of *Aphis gossypii*. *A. mali* is known to attack several other aphids and also some coccids (Muesebeck *et al.*, 1951 ; Thompson, 1953 ; Peck, 1963). However, all these records are from outside India.

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Commonwealth Institute of Biological Control,
Indian Station,
Bangalore, *November* 3, 1966. T. SANKARAN.

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A NOTE ON THE INTERSPECIFIC CROSS BETWEEN *HIBISCUS SABDARIFFA* L. AND *H. CANNABINUS* L.

THE species *Hibiscus sabdariffa* L. ($2n = 72$) and *H. cannabinus* L. ($2n = 36$) are cultivated in South-East Asia chiefly for fibre, as a jute substitute. With a view to obtain a plant possessing the desirable characters of *H. sabdariffa* (fine fibre quality, and fleshy calyx), and *H. cannabinus* (earliness, resistance to *Phytophthora* and long fibre), an interspecific cross was attempted between these species. Since these species do not cross by normal methods, the grafting technique of Iyer *et al.* (1961) used in the interspecific hybridization of *Corchorous* was adopted. The species *H. sabdariffa* and *H. cannabinus* were grafted one over the other by "approach graft" method. The grafting was successful and the 'Xenoplastic' graft grew normally. The graft with *H. cannabinus* as the root-stock, and *H. sabdariffa* as scion grew to maturity and produced flowers, whereas the grafts of *H. cannabinus* on the root-stock of *H. sabdariffa* succumbed to wilt due to the susceptibility of the root-stock (*H. sabdariffa*) to the disease.

Crosses were made using *H. sabdariffa* (scion) as the female parent and *H. cannabinus* as the male parent. The fruits developed normally, but dehisced in about 20 days after pollination. When the seeds were examined they were found to be shrivelled with no contents inside.

The non-crossability of these species appears to be due to both physiological and genetical reasons. By grafting, the physiological barrier was overcome and thus resulted in the development of fruit. This is evident, because there was no fruit formation when these species were crossed without grafting. The failure to set seed may be due to the difference in the chromosome number. Doubling of the chromosomes of *H. cannabinus* and crossing it with *H. sabdariffa* by adopting the grafting technique then, may facilitate successful crossing of these species.

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Cytogenetics Laboratory,
Botany Section,
College of Agriculture,
Poona-5, *November* 26, 1966. P. S. REDDY.

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INTROGRESSION IN *SACCHARUM*

THE genus *Saccharum* consisting of 6 species, namely, *S. officinarum, S. robustum, S. spontaneum, S. edule, S. sinense* and *S. barberi* and its related genera such as *Erianthus, Narenga, Sclerostachya, Miscanthus*, etc., are of importance in genetics and breeding of sugarcane. *S. spontaneum* occurs in West, Central and South East Asia, Malayasia, and Polynesian and Melanesian islands, *S. barberi* in North India and *S. sinense* in South East Asia and southern Japan. At the Sugarcane Breeding Institute, there is a germ plasm bank where most of these genera and species are maintained in a live herbarium. Hence an experiment laid out to study the effect of introgression of these related species into *S. officinarum*, the noble cane known for its high sucrose content. Some of the observations recorded are reported in this note.

Fifty-six clones of six species of the genus *Saccharum* mentioned above (16 clones of *S. spontaneum*, 12 of *S. robustum*, 9 of *S. officinarum*, 9 of *S. barberi*, 8 of *S. sinense* and 2 of *S. edule*) representing most of the

chromosome numbers known to occur ($2n = 48$ to 164) and from all areas of geographical distribution were selected. Healthy clones were taken, cut into three budded setts and planted in twenty feet rows with a distance of three feet between the rows. Three genotypes were planted in each row in 5 ft. distance with $2\frac{1}{2}$ ft. distance between the genotypes. The experiment was laid out in a randomised complete block design with 2 replications. Observations were recorded when the crop was eleven months old on the following characters: (1) Plant height, (2) Leaf length, (3) Leaf width, (4) Brix and (5) Stalk girth. Data were collected for two tallest healthy stalks per genotype in each replication in 48 genotypes. Correlations between the mean values with respect to brix, stalk girth and leaf-width were studied. The data indicated that there were highly significant positive correlations between brix and stalk girth (0·61**), brix and leaf width (0·45**) and stalk girth and leaf width (0·79**). Pictorialized scatter diagram of these data is given in Fig. 1.

