unit area decreases and the number of trichomes per unit area increases.

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INDUCED FASCIATION IN *CELOSIA ARGENTEA* L.

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Fasciation is a morphological term applied most commonly to an abnormal stem condition in vascular plants in which the affected regions become flattened or ribbon-shaped[1]. All parts of a plant may be altered, many of them in combination with the changes in the stem structure. Fasciation has been reported as a relatively well-known plant monstrosity or teratological abnormality[2]. Many mutagens are found to cause fasciations in many plants[3–5] which give some ideas regarding the morphological adaptivity of the species. Although the common cocks comb *Celosia cristata* L.[6] and its plumose forms[2] are the glaring examples of such types of monstrosity, which have been considered to be evolved through mutations from *Celosia argentea* L., the latter has not been tried with chemical mutagens for the same.

Dry and dormant seeds of *Celosia argentea* L. forma. *spontanea* were presoaked in water for 24 hours and then treated with different concentrations of ethylmethane sulphonate (0·4%, 0·2% and 0·1%) for 6 hr. The seeds were washed with tap water and sown in the earthernware pots. The 15-day old seedlings were transplanted into the field. Different morphological characters were recorded at different stages of development—through M_1, M_2 and M_3 generations.

C. argentea is a wild annual plant with erect stem, strongly ribbed, often much branched with spike solitary, stalked, cylindrical with conical apex, very dense throughout their length with shining white flowers (Fig. 1). In the large treated population, only three plants showed some of its spikes and stems with fasciations characterized by the unregulated increase by weight and volume of the tissue, over that of the normal type. These relative loss of control over the growth area resulted in irregular and unpredictable types of forms. In one of the plants of M_2 generation of 0·2% EMS-treated population showed one of its spikes with a slight flattening of its floral axis in the early stages of development. Subsequent growth of the spike with a mid notch in the flattening region made the normal conical spike a forked one (Fig. 2). One of the plants of M_2 generations of 0·4% EMS treated population showed little more elaboration with much more flattening and looked like a cocks comb type of inflorescence with white flowerings. Numerous growing points develop at its tip (Fig. 3). Another plant of the same treatment was found to be with flattened main shoot with some normal branches from the very base of the plant. The normal branches showed normal cone-shaped inflorescence, whereas the fasciated branches showed forked type of inflorescence at different heights of the plant with much elaborate comb-like terminal inflorescence (Fig. 4). The leaves were arranged spirally in the flat ribbon-shaped stem instead of alternate arrangement.

Regarding the morphological nature of fasciations two views were proposed, one view[7] believed that fasciation results from an increase in number of growing points or buds which subsequently fuse, and the

Figs. 1–4. Inflorescences of *Celosia argentea*. 1. Normal. 2. Forked type. 3. Cocks comb type 4. Different levels of elaboration of inflorescences with fasciated stem.

other views held that fasciation results from flattening or enlargement of a single growing point. The spiral arrangements of leaves on the flattened stem with different level of fasciations on the branches and inflorescences corroborate with the fusion concept. Further work on its histology will help in predicting its morphological nature. But these induced fasciated inflorescence might throw some light on the evolution of the flat cocks comb type of inflorescence of *Celosia cristata* L., which is now widely cultivated as an ornamental plant in gardens. Hence the present findings on the induced fasciation in *C. argentea* L. supports the previous view that *C. cristata* L. might have occurred spontaneously in nature due to mutation, from *C. argentea*.

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FOSSIL WOODS OF *MILLETTIA* AND *ALBIZZIA* FROM THE TERTIARY BEDS OF WEST BENGAL, INDIA

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IN the present note two fossil woods resembling the modern genus *Millettia* and *Albizzia* are described from the tertiary beds of Labpur, Birbhum District, West Bengal. One of them (Specimen No. P_{93}) shows the following characters:

Wood diffuse porous. Growth rings distinct. Vessels small to large, solitary as well as radial multiples of 2–3 (Fig. 1), t.d. 84–112 μ, r.d. 98–280 μ, vessel segments short, storied. Perforation plate simple with truncate ends; intervessel pits alternate, vestured. Parenchyma banded, alternating with concentric fibre bands (Fig. 1); parenchyma strands

