perimental pancreatic diabetes. The object of the present experiments is to determine the effects of chronic adrenal insufficiency on the course of experimental pancreatic diabetes.

Eight cats were anesthetized with sodium pentobarbital and both lumbo-adrenal veins were ligated distally and proximally to the gland. At the same time the entire pancreas was removed. The animals received neither insulin nor cortin. Fluid was given *ad lib.* along with a weighed amount of food (Bovex) each day. The periods of survival were 11, 11, 12, 15, 17, 18, 20, and 98 days. The life span of these animals was definitely prolonged by the ligation, for depancreatized cats usually succumb before 8 days. At the present time we shall present a brief description of the cat which survived for 98 days. After the operation the cat exhibited a profound glycosuria, but 2 weeks later the urine was free of sugar and remained so until death. There was a marked (50%) loss in body weight. At autopsy careful examination revealed no traces of pancreatic tissue. The adrenal glands appeared degenerated. The kidney cortex was white due to increased deposition of fat, 14.8% on analysis, although the liver was free of fatty infiltration and contained the normal amount of fat, 4.5%. Two large and several small ulcers were found on both sides of the pyloric orifice of the stomach. Histological sections of the adrenal and pituitary glands are being prepared.

Biochemical studies are in progress on several animals now under observation.

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Effect of Male Hormone upon Uterine Motility and the Uterus.*

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The discovery of the "progesterone-like" action of several male hormone compounds in the induction of morphological changes in the rabbit's uterus suggested the possibility that such compounds might also exert a similar effect upon uterine motility.[1] While we

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1 Klein, M., and Parkes, A. S., *Proc. Roy. Soc. London*, 1937, **121**, 574.

were investigating this problem, our attention was called to a paper by Robson[2] in which he described inhibition of contractions of the rabbit uterus by male hormone. As our methods differ from those of Robson and give additional information, we are reporting our results. We have studied the action of testosterone propionate on the rhythmically contracting uterus of rabbits *in vivo*, using Reynold's technique[3] of the uterine fistula.

Seven adult non-pregnant female rabbits weighing between 4 and 4.5 kg. were isolated for 2 weeks or more prior to experimentation. After preparation of the Reynolds uterine fistula only 5 rabbits exhibited spontaneous motility of the oestrous type. The other animals were discarded.

Daily records were made until typical oestrous motility was obtained. The rabbits were then injected with a single dose of 2.5 to 10.0 mg. of testosterone propionate† dissolved in sesame oil. Records were taken 8 to 24 hours later. Eight hours were found to be too short a period for the hormone to be effective, so further tests were made 24 hours after treatment. In some instances 2 successive injections were necessary to alter the motility.

Seven tests for the inhibiting action of the male hormone were made on the 5 rabbits and inhibition of motility or disturbed oestrous rhythm resulted in every case. In 2 tests there resulted a disturbed rhythm or lowered height of contraction and in 5 tests complete quiescence with only an occasional contraction. Figure 1 (part of the protocol of rabbit 6) shows complete inhibition. In 6 of the 7 tests, the uterine motility returned to normal within 1 to 5 days. No corpora lutea were found in the ovaries; the follicles present were of medium and small size. During the period of quiescence resulting from the action of testosterone propionate, 3 trials were made of intravenous injections of 2 i.u. of pituitrin with failure in each case of obtaining a strong sustained contraction.

These data are insufficient for determination of the minimal amount of testosterone propionate required to halt contractions. In one instance when 2.5 mg. were injected, the height of contractions only was lowered. Since 10.0 to 20.0 mg. gave consistent results this range of dosages was used throughout. One peculiar result was obtained which should be mentioned. Rabbit 4 showing good oestrous rhythm received 10 mg. of testosterone propionate, after which the uterine contractions were completely inhibited on

[2] Robson, J., *Quart. J. Exp. Physiol.*, 1937, **26**, 355.

[3] Reynolds, S., *Am. J. Physiol.*, 1930, **92**, 420.

† The testosterone propionate was furnished through the kindness of Dr. E. Schwenk, of the Schering Company.

