
History of Pharmacy in India – Pharmacy Practice. Harkishan Singh. Vallabh Prakashan, SU-221 Pitampura, Delhi 110 088. 2002. Vol. 3. 226 pp. Price: Rs 450.

Writing of history by a scientist is rare. Harkishan Singh, a noted, devoted and reputed pharmacist of the country has done a marvellous job of publishing three volumes on *History of Pharmacy in India*. Like the first two volumes, this volume on pharmacy practice has been well written and documented (with 43 illustrations) after thorough research (the author has given 908 references and notes as bibliography).

The book consists of 12 chapters that run into 226 pages along with an extensive index. The first two chapters give an overall history of the emergence of practice of pharmacy in India. As rightly pointed out in these chapters, current pharmacy practice is based on the Western medical system which started as a part of Military Service and in the lines of the Pharmaceutical Society of Great Britain.

Chapters 3 to 8 provide an interesting view of the profession of pharmacy; transformations from the job of apothecary, compounder, chemist, druggist and assistant to medical staff in a hospital. These transformations have been well-associated with chapters in the policies of drug trade, how various British-period pharmacies came into existence and the emergence of various associations and organizations such as the Pharmaceutical Society of India, The Pharmaceutical Association, etc. There is also a mention about the educational policies and legislative changes that have taken place to maintain the standards in practice of pharmacy in the country. Several illustrations have been given about great personalities involved and old British-period pharmacies.

History pertaining to foreign trade, including export of opium, cinchona and nux vomika from India, and import of various proprietary and patent medicines is worth reading.

The last four chapters deal with pharmacy ethics, code of pharmaceutical conduct, practice of pharmacy in hospitals and rural areas. The book has focused on the history of pharmacy practice as related to dispensing and drug

trade. In the area of pharmaceutical manufacturing India has done extremely well. This aspect has not been touched to a large extent.

Besides giving an in-depth account of the history on pharmacy practice, various statements mentioned in the book are thought-provoking. Some of them are as follows:

‘British were successful in successfully introducing and developing the Western Medical System but ignored the pharmaceutical sector.’

(Probably it is still an ignored sector for the Government of India!)

‘The start of an organized pharmacy profession in India is over a century behind the introduction and consolidation of the Western Medical Profession.’ (Implementation of the section 42 of the Pharmacy Act of 1948 after 36 years, i.e. 1984 spells out this truth, and how long it will take to get the profession of pharmacy from industry orientation to clinical orientation is still a big question.)

All pharmacists must read the book. One should seriously consider the realities that have been mentioned, to uplift the profession of pharmacy to a standard that one can take pride of at the International level.

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Biophysical Processes in Living Systems. P. Pardha Saradhi. Oxford and IBH Publishing Co Pvt Ltd, 66, Janpath, New Delhi 110 001. 2001. 369 pp. Price: Rs 850.

This is an interesting book, dealing with the major biophysical processes associated with the structural and functional aspects in living systems. Interaction and importance of macromolecules, water

and organelle, etc. in living systems form the core of biophysics, and to understand and comprehend all these in one book is quite a laudable task.

The book contains 20 chapters, covering various aspects starting from the first chapter, dealing with the role of reverse micelles in biological systems. Reverse micelles or water in oil microemulsions are formed with natural or synthetic surfactants with or without co-surfactant. A large number of enzymes are found to be active in reverse micelles where they arrange themselves in the internal water space of the micelle. Reverse micelles have a great potential in biotechnology because they provide an environment for the bioconversion of polar and apolar compounds used in organic synthesis, micro-particle synthesis and luminescence. A good feature of this chapter is that it contains several illustrative diagrams and spectra.

The second and third chapters centre around DNA replication and DNA reactive ligands. Molecular and biophysical events necessary for both have been considered in detail, but the author has omitted stereochemistry and aspects regarding the protein as a reactive ligand to the DNA. The protein is a very prominent reactive ligand and the DNA-protein interaction should have been included.

The next four chapters deal with the ionic interaction, folding, catalysis and immobilization of proteins. Although much of this is standard text book material, the precision of material and its presentation are good. Most of the studies described in these chapters owe their success to the good consideration of both the theoretical and practical approach of the author.

Subsequent chapters are mainly concerned with the transport and signalling across the membrane. Molecular mechanism of transport of metabolites across the membrane has always been an intriguing problem for scientists. The mechanism which utilizes the free energy of ATP for the active transport is still unclear and the author's effort to correlate the mechanism with H^+ ATPase for the proposal of a suitable model is laudable. We need some more similar ATPase to put forth a solid proposal for the molecular mechanism of active transport.

Light plays an important role in plant growth and development. Phytochromes,

via the turnover of inositol lipids, bring the sequence-specific photomorphogenic effects to regulate the gene expression and subsequently the growth of plant.

