

eral account of solid electrolytes. Unfortunately, the relevance of many of these topics to the study of solid electrolytes is not made clear. The discussion of interatomic distances is rather inconclusive and that on cohesive energy suffers from a lack of references to the tabulated data; this is particularly irritating when the data in two tables (X and XII) do not agree.

Fong has contributed an account of the statistical mechanical treatment of interactions between impurity atoms and lattice defects in ionic crystals, and the experimental results available to test this theory. In the final chapter of this section, Amsel describes the range of applicability of, and some of the experimental results obtained with nuclear microanalysis. This chapter makes extremely interesting reading but deals mainly with film formation on metal surfaces.

The section on transport processes is much more homogeneous. Friauf gives a sound account of the basic theory of conduction and diffusion in solids and describes the methods available for determining the mechanism of these processes. Diffusion processes are also clearly discussed, though in more detail, by Bénére but there is considerable overlap between these two chapters; some of the tables and figures and much of the theory being common to both. Bénére has also contributed a good but incomplete account of transference number measurements in ionic crystals. The measurement of the transference number of the electron by EMF measurements or by the Wagner technique is unfortunately not described. Ionic conductivity in solids is reviewed by Kvist but only a cursory account of the experimental methods and the conditions which must be satisfied in making conductivity measurements is provided.

The remaining chapters by Hartman, on ionic conductivity in whiskers, Hughes and Isard, on ionic transport in glasses, and Riande, on transport phenomena in ion-exchange resins, are very competent reviews.

Overall, this book suffers from inadequate editing to remove the unnecessary overlap between some chapters and to provide the links between the separate contributions. The proof reading, especially of the chapters by Hladik, must have been careless and should have ensured that the tables and diagrams in the chapter by Kvist appeared nearer to the relevant sections of the text.

In spite of the limitations described above, this collection of articles and especially those on transport phenomena, should be of value to those involved in this area of research.

T. DICKINSON

Copernicana

The Scientific World of Copernicus: On the Occasion of the 500th Anniversary of His Birth, 1473-1973. Edited by B. Bienkowska. Pp. xii+142. (Reidel: Dordrecht and Boston, 1973.) Dfl. 50.

1973, half a millennium since the birth of Nicholas Copernicus the founder of modern astronomy, has produced an unprecedented outpouring of Copernicana. To the present example twelve authors contributed essays, three previously published in Polish and one in French.

Discrepancies between statements by different contributors have been overlooked by the editor. Thus Copernicus is said to have spent "five years as [a] student in Cracow" (page 1). Yet "Copernicus enrolled at the University of Cracow in 1491. For the four years he remained at the University he devoted himself to the study of the liberal arts without, however, winning an academic degree" (page 15). Was Copernicus at Cracow four years or five? The university records do not reveal when he left. At Cracow the bachelor's degree was normally obtained in four years. Surely the founder of modern astronomy was no dullard. Since Copernicus received no degree from Cracow, and did not need the baccalaureate for the career which he contemplated, presumably he stayed less than four full academic years in Cracow.

Readers are assured that the thesis of Copernicus' *Revolutions* "was accepted . . . without demur by Pope Paul III, to whom Copernicus' book was dedicated" (page xi). For this familiar assertion about the reigning pope, nobody has ever adduced any documentary support. Evidence to the contrary was published in *Rivista critica di storia della filosofia* (26, 84-85; 1971). Shortly after Copernicus' *Revolutions* was printed in 1543, initiating modern astronomy and therewith modern science, preparations to condemn that magnificent work were begun by Pope Paul III's personal theological advisor, Bartolomeo Spina, the Master of the Sacred and Apostolic Palace. But before Spina could act, he fell ill and died. Thereupon Spina's close friend Giovanni Maria Tolosani resumed the theological anti-Copernican campaign in an appendix to his treatise *On the Truth of the Holy Scripture*. Herein Tolosani declared that Copernicus "contradicts some Scriptural principles, not without danger of infidelity both to himself and to the readers of his book". An annotation in Tolosani's manuscript discloses that his attack on Copernicus "for the purpose of safeguarding the truth to the common advantage of Holy Church" was later consulted by the preacher of

the first public sermon against that great Copernican, Galileo.

The (lost) reconciliation of Copernicanism with the Bible was written by Copernicus' disciple Rheticus, not by Bishop Giese (page 27). The "first publisher" of Copernicus' *Revolutions* was Petreius, not Osiander (page 140).

EDWARD ROSEN

Chromosome more or less

Cytogenetics of Aneuploids. By Gurdev S. Khush. Pp. xii+301. (Academic; New York and London, December 1973) \$17.50; £8.40.

THIS book is a survey of what has been achieved in isolating, identifying and using aneuploids, that is, individuals whose chromosome number differs from an exact multiple of the basic number. Most of the book is concerned with aneuploids in plants, with a very short chapter in which the author briefly describes examples of aneuploids in animals, especially man.

After outlining concisely the history of the discovery and production of the various aneuploids, and the terminology used for the different types, the author gives a very useful glossary of the current terms, and an explanation of the chromosomal formulae used to indicate the different types of aneuploids.

The book is then divided into two main parts, the first dealing with trisomics, with some mention of tetrasomics, and the second dealing mainly with monosomics but also mentioning nullisomics. As monosomics and trisomics have seldom been developed in the same species, this does not lead to too much duplication, and the two sections are linked by cross references where necessary. Each part covers the sources of the relevant aneuploids, detailing how the various types have been obtained in different species; some of the difficulties encountered in producing the aneuploids; the cytological behaviour associated with the aneuploid condition; and the breeding behaviour of the aneuploids. There are chapters on the uses of aneuploids, which include chromosome mapping, locating markers on chromosomes, locating the centromere and orientating the linkage map on the chromosome, as well as the production of substitution and addition lines.

The book brings together data widely scattered in the biological literature, and so will be a valuable reference work for those wishing to develop or use an aneuploid series, as well as being a useful source of information for anyone requiring a basic knowledge of the subject. It will therefore be of use to honours undergraduates as well as practising cytogeneticists and plant breeders.

J. P. MOSS