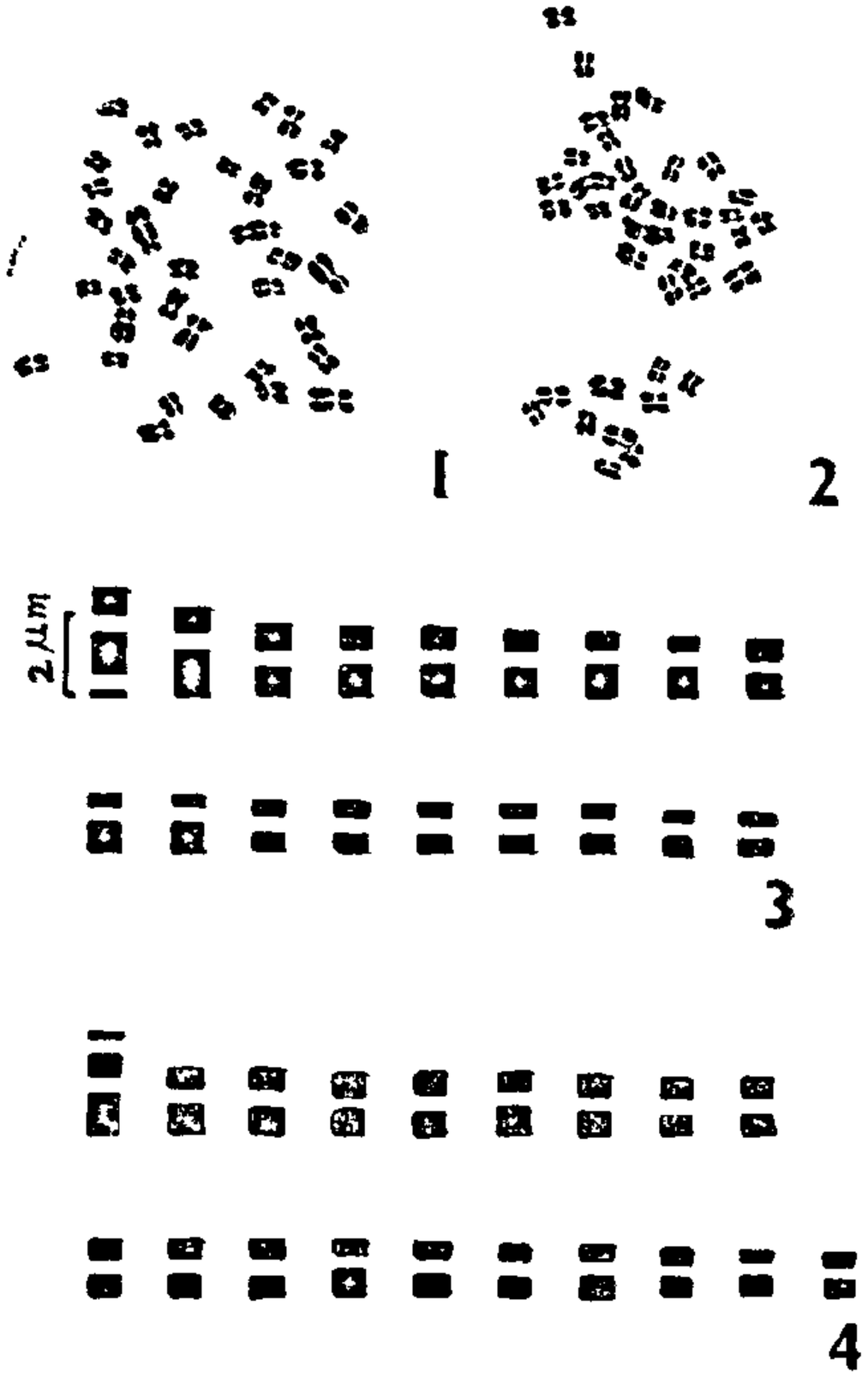
meres one of which having satellites in the short arms (Figs. 2, 4).



