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The differences between arterial and venous oxygen contents in heart failure.

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The paper is a report of an attempt to estimate the circulation by the difference in the oxygen content of arterial and venous blood.

1. *Arterial Blood.*—Being unable to draw samples from an artery, we take the venous blood, saturate it with air, and determine either its oxygen content or its hemoglobin content, which is proportional to the oxygen capacity. The oxygen content is determined by Van Slyke's method, previously described in the Proceedings of this Society. The hemoglobin is determined by a colorimetric method of Dr. W. W. Palmer.*

2. *Venous Blood.*—Ten c.c. of blood, drawn from the arm vein without any stasis, is deposited together with a little oxalate below mineral oil. A sample of 2 c.c. is transferred to the chamber of the Van Slyke apparatus without exposure to air, and the chemically bound oxygen determined.

RESULTS.

Twenty-three determinations have been done on 7 normal persons in rest and 27 on 13 resting patients.

1. *Normals.*—The amount of oxygen taken away has varied from 2.5 to 9 volumes per cent.

2. *Patients.*—In clinical compensated patients the difference between arterial and venous oxygen fell between 2.5 and 9 volumes per cent. In clinically decompensated, it was usually about 9 volumes per cent.; the highest found was 16. Three patients are followed under treatment.

The difference between arterial and venous oxygen appears, therefore, to be related to the degree of retardation in the circulation, although the present data justify no assumption of exact proportionality.

* See this number of the proceedings p. 175.