

A NEW SPECIES OF *KUMANASAMUHA*

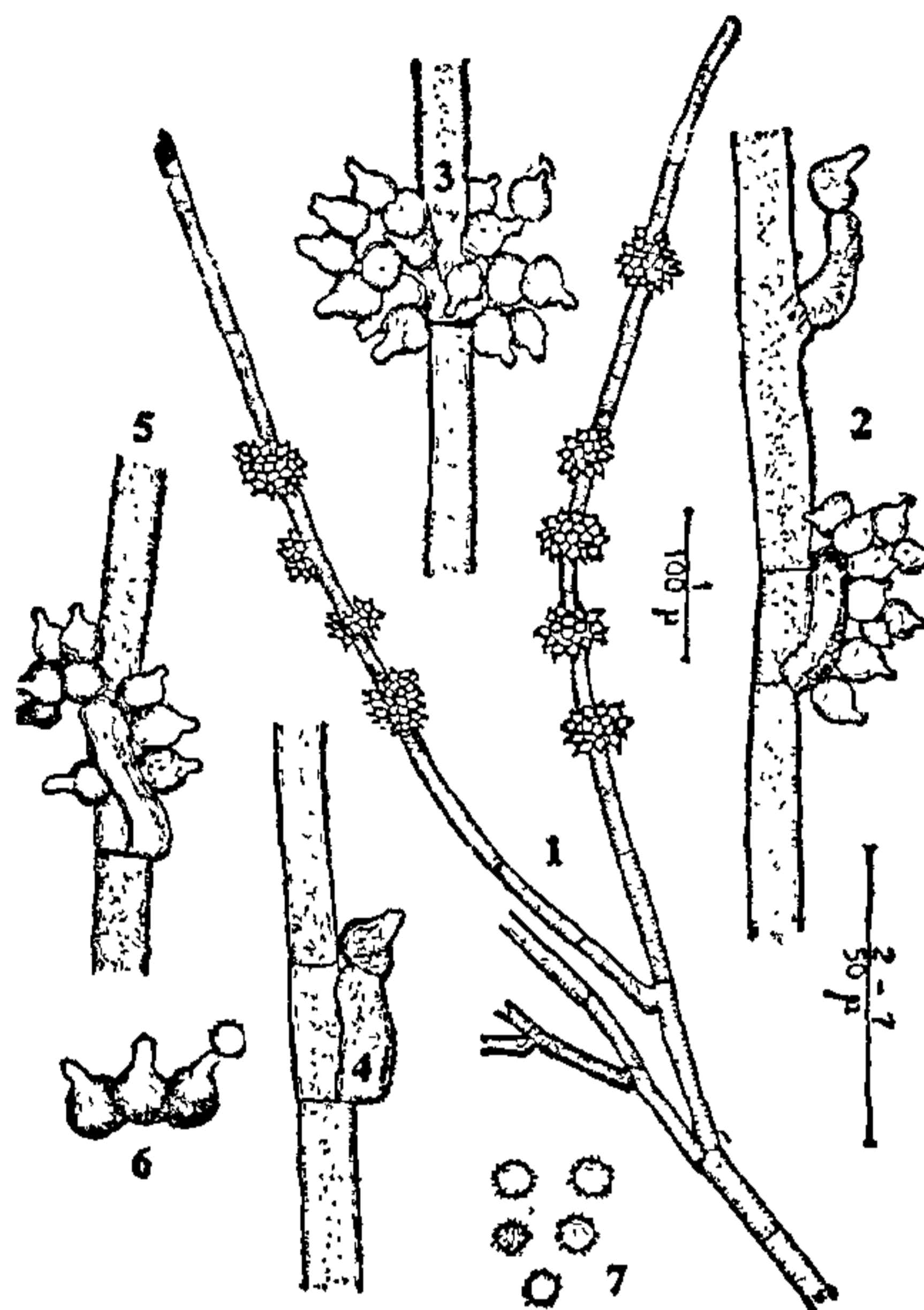
THE form genus *Kumanasamuha* was proposed by P. R. and Dev Rao (1964) with *K. sundara* as type to accommodate a dematiaceous hyphomycete producing simple or irregularly branched, mononematous and macronematous conidiophores bearing laterally short, solitary, straight or curved fertile branches. The upper part of the conidiophore and its branches are usually sterile with a round apex. Polyblastic, discrete, determinate, spherical or subspherical, clustered or penicillately arranged conidiogenous cells borne on the short lateral fertile branches produce solitary, dry conidia several at a time from the thin walled apical protrusion (the beak). The conidia are holoblastic, broadly ellipsoidal to subspherical, 0-septate, short-spiny where the spines are arranged spirally. So far, *Kumanasamuha* is a monotypic genus and the type was collected from Pakhal forest, Warangal (A.P.). Subsequently, it was also collected from Gabon, French Equatorial Africa (M.B. Ellis, 1971). In this communication a new species of this interesting hyphomycete, collected from Araku Valley, is being described which is an addition to this monotypic genus.

