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.

By **J. P. ATKINSON** and **C. B. FITZPATRICK.**

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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.

These depressions are not caused by the injection of minute quantities of ammonium sulphate per se. A recent, whole, anti-pneumococcus serum, which produced rashes in humans, gave in a young dog well-marked depressions and after the total injection of 35 c.c. given in 7 c.c. volumes, there was a rise, 13 minutes after which the dog died. This depressor substance practically disappeared after four days standing in the ice-box.

We have noticed a similar rise after the injection of numerous 6 c.c. doses of beef extracts, each of which had produced marked depressions; we have however been unable to kill a dog with these injections. These observations would seem to indicate that the amount of depression per se within moderate limitations is not so important as the recoil or loss of recoil.

Three c.c. of nutrient peptone broth gave no depression. The blood sera of a rabbit, which had 5 days previously been injected with nutrient peptone broth gave splendid depressions in 6 c.c. volumes.

The blood sera of rabbits, which had been 5 days previously injected with heated, sterilized, cultures of the typhoid bacillus, pneumococcus, and streptococcus, gave remarkable depressions in 4 c.c. volumes.

The injection of 2½ c.c. of the serum of a rabbit which died 4½ hours after having received 1,000 m.l.d. of tetanus toxin intravenously, gave a decided depression.

The injection of 2½ c.c. of the serum of a rabbit which had 3 hours previously received 1,000 m.l.d. of diphtheria toxin, intravenously, gave a depression. The depressor substance of both of these sera practically disappeared, after standing 6 days in the ice-box.

Adrenalin chloride prevents the depression caused by the tetanus depressor serum.

Twelve m.l.d. and 15 m.l.d. of diphtheria toxin gave no reaction when injected into the dog intravenously, 3 c.c. of broth containing 210 m.l.d. of diphtheria toxin gave a well-marked depression when injected intravenously into a dog which had been sensitized 24 hours previously with 100 m.l.d. of diphtheria toxin.

The blood serum of rabbits injected with 3 m.l.d. of diphtheria and tetanus toxins, drawn 4 days after the injections, gave marked depressions.

Contaminated sera cause depressions.

An antimeningococcus serum, which had produced rashes in humans caused well-marked depressions in 6½ c.c. doses.

Serum of a diphtheria antitoxin horse, which was recovering from an attack of indigestion gave a slight depression. This serum was secured through the courtesy of Dr. Banzhaf.

These observations have extended over a period of 2½ years.

Note.—We have already reported depressions from the injection of the sera of tuberculous rabbits and from the injection of tuberculins as well as from the injection of the sera of animals inoculated subdurally with normal and hydrophobic brain tissue emulsion.

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A study by the Meyer method of the effect of blood serum and certain inorganic salts on surviving arteries.

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The method employed is an adaptation of the Meyer ox carotid method. Instead of strips from the carotid, rings from the mesenteric or hepatic arteries of the ox strung in pairs were used, and from the coronary arteries as controls. Adrenalin, even in every dilute solution, constricts the former, while it causes the coronary to dilate, whether it be added to Ringer-Locke fluid, or to the ox blood serum. This method, then, based on the contrary effects produced by adrenalin on two kinds of arteries, each possessing a different reactive property to adrenalin, should be ideal for the detection of adrenalin and the separation of it from the confusion with other substances in the blood serum exerting a constrictor or dilator action. Ox blood serum as opposed to adrenalin produces a constriction of both coronary and mesenteric or hepatic arteries. Thus it essentially differs in its action from adrenalin. There is, then, so far as surviving arteries are concerned, a vasoconstrictor property of ox blood serum, not to be explained by the presence of adrenalin.

The constriction produced by ox blood serum on ox arteries