



Fig. 2. Attractive radius experiments.

Platt, S.A. and M. Holliday. University of Illinois, Champaign, Illinois. A versatile apparatus for the demonstration of and selective breeding for discrimination learning in individual *D. melanogaster*.

Once instrumental learning has been demonstrated in individual *Drosophila* (Platt, Holliday and Drudge 1980), many questions concerning the parameters of the learning behavior can be investigated (e.g., what are the effects of delay of reinforcement; what is the duration of retention and memory) and the proposed components of learning might be teased apart by

selective breeding and a behavior-genetic analysis. The apparatus we are currently using to attempt to selectively breed for learning is versatile, inexpensive and easily adaptable to various critical control procedures to insure that learning is, in fact, occurring and selection is being carried out on the behavior change (learning) and not upon some stereotyped or biased response pattern.

Our apparatus is constructed of modified Beral dropping pipets (Stock #B-75-100). Horizontal arms of the choice points were made by cutting the straight tubing section from the pipet and drilling a small hole in the center for receiving a pipet tip (the pipet tip was cut back about 1 cm to permit the fly to move through). In pipets to be used for the vertical alleyways, a hole was cut near the bottom to insert one arm of the T. A perforated cap cut from a pipet bulb was placed over the other arm of the T to form the cul-de-sac.

Recently we have made several useful refinements. A small ring of vinyl tubing is slid over each end of the horizontal arm. The outside diameter of the tubing ring matches the inside diameter of the cut bulb and cap. This prevents escape of the subjects and facilitates the rapid reversal of the choice point arms. About one-half of the bulb at the bottom of the vertical alley is cut off, perforated and inserted inverted. This prevents the occasional fly from descending into the bulb. We now use two different textures of white paper inside each arm of the choice points. Therefore, it is no longer possible for a fly to avoid exposure to the discriminative stimulus at the choice point. In addition, we now introduce each fly to a brief maze pre-exposure of choice points and vertical alleys all leading to the first choice point with discriminative stimuli. The pre-exposure is thought to acclimate the subject to the apparatus and reduce excessive initial choice point exploration.

Reference: Platt, S.A., M. Holliday and O.W. Drudge 1980, *J. Exp. Psych: Anim. Behav. Proc.* 6(4): in press.