A NEW SPECIES OF *BACCHAROIDES* (ASTERACEAE:VERNONIEAE) FROM UGANDA, EAST AFRICA

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Abstract

Baccharoides tayloriana formerly including in the *Vernonia hymenolepis* group is described as a species new to science. The new species is found on the Ruwenzori mountain, Uganda. A short discussion of its systematic position and an illustration are provided.

Introduction

The genus *Baccharoides* Moench was resurrected by Robinson (1990) who transferred three *Vernonia* species to the genus on the basis of its lophate pollen with polar areoles, which is distinctive among Old World tricolporate Vernonieae. Isawumi (1993) transferred four other species and seven infraspecific taxa from the genus *Vernonia* to *Baccharoides* based on its strikingly distinctive floral characteristics which separate it from the genus *Vernonia s.l.* The resurrected genus was found to possess corollas with long, slender, basal tubes, abruptly expanded cylindrical limbs and comparatively short erect lobes; phyllaries are apically appendaged; and the style bases are completely enclosed by long keeled nectaries.

During a comprehensive study of the genus *Baccharoides* (Isawumi & El-Ghazaly in press) using pollen morphology and floral microcharacters to diagnose the species it became obvious that a specimen from Ruwenzori in Uganda, hitherto treated as belonging to *Vernonia hymenolepis* A. Rich., should be separated as a new species.

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Baccharoides tayloriana Isawumi, sp. nov.

(Fig. 1 A1-A3; Pl.1 A-G)

Holotype: Uganda, Ruwenzori, Namwamba valley, Kilembe, c. 2,850-3,150 m, 6.i.1935, Taylor 2934 (S).

Frutex erectus tomentosus. Folia alterna petiolata, lamina plana elliptico-lanceolata herbacea, pinnatinervia, margine serrata, 13.5–25 cm. longa et 5—8.5 cm. lata, inferne lanata–tomentosa, super sparsim puberula, apice acuminata. Capitula c. 3.5 cm. diametro, homogama, discoidea, in corymbum laxum terminalem disposita. Pedunculus 2–5 cm. longus. Involucrum late campanulatum. Phyllaria 1.7–2.6 cm. longa, pluriseriata, scariosa, appendicibus apicalibus, apice acuminata. Receptaculum convexum epaleatum. Flosculi disci hermaphroditi, c. 14 mm. longi, corolla e tubo angusto abrupte ampliata lobis quinque erectis. Antherae basi calcaratae; appendicibus apicalibus ovatis–lanceolatis, pilis unicellularibus tectis; endothecio polarato. Filamentum collum dilatatum; filamenta longa torsiva, nectario connata. Cypselae homomorphae 5–6 mm. longae, 16–20-costatae, sparsim pilosae. Pappi setae pluriseriatae barbellatae caducae.

An erect shrub, copiously tomentosely hairy. Leaves alternate; lamina 13.5–25 x 5–8.5 cm, flat, pinnativeined, distinctly serrate at margin with many callose-tipped teeth on each side, elliptic-lanceolate, with cuneate attenuate base tapering into a petiole c. 3-5 cm long, lower surface woolly tomentose with appressed matted T-shaped hairs interspersed with scattered glandular hairs, upper surface sparsely puberulous with scattered patent hairs; apex acuminate. Capitula c. 3.5 cm in diam., homogamous, discoid, in loose terminal flat-topped corymbs. Peduncles 2–5 cm long, with a few lanceolate bracts below the capitula. Involucre broadly campanulate. Phyllaries pluriseriate, with overlapping margins, scarious, apically appendaged; outer phyllaries lanceolate c. 1.7 cm long, glabrescent apically, tomentose basally, with a midvein and usually 2 veins on either side; middle phyllaries c. 2.4 cm long including the appendage, acuminate at tip, broadly lanceolate, tomentose at the junction of the appendage and the base, with a midrib and about 4 veins on either side, acuminate at tip; inner phyllaries c. 2.6 cm long including the appendages, tomentose on the appendage and the margins of the phyllary base, elliptic-lanceolate, gradually tapering to the acuminate apex. Receptacle somewhat convex, epaleate. Disc-florets perfect, c. 14 mm long with long, slender, basal tubes, abruptly expanded cylindrical limbs and 5 lanceolate erect lobes. Veins forming an arch at the corolla lobe without median trace; corolla with capitate glands and biseriate eglandular trichomes concentrated on corolla lobe tips also with many biseriate eglandular trichomes and few capitate glandular hairs on the throat and the tube. Epidermal cells of the adaxial corolla lobe elongate and distinctly wavy. Anthers calcarate; apical appendage ovate–lanceolate, narrower than the thecae, acute at tip, completely covered with unicellular hairs; distal hairs acute/acuminate, proximal hairs obtuse. Endothecial tissue polarized. Filament collar somewhat dilated distally but not thicker than the filament; filament long, coiled and connate to the nectary at the base of the corolla tube. Style base slightly dilated and

