

Summer (Aus) variety of rice	Treatments	No. of days from sowing to flowering	Acceleration (+) or retardation (-) of flowering as compared with control
Charnock	Series I		
	A	113.8	
	B	120.6	- 6.8
	C	109.6	+ 4.2
	D	121.4	- 7.6
	Series II		
	E	110.5	+ 2.5
F	126.3	-13.3	
G	113.0		
Panbira	Series I		
	A	110.5	
	B	121.8	-11.3
	C	109.9	+ 0.6
	D	122.7	-12.2
	Series II		
	E	99.8	+ 7.8
F	111.8	- 4.2	
G	107.6		

A, Control; B, 8-hour day for 4 weeks; C, 35° C. for 10 days; D, 35° C. for 10 days plus 8-hour day for 4 weeks; E, 35° C. for 20 days; F, 35° C. for 20 days plus 8-hour day for 4 weeks; G, control.

varieties examined by us, short days did not induce earliness but rather they have a devernalizing effect; also long days do not always retard, but sometimes accelerate, flowering, for the data for two Aus varieties presented in the statement<sup>4</sup> show acceleration by long days. It appears to us that Kar's results indicate that in Aus varieties long days, and in Aman varieties short days, tend towards the acceleration of flowering.

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the same characteristic cellular proliferation at high concentration<sup>2</sup>. The reactions have also led to the detection of growth-substances in bacteria-free crown gall tissue.

The following method has been used for applying tests. Sunflower plants (var. Russian giant) were grown in pots until the first internode of the plant was fully expanded and the second was on the point of beginning to elongate. Such plants were cut off at the base and removed to the laboratory. By means of sterile forceps the epidermis was carefully stripped from the first internode, which was freed by this means of all external contaminants. The internode was then cut into segments of about 4 mm. in length by means of a sterile scalpel. Each segment was then transferred to an agar slope containing 0.8 per cent agar, 2 per cent sucrose, mineral salts (White's solution) and the substance to be tested. Tests so far have been carried out in 25 mm. × 150 mm. 'Pyrex' tubes containing 2½ c.c. of agar. If the amount of material available was limited, it was incorporated into a few millilitres of agar, which was then cut into small blocks and applied to the cut surface of the stem fragment.

The sunflower stem fragments were taken from the upper half only of the internode, as tissue of the lower half tended to produce roots spontaneously. Material to be tested was always applied to the basal end of the fragment. If a root-producing substance had been added to the agar, root production was generally evident in about four days. A two-week period of growth was used when it was desired to detect the influence of a substance on the increase in fresh or dry weight of the fragment. Quantitative estimates of this kind were based on means from at least twenty samples. Histological effects of the unknown substances were also looked for.

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<sup>1</sup> Sircar, S. M., *Chron. Bot.*, in the press.

<sup>2</sup> Hedayetullah, S., and Sen, N. K., *Science and Culture*, 6, 668 (1941).

<sup>3</sup> Hedayetullah, S., and Ghosh, B. N., *Nature*, 157, 194 (1946).

<sup>4</sup> Kar, B. K., *Nature*, 157, 811 (1946).

<sup>5</sup> Parija, P., *Curr. Sci.*, 12, 88 (1943).

<sup>6</sup> Sircar, S. M., *Nature*, 153, 378 (1944).

<sup>7</sup> Sircar, S. M., and Parija, B., *Nature*, 155, 395 (1945).

<sup>1</sup> de Ropp, R. S., *Amer. J. Bot.*, in the press.

<sup>2</sup> de Ropp, R. S., *Nature*, 158, 555 (1946).

## Sunflower Stem Cultures for the Detection of Plant Hormones

FRAGMENTS of young stem tissue of *Helianthus annuus* (L.), when cultured on a nutrient medium containing 2 per cent sucrose and mineral salts, are capable of making only a limited amount of growth, chiefly confined to the production of a pad of callus tissue on the cut surface. Such cultures have been shown to respond in various ways to certain plant hormones. Root production results from the addition to the medium of one part per thousand million of such substances as indole acetic, indole butyric or naphthalene acetic acid to the agar on which such stem fragments are cultured. The type of root growth varies with the hormone used<sup>1</sup>. Higher concentrations of these substances cause a characteristic proliferation of the stem tissue. These reactions have already been used to demonstrate the presence of indole acetic acid in commercial penicillin. The crystalline penicillins G and X were shown to have root-initiating properties by this means, but to differ from indole acetic acid in that they failed to induce

## Sex Differences in Colour Vision

In a previous communication<sup>1</sup>, it was shown that women with known colour-blind relatives were significantly more often red-green weak to a slight extent than women taken at random. This carried the implication that red-green blindness must be an incompletely recessive Mendelian character (although sex-linked), because a large proportion of the women with known colour-blind relatives must be heterozygous for that defect. Several later experiments have confirmed that conclusion, essentially the same results being obtained with each new group tested.

Another experiment, carried out on 191 men and 185 women with normal colour vision (but otherwise chosen at random), and 18 women with known colour-blind relatives, has confirmed the same conclusion in a different way. Sensitivities to the differences between red and green and between yellow and blue were measured by the limiting method, using monochromatic colour filters. The subjects tested were then grouped to compare men with women selected at random, and these women in turn with the women who knew of colour-blind relatives. The  $\chi^2$ -technique showed a higher proportion of women than of men in the random samples, who had more