

Myxomycetes New to India. I.

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Abstract. This paper records three genera of the Myxomycetes, new to India viz: *Echinostelium* (1 species), *Macbrideola* (1 species) and *Pleiomorpha* (2 species). The last genus was published as a subgenus of *Licea* by NANNENGA-BREMEKAMP (1965) and is being treated here as a genus for which a short history and key to the species is given. All the four species were procured from the bark in the moist chamber following GILBERT and MARTIN (1933). The taxa described here are fully illustrated. The material of all species is lying in the Herbarium, Department of Botany, Panjab University, Chandigarh — 160014, India, except where stated otherwise.

In case of *Echinostelium* and *Macbrideola* classification followed ALEXOPOULOS (1973) whereas, in case of *Pleiomorpha* the concept of NANNENGA-BREMEKAMP (l. c.) has been accepted. The differences of these Indian species, where they exist, are compared or contrasted with the species described by MARTIN and ALEXOPOULOS (1969).

1. *Echinostelium minutum* de BARY in Rost. Versuch 7. 1873.

Matured in the moist chamber from the bark of *Populus* sp., collected from Pahalgam (2,100 m. alt.), Jammu & Kashmir, India, August 30, 1972, PAN/SS DHILLON 1841 and a part in the private Herbarium of NANNENGA-BREMEKAMP, NE 8404. (Figs. 1—3).

Fructifications sporangiate, stipitate, total height upto 300 μ ; sporangia minute, globose, scattered to gregarious, creamy white, erect or sometimes slightly inclined, upto 65 μ in diameter; stipe thin and hair-like, filled with granular matter, expanded below, 100—200 μ long; columella small; capillitium sparse, scanty, rather open with a few meshes and many hooked free ends; spores creamy white in mass, pallid by the transmitted light, globose, smooth with equidistant thickenings on the spore wall, 6.8—8 μ in diameter; protoplasmodium not seen.

The species is characterised by the minute sporangia, scanty netted capillitium (with a small net having hooked free ends) and the characteristically marked spores. The present collection is similar to the species in most respects, however, the sporangia are slightly larger in diameter (upto 65 μ) instead of upto 50 μ , and there is characteristic thickening on the spore wall not reported for this species (fide MARTIN and ALEXOPOULOS, 1969). This marking is, however, a generic feature.

In the presence of the capillitium *E. minutum* is close to *E. cribrarioides* ALEXOP., but differs in not having a large meshed net, in having many hooked free ends and smaller spores than reported for the latter species (9–10 μ in diameter).

2. *Macbrideola cornea* (G. LISTER & CRAN) ALEXOP. Mycologia 59: 112. 1967.

Matured in the moist chamber from the bark of *Abies* sp., collected from Narkanda (2,700 m. alt.), Himachal Pradesh, India, June 27, 1971, PAN/SS DHILLON 1842, (Figs. 4–6).

Fructifications sporangiate, stipitate, total height upto 0.65 mm; sporangia solitary, scattered, globose, dark brown, 0.1–0.2 mm in diameter; stipe rather long, erect, slender, tapering upwards, translucent, hollow, tubular, yellow near the base but darker above, filled with interlacing strands or thread-like structures, upto 0.45 mm long; hypothallus either indistinct or sometimes small and discoid; columella present, concolorous with the upper part of the stipe i. e. brown, cylindric, marked by a collar near the sporangium base, reaching almost to the middle of the sporangial cavity, dividing above into three or four main branches; peridium fugacious; capillitium arising from the main branches of the columella, dichotomously branching into a few other branches, light brown in colour, ultimate branches rather stout; spores brown in mass, light brown by the transmitted light, globose, minutely verrucose with thick wall, lacking a paler area on the one side, 8–9.5 μ in diameter; plasmodium hyaline or colourless.

This species is characterized by the scattered minute sporangia, hollow tubular stipe with yellow base, columella with persistent basal collar and the origin of capillitium.