enclosed by a long cylindrical nectary; style branches apically tapering, long exserted and curved, with distinctly stigmatic areas throughout the inner portions, outsides covered with unicellular hairs down to the upper portion of the shaft. Cypselas homomorphic, dark brown, 5–6 mm long, narrowly oblong, terete, 16–20-costate, sparsely pilose with short twin hairs, few capitate glands and many idioblasts; testa epidermis ornamented; carpopodium large, annular, the cells heavily thickened with simple pits; ovary crystals broad, lozenge-shaped. Pappus bristles pluriseriate, caducous, flat, acute/acuminate at tip with some dilated distally, basally connate to form an annulus, barbellate on margins, stramineous or somewhat fulvous. Pollen echinolophate, tricolporate, micropunctate with long colpi.

Discussion

The striking distinguishing characters of the new species are, *inter alia*, the complete covering of the apical anther appendage with unicellular hairs (Fig.1A2, Pl.1A–B) and the extraordinarily long coiled filaments which are connate to the nectary at the base of corolla tube (Fig.1A3). These characters are autapomorphic for the species, and clearly distinguishes it from the *Vernonia hymenolepis* group and other species of *Baccharoides*. The strange apical anther appendage has not been observed in any other species in the family Asteraceae (Karis, Anderberg, Nordenstam, pers. comm.).

V. hymenolepis belongs to the genus *Baccharoides* (Isawumi & El-Ghazaly in press) because it shares with the genus all the diagnostic characteristics mentioned above. The new species is superficially somewhat similar to *V. hymenolepis*. As a result, most authors might have been lumping it with either *V. hymenolepis* (Wild 1978, Jeffrey 1988) or *V. tolypophora* Mattf. (Pope 1992). With the above listed characters, *B. tayloriana* is, however, distinct, but if it is put as a separate genus, *Baccharoides* may become paraphyletic.

The crystals in the ovary wall of the new species are broad and lozenge-shaped (Dormer 1961, Plate 1), whereas those of *V. hymenolepis* and other species of *Baccharoides* are elongate and hexagonal in shape. The observably different macrocharacters of the new species from *V. hymenolepis* are the larger capitula and larger leaves.

The new species belongs to the genus *Baccharoides* because it shares some morphological characters which define the genus. Some of the characters have already been mentioned above and include the elongate corolla tube with abruptly expanded cylindrical limbs and phyllaries apically appendaged. It also shares with the genus some major pollen characters which separate it from the genus *Vernonia s.l.*, some of the characters being lophate pollen with long colpi (Pl.1H) and with equatorial lacunae (Pl.1G). Its pollen is therefore echinolophate, tricolporate, micropunctate and with large basal columellae, the sort of grains classified by Jones (1981) as 'type C' pollen. The 'type C' pollen is said to be unique to section *Stengelia* (now genus *Baccharoides*) in the Old World and is different from most type C of the Neotropics by the presence

of three equatorial areoles of the intercolpi and strong basal columellae under the crests of the exine (Robinson 1990).

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References

Dormer, K.J. 1961. The crystals in the ovaries of certain Compositae. *Ann. Bot. n.s.* 25: 241-254.

