AN ISOLATION CHAMBER FOR USE IN SMALL ANIMAL RESEARCH¹

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Although aluminum picnic ice chests are frequently used as isolation chambers in small animal research, their small size and lightweight construction are disadvantages. Special purpose, commercially fabricated units are expensive, and the design and construction of homemade units is time consuming. There is, however, a commercially produced ice box, originally designed for use in a trailer, which has been found suitable. (Montgomery Ward, catalogue number 61C 16037R, cost \$39.95). It is constructed of enameled sheet metal. Its walls and door are fully insulated with fiberglass. Its inner dimensions are 24.25 in. wide, 18.5 in. high, and 15.5 in. deep. The unit is considerably larger than a picnic ice chest, and its dimensions are comparable to special-purpose commercial units.

Figure 1 shows the chamber and illustrates how the unit has been outfitted for our use. Ventilation is provided by an exhaust fan (Rotron Muffin Fan, Herbach and Rademan, Inc., catalogue number TM 12K511, cost \$12.95) mounted in a fiberglass-lined aluminum chassis box. Air inlets are provided at *a* and *b* by removing portions of the rubber door gasket. A one way vision glass (6 in. by 9 in., 1/4 in. thick, Pittsburgh Plate Glass, cost \$4.00) mounted on the door permits continuous observation. The houselight is a stainless steel reflector and bulb assembly of the sort commonly used for an aquarium tank. The animal chamber, feeder and associated stimulus devices are mounted on a sheet of masonite and connected (via a multiconductor plug) to a cable which passes through the rear of the unit at *c*. Aluminum rails are mounted on the bottom of the unit to facilitate sliding the panel and accessories in and out. These arrangements provide convenient access and simplify routine cleaning and maintenance.

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Fig. 1. The isolation chamber and its spectrum of acoustical attenuation.

The icebox comes with a shelf, which is spot welded to its inner walls. The shelf can be removed by cutting with a pair of tin snips and then bending the residual material back and forth until the metal fatigues and snaps off. Holes for the air vents, window, and cable can be readily cut with an Adel nibbling tool (Lafayette Radio Electronics, Catalogue number HD-436, cost \$3.85).

The spectrum of acoustical attenuation for the chamber is shown at right in Fig. 1. This response curve was obtained by placing a transducer inside the chamber and measuring the sound pressure level in db re. .0002 dynes per cm² outside the chamber at selected frequencies with the door alternately opened and closed. The difference of these readings gives the value of attenuation. The sound pressure level was measured on the C scale of a General Radio sound survey meter (type 1555-A) placed approximately 3 ft. in front of the chest. The level inside the chamber was maintained at approximately 100 db, thus insuring that all readings would be at least 10 db above the ambient noise level of the room.

The chamber's sound insulating properties are far from perfect. But they are better than those of picnic ice chests, and size and structure makes the chamber suitable for many purposes where the requirement for acoustic isolation is not stringent. Moreover, the chamber is large enough to permit the addition of supplementary sound-absorbing material when better sound insulation is required.