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SCRAMBLE PATTERNS AND ESCAPE LEARNING

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The failure of a small percentage of rats to learn a lever press escape response often appears to be related to the animal learning to discriminate differences in shock density (time integral of shock) on the grid floor. Some shock scramblers do not provide a scramble pattern so that reversed polarity exists on all pairs of bars for an approximately equal percentage of time. Certain animals learn very quickly to stand where the shock density is low, and do not learn the desired response. Exposure to continuing shock appears to facilitate such discrimination learning, which thus occurs more often on various escape procedures than on procedures such as Sidman avoidance.

Such learning has been observed in standard commercial experimental chambers measuring approximately 12 by 32 in., with the height restricted to 5 in. by a glass plate. We have used two commercial motor-driven scramblers, and two power supplies. Maximum current on short circuit has usually been in the 1.5—2.0 ma range at 350-400 v, with a large resistor in series with the grid floor to minimize current variation due to changes in the resistance of the animal. Shock is always scrambled on the lever and chamber walls.

By reducing the experimental chamber size by ⅓ to ½ with a metal partition, it is usually possible to obtain a satisfactory scramble pattern on that area of the grid floor still available to the animal by rewiring the leads from the scrambler, using a trial and error method with a meter as an indicator.