A Free & Effective Storage Method for Biology Specimens

Douglas G. Smith

A constant problem in long term storage of alcohol-preserved specimens used in biology classes is finding cost-effective glass jars of sufficient quality to insure a reasonable degree of maintenance-free storage. Glassware from scientific supply houses is notoriously expensive, and the caps supplied are plastic. Used canning jars with rubber seals are almost impossible to obtain, and new ones are prohibitively expensive. When costs are a serious consideration, curators must depend on less expensive choices. The only solution for some teachers is to rummage through trash or rely on the kindness of others to supply discarded food storage jars.

An enormous variety of food jars is available, and you can choose among several brands or styles to use in collections. However, problems exist because there is usually a lack of interchangeability among various jars and caps. Also, many of these jars are simply inappropriate because the glass is opaque, textured, or oddly shaped. In many instances, an unfortunate dependence is placed on twist-on style jars and caps that are inherently leaky and prone to failure.

For large specimens (over 70 mm in diameter), the prognosis is bleak. Castoff one-gallon, screw cap jars made of clear glass are becoming very hard to locate. Two and five-gallon "carboy" style jars, very expensive when they were available, are no longer manufactured. Your only recourse may be multiple storage of specimens in tanks of some sort.

Regarding specimens of 70 mm (2¾ in) in diameter or less, a free and reliable solution exists. After experimenting during the 1970s with several types of jars in our invertebrate collections, and now having some useful information on their effectiveness, I recommend the 16-, 32- and 48-ounce glass jars (Figure 1) used for mayonnaise and mayonnaise-like products. These have ⅝" (ca 15 mm) deep screw style metal caps that, with some modification, make ideal museum storage devices. These jars are supplied by various manufacturers but have either 60 mm (16 and 32 ounce) or 75 mm (32 and 48 ounce) inside diameter openings. All manufacturers' lids supplied with these jars are interchangeable. The metal jar lids have deep threads that permit a tight seal and, in this regard, are far better than either plastic caps or twist-on caps. The glass used to produce these jars is clear, making label reading easy (Figure 2).

To use these in collections, clean the jars and remove the paper labels. It is recommended that you paint the lids with enamel spray paint to retard oxidation. You may also find that paint-

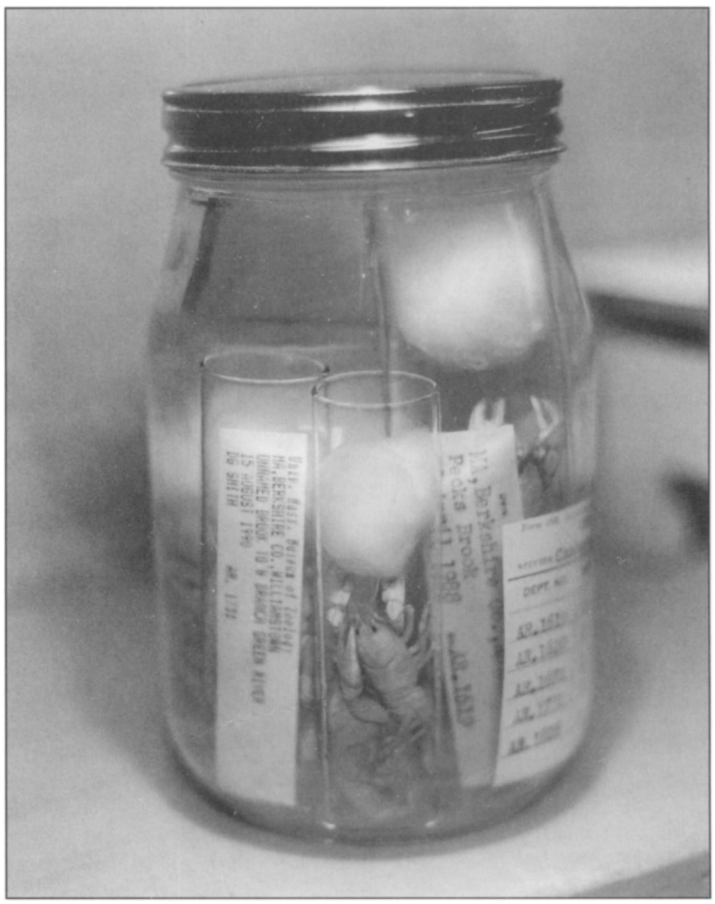

Figure 1. A 32-ounce jar containing an aggregate of several small lots of alcohol-preserved crayfish.

