HLA system

The HLA System: An Introductory Survey. Second edition. By A. Svejgaard, M. Hauge, C. Jersild, P. Platz, L.P. Ryder, L. Staub Nielsen and M. Thomsen. Pp. 111. (S. Karger: Basel, London and New York, 1979.) DM 43; $21.75; SFr. 36.

THE HLA system of tissue antigens is acquiring a growing importance in the study of cellular interactions. A coherent, lucid account such as this volume attempts is to be welcomed. The small size of the book (111 pages) in no way reflects a paucity of information. The authors have achieved the combination of brevity and clarity, at the same time providing useful links for readers who may come to the subject from disciplines which do not encompass genetics or human disease.

The scope of work now relevant to HLA is indicated by the contents page, with topics ranging from immune response (Ir) genes to complement, transplantation, transfusion, pregnancy, paternity testing and disease association. The bibliography is comprehensive and commendably up to date. There is a simple but adequate account of the biology of the HLA system, with particular reference to the role of the major histocompatibility complex (MHC) in the immune response. This section also includes a summary of current thinking about the specific role of HLA antigens as cell membrane products (? receptors).

There is a good appraisal of the current status of HLA in clinical medicine, including both transplant matching and disease association studies. The authors have summarised these two major applications and give a very honest view of the advantages and disadvantages of applying HLA studies in these areas. There is a short concluding section on methods in HLA typing which is more than adequate for those who may not work directly on HLA but need to know about the general techniques.

This book could be required reading for all non-HLA workers who are proposing to collaborate on HLA studies with the experts in the field. It would save a great deal of time presently spent on lecturing on HLA to various groups of medical and scientific workers who are looking for a simple, understandable introduction to HLA.

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Physics of neutron stars

Neutron Stars. By J.M. Irvine. Pp.155. (Oxford University Press: Oxford, 1978.) £7.95.

IRVINE'S monograph is the first book devoted to the physics of neutron stars, the second most extreme endpoint of stellar evolution. The primary content is an informal review of the theory of neutron star structure, with emphasis on our understanding of the physical processes in condensed matter that is needed in order to construct 'realistic' models.

The book begins with a broad outline of stellar evolution, and the mass-radius relationship of neutron stars is estimated in the manner familiar to students of stellar interiors since the work of Eddington. The basic observation of pulses from isolated pulsars is then briefly described, followed by a repetition of the now classic arguments for the identification of pulsars as rotating neutron stars, based on their rate of increase of pulsar periods and the shortness of the period of the Crab pulsar. (The use of the Crab nebula as a box calorimeter to measure the moment of inertia of the central object, an equally crucial part of the identification, is not mentioned.) This is followed by a fairly detailed discussion of glitches in the spindown of the Crab and Vela pulsars along with a review of the starquake model. No mention is made of the 'restless' random walk of the rotation frequency of the Crab pulsar, which is probably also present in the Vela and many other pulsars.

From here, Irvine turns to an outline of cooling processes that can influence the final temperature of a neutron star, both in the deep interior and at the surface. He does a reasonably good job of outlining the significance of superfluidity, superconductivity and the formation of a pion condensate for the cooling rates, a topic which is rapidly increasing in experimental importance as the HEAO-2 observing programme moves forward. An understanding of his discussion requires at least slight acquaintance with the BCS theory of superconductivity. He then turns, in chapter 4, to a brief discussion of neutron star "exteriors". Here, the magnetosphere is treated solely as a source of vacuum magnetic dipole radiation (including the ~ 20% relativistic corrections!), in spite of his mentioning the requirement of there being an electrically significant number of charges in the environs. Irvine then returns to the less controversial realm of condensed matter by describing the peculiar atoms and solids which make up the perfect lattice (density ~ 10^4 g cm^3) expected to form the very outermost layers. This region (often called 'Ruderman's whiskers') is treated with about the same depth but less clarity as is contained in Ruderman's discussion in the