The above experiments indicate that it is possible to obtain a potent phage practically free of extraneous proteins or amino acids.

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Cause of Onset of Labor. An Hormonal Investigation.

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With the increase in our knowledge of the rôle played by the pituitary and ovarian hormones, attention is being directed toward the possibility of a hormonal source as a fundamental cause which induces labor. Animal experiments suggest that there is a synergistic action between oestrin and pituitrin. If the isolated uterus is first bathed with oestrin, it becomes more sensitive to pituitrin as manifested by increase of contraction.[1-5] On this hypothesis, a hormonal theory as to the cause of the onset of labor may be summarized as follows: During early pregnancy oestrin is held in abeyance by the presence of the luteinizing factor in the ovary, placenta, and anterior hypophysis, and as maturity of gestation approaches release of this inhibiting action upon oestrin is observed. The uterine sensitivity to pituitrin, stimulated by the released oestrin, becomes more marked and continues until the threshold is reached, when labor is precipitated.

To test this theory clinically, a series of hormonal injections was undertaken on 45 pregnant negro women at term. The ovarian follicular hormone, in the form of theelin, was administered in various dosages, singularly and daily, to 10 pregnant women who were at term. Labor occurred within 36 hours in only 2 cases. Ovarian follicular fluid, aspirated at operation, was given to 2 women in a similar state; neither delivered in the allotted time. This same hormone in the form of amniotin or progynon was administered alone, or in combination with pituitrin or pitocin, the active uterine stimulating principle of pituitrin, in various dosages and at different

[1] Bourne, A. W., and Burn, J. H., *Lancet*, 1928, **2**, 1020.

[2] Brouha, L., and Simmonnet, H., *Compt. Rend. Soc. de Biol.*, 1928, **94**, 759.

[3] Dixon, W. E., and Marshall, F. N. A., *J. Phys.*, 1924, **59**, 276.

[4] Jeffcoate, T. N. A., *J. Obs. and Gyn. Brit. Empire*, 1932, **39**, 67.

[5] Witherspoon, J. T., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 1063.

intervals, to 30 full term pregnant negro women. Seven delivered within 36 hours. Assuming that there might be an oxytocic factor present in the blood of parturient women, 25 cc. of parturient blood taken from women in hard labor, were injected into the buttocks of 3 women who were at term. One delivered within 36 hours—actually in 11 hours. In no case was there any maternal or fetal abnormality attributable to the injections. Table I indicates the findings in 45 full term negro women in whom labor apparently was induced in 22.2% by hormonal injections.

TABLE I.

	Delivered Within 36 hours	Failed
Theelin, 1 to 4 cc. singularly and daily	2	8
" 1 cc., with pituitrin, m. iv every 4 hours	0	3
Aspirated ovarian follicular fluid, 1 to 4 cc.	0	2
Amniotin, 1 to 3 pessaries, bid.	3	7
" 1 pessary bid. with pitocin, m. iv	0	1
" 1 cc. (hypo), with pitocin, m. iv every 4 hrs.	1	0
" 1 cc. (hypo), with pituitrin, m. iv every 4 hrs.	1	3
" (oral), 5 cc. daily	0	3
" (oral), 5 cc. with pitocin, m. iv bid.	1	2
Progynon, 1 cc., with pitocin, m. iv every 4 hours	0	1
" 1 cc., with pituitrin, m. iv every 4 hours	1	3
Parturient blood, 25 cc. (hypo)	1	2
	10	35

In several instances the onset of labor followed the injections so closely that induction of labor could possibly have been considered the result of the therapy. Hormonal induction of labor will be of value clinically only when our knowledge concerning the regulation or mechanism of labor is on a firmer basis.

My thanks are extended to the following drug firms which supplied the hormonal preparations. Theelin 1 cc. equals 50 R.U.; Pituitrin, and Pitocin (Parke-Davis). Amniotin 1 pessary contains 75 R. U.; 1 cc. (Hypo) contains 50 R.U. 5 cc. Oral contains 2000 R.U. (E. R. Squibb and Sons). Progynon 1 cc. contains 50 R.U. (Schering and Company).