with certainty and the problem is further complicated by the fact that a species difference may exist with regard to the part of the female reproductive tract that may serve as a source for relaxin.

Summary. Relaxin is found in the blood of guinea pigs on about the 21st day of pregnancy, at which time relaxation of the symphysis pubis may first be detected by palpation. The concentration of relaxin reaches a peak of 0.5 G.P. units per ml of blood serum on the 28th day and is maintained until the 63rd day when the concentration falls to 0.33 G.P. units per ml. Immediately after parturition a precipitous decline of the relaxin content of the blood serum takes place. The urine shows a concentration of 0.5 G.P. units of relaxin per ml at 42 and 56 days of pregnancy with a drop to 0.25 G.P. units by the 63rd day. The uterus contains about 10 G.P. units per gram of tissue on the 56th and 63rd day of pregnancy whereas the placenta shows 5 G.P. units per gram of tissue on the 56th day and 2.5 G.P. units on the 63rd day. It seems probable that the drop in serum relaxin in the latter part of pregnancy may be due to a decreased output from the placenta.

16133 P

Enhancement of Effect of Chorionic Gonadotrophin on Ovarian Hyperemia in the Rat by Pituitary Extract.

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The earliest demonstrable effect of chorionic gonadotrophin on the ovary of rats is the appearance of hyperemia.[1] This reaction has been used with varying degrees of success for the rapid diagnosis of pregnancy. Attempts to enhance the effect of chorionic gonadotrophin on ovarian hyperemia led to our present use of a pituitary extract for this purpose. This was based on the well-known synergistic effect of certain anterior pituitary extracts in augmenting the ovarian response when used in conjunction with chorionic gonadotrophin.[2] The effective component of such pituitary extracts is not known. The earlier claims[3] that such "synergists" represent a distinct gonadotrophin no longer seems likely in view of later work[4] indicating that similar effects can be obtained with follicle-stimulating gonadotrophins (F.S.H.). The pituitary synergist† employed in these studies is reported to be chiefly F.S.H., with traces of luteinizing principle.[5] Prolactin was not demonstrable.

Methods and Results. The 28- to 32-day-old, 50 to 60 g immature albino female rats used were of a mixed strain of unknown identity. Chorionic gonadotrophin, the pitui-

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TABLE I.
Hyperemia Response with Varying Dosages of Chorionic Gonadotrophin and Synergist.

Reaction time	Dose Chorionic Gonad. (I.U.)	Dose of synergist (units) and response											
		None		0.044		0.022		0.011		0.0044		0.0022	
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
2 hr	None	—	—	0	18	0	9	0	5	0	5	0	4
	0.60	19	6	4	0	8	0	5	0	5	0	4	2
	0.55	4	9	4	0	3	0	1	3	1	3	—	—
	0.50	0	11	5	0	3	0	0	3	—	—	—	—
	0.45	0	5	5	0	3	0	0	4	—	—	—	—
	0.40	0	5	3	0	3	0	1	2	—	—	—	—
	0.30	0	4	3	0	3	0	0	5	—	—	—	—
	0.20	0	4	0	3	0	3	—	—	—	—	—	—
	0.10	0	4	0	3	0	3	—	—	—	—	—	—
1 hr 15 min	None	—	—	0	4	—	—	—	—	—	—	—	—
	0.65	5	3	6	0	—	—	—	—	—	—	—	—
	0.60	4	5	5	0	—	—	—	—	—	—	—	—
1 hr	None	—	—	0	4	—	—	—	—	—	—	—	—
	0.70	1	7	3	0	—	—	—	—	—	—	—	—

tary synergist, or their combination was injected intraperitoneally into a total of 307 rats. The rats were asphyxiated with ether and autopsied after one, 1¼ or 2 hours. The reaction was considered positive if one or both ovaries were light to dark crimson, and negative if both were pale or pinkish. The details of the technic used have been described by Kupperman and Greenblatt.[6]

The results are given in Table I. There were no positive reactions with the synergist alone. Chorionic gonadotrophin in a dosage of 0.6 I.U. produced positive reactions in 76% of 25 rats. The percentage of positive results could not be increased by raising the dosage higher. When 0.0044 or more units of synergist were added to this minimal effective amount‡ of gonadotrophin, strong positive reactions were present in 100% of 22 rats. With subminimal doses of chorionic gonadotrophin alone, positive reactions began to appear only after the injection of 0.55 I.U. or more. Strong positive reactions were noted in all rats injected with 0.30 to 0.55 I.U. of chorionic gonadotrophin if 0.022 or more units of synergist were added. The combinations of 0.2 I.U. or less of chorionic gonadotrophin and the maximum amount of synergist used, 0.044 units, did not produce positive reactions.

At 1¼ hours the percentage of positive reactions with the subminimal effective amount of chorionic gonadotrophin (0.65 I.U.) was increased from 62 to 100 with the addition of 0.044 units of the synergist, while the percentage of positive reactions with 0.60 I.U. was raised from 44 to 100. It is notable that though the minimal dosage of chorionic gonadotrophin at one hour was 3.0 I.U., positive reactions with 0.70 I.U. were increased from 15 to 100% with the addition of 0.044 units of the pituitary synergist.

The enhancement of the rat ovary hyperemia effect by this pituitary extract has been used to advantage by us in testing urines for the presence of pregnancy.

[4] a. Evans, H. M., Simpson, M. E., Tolksdorf, S., and Jensen, H., *Endocrinology,* 1939, **25**, 529.

b. Jensen, H., Simpson, M. E., and Tolksdorf, S., *Endocrinology,* 1939, **25**, 57.

† The synergist was prepared from sheep pituitaries. The unit was defined as the amount of synergist which in combination with 15 I.U. of chorionic gonadotrophin will cause a 5-fold increase in ovarian weight over that of the uninjected controls. Human chorionic gonadotrophin was present in an amount equivalent to about 0.25 I.U. per mg (22.2 units) of synergist. The synergist was kindly furnished by Dr. E. Schwenk of the Schering Corp., Bloomfield, N.J.

[5] Cutuly, E., *Endocrinology,* 1942, **31**, 13.

[6] Kupperman, H. S., and Greenblatt, R. B., *South. Med. J.,* 1946, **39**, 158.

‡ That amount which produced positive ovary hyperemia reactions in approximately 75% of 5 or more rats.