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## The internal secretion of the mammæ as a factor in the onset of labor.

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The importance of the internal secretions has come to be well recognized in modern physiology and medicine. Among other interesting observations in this field may be mentioned the fact that Miss Lane-Claypon and Starling (*Proc. Roy. Soc.*, 1906, B. 505) have shown that the stimulus to the hypertrophy and lacteal activity of the mammary glands, in pregnant animals, comes not from the ovaries, or the placenta or the uterus, but from the fetus itself. In connection with our studies on the toxic nature of the colostrum of the cow, ill with parturient paresis, we have succeeded in showing that the colostrum both of the normal cow and that of the cow ill with parturient paresis contain a substance, or substances, which have the power to bring on abortion in pregnant guinea pigs; and that neither normal salt solution (0.85 per cent. NaCl) nor the fresh milk of a healthy dairy herd have the power to bring on premature labor. It has also been shown that boiling for a short time does not destroy the power of the normal colostrum of the cow to accomplish premature labor in pregnant guinea pigs.

In this abstract of our paper on this subject we have only space for the details of one experiment, which are as follows:

*Experiment 15.*—A healthy guinea pig in the 5th to the 7th week of pregnancy received by intraperitoneal injection 10 c.c. of sterile, normal salt solution (0.85 per cent. NaCl). The injection caused no discomfort and at the end of five days she had not aborted. She then received by intraperitoneal injection 10 c.c. of fresh milk, from a healthy dairy herd. This was heated to 38° C. before the injection. The pig showed no discomfort and had not aborted at the end of four days. She then received, by intraperitoneal injection, 8 c.c. of the first, fresh, whole colostrum of a normal cow (second calf). This colostrum was heated to 38° C. before the injection. Following this last injection this

pig aborted in 60 hours, giving premature birth to two fetuses, each 6.5 cm. in length, and 60 hours after this she aborted a second time, giving premature birth to one fetus 7 cm. long.

It is evident from these results that the colostrum of the normal cow contains a substance, or substances, capable of causing a premature onset of labor in pregnant guinea pigs. This substance is also present in the colostrum of cows ill with parturient paresis. It resists boiling and is probably of the nature of a hormone. Our results bring to light a new and hitherto unrecognized correlation between the mammary glands and the uterus. According to Lane-Claypon and Starling the fetus through its internal secretions stimulates the hypertrophy and lacteal activity of the mammary gland. It is evident from our experiments that the internal secretions of the mammary gland stimulate the pregnant female to labor and the birth of the offspring.

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## Some vaso-reacting substances in blood serum.

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These observations supplement our previous articles on serum digestive processes. All the reactions were obtained by the kymograph, the pressure in the carotid of the normal dog being recorded with a mercury manometer. The injections were made into the femoral vein. The normal sera (horse and rabbit) give a slight rise, whether freshly drawn or after standing for some weeks as far as we have observed.

The whole serum of a horse which had been injected with 800 c.c. of strong diphtheria toxin gave no reaction with the serum drawn the first three days after the injection. The serum of the 4th, 5th, and 6th day each gave depressions, when given in 8 c.c. volumes.

Another series of sera from the same horse, bled 6 weeks later gave well-marked depressions, with the sera drawn on the 3d, 4th, 5th, 6th, 7th, 8th and 9th day after the toxin injection.

Several specimens of refined antidiphtheria sera, some of which had given rise to rashes in humans, gave well-marked depressions.