Kumanasamuha arakuensis sp. nov. (Figs. 1-7)

Colonies dark brown to snuff coloured, velvety, irregular and consist of erect macronematous conidiophores. Hyphae partly immersed or superficial, septate, smooth, subhyaline, branched, thin walled, 3-4.5 μ broad. Conidiophores mononematous macronematous, erect or flexuous, finely verruculose, thick walled, septate, septa up to 75 μ apart, simple or branched irregularly. The branches and the main axes measure up to 2 mm, and 6-9 μ wide. The branches of the conidiophores are either long and sterile or they may be short, curved, adpressed laterally and fertile. The anterior part of the conidiophores and their branches are setiform with rounded apex. The main axis, long sterile, and short fertile laterals are concolorous and finely verrucose. The fertile laterals are produced just below or above the septum, thick walled, 0-septate, curved or straight, closely adpressed to the axis, 15-33 μ long and 6-12 μ broad. The conidiogenous cells are flask-shaped, dark brown in the basal part and light brown to subhyaline in their anterior part, discrete, determinate, clustered or arranged penicillately on the fertile lateral branches. They are polyblastic, solitary (not in chains), measure 9-12 \times 6-12 μ . Conidia holoblastic, solitary, dry, more or less spherical, light brown, spiny, spines short and arranged spirally, 4-6 μ in diam.

The above described *Kumanasamuha* differs from the type *K. sundara* P. R. and Dev Rao, in having very long and frequently branched conidiophores. The fertile laterals in this taxon are short and not septate whereas they are septate in the type. In addition,

the conidiogenous cells are flask-shaped and the same are spherical to subspherical in the type. Therefore, described new *Kumanasamuha arakuensis*, named after Araku, the place of collection.



FIGS. 1-7. *Kumanasamuha arakuensis* sp. nov. (from type material M.R.L. No. 330). Fig. 1. Conidiophore. Figs. 2-5. Part of the conidiophore with short fertile laterals with solitary or penicillately arranged conidiogenous cells. Fig. 6. Conidiogenous cells with conidia. Fig. 7. Conidia.

On dead stems, Araku Valley (Visakhapatnam), January 1977, B.A.K.S., M.R.L. No. 330.

Kumanasamuha arakuensis sp. nov.

Coloniae fusce brunneae, irregulariter, discreti. Hyphae parte immerse parte superficiae septatae, subhyalina, levibus, ramosis, 3-4.5 μ lati. Conidiophora macronemata, mononemata, recta vel flexuosa, simplicia vel ramosa irregulariter, verrucosae, septatae, septa usque 60-75 μ distantibus, conidiophora et ramuli sterilibus, usque 2 mm, longa, 6-9 μ lati. Ramuli fertili curvi, vel erecti, 0-septatae, 15-33 μ longa, 6-12 μ lata. Cellulae conidiogenae lageniformis, sclitariae emergenti singulariter e brunneae, verruculosae in parte inferiore, apicaliter rostratae et hyalinae, discretae, determinatibus polyblasticae, 9-12 \times 6-12 μ . Blastoconidia solitaria spherica, dilute fusce, spinulosae, 4-6 μ diam.