The biological molecules transduce diverse signals with remarkable specificity. The interaction between hormone receptor, enzyme and substrate or antigen and antibody, molecular recognition involves complementarity of shape and charge at the interface. Molecular mimicry is now in the initial stages of being understood and can certainly play a pivotal role in the rationale drug design. Therefore, understanding the structural principle governing molecular mimicry could be important in its successful exploitation.

The more complex and sophisticated the regulation mechanisms of the biological system, the more they are able to adopt it. In order to get a better understanding of the adaptive and the survival strategies that the system can enjoy, it is thus necessary to gain an access into the phenomena that reveal the existence and performance of the regulation mechanisms of the system. Chapter sixteen deals with the biophysical approach to understanding the structure–function relationship in the photosynthetic approach.

The last three chapters basically deal with neuroscience. The neural control of arterial pulse measurement of oscillating arterial contractions should be in phase with, but uncomplicated by, the hydrostatic pressure change. Such measurements were observed by bypassing the flow of blood around arterial segments from which contractile activity was recorded. The rhythmic contraction was in phase with the cardiac cycle and was found to be of neurogenic origin that was triggered from a pacemaker region located in the right atrium. Behavioural expressions of living beings are complex phenomena and the use of biophysical properties in understanding the physiological mechanisms and phenomena is quite interesting. The last chapter deals with the modelling of neurons and the biological neural system which explains the functioning of the network of neurons at a system-level.

The authors of the various chapters are fairly experienced in their respective fields and have done a good job by giving an insight into the various aspects of biophysical processes in living systems,

while the main author has to be complimented for trying to compile all these in the form of a book. I am sure this book will be an asset to any library or individual in the concerned subject.

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Earthshaking Science – What We Know (and Don't Know) about Earthquakes. Susan Elizabeth Hough, Princeton University Press, 41 William Street, Princeton, NJ 08540, USA. 2002. 230 pp. Price: US\$ 24.95.

Perhaps no other branch of earth sciences commands so much public attention, as the science of earthquakes does. Why do earthquakes occur where they do? Can they be predicted? How much will the ground shake during an earthquake of a given size and how should the building be designed? These are some of the questions that are frequently asked by the public as well as the policy makers. In a more practical sense, the issue is about using the knowledge of earthquakes to quantify and thereby mitigate future seismic hazards. Even as the scientific community is struggling to fully address these and many other issues on the mechanism of earthquakes, there is a definite need to translate the scientific knowledge into formats that can be understood, by the public as well as the builders, policy makers and scores of others interested in disaster mitigation. Translating scientific knowledge to jargon-free and simple prose is not always easy, especially when the topic being dealt with is complex. *Earthshaking Science* by Susan Hough is one of the rare books that puts together almost everything that we know (and do not know) about earthquakes, in a remarkably simple and attractive style. Hough states in her preface that *Earthshaking Science* was 'born of a perceived need for clearly presenting basic information'. The sec-

ond goal, she states, is to 'communicate the passion and excitement associated with earthquake science'. This book meets these dual goals marvellously well. It deals with issues in seismology in a way that most readers can understand, and leaves the more involved reader infected by the author's passion for the science of earthquakes.

Earthshaking Science is organized in eight chapters. The first chapter deals with the plate tectonics revolution. Although most books on earthquakes carry a chapter on plate tectonics, there are a few modern ones that deal with the history of development of this great idea that laid the foundations of modern-day understanding of earthquake processes. Hough succinctly summarizes the contributions of Alfred Wegener, Hammond Hess, Tuzo Wilson, Dan McKenzie and many others, leading the way to the modern-day GPS revolution. She sets a perfect stage to understand why earthquakes occur where they do; for example, in the San Andreas fault, in the US, North Anatolian Fault, in Turkey, Mainland China and the Rann of Kachchh, India.

The second chapter on 'sizing up earthquakes' deals with some of the basic concepts and terminology starting with the nature of *P*- and *S*-waves, epicentre and hypocentre. Concepts of elastic rebound theory, seismic moment, moment magnitude as well as earthquake nucleation models are explained with ease and simplicity. A good part of this chapter is devoted to the confusion over reporting earthquake magnitude. With half a dozen values and many conversion formulae to go from one scale to another, there is enough confusion over magnitude of an earthquake, as evident from the early reports on large earthquakes filed by the media. Hough gives a useful analysis and explains in simple terms why this confusion is bound to be there. This will be a useful reading for many, science reporters in particular.

The third chapter on earthquake interactions opens with a quote from Charles Richter, 'An earthquake of consequence is never an isolated event'. An observation penned in 1957, this idea has now reborn in the theories on stress shadows, triggering and fault interactions. The classic case of the 1992 Landers sequence of earthquakes is elaborated in some detail, leaving the reader a bit too perplexed with the complexity of earthquake interactions. Perhaps this is a bit