molecular geometry and stereochemistry.

The book should be useful to structural, physical, and organic chemists as a general reference. Classification by subject of the entries in the bibliography would have facilitated its use for this purpose. Workers in the biological sciences will find little information directly applicable to their fields, even though the title might imply otherwise.

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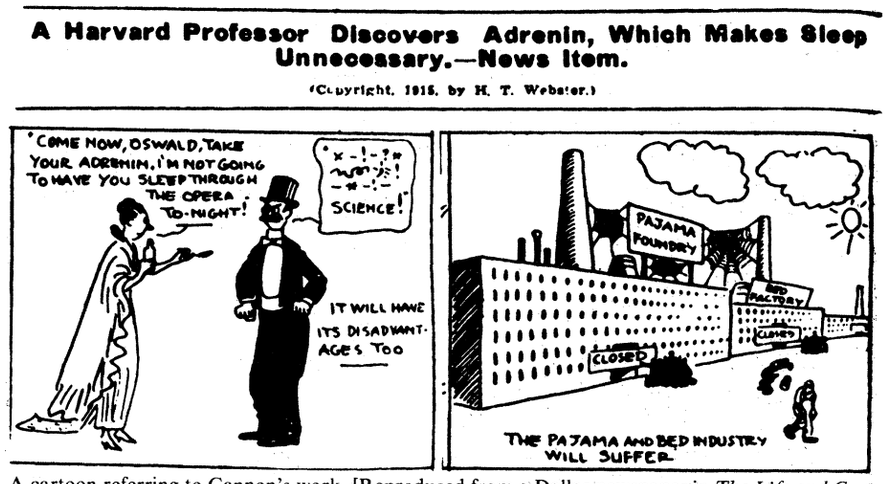
Centennial in Physiology

The Life and Contributions of Walter Bradford Cannon, 1871-1945. His influence on the Development of Physiology in the Twentieth Century. Papers from a symposium, Brooklyn, N.Y., May 1972. CHANDLER MCC. BROOKS, KIYOMI KOIZUMI, and JAMES O. PINKSTON, Eds. State University of New York Downstate Medical Center, Brooklyn, 1975 (distributor, State University of New York Press, Albany). xxii, 264 pp., illus. $20.

This volume is the proceedings of a symposium held at the centennial of the birth of Walter B. Cannon, summarizing his influence on the development of physiology in the 20th century. Three types of material are presented: summaries of important discoveries made by Cannon, reviews of current knowledge of some topics the study of which he initiated, and reminiscences and evaluation of him as a person. A list of Cannon's publications from 1897 to 1945 is appended.

A striking characteristic of Cannon's career was his logical transition from one research topic to another. He pioneered in the development of diagnostic roentgenography (radiation he received on his hands ultimately caused his death). He used x-rays to solve questions of esophageal and gastrointestinal motility, and for this he compared many species. He then spent years on the autonomic nervous system and demonstrated humoral transmission at sympathetic endings; his postulate of two types of "sympathin" was later modified but was empirically correct. During World War I he devoted himself to studies of shock. His next logical step was to study the central nervous basis for emotions, and in doing so he opened a large and continuing area of research. Related to this was analysis of thirst and hunger. Cannon was persistently holistic in his approach, and this culminated in enunciation of the principles of homeostasis, a concept that now



A cartoon referring to Cannon's work. [Reproduced from a Dallas newspaper in *The Life and Contributions of Walter Bradford Cannon, 1871–1945*]

permeates much of biological theory. He emphasized the role of sympathetic nerves and the adrenal medulla in responses to stress well before the role of steroids was suggested. His wide-ranging curiosity, industry, and research drive are clearly illustrated in numerous chapters in this book. He was a master at taking advantage of an unexpected turn of an experiment—serendipity. It is suggested that the reason he did not win the Nobel Prize may have been the diversity of his contributions.

The accounts of Cannon's contributions to roentgenology, to gastroenterology, and to the study of chemical transmission by sympathetic nerves are valuable contributions to the history of physiology. Some of the accounts of the present status of research, for example, on autonomic function, central representation of emotions, and the stress syndrome, diverge from the central theme of the book and seem somewhat forced. Even the final summary on "heroes in this age" is more Gerard than Cannon.

For many physiologists who, like myself, spent time in Cannon's department, the most interesting parts of the book are the accounts of Cannon as a man, as a leader of American science, as an international figure in physiology and medicine, and as a mentor. Chapters by Hallowell Davis, Bradford Cannon, and the editors reveal Walter Cannon's liberal character, his willingness to battle for good causes (exemplified by his continued opposition to the antivivisectionists), his leadership qualities. I experienced nostalgia in reading accounts of research done in the '20's and '30's and wished for more insight into how Cannon managed to maintain such quality in his staff. He insisted that medical students have a rigorous background in basic science before entering the clinics. His dogged emphasis on the international unity of science is well illustrated by his friendship with Pavlov, by his support of Spanish physiologists during the revolution, by his willingness to speak bluntly of matters of principle at international congresses. One must agree with Gerard in doubting that the next generation of physiologists will have such heroes as Walter Cannon.

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Radiation Chemistry

EPR of Free Radicals in Radiation Chemistry. S. YA. PSHEZHETSKII, A. G. KOTOV, V. K. MILINCHUK, V. A. ROGINSKII, and V. I. TUPIKOV. Translated from the Russian edition (Moscow, 1972) by P. Shelnitz. T. Pick, Transl. Ed. Halsted (Wiley), New York, and Israel Program for Scientific Translations, Jerusalem, 1974. viii, 446 pp., illus. $45.75.

Both neutral and charged free radicals are pervasive and important intermediates in the action of ionizing radiation on matter. Electron paramagnetic resonance (EPR) is generally the technique of choice for detecting, identifying, and monitoring them. Reactive free radicals can be most conveniently studied after stabilization in solid matrices. The spectra of radicals stabilized in single crystals can often be analyzed in considerable detail to obtain both isotropic and anisotropic hyperfine constants, to deduce the radical structure, and to identify radical-matrix interactions. In polycrystalline, amorphous, or glassy solids, however, the anisotropic information is partially or wholly lost and only gross isotropic features of the spectra are readily discernible. Nevertheless, analysis of spectra in such disordered media is of great value because single-crystal systems can-