Typus lectus in ligno emortuo ad Araku, die mensis Januarii anni, 1977, leg B.A.K.S., M.R.L. (330).

Sincere thanks are due to Justice Gopal Rao, Ekabte, Chairman; Professor R. B. Madhekar, Hon. Secretary; Professor Vanaja Iyengar, Principal, University College for Women and to Mr. D. K. Rotkar, Principal, Vivek Vardhini College, for facilities and encouragements.

Mycology Research Laboratory,
Vivek Vardhini Campus,
Hyderabad 500 001, India,
February 6, 1978.

TULASI RAMAN,
B. RENUKA RAO,
DEV RAO.

1. Ellis, M. B., *Dematiaceous Hyphomycetes*, C.M.I., Kew, England, 1971, p. 341.
2. Rao, P. R. and Dev Rao, *Mycopathol. Mycol. appl.*, 1964, 22, 330.

POLLEN MORPHOLOGY IN TWO VARIETIES OF *EPHEDRA INTERMEDIA* SCH. & MEY.

THE special position occupied by *Ephedra* (Gnetales) among the gymnosperms makes it an important material for botanical enquiries. Pollen grains of *Ephedra* are particularly important due to their typical morphological features, making it easy to identify them among the fossil remains.

In a monograph given by Steeves and Burghoorn¹, on the pollen morphology of 43 species of *Ephedra*, the pollen grains were described as polycolpate, and provided with meridional ridges. The areas between the ridges were interpreted as colpi or furrows.

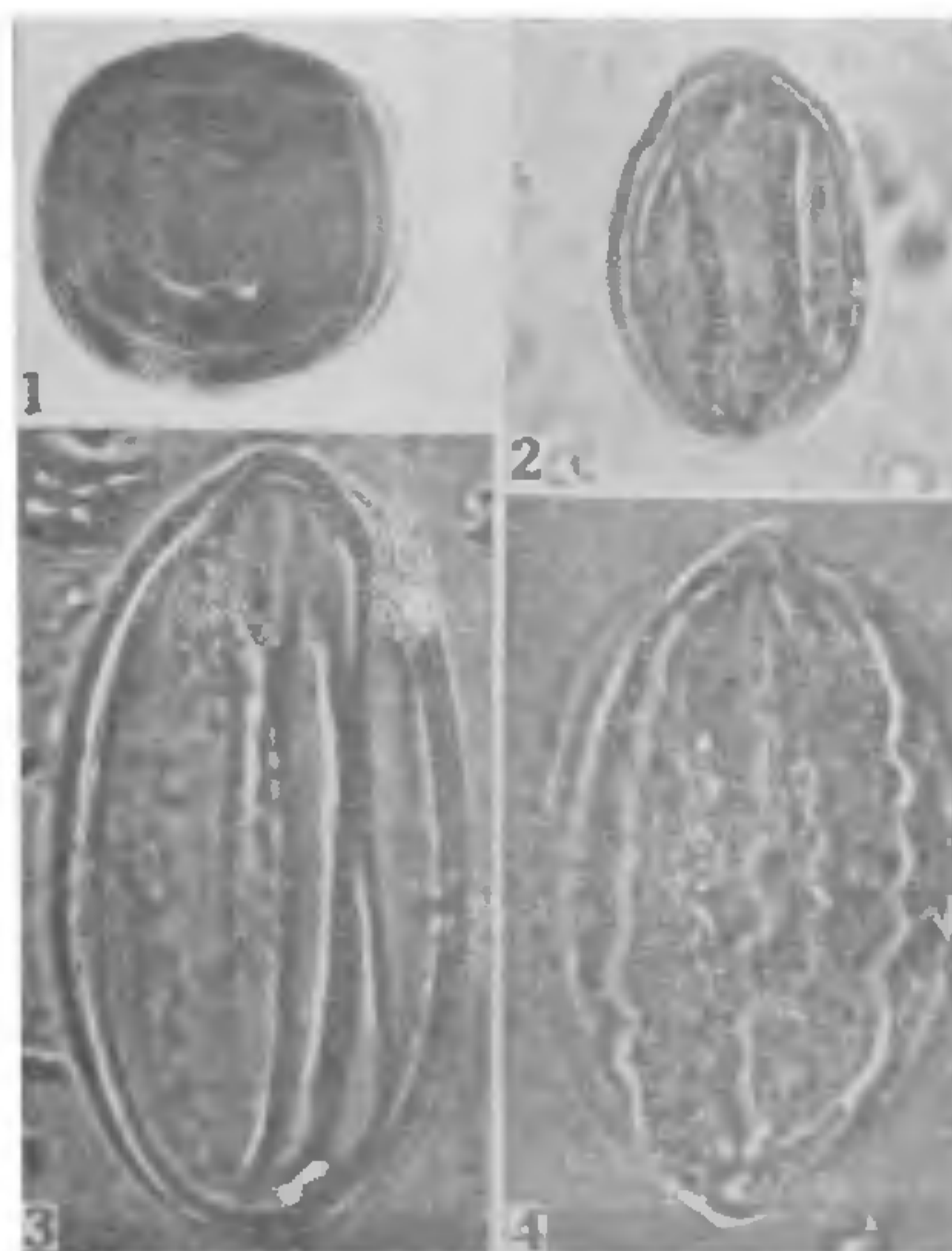
The present report aims at adding further knowledge to the pollen morphology of *Ephedra*. The investigation relates to the pollen morphology of two varieties of *Ephedra intermedia* Sch. and Mey., namely, var. *persica* Stapf. and var. *tibetica* Stapf. Pollen preparations have been made according to the acetolysis method².

