Conclusions. 1. There was no apparent relation between arterio-venous blood sugar differences and the following: period of time following milking, arterial blood sugar level and level of milk production. 2. Both glucose and lactic acid are absorbed by the lactating mammary gland in considerable quantities. While the glucose arterio-venous loss is not sufficient to account for all of the milk sugar, the combined loss of the two substances to the lactating mammary gland can account for all of the milk lactose.

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Stimulation of Reproductive Tract of the Infantile Female Mouse by Anuran Anterior Pituitary Substance.*

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Attempts to stimulate the reproductive tract of the infantile female mouse by small doses of anuran anterior pituitary substance have been consistently negative.[1] Even with larger amounts, *e.g.*, 16 to 96 fresh anterior lobes of *Rana pipiens,* averaging 16.2 to 104.0 mg per mouse, the ovaries, uteri and vaginae showed no differences compared with litter mate controls although thyroid and adrenal glands were stimulated to a degree that was significant statistically.[2]

In the present experiments, however, a positive reaction has been secured by approximately doubling the highest dosage of fresh pars anterior previously employed. Infantile female mice, 17 to 21 days old, were used as hosts and *Rana pipiens* as donors of the anterior pituitary substance. The frog anterior lobes were removed and placed in a bottle containing 0.3 cc of 0.9% NaCl packed in ice. As soon as a certain amount of pars anterior substance, judged by number or weight of glands, was secured, it was macerated and then injected into the hind leg of the mouse. Any tissue remaining in the bottle was injected into the other leg in an additional 0.3 cc of salt solution. Equivalent doses of frog brain and smaller amounts

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[1] Lipschütz, A., and Paez, R., *C. R. Soc. Biol.*, 1928, **99**, 693; Martins, Th., *C. R. Soc. Biol.*, 1929, **101**, 957; Zondek, B., *Arch. Gynäk.*, 1931, **144**, 133; *Hormone des Ovariums und des Hypophysenvorderlappens,* 2nd edit., J. Springer, 1935; Magistris, H., *Pflüger's Arch.*, 1932, **230**, 835.

[2] Adams, A. E., and Tukey, G., *Anat. Rec.*, 1938, **71**, in press.

of mouse pars anterior or brain were administered similarly to litter mates. Treatment was given daily for 3 or 4 days and the animals were autopsied on the fourth or fifth day following the first treatment.

Table I gives the average data of tests made on 5 litters of mice.

TABLE I.
Averaged Weights of Reproductive Tracts of Infantile Female Mice from 5 Litters Given Fresh Frog Anterior Pituitary Substance, Fresh Mouse Anterior Lobes, Fresh Frog or Mouse Brain or Left Untreated.

No. of animals	Body wt at autopsy, gm	Treatment	Wt at autopsy, mg			
			Ovaries	Tubes, uterus, vagina	Tubes, uterus	Vagina
6	8.6	223.3 mg frog A.P. per mouse (211.5 ant. lobes)	4.88	49.87	30.99	18.88
5	10.0	5.41 mg mouse A.P. per mouse (4.8 ant. lobes)	3.89	38.47	18.18	20.29
12	9.6	233.0 mg frog brain per mouse (5 mice) 4.14 mg mouse brain per mouse (2 mice) Untreated (5 mice)	2.50	15.16	7.04	8.12

Four of the 6 individuals receiving frog pars anterior showed very high weight increases in all parts of the reproductive tract and the histological picture of ovaries, uteri and vaginae of these revealed, respectively, increase in numbers of Graafian follicles and follicles with antra, marked thickening of uterine walls and vaginal epithelium characteristic of proestrus or estrus with an open vagina in the estrous stage. In the other 2, the response was less pronounced. The thyroids and adrenals of the 6 animals also were stimulated. Tests were made with very large doses of acetone-dried pars anterior of frogs and a positive but less marked reaction was observed in the reproductive tracts of 7 of 9 individuals so treated, but in all thyroids and adrenals responded. The reproductive tracts of all of the mice given mouse pars anterior reacted positively and the vaginal picture was that of estrus or metestrus. No stimulation occurred in mice given frog brain, mouse brain or left untreated.

Summary. Stimulation of the reproductive tracts of infantile female mice has been brought about by the administration of large amounts of fresh anterior pituitary from *Rana pipiens*. It is believed that this is the first time precocious sexual maturity has been caused in the mammal by anuran pars anterior.