Isawumi, M.A. 1993. New combinations in *Baccharoides* Moench (Vernonieae: Compositae) in West Africa. *Feddes Repert.* 104: 309-326.

Isawumi, M.A. & G. El-Ghazaly in press. Pollen morphology, floral microcharacteristics and taxonomy of the genus *Baccharoides* Moench (Vernonieae: Asteraceae). *Grana Palyn.*

Jeffrey, C. 1988. The Vernonieae in East Tropical Africa. Notes on the Compositae:V. *Kew Bull.* 43: 195-277.

Jones, S.B. 1981. Synoptic classification and pollen morphology of *Vernonia* (Compositae: Vernonieae) in the New World. *Rhodora* 81:425-447.

Pope, G.V. 1992. Compositae. *In*: *Flora Zambesiaca* 6, 1:1–264.

Robinson, H. 1990. Six new combinations in *Baccharoides* Moench and *Cyanthillium* Blume (Vernonieae: Asteraceae). *Proc. Biol. Soc. Wash.* 103: 248–253.

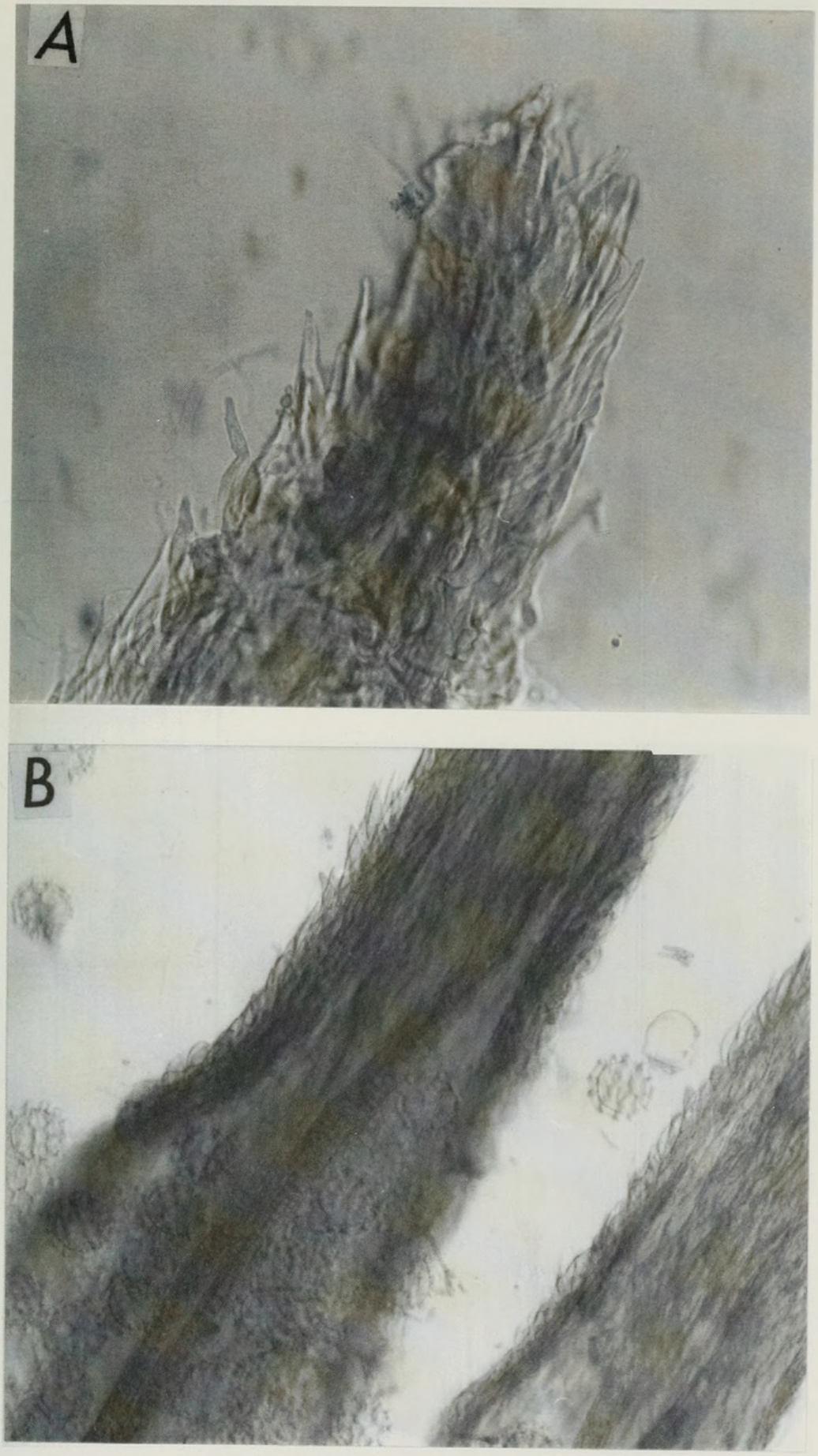
Wild, H. 1978. New and interesting *Vernonia* species from the Flora Zambesiaca area. *Kirkia* 11: 1-23.

