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8304 P*

**Incidence of Mammary Cancer and Nature of the Sexual Cycle in
Various Strains of Mice.†**

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Loeb and Genther¹ studied the characteristics of the sexual cycle in 2 different strains of mice, which were believed to differ in their incidence of mammary cancer. Subsequently it became doubtful to what degree the cancer incidence differed in these mice, and furthermore a comparison of only 2 strains of mice did not seem sufficient. Soon after completion of this first series, we began therefore a new and more extensive series of experiments. In the meantime there

* P represents a preliminary, C a complete manuscript.

† These investigations were carried out with the aid of a grant for research in science made to Washington University by the International Cancer Research Foundation.

¹ Loeb, Leo, and Genther, I. T., *PROC. SOC. EXP. BIOL. AND MED.*, 1928, **15**, 809.

appeared communications by Lacassagne² and by Harde,³ which seemed to establish a connection between the differences in the intensity of follicular hormone action during the sexual cycle and the incidence of mammary cancer. Quite recently, however, Bonser⁴ in comparing 2 strains of mice differing in the incidence of spontaneous tumors did not find any correspondence between these 2 conditions.

Our own investigations are based on the study of 10 strains of mice markedly differing in their tumor incidence. We considered the following characteristics in the sexual cycle: (1) The duration of the sexual cycles and the number of cycles in individual mice, and the averages in the various strains. (2) The average duration of the periods of keratinization and the relation between the periods of oestrus and dioestrus in the various strains and in the individual mice composing them. (3) The degree of regularity of the oestrous cycles. We may summarize our results by stating that there was no parallelism noticeable between any of these factors and the incidence of mammary cancer either in the individual mice or in the whole strains.

We studied the effect of 2 different diets on the characteristics of the sexual cycle. In a first period of 30 days, the mice were fed solely on a diet of Purina Chow; in a subsequent period of 28 days the diet consisted of a mixture of chow, cracked corn and oats. There was a distinct difference in some characteristics of the sexual cycle during these 2 periods; the regularity in the sexual periodicity was greater in the first set of mice, and in the second series the differences between the nature of the sexual cycles of the different strains were considerably more marked than in the first series, when the pure chow was used. Notwithstanding these differences in the nature of the cycles in these 2 series of experiments, there was a great similarity in certain characteristics of the oestrous cycles in many individual mice and also in the whole strains during both periods. This persistence in the characteristics of the sexual cycle during 2 periods suggests that a factor, perhaps of a genetic nature, inherent in each female mouse is one of the conditions which determines some of the characters of the sexual cycle.

We may then conclude that the great differences in the hereditary tendency to cancer which are found in different strains of mice do not depend upon differences in the characteristics of the sexual

² Lacassagne, A., *Compt. Rend. de la Soc. Biol.*, 1934, **115**, 937.

³ Harde, E., *Compt. Rend. de la Soc. Biol.*, 1934, **116**, 999.

⁴ Bonser, S. M., *J. Path. and Bact.*, 1935, **41**, 33.

cycle and in particular not on differences in the intensity of the action of the follicular hormone during the follicular phase of the cycle.

8305 C

Loss of Blood from Circulation in Various Types of Intestinal Obstruction.

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The theory that the cause of death in intestinal obstruction is a loss of blood from the general circulation into the distended and stagnant vessels of the congested intestinal wall has not in all quarters been entirely discarded. Splanchnic congestion is of course a factor of no importance in obstruction of the duodenum or uppermost jejunum: high obstruction is not therefore considered here, but a series of simple animal experiments has been performed to determine the blood loss from the general circulation in the 3 other varieties of intestinal obstruction which occur clinically—(1) simple low occlusion of the small intestine, (2) closed loop obstruction without strangulation, and (3) closed loop obstruction with strangulation of the veins draining the obstructed loop.

(1) *Simple Low Small Intestine Occlusion.* In each of 9 cats under ether anesthesia a silk ligature was tied tightly around the ileum 18 inches above the ileocaecal junction. Two fine seromuscular knots of silk were placed in the gut wall one foot above, and one foot below the point of obstruction to measure off respectively the lowest foot of obstructed bowel, and an equal adjacent loop of unobstructed bowel. In 2 of the cats the obstructing ligature broke or cut through and the animals recovered. The remaining animals died after periods of 1 to 6 days. In these the 2 measured loops were excised after death and their mucosal surfaces dried by the passage of a cotton pull-through. Only a drop or 2 of blood was lost from each loop during excision from the vessels of the mesentery and of the loop ends. The difference in weight between the measured unobstructed foot of bowel, and the lowest foot of obstructed bowel was taken to represent the maximum possible sur-

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