

formity exists between the *Soupy Zone* and *Undisturbed Sediment*.

Discussion

Fault graded beds are geopetal in distribution. Seilacher (*op. cit.*) was first to recognise them as seismites and suggested their possible use as palaeoseismograms.

In the present area, the beds are characterised by lack of basal slip surface and presence of top soupy layer. The micro-faults are confined to a few layers, with overlying and underlying beds in normal setting, undisturbed and traceable with micro-unconformity above the *Soupy Zone*. These features suggest penecontemporaneous seismic shocks. The alteration of *Undisturbed Sediment* and *Segmented Zone* are indicative of repetitious shocks. An interesting feature is the presence of normal and reverse faults in the *Segmented Zones*, separated by *Undisturbed Sediment* zone. These changes in the fault styles are attributable to the changes in the nature of the seismic impulses.

Seilacher (*op. cit.*) suggested the use of fault graded beds as palaeoslope indicators. In the present area, the fault planes for both normal and reverse faults dip towards southwest. The local direction of palaeoslope as interpreted from α -axes orientation of cross-bed dip azimuth, show parallelism with the dip direction of the fault planes of the *Segmented Zones*, thus confirming the reliability of using the fault graded beds as palaeoslope indicators.

In the Upper Aravalli rocks of Rajasthan and Gujarat, soft rock deformation has been observed to be confined to a definite stratigraphic horizon comprising semipelite, with intercalations of pelite and arenite layers. The present find of Seismite within a section of the said horizon is interesting, in as much as, it provides a key to the understanding and interpretation of the soft-rock deformation of the associated rocks. The existence of penecontemporaneous seismic activity makes it tempting to conceive a genetic correlation between Seismite and soft-rock deformation of the area. The palaeoseismic activity triggered the sliding process, but before the sliding process was fully developed, in some of the beds the deformational structures were 'fossilised' without undergoing lateral transport, giving rise to Seismite, whereas others experienced the effects of sliding and gave rise to slump structures.

The spatial distribution of slump structures in the Upper Aravalli rocks of Rajasthan and Gujarat defines the geographical limits of a palaeoseismic belt, whose recognition is of utmost significance for the geoscientists engaged in geodynamic projects.

The paper has been published with the kind permission of the Director General, Geological Survey of India.

Geological Survey of India,
Jaipur,

IQBALUDDIN.

December 26, 1977.

1. Seilacher, A., Fault grade beds interpreted as Seismites; *Sedimentology*, 1969, 13, 155.

CYTOGENETICAL STUDY IN *IPOMOEA PES-TIGRIDIS* LINN.

TWO morphological variants of *Ipomoea pes-tigridis* Linn., one with lobed leaves and the other with entire leaves, were taken for the study. Already the cytological characters of these two varieties have been published by the author¹⁻³. In order to study the genetics of the lobing of leaves, the crosses were attempted, the results of which are presented in this paper. The types were true breeding as studied for three generations by repeated selfing. The F_1 s were selfed to get F_2 . The parents, F_1 and F_2 were raised in flats.

The flowerbuds have been emasculated and bagged to prevent natural pollination. The next morning, the pollen-grains from the desired variety were dusted. The bags were removed after three days subsequent to pollination. It took 25 to 29 days for the fruits to attain maturity after pollination. The average number of seeds per pod was 3.06. The flowerbuds from the parents as well as from hybrids used for cytological observations were fixed in 1:3 acetic alcohol for a minimum period of 24 hours.

The leaves of F_1 plants were lobed and F_2 generation showed segregation of 3 lobed:1 entire, indicating the dominance of lobed nature over the entire (Table I, Fig. 1).

TABLE I

Characters	Observed	Expected	χ^2 value (calculated)
Lobed	125	126	0.0309
Entire	43	42	(Table: 3.841)

Both the varieties have been found to possess $2n = 28$ chromosomes in the somatic cells. The flowers of *I. pes-tigridis* lobed variety were slightly larger than those of the other variety. It is particularly noteworthy that these two varieties are so

characteristically different even in the first foliage leaf that one can easily identify the variety even at the seedling stage with a first foliage leaf. The first foliage leaf of the lobed variety is invariably 3-lobed while that of the other variety is entire and cordate.

