ferent tissues vary. Growth of chorionic tissue was observed in every case and contractions of the heart region were observed in a few instances. However, distortion of the brain vesicles and eye cups was observed in every case after deep-freezing. It seems, then, that tissue of mesodermal origin may withstand deep-freezing better than that of ectodermal origin.

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Manuscript received July 10, 1953.

Lack of Protective Effect of Allyl Thiourea Against X-Irradiation[1]

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Alexander and Fox (*1*) recently found a correlation between the ability of various agents to protect animals against x-rays and the ability of these agents to protect polymethacrylic acid from radiation-induced loss of viscosity. The most effective agent they tested in their polymer system was allyl thiourea, and they pointed out that this chemical had never been tested biologically.

We have found that allyl thiourea does not protect mice from the lethal effects of whole body x-irradiation, and it therefore appears that the interesting polymer system of Alexander and Fox may not be used as an *in vitro* test of *in vivo* protective action.

TABLE 1

EFFECT OF ALLYL THIOUREA ON LETHALITY OF WHOLE BODY X-RADIATION TO MICE*

Expt.	Allyl thiourea (mg/kg)	X-rays (r)	Lethality	Av length of survival (days)
1	0	800	16/16	11.9
	250	0	0/16	—
	250	800	16/16	8.9
2	0	750	16/16	10.3
	35	750	16/16	7.0
	100	750	16/16	9.6
	250	750	16/16	10.7
	250	0	0/16	—

* Mice were Carworth Farm males, age approximately 60 days. Allyl thiourea freshly prepared for each use and injected within 15 min before beginning x-radiation. X-Ray factors: 250 KVP, 15 ma, ¼ mm Cu + 1 mm Al, 60 cm target distance. Rate: 60 r/min in expt. 1; 53 r/min in expt. 2. Lethality is expressed as the number of deaths over the total number tested.

[1] This study was supported by funds provided under contract AF 33(038)27353 with the USAF School of Aviation Medicine, Randolph Field, Texas.

Allyl thiourea is relatively nontoxic and soluble and may be given intraperitoneally to mice at a dose rate of 250 mg/kg without effect. In the experiments reported here we administered 750 or 800 roentgens of whole body x-radiation to our mice; these doses are 100% fatal, but appreciable percentages of mice may be saved from these doses by sodium azide, cysteine, or other agents shown by Alexander and Fox to be less effective than allyl thiourea in their polymer test system.

The results of two experiments are given in Table 1, which indicate no protective effect whatsoever of allyl thiourea. In fact, in some cases the drug, though without toxicity itself, seems to hasten the lethal result of the x-radiations.

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Manuscript received June 19, 1953.

Photoperiodic Behavior of Medium-Early Varieties of Rice

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The effect of short days of 10 hr (8:00 A.M.–6:00 P.M.) on the flowering behavior of medium-early rice (*1*) has been studied. Three varieties, T.3 (a selection from Basamati of Dehradun), T.12 (a selection from Hanshraj of Unnab district), and T.21 (a selection from Chawal of Rampur State), grown in Uttar Pradesh, were used in pot-culture experiments. Pure seeds of these varieties, obtained from Nagina Rice Research Station, U.P., after a preliminary selection for uniformity by eye, were sterilized in 0.2% formalin, thoroughly washed in distilled water, and sown on June 18, 1949. Germination was complete in 5–6 days. Short-day treatment[2] was started in the seed bed with 7-day-old seedlings. Short days were given for periods of 3, 4, 5, and 6 wk to separate seed beds. The treatments

[1] Thanks are due to Shri Ranjan for his guidance and helpful criticism and for the facilities provided in the Department of Botany of Allahabad University for carrying out this investigation. I am grateful to C. M. Bastia for his help in the preparation of the diagram.

[2] Short-day treatment consisted of a daily 10-hr exposure to natural daylight in the open field, from 8:00 A.M. to 6:00 P.M. For the remainder of the 24-hr cycle, i.e., from 6:00 P.M. to 8:00 A.M. of the next day, the pots were removed to a well-ventilated dark room.

Long-day treatment consisted of a 24-hr continuous illumination obtained by supplementing the natural daylight with artificial illumination from a 1000-w gas-filled Osram bulb. The bulb was hung at a height of 5 ft, and the intensity of light falling on the surface of the soil, as measured by a Weston phototronic foot-candle meter, was 30–40 ft-candles. The pots were arranged in concentric circles on the ground and their respective positions were interchanged every day so that each pot received almost the same intensity of light.

