journalists. Tom Margerison is a well known science journalist and this book has benefited from his skills. Technical details essential to the arguments are put clearly and simply. The operation of the trichlorophenol reactor at Séveso is well described. Accounts on the operation of the reactor differ, say the authors, depending on whether it is the workers themselves describing the operation or the management describing the instructions given to the workforce.

No satisfactory explanation is available yet to explain why the accident occurred. The authors find attractive a theory that there may have been sabotage. They say that one piece of evidence supports this. The reactor contents at Séveso are not alkaline as might have been expected. It is as though they were neutralized with acid, say the authors, giving credence to the sabotage theory. They do admit, however, that the *p*H change may be attributable to temperature differences, as indeed it is. Experiments designed to re-create the conditions in the Séveso reactor have since shown that at temperatures in excess of 260°C the *p*H of the contents changes from alkaline to acid. The temperature of the reactor at Séveso is thought to have reached at least 350°C. Sabotage is ruled out in this case.

Political intrigue was rife at Séveso and this book describes it in ample detail. Scientific infighting also occurred and the authors take many irreverent swipes at the various experts involved with the dioxin problem. Interviews with many of the Séveso residents confirm that their treatment by the various authorities has been high handed. The authors succeed in showing that the residents at Séveso have had a raw deal. In their view the final immorality of the whole episode was that "Hoffmann-La Roche had the benefit of a profitable product while the innocent citizens of Séveso unknowingly took the risk". This may well be the verdict of history. But as more information accrues it is clear that the issue is not as clear cut as the authors make out. The companies certainly have much to answer for, but so too do the Italian authorities. □

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Plasma physics for robust readers

A.D.R. Phelps

Plasma Physics for Nuclear Fusion. By Kenro Miyamoto. Pp.610. (MIT Press: 1980.) £35, $50. *Fundamentals of Plasma Physics.* By V.E. Golant, A.P. Zhilinsky and I.E. Sakharov. Pp.405. (Wiley-Interscience: 1980.) £22.10, $51.90.

BOTH of these books treat several aspects of plasma physics in detail, and yet neither provides a complete coverage of the subject — Golant *et al.* intentionally omit the important subject of waves in plasmas and Miyamoto, as implied by his title, concentrates on those topics in plasma physics which relate to nuclear fusion. Both are appropriate for postgraduate courses, and should appeal particularly to the mature research scientist.

The text by Miyamoto uses rationalized mks units and is a translation of his 1976 Japanese publication. Some opportunity appears to have been taken to update a few of the references, but some of the most recent results of nuclear fusion research have not been included. Nevertheless, much of the content has not hitherto existed in such digestible textbook form.

Professor Miyamoto divides his 16 chapters into four sections: fundamentals, which includes a review of fusion criteria, magnetic field configurations, single particle motion, Coulomb collisions and kinetic equations; MHD, covering equilibrium, diffusion and confinement, and instabilities; kinetic description of waves and instabilities, which treats waves in cold and hot plasmas and velocity space instabilities; and finally, heating, diagnostics and confinement.

Fundamentals of Plasma Physics is also a translation (from the original 1977 Russian edition) and, like Miyamoto's book, more readable than might be expected. In ten chapters the authors cover collisions, kinetic equations, equilibrium plasmas, distribution functions, transport processes and magnetic field influences on particle motion, transport processes and plasma confinement. Cgs units are used. The notation is somewhat inconsistent in places, for example rot and curl appear on the same page and the Laplacian operator used in the text does not correspond to that given in the symbols list. Yet these are minor points which should not worry the relatively robust reader for whom both books are best suited.

Whereas Miyamoto's book essentially involves the high temperature collisionless type of plasma, Golant *et al.* address themselves more to gas discharges and ionization phenomena. Although there is some overlap in subject matter between the two books, the difference in emphasis makes them complementary. Thus one might expect the libraries of those research laboratories and universities engaged in plasma physics research to invest in both of them. □

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More from Harris

Alan E.H. Emery

The Principles of Human Biochemical Genetics. By Harry Harris. 3rd Edn. Pp.558. (Elsevier/North Holland Biomedical: 1980.) Hbk $65.75, Dfl.135; pbk £26.75, Dfl.55.

THE first edition of this book, published in 1959, was an immediate success. The subject of human biochemical genetics was then in its infancy but there were sufficient pointers to indicate the exciting possibilities for the future. It has to be remembered that until Garrod introduced the idea of inherited disorders involving chemical processes (so-called inborn errors of metabolism) at the turn of the century, human genetics had been largely concerned with the inheritance of obvious structural abnormalities. In 1923 Garrod was only able to describe some half-dozen rare inborn errors of metabolism, but now Professor Harris details some 120 such disorders and a further 73 enzyme and protein polymorphisms.

This new edition is divided into nine chapters with an appendix listing details of specific enzyme deficiency disorders, and a similar appendix of enzyme and protein polymorphisms. The introductory chapter on gene mutations and single amino acid substitutions is, like the rest of the book, a model of clarity and could well form the basis of any graduate course in genetics. Genes can no longer be considered merely discrete sections of DNA contiguous with each other, but are frequently separated by intervening sequences where the relevant messenger RNA is not translated into protein. The function of these intervening sequences is as yet not clear, but in the future the unravelling of their role in gene action could well herald yet another new departure in biochemical genetics.

Two chapters are devoted to the principles of gene action which are largely, though not exclusively, illustrated from findings in the haemoglobinopathies. A discussion of gene localization (mapping) is also included. Until recently gene localization was dependent on the study of pedigree and somatic cell hybrids, but is now being greatly helped by the use of restriction endonucleases. In the near future this, too, is going to generate an entirely new perspective of gene structure and localization.

Subsequent chapters also deal with quantitative and qualitative variations in enzymes, inborn errors of metabolism and blood group substances. However many enzyme and protein variations (and the more recently discovered variations at the DNA level of restriction endonuclease cleavage sites) appear to be unrelated to any specific disorder, yet often their incidence is far greater than could be accounted for by mutation alone. Harris suggests that the term polymorphism might be reserved for those variations in which