

THE VOLUME OF THE BLOOD DURING HIBERNATION AND OTHER PERIODS OF THE YEAR IN THE WOODCHUCK (*MARMOTA MONAX*)

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INTRODUCTION

In a previous paper (1) by one of us certain changes in the number of blood corpuscles, the amount of hemoglobin and the specific gravity of the blood during hibernation and other stages in the annual cycle in the woodchuck were reported. Such data while instructive are not of full value without a knowledge of the changes in the quantity of blood.

During the last sixty years the blood volume of man and a number of lower animals has been the subject of much study by a variety of methods, but apparently no data are on record regarding the volume of blood during hibernation.

Dubois (2) bled an active marmot through the cut carotid artery till the blood stopped of its own accord, and got 43.26 grams per kilogram of body weight. Similar treatment of a hibernating animal with a rectal temperature of 8°C. yielded only 31.30 grams of blood per kilogram. This animal did not die, however, and the next day, at which time it had a rectal temperature of 35.4°C., another 28.75 grams per kilogram of body weight was obtained by hemorrhage. But this gives no valid idea in regard to the relative amount of blood in the two animals because of the long interval intervening between the bleedings in the case of the hibernating animal and the probable influx of lymph in the meanwhile, and because there was apparently no effort made to estimate the amount of blood remaining in the animals. The present investigation was therefore carried out in the hope of getting some idea of the blood volume during the various seasonal conditions exhibited by an animal subject to a long hibernating period.