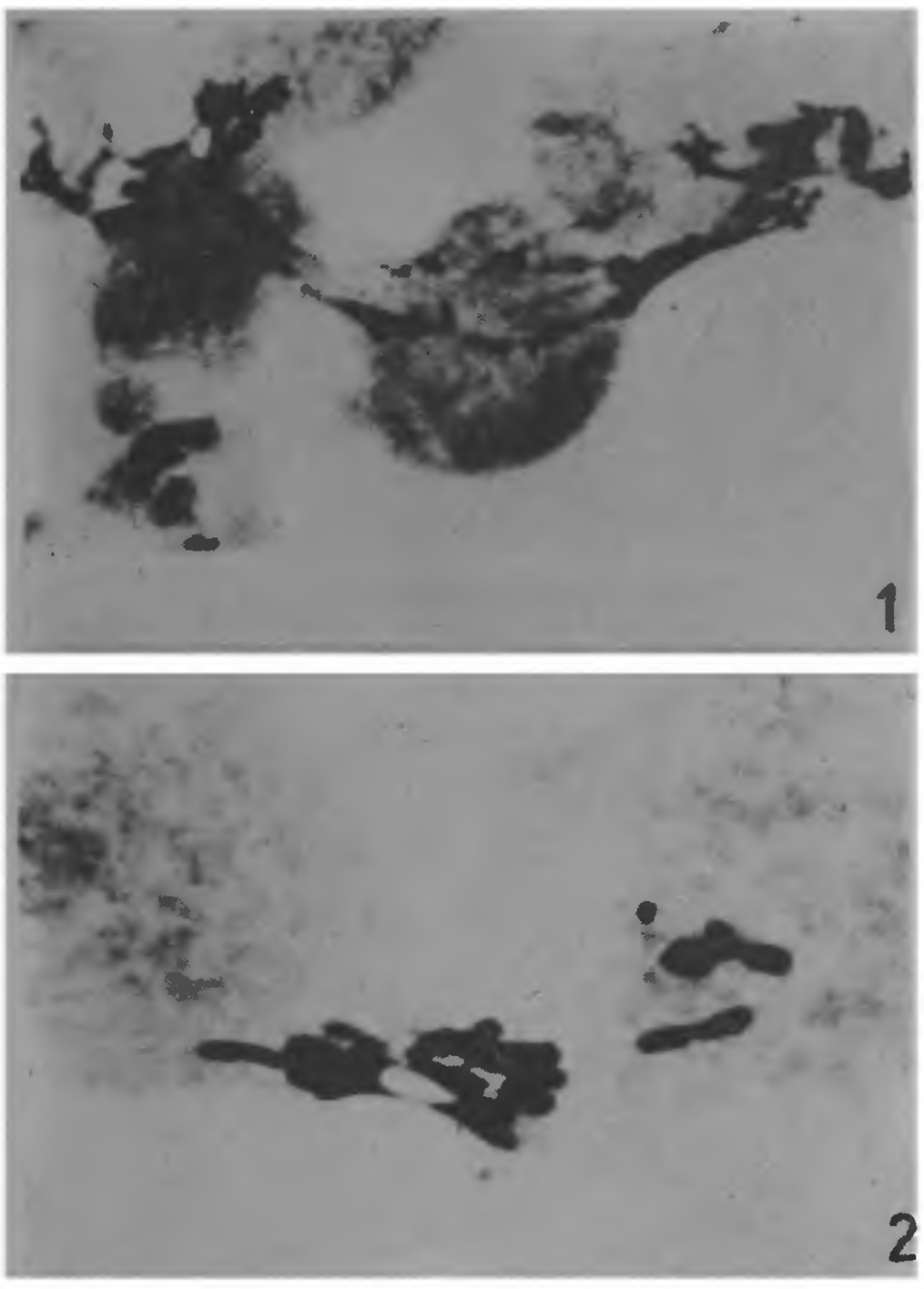

Figures 1 and 2. **1.** PMCs involved in cytomixis showing continuous flow of chromatin from one PMC to another; **2.** PMCs involved in cytomixis at metaphase I showing some of the chromosomes are not involved in this phenomenon.

ances have been advanced[9]. Recently most of the workers opine that it is genetically controlled[5, 6]. Occurrence of cytomixis in highly evolved and meiotically stabilized C_{13} plants further strengthened the argument that it may be associated with certain genetic factors which does not have serious effect on the viability of gametes. Production of aneuploid or hyperploid gametes due to partial or complete chromatin migration may play a significant role in the evolution and variation of certain taxon.

