

TABLE I
Effect of gamma irradiation on growth and flowering of tuberose

Gamma dose (Kr)	No. of days required for first flowering	Length of stalk at first flowering (cm)	No. of days required for first opening of flower	Length of flower stalk (cm)	Girth of flower stalk (cm)	Length of internodes (cm)	No. of leaves when 1st flower stalk emerged	Other observations
Control	150	40-42	156	70	2.5-3	8-10	15.00	..
0.5	140	50-58	145	73-90	1.5-4.0	8-14	13-30	One mutant gave bolder flowers compared to control plants. Flower tube length was 5 cm compared to 4.0-4.5 cm of control and other doses. Flower diameter was 4.1 cm compared to 3.5-4 cm in control and other doses.
1.5	140	42-50	148	69-75	1.5-4.0	10-14	11.20	4-5 stalks were found bifurcated. Leaves with ivory coloured midrib. 3 flowers at one place instead of 2 in control and other plants.
2.5	Very poor sprouting of bulbs. 4 out of 25 bulbs sprouted upto 5 months after planting.							
3.5	No. sprouting of bulbs.							

flowers compared to control plant and plants from bulbs treated with other doses. As reported by Desai the abnormalities like bifurcated stalks, ivory coloured midrib were observed in bulbs treated with 1.5 Kr gamma dose. The higher doses like 2.5 Kr and 3.5 Kr proved to be more or less lethal for sprouting tuberose bulbs.

Mahatma Phule Krishi
Vidyapeeth,
Rahuri District,
Ahmednagar (M.S.),
December 6, 1975.

A. V. PATIL.
P. N. KALE.
S. N. KAULGUD.

- Desai, B. M., Report from Bhabha Atomic Research Centre, Trombay, on Irradiation Research on Ornamental Plants (unpublished).

Unstable Haemoglobin

Unstable haemoglobin syndromes comprise of a group of inherited disorders characterised by haemolytic disease of varying severity. In view of paucity of reports in Indian literature, tests were conducted to detect this abnormality in 10 normal persons and 31 patients with different haematological disorders attending the Department of Haematology of the School of Tropical Medicine, Calcutta.

In control subjects, the range of heat-labile haemoglobin was 0 to 1.8%. Series of estimations

from blood samples, preserved in A.C.D. solution, revealed a gradual rise of unstable haemoglobin level reaching 4% on the 10th day and thereafter a fall reaching normal level after two weeks.

Two cases of unstable-haemoglobin syndromes were detected; One had 32% of unstable haemoglobin with mild haemolytic anaemia and the other with 12.5% of unstable haemoglobin associated with iron deficiency anaemia.

Excess amounts of heat-labile haemoglobin upto 12% range were detected in 10 out of 16 cases with Haemoglobin-E-Thalassaemia disease. It is probably from the excess alpha chains synthesised by the reticulocytes and young red cells.

Heat-labile haemoglobin was not detected in other haematologic disorders such as, iron deficiency anaemia, glucose-6-phosphate dehydrogenase deficiency, idiopathic thrombocytopenic purpura and myelophthisic anaemias.

Dept. of Pathology,
S.C.B. Medical College,
Cuttaek 753 007, November 21, 1974.

R. C. MISRA.

Occurrence of *Pythium butleri* Subr. in *Amaranthus tricolor* var. *gangeticus* (Linn.) F and P.

A severe 'damping off' disease of amaranthus [*Amaranthus tricolor* var. *gangeticus* (Linn.) F & P.] seedlings was observed in November 1973, around

Hebbal, Bangalore, the disease was noticed when the seedlings were in 4-6 leaf stage. Affected plants showed rotting of the stem at ground level. In the initial stages, water-soaked zone at basal portion was noticed which later turned brown and soft. The infected portion got constricted resulting in toppling of the seedlings. The seedlings remained in this condition for one or two days and later died. The disease was observed to occur in patches. Repeated isolations from the diseased seedlings in culture yielded a pythiaceus fungus.

For pathogenicity studies, the fungus, cultured on corn-meal agar, was mixed with sterilized soil in plastic trays. A week later, surface sterilized amaranthus seeds were sown into them. Both pre and post-emergence damping off was noticed at germination time in inoculated soil. Out of 300 seeds sown 268 seeds germinated in uninoculated soil as against 64 in inoculated soil. All the seedlings in inoculated soil died in a fortnight's time. The pathogen was reisolated from such infected seedlings. The fungus was identified at Centraal-

bureau Voor Schimmelcultures, Baarn, Netherlands, as *Pythium butleri* Subramanian. The culture has been deposited in the culture collection of Department of Plant Pathology, U.A.S., Bangalore, and has been given accession No. 101.

The fungus is known to attack tobacco, ginger, papaya, chille¹, maize², and torai³. However, there is no record of this fungus on amaranthus and this is a new host record.

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Dept. of Plant Pathology,
College of Agri., U.A.S.,
Hebbal, Bangalore 560 024,
November 26, 1974.

H. R. REDDY.
T. B. ANILKUMAR.

1. Drechsler, C., *Sydowia*, 1955, 9, 451.
2. Srivastava, D. N. and Rao, V. R., *Curr. Sci.*, 1964, 33, 119.
2. Aulakh, K. S., *Indian Phytopath.*, 1971, 24, 611.

REVIEWS AND NOTICES OF BOOKS

Annual Review of Physical Chemistry (Vol. 25).

Edited by H. Eyring, C. J. Christensen and H. S. Johnston. (Annual Reviews, Inc., 4139 Camino Way, Palo Alto, California 94306). Pp. 566. Price : U.S.A., \$ 12.00 ; Elsewhere \$ 12.50.

The book contains 19 chapters on a variety of topics in physical chemistry. Starting from the history of physical chemistry in Denmark which forms the first chapter, the book covers several subjects of current interest and development, e.g., laser light scattering from liquids, laser-induced chemical reactions, lipid phases, mechanism of ion-transport in lipid membranes, magnetic circular dichroism to mention a few.

In the chapter on the history of chemistry in Denmark, the author Prof. T. A. Bak describes some important discoveries made in Denmark but it appears as though nothing much has been achieved after 1947.

Studies on lipid-water systems with particular emphasis on X-ray scattering have been described thoroughly by Luzzati and Tardieu. Structures of the phases are illustrated with the help of impressive diagrams.

The instrumentation, the general theory and the applications of the method of magnetic circular

dichroism are discussed and the literature coverage is from 1960 to 1973.

Laser light scattering studies as applied to macromolecules bacterial motion, gels, collision induced anisotropies and rotational motion of molecules in liquids have been described. An account of infra-red- and ultraviolet-laser induced reactions, selective two step reactions and laser temperature jump relaxation experiments is given. The areas of vibrational and rotational relaxation in the ground state of small molecules using the laser devices and of the molecular trajectory calculations have been covered. Recent developments relating to the understanding of molecular collision have been given. The basis of the electrical excitability of nerve cells has been discussed in the chapter on excitable membranes. Time domain electron paramagnetic resonance, electron-nuclear double resonance of free radicals in solution and of proteins and electron-electron double resonance in organic systems have been exhaustively reviewed. Experimental techniques, their objectives and the scope for studies on gaseous negative ions, theory of liquid mixtures of non-electrolytes and the spectroscopy of linear polyenes have been described. Vibration relaxation in condensed media and its