

Thanks are due to Professor Shri Ranjan for his interest and guidance.

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University of Allahabad,  
September 14, 1949.

1. Pal, B. P., and Murty, G. S., *Ind. Jour. Genet. and Pl. Breed.*, 1941, 1, 61-86. 2. Kar. B. K., *Nature*, 1946, 157, 811. 3. Chinoy, J. J., and Nanda, K. K., *Ind. Jour. Agric. Sci.*, 1946, 16, 390-399. 4. Pugh, B. M., *Allahabad Farmer*, 1945, 19, 131-142. 5. Ranjan, S., *Proc. Ind. Acad. Sci.*, 1940, 12, 62-68.

#### EFFECT OF VERNALIZATION AND PHOTOPERIODIC TREATMENTS ON GRAIN DEVELOPMENT IN WHEAT

HIGHLY significant negative correlations between yield, 1000-grain weight and mean maximum temperature of the ripening period have already been reported elsewhere.<sup>2</sup> When the temperature of the ripening period exceeded a certain level the grain filling processes in wheat were affected and as a consequence of which the grain remained shrivelled and the yield was reduced.

In order to confirm the general applicability of the abovementioned result as well as to make sure that the effect of the temperature of the ripening period on yield and 1000-grain weight of wheat is paramount over other factors, vernalization and photoperiodic treatments were given to a number of wheat varieties selected from different flowering classes, for accelerating or retarding their developmental processes and thus synchronizing their ripening periods, either with a lower temperature range during February-March (75-80° C.), or with a higher temperature range during April-May (90-95° C). Details of some of these experiments have already been given elsewhere.<sup>1,3,4</sup> When flowering in early wheat varieties, like N. P. 165, Khapli and others, was delayed in order to shift the ripening period to hotter months, the yield per plant was reduced to 3-5 g. from 10-15 g. and 1000-grain weight to 20-25 g. from the normal figure of 40-45 g. The ripening period was also shortened from 50-60 days to 30-35 days. On the other hand, when flowering was accelerated in late varieties like Yeoman II, Kubanka, Vaneum Yakub, and others, by vernalization and photoperiodic treatments, thus making it possible

for these varieties to ripen their grain in February-March, it was found that the yield increased from 2-4 g., to 7-10 g., the 1000-grain weight from 15-20 g to 40-45 g. The ripening period was considerably lengthened from 20-30 days to 40-60 days due to lower temperature.

The usefulness of this physiological method of varying environmental conditions may be seen from the fact that the conclusions arrived at earlier<sup>2</sup> have been repeatedly confirmed during the last eight years by experiments on vernalization and photoperiodic responses of wheat carried out at the Indian Agricultural Research Institute, New Delhi, and also at the University of Delhi, Delhi.

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October 11, 1949.

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1. Chinoy, J. J., and Nanda, K. K., *Indian J. Agri. Sci.*, 1946, 16, 390. 2. Chinoy, J. J., *Nature* (London), 1947, 159, 442. 3. —, *Ibid.*, 1949 (in press). 4. Nanda, K. K., and Chinoy, J. J., *Curr. Sci.*, 1945, 14, 241.

#### PROLIFERATION OF GRASS SPIKELETS

IN *Current Science*, August 1949, 18, No. 8, 301-02, a letter appears entitled 'Proliferation of Spikelets in *Pennisetum Polystachyum*'. For those interested, the following reference may be useful: —

Jenkin, T. J., "Notes on Vivipery in *Festuca Ovina*", Report for 1921 of the Botanical Society and Exchange Club of the British Isles. T. Buncle & Co., Arbroath, 1922.

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#### OCCURRENCE OF TURIONS IN ELODEA CANADENSIS

*Elodea canadensis* Michx is a rapidly multiplying common pond weed in South India. Specimens collected during summer when the ponds were rapidly drying up, showed small tuberous structures (Figs. 1 & 2) which proved to be turions reported in the pond weeds of temperate regions.<sup>1</sup>

Plants like *Myriophyllum verticillatum* L. and *Potamogeton* sp., develop turions under adverse conditions and germinate and produce new shoots under favourable

Fully developed turions are tuberous, cinnamon-brown and covered with scale leaves. In transverse sections they show the growing point in the centre and several enveloping layers of scale leaves which are studded with food material, and give a blue colouration with IKI.

Turions collected during April and May were hard and ovate to spherical in shape. Those collected in July, following the commencement of rainy season, showed early stages of germination and consequent regeneration of new shoots. Longitudinal sections of turions at this stage showed the rapidly developing apical shoot (Fig. 3) with its nodes and internodes.

