Cytomixis in *Tauschia nudicaulis* Schlecht (Apiaceae)

C. Ritchie Bell

Department of Botany, University of North Carolina,
Chapel Hill, North Carolina, U.S.A.

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Cytomixis, defined by Gates (1911) as the "process of extrusion of chromatin from the nucleus of one pollen mother-cell into the cytoplasm of the adjacent mother-cell," now appears to be accepted as a normal, if infrequent, cytological phenomenon and not always an artifact of preparation as argued by Woodworth (1931) and Gelin (1934). Occasionally, as in the case of *Bouchea fluminensis* (Schnack and Fehleisen 1957), cytomixis is found to be a constant aspect of meiosis of the plants of a given species. However, in most instances cytomixis is of sporadic and infrequent occurrence and is usually presumed to be the result of unknown physiological disturbances which may themselves be associated with other meiotic irregularities or with hybridization.

References to cytomixis in the literature are very infrequent and the

Fig. 1. Cytomixis in *Tauschia nudicaulis*.

topic is rarely mentioned in cytology text or reference books though the subject has been briefly treated by Maheshwari (1950) under an expanded definition or concept that includes syn-cyte formation. Excluding these latter ex-amples as

beyond the usual definition, cytomixis has been reported in plants belonging to the following families: Onagraceae, Asteraceae, Alismaceae, Poaceae,

Droseraceae, Fabaceae, Iridaceae, Papaveraceae, Rosaceae, Betulaceae, and Verbenaceae.

In a recent cytological preparation, made by Miss Lee Rogers, an example of cytomixis in the Apiaceae appeared. The bud material was of *Tauschia nudicaulis*, collected in June, 1963, near Raices, on the slopes of Nevada de Toluca, Mexico (*Bell and Rice 17790*). A previous collection from this locality (*Bell and Duke 16758*) as well as another 1959 collection¹ from the state of Durango, Mexico (*Bell and Duke 16626*), were both tetraploids with $n=22$ (Bell and Constance, in press) and normal meiosis. Only a few buds of the current collection were young enough to show any meiotic stages of division, but cytomixis at various stages and of various degree was abundantly evident in all such material (Fig. 1) and only one plate showed the expected $n=22$ distribution of chromosomes.

Fig. 2. Photomicrograph of cytomix in *T. nudicaulis*

Because no cytomixis was observed in the earlier *Tauschia nudicaulis* collection from the Raices locality, or from the Durango collection, it seems that cytomixis is not a constant or usual aspect of meiosis in this species but is, as in most other reported cases, of limited occurrence. However, even a limited amount of cytomixis in the numerous, perennial, polyploid umbellifers of Mexico might play a part in the origin of some of the observed aneuploid series which vary from tetraploid, or higher polyploid, chromosome numbers. In order to consider an aneuploid series to be the result of cytomixis it would be unnecessary, of course, to assume cytomixis to be the cause, rather than the result, of meiotic irregularity.

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