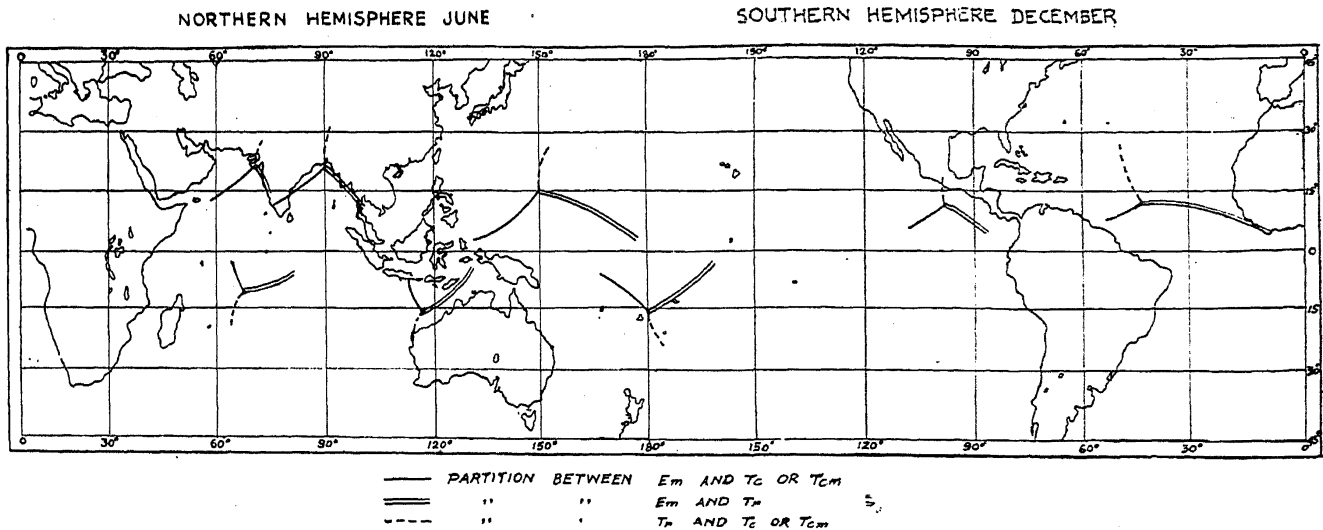


can be made easily unstable, and the hot, almost-saturated, more stable Tr. can show clouds, weather and squalls over a wide stretch. In the partition of Em. and Tc., it may show a few thundershowers or even a scatter of only dry thunderstorms. Between different portions of the I.T.F., there would be distinct differences and the utility for a forecaster also would not be equally satisfactory. With three air masses which go to determine

and Pisharoty, "Evidence of three air masses from temperatures aloft in Tropical Cyclones" (in Press). —, "Abnormally Dry and Wet Western disturbances over N. India" (in Press). —, "Air Mass interpretation of Sen's Vortex method of Weather Forecasting", (in Press). 5. —, *Curr. Sci.*, 1947, 16, 14. 6. Gibbs, *Synoptic Studies in Australian Me.*. 7. Malurkar, "Occasional Distant Weather Information and Forecasting" (in Press).

PARTITION LINES IN THE TROPICS



tropical weather, it is hardly possible to represent the semi-stationary conditions by a single front. Gibbs⁶ tried a compromise by an extra front called "Tropical front" which, when it combined with the I.T.F., indicated tropical depressions or cyclonic storms. It would be only logical to draw partitions of the three air masses over the Tropical belt as an idealised condition. An active outbreak of the various air masses across these fronts (particularly Em.) would be favourable for unsettled conditions and for development later of a tropical cyclonic storm or monsoon depression.

The available climatic information has been used, and the partitions for the months of June and December have been drawn on a single diagram of the Tropical belt. The partitions in the northern hemisphere represent the conditions in June, while the partitions in the southern hemisphere represent the conditions in December. As tropical weather comes from the east,⁷ the map is drawn with the Pacific Ocean in the middle.

The fairly strong circulation south of the equator in the Atlantic and the Eastern Pacific Oceans, and the extension of the seasonal highs to within a few degrees of the equator prevent any partition lines being drawn. In other words, tropical cyclonic storms do not form there.

Poona 5,
April 19, 1947.

S. L. MALURKAR.

A MOSAIC DISEASE OF BRINJAL (*SOLANUM MELONGENA* LINN.)

A MOSAIC disease of brinjal (*Solanum melongena* Linn.) was of fairly widespread occurrence in 1946 at Delhi. The chief symptoms are bright green mosaic mottling and malformation of the leaf (Figs. 1-14) such as puckering and crinkling associated with abnormal and incomplete growth of the lamina; occasionally fine, pale, straw-coloured, concentric, irregularly-shaped rings develop on the leaf. In some cases the midrib or its branches protrude beyond the lamina (Fig. 12), while in others the leaf is completely modified into a filamentous structure. There is considerable reduction in the development of flowers and fruits.

