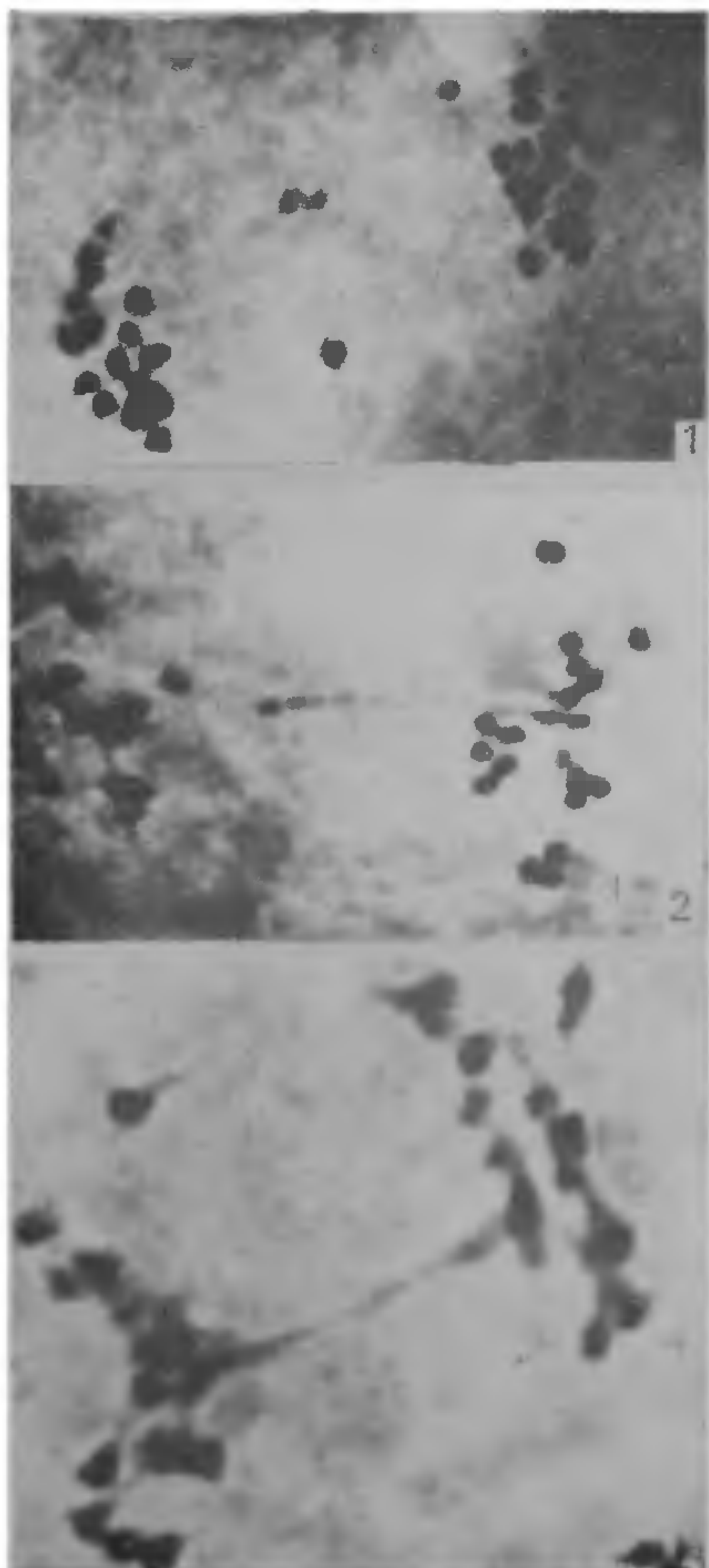


**CYTOLOGICAL INSTABILITY IN  
*ARACHIS HYPOGAEA* L.**

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CHROMOSOMAL instability has been cited as one of the factors responsible for varietal break up in groundnut, *Arachis hypogaea* L.<sup>1</sup>. *Arachis hypogaea* is a segmental allotetraploid and exhibits occasional formation of



FIGS. 1-3. Fig. 1. Anaphase I in kadiri 71-1 showing 2 laggards. Figs. 2 and 3. Disjunction bridges in TMV-2 and M-13.

quadrivalents<sup>2-6</sup>. The present study was undertaken to find out the occurrence of meiotic abnormalities in the different botanical varieties of groundnut and whether such abnormalities are correlated with the age of the plant.

