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The effects of graded saturation of the circulatory blood on the respiratory response to the administration of carbon dioxide and on the total oxygen consumption of the dog.

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Saturation of the blood with carbon monoxide resulted in an increased pulmonary ventilation both on the administration of room air and of a mixture of carbon dioxide in room air. Desaturation led to a return to normal respiratory response, though not always complete.

The effects of saturation of the blood with carbon monoxide on the rate of oxygen consumption were variable. In some instances the rate of oxygen consumption decreased progressively from the outset of saturation. In other instances this decrease in the rate of oxygen consumption was preceded by a temporary increase in the rate of oxygen consumption.

This observation along with the finding that the respiratory response to the administration of carbon dioxide was not as constant as that noted with hemorrhages[1] points to circulatory compensations which are absent if the blood volume is less than normal.

Since the effects of carbon monoxide poisoning and hemorrhage are in general the same they are apparently due, in both instances, to similar disturbances in oxidation and transport of blood gases.

The results obtained on saturation of the blood with Carbon monoxide, therefore, support our view[2] on the significance of the coordination of the dual function of hemoglobin and the volume flow of blood in relation to the mechanism of the chemical control of respiration.

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1 Gesell, Capp and Foote, PROC. SOC. EXP. BIOL. AND MED., 1921, xix, 1; *The American Journal of Physiology*, 1922, lxiii, 1.

2 Gesell, Foote and Capp, *The American Journal of Physiology*, 1922, lxiii, 32.