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Vial Support System for Fluid Collections

Purpose

Insect collections often have been preserved in 70%ethyl alcohol in vials of various sizes with either screw cap, cork, rubber or neoprene stoppers, or in various sizes of wide mouth jars with bakelite or metal lids, and in commercial food jars and canning jars.

Efficient housing of such materials is very difficult because of the different sizes and configuration of containers. Moreover, evaporation occurring in screw cap and cork stoppered vials necessitate higher maintenance costs in labor and in replacing alcohol.

Additionally, the rubber stoppers may increase the level of sulfuric acid in those vials with such stoppers, and the cork stoppers contain tannic acid which may affect specimens in those vials.

The system described is a standardized and improved method for storing fluid preserved larvae and soft-bodied adult insects. The goal was to achieve a system that improved on the deficiencies observed in other fluid collections — high cost, wasted space, inappropriate storage containers (vials, bottles, jars, cabinets), difficulty of assessing individual specimens or specific data, and degraded specimens.

The principal advantages of this system are simplicity (components easily available, very compact storage), versatility (any size unit trays or cabinets to fit product availability) and cost.

Standard insect storage cabinets with glass topped drawers for pinned material have been modified by several manufacturers for fluid collections. By deleting

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Tray/Jar Labels
Object Labels
Environment

the glass top on the drawer, and providing glass inserts that have been punched out to receive vials (or with unit trays containing an interlocking grid of partitions), a vial drawer is created in a standard insect cabinet.

Insect storage cabinets with drawers modified for holding fluid preserved specimens, however, cost considerably more than metal file cabinets, unit trays and cardboard tubes. Moreover, by placing the cardboard tubes in the unit trays, one has a sturdier, more durable system and less expensive product than commercially available units with interlocking partitions (Fig. 1).



Figure 1. Metal cabinets with shallow drawers are used to house the collection. This system produces maximum use of space at relatively low cost.

Description

The improved system uses only three sizes of containers that can accommodate any size class of insect specimens. The containers are: 2 dram (7.4ml), patent lip vials with non-reactive stoppers for the vast majority of the collection; 2oz (59ml) wide mouth bottles with screw cap lids for larger specimens, and 16oz, wide mouth, low form jars with screw cap lids.

The lids of the 2oz bottles are fitted with polytetrafluoroethylene cap liners (available with or without adhesive) while the 16oz jars are covered with paraffin sheeting prior to sealing. Both liners and film produce a tighter seal, are chemically stable with water, alcohol and formaldehyde, and retard the development of corrosion on the lids.

Alternatively, polypropylene lids and liners produce an even better seal without corrosion problems. See Suzumoto, "Storage Containers for Fluid-Preserved Specimens", this volume.

The vials are stored in a unit tray system that can be customized to fit both the number of vials one wishes for each unit tray and the size of the cabinet drawer in which the trays are placed. The trays are 14cm x 17.7cm and 14cm x 28cm; both are 5cm high, boxes with a white litho finish and can be made to size by a manufacturer of boxes or packaging materials (Fig. 2).



Figure 2. The unit tray system used to store vials. Figure 2. The unit tray system used to store vials.

The appropriate number of 3.8cm x 1.7cm (inside diameter) spiral, cardboard tubes to hold the vials are adhered within each unit tray with polyvinyl acetate emulsion adhesive (Fig. 3). Some unit trays are left empty to house 2oz bottles; the 16oz jars are not stored in a tray but rather placed in the drawer of the cabinet.

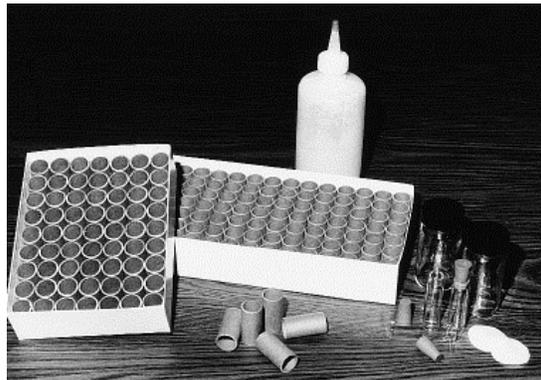


Figure 3. Unit tray system construction materials: cardboard tubes, polyvinyl acetate emulsion adhesive, vials and polytetrafluoroethylene cap liners.

Materials Tools Supplies

- Glass vials
- Litho finish boxes, white
- Open-end spiral cardboard tubes kraft outer wrap, and custom length
- Paraffin film
- Polytetrafluoroethylene cap liners
- Polyvinyl acetate emulsion adhesive

- Wide mouth jar

Construction

1. Purchase custom-made cardboard tubes.
2. Adhere the tubes to the bottom of the box and to each other with polyvinyl acetate emulsion adhesive.

Comments

Because the system is versatile, nearly any standard size, shallow drawer filing cabinets can be used. The method of arranging the collection depends on staff size and expertise, as well as the kinds of use the collection receives (i.e., voucher, teaching, or research collection).

