

Short Communication

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AN OBSERVATION OF SPORE GERMINATION (*IN SITU*) IN *FRULLANIA* *PHYSANTHA* MITT.

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Spore germination (*in situ*) has been discovered and studied in *Frullania physantha* Mitt. for the first time.

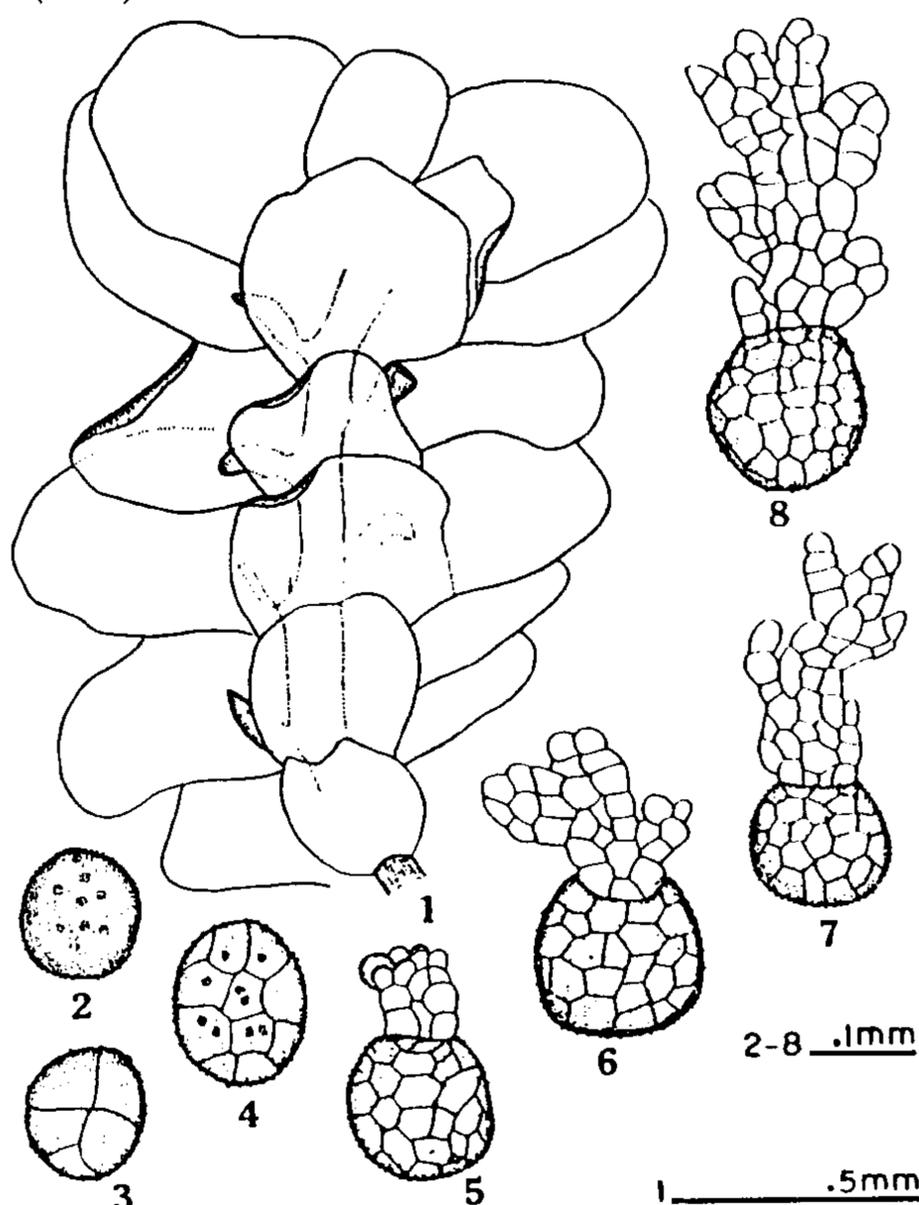
Key Words : *Frullania*, *Frullania physantha* Mitt., Spore germination (*in situ*)

During the course of investigations on Indian taxa of family Frullaniaceae, interesting features of spore germination *in situ* has been observed in the type specimen (G 15958) of *F. physantha* received on loan through the courtesy of Director, Conservatoire et Jardin Botanique, Geneve. The sporeling germination pattern and early stages of germination (*in situ*) in *F. physantha* Mitt. are being reported here for the first time with illustrated account. The presence of *in situ* germination of spores is also an addition to the knowledge of sporeling pattern of *F. physantha*.

Plants were characterized by entire, broader amphigastria, larger leaves, cucullate lobules (Fig.1) and bulbous 5-keeled perianth having short beak, spores minutely papillose, 46-69 μ m in diameter.

When dried herbarium plant specimen was stretched with water for study then after rupturing the capsule, spores were observed in early stages of germination *in situ*. The stages were found resembling with those earlier described by Fulford (1956) in *F. dilatata* and Nehira (1984) in *F. densiloba*. Initially the spores were spherical to oval and papillose (Fig. 2) but in later stages differentiation had taken place and a 5-7 celled stage (Fig.3) appeared which after some time may have given rise to a globose protonema of 20 or more cells through divisions inside the large exospore (Fig.4). Gradually the leafy shoots have protruded out in the form of globular mass (Figs. 5,6) from an active cell at one end. Further development continued to form primary ovate to oblong leaves and smaller inflated juvenile leaves (Figs.7,8).

