

## INDIAN WATER-MOULDS.—II\*

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1. *Achlya proliferata* (Nees). de Bary, *Bot. Zeit.*, 1852, 10, 473, Pl. 7, Figs. 1-28. (Plate I.)

Growth dense and stout, reaching a length of 1.45 cm. on egg-yolk in distilled water. Primary zoosporangia cylindrical, terminating the stout hyphæ. Secondary zoosporangia rare; when present, arising in a cymose manner from below the primary ones. Oogonia in racemes on the ends of lateral branches of the main hyphæ, spherical. Oogonial wall pitted. Eggs variable in number, upto 8 in an oogonium, eccentric. Antheridial branches declinous, much twisted and branched, winding like a parasite about the oogonia. Gemmæ formed by the segmentation of the hyphæ.

*Growth in culture.*—On egg-yolk in distilled water—growth dense, upto 1.45 cm. in length, oogonia plentiful. On egg-white in distilled water—growth strong, zoosporangia plenty, oogonia few. On boiled corn grain in distilled water—growth luxuriant, abundant gemmæ, zoosporangia in profusion, but no oogonia.

Collected from Lahore and Sheikhpura.

It agrees with de Bary's description of the fungus.

2. *A. klebsiana* var. *indica*, nov. var. (Plate II.)

Growth moderately stout, reaching about 1.6 cm. on egg-yolk in distilled water. Hyphæ branched, tapering gradually towards the apex. Zoosporangia  $25.2-60 \mu \times 180-300 \mu$ . Secondary ones not very common, when present arising by cymose proliferation. Oogonia plentiful, borne on lateral stalks, which are from equal to, to twice the diameter of the oogonium; spherical,  $36-70.8 \mu$  in diameter; wall of the oogonium unpitted, oogonial neck very small. Eggs variable in number, 3-14, commonly 2-4;  $12-30 \mu$  in diameter, mostly  $19.6-25.2 \mu$ ; spherical, eccentric. Antheridial branches slender, always declinous, rarely branched. Gemmæ formed by the segmentation of the hyphæ; dense and irregularly rod-like, attenuating at the tips or ending in a knob.

\* In continuation of Indian Water-Moulds.—I. By H. Chaudhuri and P. L. Kocchar. Published in *Proc. Ind. Acad. Sci.*, 1935, 2, No. 2, Section B.

