refrigerator for 7 days. During that period the prothrombin time increased from 12 to 28 seconds. On adding 1 part of defibrinated alumina plasma to 3 parts of this stored human plasma, a mixture was obtained which had a prothrombin time of 10 seconds. Since the only reacting fibrinogen was supplied by the stored plasma, the striking decrease of the prothrombin time brought about by the addition of alumina plasma to stored plasma must have been due to a specific factor which is not related to fibrinogen and which for the sake of simplicity has been named component A.

In this study the procedures which were employed have been previously described.[1]

Summary. 1. Undecalcified hemophilic plasma shows markedly less loss of prothrombin activity on storage than does oxalated plasma. 2. Aluminum hydroxide removes component B from native hemophilic plasma. 3. The prolonged prothrombin time in stored human plasma is strikingly shortened by the addition of defibrinated plasma treated with aluminum hydroxide. This proves that the delayed prothrombin time in preserved plasma is not due to an alteration of the fibrinogen.

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Effects of Injections of Equine Gonadotrophin upon the Gonads and Adrenals of Fetal Rats.*

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Using a method recently described,[1] fetuses of the Sprague-Dawley strain of rats were transferred to the abdominal cavity of the mother and subjected to subcutaneous injections of equine gonadotrophin. Thirty-two fetuses received injections twice daily and about 12 hours apart. Near term, the 16 that had survived were secured by severing the umbilical cord. Fourteen and certain littermate controls were immediately autopsied, while 2 were placed in the nest of a foster mother. Although one was promptly destroyed by the mother, the other one received 3 additional injections before it was sacrificed by decapitation (Fetus 20, Table I). Litter 112 (Fetuses 35 and 36) differs from others in that the mother received subcutaneous injections of progesterone for the purpose of delaying parturition. Injections, each containing 1.0 mg, were made twice daily on days 20, 21 and 22 of pregnancy. In all cases, the procedure at autopsy was to open the abdominal cavity before placing the specimen in Bouin's fixing fluid. After fixation, the lumbar and pelvic regions of the body were sectioned serially and the sections stained with hematoxylin and eosin. In some instances, certain sections of the series were segregated for special staining (Dominici's, Mallory's triple and Heidenhain's iron hematoxylin).

When sections of testes were examined with the aid of a micro-comparator, an instrument which brings half the field of each of 2 microscopes into view, it was found that the interstitial cells of Leydig of each injected male were larger and more abundant than those of litter-mate controls (Fig. 1 to 4). They were most abundant in the 2 fetuses which received the most hormone (3 and 5, Table I).

Although it is reasonable to suppose that the interstitial cells secreted androgen more rapidly than normally (?), evidence that they actually did could not be detected by inspecting serial sections of such developing

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1 Wells, L. J., *Anat. Rec.*, 1946, **94**, 530.

TABLE I.
Effects of Gonadotrophin upon Organs of Fetuses.

Fetuses	Litters	Treatment: Days of preg.	Treatment: No. of injections	Treatment: Total gonadogen (I.U.)	Autopsy (hrs before term)*	Gonad: Vol. (cu mm)	Gonad: Tubules: Diam. (μ)	Gonad: Tubules: No. in matched section†	Adrenal (vol., cu mm)
				Males					
1	132		0		10	1.031	45.9	116	.439
2	"		0		10	1.014	43.3	108	
3	"	20-21	4	1186	10	1.065	51.7	81	.433
4	129		0		11	.865	48.8	90	.356
5	"	20-21	4	1032	11	.999	51.7	71	.353
6	137		0		1	1.212	50.7	89	.321
7	"		0		1	.971	46.5	108	
8	"	20-22	5	400	1	1.237	50.7	77	.292
9	136		0		1	2.064	50.5	87	.431
10	"		0		1	1.234	45.9	99	
11	"		0		1	1.096	45.9	110	
12	"	20-22	5	400	1	1.456	50.4	78	.329
13	"	20-22	5	400	1	1.280	50.1	56	.360
14	139		0		1	1.057	48.1	96	.372
15	"		0		1	1.052	49.8	112	
16	"	20-22	5	240	1	1.429	51.4	72	.363
17	"	20-22	5	240	1	1.175	48.8	97	
18‡	103		0			1.890	48.8	108	
19‡	117		0			1.735	48.5	120	
20§	119	20-21	7	800		1.126	45.3	90	
				Females					
21	130		0		10	.094			.271
22	"		0		10	.078			
23	"	20-21	4	1186	10	.090			.353
24	"	20-21	4	1186	10	.089			
25	132		0		10	.085			.388
26	"	20-21	4	1186	10	‖			‖
27	129		0		11	.084			.302
28	"	20-21	4	1032	11	.092			.313
29	114		0		9	.076			.378
30	"	20-22	5	500	9	.088			.411
31	"	20-22	5	500	9	.073			
32	115		0		9	.095			.367
33	"		5	500	9	.101			.502
34	"		5	500	9	.086			
35¶	112		0			.105			.369
36¶	"	20-22	6	600		.100			.339

* Hour of expected parturition estimated by allowing 21 days and 16 hours after observation of coitus.

