

First I would like to compliment the authors for their sincere effort in bringing out the book, especially considering the fact that they are not specialists in this field. The book is aimed at students of B Sc (Hons), M Sc and M Phil in physics. The authors have dealt with the topic in the conventional manner, starting with nuclear properties, moving on to nuclear forces, followed by nuclear structure and ending with a discussion on nuclear reactions. A good discussion on neutron physics and nuclear energy has been provided. Charged particle accelerators and radiation detectors, which are the tools for nuclear and particle physics research, are covered in the subsequent chapter. The last chapters are related to particle physics and cosmic ray physics.

On the whole, the authors have done justice to this broad area of nuclear and particle physics. When I received the book from *Current Science*, I was impressed by the quality of publication in terms of print, which is indeed reader friendly. The book is written in a style that is useful for students. Every chapter has references, review questions, problems, short question–answers and objective question–answers. This format deserves appreciation.

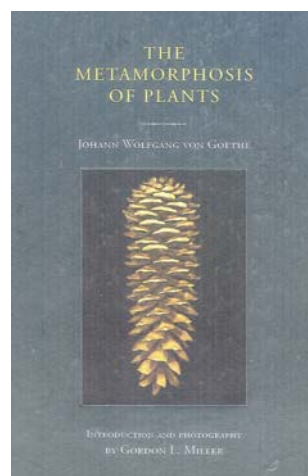
However, the book has several deficiencies which need to be addressed. Broadly, I will summarize the errors in three categories: (i) Imprecise information: for e.g., on page 949, the half life of neutron is given as 12 min; the actual value is 10.24 min as per the Nuclear Wallet Cards (BNL, NNDC). The half life of Tritium is given as 12.26 yrs; the actual value should be 12.32 yrs. (ii) Wrong spellings/typos: for e.g. on page 812, q. 5 answer – spelling of linac, circular. I am not aware of any accelerator which is called static – it could be DC accelerators. (iii) Incorrect statements/expressions: for e.g. on page 553, thermal neutron energy is 0.025 eV and not 1 eV. Page 788 has incorrect statements regarding accelerators at various institutes – the 5.5 MeV accelerator was decommissioned nearly 10 years ago; it was in BARC and not at TIFR. Similarly, the 2 MV tandem was decommissioned long time ago. Right now, a 6 MV FOTIA is operational at BARC.

In the reference section, there are a number of notable omissions; for e.g., *Int. Nuclear Physics* by K. S. Krane, John Wiley; *Radiation Detectors and Measurements* G. F. Knoll, John Wiley. The

authors should remove these deficiencies and provide a table containing errata.

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The Metamorphosis of Plants. Johann Wolfgang von Goethe. Introduction and Photography by Gordon L. Miller. The MIT Press, 55 Hayward Street, Cambridge MA 02142, USA. 2009. xiv + 123 pp. Price: US\$ 21.94.

The Metamorphosis of Plants written by the German polymath Johann Wolfgang von Goethe, belongs to a rare category of works that bring fresh insights each time a reader explores it or a researcher interprets its main theme. Goethe was a literary giant and the author of the famous play *Faust*, deeply interested in the theory of colours and the science of optics and 'diversity of plant form'. The mineral Goethite, hydrated ferric oxide, is named in the honour of the poet. Goethe coined the term morphology for the study of organic form, especially the unity of type that formed the basis of all form. 'The Metamorphosis...' was first composed as a poem and later as a short preliminary treatise with 123 paragraphs. Goethe was planning a more comprehensive account that would contain illustrations to meaningfully explain his perception of a flowering plant. It was during a visit to Palermo, in the Island of Sicily that

Goethe was exposed to a wider variety of plants in the more sunny surroundings. He collected many plants and made a few interpretive sketches and also got some drawn by professional artists. Had he visited tropical Asia, he would have been baffled by the majesty of trees such as the banyan! Goethe was seeking a simple archetypal plant the *Urpflanze*. In his intense search for the basic unit that could create any form of plant, it suddenly dawned on him that it was the leaf, some kind of *Próteus* (an ancient Greek sea-god who assumes many shapes to evade having to foretell the future) that could create any kind of plant.

Miller has written a scholarly and beautiful introduction after a thorough study of the previous and contemporary literature. He has fathomed the passion of Goethe through the imagery created by the mind and the eye, which he states brings together not only poetry and science but art and science as well. Miller is a renowned historian and director of the inter-disciplinary environmental studies program of the Seattle University, Washington State University, USA, an unthinkable combination in India. A gifted photographer, Miller has tried to search for the plants listed in Goethe's book or their close relatives in the flora of the west Washington State and in the gardens, yards of neighbours and florist shops. He has added 60 superb colour plates to Goethe's book to present the full range of modifications the plants undergo,



Vegetative and reproductive organs displayed in 'Coral Nymph' salvia (*Salvia coccinea*).

