the time of bleeding which we are willing to call degenerative.) There is much extravasation of blood into the subepithelial tissue of the dog during the bleeding but no lacunae of blood are seen such as those found in the menstruating primate uterus. The stromal tissue in the areas of extravasation does not appear to be degenerated. These findings are in accord with the general opinion that stromal degeneration does not take place in the uterus of the dog at the time of the prooestrous bleeding.

These data demonstrate that the prooestrous bleeding of the dog is produced by direct or indirect action of the oestrous hormone on the uterus. We believe the mechanism by which this hormone produces its effect cannot be considered to be identical with that concerned in the production of uterine bleeding in primates.

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Rate of Beat Over Long Time Periods of Isolated Turtle Hearts Treated with Thyroxin.

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The question arises whether the marked increase in rate of heart beat which develops in hyperthyroid and in thyroid fed animals will appear in isolated hearts treated with thyroxin if a sufficient time is allowed for the action of the hormone. Lewis and McEachern[1] have shown that hearts removed from thyroid fed, or thyroxin treated rabbits maintain a 50% increase in rate for 8 to 10 hours, and that normal excised rabbits' hearts show no immediate effect of thyroxin.

We have kept excised turtle hearts at 20°C. ± .02° for 60 hours. recording automatically the rate during this period by means of the Loomis chronograph.[2] The heart was tied by the tips of the auricles to a heart lever and suspended in a modified Ringer's solution, containing 0.1% glucose and phosphate buffer to pH = 7.3, oxygenated by pure O_2 gas. Addition of thyroxin*, dissolved in a minimal

[1] Lewis, J. K., and McEachern, D., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 504; *Bull. Johns Hopkins Hospital*, 1931, **48**, 228.

[2] Loomis, A. L., Harvey, E. N., and MacRae, C., *J. Gen. Physiol.*, 1930, **14**, 105.

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amount of alkali as a stock solution of 1:1000, does not change the pH of the solution. The details of transmitting the heart beat to the chronograph are described in a previous paper.[2]

The hearts beat about 10 times in 20 seconds at first, gradually slowing to 10 beats in 30 seconds in 2 hours when the thyroxin, $1:10^5$, is added. No immediate change in rate occurs, the heart gradually slowing, with some rhythmic variation in rate, over a period of 2 days, when the rate may be 10 beats in 80 seconds. The 4 hearts studied showed no tendency whatever to increase in rate and behaved in every way like normal hearts, which likewise continually slow over long time periods. We, therefore, conclude that thyroxin has no delayed direct action on the heart after excision from the body. Its action in the body must be secondary, possibly the production of a substance which directly affects heart muscle and whose effect persists for some time. Epinephrin and ephedrin affect these hearts in the normal rate-increasing manner.

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Colony Variation in Pathogenic Strains of Bacterium coli Induced by the Use of Dyes.

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There is perhaps no other single criterion for the identification of the culture type that is so significant as colony appearance. It is regrettable, however, that in many investigations slight or no effort is made to proceed beyond recording the colony appearance. That this procedure is ill-advised is evident to every investigator who finds discrepancies in the characteristics of apparently established types.

In connection with studies on the pathogenicity of certain strains of *Bacterium coli,* note was made of the fact that some dyes tended to cause the appearance of clearly defined rough colonies with marked consistency in cultures that had been quite uniformly smooth for many generations. Use was made of a series of dyes to ascertain whether this was a constant phenomenon, perhaps associated with specific dye radicals, and there were found 4 of 25 common dyes which gave definite results.

Methylene blue (1-1000) yielded 60% roughs on the first trans-