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DEVELOPMENT AND HISTOCHEMISTRY OF SPINE IN *CENTROCERAS CLAVULATUM* (C. AGARDH) MONTAGNE

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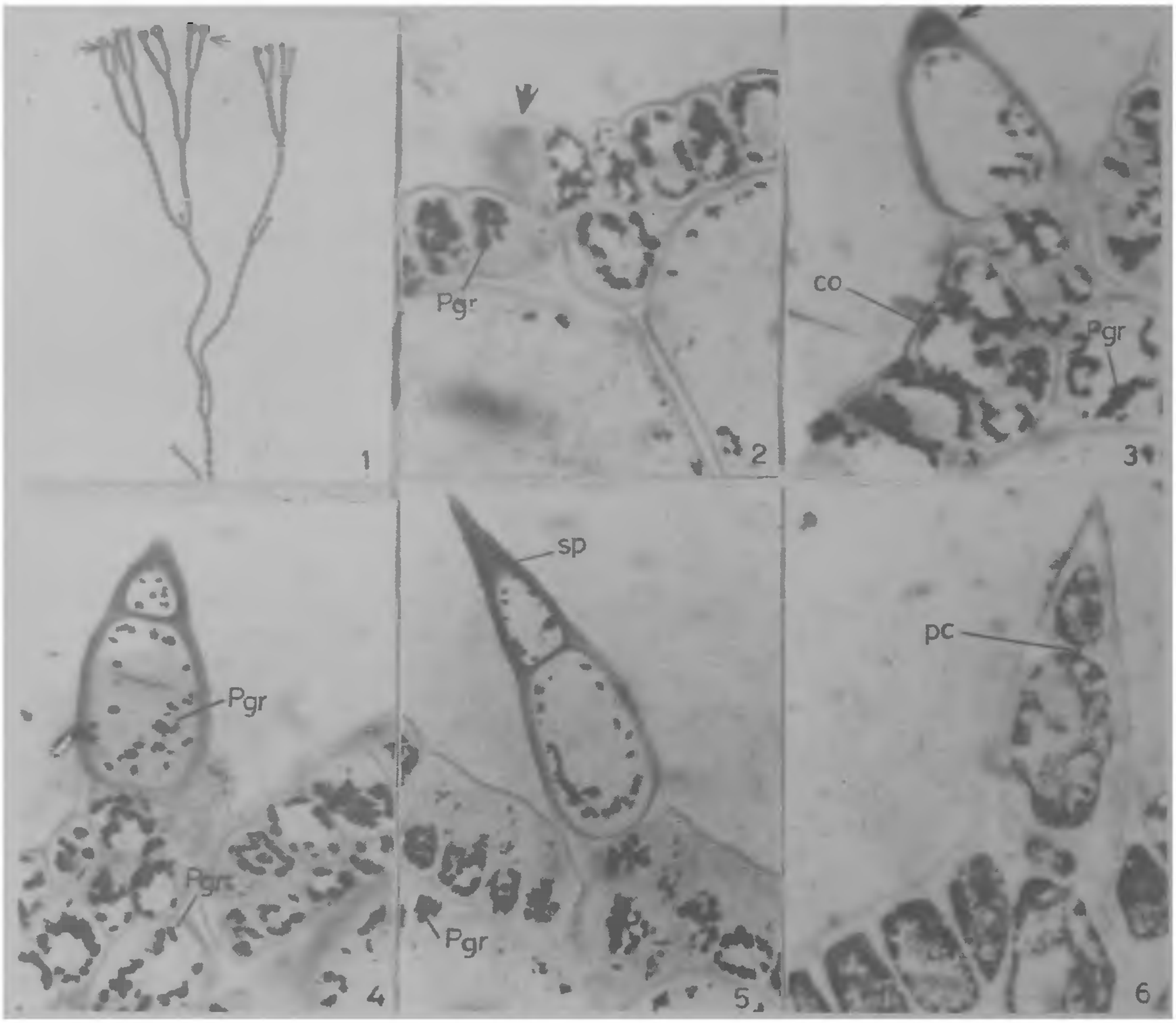
CENTROCERAS CLAVULATUM (Ceramiaceae, Ceramiales, Rhodophyta) exhibits simplicity both in vegetative and reproductive organs. The alga is bushy, dull, purple red and about 1–3 cm in height. The filiform thallus attenuates at the apex and repeatedly branches to form fairly regular dichotomy with incurved tips (figure 1). The spines are present only in the nodes and abundant at the tips[1, 2]. The spines are generally two-celled but rarely three-celled and are uniseriate with pointed tip. Rhizoids emerge from nodes.