It appears that adverse weather conditions such as low temperature, lack of water resulting in a severe competition for food and space among the plants induce turion formation. In the present case drought and consequent drying up of ponds are probably the chief causes for turion formation.

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Bangalore,  
October 10, 1949.

K. M. SAFEEULLA.  
H. C. GOVINDU.

Arber Agnes, "Water Plants" (1920).

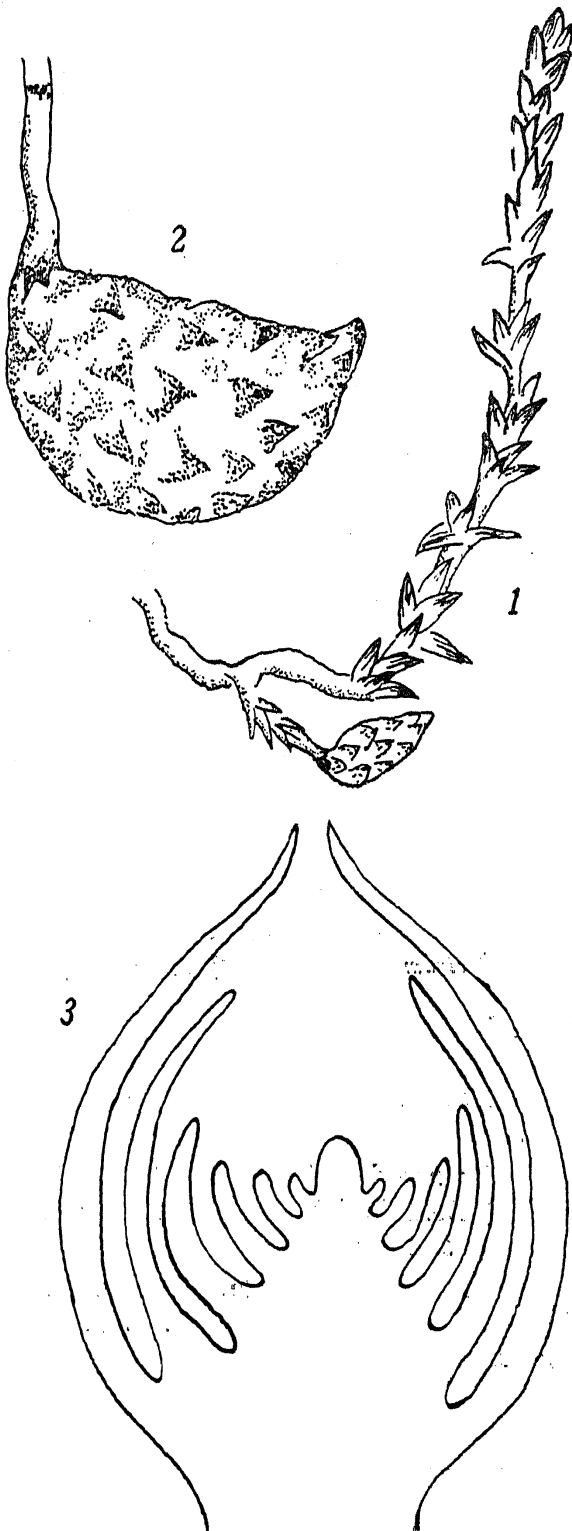


FIG. 1. Showing turion × Natural size.

FIG. 2. Enlarged view × 4.

FIG. 3. Longitudinal section showing the apical shoot × 6.

conditions. Several of the turions in *Myriophyllum verticillatum* detached from the mother plant during cold season regenerate new shoots in spring.

#### ON THE NECTARY IN THE STAMENS OF *MEMECYLON HEYNEANUM* BENTH.

*Memecylon Heyneanum* belongs to the family Melastomaceæ which is characterised by the presence of peculiar appendages on the connectives of anthers. Ziegler<sup>1</sup> has described the structure and biological interest of these appendages in several species. In the present form there are eight incurved stamens whose connectives are prolonged at the back to form very characteristic horn-shaped appendages, bluish in colour (Fig. 2). Each appendage bears a nectary facing the style in the bud (Figs. 1-2).

The nectary is broad and funnel-shaped (Fig. 4) and its outermost layer consists of narrow elongated palisade-shaped cells with conspicuous nuclei and dense cytoplasm. The vacuoles are present at the basal end only. This is the secretory layer