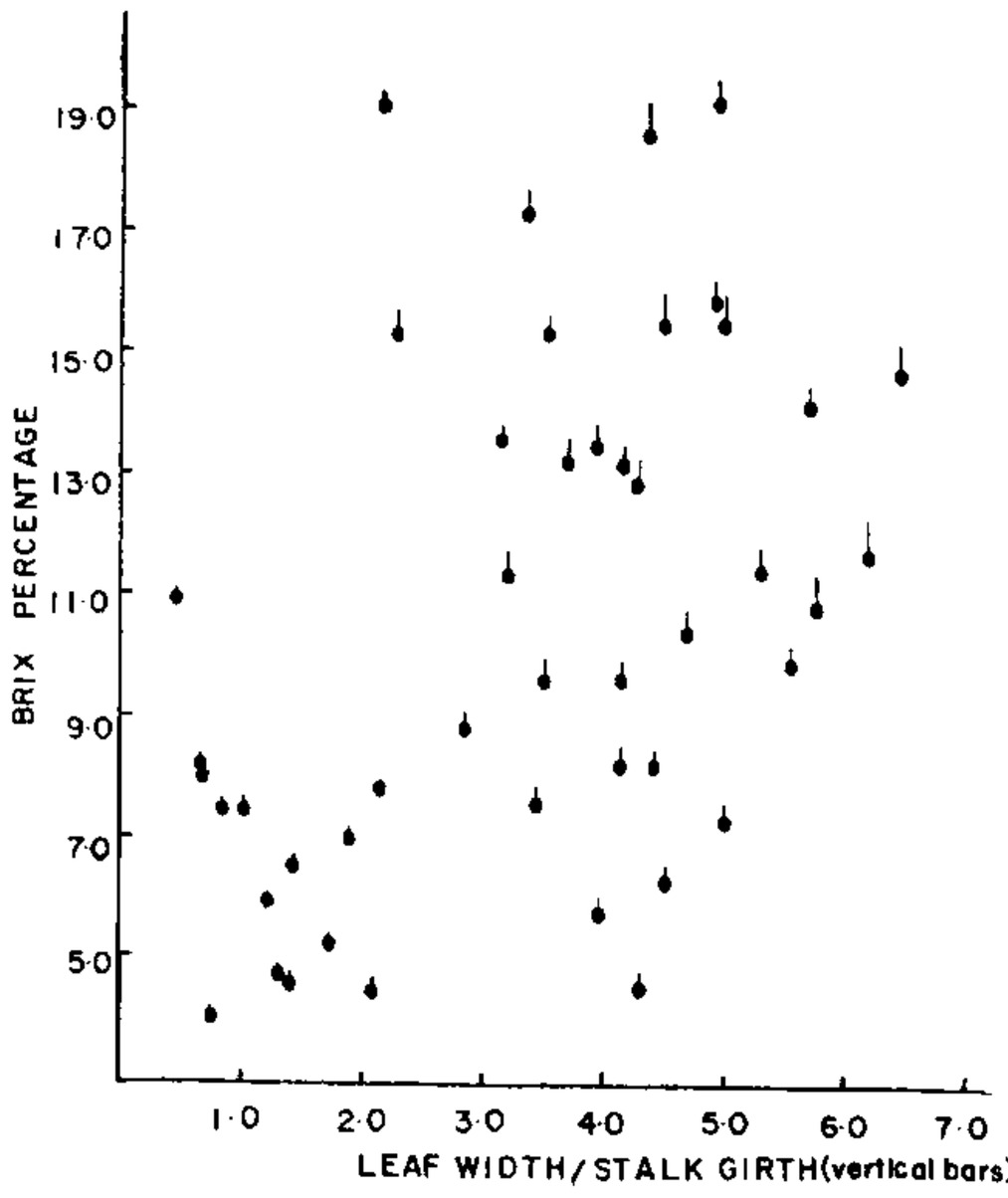

FIG. 1.

Observations were recorded one and a half month later on brix and these data also indicate highly significant correlations between brix and stalk girth and brix and leaf width.

Grassl[1] has reported that *S. officinarum* has been modified to a considerable extent by introgression of characters from *Miscanthus floridulus* and in extreme cases brought about cenanthy in the former. He also believes that introgression of characters from the same species to *S. robustum* has been extensive in the highlands of New Guinea. Though the data are limited, the existence of great restriction of recombinations and the fact that the points in the pictorialized scatter diagram fall along a broad line (for details see Anderson[2]) in the present study, indicate that introgressive hybridization seems to have played a role in enriching the variability and great amount of genetic heterogeneity in *Saccharum* species.

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Sugarcane Breeding Institute, Coimbatore-7, *October* 27, 1966.

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M. R. VENKATARAMAN.
S. S. SHAH.

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INDUCTION OF HETEROCYSTS IN THE BLUE-GREEN ALGA *ANABAENA AMBIGUA*

HETEROCYSTS are specialized cells found in some blue-green algæ whose function is little understood. Some vegetative cells present in a filament at more or less definite places, develop into heterocysts. The factors that control this process of cellular differentiation are not clear. We have developed a simple technique by which heterocyst formation can be brought about within a short time. It is based on some observations of the earlier workers[1,2] who showed that ammonium ions suppress the development of heterocysts in a number of blue-green algæ.

The alga used in the present investigation *Anabæna ambigua* (Cambridge Culture Collection 1403/7) is grown in Allen and Arnon's medium[3] supplemented with ammoniun chloride, 20–30 mg. per 100 ml. When grown in this medium it forms very long and undifferentiated filaments devoid of heterocysts (Fig. 1). These filaments after 7–10 days growth, are centrifuged aseptically, washed once and resuspended in the sterile Allen and Arnon's medium (without ammonium chloride) and kept near a fluorescent tube lamp, 40 W, at a distance of 150 cm. After approximately 48 hrs. well-developed heterocysts could be seen in all the filaments (Fig. 2). However,