

eruption (Crookshank, 1936; Prasad, 1959). The presence of unusually large plagioclase phenocrysts poses certain problems regarding their history of formation. The mega-phenocrysts are early formed crystals of uniform composition characteristic of crystallization in slow cooling magma at depth. Their presence in a rock of doleritic texture shows that the magma in which they were included moved to higher levels where crystallization was more rapid.

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PHENOXETOL A AS GOOD SORTING MEDIUM-CUM-PRESERVATIVE FOR ZOOPLANKTON IN THE TROPICS

ZOOPLANKTON samples collected during the International Indian Ocean Expedition (1960-65) and stored in the Indian Ocean Biological Centre were found to deteriorate progressively. Results of an analysis¹ of causative factors showed that bacterial action of the specimens partly caused by the sorting procedure may also be a cause. Hence of the need to find a sorting medium-cum-preservative (as part of the SCOR/UNESCO/WG-23 programmes) for the proper fixation and preservation of zooplankton.

Berry² reported the bacteriostatic and bactericidal value of ethylene glycol monophenyl ether. Rankin^{3,4} used phenoxetol for treating fin rot in fishes. This was found active against penicillin resistant gram negative organisms. Use of propylene phenoxetol as a relaxing agent, as a preservative for a variety of animals and for preserving aqueous stains has been reported (Owen⁵; Owen and Steedman^{6,7} and Turner⁸). Bagenal⁹ and Rosewater¹⁰ used propylene phenoxetol as an anaesthetic agent for fishes and molluscs.

Glycol monophenyl ether being referred to as phenoxetol is a colourless viscous liquid with a pleasant smell, soluble in water to about 2.5% v/v. This solution is perfectly stable with the pH around 5.5 to 6.0. Since it has no ionising groups, the pH of the water in which it is dissolved is unchanged and it has no buffering action of its own. A raised pH, however, can be obtained by adding the usual buffering agents. Though sea water has no chemical effect on phenoxetol owing to the salting out effect, distilled water was used for dilution. Normally phenoxetol is added to boiling distilled water, shaken until dissolved, cooled and adjusted to volume.

Initially 0.5% phenoxetol (B-phenoxyethyl alcohol or ethylene glycol monophenylether) or 0.5% propylene phenoxetol (3-phenoxypropanol) was tested as a sorting medium for subsampling and open dish sorting of zooplankton. A few drops of B.D.H. universal indicator whose pH range extended from 3 to 11 was also added to indicate the pH of the sorting medium. In general this was not found to have any damaging effect on the sorted plankton. During sorting more and more preservative was added to nullify the effect of evaporation. Examination of condition of these sorted taxa revealed no deterioration.

Being satisfied with its merit as a sorting medium, its use as a preservative was then tested. Zooplankton, fixed in 2% sea water-formaldehyde for ten days, was drained and after a quick rinse in distilled water, was transferred to a test series of different media. The two chemicals in different concentrations in different diluents were used (Table I). The table also gives the various buffers used for neutralising the medium. Different additives for improving the condition of the specimens were also added to each of the preservatives in the experimental series.

The condition of the specimens were recorded for the last four years with emphasis on morphological features of taxonomic importance. The results indicate that distilled water solution was better than tap water and sea water. All four strengths of solutions used gave equally good results. However, 0.5% solution may be considered advantageous for proper preservation since it requires less quantity of chemical. The preservation was satisfactory in that retention of colour and pigmentation was good; specimens remained soft and flexible. Incidence of transparency of cuticular forms indicating a decay of tissue was negligible. Gelatinous plankters had their morphological features mostly retained. Calcareous plankton was well preserved in 3-5% potassium

TABLE I
Test preservative used

Chemicals	Phenoxetol											
	Distilled water				Tap water				Sea water			
Strength % v/v	0.5	1.0	1.5	2.0	0.5	1.0	1.5	2.0	0.5	1.0	1.5	2.0
Condition* of organisms after four years	S	S	S	S	A	A	A	A	A	N	N	N

Chemicals	Propylene phenoxetol											
	Distilled water				Tap water				Sea water			
Strength % v/v	0.5	1.0	1.5	2.0	0.5	1.0	1.5	2.0	0.5	1.0	1.5	2.0
Condition* of organisms after four years	S	S	S	S	A	A	A	A	A	N	N	N

Buffers used: Hexamine, Borax, Marble powder and potassium oxalate in strengths of 0.0, 1.0, 5.0 and 10% w/v

* S = Satisfactory; A = Average; N = Not satisfactory.

oxalate buffered medium. Addition of 1% sodium tetraborate improved preservation of chitinous and gelatinous plankton. The quick transfer of zooplankton from formaldehyde to phenoxetol had no visible osmotic damage or adverse effect.

To conclude, 0.5% phenoxetol or propylene phenoxetol in distilled water buffered with 1% sodium tetraborate was found to be an efficient sorting medium-cum-preservative after adequate fixation in 2% formaldehyde as recommended by Balachandran¹¹. However the heterogeneous nature of the zooplankton makes it difficult to arrive at a single preservative solution equally good for all the taxa.

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TWO NEW LEAF SPOT DISEASES OF CITRUS

DURING the investigation of plant diseases in Madhya Pradesh two new leaf spot diseases of *Citrus* were recorded. Microscopic examination of the infection spots revealed the presence of two different Sphaeropsidaceous fungus, *Bartalinia robillardoides* Tassi and a new variety of *Sphaeropsis tumefuscians* Hedges. Both these diseases have not been recorded previously from India. A brief description of the symptoms and morphology of the pathogen is given here.

The specimens have been deposited in the Herbarium Commonwealth Mycological Institute, Kew, England, and indicated in the text as I.M.I. number.

1. *Bartalinia* Leaf Spot of *Citrus medica* L.

Necrosis usually starts from apex downwards or at times from margin inwards. The mature spots are whitish to dirty on the upper leaf surface. High humidity favours the growth of the fungus (Fig. 1).

Pycnidia light brown, sub-epidermal, innate, depressed globose, ostiolate, 120–200 μ in diam.; conidiophores small, hyaline, slightly cylindrical, 5.5–8 \times 3–4 μ ; conidia golden yellow, 4-septate, cylindrical, 24–32 \times 4–5.5 μ ; apical cell conic, hyaline, bifurcate near the apex, apical appendages 12–24 μ , basal cell truncate, basal appendage lateral, exogenous, 4–16 μ long, 1.5 μ wide (I.M.I. Herb. No. 145462).