survive the injection several hours or longer there is a profound drop in temperature (as much as 6 degrees Fahrenheit) and numerous petechiæ are found in the heart muscle and in the gastro-intestinal tract. The intravascular precipitation of hematin can be reproduced in vitro by allowing the venous blood of a hirudinized rabbit and 0.5 per cent. hematin solution to flow together. The precipitation is not quantitative and its mechanism is not yet clearly established, but it is probably due to some constituent of the blood serum or plasma. Hematin itself is insoluble in blood serum of the rabbit. Injected intraperitoneally hematin is precipitated from alkaline solution in the peritoneal cavity of the animal.

In addition to the experimental work on rabbits, the blood sera of 19 patients with malarial organisms in the blood were examined for hematin. The blood was taken before and after the paroxysm and before the administration of quinine. In no case was hematin demonstrable. The quantity of hematin which can be detected spectroscopically in human blood serum in 7 cm. layers is less than 1 part in 3,000.

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The effect of pituitary extract on the secretion of milk in the cow.

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Ott and Scott (1), Schäfer and Mackenzie (2), Mackenzie (3), and Hammond (4) are agreed that the intravenous, intramuscular or subcutaneous administration of pituitary extract (posterior lobe) to lactating animals causes a marked increase in the rate of secretion of the mammary gland. The effect appears within twenty or thirty seconds after injection and lasts for three or four minutes.

In order to find out what effect the extract might have on the total quantity of milk per diem and on its quality Gavin (5) experimented with dairy cows under ordinary farm conditions; he

found that there was no change either in the amount or in the composition of the milk for the twenty-four-hour period.

We[1] have found that in the goat, within fifteen minutes after the injection, there is invariably an increase in the quantity of milk obtained and likewise in the percentage of fat. This has also been observed by Hammond. In one of our experiments the fat reached the high figure of 18 per cent. in the milk yielded after injection, while the normal for this animal was about 5 per cent. There is, however, a diminution in the quantity of milk obtained at the next milking period but the fat content remains above the normal for a day or two. The solids-not-fat of the milk do not appear to be affected.

The experiments which we desire to report on this occasion were made on the cow. Two animals at different periods of lactation were used. They were milked by hand, twice a day, at 6 a.m. and 5 p.m., and records were kept of the amount yielded and the percentage of fat for some days before and after the injection, as shown in the following tables:

TABLE I.

GUERNSEY COW; AGE 12 YEARS; WEIGHT 930 LBS.; LAST CALF BORN MORE THAN ONE YEAR AGO.

	Weight of Milk in Pounds.		Percentage of Fat.	
	Morning.	Evening.	Morning.	Evening.
January 28	5.9	4.5	4.8	5.2
29	6.2	4.8	4.8	5.2
30	5.4	5.4	4.6	5.1
31	5.6	5.0	4.6	5.3
February 1	5.8	5.0	4.0	5.3
2	5.9	5.4	4.3	5.2
3	5.8	.....	5.1	.....
4	3.3	5.4	4.8	.....
5	5.9	5.4	4.9	5.0

On February 3, at 4.30 p.m., this cow was milked dry; 4.7 lbs. of milk was obtained which contained 4.9 per cent. of fat. She was in heat and was being examined by a veterinary surgeon which caused some delay. At 5.15 p.m. a Ringer's solution extract of eight whole ox pituitary glands (anterior and posterior lobes) was injected into the external jugular vein, and at 5.30 the milk

[1] Our paper is in the press and will appear in the first number of the *Quarterly Journal of Experimental Physiology* for the current year.

was withdrawn again. The yield was 1.2 lbs. and the fat content 11.2 per cent. Between the injection and second milking the uterus had been washed out by the surgeon, so that the conditions under which this experiment was made were very unfavorable. At 5.45 p.m. the cow was milked again but only two ounces was obtained with a fat content of 9.5 per cent. On the next morning there was a marked falling off in the quantity of milk but the percentage of fat was about the normal, viz., 4.8 per cent.

On the evening of February 4 a control experiment was made as follows: The cow was milked dry at 4.45 p.m., and again at 5.45 p.m. The first yield was 5.4 lbs.—fat 5.9 per cent., and the second about one ounce,—fat 9 per cent., the result of "stripping."

TABLE II.

JERSEY COW; AGE 6 YEARS; WEIGHT 950 LBS.; LAST CALF BORN SEPT. 23, 1913.

	Weight of Milk in Pounds.		Percentage of Fat.	
	Morning.	Evening.	Morning.	Evening.
February 12	10.3	8.9	—	—
13	10.0	9.3	—	—
14	10.1	8.7	6.6	7.0
15	10.4	9.3	6.4	.....
16	6.0	10.1	5.4	.....
17	7.0	10.4	4.4	6.2
18	11.2	.....	6.6	.....

On February 15, at 5.15 p.m., this cow was milked dry and yielded 8.3 lbs. containing 7 per cent. of fat. The Ringer's solution extract of eight pituitaries (posterior lobes alone) was then injected into the external jugular vein and three minutes after the operation had been completed—at 5.30 p.m.—the udder was again emptied. At this second milking one pound was obtained with a fat content of 19 per cent. On milking a third time, 15 minutes later, not more than two ounces could be withdrawn; in this the percentage of fat was 10.5. Next morning (February 16) there was a marked drop in the quantity of milk and some diminution in the percentage of fat.

On the evening of February 16 a second experiment was made on this cow. At 4.45 p.m. the udder was completely emptied and yielded 8.9 lbs. of milk with a fat content of 5.5 per cent. Fifteen minutes later the cow was milked again when about one

ounce was obtained yielding 11.5 per cent. of fat—the result of "stripping." The injection was then made into the external jugular vein as on the previous evening, the same quantity of extract being used, viz., the equivalent of eight posterior lobes. About three minutes after the operation was finished, and fifteen minutes after the second milking, the udder was emptied a third time and now 1.2 lbs. of milk was obtained with a fat content of 14 per cent.

On the morning of February 17 the quantity of milk was again distinctly below the normal as also the percentage of fat.

The examination of the milk constituents other than fat has not yet been completed.

The conclusions to be drawn from the above experiments are that,

1. In the cow, the intravenous injection of pituitary extract (whole gland or posterior lobe alone) leads to an immediate secretion of milk very rich in fat. The effect, however, quickly passes off.

2. There is a corresponding diminution in the yield of milk at the next milking period, and to some extent in the percentage of fat, so that for the twenty-four hours there is practically no increase either in the total quantity of milk or of fat obtained.

We are indebted to the firm of Parke, Davis & Co. for the supply of the material which we have used.

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