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An Improved Device for Recording Activity of Rats.

C. C. SCOTT AND H. M. WORTH. (Introduced by K. K. Chen.)

From the Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, Ind.

Measurement of spontaneous activity of rats can be accomplished satisfactorily by the spring-suspended cage technique of Schulte and associates.^{1,2} In these laboratories some

improvements have been made which add to the convenience, simplicity and perhaps the accuracy of operation. Essential features of the apparatus are shown in Fig. 1. The spring, cage and work-adder are much the same as previously described. The method of recording is different. Attached to the hub of the work-adder is a lever which can swing freely. This is pulled around by the work-adder wheel until overbalanced. It then falls to trip a mercury switch, completing a circuit momentarily. The switch is connected to a relay which activates a 110 v automatic counter. It is impossible for the falling lever to register more than once for each revolution of the work-adder. The possibility of the contact dipping in the mercury pool 2 or more times per revolution because of slight play in the wheel is thus eliminated. The automatic counter obviates the necessity for tedious or even inaccurate counting of signal marks on a record.

The long spring which suspends the cage is constructed of steel music wire of 0.029 inch diameter. There are 180 turns in each spring which has an inside diameter of 13/32 inch. Galvanized screen of 1/4-inch mesh is used in constructing the cages. The latter weigh about 400 g. For greatest sensitivity, the weight of the cages should be small in relation to animal weight. It has been found convenient to mount 5 complete units of the apparatus on a framework of 1/2-inch aluminum rods.

In practice, adult rats weighing around 250 g are used. They produce optimal movement for the weight of our cages and the gauge of wire in the springs. There is much variation in the degree of activity of different animals. A selection is made of those which show good activity responses, the others being discarded. The selected rats are used repeatedly with appropriate rest intervals.

For studies of stimulating drugs, constant

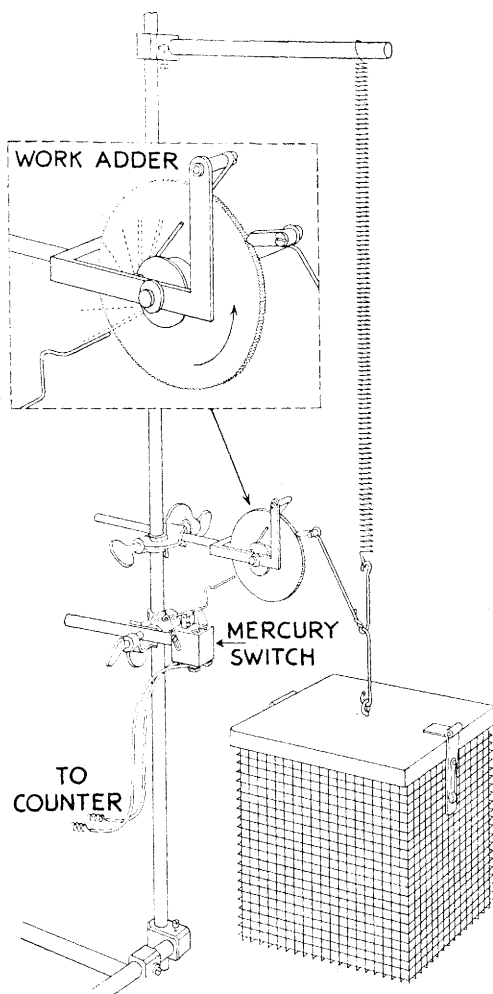


FIG. 1.

Details of apparatus for recording movement of spring-suspended cage.

¹ Schulte, J. W., Tainter, M. L., and Dille, J. M., *Proc. Soc. Exp. Biol. and Med.*, 1939, **42**, 242.

² Schulte, J. W., Reif, E. C., Bacher, J. A., Jr., Lawrence, W. S., and Tainter, M. L., *J. Pharm. and Exp. Therap.*, 1941, **71**, 62.

light and temperature of the room are required, as suggested by Schulte *et al.* Depressant drugs may be studied in the same apparatus, but the room must be darkened to increase the normal activity. Changes, however, in studies of the latter type are much less

striking.

Summary. An apparatus is described for recording the activity of rats in spring-suspended cages. The movements are automatically registered on a magnetic counter.