parasite flowers profusely (Fig. A). This first appeared here in 1974 introduced along with some forage crops like *Melilotus* and *Medicago*. Data about nomenclature and description were provided by Santapau[2].

FIG. A. *Cuscuta chinensis* Lamk. (China dodder) on cowpea.

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KARYOLOGICAL STUDIES IN *PANCRATIUM LONGIFLORUM* L.

Pancratium longiflorum L., a subtemperate and tropical member of Amaryllidaceae, is a dwarf bulbous plant of medicinal avail. It bears linear leaves and white scented flowers. Of the fourteen species of this genus, cytological work is confined to *P. illyricum*[2,3], *P. zeylanicum*[4], *P. triflorum*[6] and an undotermined species[5]. Since *P. longiflorum* L., as far as the authors are aware, has not been cytologically explored, the present investigation is undertaken and its karyomorphology is detailed in this communication.

From the observation of somatic metaphase preparations, it was observed that the chromosome number of the current species is $2n = 22$ (Fig. 1) and the karyotype comprises the following eleven pairs of chromosomes (Fig. 2).

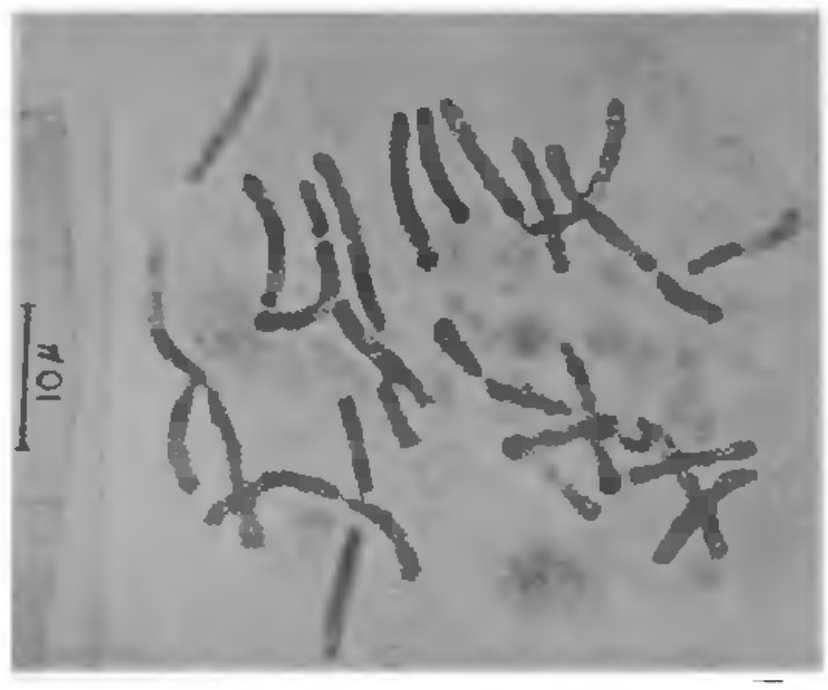

FIG. 1

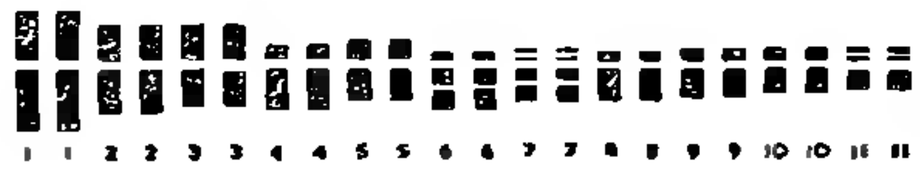

FIG. 2

FIGS. 1–2. Fig. 1. Mitotic complement of *Pancratium longiflorum showing* $2n = 22$ chromosomes, × 720. Fig. 2. Idiogram of *Pancratium longiflorum*.

(1) Two pairs of long chromosomes (11·2 μ and 8·8 μ) having median primary constrictions; (2) one pair of medium chromosomes (8·0 μ) with median centromeres; (3) three pairs of medium sized chromosomes (6·4 μ, 4·8 μ and 4·4 μ) having nearly subterminal primary constrictions; (4) two pairs of medium sized chromosomes (6·0 μ and 4·4 μ) having submedian primary constrictions; (5) one pair of medium sized chromosomes (5·6 μ) having almost subterminal primary constrictions and secondary constrictions on the long arms; (6) one pair of medium sized chromosomes (5·2 μ) having subterminal primary constrictions and each with two secondary constrictions, one on the long arm and the other on the short arm; (7) one pair of short chromosomes (4·0 μ) with submedian primary constrictions and secondary constrictions on the short arms.