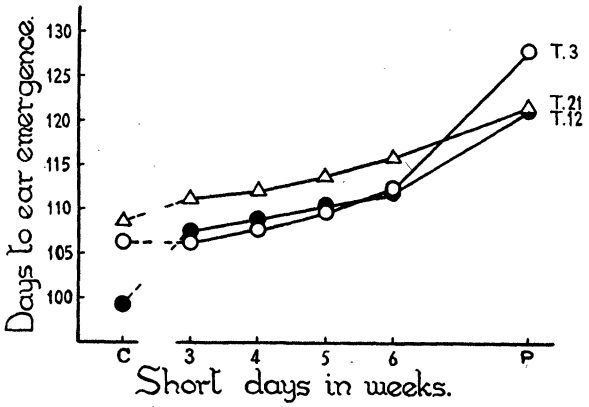

FIG. 1. C, control; P, short-day treatment prolonged until the time of ear emergence.

were arranged so that all were completed on the same day (Aug. 7) and the seedlings were transplanted on that day. After the short-day treatment was over, the seedlings were kept in the pot culture house under environmental conditions identical with those of the control plants which were sown and transplanted on the very same day as the plants from treated seeds. In another set, after 6 wk of short days in the seed bed, the short days were continued till ear emergence was noted in all the plants. Data for ear emergence of the main shoot are graphically represented in Fig. 1. A study of this figure shows that there is a gradual delay in the time of ear emergence as the duration of short-day treatments is increased in the seed bed and thereafter. In the experimental set where the short days were prolonged until heading, the delay was very marked. The photoperiodic behavior of these 3 medium-early varieties is somewhat akin to that of the 4 early varieties T.136, T.N.22, T.N.27, and Ch.10 of U.P. (*2*). Similar results were obtained by Sircar and Ghosh (*3*) in Charnock and Panbira, 2 summer varieties of rice of Bengal, by the application of 8-hr short days. Sircar and Parija (*4*), however, have not obtained any delaying effect in Jhanji 34 and Bhutmari 36, 2 other summer varieties of Bengal, by giving similar treatments. Kar (*5*), after giving long and short days for only 15 days to 2 summer and 8 winter varieties of rice of Bengal, made a general statement that in different varieties of paddy, high temperature associated with short day lengths was inducive to earliness and that low temperature or longer day lengths produced retardation. In the light of the present investigation, Kar's statement needs modification. In these 3 medium-early varieties of rice of U.P., short days did not induce earliness but rather they greatly prolonged the time of ear emergence. The photoperiodic behavior of medium-early varieties stands quite in contrast to those of late or winter varieties of rice where considerable earliness is obtained by application of the same short-day photoperiod (*6*). The response to photoperiod in rice is thus greatly varietal and is largely controlled by the agricultural characteristic of the predominant groups. While studying the effect of long days on these medium-early varieties it was also seen that 24-hr long days for 3–6 wk in the seed bed brought about a delaying effect on ear emergence. On the basis of their flowering behavior as related to length of day, these medium-early varieties may be classified as intermediates, as they flower within a definite range of length of day, producing flowers less readily when the days are either sufficiently shortened on the one hand or sufficiently lengthened on the other (*7, 8*).

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Manuscript received May 25, 1953.

The Effect of Adenosinetriphosphate on the Cilia of the Pharyngeal Mucosa of the Frog

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At the present time it is generally agreed that adenosinetriphosphate (ATP) participates widely in the chemical to mechanical energy-converting systems of living organisms. Particularly in the case of muscle, the role of this compound has been studied extensively (*1, 2*). Bacterial flagellar proteins have been observed to contract when treated with ATP, and bacterial motility is increased specifically by this substance (*3*). Moreover, the rates of cytoplasmic streaming and ameboid movement rise after injection of ATP solutions into the tail region of *Amoeba discoides* (*4*). In the present report, data summarized show that the movement of cilia of the pharyngeal mucosa of the frog is strikingly accelerated in the presence of ATP. Thus, the evidence suggests that ciliary activity may be included among the various types of cellular movement related to this ubiquitous compound.

Ciliary activity was measured in terms of the rate of transport of a standard object across the ciliated pharyngeal mucosa of the frog (*Rana pipiens*), using a technique generally similar to the method employed by Stewart (*5*). In each of 29 experiments, the pharyngeal mucosa of a pithed frog was dissected free of underlying tissues and pinned with slight traction to a weighted cork. The preparation was immersed in 20–200 ml aliquots of specified test solutions in a paraffin-lined or glass container. The time required for the transport of a piece of aluminum foil (weight = 0.1 mg; area ca. 1 mm^2) along a 1-cm distance in a hori-