

A FURTHER STUDY OF THE BLOOD GASES DURING HIBER-
NATION IN THE WOODCHUCK (*MARMOTA MONAX*)
THE RESPIRATORY CAPACITY OF THE BLOOD

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INTRODUCTION

In a former paper (1) it was shown that during hibernation of the woodchuck there is an increase of CO_2 in the blood from about 70 volumetric per cent to as high as 100 volumetric per cent in the case of the venous blood, and from about 68 volumetric per cent to as high as 87 volumetric per cent in the arterial blood. This confirmed the observations of Dubois on the European marmot. In discussing the results it was recognized that this difference in the blood of the two states might have been exaggerated to some extent because of the use of ether in immobilizing the active animal, while no anaesthetic was used on the dormant ones. It was concluded from a single case in which chloretone was used that the probable error was slight. In order to make sure of this point, it was finally decided to make a more extensive series of observations along a similar line except that some other means be used to immobilize the active animal.

A saturated aqueous solution of chloretone was found to be very slow in its action and to involve the injection of too large a quantity of water to be absorbed and thus tend to dilute the blood. An alcoholic solution was tried and found to be more satisfactory, especially when aided by cocaine as a local anaesthetic, if given in a large enough dose. Due, however, to the death of about fifteen woodchucks from some unknown cause, the number of animals available for this experiment was unintentionally limited.

It was also mentioned in the paper referred to above that DuBois (2) concluded that the respiratory capacity of the blood was greater during hibernation because of an increase in the concentration of the blood. He found that defibrinated blood obtained from a hibernating