details of processes commonly seen clinically but about which much theorizing must be done in the wards.

25 (117). **"On the blood-pressure relations in mitral insufficiency and stenosis": W. G. MACCALLUM** and **R. D. MCCLURE.**

In the course of experiments like those described in the preceding communication, blood pressure in various portions of the circulatory apparatus was recorded after mitral insufficiency had been produced by introducing a curved knife hook into the left auricular appendage and cutting some portion of the mitral valve — a systolic murmur could then be heard especially loud over the auricle and along the pulmonary veins with usually a thrill felt over the auricle. Interest attaches especially to the exact explanation of the hypertrophy of the right ventricle since, as Gerhart points out, there is an obvious obstruction to the flow of blood through the mitral orifice into the ventricle.

This is true only when the left ventricle at once accomodates itself to the condition by dilating to receive the excessive amount of blood which accumulates in the auricle, that is, the amount thrown into it from the right ventricle plus the amount regurgitated, and then succeeds in expelling it all. Unless this happens the auricle is unable to empty itself and a condition arises in which the amount of blood circulated is smaller than normal, the remainder being stagnant in the pulmonary circulation and the right ventricle is found to be driving a uniformly smaller amount of blood into a cavity (the pulmonary circulation) in which there is some stagnant blood and into which more is forced from the left ventricle during systole. The elevation of pressure from this stagnation need not be great and in the experiment where these conditions seem to prevail the pressure in the pulmonary is not much elevated. Ordinarily, however, the left ventricle dilates to receive the excessive blood, then regurgitates some and discharges nearly the normal amount into the aorta. The right ventricle then attempts to discharge into the pulmonary circulation the same large amount at the moment when the stronger left ventricle is also forcing into that cavity the amount constantly regurgitated. The pulmonary pressure is again not much elevated — not more than before but

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