castle conference, and as such reflect both the merits and faults of the conference itself. At the same time, however, they present problems of their own. I was about to say that they are the academic equivalent of the book of the film, but on reflection it would be more true to say that what we actually have here in part is the book of the film of the book. In other words, no small proportion of the material presented has been published before in other forms.

It is time that the pressures—of tradition, commercialism, the ego, or whatever—to manufacture tomes such as these were resisted more often, not least because the result is self-defeating. It is quite reasonable, of course, that conference organisers should seek to make available to nonparticipants something of what the privileged few have found useful or enjoyable. But when such proceedings are produced incompleteness may be a virtue. It would have been far more profitable for everyone if Tarling and Runcorn had commissioned a small group of the best scientists and writers involved to distill the essence of the 87 original papers into a book of 200 pages or so, avoiding overlap, the bad, the indifferent and the peripheral, and perhaps even restricting the coverage. People, rather than merely libraries, would then have bought the book and read it. As it is, “so it must be, for now all length is torture”. As Mark Antony might say.

PETER J. SMITH

Experimental X rays

X-Rays in Atomic and Nuclear Physics. By N. A. Dyson. Pp. xiii+380. (Longman: London, December 1973.) £8.

THIS book is the logical successor to Compton and Allison's *X-Rays in Theory and Practice*. The author emphasises the constant interest that has been maintained in the subject since the discovery of X rays by Roentgen in 1895, and points out that the succeeding years can be roughly divided into three eras, each twenty-five years long. The first of these, from 1895 to 1922, saw the laying of the foundations, and a multitude of experiments were performed with the prime purpose of elucidating the properties and behaviour of X rays. The second period, 1922 to 1945, was involved with the development of X-ray spectroscopy, and the design and construction of sensitive detection systems. The third period, from 1945 to the present day, has been concerned more with nuclear properties and with the physics of the stars. It is not often that a single branch of physics has kept up its momentum over such a long period and has, at the same time, been able to generate such important and wide-ranging offshoots as X-ray

crystallography, Auger spectroscopy, and Mössbauer spectroscopy.

After a brief historical introduction, the author covers his chosen field in six chapters: the continuous X-ray spectrum; characteristic X rays; experimental techniques for the study of X rays; the absorption and scattering of X rays; X rays in radioactive decay; and some additional fields of X-ray study. There follows a number of appendices giving numerical data, a comprehensive bibliography arranged chapter by chapter, and finally a subject index.

The bias of the book is towards the experimental side which is understandable, since much of the physics of X rays is well understood and documented. The chapter concerned with experimental techniques is particularly notable for its wealth of detail for the construction of a variety of devices for the detection of both hard and soft X rays. Each chapter is copiously illustrated with diagrams emphasising the nature of the results that can be obtained in the particular area under discussion.

The last chapter is in some ways the most interesting one because here the author changes pace and selects various areas in which X rays have been used (such as various sorts of microanalysis), are being used (such as the isotope effect in absorption and emission), or are likely to play a dominant part (such as plasma physics and astrophysics). When, to all this, is added such important areas as medical physics and industrial radiography, it is clear why the author's mood seems to be so buoyant and optimistic. Certainly his claim that not only have X rays had a great part to play in the past, but are likely to continue to do so is certainly justified.

The book is economically written, well illustrated and carefully produced. It should be made available in all scientific libraries, and should find a place on the shelves of any individual who is interested in the production, properties, and applications of short wave-length radiation.

P. J. WHEATLEY

All dating is relative

Recent Earth History. By C. Vita-Finzi. Pp. xii+138. (Macmillan: London and Basingstoke, October 1973.) £3.00 boards; £1.50 paper.

THIS slim volume has an inappropriate title, for this relates rather to the author's original intention “to write an account of the physical changes undergone by the earth during Holocene times . . .”, as he states in his disarming preface. This book presents the contention that chronology should be based upon dating and not upon stratigraphy,

that is, that dating throughout earth history should be chronometric and not relative.

The author quotes the anonymous reviewer of an early draft of this book that “Palaeontology . . . and stratigraphy are humble and intellectually unexact-ing and nothing written by [the author] or anyone else can change this for a long time”. Although obviously someone who knew very little of modern palaeontology and stratigraphy, that reviewer was probably correct in concluding that such a view would not be modified by this book's contents.

The author apparently understands that quantitative dating depends upon the resolving power of the particular method, but a failure to deal satisfactorily with Oakley's point that “All dating is in a sense relative”, renders the book less than effective for its purpose. The dustcover's claim that the book is “clearly written and logically argued” is perhaps rather too obviously a commercial.

EDWARD A. FRANCIS

Many bodies

The Many-Body Problem. By W. E. Parry. (Oxford Studies in Physics.) Pp. x+217. (Clarendon: Oxford; Oxford University: London, December 1973.) £6.25.

DR Parry, in writing this book, had a very clearly defined and limited aim to which he has stuck rigorously. Assuming that his readers would have a knowledge of basic statistical physics and of Dirac's approach to quantum theory, he provides them with a large number of the mathematical techniques currently used for dealing with many-body problems and shows how they are related. Applications are introduced to illuminate the mathematics but only for this purpose. Readers are referred elsewhere for a fuller study of specific physical problems. The result is a well balanced, comparatively slim book containing a wealth of methods which include second quantisation, perturbation theory, Green functions, correlation functions, linear response theory, partial summation of diagrams, equations of motion, the drone-fermion representation in magnetism and the use of the variational principle.

Despite the large number of techniques introduced, the book has a uniformity which makes it easy to read and to relate one part to another. The point of departure (one I favour) is temperature-dependent perturbation theory for the grand partition function and other techniques are related to this. Expansions for the properties of the ground state are derived from this as a special case. This approach makes the