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Title: Techniques: A Clean and Safe Gravimetric Method to Differentiate Spirit, Formalin and Other Fluid Preserving Media

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Techniques

A Clean and Safe Gravimetric Method to Differentiate Spirit, Formalin and Other Fluid Preserving Media.

Many of us spend a part of our job among glass bottles of old fluid-preserved specimens containing goodness-knows-what preservatives. A great many curators are still old-fashioned enough to use a standard fixative such as 10% formalin (4% formaldehyde solution) as a storage medium rather than one of the more modern preservatives such as those containing propylene phenoxetol (Steedman, 1976). There inevitably comes a time when these fluids need renewal or topping up, and the unfortunate curator has to determine what each jar contains. Since additional signs or labels in or on the jar obscure the view of the specimen, the curator has to resort to sniffing at the fluids and contravening many health and safety regulations. To obviate this, and the dangers of headaches, cancer or anaemia, the following simple panacea is proposed.

Remove the teat from a dripper bottle (preferably the sort which has a small reservoir in the pipette just below the teat). Place a plastic ball or smooth-sided knob of plastic of an appropriate specific gravity (e.g. 0.9) into the reservoir. Replace the teat. When testing for alcohol or formalin draw off enough fluid to half-fill the reservoir. If the ball floats you have formalin or some aqueous-based preservative. If the ball sinks you have alcohol (between 30% and 100%). Remember to tap the pipette against the side of the jar to dislodge any air bubbles from the float that might otherwise give a false reading. If the ball sinks slowly, then you probably have a mixture of alcohol and some other aqueous fluid.

For additional hydrometric distinctions further balls (or knobs of plastic) will be required, preferably of different colours. By drilling them half-way through and inserting different (minute) sizes of lead shot, specific gravity distinctions of 0.1 can be detected between fluids although you will have to make many flotation tests to obtain the critical weight of the lead shot so that it is just right to float or sink the ball as required. With three balls you could also distinguish glycerol-containing preservatives from alcohol and formalin.

Aldehyde detector papers (impregnated with leuco-basic fuchsin - Schiff's reagent), commonly used for detecting formaldehyde, are by comparison messy and have a limited shelf life. With several hundreds or maybe thousands of jars to test, the method described here will save much time and considerably lessen the risk of inhaling of noxious fumes than those involving impregnated papers.

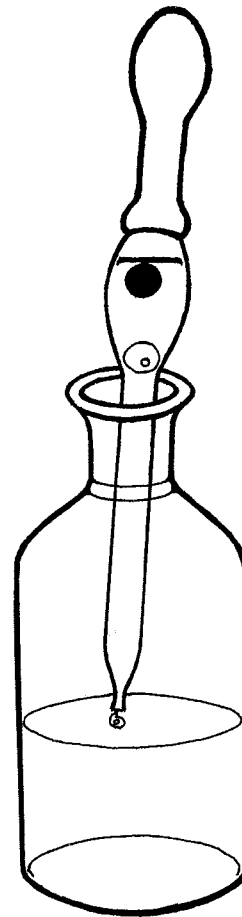
Acknowledgement:

Thanks are due to Paul Cornelius who helped me in devising this idea and to the Engineering Section of the Central Services Department of the British Museum (Natural History).

Reference:

Steedman, H.F. 1976. ZOOPLANKTON FIXATION AND PRESERVATION. The Unesco Press, Paris

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The following article was sent in by Velson Horie, Keeper of Conservation at Manchester Museum, in response to Jenny Clack's request for information on sealants for museum jars (see also Martin Linnie's letter on the subject). It first appeared in CONSERVATION NEWS no 20, March 1983. I am grateful to Velson Horie and the editors of CONSERVATION NEWS for permission to reproduce it in full.