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On the relation of blood-volume to the nutrition of the tissues. IV. The effects of hemorrhage and subsequent injection of gum-saline on total oxygen consumption.

By ROBERT GESELL, CHARLES S. CAPP and FREDERICK S. FOOTE.

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The effects of progressive hemorrhage were studied on the dog under morphine-urethane anesthesia. We found that the greater the hemorrhage the greater the reduction in the amount of oxygen consumed and that a hemorrhage amounting to 1/2 per cent. of the body weight may elicit a decided reduction. Subsequent injection of gum-saline, bringing the blood volume back to normal, increased the amount of oxygen consumed. The amount of oxygen consumed immediately after an injection was greater than the consumption a few minutes later. We believe this, along with the decreased amount of oxygen consumed, points to an oxygen hunger during a period of decreased blood-volume. The results here reported are in agreement with those recently published by Doi.[1]

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A comparison of the waves of blood pressure produced by slow and by rapid breathing.

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The effects of rapid breathing were compared with those of more normal breathing upon the systolic blood pressure in man. Supplementary data were also obtained on the dog and cat.

For the well-known changes of blood pressure that occur during a single respiration, and which are more or less synchronous with the changing respiratory phases, we have proposed the name of simple cardio-respiratory waves to distinguish them from those waves produced by rapid breathing.

[1] Doi, Y., *Journal of Physiology*, 1921, lv, 249.