

BOOKS

Direct interactions and nuclear reaction mechanisms, edited by E. Clementel and C. Villi (New York, Gordon and Breach, 1963; \$ 39.50).

This book, of about 1200 pages, contains the proceedings of the conference with the same title held at the Institute of Physics, University of Padua, 3-8 September, 1962.

The editors point out that they have tried to compile the proceedings in such a way that they do not appear simply as a succession of the papers presented at the conference, but rather as a comprehensive book on direct interactions and nuclear reaction mechanisms, written, as it were, by the conference itself.

The book is divided into ten chapters, each of which begins with one or more 'invited' papers followed by selected research contributions and abstracts of all papers that could not be printed in full because of space limitations. Also included are the discussions following the different papers presented.

Perhaps the best way of giving an idea of the scope of this book is to give the titles of the chapters and some of the respective invited papers. Thus, Chapter I is about 'direct interactions and nuclear structure' and contains, among others, an invited paper by T. Ericson on 'pion capture and nuclear structure'. In Chapter II, the generalized optical model is discussed, with contributions on the distorted-wave theory of direct reactions. Chapter III is entitled 'direct interactions and compound-nucleus processes', including a paper with the same title by H. Feshbach, while in Chapter IV the possibilities for distinguishing direct reactions and compound-nucleus reactions by time-delay measurements are discussed (notably by T. Ericson, R. M. Eisberg and H. Feshbach). Chapter V deals with 'stripping and pick-up reactions'. Chapter VI, 'polarization in direct reactions', includes invited papers dealing with polarized ion-sources (E. Baumgartner) and polarized targets (L. J. B. Goldfarb and D. A. Bromley). In Chapter VII, 'direct interactions and inelastic scattering', there is a paper about inelastic excitation of collective modes, by J. S. Blair, and in Chapter VIII, 'direct reactions between complex nuclei', A. Zucher gives a review of the present state of this field. Chapter IX is called 'direct interactions other than stripping', which is another way of saying that there is no good theory available for the sort of reactions that are discussed, that is, reactions such as (p, α) or (α, n) . Finally in Chapter X are collected the reports on 'direct reactions at high energies', which here means energies above 100 MeV. An invited paper by L. R. B. Elton, dealing with the 100-200 MeV region, is included, as well as one by A. E. Glassgold covering the 'very high-energy region, that is, above 1 GeV.

It is interesting to note that only one out of the ten chapters (with the exception of Ericson's paper in Chapter I) deals with nuclear reactions at high energies, in spite of the fact that the first direct reactions to be studied were carried out in this region, by Serber and co-workers at the 184-in synchro-cyclotron in Berkeley in 1946. During the last 10 years, however, the overwhelming amount of work in this field has been conducted at lower energies, in the MeV and tens of MeV range, with Van de Graaff accelerators and conventional cyclotrons.

The book finishes with a 'conference summary' by J. S. Blair, in which he points out that although nothing emerged during the conference to shake our basic picture of nuclear reactions — the dominating ideas still being the generalized optical model on the one hand and the statistical theory on the other —, the general picture was one of steady progress.

The layout, printig and illustrations of the book all help to support the impression that it is in fact the comprehensive book in this field that the editors wanted it to be. Unfortunately the price will certainly limit the number of prospective buyers.

Jan Kjellmann

Repair from genetic radiation damage, and differential radiosensitivity in germ cells, edited by F.H. Sobels (Oxford, Pergamon Press Ltd., 1963).

This book gives the papers presented, together with the subsequent discussions, at the International conference on repair from genetic radiation damage held at Leiden (Holland) in August 1962; altogether 24 reports were presented by experts in radiobiology. Most of the papers deal with experiments on the mutations caused by irradiation of the cells of certain insects (particularly the 'Drosophila', an insect of the Diptera family, also known as the 'fruit fly'), mice and plant seeds, and also on the possibility of increasing or reducing the frequency of these mutations and of repairing the damage.

Recent studies of the effects of radiation seem to show that biological mutations start with a direct absorption of energy which, in successive stages (molecular impairment or injury of the chromosome, onset of molecular injury, occurrence of spontaneous molecular changes) leads to changes which can be detected. The process can be stopped at any of these stages in different ways, consequently reducing the harmful effects.

The final report by R. Kimball, who sums up the present state of knowledge in this research field, can be read with interest even by those with only a general knowledge of radiobiology.

A. Rindi

International scientific organizations, compiled under the direction of K.O. Murra (Washington, U.S. Government Printing Office, 1962; \$ 3.25).

Although international scientific collaboration is one of the topics of the day — and not only at CERN where one finds a living example — it is none the less difficult to imagine how many scientific bodies, governmental or otherwise, may lay claim to the title 'international'. Before examining the book under review the reviewer asked himself just this question. The answer is not 'a hundred' but at least 449 — in February 1962, when the manuscript of the book, begun in 1959, was completed. At that time the authors had probably not been told of the creation of ESRO (European Space Research Organization) and ESO (European Southern Hemisphere Observatory).