Five varieties (TMV-2, AH-6481, Gaug-1, LP No. 1 and Chico) belonging to the Spanish group; two varieties belonging to the Virginia bunch group (US-52 and MK-374), three varieties belonging to the Virginia runner group (M-13, Robut 33-1 and Kadiri) and three Valencia varieties (Gangapuri, GDM, Acholi white) were cytologically analysed. PMC's were scored for frequency of various chromosome associations at MI and laggards and bridges at AI in standard iron acetocarmine smears. Material was examined at 2 growth stages of the plants, one at 30-45 days (Growth stage I) and the other at 60 days (Growth stage II of sowing). In each case at least 30 PMC's. were analysed.

At MI, there was predominant bivalent formation. Univalents, trivalents and quadrivalents also were observed. Quadrivalents were consistently present in all the varieties. At AI, there were some laggards and disjunction bridges (Table I, Figs. 1-3). The frequency of meiotic irregularities (univalents, trivalents, laggards and bridges) has increased in growth stage 2 compared to growth stage 1. A very substantial increase in the frequency of chiasmata occurred in growth stage 2 in all the botanical groups as well as all the varieties (Fig. 4). When the botanical varieties were compared, maximum number of abnormalities occurred in Virginia runner and east in Spanish (Fig. 5).

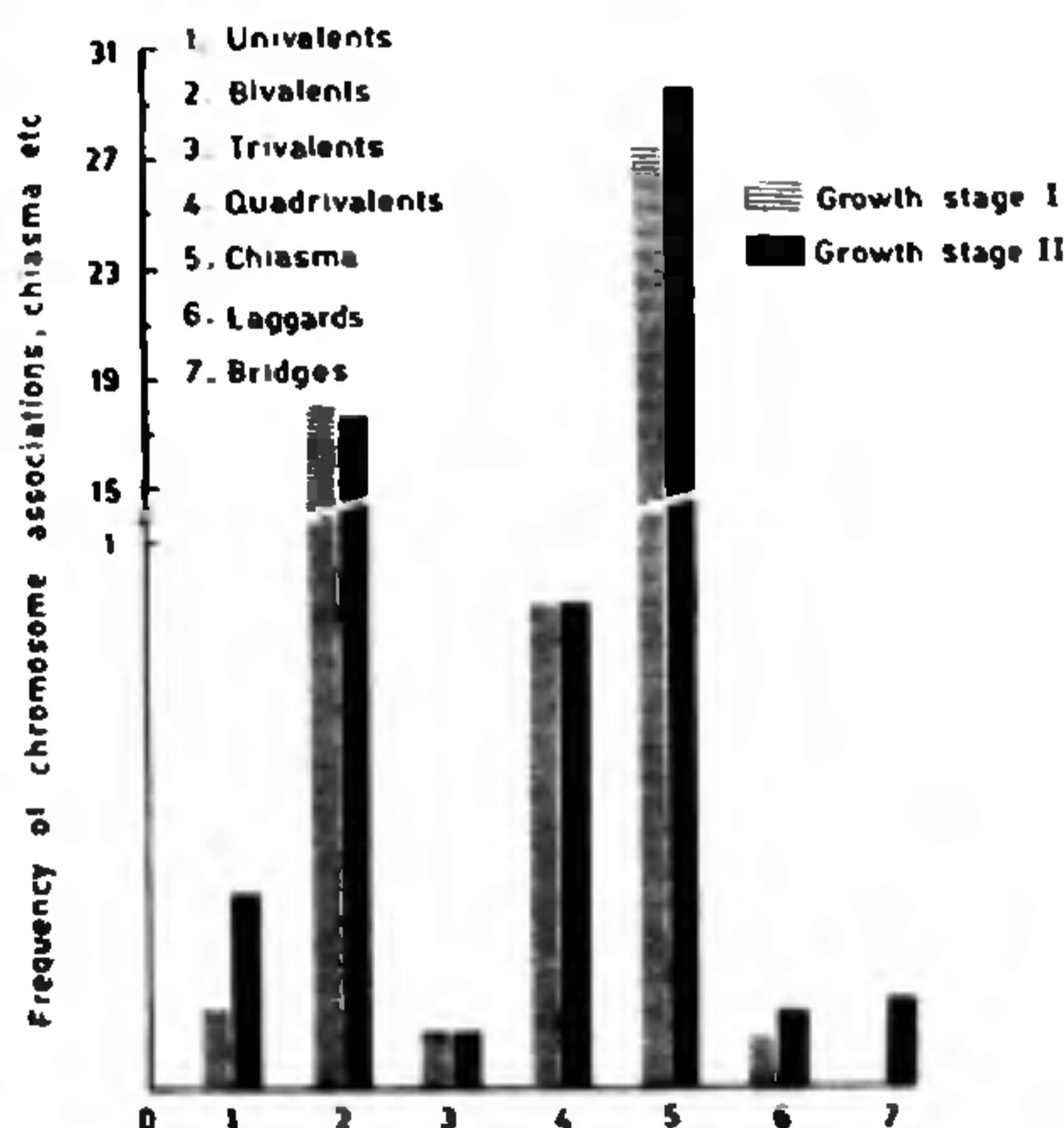


FIG. 4. Frequency of chromosome associations, chiasmata, laggards and bridges in 2 growth stages of *Arachis hypogaea* genotypes.

TABLE I  
Frequency of chromosome associations, chiasmata, lagging chromosomes and disjunction bridges in the different botanical varieties

Sl. No.	Botanical group	Growth stage	Mean No. of				Chiasmata	Lagging chromosomes	Disjunction bridges
			I	II	III	IV			
1.	Spanish	I	0.03	18.08	0.03	1.00	29.06	0.06	0.00
		II	0.10	18.19	0.04	0.85	30.35	0.06	0.08
2.	Valencia	I	0.08	18.45	0.05	0.94	25.3	0.10	0.00
		II	0.68	17.30	0.17	1.18	31.4	0.14	0.25
3.	Virginia bunch	I	0.27	18.14	0.26	0.85	25.4	0.10	0.00
		II	0.09	18.20	0.06	0.88	26.4	0.10	0.05
4.	Virginia runner	I	0.21	18.54	0.05	0.71	25.97	0.05	0.00
		II	0.58	17.96	0.10	0.67	27.38	0.26	0.27
Mean		I	0.15	18.30	0.09	0.89	26.43	0.08	0.00
		II	0.36	17.87	0.10	0.89	28.88	0.14	0.16

