

## NOTES ON MYXOMYCETES II

### A NEW DIDYMIUM, A NEW PHYSARUM AND A NEW VARIETY OF BADHAMIA LILACINA (FR.) ROST.

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(Doorwerth)

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1. **Didymium ovoideum** nov. spec. maxine ut *D. iridis* (Ditmar) Fries, sed a specie illa sporangiis plerumque prolatis, peridio fragili et translucente, primum crystallorum calcis glomerulis albis aspersis, sed crystallorum glomerulis detritis ob colorem sporarum olicaveis, columella plerumque etiam prolata, sporis minoribus distinguenda (cf. Fig. 1).

Sporangia (Fig. 1, a) gregaria, stipitata, stipite incluso 1.0-1.5 mm alta, parte sporifera plerumque prolata, 0.4-0.5 mm diam. et 0.8-1.0 mm alta, rarius globosa casu quo diametrum eundem exhibente, basi umbilicata, crystallorum calcis glomerulis albis aspersa; stipes rubro-brunneus, translucens, ad basin granulis aliensis cum substantia propria commixtis nigrescens, e hypothallo orbiculari parvo, dilute

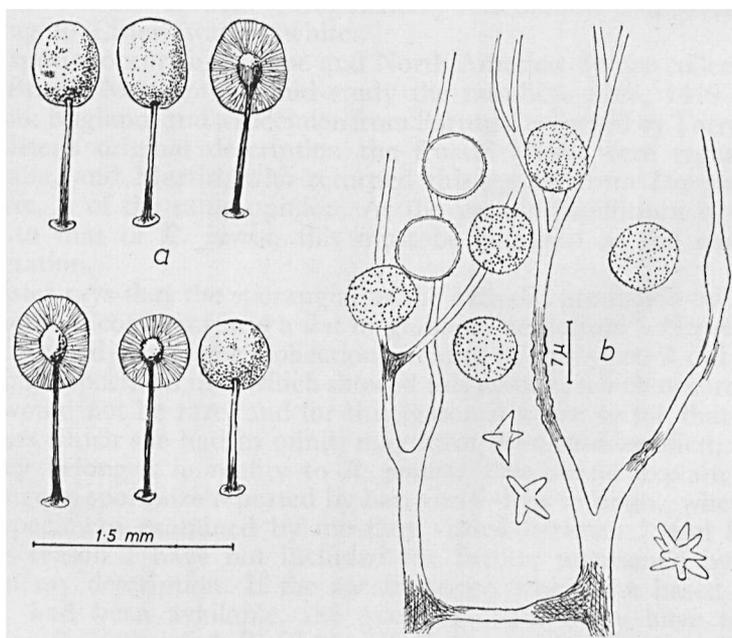


Fig. 1. *Didymium ovoideum* nov. spec. a. sporangia, three of them opened to show the columella and the capillitium; b. capillitium with spores and lime crystals.

brunneo et granulis alienis nigropunctato ascendens, in parte sporifera extensus; peridium ipsum sine colore, tenuis et translucens, sed primum glomerulis crystallorum albo-pulverulentum, glomerulis crystallorum tamen faciliter detritis, casu quo ob praesentiam sporarum colorem olivaceo-brunneum exhibens, fragile, irregulariter dehiscens; columella calcis crystallis obiecta, porphyrea, lutea vel interdum albida, in sporangiis prolatis prolata, in sporangiis globosis globosa; capillitium (Fig. 1, b) profusum, e filamentis tenuibus, ramificatis et interdum inter se connectis, vix coloratis vel dilute brunneis, sed hic inde, praesertim ad ramificationes saturatius coloratis consistens; sporae globosae, 6–7.5  $\mu$  diam., per saturam brunneae, ad lucem orientum versus visae dilute violaceo-brunneae, minute et irregulariter verruculosae, verruculis pleremque in series incurvatas dispositis. Plasmodium luteum.

Habitat vicum "Bilthoven" in provincia Utrecht, ubi in querceto in foliis mortuis crevit, N. E. NANNENGA-BREMEKAMP 2943 (U), typus.

