TABLE I
Chromosome configurations at M-1 in F1 progenies of unknown translations and translocation testers in pea

<table>
<thead>
<tr>
<th>Culture number of unknown translocations</th>
<th>Chromosome configurations observed at M-1</th>
<th>Interchanged chromosomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Translocation testers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1-5</td>
<td>T2-6</td>
</tr>
<tr>
<td></td>
<td>T3-5</td>
<td>T3-7</td>
</tr>
<tr>
<td></td>
<td>T4-6</td>
<td></td>
</tr>
<tr>
<td>B-199</td>
<td>2 O4</td>
<td>2 O4</td>
</tr>
<tr>
<td>B-462</td>
<td>1 O6</td>
<td>2 O4</td>
</tr>
<tr>
<td>B-1466</td>
<td>2 O4</td>
<td>1 O6</td>
</tr>
<tr>
<td>B-1467</td>
<td>1 O6</td>
<td>1 O6</td>
</tr>
<tr>
<td>JI-152</td>
<td>2 O4</td>
<td>2 O6</td>
</tr>
<tr>
<td>JI-147</td>
<td>1 O6</td>
<td>71</td>
</tr>
<tr>
<td>HUP-239-1-10</td>
<td>2 O4</td>
<td>2 O4</td>
</tr>
</tbody>
</table>

The crossing between the line JI-147 and the tester, T4-6, 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, T3-6, showed 71 (Table I). The chromosome 5 was further confirmed from the observation of a 1 O6 configuration at metaphase I (Table I) in the F1 of cross with the tester, T1-5.

July 19, 1980.

5. —, Ibid., 1978, 21, 29.
7. —, Genetics, 1976, 45, 287.

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. 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 vividly hairy lance-linear involucral scales in A. houstonianum, while oblong leaves and acuminate, sparingly hairy involucral scales in A. conyzoides. 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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ENDOTHECIUM IN CYPERACEAE

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This paper deals with the nature of endothecium in the mature anthers of Cyperaceae. Earlier reports indicate that the thickening of the endothelial cells to be fibrous in nature.4,5,9,11,12 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 endothelial 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 endothelial 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 endothelial 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. 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 transsections, they look very much like the fibrous thickenings on the endothelial 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


Figs. 1-3. Figs. 1 and 2. Metaphase I in triploid Ageratum. 1. 9II + 1III + 1I. 2. 10III. 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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