period (December and first half of February) the ovaries of the ferret are small and differ from the ovaries in the period of sexual activity especially through the diminution in the number of good follicles. While the ovaries as a whole are smaller, the interstitial gland is well preserved during the winter months.

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The cyclic changes in the mammary gland of the guinea pig.

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Our interest in the character of the cyclic changes of the mammary gland and in their mechanism was twofold. (1) In former investigations Loeb has shown that an early extirpation of the ovaries reduces to a very marked extent the incidence of cancer of the breast in mice. It was therefore of interest to inquire more closely into the relations between ovaries and mammary gland, and (2) we wished to determine whether there exists a parallelism between the cyclic changes in the mammary gland on the one hand and in the ovaries and uterus on the other hand. One of us had formerly shown that in the cyclic changes of ovaries and uterus we could distinguish two phases: the first, comprising ovulation and the heat changes in the uterus, depends upon the absence of the corpus luteum. These are prevented by a substance secreted by the lutein cells. This phase is, however, dependent upon another constituent of the ovaries. The second phase, comprising the further cyclic changes in the uterus as well as the production of decidua and deciduomata, requires a substance secreted by the corpus luteum. Do corresponding phases exist in the case of the mammary gland?

Relatively little is known concerning the cyclic changes in the mammary gland. Bouin and Ancel, as well as Frank and Unger, have shown that in the rabbit, even in the absence of pregnancy, but in the presence of corpora lutea, proliferation takes place in the mammary gland. Proliferation also occurs regularly during pregnancy. Frank and Unger have furthermore demonstrated

that the experiments of Starling and others concerning the source of the growth substance which acts on the mammary gland are not conclusive.

Our investigations concern the cyclic changes in the mammary gland of the guinea pig. We studied the mammary glands as well as uterus and ovaries in 262 animals, in almost all of which the time of ovulation had been ascertained prior to the experiment. In many of these animals the effect of ovaries and uterus on the cyclic changes was analyzed by various experimental procedures.

Without going into a detailed discussion of our results, we may state our principal conclusion as follows: The normal sexual cycle of the guinea pig (the period between two ovulations), has a duration of approximately 16–18 days. We can also, in the case of the mammary gland, distinguish two phases in this cycle—one comprising the time of heat and ovulation and two or three days following ovulation; in the large majority of cases the mammary gland proliferates mitotically during this phase. In the second phase, comprising the remainder of the sexual cycle, proliferation is as a rule absent. Only toward the end of this phase, from the fifteenth to the twentieth day, we find again in some cases proliferation. The first proliferating phase depends upon the absence of the corpus luteum. We can accelerate it by an early extirpation of the corpora lutea, in a way similar to the acceleration of ovulation and uterine heat changes by the same procedure. The corpus luteum of the ordinary sexual period in the guinea pig does not usually produce proliferation of the mammary gland. Also during pregnancy, which lasts in the guinea pig about twice as long as in the rabbit, proliferation of the mammary gland occurs regularly only after the twenty-fourth day of pregnancy.

If through certain experimental procedures we prolong the sexual cycle, we find usually a proliferating gland in cases in which well-developed living deciduomata and good corpora lutea, or in which strongly developed, not degenerated corpora lutea without deciduomata, are present. In those cases in which during the period of prolongation deciduomata and corpora lutea are degenerating, proliferation of the mammary gland as a rule is absent.

In case of castration and of the presence of hypotypical ovaries, proliferation of the mammary gland is not found. Con-

sidering all the facts we may conclude that while proliferation in the first phase depends upon the absence of the corpus luteum and upon the activity of another constituent of the ovaries, the proliferation which is found following the first period is in all probability due to substances secreted by the corpus luteum.[1] In the guinea pig, however, the effect of this substance becomes apparent only at a much later period than in the rabbit. The adaptive character of this phenomenon is clear if we remember that in the rabbit the functioning of the mammary gland is required at a much earlier period than in the guinea pig. Repeated intraperitoneal injections of corpus luteum of the cow does not produce a proliferation of the mammary gland in the guinea pig.

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The chlorides of the plasma in uremia.

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Previous investigations relating to the chlorid content of the blood or plasma in uremia have yielded conflicting results, some figures much lower than the lowest normal limit having been reported.[2] It is known that the chlorid content of nephritic plasma is usually somewhat higher than that of the average normal plasma, but the findings in uremia have apparently so far not been explained.

We have been able, in several cases, to make frequent observations of the chlorid content of the plasma of nephritic individuals during life, and up to the time of death in uremic coma. We have found a diminution of chlorids in the plasma to be the usual accompaniment of uremia, and we have found this decrease of chlorids in the plasma to accompany the increased H + ion concentration frequently observed in the blood of uremic patients shortly before death.

[1] The latter part of this conclusion depends in part at least upon the correctness of the observations of Bouin and Ancel and Frank and Unger.

[2] Strauss, H., "Die chronischen thieren entzündungen," Berlin, 1902, 51.