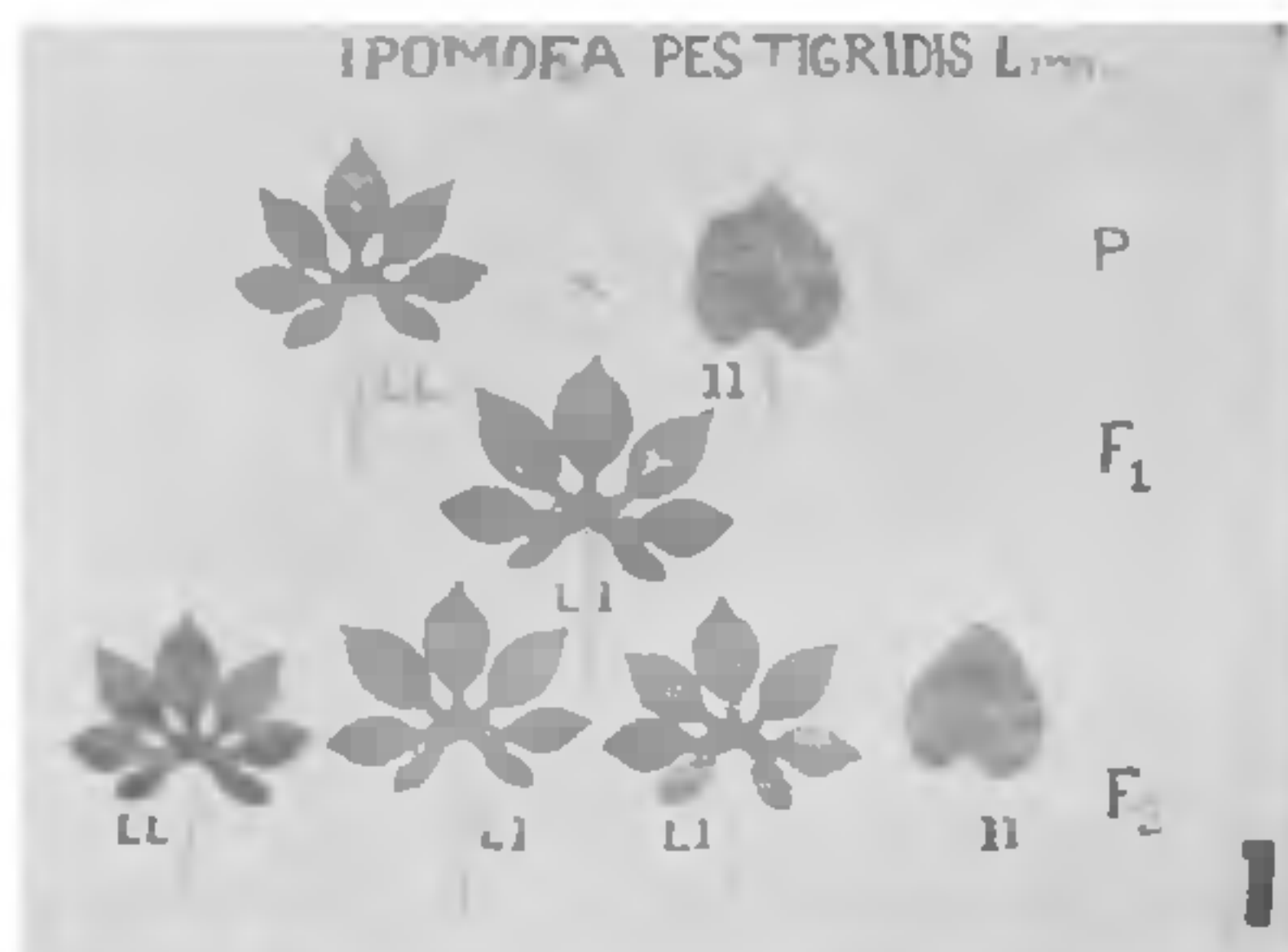


FIG. 1. Inheritance pattern of leaf shape in *I. pes-tigridis*.

The meiotic observations included the chromosome pairing study at metaphase-I, in the pollen mother cells of F_1 hybrids. The chromosome pairing at metaphase-I in the sporocytes of hybrids was as good as that of the parents, indicating a common genome for both the varieties. Fourteen clear bivalents have been sighted at metaphase-I in the PMCs of hybrids. Less commonly, 13 bivalents and two univalents were also sighted in a few pollen mother cells. The chromosome pairing studies in the hybrids clearly indicate that the two varieties are closely related.

I express my sincere thanks to Prof. K. Rangaswami Ayyangar for valuable guidance and to Mr. V. A. Farthasarathy, Faculty of Agriculture, for his useful suggestions.

Department of Botany,
Annamalai University,
Annamalainagar 608 101,
May 30, 1977.

R. SAMPATHKUMAR.

1. Sampathkumar, R., *Proc. Ind. Sc. Cong.* (55th Session), 1968, p. 361.
2. —, *Ibid.* (57th Session), 1970, p. 279.
3. —, *J. Annamalai Uni. Sci.*, 1970, 28, 39.

PURIFICATION AND SEROLOGY OF A VIRUS CAUSING MOSAIC IN *VINCA ROSEA* L.

A MOSAIC disease of periwinkle (*Vinca rosea* L.) has been found to be of common occurrence at Delhi. The disease is characterised by mosaic mottling of the leaves accompanied by slight malformation (Fig. 1).

The causal virus is sap transmissible and has a thermal inactivation point of 50–55° C, dilution end point between 1 : 800 and 1 : 900 and longevity *in vitro* of 24–48 hours at room temperature (25–30° C) and 5–6 days at 4° C³. Studies undertaken on the host range, purification, electron microscopy and serology to identify the causal virus are reported herein.

