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Grand Opening of the "Chateau Challenger '68"

The list of ills afflicting many museum spirit collections is a long one, and the older the collection the more vulnerable it becomes to incorrect maintenance, wear and tear, and neglect.

It is a familiar enough picture - store-rooms with a climate closely resembling that of Death Valley, California in summer; spirit collections reminiscent of the old Hammer Horror movies, with cracked glass vats containing 'bits of rubbery-looking things' floating in dilute Ribena; cobwebs, the odd pickled rat and the occasional curled brown label bearing some ancient hand.

It is true that the properties of different storage solutions may provide greater or lesser protection against harmful agencies, fungal attack for instance, but this depends greatly upon storage conditions and collection usage.

Where large and poorly sealed containers cannot be replaced, solutions with ferocious evaporation rates and high flammability are not the order of the day; similarly, where material is regularly removed from containers for inspection by school children, formaldehyde (currently under suspicion as a carcinogen) is not an appropriate choice, being at the very least extremely noxious to work with.

Faced with the daunting prospect of 'getting stuck into' Stockholm Tar or red lead in a big way and perhaps fitting steel fire doors, or seeking regular medical screening, what is the alternative? Move into Computer Programming?

One answer is to remove the various alchemical solutions currently fermenting in the collections, with their unguessed at pH's and dilutions, and replace with good old magic mixture - propylene phenoxetol.

Following the advice and encouragement of Reg Harris (then of BMNH) such a transfer was undertaken at Sheffield Museum in 1979, being precipitated by the need to undertake extensive conservation measures; comply with Fire Regulations; and establish a rationalised system of preparation and maintenance. The latter being particularly important in view of the subsequent addition of some 5000 freshwater invertebrates to the spirit collections.

The task took about 5 man months and 400 litres of Steedman's solution, liberally dispensed from a large Polythene dustbin.

The collections comprised two fairly distinct areas, modern and historical collections. The former being housed in dark Beatson Jars, with small items in inverted tubes packed top and bottom with fibre wadding and inverted in a common reservoir. The jars were lined on the base with wadding and in many cases divided with card. Some larger items were held in large plain glass jars with plastic screw tops. All modern material was stored in 70% IMS. The historical collection as could be expected, was largely stored in formalin, and comprised a vast range of containers, many of which were sealed with tar or with ground glass stoppers, and in some cases had to be replaced.

The relatively low evaporation rate of propylene phenoxetol solutions was a particularly important consideration when re-using jars with suspect seals or tops, and subsequent experience has shown that fluid loss from these has been very slow.

The procedure we used (after Harris 1978):-

- 1 Reconstitution of dried-up material may be necessary.

Specimens were placed in a solution of 2% aqueous tri-sodium orthophosphate, in a warm place until form was fully restored. For large items this may take a week or more. When strongly discoloured the solution was changed, and any persistent staining of the specimen due to oxidation effects was treated with 10 volumes of hydrogen peroxide.

- 2 Specimens were washed in de-ionised water for a few minutes and transferred for several days to the following:-

Steedman's solution A	-	40% Formaldehyde:	10 ml
		Propylene glycol:	5 ml
		Phenoxetol:	1 ml
		Water:	84 ml

Specimens washed again in de-ionised water and transferred to the following:-

Steedman's solution B	-	Propylene glycol:	10 ml
		Phenoxetol:	1 ml
		Water:	89 ml

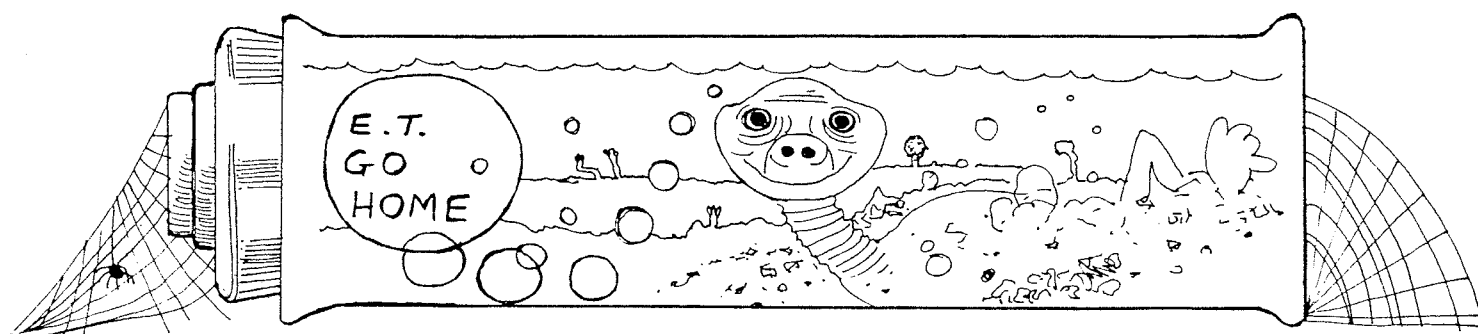
Reagents required:-

40% Formaldehyde

Propylene glycol

Phenoxetol

De-ionised water



Propylene glycol is a humectant and no sample immersed in solutions containing this reagent will ever completely dry up even when all solution is evaporated off. Propylene glycol as an additive to preserving fluids has a softening effect, relaxing stiff tissues. It is a powerful inhibitor of moulds and appears to assist the penetration of formaldehyde. It lowers the freezing point of preserving fluids and has solvent properties so that phenoxetols may easily be dissolved. It also breaks down to pyruvic acid and acetic acid and is, therefore, relatively harmless to man - preferred to the use of glycerine which can encourage moulds and bacteria.

Solution B provides a clear, non-toxic, non-flammable, non-volatile and odourless solution; and our specimens have retained their colour well, whilst remaining very flexible. Flexibility was also restored to older material formerly stored in IMS. These properties have many obvious advantages.

The effective cost, bearing in mind the low evaporation loss over time and subsequent saving in both labour and materials is equivalent to that of IMS. Phenoxetol is of further value as a narcotizing agent, particularly for invertebrates including leeches, planarians and worms.

In the transfer of large numbers of specimens from alcohol to Steedman's B, care should be taken to ensure that the fabric of labels is sufficiently robust to survive in the essentially water based media. Light papers may be considerably softer in 'B' than in IMS. Our experiments with 'Tyvec' were not entirely successful, with difficulty experienced in writing clearly with 'Rapidograph' pens, there being a tendency for the waterproof ink to bleed and spread on the paper. The use of an extremely fine nib seemed to reduce this problem. Re-labelling does add significantly to the cost of a collection transfer of the type described above.

Other areas of difficulty are gelatin based preparations which must be stored in alcohol, and perspex containers which are only suitable for use with formalin.

Propylene phenoxetol is now replacing spirit as a standard preservative in many institutions, care should be taken, however, to check its suitability for each intended application, and each animal group.

References

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Ed. I would like to take this opportunity to invite other articles concerning propylene phenoxetol solution and its uses in museums. Have you had any problems with it? What is the most unusual use that you have found for it? (only those suitable for printing please!) I approached the BM(NH). about it, as they have been using it for the longest period. However they feel that further work and study is needed before a definitive summary can be produced. In the absence of such careful studies I feel that other museums who are using the solution can make a valuable contribution by recording observations in this Newsletter.