surface, under the bed clothes was determined and then the rate of fall of skin temperature after uncovering the body and with an electric fan at constant distance blowing air of constant temperature and humidity downward on the body. In general, the areas which dropped to the lowest temperatures were areas of low sensibility to cold or areas with thick subcutaneous fat. Although a higher metabolic rate (heat production) was often associated with a slower fall in skin temperature on exposure, there were many complicating factors. The fall in skin temperature on exposure was at first most rapid but after a time regulatory processes were called into play. Heat loss was influenced by anatomical differences in individuals. One individual with a tendency to maintain a relatively high general skin temperature acquired cold feet on exposure. No pulse could be detected in the feet. One finger of another individual became cold and white on exposure. Although a psycho-galvanic reflex resulted from exposure to cold, it might result from other causes as well and some of the individuals were much more emotional than others. Since muscle tone is a fibrillation similar to a voluntary contraction, it must be associated with heat production and shivering may be regarded as a special form of tone due to a reflex whose receptors are the muscle spindles.

It seems probable that a lowered thyroid function resulting from a low iodine intake during uterine life, infancy and childhood, affects the physiology of the individual in such a manner that thyroid therapy in adult life will not make the individual normal. From the standpoint of health and efficiency, it seems better to assure a higher iodine intake in pregnancy and infancy than to wait until adult life before paying attention to the thyroid.

4515

A Method for Assay of Ovarian Hormone in Blood and Urine and Relation of Assay to Menstrual Cycle.*

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Ten cc. of blood are drawn from the Median Basilic vein into oxalate to prevent coagulation. The blood is centrifuged, and the blood plasma pipetted off. The blood corpuscles are washed with

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normal saline solution twice, and the washing fluid is added to the blood plasma. Since no ovarian hormone was found in the blood corpuscles they are not included in the extraction. To the blood plasma and saline is added about 5 cc. of *N* NaOH. This is extracted 3 times with an equal volume of ether (free of peroxides). The ether extract is put into a distilling flask and the ether boiled off under reduced pressure. The residue is taken up in normal saline. For purposes of quantitative assays, no further purification is necessary, as this extract is not so irritating as to induce sloughs in mice.

Castrated white mice are used, which have been observed to be in continuous dioestrus pause, for at least 2 weeks following castration; and when used again after having been injected, at least 4 days of dioestrus are necessary.

Urine: Twenty-four hour urine specimens are obtained from normal non-pregnant women. Five cc. of chloroform is used as a preservative. The urine is made alkaline to phenolphthalein with NaOH, and then extracted 3 times with one-fourth pound of ether for each extraction. (When the urine is acidified before extraction with ether, toxic substances pass into the ether. In most of our experiments this acid-extract caused death to the mouse in 2 hours.) The ether extract of the alkalinized urine is then treated the same as the blood extract, and the residue taken up in normal saline.

In assaying this hormone, because of the large number of assays of samples to be made, we employed a single injection instead of the 3 injections of the Allen-Doisy method or the 8 injections of the Laquer method. Readings were taken twice daily for 72 hours following injection into the mice.

The following results were obtained in a normal non-pregnant young woman:

Days of Cycle	Mouse units in 20 cc. blood
2nd day menstruation	126
3rd " "	126
6th " "	24
2nd " after menses	31
7th " " "	33
13th " " "	43
18th " " "	120
21st " " "	124
24th " " "	126
	Mouse units in 24 hr.
12 days preceding menses	33
8 " " "	36
3 " " "	42
1 " " "	48

2nd day menstruation	33
3rd " "	12
1st day after menses	12
4th " " "	15
5th " " "	18
7th " " "	30

In 2 cases of young adult women, who had never menstruated, and in whom sexual infantilism had been diagnosed, no hormone could be found in the circulating blood.

From our tables, it is seen that there is no sudden fall in the concentration of the hormone in the blood just preceding menstruation as reported by Frank and Goldberger and by Hirsch. Our tables do not support the assumption that menstruation is due to the sudden drop of this hormone in the blood.

Assuming an average of 7 liters of blood in the woman, we have computed at least 45,000 mouse units of hormone circulating in the blood stream, with no way of ascertaining the amount in storage in different organs. It appears to us, that to obtain clinical results in definite cases of hypofunction of the ovary, massive doses of the hormone must be given to approximate the amount found in a normally functioning woman.

4516

Reaction Between Antiseptics and Proteins and Antiseptic Activity of the Adsorbed Portion.

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It is a well know fact that the action of antiseptics upon bacteria is greatly diminished by the presence of proteins, blood serum, tissue juices and pus, but whether this is due to a chemical combination with the protein or to adsorption of the antiseptic on the surface of the protein, is not so certain.

Mathews,[1] Heidenhain,[2] and Chapman, Greenberg and Schmidt,[3]

* The experiments reported in this paper form the basis for a part of a Thesis presented by Harold N. Wright in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the University of Minnesota (May, 1929).

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