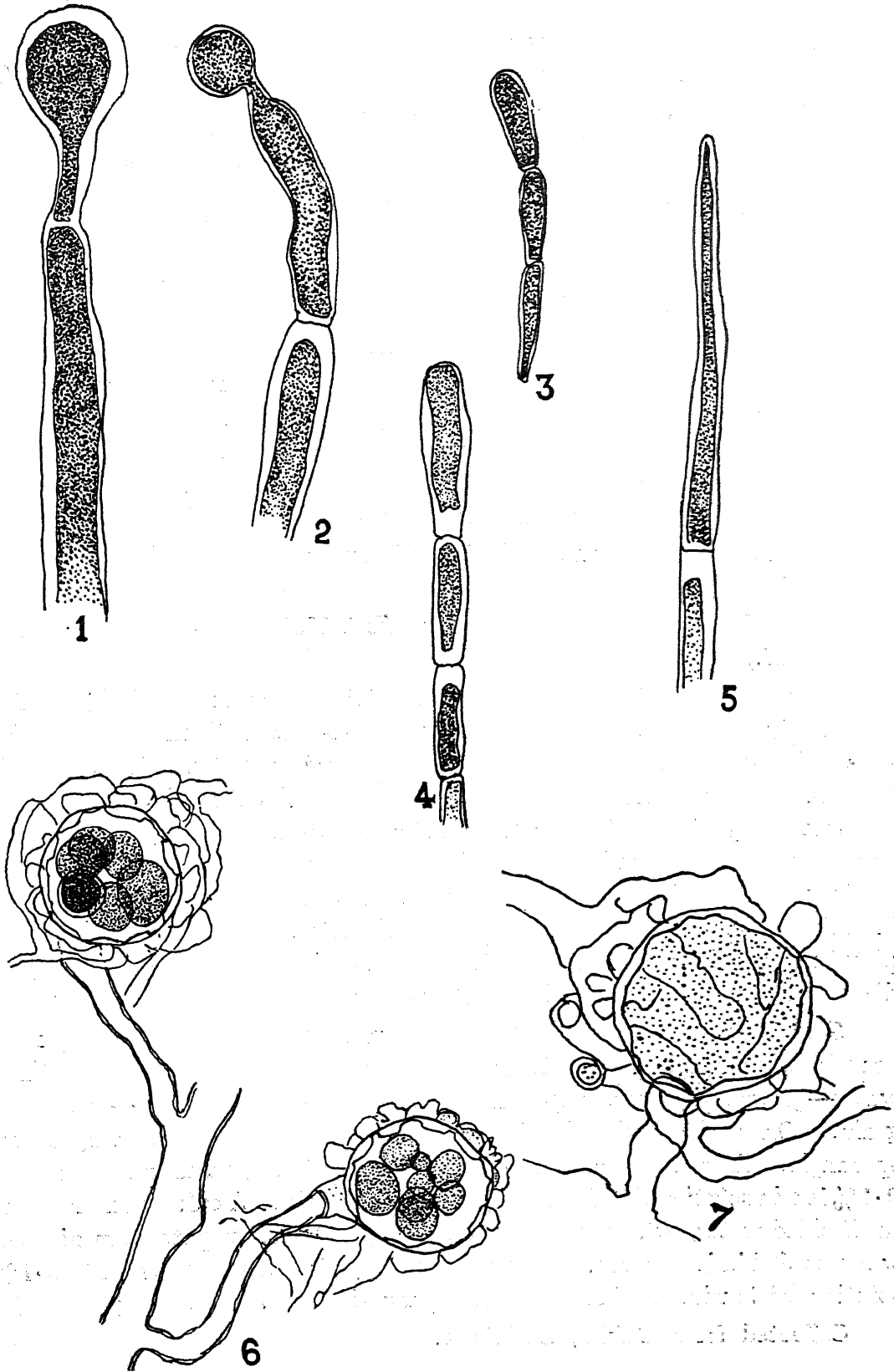


PLATE I.—*Achlya prolifera*.

*Growth in culture.*—On egg-yolk in distilled water—growth fairly stout, reaching about 1.6 cm.; oogonia plentiful, but not so antheridia. On egg-white in distilled water—vegetative growth delicate, hyphæ slender, oogonia present, with antheridia on less than 40% of them. Zoosporangia formed. A culture on house-fly in distilled water, which developed normal oogonia, produced oogonia more plentifully but very few gemmæ when transferred to .1% solution of leusin. A culture on an insect formed zoosporangia which developed zoospores, some of the zoosporangia liberating the zoospores. No oogonia.

Collected from Mughalpura and Calcutta.

*A. klebsiana* var. *indica* differs from the main species in the size and form of the zoosporangia which in this case are smaller and thicker and in developing comparatively few secondary zoosporangia; in the shorter neck of the oogonia; in the larger number of the eggs in an oogonium and in the form of the gemmæ which may attenuate at the tips.

3. *Thraustotheca clavata* (de Bary) Humphrey, *Trans. Am. Phil. Soc.*, 1892 (1893), 17, 131.

*Dictyuchus clavatus* de Bary, *Bot. Zeit.* 1888, 46, 649, Pl. 9, Fig. 3. (Plate III.)

Growth luxuriant, reaching a length of 1.89 cm. on corn grain in distilled water. Hyphæ stout, straight, branched, 20.4-78  $\mu$  in thickness, averaging 36  $\mu$ ; branches of the hyphæ much curved and twisted. Sporangia terminal, usually short, broad and clavate, sometimes bearing resemblance to those of *Pythiopsis*, 36-78  $\mu$   $\times$  66-240  $\mu$ . Secondary sporangia not formed. Spores variously shaped, while inside the sporangia. Spores liberated by the fragile sporangial wall breaking down. Oogonia borne on short, straight lateral stalks; spherical, 31.6-69.6  $\mu$  in diameter. Wall smooth or slightly pitted; oogonial neck prominent. Eggs 1-6 in an oogonium, 18-24  $\mu$  in diameter, eccentric. Antheridia declinous, many to an oogonium.

*Growth in culture.*—On boiled corn grain in distilled water—growth luxuriant, sporangia plentiful, but no oogonia. On egg-yellow in distilled water—growth strong with sporangia and oogonia. On egg-white—as on corn grain. On an insect in distilled water—growth delicate with only a few sporangia. A culture on house-fly in distilled water, when transferred to 0.1% leusin solution developed oogonia in two weeks. A culture on an insect in distilled water, when transferred to 0.1% solution of potassium nitrate, was retarded in its growth. A culture on egg-yolk, when transferred to 0.1% solution of leusin, produced normal sporangia and a good many oogonia.

Collected from Dakha, Ludhiana.

