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# The pressure changes in the right ventricle studied by optically recording manometers.

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Before it is possible to interpret the inspiratory and expiratory changes in the shape and amplitude of right ventricular pressures in the unopened chest, it is necessary to know the correct contour of the pressure curve during normal cardiac cycles uninfluenced by respiration. Inasmuch, however, as the recent studies of Straub,[1] Piper[2] and C. Tigerstedt (left ventricle only[3]) by optically recording manometers reopened the old question as to the existence of a plateau or rounded top in the ventricular pressure curve, an attempt was made not only to reinvestigate the contour of the curve but to explain the causes of the different records obtained.

The changes of right ventricular pressure were, therefore, studied in open chest experiments (in which a right auricular pressure equal to intrathoracic was maintained) by inserting a sharp cannula of an optical manometer with high vibration rate through the musculature near the base of the right ventricle. The instrument and method were demonstrated.

The results show that the curve obtained depends, in a large measure, on the sensitiveness and periodicity of the manometer used. (1) With a manometer, periodic for the pressure change involved, all the details described by C. Tigerstedt for the left ventricular curve appear, viz.: an auricular wave, vibrations due to closure of tricuspids, superimposed waves on ascending level, broad, declining top, semilunar vibrations, rapid fall. (2) When the manometer becomes damped so as to become approximately aperiodic, the smaller vibrations on the ascending and descending limb are entirely lost or only faintly indicated. (3) Although

[1] Straub, *Arch. f. d. ges. Physiol.*, 1911, CXLIII, p. 69.

[2] Piper, *Zentralbl. f. Physiol.*, 1912, XXVI, No. 10, p. 429; *Arch. f. Physiol.*, 1912, p. 343.

[3] C. Tigerstedt, *Skan. Arch. f. Physiol.*, 1913, XXVIII, p. 37.

many variations of detail occur every record gives evidence of more than an evenly rounded top. During the period of cardiac ejection, the curve rises slowly and reaches a rounded summit and the wave slowly declines until the movement of cardiac relaxation, after which a sudden and abrupt fall occurs. When curves are written with too sensitive manometers the flattened top is less apparent to the eye, while, if also written on slowly moving paper as was done by Straub, this top fades to a mere suggestion requiring careful scrutiny to detect.

The results, therefore, corroborate the work of Piper and C. Tigerstedt that, during the systole of normal beats, a more or less flattened top (plateau ?) occurs while the records of Straub are not clearly typical because they were too large for the pressure change and written on too slowly moving paper. With periodic manometers vibrations are superimposed on the ascending and descending limbs but these are either lost when the manometer is aperiodic or so sensitive that a very large record is written.

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## A comparative study of the Ehrlich and Salkowski tests for indol production by bacteria.

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One of the bio-chemical reactions extensively used for the identification of bacterial types is the production of indol from peptone in a peptone-water solution. Of the various tests that might be used for the detection of that substance the one most widely adopted in this country is the so-called Salkowski test ($H_2SO_4 + KNO_2$). In Germany Bohme (1905) and in England Marshall (1907) have found, after a comparative study, that the Ehrlich reaction (Paradimethylamidobenzaldehyde + HCl) gives more uniform and constant results.

This study was undertaken in order to obtain further light on the relative reliability of the two tests. Seventy-five organisms,