

present in such models. He then proceeds to analyse the various approximations (for example, the van der Waal or the Percus-Yevick) used in coping with the difficult three-dimensional topological disorder. The role of computer simulation techniques in melting and the liquid state is emphasized, and the chapter concludes with a short discussion of the configurational and communal entropy and free volume.

Chapter 7 summarizes the statistical properties of polymers in solution. Branching, gel formation, rubber elasticity and random walks are some of the topics covered. The statistical treatments of the gels are connected to the Bethe lattice and the percolation problem. Chapters 8, 9 and 11 are concerned with excitations — magnons and phonons — in disordered solids. Chapter 8 develops the notion of localization or gaps in the spectral density using a linear chain model, and in Chapter 9 the discussion is extended to the three-dimensional case. Here the tight bonding and coherent potential approximation are discussed in some depth. Anderson localization and percolation theory and their significance in our understanding of disordered solids are presented. Chapter 11 contains a review of the dynamics of liquids and glasses.

Chapter 10 has a derivation of the resistivity equation (the Ziman formula) frequently used by experimentalists to explain the resistivity data on glasses and liquids. The generality and applicability of this deceptively simple formula is discussed. The remaining part of this chapter is concerned with scattering theories and their application to disordered solids. Chapter 12 contains a rather brief description of spin and ferromagnetic glasses. There is no mention made in this chapter of recent theoretical developments in spin glasses using topological notions. The final chapter contains the theory of metal-insulator transition and hopping conductivity.

Professor Ziman's book is primarily aimed at theoretical physicists. For readers with such a background or interest the book provides excellent reading of the current status of the field of disorder. The limitations of theoretical approaches, which are frequently assumed in the original sources, are clearly stated.

There are, however, a few areas which are either not adequately covered or are omitted entirely. Superconductivity and optical properties of disordered solids are not discussed. The theory of structural defects is barely mentioned. Considering the amount that has been covered these omissions are, perhaps, understandable. Overall, this book should be a very useful acquisition to anyone who is interested in the field of disorder. □

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Nuclear theory

Norman K. Glendenning

Nuclear Physics with Heavy Ions and Mesons. Edited by R. Balian, M. Rho and G. Ripka. Vol. I, pp.432; Vol. II, pp.548. (North-Holland: Amsterdam and New York, 1978.) Vol. I £66.75, Dfl.150; Vol. II \$80, Dfl.180; two volume set \$133.25, Dfl.300.

IN THE last half dozen years or so, the subject matter of nuclear theory has expanded remarkably, and no volumes that I know of chronicle this better than do these. The modern theoretical nuclear physicist becomes more and more a theoretical physicist as the techniques and concepts that he develops or borrows from other disciplines to understand nuclear behaviour under unusual conditions make intimate connections with other branches of physics. The articles are all excellent.

Volume I deals with collisions between heavy nuclei from low to relativistic energies. Semi-classical theory for peripheral low-energy collisions is

developed in several powerful approaches. The richness in behaviour of nuclear material under the stress of more intimate reactions or rapid rotation, or under the impact of relativistic collision, is the main subject.

For me, Vol. II is more exciting, perhaps only because the material is less familiar, but I think also because it indicates a new frontier of nuclear physics, where it blends with particle physics and with astrophysics. By now my copy is well worn. Most of this volume treats nuclear matter in the framework of a relativistic field theory for the light mesons and baryons, as is appropriate for studying new phases of matter at densities higher than normal such as exist in neutron stars or fleetingly at the site of a collision between nuclei at relativistic energy. This volume will be difficult going for the traditional nuclear physicist, but it opens the door to a new world.

The editors and authors are all to be congratulated for a fine work. □

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Three on food and land use

Joseph Hutchinson

The Growth of Hunger. By R. Dumont and N. Cohen. Pp.229. (Marion Boyars: London, 1980.) Paperback £3.50. *Green and Pleasant Land?: Social Change in Rural England.* By H. Newby. Pp.301. (Penguin: Harmondsworth, UK, 1980.) Paperback £2.50. *Farmland, Food and the Future.* Edited by M. Schnepf. Pp.214. (Soil Conservation Society of America: Ankeny, Iowa, 1980.) \$8.

I THOUGHT *The Growth of Hunger* was about hunger in the world getting worse. It is not. Repeatedly this is assumed, but nowhere is there any documentation of the extent of hunger, or any hard evidence given that it is more widespread now than it used to be. The book is, in fact, an attack on landlords, colonialism, the market economy, the Green Revolution, agrochemicals, multinational corporations, and poverty and injustice in society. There is already an extensive literature in this vein, and *The Growth of Hunger* does not add usefully to it.

In *Green and Pleasant Land?*, Howard Newby, after a decade of research into social change in rural East Anglia, writes perceptively, cogently, and with sympathy but not emotion. After an introductory chapter there are chapters on land and land ownership, the farming industry and the rise of agribusiness, and the farm worker

and the drift from the land.

There follow two chapters on the new influences that threaten the dominance of the agricultural interest in rural affairs. First is an account of the migration of urban-based families to rural domiciles, and second a discussion of the growth of environmentalism and its challenge to the privileged position of farming in planning legislation.

Newby probes deeply into the rural situation, and exposes the impotence and the growing isolation of the rural poor. The in-migration of urban people has generated a new affluent component in the rural population, and increased the polarization between rich and poor. With their cars and their town associations, the incomers have no difficulty in avoiding the isolation of the countryside, and they offer little support for rural services.

The incompatibility between the needs of the underprivileged and what it is economic to provide, is matched by the inconsistency between what the environmentalists regard as good and the agribusinessmen find is profitable. And having lucidly described these dilemmas, Newby leaves us. He has written a very good book, but now will he please write another. The conclusion I draw from *Green and Pleasant Land?* is that the social scientist — if he is as good as Newby — should advise us on what we should do, and the economist should then tell us what it would cost, and how we should pay for it.

Farmland, Food and the Future has nothing of the unity and coherence of *Green and Pleasant Land*. It is a series of essays sponsored by the Soil Conservation