AN IMPROVED LIVE-WORM DISPENSER¹

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Since many species of fish which do not take dry food readily, or in sufficient quantity, work well for worms, an automatic live-worm dispenser serves to extend the range of subjects

with which it is possible to do instrumental experiments. Finding the device recently described by Hogan and Rozin (1961) to be unsuitable for our purposes—as many as 25%

Fig. 1. A live-worm dispenser.

of the worms earned by an animal in a given session might adhere to the sides of the vials which contained them and fail to drop when the vials were inverted—we were led to develop a more satisfactory alternative, which is illustrated in Fig. 1.

Medicine-droppers, each containing a worm (*Tubifex*) in a small volume of water, are rotated between metal jaws which compress their bulbs and discharge their contents. The reinforcement cycle begins with a loaded dropper in discharge-position; its bulb is compressed, and, simultaneously with release, the next loaded dropper takes its place. In the 100-dropper model shown here, both the compression and the rotation are accomplished by a pair of yoked solenoids wired in parallel. (Dr. Irving Geller of the Wyeth Institute for

Medical Research, in whose shop it was built, kindly has consented to provide working drawings to anyone interested.) In a lighter, 44-dropper model, constructed earlier, a single solenoid is used for compression, and the coil-and-ratchet mechanism of a round-and-round stepping switch is used for rotation, the two Plexiglas disks which hold the droppers being mounted in the same way as the disk of a pellet-feeder described elsewhere (Longo and Bitterman, 1959). Both models are capable of faultless operation for many hundreds of trials.

REFERENCES

- Hogan, J., and Rozin, P. An automatic device for dispensing food kept in a liquid medium. *J. exp. Anal. Behav.*, 1961, **4**, 81-83.
- Longo, N., and Bitterman, M. E. Improved apparatus for the study of learning in fish. *Amer. J. Psychol.*, 1959, **72**, 616-620.

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