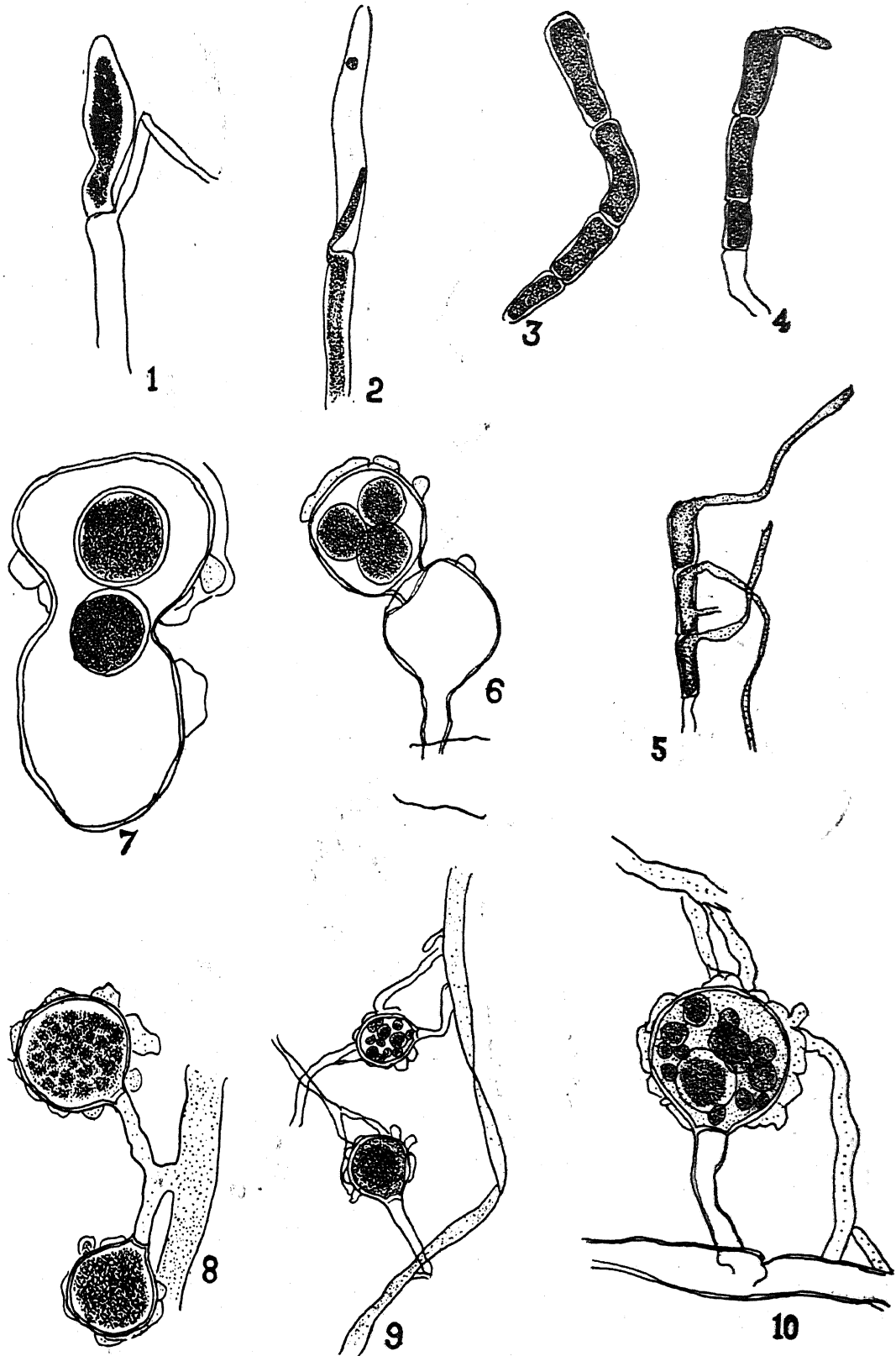


PLATE II.—*Achlya klebsiana* var. *indica*, n. var.

