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TECHNIQUE FOR REINFORCING EITHER OF TWO ORGANISMS WITH A SINGLE FOOD MAGAZINE

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In studying social behavior, it is sometimes desirable to reinforce either of two organisms placed together in the same experimental chamber. This can be done by training each organism to operate a special manipulandum in the presence of an appropriate discriminative stimulus. In an apparatus designed for pigeons (Fig. 1), one manipulandum is a treadle, 1 in. in diameter, placed to the left of the food magazine. Depression of the treadle operates a microswitch and elevates the tray of the magazine. The second manipulandum is a vertical brass bar, 3 by 1 by 0.125 in. faced at the top with sponge rubber

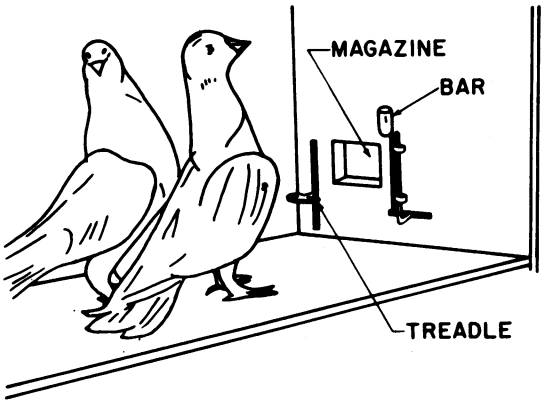

Fig. 1. Apparatus.

and placed to the right of the magazine. A horizontal movement of the bar to the right operates the microswitch and elevates the food tray. Each device can be operated only from in front of the magazine, where there is space for only one pigeon. Only the pigeon operating its special manipulandum eats.

Each pigeon is first placed in the chamber alone and shaped to operate one of the manipulanda in the presence of a discriminative stimulus (a colored light) and a buzzer. One pigeon is trained to depress the treadle. At first the treadle is close to the floor and moves very easily; but as the response is acquired, the treadle is raised and the spring mounting is strengthened so that a substantial force is needed to depress it. When this stage has been reached, there is no danger that the other pigeon will ever depress the treadle accidentally and receive reinforcement. The other pigeon is separately trained to move the vertical manipulandum to one side; and, again, the spring mounting is altered as the behavior is acquired so that accidental reinforcement of the first pigeon is impossible. A different-colored light is present during the training for the second bird.

When both pigeons are together in the apparatus, one may be reinforced by turning on the appropriate colored light and connecting its special manipulandum to the magazine. Only the selected pigeon approaches the magazine, since this behavior in the other pigeon was thoroughly extinguished under the color of light appropriate to the selected bird. Conflict or competition is successfully avoided. The other pigeon is reinforced, of course, by turning on the other light and connecting the other manipulandum.

The device has been successfully used to reinforce aggression in either of two pigeons and to bring the aggression of each under the control of exteroceptive stimuli.