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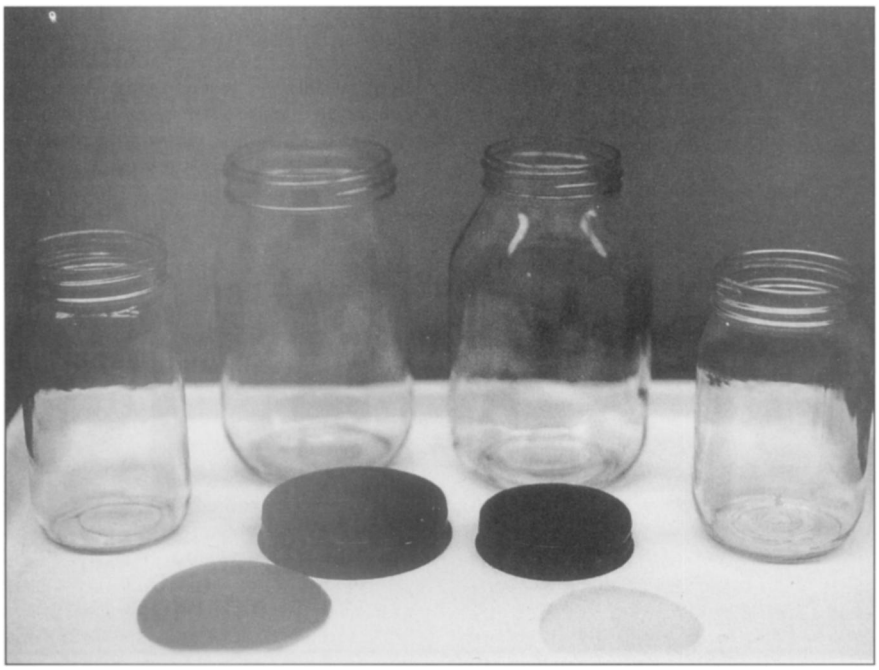

Figure 2. Sixteen and 32-ounce jars, painted lids, and cut plastic liners.

ed lids have cosmetic appeal. The final gimmick to making these jars most useful, and the only modification required, uses the discarded plastic sealers that are provided with reusable produce cans which contain items such as coffee or nuts. Remove the cardboard liner supplied with the metal cap and use it as a template to cut circular liners out of the plastic sealers. Be sure to keep any relief on the plastic 5 mm from the edge. Use only the cut plastic liner in the cap. Being careful not to allow any alcohol to get between the plastic liner and the cap, seal specimens in alcohol by capping the jar tightly. Test the seal by tilting the jar sideways in your hand and look for wetness on the skin. If wet, uncap, dry the cap and liner, and seal again. Occasionally these jars will have uneven sealing surfaces, or the lid will have a slight dent. In each case, discard the faulty item.

Since first using this method of specimen storage about 20 years ago, I have observed little or no fluid loss in about 90% of the collections stored in this manner. These results were obtained in areas that have been periodically subjected to uneven or high temperatures. Occasionally, after long periods of being sealed, the plastic liners become brittle and have to be replaced before resealing. However, if the jar was "dry sealed" originally, with no moisture between the lid and liner, there is very little, if any, oxidation of the metal lid. This method has proven to be far superior to the plastic lids supplied with jars distributed by biological supply houses, which expand and contract with changes in climatic conditions, and jars with metal twist-on lids, which never seal well and are subject to corrosion.

So alert your students and fellow faculty to save their mayonnaise jars and plastic coffee lids. My efforts have usually produced quantities of both in very little time.