FIGURE LEGENDS

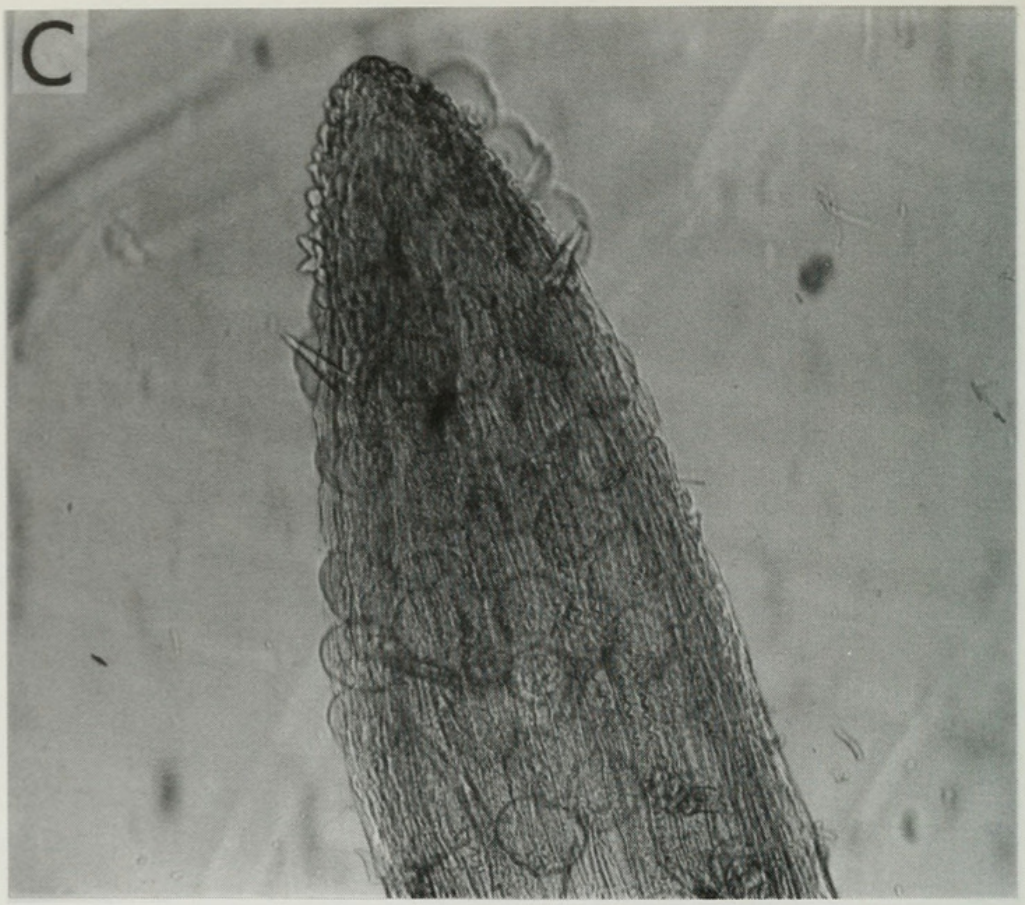
Fig. 1 *Baccharoides tayloriana* Isawumi.
A: Habit; A1: Disc-floret; A2: Stamen with anther apical appendage covered with unicellular trichomes; A3: Floret with long, coiled filaments which are connate to the nectary at the base of corolla tube. – A–A3: Taylor 2934 (S).

