Book Notice

The Ohio Journal of Science. v53 n6 (November, 1953), 326
http://hdl.handle.net/1811/4077

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This is an unusual book both as to form and content. The main paragraphs of each chapter are numbered and the illustrations are numbered according to the chapter and paragraph to which they relate. This arrangement facilitates the use of cross references since each page bears, in addition to the page number, the chapter and paragraph number.

The content of the book may be roughly divided into what the author terms the "non-mathematical" chapters and the Appendix which contains the appropriate mathematical formulations.

This is a treatise in bio-mathematics and it appears to be addressed to a small audience. This reviewer certainly lacks the ability to comprehend the mathematical angles of the presentation and it is probable that other biologists will have similar difficulties. On the other hand, mathematicians may have some difficulty understanding the references to anatomy and physiology.

The author attempts to explain how the nervous system can produce learned behavior that is adaptive. A form of behavior is said to be adaptive when its essential variables are kept within physiological limits. Changes in the environment tend to push these variables beyond physiological limits but the adaptation mechanisms of the organism tend to keep the variables within these limits and thus to bring about a condition of stability. The latter term does not imply a fixed state or a condition of rigidity but rather one of control within a range of action. Such control involves the concept of feed-back which means that as behavior is being accomplished information is fed back into the nervous system from the active muscles or glands to yield information in terms of error in approach to goal. The brain is held to be an ultrastable system which acts selectively towards its main variables, rejecting changes that would lead to critical points in adjustment ranges, and retaining these changes which do not. Thus, the brain can produce adaptive behavior.

Dwight M. Palmer.