

A MANIPULANDUM FOR USE WITH DOGS

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This note describes a manipulandum which has been successfully used with dogs in a free-responding situation over the past 2 years. The device has been used with only medium-sized animals, e.g., beagles, wire-haired fox terriers. Minor changes in the absolute size of the device should make it adequate for other breeds.

The manipulandum (Fig. 1) consists of a housing (A) made from a single piece of 16-gauge galvanized sheet metal cut and bent to form the walls and roof of the housing.

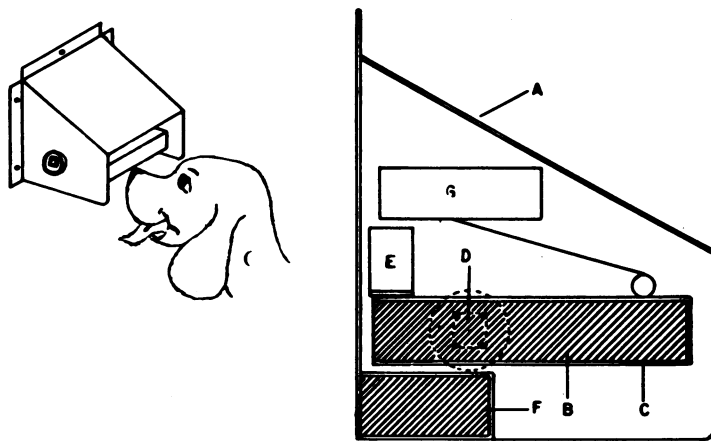


Figure 1. Dog manipulandum in operation and cross-section.

Figure 2 shows the template used in cutting the housing. The flange around the rear of the housing is drilled so that it can be securely attached to the wall of the animal container. The bar (B) consists of a piece of 0.75-inch plywood, 3 inches wide by 3.5 inches long. The bottom and front edges are covered with a single strip of sheet metal (C) which is tacked in place. Both the housing and bar are drilled for a 0.4375-inch opening through which a 0.25-inch by 3.5-inch bolt (D) is passed, supporting the bar within the housing. Four washers are used to insure freedom of movement. The bar is maintained in a horizontal position if a strip of sheet metal (E) is soldered to the inside walls of the housing above and at the rear of the bar. The upswing is limited by a block of 0.75-inch plywood (F) placed in the rear of the housing beneath the bar. This block serves to restrict the response as well as to add rigidity to the housing. A microswitch (G), preferably with a roller arm, is attached to the inside wall of the housing such that the arm rests on the surface of the bar. Raising the bar approximately 0.25 inch closes the normally open circuit, so that a pulse is put into the pulse former.

The manipulandum is designed to be operated by the dog's nose. The bar should be adjusted so that it is approximately 2 inches lower than the maximum height of the dog's nose when the dog is either standing or sitting.

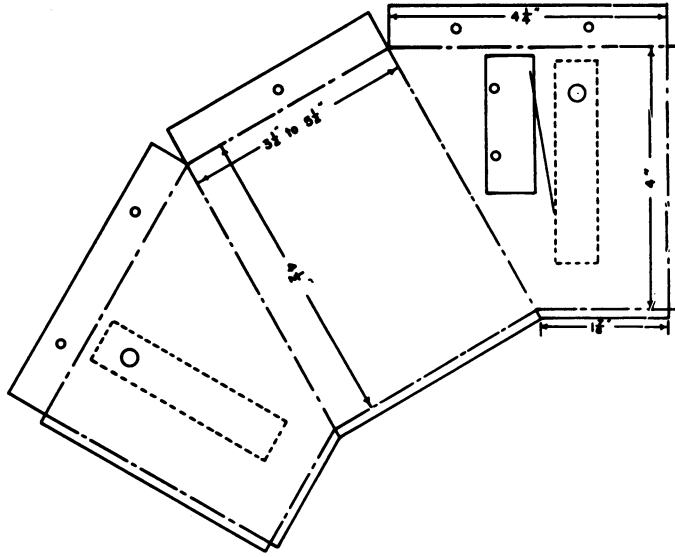


Figure 2. Template for manipulandum housing.

The bar-nosing response has a low operant level. Of the 20 dogs shaped up thus far, 56 was the maximum number of operant-level responses emitted in the initial 24-hour session and zero was the minimum. One of these animals failed to shape up spontaneously, and was trained by a successive-approximation procedure.

This response has been used successfully in researches dealing with the effects of drugs on multiple-schedule performance with both food and shock avoidance used as reinforcing events. Maximum stable rates have been of the order of 1.5 responses per second. No fatigue effect has been observed in 5-hour sessions with rates near maximum.

Received May 16, 1960