

## AN AUTOMATIC FEEDER FOR LABORATORY DOGS<sup>1</sup>

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Under typical regimens for laboratory dogs, the daily food ration is presented by a human handler. Through this procedure, virtually one of Pavlovian conditioning, the handler may acquire discriminative and secondary reinforcing properties that retard the progress of other laboratory operations, *e.g.*, training a hungry dog to remain quietly in a Pavlov frame after the experimenter leaves the test room. Similarly, when regions of a dog's gastrointestinal tract are to be intubated for physiological and biochemical analyses of gastric juice and related substances, this consideration may be important.<sup>2</sup>

In the hope of (a) possibly weakening this human-food correlation, (b) accustoming the dog to stimuli that later might accompany food reinforcement in an experimental apparatus, and (c) facilitating the timing of restricted feeding operations, we sought a means of automatically dispensing food in the dog's storage cage.

We therefore designed and installed electrically operated feeders.<sup>3</sup> Constructed from materials readily at hand, they reliably provide a commercially available kibbled feed to each of our dogs daily without impairing their eating, growth, or health.

Figure 1 shows the arrangement of the feeder's components.<sup>4</sup> A galvanized metal mounting plate, **MP**, supports them and also functions as the fourth side of a galvanized metal food chute, **FC**, soldered to it. Easily movable from one cage to another, the plate is attached with wing nuts to screws rigidly fixed in the cage door. The chute collects feed delivered from a hopper and directs its flow into the dog's 1-quart food dish protruding from its cage door.

Our hopper is basically a Bud AU-1039 aluminum utility box, **AUB**, 6 by 6 by 6 inches. One of the two panels that come with it functions as a lid, **L**, to cover the stored food and is hinged (see **LH**) to the top front of the box. The other panel, cut in two, provides the left and right halves of a trap door for the hopper. Joined to the bottom sides of the box with freely swinging hinges, **TDH**, these sections are carefully adjusted so that the center edges overlap slightly when the door is closed (as in the figure).

In this position, the door sections rest on the plunger extending from a centrally located Guardian, continuous-duty, Type 12, 117-volt AC solenoid. Encased in a Bud CU-2100 Minibox with a cutout for the plunger, the solenoid is wired in parallel with a Cinch-Jones P-202-B two-contact threaded male receptacle, **R**, which is base-mounted on the front end of the box. Wire leads, **W**, from the receptacle are connected to a Drake 75-AP, 117-volt AC, enclosed-type, pilot-light fixture, **PL**, in the hopper lid, providing for illumination of the dog's food dish during operation of the solenoid.

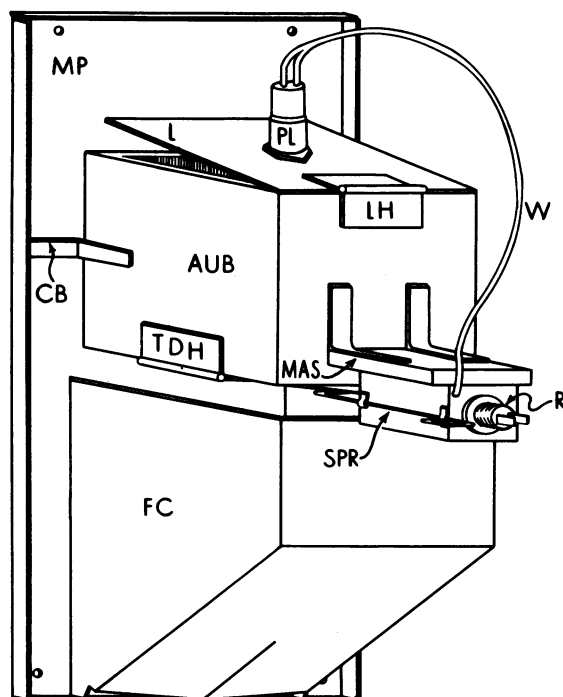


Fig. 1. A diagram of the dog feeder.

The Minibox and solenoid assembly, **MAS**, are permanently attached to the bottom front of the hopper. However, the hopper is fastened to the mounting plate with corner braces, **CB**, screws, and wing nuts to facilitate its removal for thorough cleaning of the unit.

In our laboratory, each feeder is electrically connected to its own time-switch with heavily insulated two-conductor cable, suspended from an overhead guide high above the cage, and attached to the solenoid receptacle by way of a Cinch-Jones S-202-CCT knurled-ring female plug. The cable is discon-

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<sup>3</sup>We appreciatively acknowledge the suggestions of Frank Dado, Scientific Prototype Mfg. Corp.

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nected daily when the feeder is removed for cage cleaning.

In operation, activation of the solenoid pulls in the plunger and releases the trap door, thereby delivering the food stored in the hopper. On resetting the door sections to the closed position, a solenoid plunger re-

turn, **SPR**, is used. It is, in effect, a handle attached to the plunger. Supported by small cable clamps on the side of the Minibox, it is fashioned from stiff wire so as to ensure extension of the plunger to the correct distance from the solenoid.

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