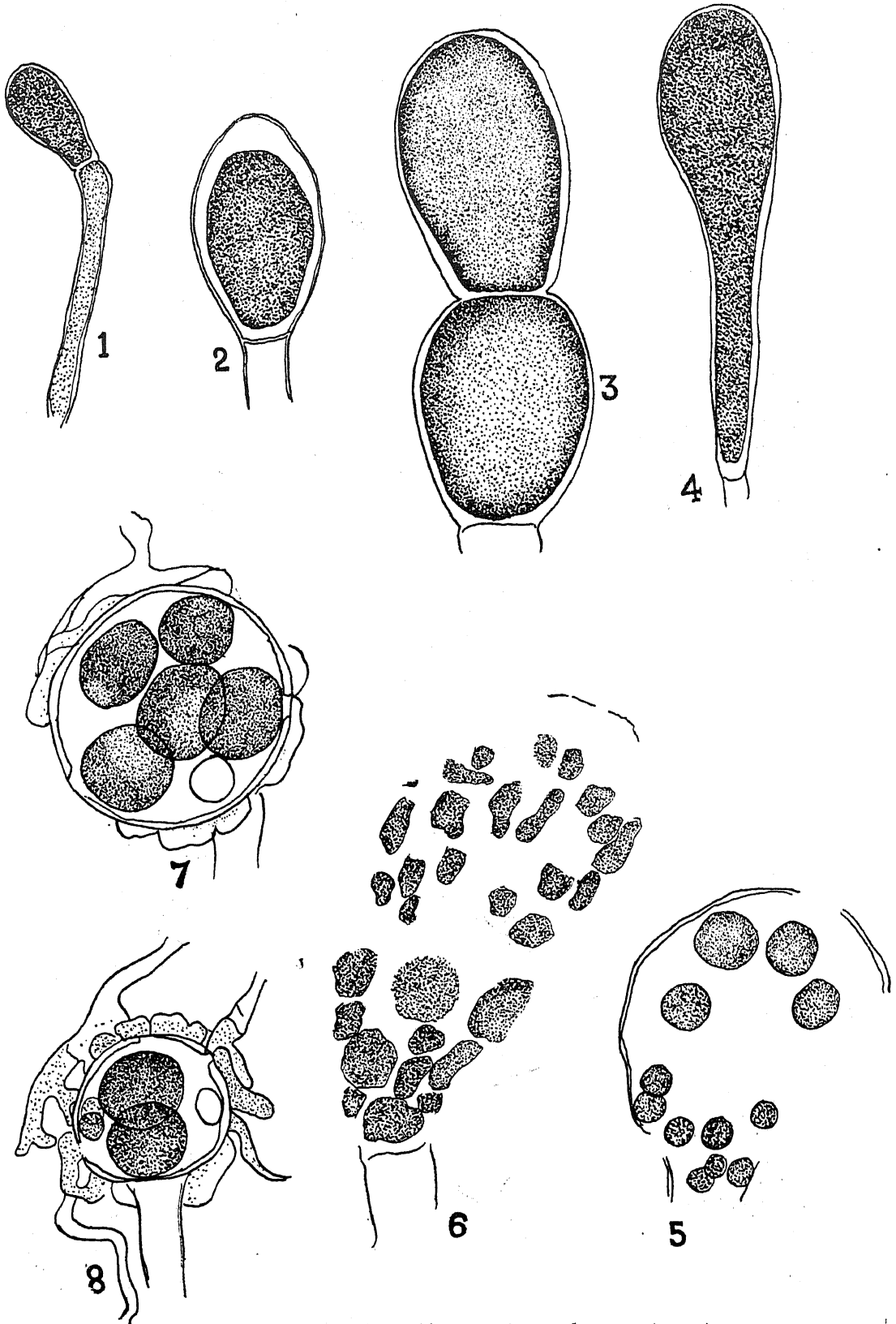


PLATE III.—*Thraustotheca clavata*.

The species is characterised by the form and size of its sporangia and differs from the rest of the water-moulds in the method of spore-liberation, which takes place by the breaking down of the sporangial wall. The absence of the secondary sporangia is also characteristic.

EXPLANATION OF PLATES.

PLATE I.

- FIGS. 1, 2—Zoosporangia changing at the tips into oogonia. (1)  $\times$  400, (2)  $\times$  140.  
FIGS. 3, 4—Gemmæ formed by segmentation of the hyphæ. (3)  $\times$  100, (4)  $\times$  150.  
FIG. 5—Zoosporangium.  $\times$  200.  
FIGS. 6, 7—Oogonia surrounded profusely by antheridia. (6)  $\times$  400, (7)  $\times$  640.

PLATE II.

- FIGS. 1, 2—Zoosporangia showing proliferation.  $\times$  160.  
FIGS. 3, 4—Gemmæ.  $\times$  160.  
FIG. 5—Germinating gemmæ.  $\times$  160.  
FIG. 6—Double oogonium.  $\times$  430.  
FIG. 7—A notched oogonium with two eggs and diclinous antheridia.  $\times$  640.  
FIG. 8—Two oogonia with a common stalk and diclinous antheridia.  $\times$  400.  
FIG. 9—Oogonia showing androgynous and diclinous condition of antheridia.  $\times$  160.  
FIG. 10—Androgynous and diclinous condition of an oogonium shown in detail.  $\times$  400.

PLATE III.

- FIGS. 1, 2—Young sporangia. (1)  $\times$  100, (2)  $\times$  420.  
FIG. 3—A double sporangium.  $\times$  420.  
FIG. 4—An elongated sporangium.  $\times$  420.  
FIGS. 5, 6—Two ruptured sporangia with scattered mass of spores. (5)  $\times$  660, (6)  $\times$  1000.  
FIG. 7—An oogonium with five mature eggs.  $\times$  660.  
FIG. 8—An oogonium with diclinous branched, stout and crooked antheridia.  $\times$  420.