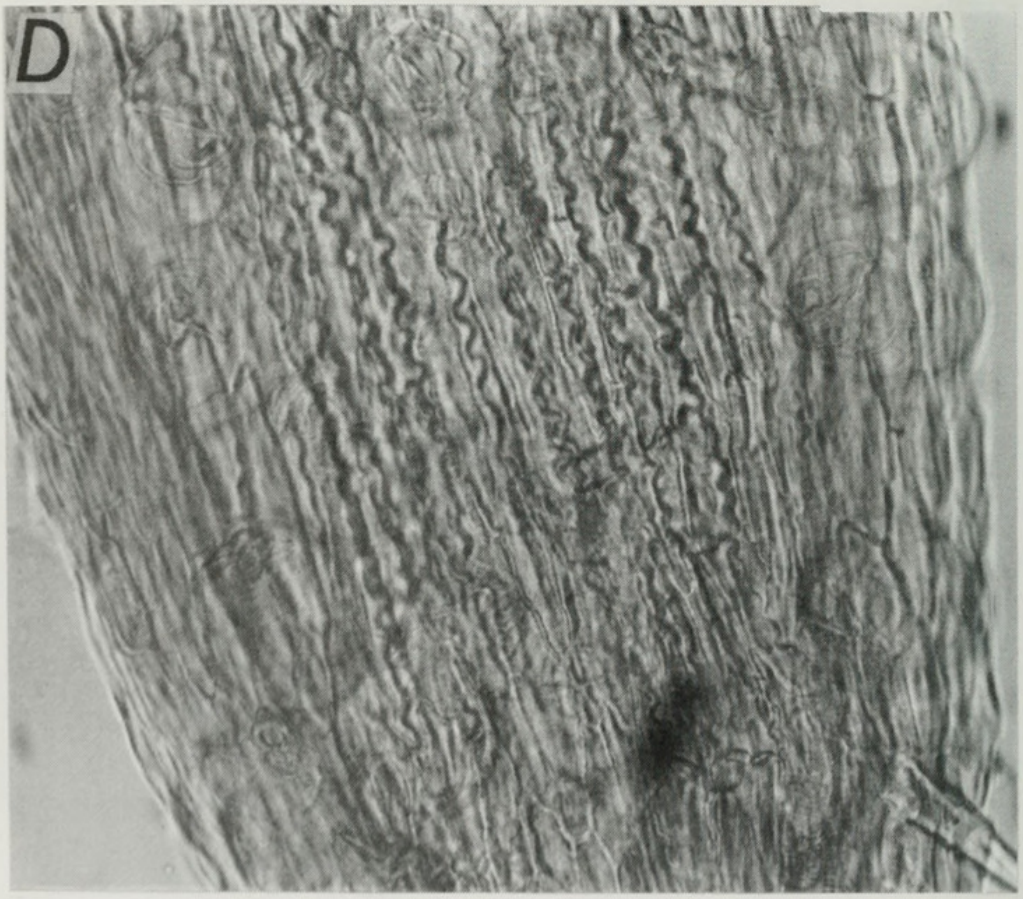
Pl. 1 Microcharacters of the floret of *B. tayloriana* Isawumi
A: Anther apical appendage covered with unicellular trichomes, x 250.
B: Base of anther apical appendage, x 100.
C: Corolla lobe showing glandular and unicellular eglandular trichomes, x 100.
D: Middle of corolla lobe showing wavy epidermal cells, x 250.
E: Polarized endothecial tissue, x 250.
F: Ovary crystals lozenge-shaped, x 250.
G: LM, polar view of pollen, x 400.
H: LM, equatorial view of pollen with long colpus, x 400.
– A–H: Taylor 2934 (S).

