

## 8471 P

**Estrogenic Substances in the Blood and Urine After Castration and the Menopause.**

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We noted that the blood cycle persists after hysterectomy.<sup>1</sup> We reported the recovery of estrogenic substances from the blood<sup>2</sup> and urine<sup>3</sup> years after the onset of the physiological menopause. The present report deals mainly with the finding of estrogenic factor in the urine of human castrates.

The report is based on the study of 12 female surgical castrates, 5 physiological menopause patients and 3 X-ray castrates.

1. All of the 12 surgical castrates excreted estrogenic factor in the urine. The amount varied between 15-200 M.U.L. In 2 cases, aged 23 and 44 years, studied over a month's period, a total of 255 M.U. and 720 M.U. respectively, were excreted. The average normal excretion of a menstruating woman in the same period equals 1500 M.U.<sup>3</sup> Blood studies of these 2 cases failed to show estrogenic factor.

2. No correlation could be demonstrated between the relative amount of estrogenic and prepituitary gonadotropic factor of the urine. Seven patients were studied. With high readings of both luteinizing and follicle stimulating factor as little as 15 M.U.L. of estrogenic factor and as much as 200 M.U.L. were encountered.

3. No difference was noted between castration (2 cases) and castration with removal of the uterus (10 cases).

4. The subjective symptoms (flushes, arthritis) showed no correspondence with the amount of estrogenic factor excreted—6 "mild" cases with from 40 to 200 M.U.L.; 6 "severe" cases with 15 to 200 M.U.L.

5. The vaginal spreads<sup>4</sup> showed no correlation with the amount

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<sup>1</sup> Frank, R. T., *The Female Sex Hormone*, p. 256, 1929, Charles C. Thomas, Springfield, Ill.

<sup>2</sup> Frank, R. T., *N. Y. State J. of Med.*, 1934, **34**, 1009.

<sup>3</sup> Frank, R. T., Goldberger, M. A., and Spielman, F., *J. Am. Med. Assn.*, 1934, **103**, 393.

<sup>4</sup> Salmon, U. J., and Frank, R. T., *Proc. Soc. Exp. Biol. and Med.*, 1936, **33**, 612.

of estrogenic substance recovered or the severity of the symptoms. Positive spreads occurred with as little as 15 M.U.L., negative with as much as 200 M.U.L.

Of the 5 physiological menopause patients (ages between 44 and 59 years, duration 1 to 9 years) 2 showed a positive estrogenic blood reaction with 40 cc. of blood; 3 excreted from 60 to 400 M.U. per month. In only 2 (1 of which gave a positive blood reaction) was the excretion nil. The subjective symptoms of all 5 patients were severe.

The 3 X-ray castrates corresponded to the surgical castrates in their hormone titres.

*Summary.* The estrogenic factor continues to be excreted after surgical removal of the ovaries, as well as after the physiological menopause and X-ray castration. In spite of the presence of the estrogenic factor, excessive production of the gonadotropic factor (luteinizing and follicle stimulating) takes place.

No explanation of the source of the estrogenic factor, after the removal of the ovaries, can as yet be offered. Experiments to solve this problem are under way.

## 8472 C

### Development of Incompatibilities in Dogs by Repeated Infusions of Red Blood Cells.\*

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In the course of an investigation on the influence of diet upon the regeneration of serum protein it was found, as has been reported by others,<sup>1</sup> that with repeated plasmaphereses the hematocrit values tended to fall to anemia levels unless red blood cells from donors were injected periodically. Inasmuch as a fraction of the reinjected cells breaks down and liberates hemoglobin, which serves in the

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<sup>1</sup> Holman, R. L., Mahoney, E. B., and Whipple, G. H., *J. Exp. Med.*, 1934, **59**, 251.