Whereas carbachol-depolarization was sustained over several minutes, GABA-depolarization declined rapidly after the first few seconds in spite of the continued presence of GABA. Subsequent application of GABA then had no action, but carbachol remained effective.

GABA-like depolarization was produced by the following compounds (approximate molar potencies relative to GABA in brackets): 3-amino-propanesulphonic acid (3), γ-amino-β-hydroxybutyric acid (0·3), β-guanidino-propionic acid (0·06), guanidinoacetic acid (0·06), β-alanine (0·01), γ-aminovaleric acid (0·01) and taurine (0·001). 'Cross-desensitization' occurred between GABA and these compounds. Amino acids producing no detectable potential change at 10^{-2}M included glycine, ϵ-aminocaproic acid, D- and L-α-amino-*n*-butyric acid, α-amino-*iso*-butyric acid, and glutamic acid.

The effects of antagonists on matched responses to GABA and carbachol were compared. Hexamethonium did not affect responses to GABA in concentrations which completely antagonized carbachol. In contrast, bicuculline was 20 times more effective against GABA than against carbachol, and picrotoxin 2 times more effective.

Thus rat ganglion cells possess GABA-receptors which, in terms of specificity, resemble those in the mammalian central nervous system. From a practical viewpoint isolated ganglia may be more convenient for assessing the activity of GABA-analogues and antagonists since they seem devoid of receptors for short-chain amino acids like glycine. It is not yet clear why GABA depolarizes, rather than hyperpolarizes, the ganglion cells. A reverse (outward) movement of chloride is one possibility, since E_{Cl} may be more positive than E_m in ganglion cells (Woodward, Bianchi & Erulkar, 1969). This would explain the low-amplitude response and its rapid decline.

N.G.B. is an M.R.C. Scholar.

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Reversal learning facilitated by a single injection of lysergic acid diethylamide (LSD 25) in the rat

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The results of many animal experiments are consistent with the hypothesis, originally proposed by Bradley & Elkes (1957), that LSD 25 increases sensitivity to sensory stimuli. Reports from human subjects that LSD facilitates insight in problem-solving situations are consistent with this view. It seems likely, therefore, that LSD will facilitate learning in laboratory animals and experiments were carried out to test the effects of various doses of LSD on performance in a learning situation where rats were required to reverse a previously acquired brightness discrimination.

The drug was administered after initial conditioning and prior to one session of reversal learning.

Rats were trained under water deprivation for 8 consecutive daily sessions of 10 min in a light-dark discrimination ; correct responses were rewarded with access to 0·2 ml tap water. The apparatus consisted of two parallel runways, at both ends of which a small water trough and manually operated pump delivered water when the animal traversed the correct runway. The brightness of each alley was controlled by a dimmer. Fifteen min before reversal learning, animals which had reached a previously determined criterion of learning were given an injection of saline, 6·25, 12·5, 25·0 or 50·0 μg/kg of LSD (I.P.) in 1 ml. Reversal learning consisted of 120 consecutive excursions through the runways, irrespective of whether the response was right or wrong. Reversal learning was facilitated by LSD at all dose levels except 6·25 μg/kg ; the results were statistically significant.

The effects of 12·5 μg/kg of LSD was observed at 5, 15, 45 and 90 min after injection. The results indicated that, although there was considerable variation within treatment groups, LSD facilitated reversal learning at all time intervals.

The effects of 25 μg/kg of LSD, administered 15 min prior to reversal, were compared with 25 μg/kg of bromolysergide (BOL 148) and a saline control group. Statistically significant facilitation was obtained with LSD ; the BOL 148 and saline groups did not differ.

Biochemical analyses of the brains of the animals used in these experiments are being carried out. Preliminary results indicate that the doses of LSD which caused a facilitation of learning produce increased 5-hydroxytryptamine (5-HT) levels.

The results of these experiments provide evidence for facilitation of learning by LSD. Subsequent experiments will be directed towards the identification of the neurotransmitter which may mediate these behavioural effects. Previous studies by Boakes, Bradley, Briggs & Dray (1970) and Appel, Lovell & Freedman (1970), have provided evidence that 5-HT may be involved.

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Study of the mechanisms of action of desipramine and chlorpromazine in reversing reserpine-induced hypothermia in mice

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A screening test commonly employed in the evaluation of compounds with potential antidepressant activity involves the reversal of reserpine-induced hypothermia in rodents, usually mice. Chlorpromazine has been reported to reverse reserpine-

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