LETTER TO THE EDITOR

The Concentration of Catecholamines in the Turtle Heart and Vagal Escape

SIR,—A report by Hough (1895) indicated that stimulation at supramaximal voltages of the peripheral vagus nerve of the turtle produces an asystole which persists for the period of stimulation. Recent work on adrenergic factors of the heart in the phenomenon of vagal escape (Friedman and Campos, 1960; Campos and Friedman, to be published) suggested that the sustained vagally-induced cardiac arrest in the turtle might be explained on the basis of the catecholamine content of the heart. The varied ability of different species to resist vagal stimulation has been pointed out by Hough (1895).

The startling finding that vagal stimulation in the lamprey (*Lampetra fluviatilis*) resulted in cardioacceleration rather than the expected bradycardia has been reported by Augustinsson and others (1956). The myocardial catecholamine concentration of this species is the highest of any yet known. On the basis of these studies it was predicted that the catecholamine content of the turtle heart would be relatively low when compared to that of more common species such as the dog. This prediction has been verified. The supporting data is to be found in Table I.

TABLE I

CATECHOLAMINE CONTENT OF TURTLE AND DOG HEART

Tissue	Turtle		Dog[1]	
	Noradrenaline[2]	Adrenaline	Noradrenaline	Adrenaline
Atria	1·08 ± 0·08 (6)[3]	0·17 ± 0·01 (6)	2·98 ± 0·17 (8)	0·24 ± 0·08 (8)
Ventricle	0·44 ± 0·07 (6)	0·07 ± 0·01 (6)	1·09 ± 0·02 (13)	0·14 ± 0·03 (13)

[1] Data of Campos, H. A. and Shideman, F. E., *Internat. J. Neuropharmacol.* In press.
[2] Mean concentration in μg./g. fresh tissue ± S.E.
[3] Numbers in parentheses indicate number of animals used.

Catecholamines were determined by the trihydroxyindole fluormetric assay of Shore and Olin (1958).

Department of Pharmacology and Toxicology,
University of Wisconsin,
Madison, Wisconsin, U.S.A.
August 31, 1962

A. H. FRIEDMAN, Ph.D.
B. BHAGAT, Ph.D.

REFERENCES

Augustinsson, K. B., Fänge, R., Johnels, A. and Östlund, E. (1956).. *J. Physiol.*, **131**, 257–276.
Friedman, A. H. and Campos, A. (1960). *The Pharmacologist*, **2**, 74.
Hough, T. (1895). *J. Physiol.*, **18**, 175–200.
Shore, P. A. and Olin, J. S. (1958). *J. Pharmacol.*, **122**, 295–300.