15625

An Improved Feeder for Mice.

H. P. Rusch, V. R. Potter, and J. A. Miller.

From the McArdle Memorial Laboratory, Medical School, University of Wisconsin, Madison, Wisc.

In studies which require an accurate determination of food intake the spilling of food and its contamination by excreta must be kept to a minimum. Mice are notorious for their perversity in these respects. Feeders constructed along the general pattern given in the accompanying diagrams have been in use in our laboratory for over a year and have given very satisfactory service in measurements of the average caloric intakes of groups of 2 to 24 young adult mice receiving synthetic diets of widely different compositions. The feeder consists of 2 easily assembled parts. The upper piece contains compartments each of which accommodates only one mouse at a time and which are floored with ¼ inch square wire mesh. The wire mesh extends on each side of this assembly so that it may be slipped under the ledges of the food tray from either end. Thus assembled the top piece rests freely on the food in the tray and descends into the tray as food is consumed. The upper piece is readily removed when additional diet is added to the food tray. The feeders may be constructed from No. 26 galvanized iron sheeting and the joints soldered or spot-welded; the shop on this campus employed a jig for ease of manufacture. Details of a feeder for mice weighing between 15-30 g are shown in the accompanying diagram.

The small compartments, the wire mesh, and the ledges prevent the food from being spilled or contaminated. The average daily spillage of food for 10 adult mice fed *ad libitum* from a 10-compartment feeder

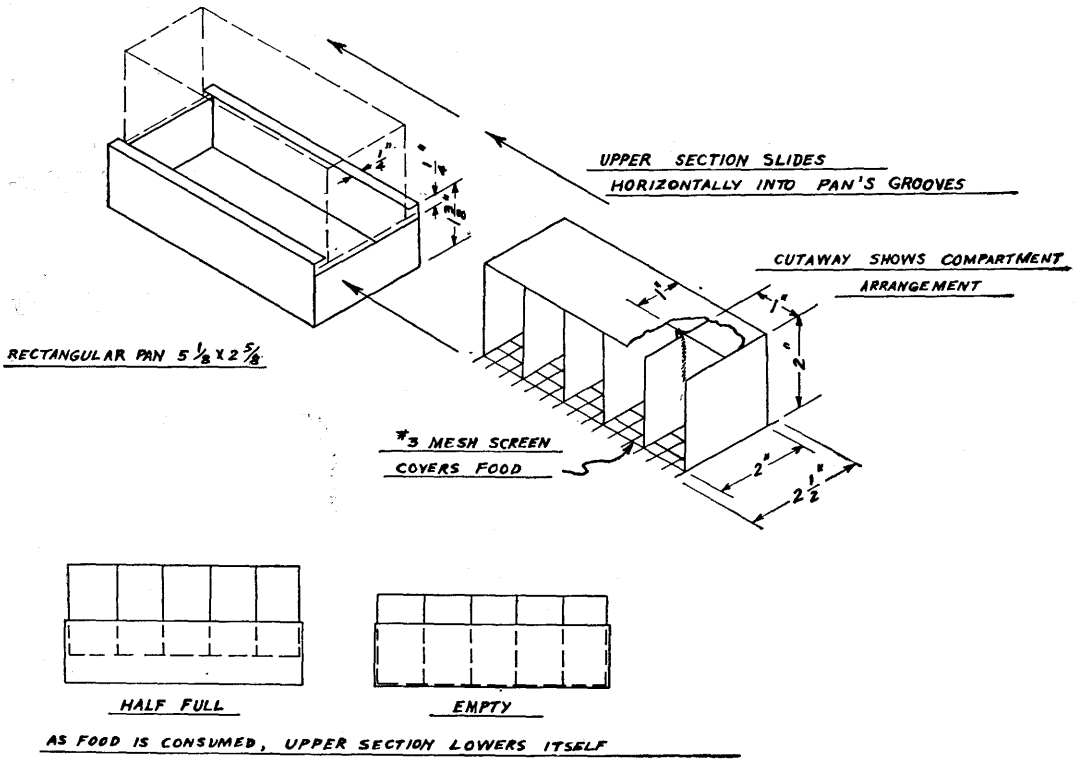

Fig. 1.

amounts to only 0.1 g or less. In feeding diets *ad libitum* we employ weighed amounts of food about 10% in excess of the expected consumption. The feeders may be constructed with varying numbers of compartments but when the food intake is being restricted below the *ad libitum* level, they should at least equal the number of mice in the cage. The compartment feature gives reasonable assurance that all of the mice in a group have an equal chance to feed when the food intake is restricted. In this regard, the practice[1] of dividing the animals in any group into smaller groups of narrower weight ranges is useful. To prevent spillage and contamination of the food with excreta the compartments must allow the entry of only the fore part of the animal; they should not accommodate the whole animal. The use of similar feeders, with compartments and wire mesh of the appropriate size, would appear entirely feasible for weanling mice or for rats of varying size.

[1] Tannenbaum, A., *Cancer Research*, 1945, **5**, 609.

15626

The Effect of Exercise on Mortality of Animals Poisoned with Diphosgene.

S. POSTEL, J. M. TOBIAS, H. M. PATT, AND R. W. GERARD.

*From the Department of Physiology, The University of Chicago.**

Absolute rest for victims of pulmonary irritants has until recently been the rule of thumb. The clinical consensus against exercise is clearly represented in the directions for first aid treatment of lung irritant casualties given in a U. S. War Department Field Manual dated September 7, 1942:[1]

"Patients suspected of having breathed lung irritant gas should be given absolute rest. All casualties known or suspected of having been seriously exposed should be considered as litter cases . . . when he has been carried to a place free of gas, the gas mask is removed, his clothing loosened and the man kept completely still, relaxed and warm with blankets."

Strict adherence to these regulations precludes any attempt by the gassed soldier to make his way to an aid station during the interval between exposure and the appearance of pulmonary edema. The present study was designed to test the validity of prohibiting exercise during the clinical latent period. Similar work has been done independently and at about the same time by I. de Burgh Daly and co-workers, who found that exercise on an endless carpet had no injurious effect on rats[2] and dogs[3] after exposure to L Ct-50 concentrations of diphosgene or on dogs gassed with phosgene.

Preliminary Experiments. Swimming was used as a controllable and relatively constant form of vigorous exercise requiring virtually no apparatus for mice, rats or dogs. Its disadvantage, temporary change to a water environment, was controlled by experiments testing the effects of wetting and temperature changes immediately after gassing.

While normal mice tolerated prolonged wetting (standing in a shallow pan of water for 42 hours) with water and air at 29°C, but not at 17°C, gassed mice did poorly under prolonged wet conditions both at 28°C and at 15°C (Table I). There are no figures for "dry cold" survival of normal mice but

* This work was done as part of a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the University of Chicago.

[1] *Defence Against Chemical Attack*, U. S. Government Printing Office, Washington, D.C., September 7, 1942, p. 28.

[2] Daly, I. de Burgh, and Ritchie, A. O., personal communication.

[3] Daly, I. de Burgh, Fegler, J., and Ritchie, A. O., personal communication.