



## Medical marvels

*The 100 greatest advances in medicine*

Eugene W. Straus and Alex Straus

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Eugene Straus, professor emeritus of medicine at the State University of New York Health Science Center, has followed up his interesting biography, *Rosalyn Yalow, Nobel laureate: her life and work in medicine* (1), with *Medical marvels: the 100 greatest advances in medicine*. Coauthored with journalist Alex Straus, with interesting and stimulating black-and-white illustrations by Bette Korman, the volume examines the science and art of many key medical advances throughout history, selected based on the criteria that they changed the course of medicine, relieved suffering, furthered our understanding of health and disease, and culminated in improvements in disease prevention, diagnosis, or therapeutics.

Each of the 100 advances is described concisely within individual 3- to 5-page chapters, thus serving as a launching pad for the reader to acquire additional information on specific topics of interest. Naturally, the breakthroughs that most scientists, physicians, and lay readers will be familiar with appear. These include the discovery of viruses, oncogenes, antibiotics, and stem cells; smallpox vaccination; gene therapy; and, of course Watson, Crick, Wilkins, and Franklin's identification of the structure of DNA and the elucidation of the human genetic code, regarded as the most important biological experiments in history. The authors also examine the evolution of some of the experimental and diagnostic approaches that researchers and physicians have come to rely on daily, including: history taking and the physical exam, surgical anesthesia, tissue culture, the x-ray, the ECG, and PCR.

The authors revisit Antonie van Leeuwenhoek's construction of the single-lens

microscope and William Beaumont's examination via a perforation in the anterior wall of the stomach of a patient following a shotgun wound, which provided the earliest insights into the digestive process and its regulation in vivo. This led to the work of Ivan Pavlov, whose experiments with dogs provided great insight into the mechanisms of salivation, pancreatic function, hunger, and satiation and identified the phenomenon now known as classical conditioning. As an additional resource, the authors include as part of their discussion of solid organ transplantation contact information for national organizations that assist patients in need of transplants.

In the 1940s, as a naval medical corpsman, I had the great fortune to be among the first to administer a new drug — penicillin — to casualties from the Pacific Island invasions. At that time the results obtained from using penicillin were astounding and never before equaled by any therapeutic agent for infections. Alexander Fleming and Howard Florey's work toward the discovery and commercial production of penicillin rightly appears on Straus's list, and this drug represents a true medical marvel.

Throughout the text each chapter is admixed with others concerned with social and economic problems associated with socialized medicine, medical ethics, health maintenance organizations, patient advocacy, and related subjects. These include the evolution of the doctor-patient relationship into one of a provider and customer, the management of addictive behavior, and the underrepresentation of minorities and women in the pursuit of medicine. As interesting and important as the sections on the social aspects of medicine are, they distract

from the flow of scientific information and would have better constituted a separate section of the book. This is not to diminish the importance of these sections, but rather to note that they interrupt the sequence of summaries of medical research-related accomplishments.

Based on my own experience in medicine and research since 1953, I would have included several additional advances in the physical sciences, akin to some of those highlighted by John Gribbin in *The scientists: a history of science told through the lives of its greatest inventors* (2), along with the elucidation of the structure of the psychotropic serum vasoconstrictor serotonin and the research of Erwin Chargaff that actually laid the groundwork for the discovery of the double-helix structure of DNA. I would hope to see these featured if a second edition of this volume is released.

Thus, we have an interesting, richly illustrated book for both the layman and scientist who wish to develop broad baseline information on major medical advances. However, more than simply a compendium of breakthroughs in medical technology, *Medical marvels* intertwines the social and ethical aspects of the practice of medicine with the science, impressing upon the reader the dedication of individuals committed to enhancing the quality of human life. The text is strongly recommended as interesting, informative, and stimulating reading.

1. Straus, E. 2000. *Rosalyn Yalow, Nobel laureate: her life and work in medicine*. Perseus Books Group. New York, New York, USA. 277 pp.

2. Gribbin, J. 2004. *The scientists: a history of science told through the lives of its greatest inventors*. Random House Trade Paperbacks. New York, New York, USA. 672 pp.