The algae collected during December 1984 and January 1985 were fixed in 10% aqueous acrolein and dehydrated, infiltrated and embedded in glycol methacrylate[3]. Sections (2 μ) were cut using glass knives and stained for developmental and histochemical studies[3–8].

The spine initial bulges as a very small protuberance (figure 2) and gradually enlarges. A thick mucilaginous layer overlays the initial. A small PAS positive protuberance emerges from the mature spine initial (figure 3) that enlarges in size (figure 4). The initial cell of the spine divides transversely to produce two unequal cells. This terminal cell enlarges gradually; the tip of this cell becomes very pointed. Occasionally the mature spine even becomes a 3-celled structure and the cells are connected by pit connections (figure 6).

In *C. clavulatum* (present work) the spine wall is PAS positive and during development the wall shows different staining intensity with PAS reaction. During early stages of development the spine wall and tip (figure 3) are strongly PAS-positive. In the



Figures 1–6. Spine development in *Centroceras clavulatum*. **1.** The thallus shows dichotomous branching, note the pointed tips (arrow) (× 15). **2.** Spine initial at the nodal region. The cell wall and polysaccharide grains stain intensively with PAS (× 455). **3.** The development of a protuberance (arrow) at the tip of the spine which stain intensively for PAS. The polysaccharide grains in the cortical cells are fused (× 455). **4.** Two-celled spine stained with PAS (× 455). **5.** Two-celled spine with very pointed tip showing deposition of polysaccharide grains (× 455). **6.** Two-celled spine showing pit connection between the cells (× 455). (co, cortex; pc, pit connection; pgr, polysaccharide grains; sp, spine).

two-celled mature spine, however, the wall of the lower cell takes less PAS stain as compared to the wall of the upper cell. The number of polysaccharide grains is smaller in young spine cells in contrast to mature spine cells. In the latter, the grains aggregate around the periphery of the cells (figure 5) and are smaller in size than grains found in the cortical cells. The characteristic photosynthetic product in Rhodophyceae is a polysaccharide, Floridean starch that is present as small grains. Two main classes of polysaccharides have been identified in the cell walls of red algae: hot water soluble polymers that form an amorphous material and soluble structural polymers that are fibrillar. The soluble polymers consist of galactose and/or modified galactose units[6]. The insoluble structural elements of the walls of these algae are reported to be 1,3-linked xylans and 1,4-linked mannans. The present work on *C. clavulatum* suggests that the polysaccharides deposited at the spine initial tip during early stages of development are perhaps utilized in the formation of the multicelled spine.

The spine cell wall does not stain with protein. Pit connections between the cells stain darkly for protein (figure 6), showing the proteinaceous nature of pit connections[7]. The cytoplasm towards the periphery stains positively for protein. The central portion of the cells in the spine stains negatively for protein (figure 6).

The mode of development of spine in *C. clavulatum* is similar to that of *Ceramium* species[2]. The pit-connections between the cells of spine are similar to that of cortical and axial cells[10]. In certain members of *Ceramium* such as *C. fimbriatum*, *C. gracillium* var byssoideum and *C. tenerrimum*, large, thumb-like protrusions originating from the pericentral cells occur in the nodal bands of the thallus and persist for a long time[5]. The thumb-like protrusions correspond to the spines of other species of *Ceramium*[9]. Our observations on *C. clavulatum*, report for the first time, thumb-like protrusions which also correspond to the spines. This is also the first report on the histochemical nature of the spines. The copious extracellular polysaccharides secreted by spines are interesting and the exact function of such secretions and spines needs further studies.

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A NEW SPECIES OF *PODOSPORIUM*

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DURING a survey of fungi from Aravalli hills, Rajasthan, the authors observed a growth on twigs of *Ficus religiosa* Linn. The fungus was found to be a new species of *Podosporium*. So far 3 species of this genus viz *P. rigidum* Schw, *P. nilgirense* (Subram) M. B. Ellis and *P. viticola* Munjal and Kapoor have been reported. The present fungus differs from the above species in having furcate conidia. The apical cell of the conidium is usually bifurcate to trifurcate. Due to these distinct morphological characters, the fungus is being described as a new species.