Sporangia (Fig. 1, a) gregarious, stipitate, with the stipes 1.0–1.5 mm high, the part which contains the spores usually prolata, 0.4–0.5 mm in diam. and 0.8–1.0 mm high, more rarely globose and then also 0.4–0.5 mm in diam., umbilicate at the base, sprinkled with white clusters of lime crystals; stipes red brown, translucent, towards the base darker by the presence of included granules, springing from a small, circular hypothallus, which itself is light brown with enclosed dark granules, penetrating the sporangium; peridium colourless, thin and translucent, but at first covered with a white dust formed by the clusters of lime crystals, afterwards when the crystals are rubbed off, showing an olive-brown colour due to the presence of the spores, frail and irregularly dehiscent; columella usually yellow, sometimes whitish and capped with lime crystals, in the prolata sporangia prolata, in the globose ones globose, rugose; capillitium (Fig. 1, b) profuse, consisting of thin, ramified and sometimes anastomosing threads; the latter nearly colourless or light brown, but locally, especially at the points of ramification darker; spores globose, 6–7.5  $\mu$  in diam., brown in mass, pale violet brown by transmitted light, irregularly and minutely warted, the wartlets usually in curred rows. Plasmodium yellow.

*D. ovoideum* resembles *D. iridis* (Ditmar) Fries, but differs from the latter in the prolata shape, the olive brown colour which appears when the clusters of crystals are rubbed off, the thin and fragile peridium, the prolata rugose columella, and the smaller spores.

The type specimens and the numbers 2944, 2947 and 2953 were collected on the 16th August 1958 on dead leaves in an oak plantation at Bilthoven, in the province Utrecht, the Netherlands, but exactly similar specimens had been collected already in the year before at the same place and in the same month (2401 and 2402); at both occasions it was plentiful; and two years before at the same place at the end of July (1422). At Doorwerth in the province Gelderland it was collected on pea straw (N. E. NANNENGA-BREMEKAMP 199) on the 22nd August 1952.

2. **Physarum mucosum** nov. spec. maxime ut *Ph. contextum* (Fries) Rost. sed a specie illa sporangii vel plasmodiocarpi apice truncato a margine erecto tenui circumdato, peridii strato externo medefacto glutinoso, pseudocolumella crossa, sporarum colore saturatiore et pariete tenui, fortuis spinolosa, quasi echinulata distinguenda (cf. Fig. 2).

Sporangia (Fig. 2, a et b) sessilia, basin versus saepe contracta, acetabuliformia, nunc subregularia et 0.4–0.6 mm diam. et alta, nunc in plasmodiocarpa irregulariter curvata vel etiam annularia extensa, casu quo usque ad 2.5 mm diam., apice semper applanata et ibi margine cristae tenuis et irregularis instar circumdato, luteola vel ochracea, in colonias parvas congesta et inde angularia; hypothallus vix conspicuus; peridium duplex, strato exteriore crasso,

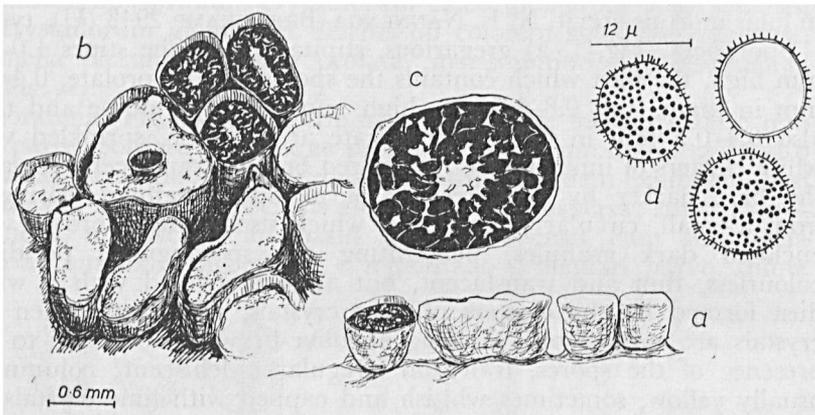


Fig. 2. *Physarum mucosum* nov. spec. a. side view of three sporangia and a plasmodiocarp with hypothallus; b. a group of sporangia and plasmodiocarps seen from above; one of the latter annular; some still covered by the peridium, and some showing the black mass of spores with the white pseudo-columella, the white capillitium threads and lime knots; c. one of the latter somewhat more magnified; d. spores, one in optical section.

