and produced sterile flowers, the flowers were smaller in size and remained closed till shedding.

Its flower buds were examined cytologically. The PMCs contained only thirteen chromosomes ($n = x = 13$) (Fig. 2). PMCs with bivalents were also observed (Fig. 3). The number of bivalents ranged from 0–6. The pollen grains were highly variable in size and did not stain with 1% IKI solution. The plant being sterile is vegetatively propagated for further studies.

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SPODOPTERA LITURA FAB. CAUSING DAMAGE TO RAMIE IN ASSAM

THE leaf-eating caterpillar, *Spodoptera litura* Fab. (Noctuidae: Lepidoptera), has been noted for the first time to cause considerable damage to ramie (*Boehmeria nivea* Gaud.), which yields the strongest known vegetable fibre[2], at the Ramie Research Station, Sorbhog, Kamrup, Assam. *Spodoptera litura* is a polyphagous pest of agricultural importance throughout India and has been reported to occur on various crops including cotton, okra, castor, tobacco, jute, tomato, cowpea, banana, red gram, cabbage[1,4–6]. In the South-East region of Rajasthan, it appears to be one of the major biological factors responsible for the damage of *Kharif* crops[3].

The pest attacks ramie at all stages of growth and becomes prevalent throughout monsoon season. The caterpillars, in their early stage, feed gregariously on the parenchyma tissues of the leaves; and as they grow, they scatter over the entire field and eat the leaf blades and other tender parts showing the cut-worm habit. Sometimes, the grown-up larvae defoliate the plants.

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GLANDLESS HAPLOIDS $n = 2x = 26$ IN *GOSSYPIUM HIRSUTUM*, L. (COTTON)

SIX haploids ($n = 2x = 26$) were obtained in the X_3 progeny of the 25 kr. irradiated mutant in *Gossypium hirsutum*, L. cotton, variety High Gossypol (H.G. 108). The plants were highly self-sterile but fairly cross-fertile. The recessive condition gl_1, gl_2 and gl_3 has been confirmed under haploid level in *G. hirsutum* cotton.

Hutchinson *et al.* (1947)[2] considered oil glands as an important taxonomic character useful in classification of cotton and its relatives. Kimber and Riley (1963)[3] reviewed literature on haploid angiosperms including *G. barbadense* cottons, and Skovsted (1935)[6] and Webber (1940)[9] reported the occurrence of monoploids with diploids ($2n = 2x = 26$) in *G. davidsonii* Kell. and *G. sturtii*, Muell. Haploids in the interspecific hybrids by semigamy is also reported by Turecotte and Feaster (1969)[8] and Barrow and Chaudhari (1976)[1]. The authors (in press)[7] have also recorded a monoploid in *G. arboreum* var. LD. 132.

X-ray treatment at 25 kr dose in H.G. 108 induced one completely glandless plant (H.G. 108–25–1) in September, 1975, which was normal in morphology and fertility. Meiotic studies of this plant did not indicate any chromosomal variations. Six glandless plants with retarded growth, smaller leaves and short internodes and with sterile flowers were noticed in March, 1976 in the selfed (X_2) progeny of the above glandless mutant. PMCs studied in young flower buds of all the six plants revealed the presence of $n = 2x = 26$ chromosomes with an average of six bivalents (Fig. 2). Meiosis was highly irregular. At anaphase I and II there was unequal separation ranging from ten to sixteen chromosomes at each pole. Only tetrads were observed at the end of second meiotic division. Pollen grains when tested with 1% IKI solution showed 90–96% sterility. The plants were highly self-sterile but fairly cross-fertile. Few bolls were set on haploids (Fig. 3) when crossed with normal tetraploid glandless mutant and also few seeds were obtained from its crosses with cultivated diploids, *i.e.*, *G. arboreum*, *G. herbaceum* and wild diploids *G. thurberi*, Tod. and *G. anomalum* Waw and Peyr. Few bolls were set with one or two seeds after selfing, might be due to parthenocarpy.

FIG. 1. A glandless haploid ($2n = 26$) in X_2 of *G. hirsutum* cotton.