FIGS. 1–4. 1, 3 *Fuirena uncinata*; 2, 4. *F. trilobites*. 1, 2. Somatic chromosomes; 3, 4. Idiograms.

Meiosis is normal in both the species.

Four different chromosome numbers have been reported in the 5 Indian species of *Fuirena* that have been investigated so far. These are not in multiples of a single basic number indicating the presence of aneuploid series in the genus. *F. uncinata* with $2n = 36$ represents the lowest level of the series. While *F. ciliaris*[2,3] and *F. trilobites* show $2n = 38$, *F. wallichiana*[1] and *F. umbellata*[3] show $n = 38$ and 26 respectively. *F. wallichiana* appears to be a polyploid derived from $x = 19$. Therefore, the indication of both polyploidy and aneuploidy is evident in *Fuirena*. Besides the difference in chromosome number, the 2 species studied here reveal certain differences with respect to their karyotypes (*cf.* idiograms). These differences appear to indicate the role of structural alterations in the evolution of species in the genus *Fuirena*.

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MEIOSIS IN *GRAPTOPHYLLUM PICTUM* GRIFF

THIS communication concerns the first record of chromosome number, besides giving the meiotic behaviour in *Graptophyllum pictum*, an ornamental shrub of Acanthaceae.

From an analysis of 60 pollen mother cells, 30 at diakinesis and 30 at metaphase I, the haploid chromosome number of this species is determined to be $n = 18$ (Fig. 1). Meiosis is irregular and is characterised

