The above findings very clearly indicate the clear difference between the two species studied, with regard to micromorphology of petal surface, particularly of the tubercles which are cone-capped and restricted to the cell wall ridges in *Melia azedarach*, while in *Azadirachta indica* the tubercles are flat topped and are restricted to the cell floor. These findings offer support for separate taxonomic status of *Melia azedarach* L. (Pl : 385, 1753) and *Azadirachta indica* A. Juss. (*Mem. Mus.* 19 : 221, 1831) as accepted now[2]. The presence of stomata on the floral surface in *Melia azedarach* may be considered to be another evidence of the floral origin of the floral parts.

The authors are indebted to Dr. T. N. Khoshoo, the Director, for providing necessary facilities; and thankful to Dr. M. Yunus for taking the SEM photographs while at JEOL (Tokyo). One of the authors (D. Y.) is grateful to the C.S.I.R. (New Delhi) for award of Senior Research Fellowship.

National Botanical Research Institute,
Lucknow 226 001, India,
January 4, 1980.

P. K. K. NAIR.
DURDANA YUNUS.

1. Cole, Garry, T. and Behnke, H. D., *Taxon*, 1975, 24, 3.
2. Pennington, T. D. and Styles, B. T., *Blumea*, 1975, 22, 419.

CYTOMIXIS IN *CLITORIA TERNATEA* L. VAR. *PLENIFLORA* FANTZ. F. *PLENIFLORA*

CYTOMIXIS first observed by Gates[5] in *Oenothera gigas* and *O. biennis*, has now been reported in many other plant species (Bell[1], Bhandari *et al.*[2], Gottschalk[7,8], Morrisset[11], Kamra[9], Narain[12], Omara[13], Sapre[16], Salesses[15], Siddiqui *et al.*[19], Simyarkhina and Kuptsou[20]). In the present investigation it was observed in double flowered *Clitoria ternatea* L. var. *pleniflora* Fantz. f. *pleniflora*. The methods followed have been detailed earlier (Raina and Khoshoo[14]).

C. ternatea var. *pleniflora pleniflora* ($2n = 16$) is a normal diploid with 8 bivalents at metaphase I. The mitotic complement resolves into four long and four short sized homologous pairs of chromosomes (unpublished). At metaphase I also, size differences among 8 bivalents are clearly discernible. Subsequent course of meiosis was normal. However, chromosome migration through prominent bridges (Figs. 1, 4) or connections (Figs. 2, 5) was clearly seen in 30 out of 325 PMCs at metaphase I and anaphase I, II. In some cells whole mass of anaphasic product was in process of migration (Figs. 2, 5). Significantly out of 52 PMCs analysed at metaphase I, 49 had 8 bivalents and the other three had 9 bivalents (Fig. 3). One of these aberrant cells had 4 large and 5 small bivalents implying thereby that the extra bivalent was of homologous pair of short sized chromosomes (Fig. 3).

FIGS. 1–5. Figs. 1, 2, 4, 5. PMCs showing cytomixis. Note a prominent bridge in Figs. 1, 4 and a connection in Figs. 2, 5. Fig. 3. Metaphase I. Figs. 1, 2, × 956. Figs. 3–5, × 1,230.

Cytomixis was not encountered in single flowered *C. ternatea* ($2n = 16$) white and *C. ternatea* ($2n = 16$) violet.

The factors responsible for cytomixis are not yet clearly understood. Levan[10], Salesses[15] and Simyarkhina and Kuptsou[20] are of the opinion that cytomixis mostly occurs in plants showing irregular physiological and/or cytological behaviour. On the contrary, the occurrence of cytomixis in meiotically normal species (Gates and Rees[6], Kamra[9], de Nettancourt and Grant[4], Schnack and Fehleisen[18], Stebbins[21], Bell[1], Narain[12], Omara[13]), support the view of Gottschalk[8] that meiotic irregularities may not be the sole criteria for causing cytomixis. Various other factors have also been reported to be responsible for cytomixis (see Narain[12]). However, cytomixis in *C. ternatea* var. *pleniflora pleniflora*, with no meiotic irregularity, may be attributed to either genetic or physiological disturbances. The genetic control proposed by Brown and Bertke[3] is supported by the fact that *C. ternatea* white and *C. ternatea* violet did not show cytomixis whereas *C. ternatea* var. *pleniflora pleniflora*, which may be a mutant of *C. ternatea* violet, exhibited such behaviour.

