TABLE I

Chromosome configurations at M–I in F_1 progenies of unknown translations and translocation testers in pea

Culture number of unknown translocations	Chromosome configurations observed at M–I: Translocation testers					Interchanged chromosomes
	T_{1-5}	T_{2-6}	T_{3-5}	T_{3-7}	T_{4-6}	
B–199	2 O_4	2 O_4	2 O_4	1 O_6	1 C_6	T_{4-7}
B–462	1 O_6	1 O_6	2 O_4	—	2 O_4	T_{1-2}
B–1466	2 O_4	2 O_4	1 O_6	—	2 O_4	T_{3-7}
B–1467	1 O_6	2 O_4	1 O_6	—	1 O_6	T_{4-5}
JI–152	2 O_4	2 O_4	—	—	1 O_6	T_{3-4}
JI–147	1 O_6	—	7_{II}	—	2 O_4	T_{3-5}
HUP–239–1–10	2 O_4	2 O_4	—	—	2 O_4	T_{3-7}

The crossing between the line JI–147 and the tester, T_{4-6}, showed two quadrivalents indicating that both chromosomes 4 and 6 were not involved in the line JI–147. The latter, however, was found to interchange for the chromosomes 3 and 5 as the cross with the tester, T_{3-5}, showed 7_{II} (Table I). The chromosome 5 was further confirmed from the observation of a 1 O_6 configuration at metaphase I (Table I) in the F_1 of cross with the tester, T_{1-5}.

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CYTOLOGY OF TRIPLOID HYBRID OF *AGERATUM*, LINN.

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THE genus *Ageratum* (Asteraceae) is comprised of about 30 herbaceous annual species, native to Tropical America[1]. Two species, *A. conyzoides* L. and *A. houstonianum* Mill., occur in India, the former being a weed found all over the country and the latter grown as a winter ornamental. During cytological analysis of these species, a natural triploid was located. This is the first report of triploidy in the genus, the meiotic behaviour of which is described.

Conventional techniques were adopted for fixing, staining and for the study of meiosis. Fifty PMCs analysed at metaphase I showed the presence of trivalents, bivalents and univalents (Fig. 1). The average number of associations and the range of distribution of trivalents, bivalents and univalents are 8·2 (6–10), 1·84 (0–5), and 1·72 (0–4) respectively. Out of 50 PMCs, 11·5% had a maximum of 10 trivalents (Fig. 2). The average chiasma frequency per cell was 21·7. Anaphase I segregation was highly irregular with unequal distribution of chromosomes, precocious separation of univalents, occurrence of laggards, etc. (Fig. 3). Subsequent stages of meiosis also showed irregularities leading to the formation of aneuploid gametes. Pollen stainability was 38·7% and there was 50% seed setting. The seed viability was found to be 40%.

The present triploid appears to be a natural hybrid between *A. houstonianum* and *A. conyzoides* which have been found to be tetraploid ($2n = 40$) and diploid ($2n = 20$) respectively (authors' unpublished data). The two species can be morphologically distinguished only on the basis of heart-shaped leaves and viscidly hairy lance-linear involucral scales in *A. houstonianum*, while oblong leaves and acuminate, sparingly hairy involucral scales in *A. conyzoides*[1]. The triploid form showed intermediate morphology with respect to leaf shape but profuse branching and flowering are characteristics of *A. houstonianum*. The high frequency of trivalents (6–10) found in the interspecific triploid