On the whole this well-bound book of almost 800 pages is an excellent source of information for anyone seeking

quick documentation on one or other of the scientific institutions of international character. It must be noted that 'scientific' is given a wide interpretation and includes both technological fields and those related to agriculture and medicine: from the 'Advisory Group for Aeronautical Research and Development' to the 'Zinc Development Association'. Since the work is above all a 'guide to the library documentation, and information services' of the organizations concerned, the reader is also provided with references to the best sources of additional information. Similarly one finds listed under each organization details of its periodical publications and the conferences it holds. In fact, the 449 organizations listed are those that, among the 781 contacted, indicated that they had such information services and conferences. Each entry includes the date of its composition (a useful detail) and the book contains a comprehensive index (preceded by a list of the acronyms used by the various organizations). CERN is included under 'European Organization for Nuclear Research'. Incidentally the list of acronyms provides some mild entertainment: AIL, CAB, FAGS, FIT, SCAR and SITS have not quite the same meaning as one might imagine at first glance!

This volume, prepared by the International Organizations Section of the American National Science Foundation, may be compared with a similar work, *Annuaire des Organisations Internationales*, published by the 'Union des Associations Internationales', Brussels.

R. A.

Also received

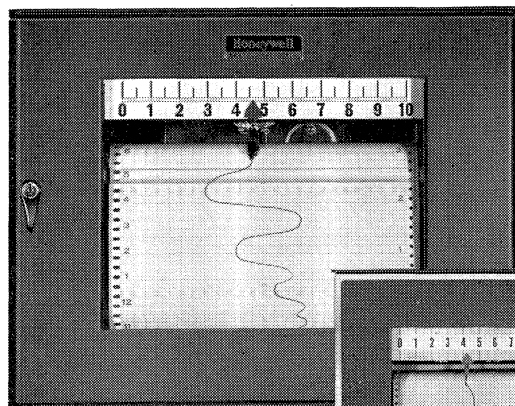
The quantum theory of many-particle systems, edited by H.L. Morrison (New York, Gordon and Breach Science Publishers Inc., 1963; \$ 4.95) - volume 2 of the *International science review series*; reprints of important papers showing the development of the subject from 1954 to 1961.

Nuclear engineering abstracts (London, Silver End Documentary Publications Ltd., 3 issues per year, annual subscription £ 9 9 s. 0 d.) — not just another abstract bulletin containing 'synopses' of the usual kind, but an attempt to provide fully documented summaries of progress in the chosen field; accelerators, particle detectors, etc. are covered in the section on research techniques, instrumentation and testing methods; publications scanned range from specialist journals to daily newspapers, mostly in Europe and the U.S.A.; each issue covers a specific period of time with a nominal delay of 9 - 12 months, although publishing difficulties have currently doubled this.

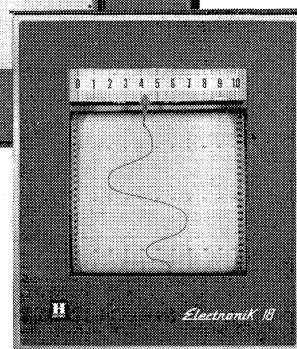
Plasma physics and thermonuclear research, vol. 2, edited by C.L. Longmire, J.L. Tuck and W.B. Thompson (Oxford, Pergamon Press Ltd., 1963; £ 5) — second volume of *Progress in nuclear energy, series XI*; a collection of twelve papers, mostly describing progress since 1958 although two of them are previously unpublished notes dating from the 'classified' era of 1954; good author and subject indexes and list of contents of volume 1.

Operator techniques in atomic spectroscopy, by B.R. Judd (London, McGraw-Hill Publishing Company Ltd., 1963; 77 s.) — a detailed description of the modern theory of atomic spectroscopy, based on the use of continuous groups as introduced by Racah •

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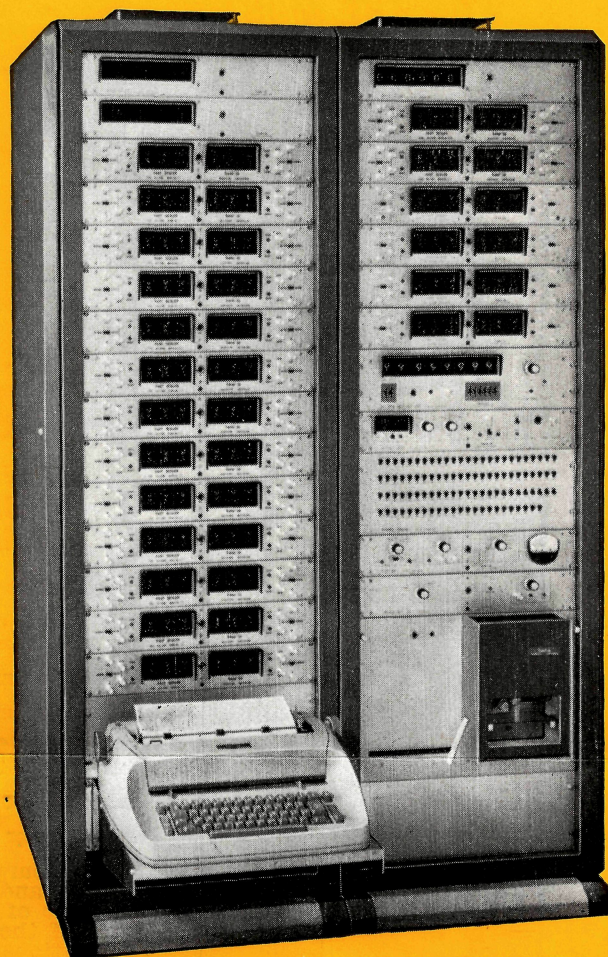
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Personnel Division (CC/64/3), CERN, Geneva 23, Switzerland

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