BOOK REVIEW

Science and technology in medicine: an illustrated account based on ninety-nine landmark publications from five centuries

Andras Gedeon. Springer-Verlag New York NY USA. 2005. 580 pages. Hardcover, US $89.95. ISBN: 0387278745

We live in an age of lists and compilations – "12 Books that changed the world", "50 places to visit before you die …" and so this book based on 99 publications that mark the highlights of the influence of science and technology on medicine would seem to be very timely. Having said that, the book is far more than just a list. It is a voyage of discovery – each chapter is illustrated by a superb collection of drawings, prints and original documents that both make it live and explore its implications. It shows that many of the techniques that we think of as modern such as electrical stimulation of tissue have a surprisingly long history although their scientific basis was not elucidated until the 19th and 20th centuries.

The author, Dr Andras Gedeon, is a distinguished Swedish scientist who is well qualified to undertake this task, having spent a long career in the medical equipment industry developing new equipment and techniques in the intensive care and cardio-pulmonary areas.

In covering scientific and technological innovations in medicine from Paracelsus to PET imaging the choice of items is necessarily subjective and there have to be some omissions. For example, the author includes the invention of the transistor and the digital computer, but not the thermionic valve, which was used in electrophysiological recording equipment from the 1930s to the 1960s and played a major part in the developments in the understanding of the mechanisms of cell biophysics.

In looking at a book such as this, one tends to start by looking at the papers covering one's own interests. The section on electrocardiography is very comprehensive starting with recordings made in the late 1880s by Waller on his bulldog Jimmy using a capillary electrometer and reproductions of Eindhoven's original tracings from his own newly-developed string galvanometer. The section then goes on to illustrate inkjet ECG recorders [a Swedish innovation used widely in Europe but less so here] and ends with brief mentions of Holter monitoring and ECG recording via radio telemetry. There are excellent illustrations of the development of the heart-lung pump and the artificial heart.

Then there are the discoveries of the unexpected. I was unaware that much of the early work on the piezo-electric properties of quartz crystals was done by Pierre Curie in 1889. His pupil Langevin then developed the techniques used to locate underwater objects during the first World War that form much of the basis of modern day ultrasonography.

Medical imaging is well represented. There are seminal papers by Zworykin, Hounsfield, Damadian and Lauterbur and Phelps (PET scanning).

A 1974 paper by Cerf and Carn on a protocol for packet network intercommunication points out that optical signalling has a long history and describes the torch system used by the Greek army for communication during the Peloponnesian War in 430 BC where torches were deployed in a 5 by 6 matrix to spell out messages.

This book is a delight. It is a book that can be read from cover to cover in a sitting but is best kept close to hand and delved into from time to time. Although expensive, the book contains very high quality illustrations and good resource material for lecture presentations. It would make an excellent teaching tool for courses in biomedical engineering and medical physics and merits a place in your library.

Richard Kirsner,
Biomedical Engineering Group
Department of Electronic Engineering
La Trobe University, Bundoora, Australia