A MULTIPLE-UNIT PIGEON APPARATUS¹

C. B. FERSTER and M. H. APRISON

INDIANA UNIVERSITY MEDICAL CENTER

In experiments where more than one animal is run on the same program, most of the devices used to provide an automatic change from animal to animal have been rotary. A panel containing the keys, magazine, etc., is fixed in position tangent to a rotating drum containing the animals' compartments. However, a vertical device, which takes considerably less floor space, can also be used. The device described here is for pigeons, and was designed so that the birds would live in the apparatus continuously. The experimental session would occur whenever the panel came into place in front of the pigeon and the appropriate lights were turned on. Figure 1 is a photograph of the apparatus. The moving panel slides

Figure 1. Left: An over-all view of the apparatus.
Right: Enlarged view of the moving panel.

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in a track, and is driven by the reversible motor engaging a long pinnion rack running the entire length of the apparatus on the right-hand side. The microswitches are used to stop the panel in the required position and to reverse its direction whenever it reaches either the top or bottom. The panel is counter-balanced to prevent overshooting. A brake on the motor would have accomplished the same purpose. The birds have continuous access to a food and water cup on the doors on the left-hand side, and to light and air through bars on the front. When the panel is in working position, the bird is isolated visually.

After birds are conditioned, they tend to keep their heads in the food magazine or to look out of the cage while the panel is moving. To prevent decapitations, we have added two modifications (not shown). In the first, we hinge a plastic door over the food-magazine aperture. The door swings open by a cam at the position where the panel stops. The swinging door is spring-loaded in the closed position, and forces the bird's head out should it be in the food magazine while the panel is moving. Second, a flexible wire-mesh screen, running in the same track as the panel, is fastened to window-screen rollers at the top and bottom of the panel. This screen prevents the bird from putting its head through the bars and, at the same time, gives access to light and air when the panel is not in position.

Even though four compartments were used in the present device, a room of ordinary height could accommodate eight or ten compartments. The birds remain in the apparatus continuously and are weighed weekly. A standard experimental regime ordinarily will keep the birds' weight fairly constant over long periods. The birds stand on stainless-steel mesh raised over the bottom of the compartment, so that paper toweling underneath can catch the droppings. The wire-mesh floor can be removed for cleaning. We use the multiple-pigeon apparatus in drug experiments to develop base-line performances prior to the drug experiment proper, when the bird is transferred to a standard experimental space.

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