The origin of aneuploids through cytomixis (Sarvella[17], Salesses[15] and Gottschalk[8]) has relevance in the present investigation, because 3 PMCs had 9 bivalents instead of normal 8 and there is every likelihood that PMCs with 7 bivalents might also be present. The above analysis has special significance because in *C. biflora* the zygotic number is 14 and they associate into 7 bivalents at metaphase I (unpublished).

Authors are grateful to Prof. H. C. Arya for facilities, C.S.I.R., New Delhi, for financial assistance and Dr. Paul Fantz, North Carolina, U.S.A., for providing the seeds.

Cytogenetics Laboratory,
Botany Department,
University of Jodhpur,
Jodhpur 342 001, India,
February 11, 1980.

P. K. Srivastav.
S. N. Raina.

1. Bell, R. C., *Cytologia*, 1964, **29**, 396.
2. Bhandari, N. N. *et al.*, *Ibid.*, 1969, **34**, 22.
3. Brown, W. V. and Bertke, E. M., *Textbook of Cytology*, The C.V. Mosby Co., Saint Louis, 1969.
4. de Nettancourt, D. and Grant, W. F., *Cytologia*, 1964, **29**, 191.
5. Gates, R. R., *Ann. Bot.*, 1911, **25**, 909.
6. — and Rees, E. M., *Ibid.*, 1921, **35**, 365.
7. Gottschalk, W., *Chromosome Information Service*, 1965, **6**, 6.
8. —, *The Nucleus*, 1970, **13**, 1.
9. Kamra, O. P., *Hereditas*, 1960, **46**, 592.
10. Levan, A., *Ibid.*, 1941, **27**, 243.
11. Morrisset, P., *Can. J. Genet. Cytol.*, 1978, **20**, 383.
12. Narain, P., *Curr. Sci.*, 1979, **48**, 996.
13. Omara, M. K., *Chromosoma*, 1976, **55**, 267.
14. Raina, S. N. and Khoshoo, T. N., *Cytologia*, 1971, **37**, 217.
15. Salesses, G., *Ann. Amelior Pl.*, 1970, **20**, 383.
16. Sapre, A. B., *Ind. J. Bot.*, 1978, **1**, 29.
17. Sarvella, P., *Cytologia*, 1958, **23**, 14.
18. Schnack, B. and Fehleisen, S., *Darwiniana*, 1957, **11**, 244.
19. Siddiqui, N. H., Khan, R. and Rao, G. R., *Curr. Sci.*, 1979, **48**, 118.
20. Simyarkhina, S. Y. and Kuptsou, M. S., *Ser. Biyal.*, 1974, **4**, 43.
21. Stebbins, G. L., Jr., *Bot. Gaz.*, 1934, **94**, 322.

A NEW METHOD FOR COUNTING WHITEFLY (*BEMISIA TABACI* GENN.) POPULATION IN MUNG BEAN [*VIGNA RADIATA* (L.) WILCZEK]

RAPID and reliable estimation of the field population of insect vectors is of basic importance for proper understanding of the epidemiology of virus diseases and to devise ways and means for their control. This is particularly so in respect of whitefly-borne viruses, most relationships of which seem to be as little understood as the biology of vectors like *Bemisia tabaci* Genn. which transmits over 25 different diseases. The economic losses due to whitefly-borne virus diseases in India such as tomato leaf curl, yellow vein mosaic of *Bhindi*, yellow mosaic of mung bean, urd bean, soybean, etc., are often quite heavy[3–5]. The present communication is the outcome of the difficulties experienced by the authors in estimating whitefly populations on mung bean and consequent development of a suitable method.

Naresh and Thakur[3] examined the whitefly population on 20 plants of black gram selected at random from each plot. But their account lacked details of the procedure adopted to estimate the vector population. The method employed by Banks[1] and Sylvester and Cox[6] for aphid counts was followed by Sastry and Singh[4] with slight modifications to estimate whitefly populations on *Bhindi*. During *kharif* (1974) we followed the method of Sastry and Singh[4] for counting the whitefly population in an experimental plot meant for evaluation of insecticides against yellow mosaic vector. The sampling technique was cumbersome and time consuming, requiring as much as 30 minutes per plant on an average to take counts of the insects on leaves at different positions. Therefore, a 'Bell Jar Method' was devised taking into consideration