Podosporium furcatum sp nov Sharma *et* Panwar

Synnemata subulata, nigra, erecta, dispersa, 1–2.5 mm long, basi 80–250 μ lata, apice vero 30–60 μ. Filia conidiophora brunnea. 3–5 μ crassa per majorem longitudinem, apicibus cellulam conidiogenam ferentibus. Cellulae conidiogenae monotraticae, integratae, terminales. Conidia e poris apicalibus conidiophorum extrema inflata exorientia, obclavata ad fusiformia, pallidebrunnea, laevia, 5–15 septata, 70–160 μ longa, ad 11–23 μ lata, 4–8 μ

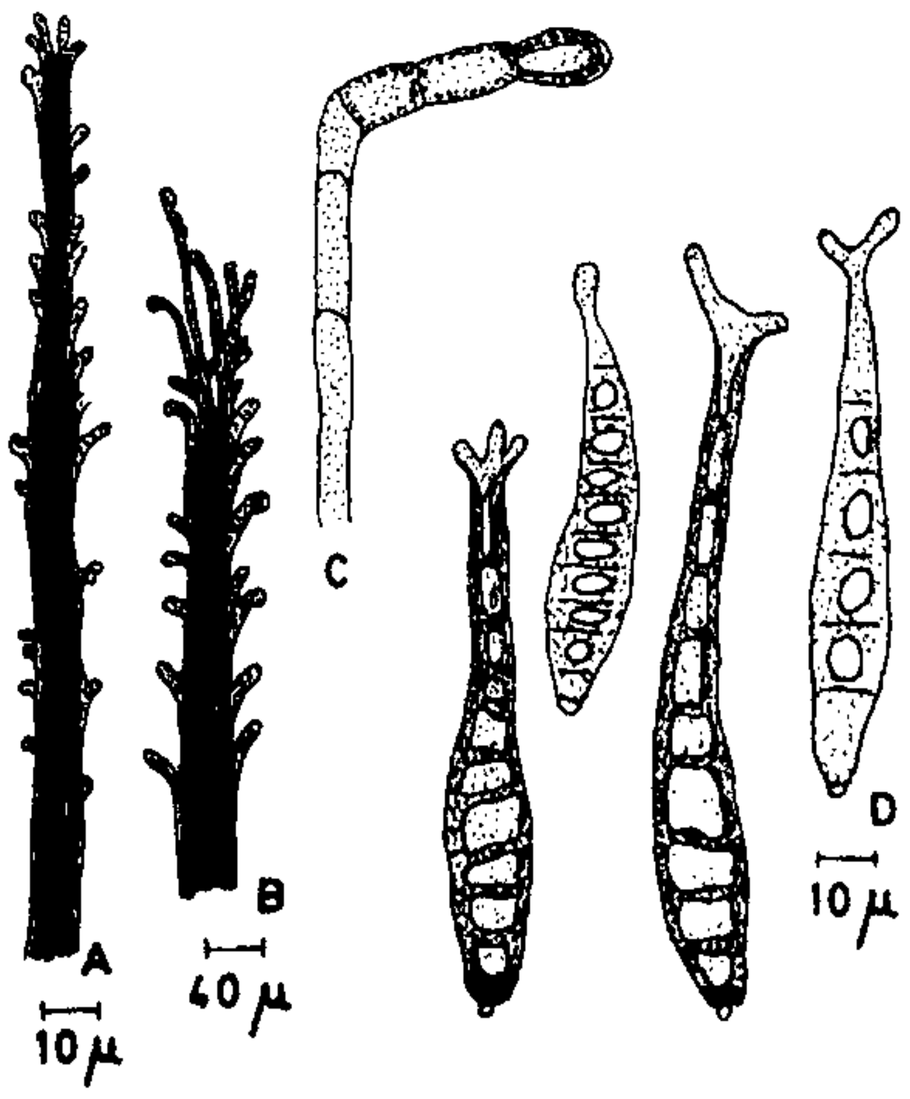

Figure 1 A–D. *Podosporium furcatum*. **A.** Synnema; **B.** A part of synnema with conidia; **C.** Conidiophores with conidium; and **D.** Conidia.