Fig. 1

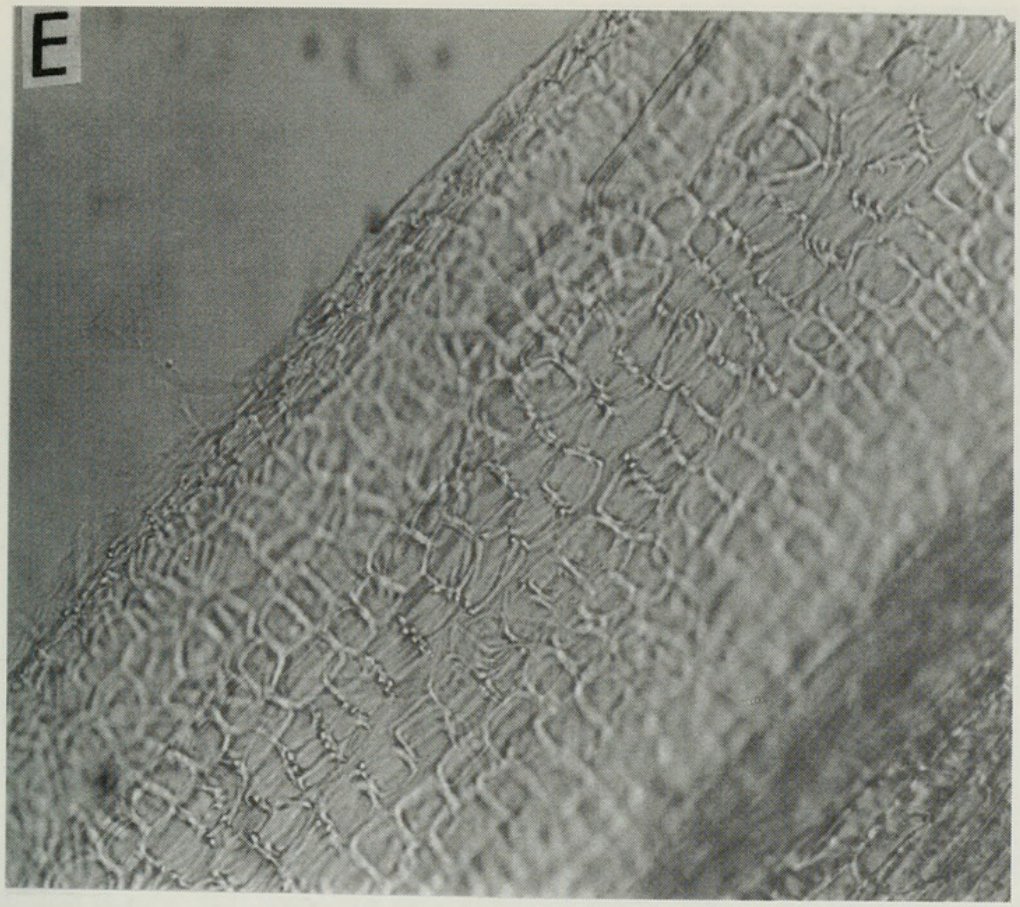


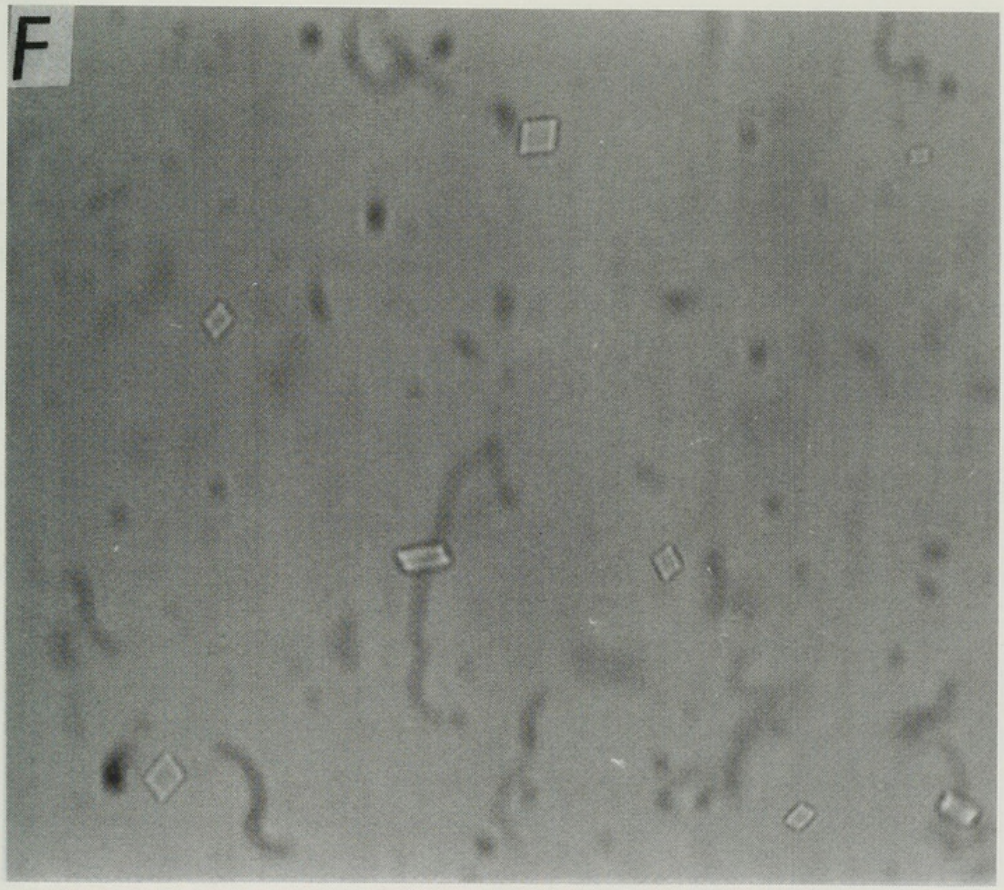
