gators are of the opinion that it is caused by malnutrition of the heart, due to the hemolytic effect of the bile. This is *a priori* improbable, since the fall of blood-pressure sets in immediately at the beginning of the injection and the return to normal begins as soon as the injection is stopped. The authors have, however, disproved this theory by direct experiment. On quickly injecting bile, the blood-pressure fell rapidly and the animal died in less than two minutes. The blood which was obtained immediately from the right ventricle did not show a trace of hemolysis.

Autopsies of rabbits killed rapidly in the above-mentioned manner showed in most cases nothing but dilated flabby hearts. The failure of the heart can be caused either by the bile affecting anatomically the heart muscle or the ganglia, or by a functional process — by inhibiting the heart's action. It is known that bile produces structural changes in muscles, and in nerve fibers and nerve cells. But it is hardly conceivable that the structural changes could be induced so speedily and it is still less conceivable that structural restitution would occur with such rapidity as has been observed to take place in the return of the blood-pressure. It is therefore more probable that the bile exerts an inhibitory effect upon the heart.

In this connection the following experiments are of interest: (1) The inhibitory effects of a stimulation of the peripheral end of the vagus not only did not diminish during an effective injection of bile, but in a few instances were distinctly improved. (2) The inhibitory effect of the vagus was manifestly unimpaired shortly before the death of the animal, when the blood-pressure was not more than a few millimeters of mercury and the heart-beats were scarcely perceptible.

32 (78). **"A report of feeding and injection experiments on dogs after the establishment of the Eck fistula": P. B. HAWK.** (Presented by **ALFRED N. RICHARDS.**)

The fistulous opening between the portal vein and the inferior vena cava was made in six dogs by Dr. J. E. Sweet. Observations were made as to the behavior of the animals when fed on a diet of proteid food. One typical experiment may be summarized as follows: During eleven days on a mixed diet there were no abnormal symptoms. On the four succeeding days beef meal and milk

were fed, with the result that on the fourth day pronounced ataxia, loss of sight and hearing, complete anesthesia, and catalepsy were observed, recovery occurring on the next day. After fasting for 24 hours the animal was placed on a diet of fresh lean beef. In five days a recurrence of the above symptoms was noted. The death of the animal occurred on the fifty-ninth day of the experiment, after the dog had undergone a loss of 42% of his weight. Autopsy showed a fistulous opening 2 cm. in length and no collateral circulation. In other cases the symptoms described occurred only after the addition of Liebig's extract to the meat diet.

The administration to normal dogs of sodium carbamate either by mouth or by intravenous injection, gave rise to none of the symptoms observed by Pawlow and associates.

33 (79). **"On chemical fertilization": JACQUES LOEB.** (Presented by **WILLIAM J. GIES.**)

1. In two previous publications the author mentioned the fact that by applying two different methods of treatment to the unfertilized egg of the sea urchin, this egg could be caused to develop in a way which resembled in all its essential features the development of the eggs fertilized with sperm. These two methods consisted, first, in putting the eggs for about two hours in hypertonic sea water (the method used in the early experiments) and, second, in exposing the eggs for from one to two minutes to sea water, to which a certain amount of acetic acid or formic acid had been added. When the old method alone was used the eggs did not form a membrane, nor did the larvas rise to the surface. When the acid treatment alone was used, the eggs formed a membrane and after about six hours divided into from two to six cells, but then died. When the eggs were exposed to the acid for only a short time, *e. g.*, for three-fourths of a minute, not all the eggs formed a membrane when put back into normal sea water; and in this case only those divided into two or four cells and subsequently died within 20 hours, which had formed a membrane, while those eggs which had not been exposed long enough to the acid to form a membrane neither segmented nor died. If both methods of treatment were combined, however, those eggs which had formed a membrane developed at about the same rate as the eggs fertilized