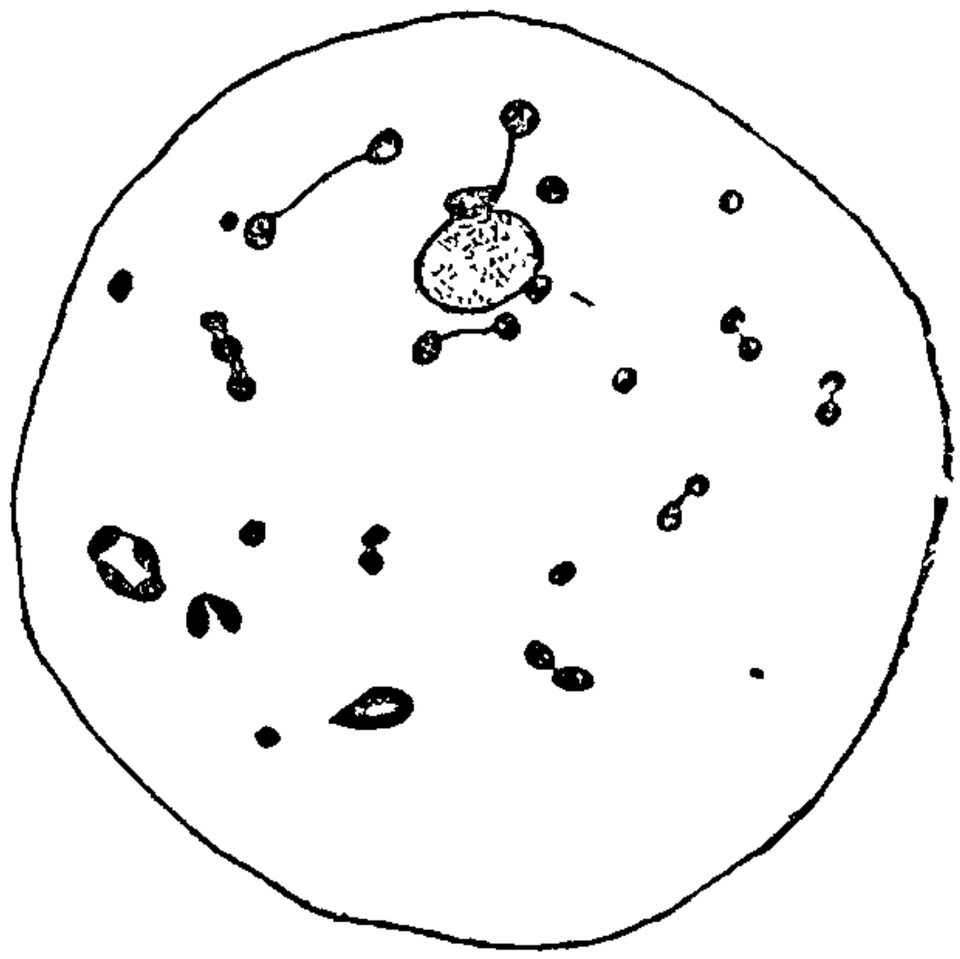

FIG. 1. Diakinesis showing $n = 18$ number with 1 IV + 1 III + 10 II + 9 Is.

by the presence of quadrivalents (6·6% at diakinesis and 5·9% at metaphase I) and trivalents (10·2% at diakinesis and 11·1% at metaphase I). However, their number is very low when compared to the high frequency of bivalents (60·9% at diakinesis and 60·8% at metaphase I). The multivalents are more often of the chain type with terminal chiasmata. Next to bivalents, univalents were present in high frequency (21·8% at diakinesis and 22·2% at metaphase I). Anaphase and telophase segregations were highly irregular with 1–6 laggards and micro-

nuclei respectively. In some cells triads were recorded which might have been formed as a consequence of the inhibition of the homotypic division in one of the poles. Further, six nuclei of more or less equal size were observed indicating the formation of multipolar spindles. Nearlly half of the pollen grains formed are sterile (52·7%). An interesting feature observed besides polyspory is the presence of polymorphic pollen grains ranging in size from 5·0 microns to 21·5 microns (Fig. 2).