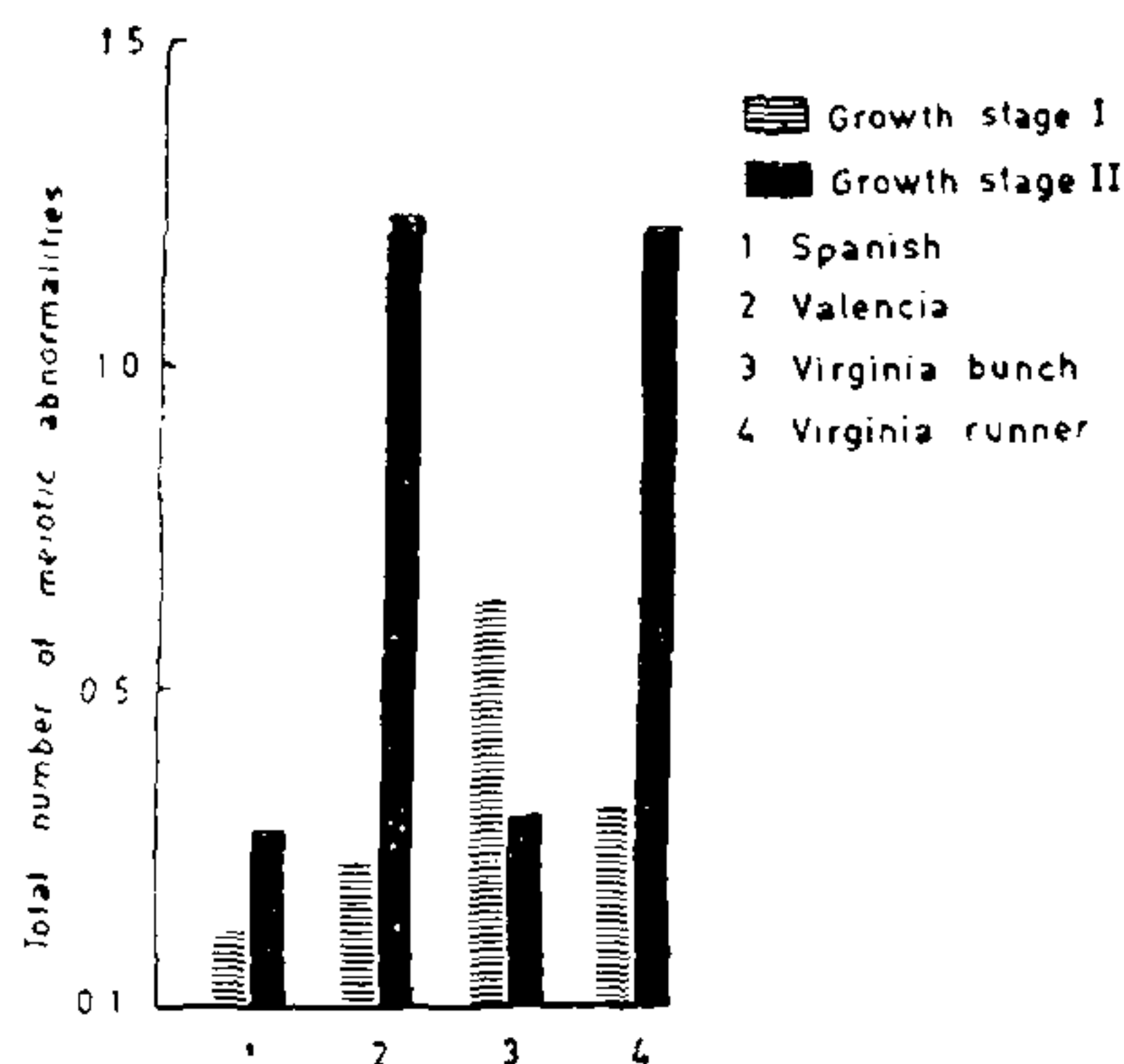


FIG. 5. Comparison of the total number of meiotic abnormalities (Univalents, trivalents, laggards and disjunction bridges) in the four botanical varieties of *Arachis hypogaea*.

The occurrence of meiotic abnormalities in a species that is normally fertile and productive indicates the existence of some homeostatic mechanism related to survival. The increase in the frequency of chiasmata also points out to the capacity for release of variability by the organism. The wide adaptability of *Arachis hypogaea* genotypes to diverse agroclimatic regions of the world lends support to such a conclusion.

December 15, 1980,

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#### TELIOSPORE GERMINATION AND NUCLEAR BEHAVIOUR IN *RAVENELIA TANDONII* SYD. ON *ACACIA CATECHU* WILLD.

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*Ravenelia tandonii* Syd. is characterised by witches' broom-like appearance due to uredial infection on *Acacia catechu* Willd. However, teliospores are rarely observed.

Meiotic divisions in the promycelium, mitotic division(s) in the basidiospores and the aberration during the germination of *Ravenelia tandonii* are encountered in the present studies,