low-graduates, you speak of this University as your Alma Mater. Do you always realize the nobility of this commonplace expression? What a singular endearment it voices – our fostering mother – what a fine relation is that for a great institution of learning to bear to all those who throughout the years have learned wisdom at her feet and have gone into the world, sustained by her strength and inspired by her lofty example... councils will come and go, ministers will blossom and perish... But your University, my University, will live on for ever, if her children by thousands and ten-thousands stand by her with steadfast loyalty and devotion.' It was with this steadfast loyalty and devotion that Asutosh served Calcutta University and, perhaps other Universities too, by setting an example. In these days when Universities have become dens for undesirable elements, when scams (financial or otherwise) are the order of the day, when higher authorities of the Universities kowtow to the wishes of political bosses, and when, ironically enough, we talk of becoming a world power, how many of the Vice-Chancellors can come up to Asutosh's ideal? If they cannot, how do we even dream of becoming a world power? I do not think it needs emphasis that the powers that be are powers only because they have assiduously nurtured knowledge and the men who created knowledge.

It is here that the diary has immense value. Asutosh foresaw the danger that his personal diaries could become published. He was opposed to the idea and so guarded his diaries under lock and key. If this published diary is able to convert a single Vice-Chancellor or a single teacher, it would have served its purpose and absolved the publishers and the readers of the sin of rubbishing the wishes of a great man when he ceased to exercise power over his possessions.

With all the shortcomings that it has, I would still like to congratulate the publishers for coming out with a book that has so few spelling/editing mistakes, which is not very unreasonably priced, and which may be a very good tool in the hands of future biographers of this venerated man.

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Computational Physics: An Introduction. R. C. Verma, P. K. Ahluwalia and K. C. Verma. New Age International Publishers, 4835/24, Ansari Road, Darya Ganj, New Delhi 110 002, 1999. Rs 250. 377 pp.

The book under review can supplement a standard physics course at pre-university or bachelor's level with material using numerical methods. It introduces the student to programming in Basic. One of the salient features of the book is that it gives the algorithms behind the computer programs used. Integration and differentiation by numerical methods is something which students do not find easy to do. Consequently, many students do not venture to write computer programs in physics or chemistry. This book presents the numerical methods and explains them well. Armed with this, even an average student with an introduction to programming can write interesting programs to solve problems in physics and chemistry. The computer is a powerful problem solving tool and the student trains to use it in toy problems like a research scientist or engineer. It allows a sledge-hammer approach to real problems where laws of physics are used in a pure raw form without recourse to simplification for reasons of analytical convenience and without waiting for sophisticated mathematical techniques that one learns later. The book is a good attempt at providing the student an integrated introduction to programming, numerical methods and physics and is strongly recommended for adoption in various courses in the country. Though we are appreciative of the general structure of the book, there are matters of details that could profitably improve the book in the future editions. Since we would hope to see more editions of the book in the future, we list these shortcomings in detail both for the benefit of the authors and the other potential users of the book.

- Though in a project like this it is impossible to cover all aspects of all the topics, we find several instances where we feel that a little more detailed treatment is definitely necessary. Magnetism, for instance, is not taken up in as much detail as 'Waves' or 'Falling bodies'.
- One of the problem areas for students in solving problems is the one that concerns 3-D visualization. It is perhaps here that the computer is ideally suited to assist students think in terms of 3D. Unfortunately, there are not many problems that pertain to this. May be in a future edition the authors can include such problems, especially, waves in 3D.
- There is a lot of scope to improve the presentation of graphics. The authors have selected SCREEN2 resolution in most of the programs. Graphics look pleasant in SCREEN9 or SCREEN13. For instance, PROG51.bas looks pleasant in SCREEN9. But making changes in the screen resolution is not easy because the coordinates have to be worked out again. This, of course, can be one of the advanced excercises for the student.
- More seriously, data validation has not been carried out in most of the programs. Therefore, any value that is input is accepted and the calculations carried out accordingly. This sometimes leads to results that cannot be interpreted. In some cases, the animation goes beyond the screen limit set. It is better to provide a range of data that a user can give in a program. There are also instances, for example in the program CH10P1.bas, for some values 'division by zero error' occurs. In CH2P1.bas, for some values the maximum range calculated is negative. It is better to avoid such outputs. This is an important aspect of programming that the student must learn.
- The speed with which animations are carried out depends on the speed of one's computer. There are animations in this book, like the one on Brownian Motion, which are executed so fast that one cannot even notice the progress of the graph or the path of a particle. A good programming procedure is to give a delay loop in which one can select the delay time.
- It is very important to mention the units when the data is accepted from the user. Then, it is pretty easy for the user to interpret the solution or graph. But most *programs* do not mention units at all. Though the *text* mentions the units, it is still a good

practice to include them in the *software*. After all, one may choose to use the software independent of the book. The programs given have been written either in GWBASIC or QBASIC. One can run GWBASIC programs on QBASIC. The converse is not true. If one has only the GWBASIC compiler, the programs on QBASIC cannot be executed. One gets the message 'Direct statement in the file'.