Pl. 1 A & B



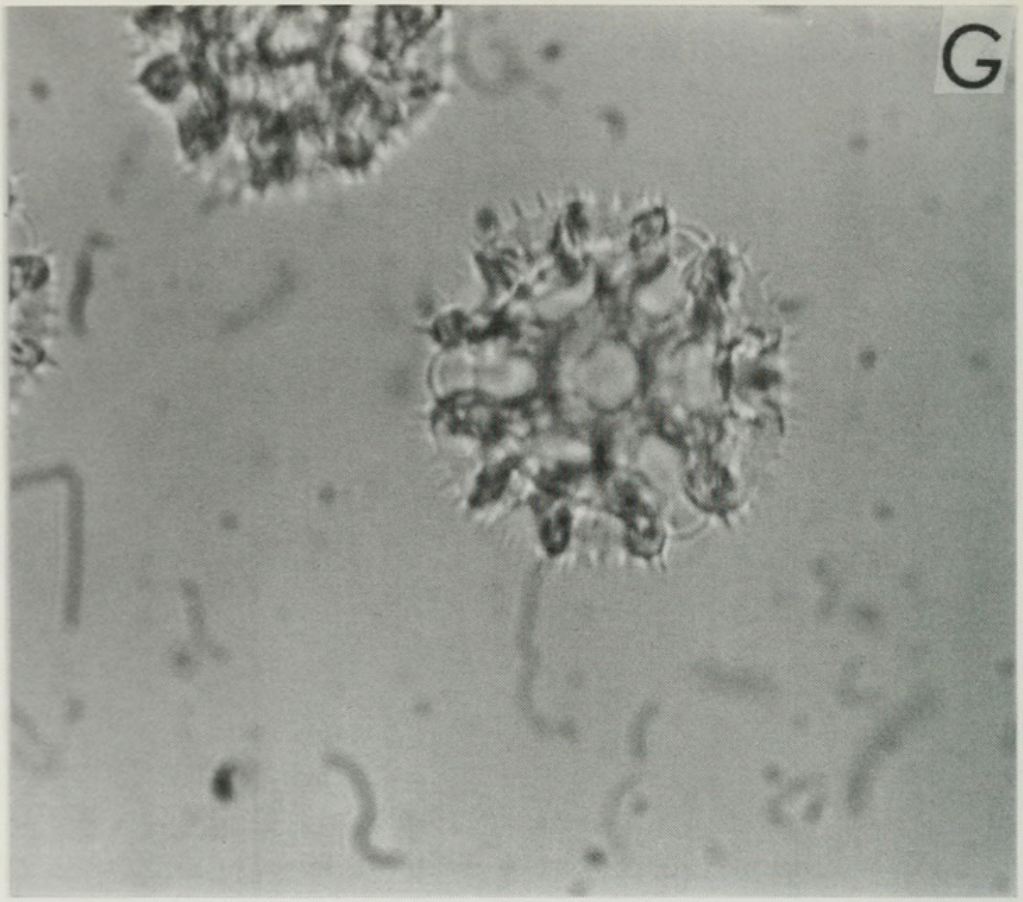