calce incrustato, madefacta glutinoso, ultimo in pulvere conterente et inde stratum interius membranaceum exponente; in dehiscencia parte strati exterioris intra marginem prominentem inclusa fracta et in pulverem contrita, strato interiore deinde trito, peridii parte remanente sporis distributis et capillitio dilapso persistente; capillitium e filamentis tenuibus cum multis corporibus calcareis angularibus et furcatis incrustatis consistens, interdum fere badhamoideum et saepe in sporangii centro in pseudo-columellam (Fig. 2, c) crassam, albam, rugosam contractum; pseudo-columella non cum sporangii basi connecta; sporae (Fig. 2, d) per saturam nigrae, visae ad lucem orientem versus porphyreo-brunneae, globosae, 12–13  $\mu$  diam., distincte sed irregulariter spinulosae, pariete tenui instructae. Plasmodium luteum.

Habitat prope vicum "Doorwerth" in provincia Gelria, N. E. NANNENGA-BREMEKAMP 1603 (U), typus; typi duplicati sub nomine *Physarum contextum* distributi in herbariis variis adsunt.

Sporangia (Fig. 2, a and b) sessile, often narrowed at the base, acetabuliform, subregular and 0.4–0.6 mm in diam. as well as in height, or developed into curved and occasionally even annular plasmodiocarps and then the largest diameter up to 2.5 mm, flattened at the top and here surrounded by a protruding irregular and thin margin, congested in small colonies and therefore angular by mutual compression, pale yellow or ochraceous; hypothallus hardly conspicuous; peridium double, the outer layer thick and encrusted with lime, becoming slimy when moistened, finally crumbling away from the membranous inner layer; in dehiscence the part of the outer layer within the protruding margin is cracked and crumbles away; the inner layer is fractured later; after the dispersal of the spores and the disappearance of the capillitium the cupshaped rest of the peridium persisting for a time; capillitium consisting of fine threads containing numerous white, angular and forked lime knots, sometimes almost badhamoid, and in the centre of the sporangium congested into a thick, white and rugose pseudo-columella (Fig. 2, c), which is free from the base of the sporangium; spores (Fig. 2, d) in mass black, dark violet-brown by transmitted light, globose, 12–13  $\mu$  in diam., with a thin wall (less than half as thick as that of *Ph. contextum*), distinctly and irregularly spinulose. Plasmodium yellow.

*Ph. mucosum* was collected but once, viz. scattered over an area of 3 square meters in a wood near Doorwerth in the province Gelderland; numerous colonies were growing here on a mass of thin branches and twigs with dead leaves that had been chopped from shrubs (N. E. NANNENGA-BREMEKAMP 1603 U).

*Ph. mucosum* differs from *Ph. contextum* (Fries) Rost. in the thin margin by which the flattened top of the sporangia or plasmodiocarps is surrounded, by the outer layer of the peridium, which becomes slimy when moistened, by the thick pseudo-columella, and by the darker spores which, moreover, have a thinner, more strongly spinulose, nearly echinulate wall. According to LISTER's monograph (3rd ed.: 61), *Ph. contextum* is described by ROSTAFINSKI as being "usually without a columella", but they themselves make no mention at all of a columella in their description, and MACBRIDE and MARTIN in their monograph (p. 58) and also Martin in the North American Flora definitely say "columella none". Hagelstein (The Mycetozoa of North America, 1944) may have based his description of *Ph. contextum* partly on material belonging to my new species, for he writes "capillitium . . . occasionally densely massed in the middle", which means that a pseudo-columella may be present, but this, as indicated above, probably does not apply to *Ph. contextum* itself. Moreover, the spores are described as follows "the color of the spores of *P. contextum* ranges from dark to light purplish brown, and the spines, often prominent, may be much fainter, and scattered, or arranged irregularly with smooth areas between". This too seems to indicate that his description