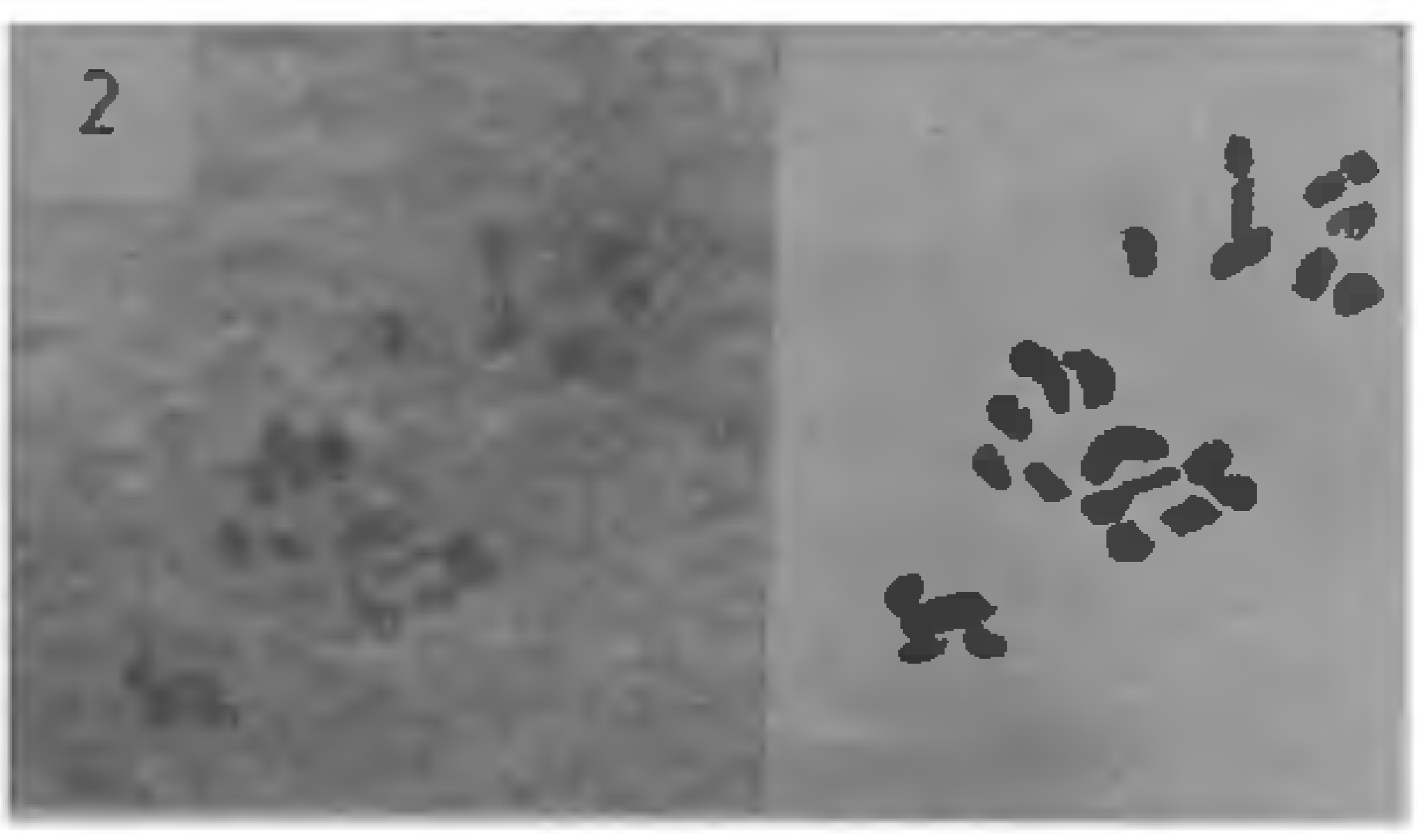

FIG. 2. Metaphase-I showing 6II + 14I 950 ×.

FIG. 3. Mature bolls of glandless haploid [($2n = 26$) and H.G. 108 Normal glanded *G. hirsutum* ($2n = 52$).

The recessive glandlessness of the plant conditioned by gl_1, gl_2 and gl_3 (McMichael, 1954 and 1960)[4,5], which is induced in tetraploid (X_1 generation) is confirmed at haploid level in X_2 generation. The haploids are being treated with colchicine to induce true breeding glandless lines, and this will be an additional source of variability for gossypol free oil and protein content in *G. hirsutum* cotton. This work is in progress.

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RADIATION INDUCED VARIEGATED MUTANT IN *BOUGAINVILLEA*

HOLTTUM[1] described four species of cultivated *Bougainvillea*, namely *B. spectabilis* Willd., *B. glabra* Choisy, *B. peruviana* Humb. and Bonpland, and *B.* × *buttiana* Holtt. and Stand. The group *B.* × *buttiana* is believed to be a natural interspecific hybrid complex between *B. peruviana* and *B. glabra*. *B.* cv. 'Jayalakshmi' has fuchsia-purple bracts and it was raised through seedlings from cultivar 'Meera' of *B.* × *buttiana* hybrid complex. Thus 'Jayalakshmi' is one among the 20 cultivars, originated and isolated through seedlings from the different centres of the world[2]. In the course of our investigations on inducing mutations in ornamental plants, a mutant with leaf variegation obtained from cv. Jayalakshmi, following chronic gamma ray treatment, is reported here.

In September, 1973 potted cuttings of *Bougainvillea* were exposed to chronic gamma-ray doses, from a ^{60}Co field source with the dose rates ranging from 10–30 R/h, for a total of 20 days. Of the 33 'Jayalakshmi' plants which received the accumulated dose of about 2·5 kR, 26 survived in the following season. They were further exposed to a total dose of about 4 kR at a dose rate of 22 R/h during January, 1975.

Bougainvillea in general is sensitive to low doses of radiations and with acute doses of X-rays and gamma-rays, it cannot withstand doses beyond 2 kR administered to fresh cuttings. With chronic gamma-ray doses, there was no survival beyond 5 kR. It