ity notwithstanding the struggle accompanying the emergence of the animal from ether anesthesia. By the next morning much of the contents of the gall-bladder had been emptied spontaneously (as frequently happens during fasting[4]), proving that the orifice of the bile duct had not been closed by adhesions. At this time the gall-bladder was relaxed (G. B., fig. 2b). Eight minutes after feeding egg yolk, however, the gall-bladder elongated, as if under tonus (2c), and in the course of the next few hours expelled additional amounts of lipiodol into the cavity (2d). But in no case was the purported sucking action of intestinal peristalsis operative, since the bile duct had been severed from the intestine.

In conclusion, one must therefore assume that the mechanical passage of food through the intestinal tract is not a factor in the emptying of the gall-bladder.

[1] Boyden, E. A., PROC. SOC. EXP. BIOL. AND MED., 1927, xxiv, 353-358.
[2] Burget, G. E., *Am. J. Physiol.*, 1925, lxxiv, 583.
[3] Whitaker, L. R., *Am. J. Physiol.*, 1926, lxxviii, 418.
[4] Boyden, E. A., PROC. SOC. EXP. BIOL. AND MED., 1927, xxiv, 157-162.

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The Importance of the Carbonate Ion in Physiological Activity.

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In the course of a study of the response of the guinea pig uterus to pituitrin when the ionic environment of the uterus was varied, the carbonate ion was found to be of importance in determining the magnitude of the response. The carbonate ion seems to exert its influence of itself, and not to be merely reflecting a change in calcium or hydrogen ion activity. This is shown by the following experimental results.

Whenever the carbonate ion activity was increased there was a diminished response of the uterus to pituitrin. This was true whether the carbonate ion activity was increased (a) by increasing the bicarbonate activity and CO_2 tension proportionately so that there was no change in pH; (b) by increasing the bicarbonate activity alone with an increase in pH; or (c) by decreasing the CO_2 tension alone, which also resulted in an increased pH.

Whenever the carbonate ion activity was decreased there was an increased response of the uterus to pituitrin. This occurred whether the carbonate ion activity was decreased (a) by decreasing the bicarbonate ion activity and CO_2 tension proportionately without change in pH; (b) by decreasing the bicarbonate without change in CO_2 tension thereby lowering the pH; or (c) by increasing only the CO_2 tension which also resulted in a decreased pH.

When the carbonate ion activity was kept as constant as experimental technique permitted, there was either no change in response or a slight change which might at times be positive and at other times negative. This occurred regardless of whether the bicarbonate was doubled, the CO_2 tension quadrupled and the resulting pH decreased, or the bicarbonate was halved, the CO_2 tension quartered and the resulting pH increased.

The calcium ion activity was the same in all solutions.

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Influence of "Effective Temperature" Upon Bactericidal Action of Gastro-Intestinal Tract.

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We have previously shown the effects of acid and alkaline buffered substances fed by mouth upon the bactericidal action of the gastro-intestinal tract.[1] We explained these differences upon the variations in the H-ion concentration of the material in the upper half of the small intestine. When there was a predominance of acid or acid buffered substances in the lumen of this part of the tract, there was an auto-disinfection of the exogenous bacterial flora. When there was a predominance of alkaline buffered substances in the upper part of the small intestine, there was a loss of this power to kill bacteria.

We wished to use certain methods of changing in external environment to influence gastro-intestinal function and study the same bactericidal mechanism under these conditions. Bread was soaked in cooked meat broth and fed to dogs kept in rooms at ordinary and warmer temperatures. Prodigiosus was added to the food before feeding. Temperature in the cool room was 50° F., the relative humidity was 40 per cent. The warm room was 98° F. and 70 per