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**BOOK REVIEWS**


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**Annual Review of Nuclear and Particle Science** - by J. D. Jackson, Editor, H. E. Gove and R. F. Schwitters, Associate Editors. Vol. 32, (Annual Reviews Inc., Palo Alto, California, USA), 1982, Pages viii + 595, Price USA \$25.00; Elsewhere \$28.00.

This is the thirty-second volume of this prestigious annual series of reviews in the general area of nuclear and particle science. It contains 14 reviews of which six reviews each are devoted to the high energy physics and nuclear physics areas. The remaining two articles deal with Plasma physics and gamma ray astronomy.

The progress in the area of weak interaction physics following the successful electroweak unification theory of Salam, Weinberg and Glashow is described in the reviews of "Charged current neutrino interactions" by H. E. Fisk and F. Sciulli and of "Physics of Intermediate Vector Bosons" by J. Ellis, M. K. Gaillard, G. Girardi and P. Sorba. Recently Intermediate Vector Bosons have been experimentally observed and it would be interesting to check the earlier predictions with the observed properties.

The new developments in strong interaction dynamics relating to quantum chromodynamics are reviewed by F. Wilczek. The lore on power laws with exponents relating to number of constituent quarks is described by D. Sivers in "What can we count on?".

Experimental calorimetric techniques in high energy physics, which have been so useful in neutrino physics and storage ring experiments, are described by C. W. Fabjan and T. Ludlam.

A precision measurement or a sharpening of the limits on/of neutron electric dipole moment is of great theoretical interest in testing and ruling out various proposed models. N. F. Ramsey has pursued this program since 1957. The latest status of this program as well as other known information on "Electric dipole moments of Particles" is given here by him.

Nuclear Chemistry is represented here by "Rapid Chemical Methods for Identification and Study of Short-lived Nuclides" by G. Herrmann and N. Trautmann. "Beam-Foil Spectroscopy" to produce fast atomic ions and study the properties of excited states of highly stripped ions is reviewed by H. G. Berry and M. Hass.

T. M. Cormier discusses "Resonances in Heavy-Ion nuclear Reactions" illustrating his material using examples mostly from  $^{12} + ^{12}\text{C} \rightarrow ^{24}\text{Mg}$  system. "Theory of Giant Resonances" is reviewed by K. Goeke and J. Speth mostly using the RPA technique.

The Random matrix approach to complicated systems has proved rather useful and is again having renewed interest. J. B. French and V. K. B. Kota have reviewed these developments. The article by W. D. Myers and W. J. Swiatecki brings uptodate, the attempts to understand nuclear masses and deformations on the basis of macroscopic considerations.

Denis Keefe's review on attempts about "Inertial confinement fusion" discusses the art of pellet compression as well as Laser and particle-beam drivers for it. R. Ramaty and R. E. Lingen Felter's review of Gamma-ray Astronomy describes this newly developing astronomy. These two articles are concerned with developments which are outside the strict confines of nuclear and particle physics but are important developments in their own right and have arisen out of traditional nuclear and particle physics.

Needless to say that the volume is recommended to the libraries of all those institutions which have interest in nuclear or high energy physics areas.

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**Annual Review of Genetics**, by Herschel L. Roman, (Vol. 16) (Annual Reviews Inc, 4139, El Camino Way, Palo Alto, California 94306, U.S.A.) 1982, pp. 505, Price: \$22.00 U.S.A., \$25.0 elsewhere.

These reviews are of current interest, some of the topics being picked up from the neglected but important areas. The macroevolution involving the complex intermediary changes between the primary effect and the phenotype are discussed in general terms. Estimation of the risk to human of low levels of radiations are reviewed. The data on mouse have been dealt with in length rather than human due to lack of information.

Double minutes and homogeneously staining regions of the chromosome represent gene amplification which play a role in malignancy. The disorders due to abnormal sex differentiation in human affect the external genitalia, internal ducts and gonads. The biochemical basis of the disorders, the deficiencies in 21-hydroxylase and other enzymes are discussed in detail. The mouse mammary tumor virus which carries the *mam* gene is gaining prominence in carcinogenesis. Disease related purine and pyrimidine metabolism in human, including immune deficiency are discussed with reference to genetics, biochemical mechanisms and clinical manifestations.

The techniques of analysis for the ordered process in microbial system are applied to higher systems to study the development. One example is the comparison of DNA replication which proceeds in a defined sequence with developmental pathways. It is rather difficult to conceive these as models for developmental system as metabolic processes always proceed in a defined sequence on a time scale.

The review on recombination is exhaustive with special reference to the *rec A* protein. Regulation at the level of translation and perhaps at the level of transcription are brought out by attenuation, for the biosynthesis of amino acids in bacteria. The discussion on DNA uptake by cells is of considerable significance in gene transfer. The need for sexual mating is bypassed in somatic cell hybridization and thus permits genetic and biochemical studies. The yeast mating type locus is very well characterised and is involved in the changes in genotype which are implicated in pattern formation in plants. The contributions by developmentally interesting mutants, parasexual processes, formation of macrocyst and characterization of genes by recombinant DNA technology, in the study of the developmental genetics in *Dictyostelium discoideum* are reviewed. The biochemical basis of nitrogen assimilation in bacteria involving glutamine, glutamate and aspartate are discussed in length. The genetic system in maize with respect to viviparous mutations, transposable elements and R locus are discussed. The T DNA of the *Agrobacterium* which induces tumor root formation are excellent carriers of foreign DNA into dicotyledonous plants. The authors have asked more questions than answered in this review.

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**Plant Nematology**—by P. Parvatha Reddy, (Published by Agricole Publishing Academy, D-76, Panchasheel, New Delhi 110 017) 1983, pp. 287, Price Rs. 175/- US \$ 35/- (elsewhere).

This is a first attempt for a text book on Plant Nematology in English by an Indian author. There are nine chapters covering 248 pages followed by selected references, common names of Nematodes, Glossary and conversion, table and the usual author and subject indices. The nine chapters are divided into introduction, methodology, morphology and anatomy, taxonomy, biology, physiology and ecology, host-parasite, relationships, interaction with other microorganisms, control methods, and diseases of crop plants.

The introduction briefly deals with the importance of nematodes in agriculture and some of the highlights of the developmental phase of the science of nematology. Some important landmarks have been missed however. The chapter on methodology deals with most of the basic details encountered during the studies and will be useful for the beginners. The other chapters follow the same pattern depending mainly on the basic structure which might initiate a graduate or undergraduate student in the subject. The book will be useful for these category of readers.

The illustration in the book, though of not high quality, will be useful in getting an idea of the disease symptoms caused by parasitic nematodes.

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