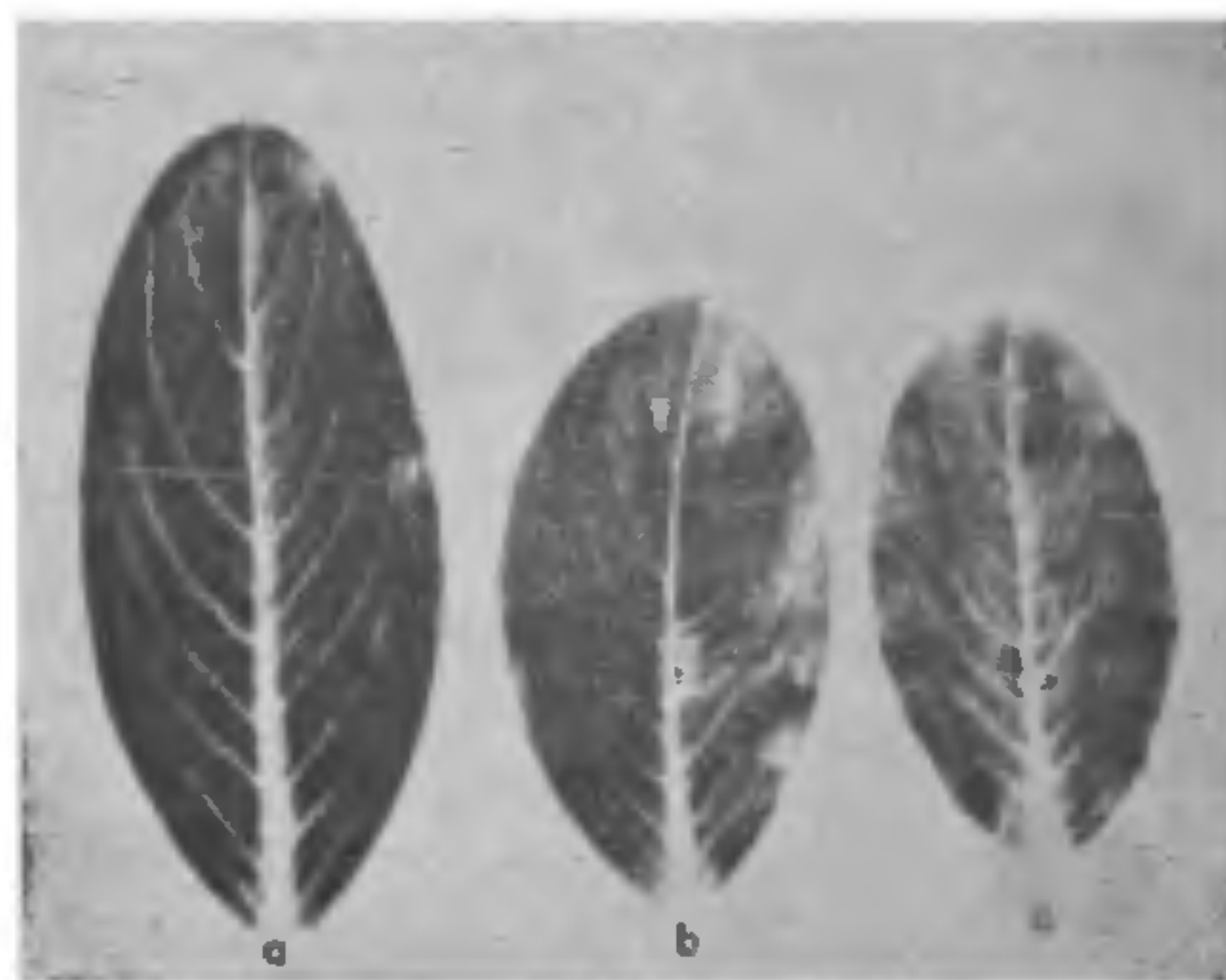


FIG. 1. Symptoms on *Vinca rosea* a—Healthy leaf. b, c—Diseased leaves.

The causal virus was found to be sap inoculable to *Nicotiana tobacum*, *N. glutinosa*, *Lycopersicon esculentum*, *Petunia hybrida*, *Lagenaria sicerata*, *Luffa cylindrica*, *Momordica charantia*, *Citrullus vulgaris*, *Cucumis sativus* and *C. melo*. The virus produced local lesions on *Chenopodium amaranticolor*. The virus did not infect *Gomphrena globosa* and *Barleria prionitis*.

The virus was purified using a modification of the butanol centrifugation method⁴. The infected leaves were mixed with 1.5 × w/vM/20 phosphate buffer (pH 7.5) containing 0.1% thioglycolic acid and minced in a waring blender. The extracted juice was passed through a double layer of muslin cloth and butanol added to 8.5% concentration drop by drop while shaking and the mixture stored for two hours. The mixture was then centrifuged at 12,500 rpm for 20 minutes in Spinco preparative Ultracentrifuge Model L and the supernatant filtered through Whatman filter-paper no. 1. This was then centrifuged at 30,000 rpm for 2 hours to pellet the virus. A second cycle of differential centrifugation at 12,500 rpm for 20 minutes and 30,000 rpm for 2 hours gave clear pellets of the virus which was suspended in a small quantity of M/30 phosphate buffer and clarified by a brief centrifugation at 7,000 rpm for 10 minutes.