Records of ovulation and reproduction show no consistent difference between the irradiated and unirradiated animals. Ovulation rates and number of young born per litter may be said to be identical for comparative groups.

Bone analyses gave very similar results for all animals, whether irradiated or not (Table II). Chick and Roscoe's A/R[3] is high

TABLE II.
Average Bone Analyses for all Irradiated and Non-irradiated Rats.

Groups	Calcium (Dry wt. basis)	Calculated on Wet Weight Basis				
		Water	Fat	Ash	Organic Residue	A/R
	%	%	%	%	%	
67 and 68 (Irradiated)	21.6	26.2	5.2	44.2	24.3	1.82
69 and 70 (Not irradiated)	21.3	25.2	6.2	44.3	24.3	1.82

and identical for the 2 groups. The calcium agrees well with the standards of Korenchevsky.[4]

Conclusions. Rats reared on a highly purified and very simple diet do not suffer appreciably from living in total darkness. They show no consistent response to daily irradiation with an open carbon arc.

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Site of Hypersensitiveness of the Exaggerated Sinus Caroticus Reflex.

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Before Hering's[1] discovery of the carotid sinus reflex, the slowing of the pulse which results from pressure over the upper area of the carotid artery, particularly on the right side of the neck, was interpreted as the direct effect of pressure upon the vagus nerve. Variations in the effect on heart rhythm were considered as indicative of the condition of the heart muscle and the Wenckebach[2] school

[3] Chick, H., and Roscoe, M. H., *Biochem. J.*, 1926, **20**, 137.

[4] Korenchevsky, V., Medical Research Council, Special Report No. 71 (1922).

[1] Hering, H. E., *Die Karotissinusreflex auf Herz und Gefasse.* Theodor Steinkopff, Dresden, 1927.

[2] Wenckebach, K. F., *Die Unregelmässige Herztatigkeit.* W. Engelman, Leipzig, 1914.

particularly attempted to use such differences in the prognostication of heart disease. Weil[3] agreed with Wenckebach that a prolonged cardiac arrest was due to a hypersensitiveness of the vagus endings in the myocardium consequent on pathological changes in the heart. Hering, having discovered that a reflex mechanism and not a direct stimulation is at play, became interested in the receptor organs of the afferent branch of the arc rather than in the end organs of the different efferent branches. He considered that a marked slowing of the pulse on pressure over the *sinus caroticus* was due to a hypersensitiveness of the afferent nerve endings induced by arterial sclerosis in this region. Consequently, Hering and his collaborators are inclined to use these same variations in heart rhythm after pressure over the carotid sinus as indicative of arterial sclerosis of the carotid artery. The experiments here reported were undertaken to determine whether the hypersensitivity in the exaggerated cardio-inhibitory response is in the afferent or efferent branches of the arc.

The demonstration by Hering[1] that pressure on the *sinus caroticus* elicits 2 independent effects, (1) cardio-inhibitory effect, (2) vaso-depressor effect, permitted the following approach to the problem. The afferent pathway for both reflexes is a common one by way of the sinus nerve through the glossophalangeal nerve to the central

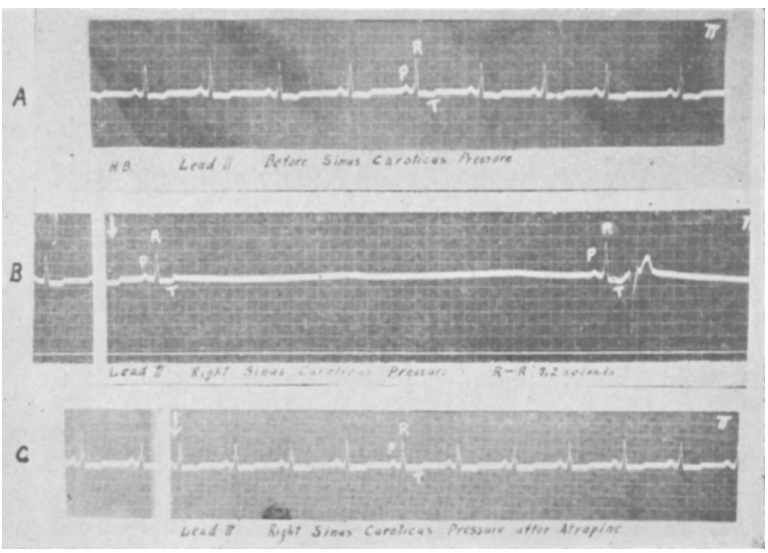

FIG. 1.
Electrocardiogram showing the effects of *sinus caroticus* pressure before and after atropine.

[3] Weil, A., *Deutsch. Arch. f. klin. Med.*, 1916, **119**, 39.

nervous system. There are 2 separate efferent pathways, by way of the vagus to the heart and by the sympathetic system to the blood vessels. The cardiac effect may be eliminated by atropine and the vascular reaction independently observed. Since the afferent endings are common to both reflexes, a marked cardio-inhibitory effect may be explained by hypersensitiveness of the afferent receptors if there is likewise a vascular reaction of a comparable degree. On the other hand, the combination of a marked cardiac inhibition and a mild effect on blood pressure may be interpreted as an indication of an increased activity of the efferent branch of the cardiac reflex, the vagus nerve.

The subject upon whom the following observations were made was a male, 70 years of age, with a history of mild anginal attacks. Over a period of several months his blood pressure varied between 130 mm. to 150 mm. systolic and 90 to 100 mm. diastolic. The response to pressure over the *sinus caroticus* was observed on numerous occasions with the string galvanometer. The reactions were constant, consisting of complete arrest of cardiac activity for periods varying from 7 to 9 seconds, with shorter periods on pressure over the left *sinus caroticus*. On March 3, 1932, the systolic pressure was 130 mm. and diastolic 90 mm. Pressure over the right *sinus caroticus* produced a cardiac arrest of 7.2 seconds (Fig. 1, B). Atropine sulphate, gm. 0.002, was administered subcutaneously. Twenty minutes after injection the blood pressure was 128 systolic and 90 diastolic. Pressure over the *sinus caroticus* on either side produced no effect on the heart rate. (Fig. 1, C.) On right *sinus caroticus* stimulation the arterial pressure dropped almost immediately to 110 mm. systolic and 90 mm. diastolic and rose within 2 minutes to 125 systolic and 90 diastolic. The effect of left *sinus caroticus* pressure was then observed. The blood pressure was 128 systolic and 90 diastolic, which dropped on pressure over the carotid sinus to 110 systolic and 90 diastolic, returning in 2 minutes to 130 systolic and 90 diastolic. From various reports this is to be considered a mild or moderate vascular response, since reductions in blood pressure of from 40 to 50 mm. with a return in from 10 to 15 minutes to the original level have been frequently observed. These observations indicate that the exaggerated cardio-inhibitory effect of *sinus caroticus* pressure is not the result of a hypersensitiveness of the afferent nerve or its endings.