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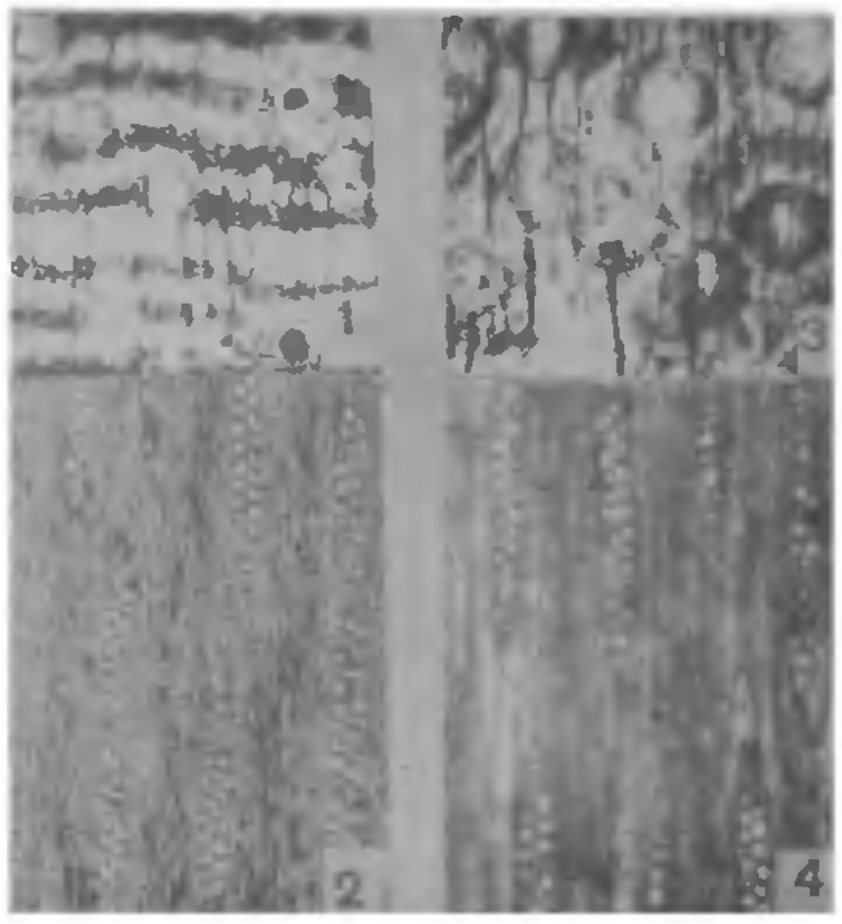

FIGS. 1–4. Fig. 1. Cross-section of *Millettioxylon pongamiensis* showing the vessel and parenchyma distribution × 15. Fig. 2. Tangential longitudinal section of *Millettioxylon pongamiensis* showing the homocellular xylem rays × 50. Fig. 3. Cross-section of *Albizzinium eolebbekianum* showing the vessel and parenchyma distribution × 15. Fig. 4. Tangential longitudinal section of *Albizzinium eolebbekianum* showing xylem rays × 50.

storied. Xylem rays fine storied, 1–2 seriate (Fig. 2), homocellular. Fibres libriform, non-septate and thick walled. Ripple marks present. The fossil wood is identical to known species *Millettioxylan pongamiensis* Prakash[1], described from Lower Siwalik beds of Himachal Pradesh. The other species (Specimen No. 165) resembles the modern wood of *Albizzia* and is identical with *Albizzinium eolebbekianum* Prakash[1]. It shows the following character: Wood diffuse porous. Growth rings distinct, delimited by terminal parenchyma. Vessels large to medium in size, mostly solitary, sometimes in radial multiples of 2–3 cells (Fig. 3), thin walled, t.d. 93–186 μ and r.d. 133–266 μ; vessel segments short with truncate ends; perforation plates simple, intervessel-pits vestured, alternate. Parenchyma paratracheal and apotracheal, paratracheal parenchyma vasicentric, aliform to aliform confluent (Fig. 3). Xylem rays homocellular, 2–3 cells wide (Fig. 4), and 12–20 cells high. Fibres septate and non-libriform.

Specimen No.—P_{93} and P_{165}, Department of Botany, University of Burdwan, Burdwan, West Bengal.
Locality—Labpur, 16 miles north of Santineketan, Birbhum District, West Bengal, India.
Age—Miocene.

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