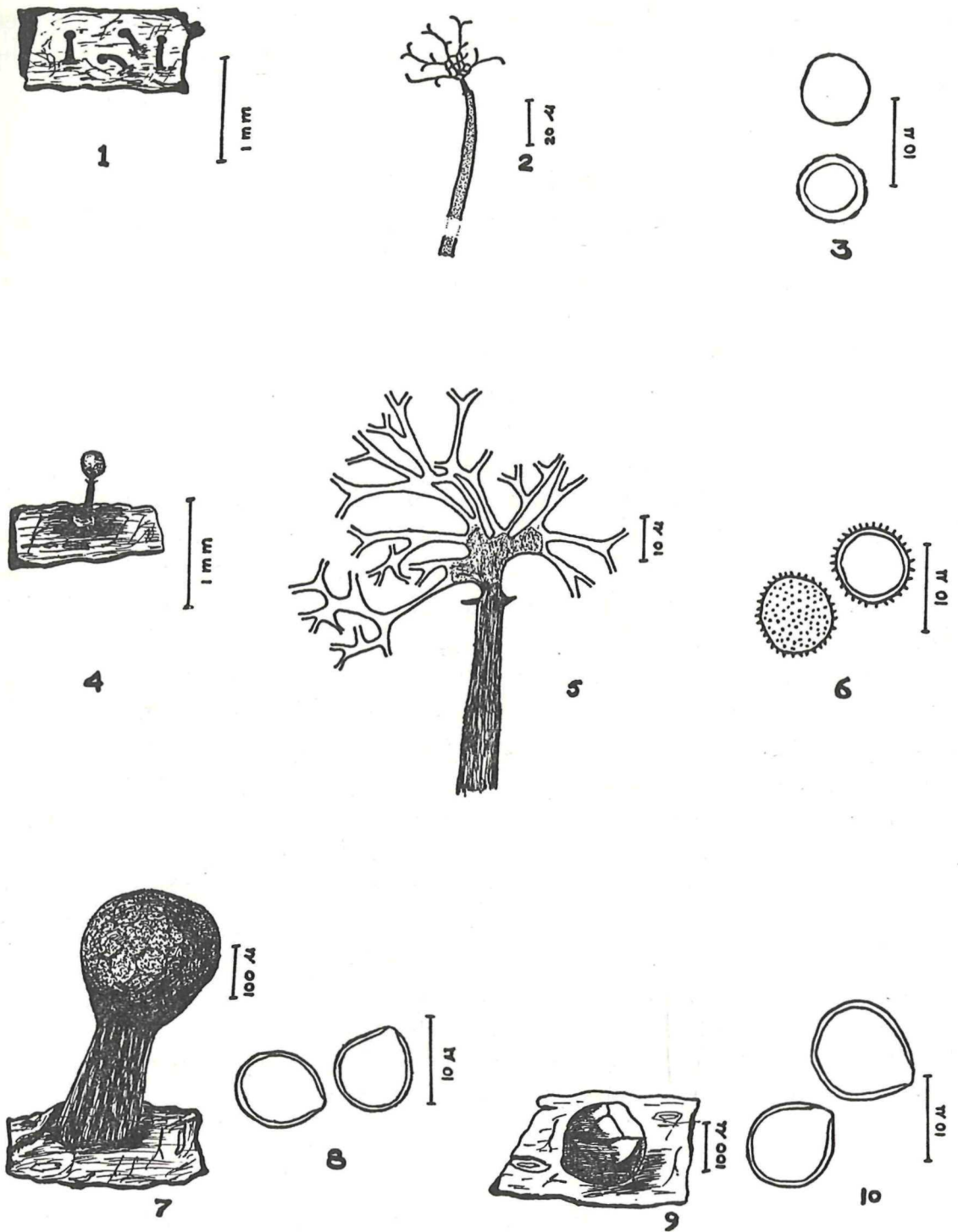
The present Indian collection differs from authentic species in the colour of the spore mass (yellowish grey fide MARTIN & ALEXOPOULOS, 1969), in having a thick spore wall (instead of thin) and in lacking a paler area on the one side as reported for the species.

This collection is the first record from India as well as Asia.

Pleiomorpha (NANN.-BREM.) DHILLON stat. nov.

Basionym: *Licea* subgen. *Pleiomorpha* NANN.-BREM., Acta. Bot. Neerl. 14: 132. 1965.