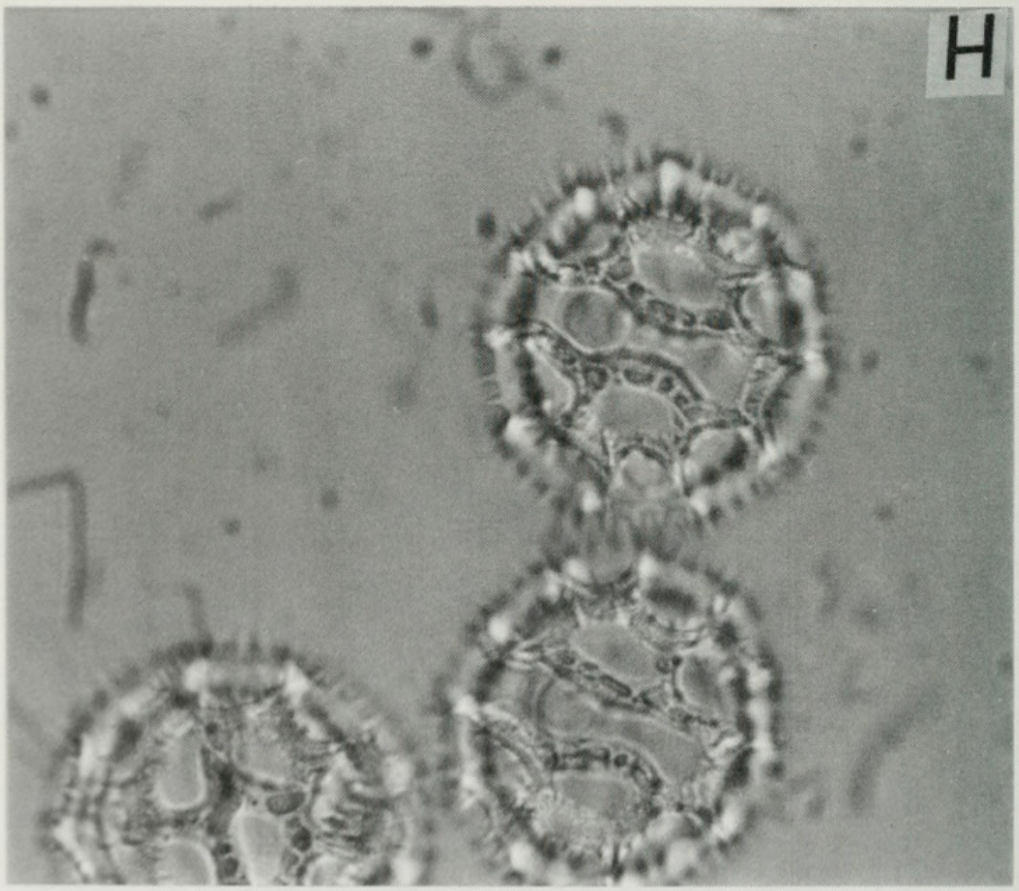
Pl. 1 C & D





Pl. 1 E & F





Pl. 1 G & H