

# ELECTRICAL SELF-STIMULATION IN THE LOCUS COERULEUS AND NOREPINEPHRINE TURNOVER IN CEREBRAL CORTEX

T. J. CROW

University Hospital of South Manchester, Manchester, England

IN RECENT experiments (ANLEZARK *et al.*, 1973) we have demonstrated that electrical self-stimulation with electrodes in the locus coeruleus is associated with increased turnover of norepinephrine in the ipsilateral cerebral cortex. We measured the cortical content of the norepinephrine metabolite H.M.P.G. in rats with locus coeruleus electrodes supporting electrical self-stimulation and in control rats with electrodes nearby. Increased H.M.P.G. accumulation by comparison with controls could be demonstrated both in rats stimulated under anaesthesia, and in rats self-stimulating for the 1-hr period before being killed (Fig. 1). In the latter case there was a lesser increase in H.M.P.G. in the contralateral cortex.

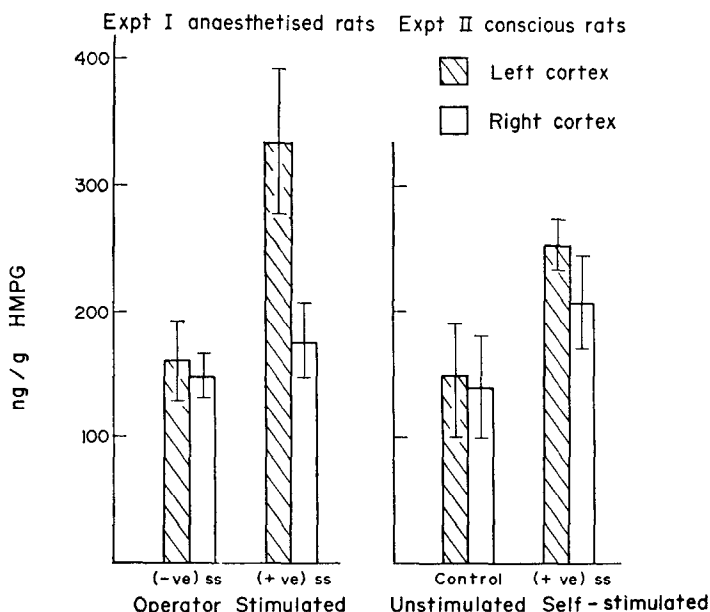


FIG. 1.—All rats had electrodes implanted in the region of the left locus coeruleus and were tested for self-stimulation responding. When stimulated under anaesthesia for 1 hr before being killed (experiment I) those animals whose electrodes had previously supported self-stimulation ((+ve)ss) showed increased H.M.P.G. in the ipsilateral cortex. Rats self-stimulating for 1 hr before being killed (experiment II) were found to have an increase in H.M.P.G. in the ipsilateral cortex, and also had a lesser increase in the contralateral (right) cortex.

This data therefore supports the involvement of the coeruleo-cortical norepinephrine system in self-stimulation.

## REFERENCE

ANLEZARK G. M., ARBUTHNOTT G. W., CROW T. J., ECCLESTON D. and WALTER D. S. (1973) *Br. J. Pharmac.* 47, 645 P.