

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, MacCallum¹ 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.*" Eckhardt² on the other hand, states that "Die Mittelsalze haben bei unseren Haustieren keine abführende Wirkung" and that "Im Gegenteil 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 author³ 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.

In this investigation rabbits weighing about 1,500 grams were used and the salts chiefly employed were sodium sulfate and sodium phosphate. Sodium sulfate, in 4 per cent. and 25 per cent. solutions, when injected subcutaneously in 15 c.c. doses, caused no purgation in any of the experiments. Five or six hours after an injection, the feces that were passed often weighed less than five grams and were of normal consistence and form. Only rarely did the total 24-hour fecal output exceed 15 grams and the pellets were moderately hard, dry and well formed. Similar results were obtained when 4.5 per cent. sodium phosphate, in 15 c.c. doses, was injected subcutaneously. Both salts failed to cause purgation but induced a moderate degree of constipation.

The action of sodium sulfate and sodium phosphate on intestinal peristalsis was also studied. The intestines of rabbits anesthetized by morphin were observed with and without a saline bath. The subcutaneous injection of sodium sulfate and sodium phosphate caused a definite increase in the pendular motions of the small gut, especially of the duodenum. These movements, however, were not of a character to cause the evacuation of unformed feces, an impression which was confirmed by the results already reported. Increased intestinal movements and purgation are therefore by no means synonymous terms; the two may possibly even be independent of each other. Leubuscher,¹ for instance, found that 5-10 grams of sodium sulfate or magnesium sulfate injected into the stomach of rabbits produced in the majority of cases no increase in the frequency or intensity of peristalsis.

The experiments which have been briefly reported lead to the conclusions first, that the subcutaneous injection of sodium sulfate or sodium phosphate does not produce purgation in rabbits, and secondly, that the pendular movements of the small gut are moderately increased thereby.

28 (120). **"The effects of extra stimuli upon the heart in the several stages of block, together with a theory of heart-block": JOSEPH ERLANGER.** (Presented by **S. J. MELTZER.**)

This research was undertaken with the object primarily of testing the statement made by Hering that the absence of a compen-

¹Leubuscher: *Virchow's Archiv*, 1886, civ, p. 104.