This altered property of the ganglion develops more rapidly at high frequencies of stimulation than at low and persists for many seconds following the end of the stimulus. After various intervals of rest following a period of high frequency stimulation we have tested the transmission through the ganglion by repeating the high frequency stimulation. The initial postganglionic spike is again maximal after a recovery period of less than a second but a minute or more may be required before the tenth or twentieth impulse is again as large as it was in the initial series. At low temperatures the progressive decrease in height of the synchronized spike potential is more rapid and the recovery of the capacity for synchronized activity is much delayed.

We suggest that these results may be due to an increase in the refractory period of the ganglion cells which is different for the various cells. Or one may assume 2 types of synaptic transmission, the one which is responsible for the grouped discharge failing more rapidly than that which produces the asynchronous firing. But these are speculations which must be tested by additional experiments.

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Improvement in Female Sex Hormone Blood Test in Cyclical Menstruating Women and in Pregnancy Blood.

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Advance in the chemistry of the female sex hormone or estrogenic factor—theelin, oestrin, etc.—has shown that some of the estrogenic compounds are ether insoluble. In consequence, we have returned to a modification of our earliest technic in which alcohol extraction was used.[1] By desiccating the venous blood specimen as heretofore with anhydrous sodium sulphate and then extracting with 95% alcohol, instead of ether, a great increase in estrogenic activity of the extract was noted.

The technic permits the accurate assay of a single specimen, the amount of extract employed in each animal depending upon the time of the cycle. By the old method[2] 40 cc. of blood give a negative

1 Frank. R. T., and Goldberger, M. A., *J. A. M. A.*, 1926, **87**, 1719.

2 Frank, R. T., and Goldberger, M. A., *J. A. M. A.*, 1928, **90**, 376.

reaction until the week preceding the onset of the menses is reached. By the new method, 40 cc. of blood even immediately after menstruation gives a positive reading.

1. The new technic requires 50 cc. of blood, dehydrated in anhydrous sodium sulphate. 2. The powder is twice extracted with 200 cc. of 95% alcohol. 3. The alcohol fractions are combined and evaporated to dryness on a water bath. 4. The residuum is taken up in 5 cc. of olive oil and injected into spayed mice. 5. The bio-assay is according to the Allen and Doisy method.

Cyclical. With the refinement of method just described, the bloods of 13 patients with normal menstrual cycles, have been examined.

By the old method, 40 cc. of blood were found to contain a mouse unit of estrogenic substance from the 7th day preceding menstruation, to the onset of the period, in the great majority of patients. Before this time the tests usually proved negative.

With the new method, it was found that 40 cc. of blood regularly give a positive reaction some 21 days before the onset of the menses; that 30 cc. are positive between the 21st and 14th day; that 20 to 10 cc. are positive from the 7th day preceding the period until menstruation.

The preliminary curves drawn on the basis of these findings correspond in every way with those of our previous reports, the difference being in the increased delicacy of the reaction.

Pregnancy. In our previous titrations of pregnancy blood[3, 4] we were unable to obtain a positive estrogenic reaction in 40 cc. of vein blood before the 8th week of pregnancy. By means of the new method, a positive estrogenic reaction is obtainable as early as the 3rd week of pregnancy with from 10 to 15 cc. of blood. In one patient 9 days overdue, the Friedman test already being positive, a plus 3 was obtained with 8 cc. of blood. By the 6th week of pregnancy, the reaction with 8 to 10 cc. of blood is regularly positive.

[3] Frank, R. T., and Goldberger, M. A., *J. A. M. A.*, 1926, **87**, 1719.

[4] Frank, R. T., and Goldberger, M. A., *J. A. M. A.*, 1926, **90**, 106.