

SCIENTIFIC PROCEEDINGS.

ABSTRACTS OF THE COMMUNICATIONS.

Forty-ninth meeting.

University and Bellevue Hospital Medical College. May 15, 1912.

President Ewing in the chair.

70 (679)

The effect of chemicals on the division rate of protozoa.

By **GARY N. CALKINS.**

[*From the Department of Zoölogy, Columbia University.*]

These experiments have been carried out during the past year for the purpose of finding out whether the products of nucleoproteid breakdown have any effect upon the division rate of free-living cells, the ultimate aim being to get some light on the controlling factors of cell division.

Two ciliated protozoa were used. One, *Actinobolus radians* Stein, lives exclusively on a diet of *Halteria grandinella*, another ciliate. The other, *Blepharisma undulans* Stein, lives on bacteria. Four control lines of each have been watched, fed, and the number of divisions recorded daily, and curves based upon the averaged division rates for five day periods, give the fluctuations in vitality of the organisms as measured by the division rates. Periods of depression, and of decreasing and increasing vitality have been clearly marked. Individuals for experimentation were in all cases sister cells of the control lines of the same dates.

The chemicals used included various amino acids, nucleins, and their derivatives, for many of which I am indebted to Dr. Levene and Dr. Walter Jones. In each experiment four strengths of chemical were used after empirical determination of the lethal dose. The number of divisions of all four lines were averaged

for five-day periods for comparison with the controls of the same periods, and all experiments were continued for at least ten days.

The results show that amino acids and their derivatives have but slight effect on the division rate at any period of vitality. The purins and their derivatives have but a slight effect on the division rate when vitality is very low or very high, but a marked effect of increasing the rate when vitality is decreasing (allantoin) or increasing (hypoxanthin, xanthin).

71 (680)

The first onflow and diastolic waves in the venous pulse.

By **E. M. EWING.**

[From the Department of Physiology of the University and Bellevue Hospital Medical College.]

Simultaneous records of the contractions of the auricle and ventricle, intraventricular pressure, arterial pulse, and the pulse of the superior vena cava were made.

Previous investigators have not agreed as to the time relations of the 3d positive (Mackenzie's "v") wave, some placing its appearance during ventricular systole, and others believing that it occurs in diastole. This confusion has arisen from the fact that Mackenzie's "v" wave in reality consists of two positive waves which are separate both in time and origin. (Bard described two such waves, but was not definite concerning the time relations.)

The first of these waves has been called the "onflow" wave, and the second, the "diastolic" wave. They are preceded, of course, by the auricular and systolic ("c") waves.

In a series of some fifty dogs, the onflow wave has always appeared just at the end of auricular relaxation, and therefore, during the first half of ventricular systole. The wave is terminated at the very beginning of ventricular diastole. The origin of the wave cannot be ascribed to the passive auricle, nor to the ventricle, the base of which is still moving downward, and which would tend, therefore, to produce a negative, rather than a positive wave. The wave must simply represent the increased pressure