

### A Monogenic Mutation Simulating Continuous Variation

Characters showing continuous variation are inherited in essentially the same manner as those showing Mendelian discrete classes<sup>1,2</sup> and, contrary to the implications of earlier models<sup>3</sup>, there is yet no experimental evidence to show that the nature and organisation of the genetic material governing these two types of variation patterns are basically different<sup>4</sup>. Our observations during the past ten years on the range of phenotypic variation regarding flower-form generated in the progenies of an X-ray induced male-sterile mutant in *Cosmos* are relevant in this context.

The mutant under study was induced in a Chelsea variety of the ornamental plant *Cosmos bipinnatus* Cav. whose dry seeds were irradiated with an acute X-ray dose of 15 kR at an operating voltage of 50 kV<sup>5</sup>. This variety invariably produces 'single' type inflorescences characterised by a single whorl of eight sterile ray florets surrounding a bunch of hermaphrodite disc florets. The mutant produced pistillate flowers of the 'double' type having 5-8 additional whorl of rays which were male-sterile; all the hermaphrodite disc florets having been transformed into pistillate rays. A recombination analysis revealed that the mutant condition was inherited as a monogenic dominant trait.

An interesting observation was that the 'double' flower forms, recovered from pollination of the original male-sterile mutant by pollen of the 'single' type control plants, showed considerable interplant variation in this respect. This intra-class variation among the 'doubles', analysed very critically in subsequent generation formed a continuous spectrum rather than discrete and was found to depend on the varying degrees of development of the central rays. An analysis of the data accumulated over the past several years regarding breeding behaviour of various 'double' forms and their progeny tests has shown that, given the presence of the gene for the 'double' condition in a plant, numerous other genes seem to influence the expression of 'doubleness'. These genes, which may have major effects on some other characters, act as the modifying factors, with both *plus* and *minus* effects, and may be said to constitute the genetic background. By varying this modifier background, a continuous range of phenotypes has been produced showing thereby that some cases of apparent continuous variation may

arise through variable expressivity of typical Mendelian factors.

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### On the Southern Limits of *Tetraclita squamosa rufotincta* (Pilsbry) (Cirripedia-Balanidae) Along the West Coast of India

It has been shown by Utinomi (1969) that the distribution of *Tetraclita squamosa rufotincta* (Pilsbry), an intertidal sessile barnacle, extends from east coast of Africa (Lat. 12° S) to Strait of Hormuz of Iranian Gulf (Lat. 26° N). Its occurrence on Kathiawar Coast of India (Wagh and Bal, 1969) suggests the probability of its further southward dispersal along the west coast of India especially in context of the circulation of surface water in this area (Wagh, in press).

A careful search for the presence of these forms in the intertidal region of the Gulf of Cambay area, however, has not been successful. This sub-species has neither been observed at any of the localities of the Konkan Coast (Lat. 20° 05' N to 15° 25' N) visited for studying the distribution and abundance of intertidal sessile barnacles (Wagh, 1965). Hence, the obvious conclusion is that Veraval (Lat. 20° 54' N) situated on the northern side of Gulf of Cambay seems to be its southern limit on the west coast of India.

It is likely that the dispersal of these barnacles southward to Cambay might have been prevented because of the ecological conditions prevailing in gulf region. An account of its hydrobiological conditions (Rao et al. in press) suggests that the various ecological factors which seem to be of importance are high turbidity, low salinity and tidal current. It is probable that these barnacles, well established in areas of high salinity (41.5‰) such as Red Sea (Ekman, 1967) might find it difficult to survive at low salinity values (26.14‰) in the Gulf of Cambay detrimental for their development and perhaps even for survival. It is also possible that the high amount of inorganic suspension

matter (personal observation) might be depriving the nauplii larvae of their essential phytoplanktonic requirements. The probability of swift tidal currents, having speed of upto six knots (West Coast of India, Pilot, 1961) carrying the planktonic larvae away from the substrata suitable for their settlement cannot be ruled out. Similar phenomenon of tidal current affecting the faunastic features of a locality has been reported for Suez Canal by Fox (1926, 1929).

It can, therefore, be presumed that Gulf of Cambay prevents the further southward dispersal of these non-fouling barnacles and thereby acts as an ecological barrier.

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#### Occurrence of Nepheline Syenites near Elchuru, Andhra Pradesh

In a reconnaissance field trip to the hill ranges in parts of Guntur and Ongole Districts, Andhra Pradesh, nepheline syenites and other related alkaline rock types were observed near Elchuru village (16° 04' 48" N and 79° 55' 42" E; Survey of India topo-sheet 56 P/16), 13 miles south-west of Narasaraopet town. Three major hills (724, Δ820 and 637) and one minor hill, all occurring in an area of about 6 sq. miles around Elchuru, are essentially composed of these undersaturated feldspathoidal rocks which contain, besides nepheline and potash-soda feldspar, one or more alkaline mafic minerals such as biotite, alkali hornblende and alkali pyroxene.

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#### *Phomopsis eugeniae* sp. nov. Causing Disease on *Eugenia jambolana* Lam.

In the course of a study of fungal diseases of various plants at Jodhpur and its surroundings, leaf spots of *Eugenia jambolana* Lam. were first observed in November, 1967, at Balsamand Gardens, Jodhpur. The lesions were irregular, apical or scattered over the lamina. At initial stage, small dot like areas surrounded by a dark brown band were produced, subsequently enlarged and changed to ashy brown. Black, fruiting pustules were present on the upper surface of the lamina. Isolation from the diseased portion was made on Asthana and Hawker's Medium A at room temperature (25-26° C). The material was sent to C.M.I. Kew, England, for identification but it could not be assigned to any of the existing species of *Phomopsis*. Due to pronounced variations in the symptomatology and morphology of the pycnidia and conidia, the isolate is being disposed of as a new species, i.e., *Phomopsis eugeniae* sp. nov.

*Morphological characters.*—Hyphae colourless to shining green, poorly branched, distantly septate, 2.7 × 4.1 μ wide; pycnidia globose to sub-globose, 196.4 × 64.8 μ (average 158.2 μ), aggregated, slightly erumpent, light brown to dark brown, wall persistent, ostiolate; *alpha* spores hyaline, mostly ovoid to elongated, rarely slightly fusoid. 8.1-5.4 × 2.8-2.3 μ (average 6.8 × 2.5 μ), single-celled, ends sub acute to obtuse, beta spores hyaline single-celled, filiform, distinctly curved at one side which form a small hook 21.6-16.2 × 1.3-7 μ (average 18.2 × .9 μ).

*Latin diagnosis.*—Hyphae in coloures vel nisenter virides, pauce ramosae, ramote, septatae; 2.7-4.1 μ latae; pycnidia globosa vel sub-globosa 196.4 × 64.8 μ (circa 158.2 μ), aggregata, leviter erumpentia, pallide vel fusce brunnea, pariete, persistente, ostiolata; *alpha* sporulae hyalinae saepissime ovoideae vel elongatae, rare leviter fuscoideae 8.1-5.4 × 2.8-2.3 μ (circa 6.8 × 2.5 μ), unicellulares, filiformes, clar curva in uno laterae in Parvo unco Producto 21.6-16.2 × 1.3-7 μ (circa 18.2 μ). Typhus electus in foliis infectis *Engeniae jambolana* Lam. cultura posita in C.M.I., No. 133182:

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