the striatum to take up the drug. The high uptake into the pineal gland, the highest in any area studied, is also worthy of notice, although this could be due to differences in the blood brain barrier in this region.

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The effects of some changes in the perfusion solution on the vasoconstrictor responses of the isolated rat mesentery preparation

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The rat isolated mesentery arterial preparation as described by McGregor (1965), perfused with Krebs solution, exhibited vasoconstrictor responses to injected noradrenaline (10 ng–500 ng) and to perimural sympathetic nerve stimulation, but did not respond to acetylcholine or isoprenaline. There was generally no response to tyramine over a wide range of doses (1 μg–1 mg); in a very small number of experiments a slight response was seen with the larger doses of tyramine.

Addition of acetylcholine ($2–20 \times 10^{-6}$ g/ml.) to the perfusate blocked the responses to perimural stimulation, an effect which was reversed by hyoscine (75×10^{-7} g/ml.), potentiated by physostigmine (1×10^{-6} g/ml.), but unchanged by hexamethonium ($0{\cdot}025–50 \times 10^{-6}$ g/ml.). Small doses of tyramine added to the perfusate enhanced adrenergic vasoconstrictor responses whilst larger doses depressed the effects of nerve stimulation. Isoprenaline (0·5–50 μg) produced inhibition of vasoconstrictor responses induced by noradrenaline (1×10^{-7} g/ml.).

Partial or total omission of calcium ions from the perfusion solution, made isotonic by the addition of sucrose, allowed the regular production of responses to tyramine. In these conditions the responses to nerve stimulation were reduced to an extent inversely related to the amount of Ca^{++} ions omitted; the responses to injected noradrenaline were not significantly altered by changes in Ca^{++} ion concentration.

The tyramine responses observed in lowered Ca^{++} ion concentrations were characterized by reduction with phentolamine and absence in rats pretreated with either 6-OH-dopamine (Thoenen & Tranzer, 1968) or reserpine (5 mg/kg subcutaneously), or after surgical denervation. The effects were blocked by cocaine (5×10^{-6} g/ml.) and were increased after pretreating the animal with nialamide (100 mg/kg intraperitoneally); in the latter case the tyramine responses were also observed during perfusion with normal Krebs solution. The omission of Mg^{++} ions from the solution induced similar responses to those of Ca^{++} ion reduction but to a lesser degree; the simultaneous omission of both ions further enhanced the magnitude of the tyramine response.

Increasing the K^+ ion concentration to twice that of normal Krebs solution enabled the demonstration of a response to tyramine.

The addition of Ba^{++} ions to normal or Ca^{++} ion deficient perfusate favoured the production of tyramine responses. Although the responses obtained in these conditions to nerve stimulation were seen to be diminished when calcium ions were deficient, the responses to noradrenaline were not significantly altered.

The results indicate that although tyramine on its own is unable to initiate a rise in perfusion pressure during perfusion with normal Krebs, an inherent activity can be demonstrated in conditions of altered membrane stability produced by changes in the ionic composition of the solution.

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Perfusion of the cerebral ventricular system in the conscious rabbit

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Under general anaesthesia stainless steel screws (5BA) 4 mm in length with a central hole (0·52 mm diameter) were inserted in the vault of the rabbit's skull so that they were directed towards the bodies of the lateral ventricles. In their final position the tips of the screws were approximately 2 mm above the lumen of the ventricles. The guide tube to the cisterna magna (Fig. 1) was inserted through a

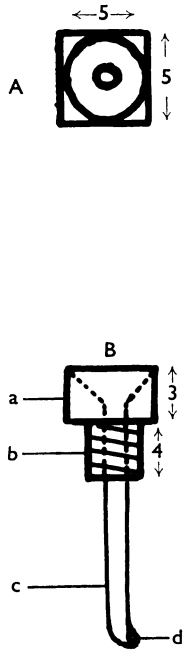

FIG. 1. Guide tube to cisterna magna. All measurements in mm. A, Plan view. B, lateral view: (a) hub, (b) roughened collar, (c) shaft, gauge 19, length 12–16 mm, (d) lateral opening at tip of shaft.