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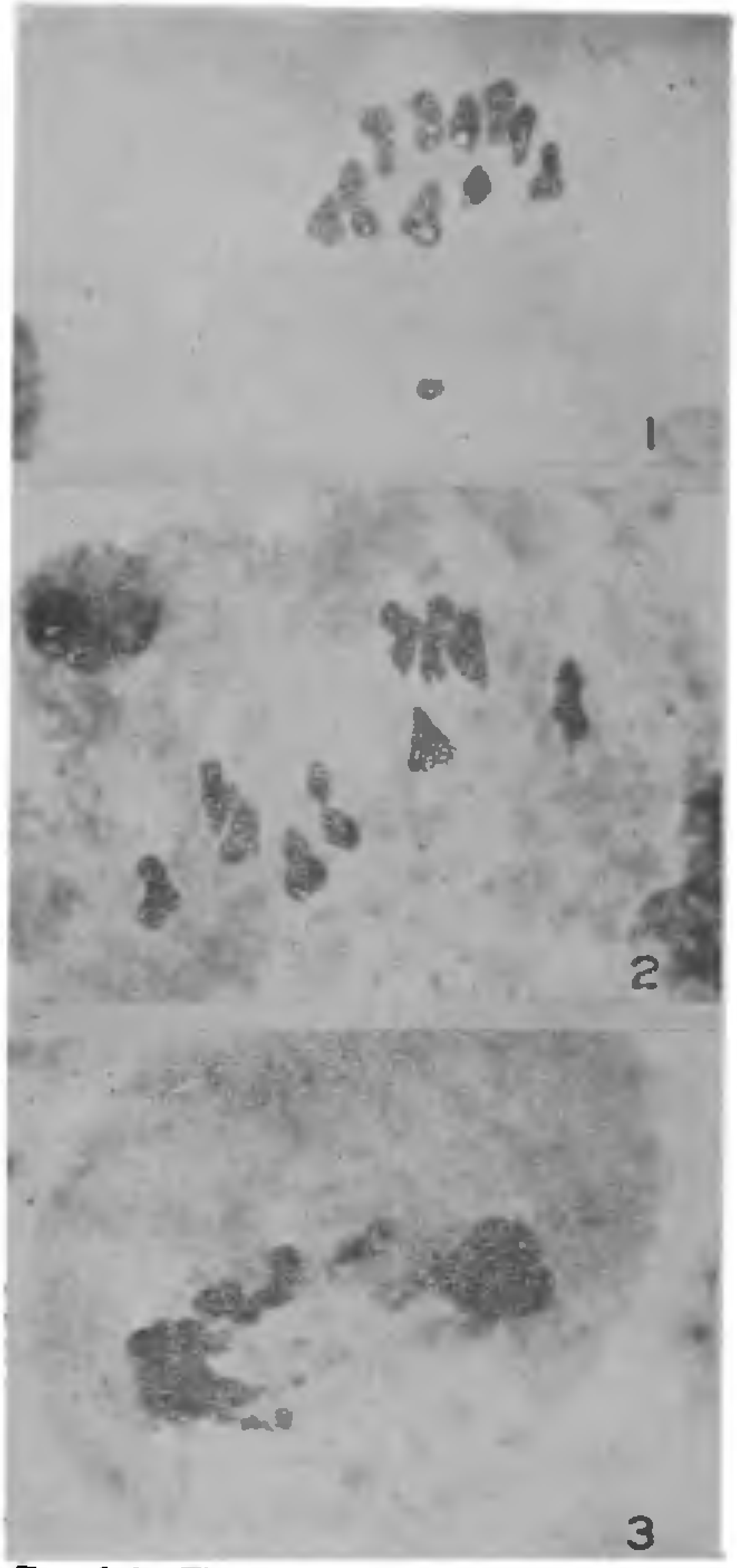

FIGS. 1–3. Figs. 1 and 2. Metaphase I in triploid *Ageratum*. 1. 9 III + 1 II + 1 I. 2. 10 III. Fig. 3. Late anaphase I showing laggards. All × 1,000.

hybrid shows a great degree of genetic similarity between parental genomes.

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ENDOTHECIUM IN CYPERACEAE

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THE paper deals with the nature of endothecium in the mature anthers of Cyperaceae. Earlier reports indicate that the thickenings of the endothecial cells to be fibrous in nature[2,4,5,8,9,11,12]. The present study covers 47 species and 18 genera*.

Microtome sections both L.S. and T.S. of mature anthers were examined. In addition, the endothecial cells from fresh material were macerated, stained with phloroglucinol and mounted in glycerine. During maceration, the connective region of the anther was isolated.

The epidermis invariably persists as a single layer till anthesis (Figs. 1–3). The endothecial cells are hypodermal, elongate at right angles to the anther epidermis (Figs. 4–6, 8) and are slightly tapering at both ends. They become cleared in macerated material. The nature of the endothecial thickenings in the species under investigation is quite interesting in being spiral and not conforming to the usual fibrous type met with in several other angiosperms[1,6]. In the taxa studied here, the spiral thickenings originate at one of the tapering ends and extend towards the other (Figs. 7, 9). The thickenings may be close or lax. When such lax spirals are observed in transections, they look very much like the fibrous thickenings on the endothecial walls. This has probably led several earlier workers to consider it as fibrous type.

Embryological literature dealing with anther development including Cyperaceae reveals that, invariably

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* *Kyllinga triceps* Rottb., *K. brevifolia* Rottb., *K. monocephala* Rottb.; *Pycreus pumilus* Nees., *P. puncticulatus* Nees., *P. latespicatus* C. B. Clarke; *Juncellus alopecuroides* C. B. Clarke; *Cyperus difformis* Linn., *C. compressus* Linn., *C. eleusionoides* Kunth., *C. tegetum* Roxb., *C. imbricatus*; *Mariscus paniceus* Vahl., *M. siberianus* Nees.; *Courtosia cyperoides* Nees.; *Eleocharis plantaginea* Br. Prod., *E. atropurpurea* Kunth., *E. capitata* Br. Prod.; *Fimbristylis tetragona* Br. Prod., *F. schoenoides* Vahl., *F. dichotoma* Vahl., *F. diphylla* Vahl., *F. miliacea* Vahl., *F. complanata* Link., *F. monostachya* Hassk., *F. cymosa* R. Br.; *Bulbostylis barbata* Kunth.; *Scirpus supinus* Linn., *S. mucronatus* Linn., *S. squarrosus* Linn., *S. royelei* Nees.; *Eriophorum comosum* Wall; *Fuirena ciliaris* Kunth., *F. wallichiana* Kunth.; *Lipocarpha argentea* R. Br., *L. sphacelata* Kunth.; *Rhynchospora wightiana* Steud, *R. glauca* Vahl.; *Remirea maritima* Aubl.; *Hypolitrium latifolium* L. C. Rich.; *Scleria lithosperma* Roxb., *S. tassellata* Willd., *S. biflora* Roxb., *S. stocksiana* Boek., *S. hebecarpa* Nees.; *Carex filicina* Nees, *C. wallichiana* Prescott.