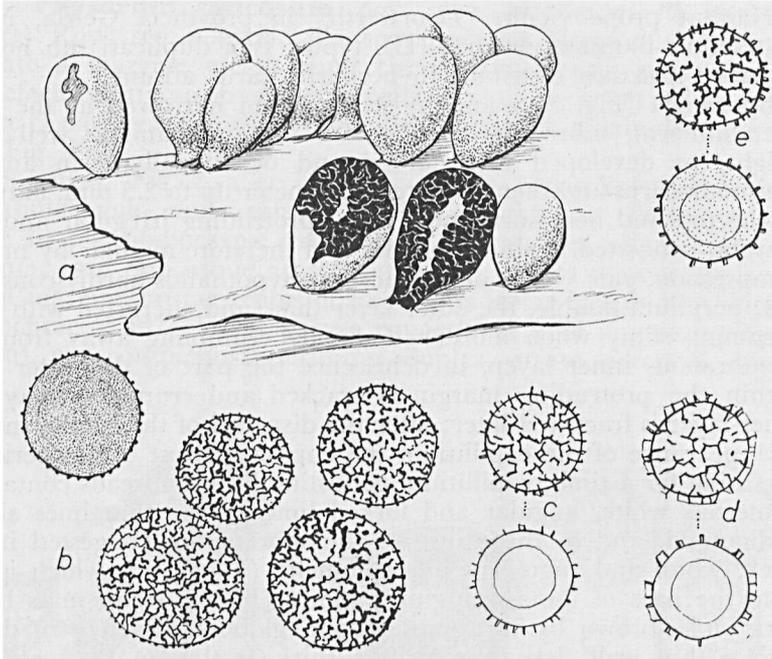


Fig. 3. *Badhamia lilacina* (Fries) Rost. var. *megaspora* nov. var. a. group of sporangia; two opened, showing the dark-coloured mass of spores extending into the pseudostipe, and the calcareous capillitium condensed in the centre into a pseudocolumella; b. spores, one in optical section. For comparison are shown in c and d the spores of *B. lilacina* (Fries) Rost. var. *lilacina* (in c from a specimen collected in England, in d from one collected in North America) and in e those of *B. rubiginosa* (Chev.) Rost. var. *dictyospora* Rost.

includes my new species, for the dark colour of the spores and the prominent spines are characteristic features of the latter.

3. ***Badhamia lilacina* (Fries) Rost. var. *megaspora* nov. var.** (Fig. 3, a et b) sporis majoribus nam 15–20  $\mu$  (Fig. 3, b) vice 10–15  $\mu$  (Fig. 3, c et d) diam., saturate porphyreis et inde colore multo saturatiore, vere ita saturate ut confinium inter parietum et protoplasma difficillime distinguendum, cristis verruculosis multo numerosioribus sed brevioribus obtectis a typo recedens.

Habitat "Vasse" prope vicum Ootmarsum in provincia "Overijssel" dicta in palude, N. E. NANNENGA-BREMEKAMP 46 (U), typus varietatis; duplicati typi in collectione privata (Doorwerth) et in collectione Dr. Karstens (Leiden).

This variety (Fig. 3, a and b) differs from the type in the spores. The latter are much larger, for they vary in diameter between 15 and 20  $\mu$  (Fig. 3, b), whereas those of the type vary between 10 and 15  $\mu$ , and usually even between 12 and 14  $\mu$  (Fig. 3, c and d); they are, moreover, darker in colour, so dark in fact that it is very difficult to distinguish the wall from the contents, and the warted ridges by

which the episore is covered, are far more numerous, but lower.

The specimen on which this variety is based, was collected on the Sphagnum bog, which is the source of the "Poelbeek" near Vasse. This habitat is not unexpected, for the typical form of *Badhamia lilacina* too is found in this kind of habitat. I myself collected it recently in a "trembling" bog near Kortenhoef in the region of the fens and pools along the border of the provinces North Holland and Utrecht. It grew here abundantly on Sphagnum, grass and withered leaves.

The variety is so far not known from other localities.