the amount of blood in the general circulation is nearer the normal. It is quite true, as Jurgensen supposed and as Gerhart also believed, that the impulse from the left ventricle is directly felt by the right — even the pulsation of the left ventricle communicated through the imperfect valve to the left auricle is transmitted unchanged to the pulmonary arteries, just as the pulsation of the right ventricle is transmitted unchanged to the pulmonary veins. Since the right ventricle contracts simultaneously with the left this direct beat of the two ventricles against each other does probably account in part for the hypertrophy of the weaker right ventricle. It may be shown to occur by inserting a cannula into the cut end of the pulmonary artery toward the lung so as to receive the blood through the lung where it is found that on the production of mitral insufficiency the pressure in that manometer rises and the curve shows high pulsations synchronous with those of the ventricle.

Mitral stenosis was produced by means of a clamp or by a coarse suture passed through the heart and about the mitral ring. The pressure is seen to rise very high in the pulmonary circulation but because of the smaller amount of blood left to circulate there it is lowered throughout the systemic circulation.

26 (118). **"Paramecium aurelia and mutation": GARY N. CALKINS.**

The ordinary species is *Paramecium caudatum;* superficially, it resembles *P. aurelia.* The latter differs from the former in smaller size, in rounded instead of attenuated posterior end, and in the possession of two instead of one micronucleus. The last is generally regarded as the most important difference between the two species. In March, 1905, a pair of conjugating *Paramecium caudatum* was isolated from a culture in an epidemic of conjugations. The ex-conjugates had all of the characteristics of *P. aurelia.* One died before many generations in culture, the other is still living and is now in the 346th generation. This one retained the characteristics of *P. aurelia* until about the 45th generation after conjugation, when it lapsed again into the *P. caudatum* form, with one micronucleus, and other characteristics of *P. caudatum.* The latter characters are still maintained.

The observation indicates one of two things. Either this is an

interesting case of mutation of species with lapse into the parent form after several generations, or the specific characteristics are inadequate and *P. caudatum* and *P. aurelia* are but variants of one species. The latter is the more reasonable hypothesis and on grounds of priority, the common forms of paramecium should be called *Paramecium aurelia.*

Physiologically the form known as *P. caudatum* is more vigorous in culture than is *P. aurelia.* During the time that the cultures were in the *P. aurelia* phase the division rate was relatively low (four divisions in five days), but soon after the change to the caudatum form the division-rate rose to two and a half divisions per day on the average for forty days, which is the highest rate on record. With this physiological difference there was a marked difference in the relative volumes of micronucleus and cell-body but no difference in the relative volumes of macronucleus and body.

27 (119). **"Experiments with some saline purgatives given subcutaneously": JOHN AUER.**

In spite of the large amount of work which has been done regarding the effect of subcutaneous and intravenous injections of saline purgatives, investigators are still in disagreement. To mention only the most recent writers, MacCallum[1] claims that "*all these salts which act as purgatives when introduced into the stomach or intestines have the same action when injected subcutaneously or intravenously.*" Eckhardt[2] on the other hand, states that "Die Mittelsalze haben bei unseren Haustieren keine abführende Wirkung" and that "Im Gegentheil wirken sie, auf diesem Wege einverleibt, häufig verstopfend." Both authors used approximately the same dose, injected the same salts subcutaneously and intravenously and yet arrived at diametrically opposite results.

In an extensive series of experiments already published, Meltzer and the author[3] have shown, among other things, that the subcutaneous injection of magnesium sulfate does not produce purgation. In view of the peculiar properties of magnesium salts the investigation was extended to some of the other saline purgatives.

[1] MacCallum, J. B.: *American Journal of Physiology*, 1904, x, p. 101.

[2] Eckhardt: Inaugural Dissertation, Giessen, 1905.

[3] Meltzer and Auer: *American Journal of Physiology*, 1905, xiv, p. 366.