Variety *persica* Stapf. (Herbarium, Forest Research Institute, Dehra Dun, India): The pollen grains are inaperturate and provided with ridges. There is pollen dimorphism with regard to the formation of ridges. In one type, there occur two horizontally elongated, thickened bands (Fig. 1), which are connected by vertical ridges. The thickened bands (as seen in the optical section of the grain) are apparently placed inside the grain on two polar sides. The other type possesses the normal external meridional ridges (Fig. 2). The number of ridges could not be counted correctly as all the grains lie in equatorial view. However, in some grains the number is reduced to just one.

A majority of the grains in the variety is elongated. Average diameters of the polar and equatorial axes

are $33.4 \times 25 \mu$ (range $29-34 \times 20-29 \mu$). However, a few spheroidal grains (size $30-32 \mu$) also occur. Exine thickness is 1.11μ . Ektexine is thicker than endexine. Exine surface is psilate.

Variety *tibetica* Stapf. (Herbarium, Royal Botanic Gardens, Kew, England): Pollen grains of this variety are inaperturate and provided with meridional ridges. Average diameters of polar and equatorial axes are $58 \times 31 \mu$ (range $44-71 \times 17-39 \mu$). The ridges are straight (Fig. 3) or undulating (Fig. 4). Exine thickness is 2.22μ . Ektexine is thicker than endexine. Exine surface pattern is indiscernible.



FIGS. 1-4. Pollen grains in the varieties of *Ephedra intermedia* Sch. and Mey. Figs. 1-2. Pollen grains in var. *persica* Stapf. 1. Grain with internal thickenings, 2. Grain with normal meridional ridges. Figs. 3-4. Pollen grains in var. *tibetica* Stapf. 3. Grain with straight ridges, 4. Grain with undulating ridges. Magnification $\times 765$.

The foregoing account shows distinctly different grains in the two varieties. However, it may be pointed out that the pollen grains of var. *tibetica* closely resemble the grains of other species of *Ephedra* (cf. Steeves and Burghoorn¹) while those of var. *persica* show a diversity in their morphology specially with regard to the presence of internal thickenings, and to their small size, as compared with the pollen size of var. *tibetica*. In that light, it has a special taxonomic significance not only in the identification of the variety but also probably relating to its taxonomic