BOOK REVIEWS

Experiments in Engineering Geology. By K.V.G.K Gokhale and D.M. Rao, Tata McGraw-Hill, New Delhi; Pages, 144, Price: Rs. 50.00

This is an interesting book written by Teachers of the Indian Institute of Technology, Kanpur. The range of topics covered is very wide, consisting of sections on minerals and rocks, engineering properties of rocks, tests for natural aggregates, site evaluation techniques, and groundwater investigations. The authors could not therefore do full justice to all aspects. Some chapters are well treated, e.g. field description of rocks, geological maps, pumping tests, whereas some topics have been treated superficially with inadequate coverage, e.g. dynamic method of determination of Young's modulus and Poisson's ratio in the field, shear strength determination of rocks, (Ch. 10), size analysis, (Ch. 11) and use of electrical logs in site exploration, (Ch. 32).

The description of rock types requires more elaborate treatment. The chapters on strength should contain an illustration of typical stress-strain characteristics, and typical values of strength. Shear strength (pp 47-49) should be defined and the term cohesion intercept should have been included in the text as well as in Figure 10.3. Figure 10.2 is incomplete and requires better detailing. In the chapter on Size Analysis, list of standard sieves and a typical figure on grain size distribution should have been included.

Chapter 19, on Remote Sensing Techniques in Site Evaluation is a welcome addition and Figures 19.4 to 19.7 are good illustrative examples.

The figures in some places are of disproportionate size (e.g. Fig. 21.1).

Although not indicated, the book will be useful primarily to undergraduate students in Civil Engineering.

Civil Engineering Department A. SRIDHARAN
Indian Institute of Science,
Bangalore – 560 012.

The Milky Way - Fifth Edition by B.J. Bok and P.F. Bok. Harward Univ. Press, C/o Unisery Inc., 525 Great Road, Rout-119, Little Ton, Mass 01460, U.S.A. Pages 345, Price:$20.00

This well illustrated revised edition of a popular classic gives student and layman alike, a concise and up to date account of the understanding we have of the galaxy that we live in. As pointed out in the preface, many of the contributors to the striking new developments reported therein, have indeed found the earlier editions of this book a most stimulating source for information on the Milky Way. The influence continues to the present day and the periodical is updated and thoroughly revised. The style of presentation makes it a delightful reading. As we go through the text, we see the transformations on the astronomical scene that extend our understanding and the present picture is a veritable combination of new knowledge laid on the building blocks of the old. And as we stand poised on the threshold of a new era of discovery with the aid of the Space Telescope, we recognize the fact that many unknown facets, of this striking galaxy we live in, would undoubtedly come to light in our life time.

Here is a book for anyone who wants a first rate condensed account of twentieth century research in an important field.

Indian Institute of Astrophysics, M.K.V. BAPPU
Bangalore 560 034.

Quantum Statistical Theories of Spontaneous Emission and their Relation to other Approaches; Springer Tracts in Modern Physics. Vol. 70 (Quantum Optics) by G. S. Agarwal, Editor G. Hohler, Springer Verlag, Berlin, 1974.

The problem of spontaneous emission was first considered around 1917 by Einstein who obtained the rate of such emission using statistical methods. Since then a large number workers have discussed this problem using quite different methods including semi-classical, neo-classical and quantum statistical methods. The present monograph is a review of the various approaches explaining spontaneous emission. In the earlier chapters the author reviews the works of Weisskopf-Wigner, Heitler-Ma and Goldberger-Watson explaining various questions concerning line shapes, shifts and widths of the levels. Applications of these dynamical theories to simple illustrative systems involving two or three level atoms in different initial states have also been considered. He then develops the quantum statistical methods for describing spontaneous emission and derives the master equations. Quantum field theory along with the techniques of nonequilibrium statistical mechanics are used for this purpose. The author has himself worked on this particular approach extensively and as such he has given an excellent description of the subject. He obtains the Langevin equations and transforms them to equivalent c-number equations.

