valvents (Fig. 3). However, in a number of cells 24 bivalents were observed at both diakinesis and metaphase I. The binucleate and tetraploid cells were recorded in 22% of the pollen mother cells. The remaining cells showed normal chromosome number with 12 bivalents at both diakinesis and metaphase I. The tetraploid cell observed in this case is believed to be originated as a result of pollen mother cells fusion. Such a process of pollen mother cells fusion has been reported in rice[1].

The occurrence of binucleate pollen mother cells and cells with double the number of chromosomes has not been reported in *S. nigrum* complex and are thought to be of extremely rare occurrence. The phenomenon of pollen mother cells fusion has a great significance in the production of diploid gametes which will account for the origin of polyploid plants in nature.

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KARYOLOGICAL HIGHLIGHTS OF *GENIOSPORUM PROSTRATUM* LINN.

OF the 25 species of *Geniosporum* (Lamiaceae) available in the world, only one species, namely, *G. rotundifolium* has been cytologically investigated, where the chromosome number is $2n = 28$[1]. The present study pertains to the chromosome number and karyomorphology of *G. prostratum* Linn. locally available as a roadside weed.

The healthy root tips were fixed in 1 : 3 acetic alcohol for 24 hours and stored in 70% alcohol. Root tip squashes were made following iron alum haematoxylin schedule[2].

The normal diploid complement of chromosomes of *G. prostratum* was found to be $2n = 18$ (Fig. 1). This number has been recorded for the first time. The chromosomes of *G. prostratum* are 2–3 microns long with a fairly symmetrical karyotype, in view of their gradation in length. The absolute chromosome length was found to be 21·1 microns. The karyotype consisted of 3 pairs of chromosomes with median centromere and secondary constriction, of which two were the largest in the complement (3 μ), while the others were 2·2 microns in length. Except the smallest pair (2 μ) which had median centromere, the rest of the chromosomes possessed sub-median centromeres. Of the 5 pairs which possessed submedian centromeres, 3 pairs had a length of 2·5 microns while the other 2 pairs measured 2·2 microns.

FIG. 1. Somatic chromosomes of *G. prostratum* ($2n = 18$).

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MONOCHAETIA KARSTENII (SACC. & SYD.) SUTTON—A NEW RECORD FROM SHILLONG

DURING March, 1976 a species of *Monochaetia* (Sacc.) (Melanconiales) was observed parasiting on the living old leaves of garden *Camellia* (*Camellia* sp., *Theaseae*) in the St. Edmund's College campus, Shillong. The disease manifests itself in the form of small spots, round (1–6 mm. across), dark to ash grey coloured on the upper surface while round to elliptial (1–4 mm. across and 2–10 mm. in breath and length respectively) on the lower surface as necrotic areas delimited from healthy leaf portion by dark grey band of dead tissues. The number of leaf spots per leaf varies (1–8). Sometimes spots become elongated with star-shaped margin and measure up to 6 mm. in dia.

Acervuli.—200–212·5 × 125–150 μ, dark coloured, scattered or pregarious, discoid, circular, slightly

cushion or oval-shaped sub-epdermial later becoming erumpent; *hyphae* : 3–4·5 μ in dia. chiefly found in the mesophyll, slender, branched, colourless, septa e, tangled sub-epidermal masses of hyphae later on developed into acervuli; *paraphyses* : 2–3·5 μ in dia., numerous, slender, hyaline, non-septate, longer than conidiophores but both intermixed; *conidia* ; 2–5 × 12 5–13·75 μ, fusoid, unequal, sided or slightly curved, with cone-shaped apical end cells, 4–5 called. 2–3 middle dark brown, number 2 cell being broadest of all, apical hyaline cell of each conidium provided with a single beak-like appendage, cells slightly constricted at the septa, basal cell of an attached conidia flat or concave without beak-like appendage; *conidiophores* : 2·5–3·5 × 5–7·5 μ, short, hyaline, each bears a single conidium at top.

The pathogen was isolated from the infected spots on Czapek's Dox agar and identified as *Monochaetia karstenii* (Sacc. & Syd.) Sutton (IMI 205320). Pathogenicity of the fungus was successfully proved 7–8 days after inoculation by the method described earlier[3].

A perusal of the literature[1,2,4–7] shows that the present report forms a new host range and hence this is the first record from Shillong.

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WILT DISEASE OF *CALENDULA OFFICINALIS*— A NEW RECORD FROM INDIA

DURING February–March 1978 the authors have observed wilt disease of *Calendula officinalis* in the P.G. Botanical Garden at Bhagalpur. *Fusarium solani* (Mart) Sacc. was identified as the causal organism. This disease of *Calendula officinalis* is the first record from India.

Symptoms are generally manifested when the plants are in flowering stage. The infected plant exhibits yellowing of foliage which later drop down with the advancement of the severity and wilt. The pathogenicity test was found positive.

The identity of the pathogen was confirmed at C.M.I., Kew, England, and the culture is deposited under accession No. IMI 226619.

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IN VITRO DEVELOPMENT OF CALLUS FROM ANTHERS IN *LUFFA CYLINDRICA*

INVESTIGATIONS on anther culture for androgenic plants are completely lacking in the family Cucurbitaceae. This prompted us to take up anther culture studies in this important vegetable yielding Cucurbitaceous plant, *i.e*, *Luffa cylindrica* L.

Mature floral buds (1·0 cm to 1·4 cm in length) containing uninucleate pollen grains were selected for experimental studies. Standard technique for surface sterilization was followed. Anthers from surface sterilized buds were excised aseptically and planted singly or in pairs on the surface of the medium. The MS medium[1] was used as basal medium (BM). BM was also supplemented with various concentrations of adenine (Ad, 0·5–40·0 ppm), Zeatin (Ze, 0·05–1·0 ppm), kinetin (KN, 0·05–20·0 ppm), casein hydrolysate (CH, 100·0–500·0 ppm), yeast extract (YE, 100·0–1000·0 ppm), coconut milk (CM, 10–20%), 2, 4-dichlorophenoxyacetic acid (2, 4-D, 0·1–10·0 ppm), indole-3-butyric acid (IBA, 0·1–10·0 ppm), indole-3-acetic acid (IAA, 0·1–10·0 ppm), and 1-naphthylacetic acid (NAA, 0·1–10·0 ppm), either singly or in various combinations.

The anthers showed slight swelling followed by spreading of its sinuous lobes (Fig. 1 A) on BM alone or supplemented with CM or auxins or cytokinins,