

BOOK REVIEW

Swapan Kumar Adhikari, *The Role of Mathematics on Human Structure*, Dipali Publications, Howrah, W. B. 2003, 156 pages, \$ 10.95, ISBN 81-901643-0-9.

Reviewed by: Siddhartha Kundu, MD, M-36, Greater Kailash-2, New Delhi 110048

Quantitative queries often arise in medical and surgical disciplines that mandate an objective precise answer, which may in turn lead to better and more effective patient management. Topics such as weight transmission, load bearing capacity, visual acuity, fluid flow velocities have profound diagnostic and prognostic significance. Dr. Adhikari's text takes on for the moment the mantle of interfacing geometry with the medical face of biology. While the main text is deep and insightful, the cover page graphic representation of the orientation of the femur and tibia is a mystery unsolved.

The initial three chapters are entirely devoted to highlighting the relevance of a mathematical perspective in anatomy and physiology. The fourth and fifth chapters while informative and interesting digress minutely from the underlying theme of the book. Chapters six through thirteen however, present a detailed mathematical analysis of the musculo-skeletal system during rest and motion. Alterations during injury are also presented with relevant data.

The historical information that Dr. Adhikari has compiled is truly voluminous. There is an even mix of Latin literature, Mathematics, English translations and Biology which could hypothetically, prevent the reader from establishing a commonality thread.

Dr. Adhikari's style of writing is lucid, simple and direct making it verbally accessible to even readers with no medical training. While there are occasional spelling errors, it does not detract the reader from the material, although an in-text glossary could have been substituted by footnotes. The diagrams could have been done with a sprinkling of color as it serves to demarcate and delineate better than words.

An initial chapter defining and revising concepts of basic geometry and calculus might assist the prospective reader in grasping the fundamentals of differential geometry; which is the central mathematical concept that the book rests on. Nevertheless, Dr. Adhikari's approach to superimpose formulae and methods of classical geometry to the study of the musculo-skeletal system is highly commendable and communicates thought provoking links between the equations and the modelled system.

Dr. Adhikari's book, without a doubt, is a very well researched text. His expertise and vast reservoir of knowledge is apparent. He has painstakingly incorporated charts and tables with actual data. A limitation that could perhaps be worked on is the absence of simulations to illustrate the dynamic nature of the mathematical ideas. The overall presentation of the book is fair; although one does get the impression that haste has been exercised at times. To reiterate, the meticulous detail of the author's work is apparent. It is an excellent reference book for mathematicians with an eye for applied research and an invaluable text for biologists with a passion for mathematics.

Dr. Adhikari's book pleasantly departs from conventional mathematical biology in that rather than formulating a model based on assumptions, he chooses instead to fit notions of geometry to existing biosystems. A highly recommended book for most Institutions.



Harkishan Singh, *History of Pharmacy in India and Related Aspects, Volume 3: Pharmacy Practice*, Vallabh Prakashan, Delhi, 2002, pp 226, Price Rs. 450, US\$ 45, ISBN 81-85 731-31-4, **Volume 4: Mahadeva Lal Schroff and the Making of Modern Pharmacy**, Vallabh Prakashan Delhi, 2005, pp. 216, Price Rs. 500, US\$ 45, ISBN 81-85 731-39-X.

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Prof Harkishan Singh has been an outstanding teacher and research worker in the field of Pharmaceutical Sciences in India. He is now doing yeoman's service to the discipline by researching in its development and growth in the country and publishing the data in an excellent series of books. The

present two volumes have maintained the unique characters of the earlier volumes but have much greater in-depth analysis and an unique personal flavour. They read more like autobiographies than history books.

The Volume on *Pharmacy Practice* traces the history of development of various facet of the discipline in India since the Britishers around the middle of nineteenth century introduced the western system of medicine here. The advent of these medicines was linked with the establishment of the Indian Medical Service and opening of Medical Colleges in Madras, Calcutta and Bombay. The teaching of Pharmacy was initiated as a Pharmacy class in 1860 at Madras Medical College. The training for persons utilized in Pharmacies, however, started in the form of a 'chemists and druggists' class in Madras Medical College in 1870s. The next such course was started in Vishakhapatnam Medical College in 1937. These 'trained' persons had bleak job prospects and remained 'utilitarian appendages' of the medical system even though they were better trained than the Compounders. Later regular training was initiated at many centers for Diploma in Pharmacy. The regulatory norms for Pharmacy practice were established after the Pharmacy Act of 1948 was passed. The book provides a fascinating account of development of regulatory milieu as well as the teaching and training facilities with extensive references to governmental archival material, published reports and personal communications. The author has similarly traced the development and growth of pharmacy stores, pharmaceutical industry and professional societies. The gradual takeover of the manufacture and sale by Indian owned companies from the initial subsidiaries of British industry has also been reviewed. A chapter on Pharmacy ethics has been included. The history of various types of Pharmacy practices like the Hospital pharmacy, retail and community pharmacy and rural pharmacy has been discussed in detail with extensive references. For example, the Chapter on Hospital Pharmacy (22 pages) has 172 references between 1892-2001. Similarly there are 128 references between 1937-2000 in the chapter on Retail and Community Pharmacy. The book has many rare photographs. It is not an easy job to procure these from the original owners. The book is written in a simple lucid style and has no 'printer's devils'. It is going to be a valuable major source book for persons concerned with any aspect of health care.

Dr. Mahadeva Lal Schroff has been rightly described as the titan and icon of modern pharmacy in India. There was no aspect of the Industry,

education, research and scientific publications that did not get his attention and significant pioneering inputs. Unfortunately no authentic biography of Dr. Schroff was available. Prof Singh's volume has aptly filled this lacuna. There are extensive references to personal reminiscences and letters exchanged between those persons and Dr. Schroff. Prof. Singh has painstakingly procured these from family members and associates of Dr. Schroff. These and the remembrances in chapter 10 make the volume appear to be an autobiography rather than a biographical memoir of Dr. Schroff. It indicates the amount of spade work Prof Singh has done to unravel so many little known facets of the life and work of Dr. Schroff. It must have been even more difficult for him to condense all this material in a book of manageable size without missing any important detail. The sequences have been elegantly dovetailed by the author to provide an uninterrupted canvas of the trials, tribulations and achievements of Dr. Schroff. All these were directed to get Pharmacy its rightful place and to let it play a major role in providing healthcare with indigenously developed resources. Prof. Singh has described and evaluated the contributions of Dr. Schroff to Pharmacy education, development of Pharmaceutical industry, evolution of the regulatory milieu including the setting up of the Pharmacy Council of India in a systematic manner. This has served not only to place Dr. Schroff's contributions in a proper perspective but also to properly project their impact on healthcare programs of the country. In addition to extensive references the volume also has copies of several major publications of Dr. Schroff as appendices. The volume also contains many rare photographs of Dr. Schroff and the institutes and persons with which he was intimately connected.

Prof. Singh has an unique style of presenting complex subjects in an easy-to-follow manner and yet provide a kaleidoscopic view of the subject. There is a sense of continuity between various chapters of both the volumes under review. Prof Singh needs to be congratulated on publishing these excellent books, which will be of interest and value to a broad spectrum of readers. It is hoped that several more such publications will emerge from his stable during the coming years.