Most of the remaining chapters deal with the solution of these equations in different situations. The spontaneous emission from single two-level atom, an assembly of two level atoms and from a system of harmonic oscillators are considered in detail in Chapters 10-14. Emission from multilevel (particularly three level) atoms is considered in Chapter 15. In Chapter 16 the author reviews briefly the neo-classical approach of Jaynes and co-workers. He points out the essential differences between the results of neo-classical theories and that of quantum electrodynamics and also discusses the reasons for such differences. Finally in the last two chapters spontaneous emission in presence of external fields is considered. The write up on the whole is mostly mathematical and requires, at places, considerable working through the steps. It is, however, a very useful article for the research workers in statistical and quantum optics.

Physics Department, C. L. MEHTA
Indian Institute of Technology,
Delhi 110 016.

ANNOUNCEMENT

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

PROGRAMME OF SCIENTIFIC MEETINGS

Nine major scientific conferences and symposia of which three will be in co-operation with other international organizations, will be convened by the International Atomic Energy Agency (IAEA) in 1982. Four of these meetings will be held in Vienna. On invitation of the governments concerned, the others will be held in the Federal Republic of Germany, Italy, the Netherlands and the USA.

CONFERENCES AND SYMPOSIA

1.IAEA/NEA International Symposium on Management of Wastes from Uranium Mining and Milling, Albuquerque, USA, 10-14 May. 2. FAO/IAEA International Symposium on Agrochemicals: Fate in Food and the Environment Using Isotope Techniques, Rome, Italy, 7–11 June. 3. IAEA/CEA/NEA International Symposium on the Conditioning of Radioactive Wastes for Storage and Disposal, Utrecht, Netherlands, 21-25 June. 4. International Symposium on Radioimmunoassay and Related Procedures in Medicine, Vienna, 21-25 June. 5. International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Baltimore, USA, 1-8 September. 6. International Conference on Nuclear Power Experience, Vienna, 13-17 September. 7. International Symposium on Nuclear Power plant Control and Instrumentation, Munich, F. R. G. , 11-15 October. 8. International Symposium on Recent Advances in Nuclear Materials Safeguards, Vienna, 8-12-November. 9. International Symposium on Water Chemistry and Corrosion Problems of Nuclear Reactor Systems and Components, Vienna, 22-26 November.

In addition the following scientific seminars will be held dealing with items of special interests.

1. FAO/IAEA Seminar in the Control and/or Eradication of the Medfly by Use of the Sterile Insect Technique (SIT) as the Basis for an Integrated Pest Management Programme for Developing Countries in Latin America, 8-12 March. 2. Seminar on Testing and Operation of Off-Gas Cleaning Systems at Nuclear Facilities, Karlsruhe, F. R. G., 3–7 May. 3. Seminar on Safety Aspects of Nuclear Power Plant Siting for Developing Countries, Buenos Aires, Argentina, 17-21 May. 4. Training Seminar on Nuclear Analytical Technology and Application in Mineral Exploration, Mining and Processing, Ottawa, Canada, 28 June-2 July. 5. Seminar on High-Dose Dosimetry in Industrial Radiation Processing, Risφ, Denmark, 20 Sept-2 Oct. 6. FAO/IAEA Seminar on the Utilization of Induced Mutations for Crop Improvement for Countries in Latin America, Lima, Peru, 17-23 October. 7. Seminar on Radiation Emergency Preparedness for Developing Countries in Europe and the Near East. 8. Seminar on Quality Assurance in the use of Nuclear Medicine Instruments for Developing Countries in Asia and the Pacific.

Detailed information may be obtained from the appropriate national authorities in Member States, e.g. the Ministry of Foreign Affairs, or the national Atomic Energy Commission, or by writing directly to the International Atomic Energy Agency, P. O. Box. 100, Vienna International Centre, A-100 Vienna, Austria.

8730/82—Edited and Published by Prof. M. R. A. Rao, Current Science Association, Bangalore-560 080