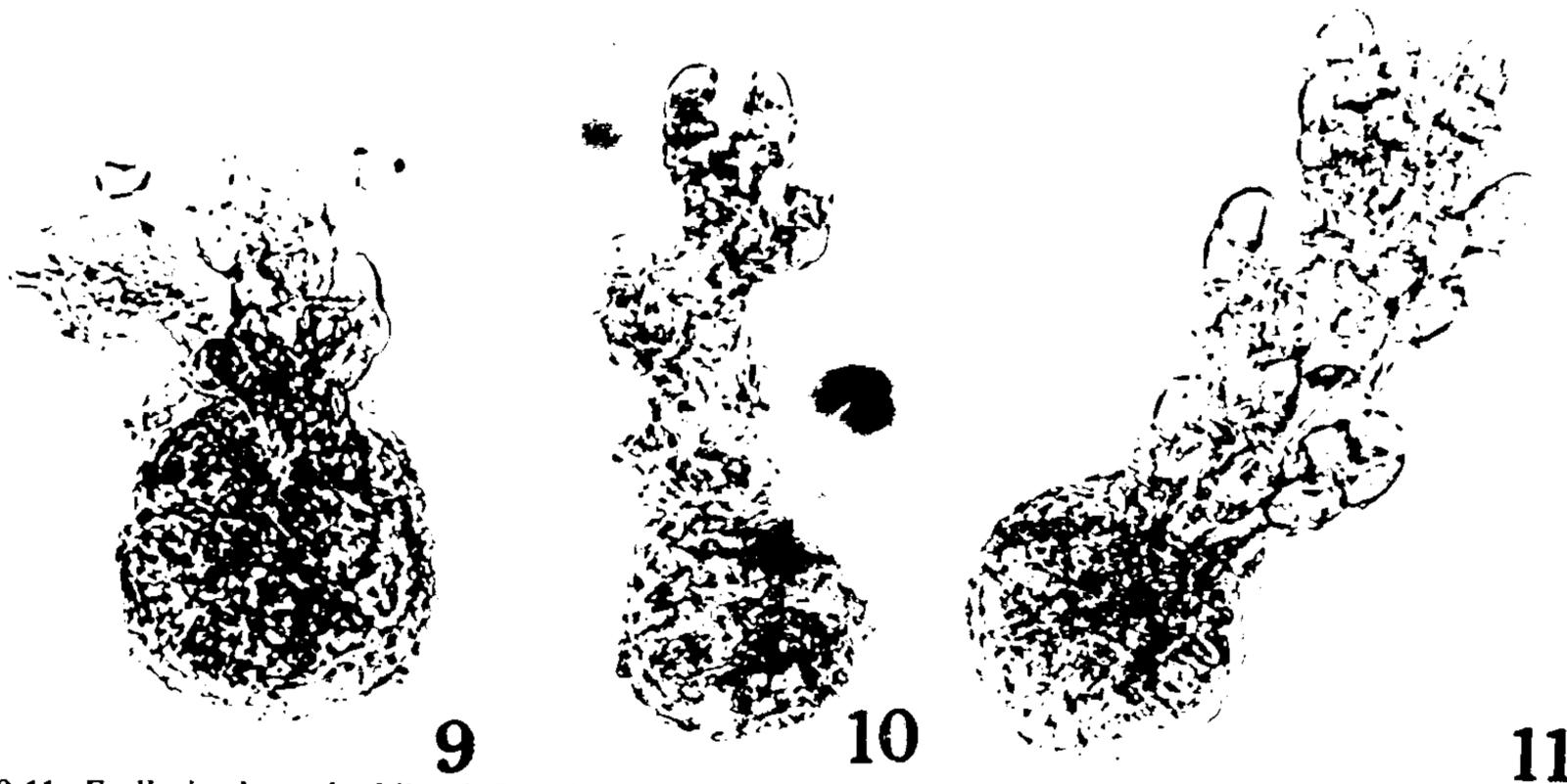
Specimen examined: G 15958 Original. Typus : *Frullania physantha* Mitten subgenus *chonanthelia*,



Figures 1-8 *Frullania physantha* Mitt. - 1. A portion of the plant in ventral view. -2. Spore. -3. 5-7 Cell stage. -4. Globose protonema developed inside exspore. -5, 6. Spores showing protruded globular mass. -7, 8. Differentiation of juvenile and young leaves.

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Figures 9-11. *Frullania physantha* Mitt. -9 Sporeling showing ovate-oblong primary leaves. -10,11. Differentiation of juvenile and young leaves (x 4800).

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REFERENCES

Fulford M 1956 The young stages of the leafy Hepaticae,

Phytomorphology 6 199-235.

Nehira K 1984 Spore germination, protonema development and sporeling development, in R.M. Schuster (ed.) *New Manual of Bryology* 1 343-385 Nichinan.