though in many instances their contents seemed slightly denser at the ends than in the middle. They remained for weeks without evident change, neither germinating nor degenerating.

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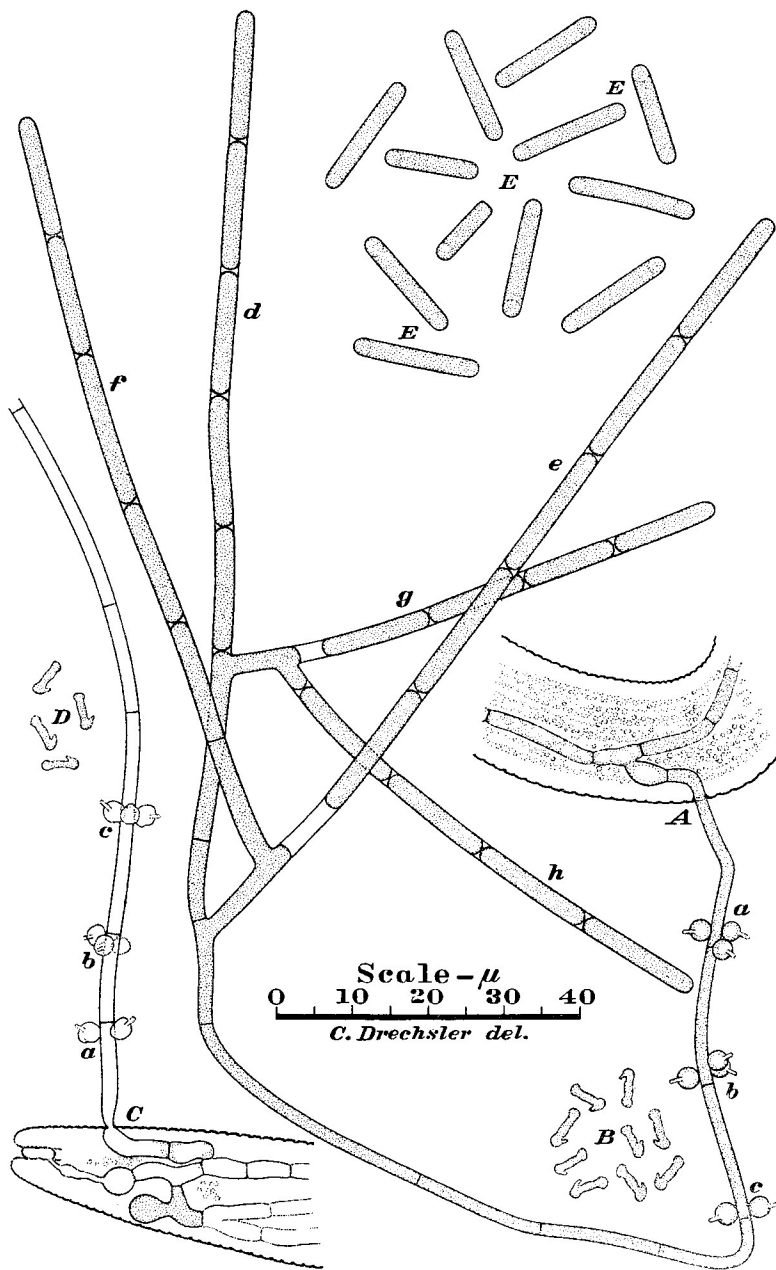


FIG. 1. *Harposporium bysmatosporum*: drawn at a uniform scale of magnification with the aid of a camera lucida; $\times 1000$ throughout. A, Middle portion of host nematode (*Rhabditis* sp.) showing assimilative filament that has put forth externally a procumbent

While their inert behavior would seem to betoken somewhat greater capacity for enduring unfavorable conditions than could be expected in the small conidia borne on the phialides, their different structure as well as their different manner of origin removes them from any close parallelism with the durable chlamydospores formed intercalarily in the assimilative hyphae of the widespread congeneric species *Harposporium anguillulae* Lohde *sensu* Zopf (1888).

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Literature Cited

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hypha which besides forming 3 groups of phialides, a-c, on its proximal segments has grown out distally to produce 5 aerial chains, d-h, of cylindrical arthrospores. B, Nine detached conidia produced on the phialides shown in A, a-c. C, Anterior portion of host nematode (*Rhabditis* sp.) showing connection of assimilative mycelium with empty membrane of conidium lodged in stoma; from the mycelium was extended a procumbent hypha with 3 groups of phialides, a-c, now represented only by their membranous envelopes. D, Four conidia from the phialides shown in C, a-c. E, Detached rod-shaped arthrospores coming from break-up of aerial chains.