† See text for method of matching sections.

‡ Control, autopsied at 36th hour after normal parturition.

§ Received 4 injections before severance of cord (9 hours before term) and 3 injections while in nest of foster mother and then was autopsied during 48th hour after severance.

‖ Loss of several sections of series militated against determining volume.

¶ Umbilical cord severed during 9th hour following normal term, mother having received progesterone (see text).

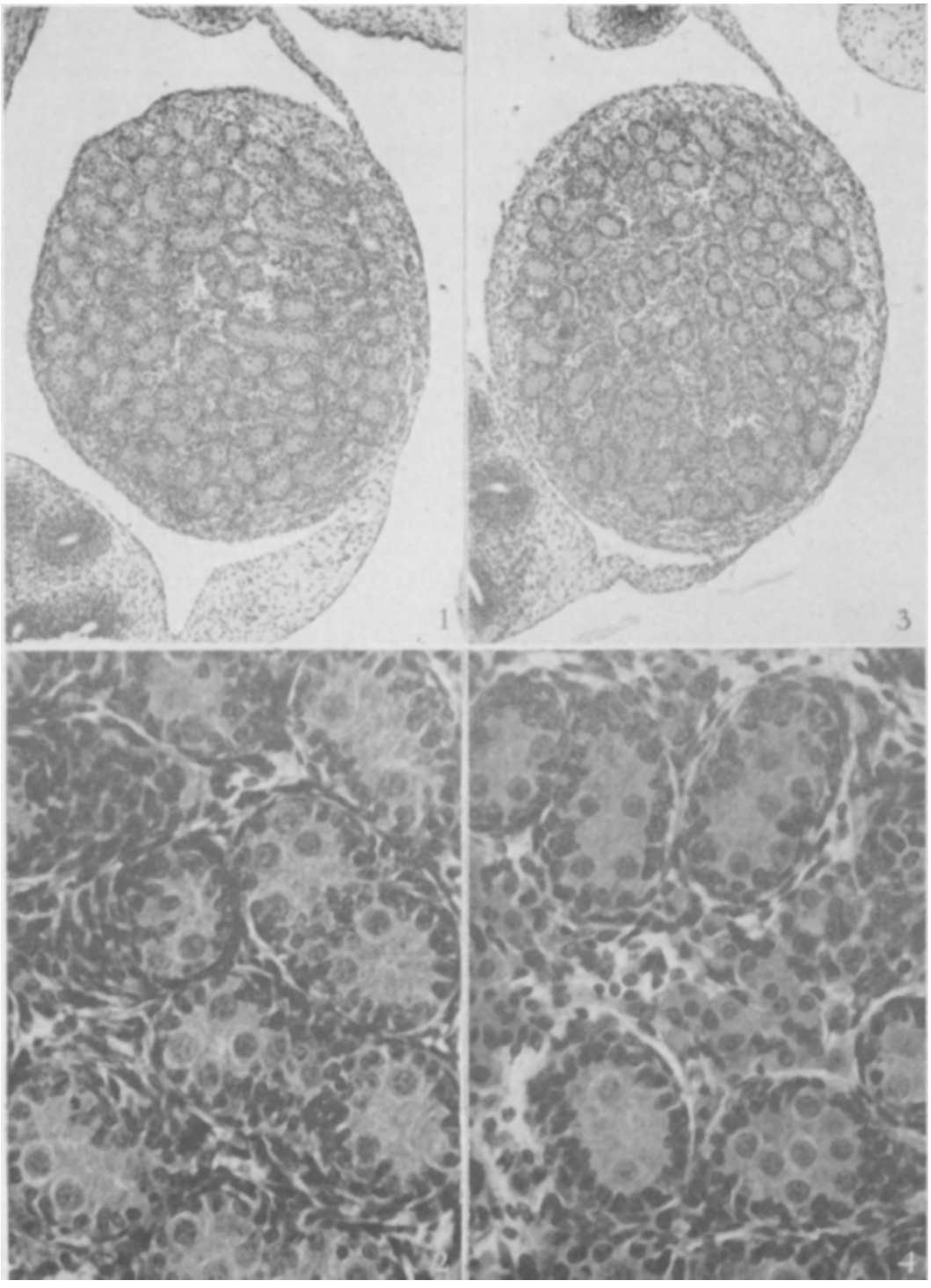

FIG. 1. Section of testis of uninjected control (Fetus 4). × 70.

FIG. 2. Higher magnification (Fetus 4). × 375.

FIG. 3. Section of testis of littermate which received 1032 I.U. of gonadotrophin (Fetus 5). × 70.

FIG. 4. Higher magnification (Fetus 5). × 375.

organs as the prostate, the seminal vesicles and the bulbo-urethral glands. Price and Ortiz[2] report that in rats injected after parturition and autopsied on the sixth postnatal day, the combined weight of the seminal vesicles and the coagulating glands was 25% greater than in controls.