To determine if the disease was graft-transmissible the scion from diseased brinjal was grafted on healthy plants of brinjal, tomato and tobacco, raised in the insect-proof house. Twenty-four grafts on brinjal, fourteen grafts each on tomato and tobacco were made; new growths arising from axillary buds on the stock showed typical symptoms of the disease in all the grafts (Fig. 16).

Inoculation of brinjal, potato, tomato and tobacco plants by rubbing the expressed sap from diseased plants or with insect needles previously dipped in the inoculum failed to transmit the virus.

Myzus persicae Sulz. and *Empoasca devastans* Dist. were commonly observed on diseased brinjal plants. Two methods were employed to determine if the disease was transmitted by the agency of these insects.

(i) They were transferred directly from a badly affected plant to healthy brinjal, potato, tomato and tobacco plants raised in the insect-proof house.

1. S. Petterssen, "Weather Analysis and Forecasting," 1940, pp. 270 and 272. 2. H. C. Willett "Descriptive Meteorology," 1944, pp. 192-93. 3. *Mem. Ind. Met. Dep.*, 26, p. 98 (Discussion) and references to Eliot. 4. Malurkar, "Forecasting Weather in and near India" released Nov. 1945, p. 34 *et seq.*; and p. 87 *et seq.* Malurkar

(ii) They were introduced in a microcage and allowed to feed on a diseased plant for a period of 24 hours and then liberated on healthy plants raised in the insect-proof house.

Each of these plants was covered with a muslin cage.

liberated after they were fed on diseased plants remained healthy. Control plants were free from the disease.

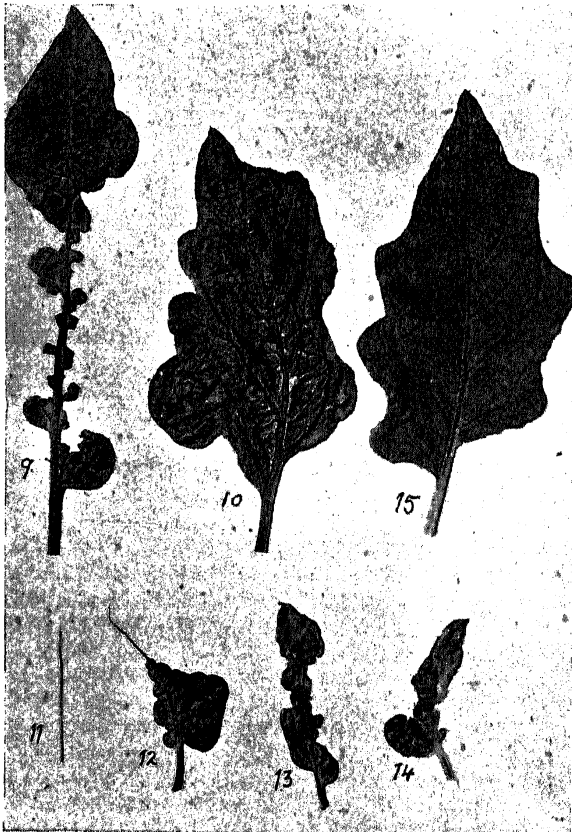


FIG. 1-14. Various types of malformation in the leaves of brinjal badly affected by mosaic disease.

FIG. 15. a young healthy leaf.

All the brinjal and tomato plants on which *E. devastans* were liberated after feeding on diseased plants showed typical symptoms of the disease in 24 to 37 days, while the potato and tobacco plants remained free from the disease; all the four hosts on which *M. persicæ* were



FIG. 16. A graft with healthy stock of tomato and diseased scion from a badly affected brinjal plant; a, point at which the diseased scion was grafted.

Two virus diseases of brinjal have been reported from Rumania the symptoms of which are different from those observed in Delhi; Savulescu *et al.*¹ described the disease as partial chlorosis causing mottling and dwarfing of the leaves while Alexandri² observed a severe mosaic with yellow interveinal lesions. In the second case the basal leaves of mature plants are the first to show the disease symptoms which spread from the base upwards. Alexandri succeeded in transmitting the virus mechanically and suspected the aphid *Myzus persicæ* to be the probable vector.

Insect transmission experiments show that the jassid *E. devastans* can transfer the disease from brinjal to brinjal or tomato.

Experiments on host-range of the virus and transmission of the disease by seed are in progress.

Thanks are due to the Imperial Entomologist for identifying the insects.

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March 26, 1947.

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andri, *Hommage au Professeur E. C. Teodoresco*,
Bucharest, 1937, 12.