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Heart Weights of Normal and Anemic Animals.

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Cardiac hypertrophy resulting from nutritional anemia reported by Forman and Daniels[1] was based on moist heart weights. There was nothing to indicate whether the enlargement was a true hypertrophy—an increase in muscle fiber, or was caused by an imbibition of water. In the present study both moist and dry heart weights of anemic rats at different hemoglobin levels, were compared on the basis of sex, age, body weight, and body length with those of normal animals of the same sex, age, length, and weight. In an attempt to determine the fate of these hypertrophied hearts, other anemic animals were fed anemia correcting diets. When the

TABLE I.
Relation of Heart Weight to Body Weight and Body Length in Normal and Anemic Animals.

Sex	Condition of Heart	No. Animals	Age	Av. Wt.	Length	Hemoglobin per 100 cc.	Heart Wt. Moist	Heart Wt. Dry	Dry Heart Wt. Length Ratio
			days	gm.	cm.	gm.	gm.	gm.	
M	Normal	18	65.9	186	17.4	15.7	.747±.027	.170±.008	.010
M	Hypertrophied	20	65.3	138	15.5	5.6	1.061±.038	.214±.008	.013
M	Recovered	14	89.7	215	18.2	15.1	1.111±.028	.244±.007	.013
F	Normal	15	83.0	167	16.3	16	.656±.016	.151±.004	.009
F	Hypertrophied	12	65.3	107	14.5	5.8	.990±.083	.193±.017	.013
F	Recovered	8	110.2	187	17.8	16.4	.978±.028	.220±.005	.012
M	Normal	5	44	107	14.6	15.5	.504	.108	.007
F	Normal	3	45.3	95	13.7	16.3	.505	.109	.008

[1] Forman, M. B., and Daniels, A. L., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 479.

haemoglobin and red cell count were again within the normal range, their hearts were compared with those of normal individuals.

The findings indicate that nutritional anemia produces a true cardiac hypertrophy, the result of increased muscle fiber. The dried heart weights were found to be distinctly heavier, whether compared on the basis of age, weight, or length, the degree of enlargement based on the dry heart weights being inversely proportional to the degree of anemia. The ratio of dried heart weight to body length was found to average approximately the same for male and female in both normal and anemic groups, although a consistently higher ratio was observed amongst the latter. During the period of observation (24 to 44 days), the animals receiving the anemia correcting diet continued to show a high degree of hypertrophy in spite of the fact that the blood haemoglobin and red cell count had returned to normal.

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A Simple Method of Demonstrating Blood Circulation in the Wings and Wing-pads of the Cockroach, Periplaneta americana Linn.

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It has long been known that blood or hemolymph circulates in the wings of certain insects (Carus, Moseley, Brocher, and others). Most of these authors apparently observed the wing circulation with difficulty and were unable to identify completely the circulation scheme in a single insect wing at a given time. Such circulation diagrams, therefore, represent averages of a number of observations and conjectures based upon these. Brocher,[1] until recently,[2] saw the movement of individual blood cells only occasionally. Moseley[3] was unable to observe blood circulation in the forewing of the cockroach, *P. orientalis*.

The present paper reports a simple method of observing the details of blood circulation in the wings and wing-pads, as well as in the appendages and certain portions of the body, of the cockroach, *P. americana*.

[1] Brocher, F., *Arch. Zool. exp. et gen.*, 1916, **55**, 347.

[2] Brocher, F., *Rev. Suisse Zool.*, 1929, **36**, 593.

[3] Moseley, H. N., *Quar. J. Micr. Sci.*, 1871, **11**, 389.