secondarily upon its relation to the body. It may be shown that under certain conditions, the head is the only part affected.

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The respiratory and cardiac variations of intrathoracic pressure and their significance in cardiac contraction.

By CARL J. WIGGERS.

[*From the Physiological Laboratory, Cornell University Medical College, New York City.*]

When intrathoracic pressure is recorded by a trocar connecting with a calibrated Frank's segment capsule it is found that the intrathoracic pressure does not change smoothly with inspiration and expiration, but each respiratory variation consists of a series of negative and positive cardiac changes. The ratio between the cardiac and the respiratory variations range from 1 : 3 to 1 : 6. Thus, in an animal whose entire intrathoracic variation was 36 mm. of water, the cardiopneumatic changes were equal to 11 mm. during an apnea period, increased to 15 mm. in inspiration and fell to 9 mm. during expiration. A comparison with simultaneous intraventricular pressure curves shows that the negative pressure decreases slightly during the period of rising intraventricular tension; then, as the ejection period begins, gives a sharp vibration and then drops sharply until it reaches a turning point, after which the curve follows the reverse of the contour of the intraventricular pressure curve.

Are these variations in whole or in part responsible for the inspiratory fall of arterial and intraventricular pressures that occur when cardiac rhythm is regular? It is conceivable that the more negative pressure during inspiration might do this either by directly counteracting the cardiac systole or by diminishing its vigor through a decrease in the initial intraventricular tension at the beginning of systole. In either case the steepness of the isometric rise of the curve should show a decrease. That this is so is shown in experiments where considerable negative pressure is applied to the heart by a cardiometer over the top of which the pericardium was tied.

When extracardial pressures equal to those previously existing in the closed thorax are applied, however, the records so far obtained show no alteration in the steepness of the curve, nor is any difference discernible when the cardiometer is left open to the air or in communication with a tambour within which a pressure equal to 15 mm. of water develops during systole. Furthermore, the records taken from naturally breathing animals *by a sound correctly placed within the ventricular cavity* also show no decreased incline of the isometric rise; in fact, some records reveal a slightly steeper curve during inspiration.

These results indicate that such negative pressures as are normally developed within the chest during cardiac systole or the acts of respiration are without direct effect on intraventricular pressure and hence cannot be responsible for the fall of arterial pressures during *inspiration.*

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The effect of gentian violet on enzymes, toxines and ultra-microscopic infections.

By JOHN W. CHURCHMAN.

[*From the Laboratory of Surgery, Yale University.*]

Since the observations reported by me, two years ago, on the effect of gentian violet on bacteria, studies have been carried on to extend these observations into the field of enzymes, toxines and ultra-microscopic infections. The original purpose of these experiments was to offer a new method of studying ultra-microscopic infections and to see if it might not be possible, by adding a dye to an infectious agent, to stain and thus to kill organisms too small to be seen. Experiments of a similar nature are now under way in this laboratory with inoculable tumors.

The following groups of active agents have thus far been studied:

1. Organized ferments (yeast). Yeast cells when stained with gentian violet lose entirely their power of fermenting sugar.

2. Unorganized ferments. (*a*) Ptyalin (salivary diastase). This ferment when stained with gentian violet is quite as active as