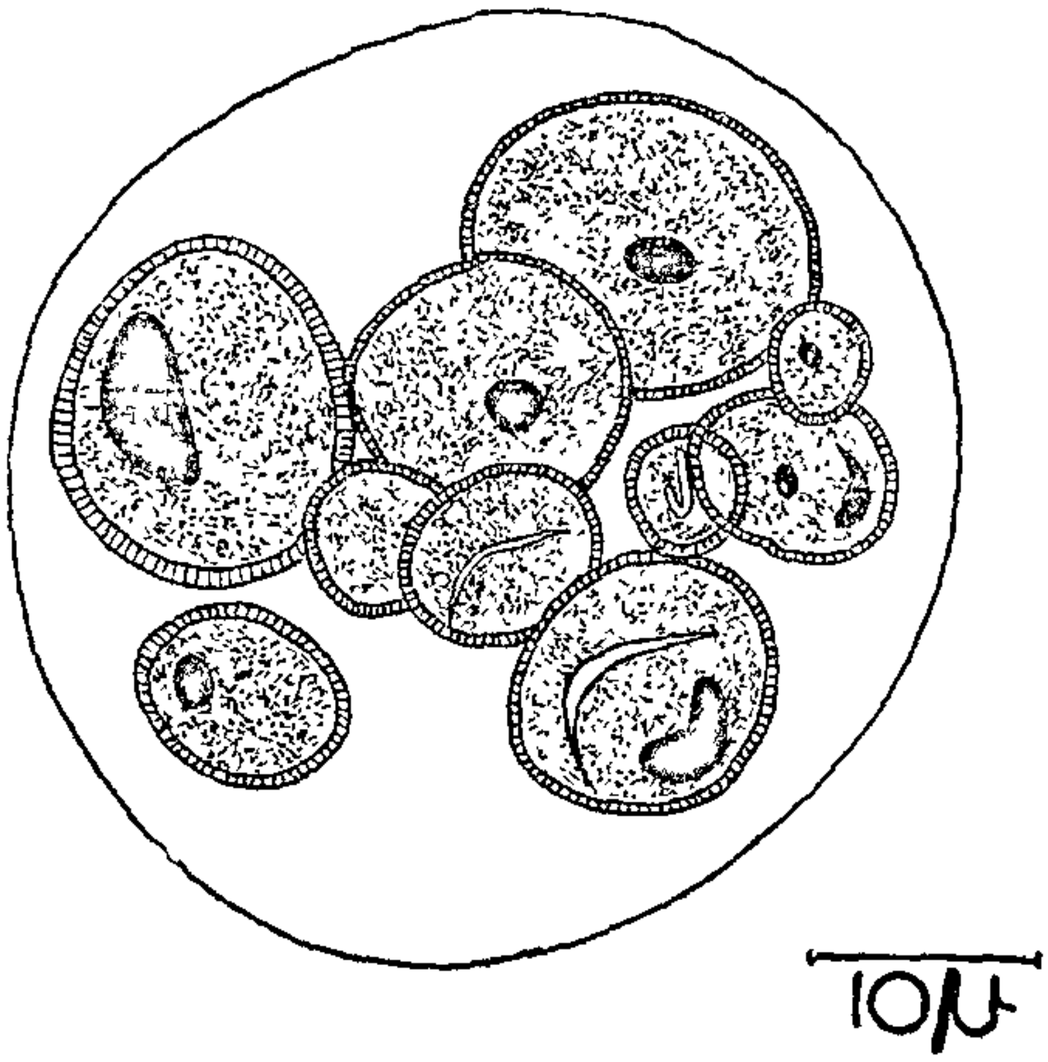

FIG. 2. Polymorphic pollen grains.

The subtribe Eujusticieae to which the genus *Graptophyllum* belongs[2] is characterised by having base numbers $x = 10$, 13, 17 and 18[1]. Since the species investigated now does not seem to be a diploid, the possibility of $x = 18$ as the base number is ruled out. Because of the absence of higher associations above the quadrivalent level, the species might be a tetraploid.

The high frequency of univalents compared to multivalents may suggest that the species is of hybrid origin. Hence this taxon may be regarded as a segmental allotetraploid, the hypothetical origin being hybridization between two diploid species ($n = 9$) followed by the doubling of the chromosome number. Polyploidy coupled with hybridization is responsible for the aforesaid meiotic irregularities which account to some extent for the high pollen sterility and lack of seed set in this species.

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SCREENING OF FLOWERS IN INTERSPECIFIC CROSSES OF SOME SPINOUS SOLANUM SPECIES

By and large many previous attempts to hybridize the different spinous Solanum species have yielded either inconsistent results or have failed, and undetermined genetic factors are assumed for these results[1,2,4]. We have been reinvestigating the cytogenetics of these species and our initial findings on their flower structure, and judicious selection of them have enabled us to produce hybrids in many crosses. These are reported in this note.

The customary bagging techniques initially did not yield any positive results. The species being mostly self-pollinated, and large-scale fruit formation being prevalent in nature, self-sterility factors were ruled out. A closer examination of tagged flowers, in selected plants, showed that some of them drop off, both when left for open pollination and on hand pollination. These are usually the flowers having shorter than the normally exserted styles. Squash preparations of the ovules from these flowers revealed that the female gametophytes in them did not progress beyond the two- or four-nucleate stage of the embryosac. They are thus rendered abortive. Such an abortive development of the embryosacs was correlatable with the stylar heteromorphism[3] of the flowers. While 'normal' flowers with styles exserted well beyond the connate anthers had 8-nucleate embryosacs and were functional, the 'abnormal' ones with shorter styles were sterile as pistillate parents. The frequency with which the normal and abnormal flowers occurred on the same or different plants of any species (or between species) was variable and inconsistent. It therefore became apparent that *only* the flowers with normal exserted styles are functional as pistillate parents.

With this realisation, 483 crosses were made involving five species (8 combinations) and we have obtained 155 hybrids in all. These results suggest that selective hand pollinations confined to those pistillate flowers with normal exserted styles