The volume of the testis was determined by the paper-weight method of Hammar,[3] using the formula presented by Boyden,[4] with the modification that every tenth section was drawn and the combined weights were multiplied by 10. From these data alone it would seem that the gonadotrophin caused little or no growth of the testis.

In a study of the seminiferous tubules it was found that the gonadotrophin caused no significant effect upon spermatogenesis. From data secured by measuring the diameter of 25 consecutive tubules adjacent to the tunica albuginea, it would appear that the hormone caused a slight enlargement of the tubules of Fetuses 3 and 5.

The abundance of interstitial cells caused the tubules to be more widely separated than in controls, as may be seen in Fig. 1 to 4. Almost as convincing as the photographs (illustrating views observed by means of the micro-comparator) are data obtained as follows. A section of testis of an injected fetus was matched with that of its littermate control so perfectly that the 2 sections were virtually identical in shape, circumference and portion of testis from which they came. Each section was projected to a sheet of paper, it and its tubules were rapidly sketched and the sketches of tubules were counted.

Considering the several observations, it is assumed that little or none of the gonadotrophin traversed the placental barrier and that therefore it did not influence the testes of controls. It is likely that the hormone stimulated the testes of injected fetuses to a greater extent than indicated by the data since at autopsy it was noticed that these fetuses were somewhat smaller than controls. They, unlike controls, received such experimental insults as being shelled out of the amnion, transferred to the abdominal cavity of the mother and subjected to subcutaneous injections.

The response of the interstitial cells to injections of gonadotrophin suggests that normally the hormones of pregnancy influence the prenatal development of the testis. With respect to other experimental approaches to this problem, it is scarcely necessary to consider maternal hypophyseal gonadotrophin since it is probable that little or none of it crosses the placental barrier.[5] Also, one cannot conceive of a method of depriving the testis of hormones produced by the placenta; although essentially this condition prevails in marsupials, the testis of the opossum fails to react to injections of equine gonadotrophin until approximately the 63rd day in the pouch (judging from the prostate)[6] or the 17th day (judging from the bulbo-urethral glands).[7] However, the testis might be deprived of fetal hypophyseal gonadotrophin by hypophysectomizing the fetus, a project which is receiving the attention of the writer.

From microscopical studies of the ovary and volumetric determinations in which every fifth section was used, there was no evidence that the gonadotrophin caused this organ to grow or to undergo precocious cellular differentiation. Similarly, Price and Ortiz[2] noted no changes in the minute anatomy of the ovaries of rats which were injected after birth and killed on the sixth day of postnatal life.

Since the results of certain experiments in adult rodents suggest that the blood serum of pregnant mares contains not only gonadotrophin but also corticotrophic substances,[8,9] microscopical and volumetric studies of the fetal adrenals were made. In determining

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volume, every tenth section was used. From these studies no evidence emerged that the hormone caused hypertrophy of the cortex or changes in the cortical cells.

In conclusion, injecting gonadotrophin under the skin of fetal rats resulted in an increase in the size and number of interstitial cells of Leydig. While it seems likely that these cells secreted more androgen than normally, positive evidence of this was not obtained. The injections failed to cause any significant changes in the ovary and the adrenal.

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Urinary Excretion of Thiamine as a Characteristic of the Individual.*

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The urinary excretion of thiamine has been used as a measure of the intake and of the body stores of this vitamin. That there is some relation between these functions is shown by the fact that an increase in the intake produces an increase in the excretion. It is usually assumed that individuals on the same intake will excrete approximately the same amount of thiamine. There are very few reports in the literature which provide detailed data for individuals who have been maintained for any length of time on a constant vitamin intake. Consequently the individual variation, and hence the reliability of the estimation of intake from individual excretion, is practically unknown.

In the course of investigations on the response of normal young men to various levels of thiamine intake,[1] a marked variation between the urinary thiamine excretion of different individuals was observed. The inter- and intra-individual variations in the urinary thiamine excretions are considerable at intake levels from 0.6 to 2.0 mg per day.[2] In spite of the great intra-individual variation, there was an indication that over a period of time, the thiamine excretion level was highly characteristic of the individual.

Experimental. Ten different menus were used consecutively in this work. They all contained the same amount of thiamine (0.50 ± 0.07 mg per day) and were reasonably constant and "normal" in composition of carbohydrate, fat and protein. We found that in man large increases in the dietary content of carbohydrates, fats or proteins have no appreciable influence on the dietary excretion of thiamine.[3] In order to determine whether the marked variations in the daily thiamine excretion were due to variations in the dietary content of foodstuffs other than the above, we fed our subjects the same diet on 3 successive days. Most of the items in these diets, including the meat, were canned or dehydrated. Where this was not the case, large quantities of the food items were secured at the start of the experiment to insure uniformity in the diet. All food was served in weighed portions. An exact duplicate of all foods served during the day was saved for thiamine analysis.

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