Of the eleven pairs, two pairs are long, eight are medium and one is short. Among them, three pairs have median constrictions, three possess submedian ones and five pairs subterminal ones (3 M + 3 Sm + 5 St), thus displaying a symmetrical karyotype.

As in other taxa of Amaryllidaceae, polymorphic races are also evident in the genus *Pancratium*. In *P. illyricum*, the diploid ($2n = 22$) and the tetraploid ($2n = 44$) races were reported by Brumfield

and Sato respectively. A resembling variation has been recorded by Venkatakrishnan in the somatic chromosome number, that is $2n = 44$ in Shornur clone and $2n = 48$ and 56 in Malapuram clones of *Pancratium triflorum*. However, in the present species (*P. longiflorum*) no such deviation in chromosome number has been observed by the authors. Sharma and Ghosh (1954) studied an undetermined species of *Pancratium* and reported 48 somatic chromosomes of which six are long, twenty-eight medium and fourteen short. Sharma and Bal (1956) reported $2n = 22$ in *P. zeylanicum* and observed two pairs of long, five pairs of medium and four pairs of short chromosomes. From the present study it becomes obvious that the chromosome number in *P. longiflorum* is in agreement with that of *P. zeylanticum*[4] and *P. illyricum*[2] but for the eight pairs of medium chromosomes and one pair of short chromosomes. The present record of three pairs of chromosomes with secondary constrictions of which a pair having secondary constrictions both on long and short arms in *Pancratium longiflorum* should be reckoned as the first for the genus *Pancratium*.

The basic chromosome number in the allied genera *Hymenocallis, Crinum* and *Eucharis* (subtribe Cyathiferae of Bentham and Hooker[1]) is 11. From the available information it appears, as though, the lowest chromosome number for *Pancratium* is $2n = 22$ (Brumfield, 1941 ; Sharma and Bal, 1956 ; present report). Thus from the chromosome report and also from the occurrence of eleven types of chromosomes in the karyotype it seems reasonable to deliberate that 11 is the basic number for the genus *Pancratium*.

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PACHYTENE CHROMOSOMES IN AUTOTRIPLOID *BRASSICA CAMPESTRIS* VAR. *OLEIFERA* ($2n = 3x = 30$)

THE progeny of an autotetraploid *Brassica campestris* var. *oleifera* ($2n = 4x = 40$) contained an autotriploid with $2n = 3x = 30$. Since details of the chromosome complement of the diploid and of the related autotetraploid species are available[12,13], an attempt is made to study the behaviour of associations of homologous chromosomes at pachytene with respect to particular chromosomes of the complement in this autotriploid. Quantitative details regarding the frequency and position of exchange of partners, the relative distribution of exchanges in the eu- and heterochromatic regions, the mean number and mean length of the pairing blocks were gathered with respect to the chromosomes 1, 4, 5, 7, 8 and 10. In general the details in the autotriploid were found to agree with those of the related autotetraploid plant presented elsewhere[13].

Although association is seen between all the three homologues at the heterochromatic segments flanking the centromere, in the euchromatic segments association is seen only between any two of them at any particular point the third one left unpaired as in the other triploids (Figs. 1 to 16). The mean number of exchanges ranged from 0 to 4. A positive correlation has been observed between the mean number of exchanges and the physical length of the chromosome (Fig. 17).

About 15·2% of the associations were with or without exchange of partners elsewhere on the chromosome but with association of heterochromatic segments of the three homologues at the centromeric region. The initial points of pairing as observed from the position of exchange of partners were found to fit to the 'Poisson' series, being distributed all along the length of the chromosome without any interference of one exchange on the chance formation of another. Although the occurrence of exchanges in the heterochromatic regions could not be seen due to lack of transparency in the material, this can however be inferred indirectly from the particular multivalent types met with at diakinesis.

The trivalents noticed at diakinesis conformed to the 7th, 8th, 9th and 10th types of Darlington (1937) in the autotriploid plant (Table I). The 7th type

TABLE I

Frequency of different trivalent types at diakinesis in autotriploid Brassica campestris *var.* oleifera ($2n = 3x = 30$)

Trivalent type	7th	8th	9th	10th	Total nuclei
Number of nuclei	6	10	19	8	43