SCIENTIFIC PROCEEDINGS

ABSTRACTS OF COMMUNICATIONS.

Eighty-third Meeting.

University and Bellevue Hospital Medical College, April 18, 1917. President Gies in the chair.

78 (1256)

Quantitative experiments demonstrating the mechanism of the inhibition of growth.

By JACQUES LOEB.

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The problem of regeneration can also be stated in a negative way, namely: Why do tissues and dormant anlagen of organs not grow in an intact organism, while we know that they grow when the buds or tissues are isolated? The laws of inhibition were studied by a quantitative method.

No notch of a leaf of *Bryophyllum* will grow while the leaf is a part of the whole plant but the notches will grow when the leaf is isolated. When a leaf is subdivided into as many pieces as there are notches, each notch will give rise to a shoot; but if the leaf remains intact only few will grow out. The writer concluded that this again is a phenomenon of inhibition.

This inhibition he had explained in former papers[1] as being due to the fact that the inhibiting organ takes away the material required for the growth of the inhibited organ. If this were the case, we should expect that the total mass of shoots produced by a leaf in a certain time is approximately the same no matter whether the leaf produces few or numerous shoots. This is true

[1] Loeb, J., *Bot. Gaz.*, 1915, LX, 249; 1916, LXII, 293; 1917, LXIII, 25. "The Organism as a Whole," New York, 1916, p. 153.

to a surprising degree of exactness and the following numerical relations were established:

1. If a pair of sister leaves (of equal size) are isolated both will produce under equal conditions and in equal time approximately the same mass of shoots, although the number of shoots may differ considerably in the two sets of leaves.

2. If the mass of one of the two sets of sister leaves is diminished (by cutting out pieces of the leaves), the mass of shoots produced in the two sets is in proportion to the masses of the two sets of leaves.

3. It had been shown by previous experiments that if a piece of stem is attached to a leaf the growth of the notches of the leaf is retarded. It has been shown by the new experiments that the mass of shoots of leaves attached to a piece of stem is smaller when the mass of the stem is larger and that it also varies directly with the size of the leaf. These quantitative data furnish the basis for a chemical theory of regeneration.

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A new method of obtaining samples of the respiratory gases in animals. A demonstration.

By **A. L. MEYER.**

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I wish to demonstrate a new method of obtaining a sample of air from the lungs, bronchi and trachea of the dog. Chloretone, dissolved in olive oil, is given intraperitoneally. The animal is tracheotomized and a T-shaped glass cannula is introduced. A Meltzer pleural cannula (new form) is placed in each pleural cavity. The intrathoracic negative pressure is then restored and the pleural spaces tested for air-tightness. It should be possible to maintain the negative pressure indefinitely. If any change occurs, it must be in the direction of an increase owing to the absorption of gases through the pleuræ.

Both pleural cannulæ are now connected with a source of air