range of distances are summarized in this chapter. At shorter length scales less than 1 m the casimir effect arising from surface charges cannot be entangled from gravitational force. On the large astronomical and laboratory scale the departure from the inverse law has not yet been claimed. Geophysical tests show no evidence of a new force of range $10 < \Lambda < 1000$ m within uncertainties of the Earth's gravity field at the experimental site, arising from unknown surface structure. The borehole measurements designed to test gravitational law within a range of $\Lambda < 1000$ m are not consistent with each other. The tower measurements and moving source experiments are consistent with the value of laboratory $G$ to within 0.4%. Free fall experiments with elementary particles give the neutron acceleration $(1.00011 \pm 0.00017)$ g while the measured antiproton acceleration agrees to within 0.01 g accuracy. The solar, terrestrial source and floating ball experiments are performed and improved spaceborne experiments are being planned. In the absence of any outstanding and clean unexplained experimental result the search for new force will continue setting better limits on the validity of existing known forces.

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**An Introduction to Peptide Chemistry.** P. D. Bailey. John Wiley & Sons, Singapore. 1992. 232 pp. Price: $ 39.95.

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When proteins have been talked about since decades, why have the peptides gained importance? This short and crisp textbook of peptide chemistry reveals the answer. 'The peptides are an amazing class of compounds'—an excellent punchline made at the start of this book. Although every peptide contains amino acids as their backbone, each of them exhibits a remarkable range of biological properties. The importance of research in this field has emerged from the medicinal properties they possess and the flexibility with which they can be synthesized, sequenced and analysed.

As peptides assume an increasingly important role in biological phenomena, methods for their purification and characterization, design and development of antagonists, determination of the biologically relevant conformation and conversion to peptidomimetic therapeutic agents become increasingly more important. Peptide chemistry (and, of course, peptide biology), a rapidly advancing field has weaved the path for the production of peptide hormones (human calcitonin and fast-acting insulin), neuropeptides (neuropeptide Y, cholecystokinin analogs and casomorphins), peptide vaccines (HIV and influenza), peptide inhibitors (for angiotensin-converting enzyme and enkephalin-aminopeptidase) and so on.

Intended mainly for undergraduates and post-graduates in chemistry, biochemistry and molecular biology, this book will certainly find a prominent place in biotechnology on the whole.

It contains just the right amount of information for beginners and displays the author's skill in condensing elaborate material into precise, crisp and apprehendable chapters. With an introductory chapter on peptides (what are they?, how should they be studied?, their biological properties, etc.) and another on amino acids (especially DNA encoded amino acids, unusual amino acids, their chemical reactions and physical properties) the author continues with chapters which outline various general steps of isolation and purification, viz. dialysis, gel filtration, ion-exchange chromatography, HPLC, GC and electrophoresis. Three more chapters related to amino acid analysis, sequencing and synthesis are well endowed with mainly theoretical aspects.

Peptide chemistry application has been well projected by an entire chapter on LH-RH (luteinising hormone–releasing hormone), given as an example for young and aspiring peptide chemists. LH–RH is a hormone known to have control on the growth and development of ovaries and testes as well as release of other hormones such as oestrogen and testosterone. This unique chapter explains structure determination, end group analysis, fragmentation of LH–RH, sequencing, synthesis and medicinal properties. This chapter is unique because it revolves round the story of Andrew Sally — recipient of the Nobel prize for Medicine in 1977 and is not merely a textbook version of a sample peptide.

At the end of the book the author has very thoughtfully incorporated three sections of appendix; one devoted to general methods of amino acid synthesis, another to the structure of peptides and a third section to the use of DNA/RNA technology (or genetic engineering) for sequencing and synthesis of peptides. At the end of every chapter, a few puzzling questions are sure to benefit the student community.

Many interesting peptides have been discovered so far and many more are still in the 'pot'. There may be an array of synthetic peptides by the turn of the century but the study of peptides comes handy for the discovery of naturally occurring ones. One such remarkable peptide is galanin. Discovered only ten years ago, galanin has now been termed by experts as a 'multi-functional peptide in the neuro-endocrine system'. Isolated in 1983 by Tatemoto, Mutt and colleagues, galanin has been shown to have remarkable effects on presynaptic inhibition of acetylcholine release, glucose-stimulated release of insulin and growth hormone release regulation.

Although unnecessary information has not been mentioned, and most of the methods covered, a few more interesting examples on custom made peptides would have thrown more light on the subject. Nevertheless, this book is certainly 'short, crisp and simple'.

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**The Essentials of Viruses, Vectors and Plant Diseases.** A. N. Basu, B. K. Giri. Wiley Eastern Limited, 4835/24, Ansari Road, Daryaganj, New Delhi 110 002, 1993. pp. 242. Price: Rs 400.

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This book on plant virology by Basu and Giri is, as the authors point out, a venture to offer a balanced coverage of the multidisciplinary subject with special emphasis on the needs of undergraduate students studying in Indian universities.

The authors have succeeded in selecting topics that are most important for the virologists working in Indian uni-

versities from the vast literature available on plant viruses. Most agricultural colleges in India do not have the sophisticated infrastructural facilities available for studies on molecular biology of plant viruses, the area of prominent activity at present in the laboratories of the West. The average virologist in India has to do his best with the limited resources available to him and produce data that will be potentially useful to the farmer, which is the goal of most of plant virus research. In this context, the choice of topics selected by the authors appears appropriate. The chemical nature of viruses, capsid and nucleic acid structure, virus replication and related topics are briefly discussed in the first few chapters of the book. More detailed accounts are provided for virus isolation, methods for identification, transmission of viruses by insects, methods for studying virus–vector relationships. Separate chapters deal with the viral diseases that are common in India and the methods found useful in the management of these diseases. In all these aspects the book deserves praise.

A book meant for undergraduate students should provide some fascination and should be flawless technically. In these aspects, the book is a disappointment. There are occasional examples as in the descriptions of the early phase of work in plant virology which are extremely interesting to read. However, much of the rest of the book is routine description. More serious are the errors, grammatical and technical that are found all through the book. On page 12, the authors state that the animal viruses, except influenza virus and new castle disease virus contain DNA. Elsewhere in the book they discuss the similarities between the RNA genome of cowpea mosaic virus, an RNA plant virus and animal picorna viruses such as polio virus. These errors are too numerous to list.

The authors have made substantial efforts to select relevant topics and devote proper portions in the book for each of the selected topics. If the errors are eliminated in later editions, the book will be of use as a basic textbook in our universities.

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