The name *Pleiomorpha* was first introduced by NANNENGA-BREMEKAMP (l. c.) as a subgenus of *Licea*. The dehiscence in the former genus is either irregular, by an apical slit or a longitudinal fissure. *Pleiomorpha* is quite close to *Licea* but in the latter the dehiscence goes along preformed lines into angular plates which are provided with interlacing knobs or pegs at the margin. This type of structure reminds



Figs. 1—3. *Echinostelium minutum* de BARY. 1. Sporangia. 2. Capillitium net, the hooked free ends and a part of the stipe. 3. Spores.

Figs. 4—6. *Macbrideola cornea* (G. LISTER & CRAN) ALEXOP. 1. Solitary sporangium. 2. Detail of capillitium, columella, the persistent collar and part of the stipe. 3. Spores.

Figs. 7—8. *Pleiomorpha pedicellata* (GILBERT) DHILLON comb. nov. 1. Single stalked sporangium. 2. Spores.

Figs. 9—10. *Pleiomorpha belmontiana* (NANN.-BREM.) DHILLON comb. nov. 1. Single sessile sporangium. 2. Spores.

one of a "Zip mechanism" and NANNENGA-BREMEKAMP has coined the term "zipper" for such apparatus. Such knobs or pegs are lacking in the genus *Pleiomorpha*.

Key to the Species

1. Fructifications typically stipitate; dehiscence irregular.... *P. pedicellata*.
- 1*. Fructifications always sessile; dehiscence along preformed ridges.....
..... *P. belmontiana*.

3. *Pleiomorpha pedicellata* (GILBERT) DHILLON comb. nov.

Basionym: *Hymenobolina pedicellata* GILBERT, Univ. Iowa Stud. Nat. Hist. 16: 153. 1934.

Matured in the moist chamber from the bark of *Aesculus indica* COLEBR., collected from Manali (1,800 m. alt.), Himachal Pradesh, India, September 29, 1971, PAN/SS DHILLON 1831; matured in the moist chamber from the bark of *Cedrus* sp., collected from Nainital (1,981 m. alt.), Uttar Pradesh, India, August 15, 1973, PAN/SS DHILLON 14027, (Figs. 7—8).

Fructifications sporangiate, stipitate, total height upto 650 μ ; sporangia globose, scattered and solitary, dark brown, upto 260 μ in diameter; stipe thick, rugose, slightly tapering upwards, opaque when mounted, filled with amorphous material, upto 260 μ long; capillitium or pseudo-capillitium absent; dehiscence irregular; peridium rough, granular, membranous; spores dark brown in mass, yellowish by the transmitted light, globose, thick walled, with a paler area on the one side, almost smooth, 11—12 μ in diameter; plasmodium hyaline.

The distinguishing characters of the species are its minute stipitate sporangia, irregular dehiscence and the large thick-walled smooth spores with a paler area on the one side.

The present collections are quite typical for the species and are the first report outside North America and Europe.

4. *Pleiomorpha belmontiana* (NANN.-BREM.) DHILLON comb. nov.

Basionym: *Licea belmontiana* NANN.-BREM., K. Ned. Akad. van Wet. Proc. 69: 337. 1966.

Matured in the moist chamber from the bark of *Abies* sp., collected from Manali (1,800 m. alt.), Himachal Pradesh, India, June 29, 1971, PAN/SS DHILLON 2507 and a part in the private Herbarium of NANNENGA-BREMEKAMP, (Figs. 9—10).

Fructifications sporangiate; sporangia sessile, scattered, sub-globose to angular, dark brown, shining, 65—130 μ in diameter; capillitium and pseudo-capillitium absent; peridium single, thin, dark brown, translucent when mounted on a slide in KOH, marked by preformed raised ridges (along which dehiscence occurs); no lid

formation by the apical plates; spores dark brown in mass, light brown under the transmitted light, globose, spore wall thick over most of the surface, the remaining area thin walled, smooth, 12–14 μ in diameter; plasmodium not seen.

The species is marked by the sessile minute subglobose to angular sporangia, the manner of dehiscence and the large smooth spores with a thin-walled area on the one side.

The present collection differs from the type in its habit (scattered and not gregarious), the apical plates which do not fall off at maturity and the matrix (*Abies* sp. instead of *Acer* sp. in the type collection).

The species was previously known only from the type locality (Wageningen, the Netherlands) and its record from India is a remarkable extension of the geographical distribution of this species and confirms its validity.

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