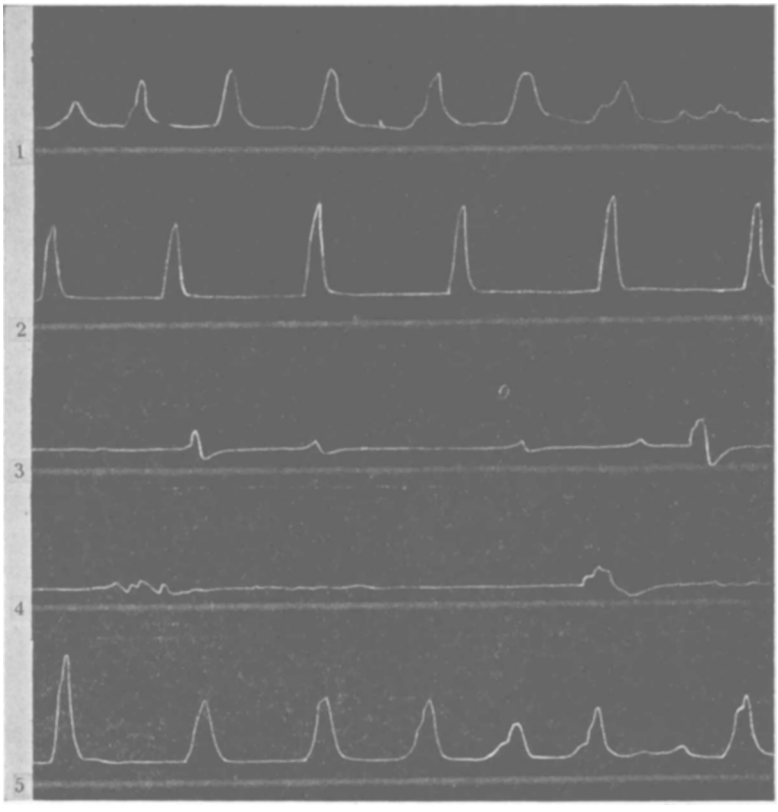

FIG. 1.
1. Good motility, typical of oestrum. Given 10 mg. of testosterone propionate.
2. 16 hours later. Contractions still regular. Given additional 10 mg. of testosterone propionate.
3. 25 hours after first injection. No motility.
4. 39 hours after first injection. No motility.
5. 5 days after first injection. Return of oestrus motility.
(Time in seconds.)

the following day. Thereupon an additional 10 mg. were given and on the next day fair motility returned but it was irregular in rhythm and unequal in height. Ten mg. more were injected and the following day the uterus was again completely inhibited and remained so for 2 days before normal oestrous motility returned.

We were also able to obtain a slight progestational modification in the uterus of young rabbits treated with testosterone propionate, confirming both Klein and Parkes[1] and Robson.[2] Six young rabbits of 2 kg. weight which had been castrated 3 weeks previously were given 70 R.U. of oestrone in 6 days. This was followed by doses of 7.5 to 20 mg. of testosterone propionate in 5 days. Microscopic

examination of the uteri in several places failed to reveal more than a ++ progestational modification and in 2 cases no modification. In all of these rabbits, however, castration atrophy of the uteri was prevented by the male hormone. Sections of the uteri of 2 of the adult rabbits used in contraction studies, which had received chronic injections of male hormone up to a few days before autopsy, showed no progestational changes. It may be added that testosterone propionate was observed to produce growth in the uterus of 3 hypophysectomized adult rats and 3 hypophysectomized and castrated adult rats.

While testosterone propionate may not be as efficient as progesterone per mg. of weight in inhibiting uterine motility, it does behave in a similar manner. Reynolds[4] found that progesterone can cause a complete inhibition of uterine contraction in the non-castrated oestrous rabbit but that the oestrous rhythm returns in 2 to 5 days after injections are stopped. This is also true of testosterone propionate. The effect of this androgen in producing uterine quiescence, however, is slower to appear than that of progesterone. Since the action of testosterone on the rabbit's uterus seems to be qualitatively similar to progesterone (though not quantitatively), there does not seem to be any evidence that 2 hormones are involved in effecting motility and progestational changes.

Summary. The male hormone, testosterone propionate, inhibited the oestrous rhythm of the rabbit uterus. This was manifested by a disturbed rhythm, a lowered height of contraction or complete quiescence. Such inhibitions appeared in animals whose uteri showed but little or no progestational response. During the period of quiescence, pituitrin failed to elicit a strong contraction. Testosterone prevented castration atrophy in the rabbit's uterus with or without minimal progestational changes.

[4] Reynolds, S., *Am. J. Physiol.*, 1932, **102**, 39.