- Since colour monitors are widely used, it will be very nice to enhance the presentation by use of colours. The colour of the background screen as well as that of the pixels may be changed with every program. With proper choice of colours one can even simulate 3D view!
- Some of the error messages that a program gives cannot be easily corrected by students not well versed with BASIC. For example, PROG116.bas gives the following message: ILLEGAL FUNCTION IN 210. And PROG117.bas says: *Subscript out of range in 90.* This is where data validation becomes very important.
- Lastly, for some reason, the file names given in the book and the ones on the floppy do not match. Thus, it is not easy to load a program of one's choice.

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Statistical and Probabilistic Models in Reliability. D. C. Ionescu and N. Limnios (eds). Verlag AG, P.O. Box 133, CH-4010, Basel, Switzerland. 1998. 392 pp. Price: DM178/sFr148.

There are many books in the area of statistical models for reliability theory and methods, and many more from the engineering perspective. However, there are few which combine the two points of view well with students and researchers in mind. Therefore a new book which tries to do this is always welcome. Unfortunately, the present book is not something that can be readily recommended for that purpose. This book is a collection of papers presented at a conference on mathematical methods in reliability, and very few volumes edited from papers presented in meetings result in good textbooks.

This book consists of twenty-four articles arranged in three sections: statistical methods, probabilistic methods, and special techniques and applications. In the preface, the editors state that 'the book aims at presenting the evolution of the most recent modelling researches based on the use of statistical and probabilistic models, and, at the same time, at pointing out, in new works, the present tendencies of reliability research and its applications'. I do not quite understand what this means, but I guess they are trying to indicate how they have put together the different articles as a book.

Part I of the book contains articles dealing with repairable systems, competing risks, and accelerated life testing models. There are many important notions in these areas which need a lot of emphasis. Therefore, the articles could have been provided with reasonably long introductions, thus explaining many of the basic concepts used in the field. For example, details on the Kaplan–Meier estimator of the survival function would be one such. This would have made the volume much more useful for students and researchers.

Part II is quite specialized, and deals with asymptotic approximations and advanced results from stochastic processes. Part III contains articles dealing with some special techniques in reliability methods.

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Understanding Chemistry. C. N. R. Rao. University Press (India) Ltd, 3-5-819, Hyderguda, Hyderabad 500 029. 1999. 298 pp. Price: Rs 160.

In spite of chemistry being a fundamental science with increasing importance in biochemistry and biotechnology, its study is not attracting the brighter students. This can be easily ascribed to the dull manner of its presentation in the classroom at all levels. The publication of a book of the above type was obviously a crying need of the day. As indicated by the author in the preface: '*Understanding Chemistry* is an elementary introduction intended for high school students and others interested in an appreciation of chemistry. It is not a textbook. Everything is not said. Some ideas and facts are presented, and a few questions raised, in order to interest the reader in the subject and to arouse curiosity. Several topics of human interest such as the environment, energy, food and water are discussed, besides giving life sketches of chemists, historical accounts and procedures for a few experiments. I believe that the book provides a flavour of the subject and shows how it works. I hope that students, teachers and enthusiasts of science will find the book useful and educational.'

The task which Rao assigned to himself has been admirably achieved in a most impressive manner. The book has been divided into seven chapters: (i) Chemistry in a capsule, (ii) Elements and the periodic table, (iii) The chemical bond, (iv) Structures and shapes of molecules, (v) Chemical energy, (vi) Chemical reactions, and (vii) Two chemists.

Each chapter begins with a brief but clear description of its 'objectives' and ends aptly with broad 'conclusions'. The inclusion of topics like 'The food we eat', 'The atmosphere', 'Water', 'Molecules of life', 'Man-made polymers', 'Energy from the sun', and 'Catalysis', obviously enhances the attraction of the subject to the beginner. In the process, the reader gets a surprisingly clear picture of the latest topics like DNA, fullerene and supramolecular chemistry, which are often not included in the conventional curricula of chemistry even at the highest levels.

X. Bian et al. / Journal of Computational Physics 297 (2015) 132â€“155. 133. 1. Introduction. In the last few decades there have been many efforts to develop multiscale methods for uid ows. There are mainly two types of multiscale methods.Â The state variables are density and momentum for the isothermal uid considered here. In addition, we introduce a simple and effective condi-tional rule to correct the pressure force calculation with a non-spherical support at the articial boundary, which resolves automatically also the density inconsistency in the same region. The Present Book Is An Effort To Provide A Quality And Classroom Tested Resource Material.Salient Features * Topics Have Been Carefully Selected To Give A Flavour Of Computational Techniques In The Context Of A Wide Range Of Physics Problems. * Style Of Presentation Emphasis The Pedagogic Approach, Assuming No Previous Knowledge Of Either Programming In High-Level Language Or Numerical Techniques. * Profusely Illustrated With Diagrams, Graphic Outputs, Programming Hints, Algorithms And Source Codes. * Ideally Suited For Self-Study With A Pc On Desktop. * Accompanied With A Cd Rom With Source C PDF | Here's a draft of an introductory book on Computational Physics that I'm composing while teaching it. The content is meant for undegrad physics students with little to zero experience with computer languages. The examples are written in the Julia language, and there's an...Â Introduction to Computational Physics. with examples in Julia. This is a draft!Â The first part of this review walks the reader through a concise historical overview on the evolution of the â€œmodelâ€ in chemistry. Salient milestones have been highlighted and briefly discussed. The second part focuses more on the general description of recent state-of-the-art computational techniques currently used worldwide by chemists to produce synergistic models between theory and experiment.