

For the Love of Physics: From the End of the Rainbow to the Edge of Time—A Journey Through the Wonders of Physics. Walter Lewin with Warren Goldstein. Free Press, New York. 2012. 318 pages. Price: Rs 399.

Walter Lewin, a well-known astrophysicist having more than 450 scientific articles to his credit, and who chose to spend his career teaching physics to undergraduate students for 43 years at the prestigious Massachusetts Institute of Technology (MIT), USA has come up with this delightful, engaging and accessible book after his retirement.

The book is not a technical one, but is meant for general readers where the author's main goal is to share the joy of learning that the world we live in is a knowable place. Warren Goldstein, who enjoys the honour of writing the introduction in this book, mentions how each of the 94 lectures by the author, now made available at MIT OpenCourseWare, YouTube, iTunes-U, etc. is a masterpiece appreciated worldwide and gives a whole list of responses and experiences Lewin received as a teacher from the student fraternity and his fans all over the world. He mentions that Lewin's inbox is flooded by e-mails with subject lines like 'You have changed my life!'. This reminds the reader of another such great Nobel laureate physicist Richard Feynman, who again chose teaching as a lifetime job, and was famous among his students at Caltech, USA, for his unique teaching style of making physics interesting.

It is a tough job to write a book on physics without a single mathematical expression and yet covering a vast range of topics from mechanics, properties of matter, wave motion, electromagnetism,

cosmology and astrophysics and successfully explaining how the everyday things work, how physics sees the complex and the easy things happening in nature, and moreover, how beautiful it is to understand the physics behind them. The first of the 15 chapters discusses about the personal life of Lewin, including how he was forced to move from the Netherlands to USA during the World War II, while half of his family was murdered by the Nazis and then how he eventually got into research, made path-breaking discoveries in X-ray astronomy and became world-famous as a teacher.

Chapter 2 entitled 'Measurements, uncertainties, and the stars', though appears quite a basic one, is of utmost importance, according to the author. In Lewin's own words 'All important in making measurements which is always ignored in every college physics book is the uncertainty in your measurements.' The chapter also discusses measurement techniques involved in estimating various astronomical parameters. The next three chapters deal with the properties of matter, discussing thoroughly Newton's laws of motion and gravitation, the problem of the pendulum, fluid dynamics and phenomena related to light such as interference, diffraction and production of a rainbow. Chapter 6 is devoted to wave motion, discussing effects like resonance. Chapters 7 and 8 present a lucid discussion on the laws of electromagnetic induction, the history behind the production of electricity, historical review of electromagnetism as well as Maxwell's theory. What is unique in this book is that the author also provides web-links for various demonstrations which may help the reader understand the concepts better. The reason behind this is that Lewin has always placed emphasis on live demonstrations in the lecture hall during his lecture sessions at MIT.

Chapter 9 entitled 'Energy conservation' is a bit off from the main content of the book, but equally important as well, since readers are made aware of the energy and food crisis which our future generations are going to face, through simple calculations involving high school-level mathematics. Possible solutions to this are also discussed under the heading 'Where are we going to get what we need?'

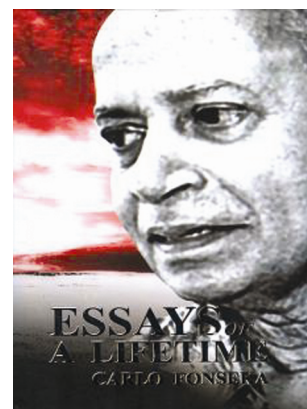
Chapters 10 and 11 related to X-rays are the author's home-ground and hence one can justify the large number of pages spent on this seemingly less important

topic. Chapters 12–14 contain some thoughts on cosmology, which has been a fascination among laymen. These chapters discuss cosmic rays, neutron stars, black holes, X-ray binaries with a mention of experimental techniques implemented as well. The final chapter, 'Way of seeing' enlists the reasons why most of the students find it difficult to study physics, and explains how our way of seeing, i.e. the approach towards the subject must be changed. The two appendices succeeding the acknowledgement section are interesting, and it becomes clear why the authors have deliberately placed them at the end, only after reading them. Though being a non-technical book, it also contains an index which is a common feature of standard technical books in science.

The book keeps reminding the readers about the physics behind the tiny and complex miracles happening around us. It creates interest among those who are new to physics and it makes the students who are already introduced to it, love the subject.

PADMANABH SHRIHARI SARPOTDAR

G.B. Tatha Tatyasaheb Khare Commerce, Parvatibai Gurupad Dhare Arts and Shri Mahesh Janardan Bhosale Science College, Guhagar, Dist. Ratnagiri 415 703, India e-mail: padphy@gmail.com



Essays of a Lifetime. Carlo Fonseka. S. Godage & Bros (Pvt) Ltd, Colombo, Sri Lanka. 2016. 368 pages. Price: SL Rs 1320/US\$ 20.

There was a time when science was just one endeavour among many for the great scientists of the world. For example,