BOOK REVIEWS

which Goethe himself would have deeply admired. Among these, botanists of the tropical and the subtropical regions would certainly enjoy the photographs of *Tilia americana* (image 67), *Ruscus aculeatus* (the phyllode bearing oval reddish fruits; image 68) and *Ulmus glabra* (image 77) to cite a few examples.

Botanists admit that Goethe was the first to propound the concept of the flower. But what exactly did Goethe write about his interpretation of flower was not easily available to me earlier. It is found in paragraph 115 of this book (p. 100): 'Whether the plant grows vegetatively, or flowers and bears fruit, the same

organs fulfill the nature's laws throughout, although with different functions and often under different guises. The organ that expanded on the stem as leaf, assuming a variety of forms is the same organ that now contracts in the calyx, expands again in the petal, contracts in the reproductive apparatus, only to finally expand as the fruit.' The knowledge of floral anatomy and comparative floral morphology served taxonomy and evolutionary botany in the 19th and 20th centuries. Even the ABC model of flower development proposed recently (based on the model plant *Arabidopsis thaliana* and its various mutants) can be explained

using the German poet's concept of the flower.

Miller has remarkably succeeded in comprehending Goethe's quest for explaining the enormous diversity in plant form. The book is profusely illustrated, includes helpful notes, an appendix on the genetic method, and is a treasure to be acquired and studied.

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PERSONAL NEWS

Premamoy Ghosh (1936–2011)

Premamoy Ghosh, one of the doyens of Polymer Science in India, passed away on 27 April 2011. Even though he was suffering from lung cancer for quite sometime, he remained active and mentally alert all along. He was born in Dhaka in pre-partition India. He did his graduation from Presidency College, Calcutta in 1955 and post-graduation with specialization in polymer science and technology in 1958 from Calcutta University and obtained the University Medal. He received Fulbright fellowship in 1965 for post-doctoral research. He carried the legacy of schools of research of Shanti Ranjan Palit of Indian Association for the Cultivation of Science on the one hand, and Billmeyer of Rensselaer Polytechnic Institute, New York and O'Driscoll of Villanova University, USA on the other. Ghosh was an internationally acclaimed polymer scientist of his era in the area of polymerization kinetics. He was also an inspirational personality brimming with energy, simple life style, wit and sense of humour. The other facet of his personality lies in his active interest to socialize, his agility and seriousness about work ethics and caring nature to students and scholars. Characteristically he was very quick in taking decision and action to augment the causes of

research and education together. He was a teacher par excellence and an outstanding orator and researcher in the field of applied chemistry as well as polymer science and technology. He was known for his lucid class room lecture and for his eloquence. In his communication, he had the skill to include loads of anecdotes and analogies to make the subject interesting and enjoyable. His presentation always had power even if there were no 'power-points' in the lecture floor unlike today's practice. One of the high points of his principles was to give equal importance to teaching and research which he practised ardently all along. In fact, such spirit of teaching intertwined with research is rare, when such balanced practices of teaching and research are fast disappearing these days in most of our universities and institutes. Besides more than 300 publications in journals including in *Nature*, he has written quite a few good books on various subjects of polymer science and technology, particularly the book entitled *Polymer Science and Technologies of Plastics and Rubbers* (published by Tata-McGraw Hill) has many editions and has created great interest among students and professionals alike. In addition to his contribution as author of books on the

subject of polymer science and technology, he has also written quite a number of books on different topics of interest for general readers. He had very cordial relation with many industrial professionals and held honorary positions in many scholarly institutes, social bodies and editorial board of journals. He was Fellow of Institution of Engineers, India; Plastics and Rubber Institute, London, and Institution of Materials, London. He was recipient of the Vijaya Shree Award, India International Society, New Delhi; also received honour and citations for life time contribution as a teacher, researcher and professional person in the area of polymer science and technology from Indian Plastics Institute, and from Society of Polymer Science and Materials Science Centre, IIT Kharagpur. Ghosh was always fascinated by the magic of polymers. His research contribution and ideal approach to life have left indelible impression in the minds of his students, scholars and admirers.

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Edited and published by P. Balaram, Current Science Association, Bangalore 560 080.

Typeset by WINTECS Typesetters (Ph: 2332 7311), Bangalore 560 021 and Printed at Lotus Printers, Bangalore (Ph: 2320 9909)