

normal "control" infants attending an infant welfare clinic. Each infant was photographed in the true antero-posterior and in the lateral position using a 35 mm single lens reflex camera. Each infant was then given a sedative and an impression of the face was made using alginate, alum and plaster bandage, and from this impression a mask was cast. Landmarks agreed by anthropologists were used as points of reference and measured with callipers and the contours were measured with strips of dental wax. For comparative purposes the detailed measurements of facial structure were adjusted to a common age of 190 days. Detailed measurements obtained either from the photographs or from the face mask were made of the general contours of the face, eyes, nose, mouth, ears and facial profile, and the results obtained were compared with those recorded in the literature from 1866 by Langdon Down to Gustavson in 1964.

A few examples will suffice to reveal the exactitude and attention to detail recorded in this monograph. The eye was assessed by the length, angle, asymmetry and shape of the palpebral fissure, by eye size and prominence, by distance between the eyes and by the epicanthic folds. The ear was assessed by length, shape, prominence, lobe and pattern. These and other detailed measurements of facial structures will prove of great value in diagnosis, for they supersede a purely qualitative description and they will be helpful in defining the cardinal features of Down's syndrome and other disorders which have a specific facies. The investigation shows that within their own group the Down's syndrome children are subject to as wide a range of individual variation as normal children.

The authors are to be congratulated on the original, careful and painstaking way in which they have obtained accurate measurements of facial characteristics; their work forms a springboard for extensions of observations by subsequent workers.

R. McL. TODD

ORGANIC REAGENTS

Reagents for Organic Synthesis

Vol. 2. By Mary Fieser and Louis Fieser. Pp. 538. (Wiley (Interscience): New York and London, March 1970.) 160s.

THE second volume of the Fiesers' book is as welcome as the first. As a result, no doubt, of much correspondence and much searching, many new entries are made dating both from before the deadline of the first volume (1966) and after it. The first volume has lived up to the usefulness I claimed for it in my review (*Nature*, 216, 1253; 1967); now the second volume containing, as it does, much extra information about reagents already in the first volume will obviously be just as useful. Almost every reagent I set out to look for I found (the exceptions were trichloro-ethanol and cupric fluoroborate). I look forward to further volumes in what I hope is a series. These books are useful personal possessions as well as essential for a working library.

IAN FLEMING

REVISED DURRANT

Introduction to Advanced Inorganic Chemistry

By P. J. Durrant and B. Durrant. Second edition. Pp. xv + 282. (Longmans: London, February 1970.) 160s.

THIS is a new and enlarged edition of a book that appeared in 1962. Inorganic chemistry has not remained still in the nineteen-sixties and this book has changed with the times to include plenty of new and up to date material. The authors are husband and wife, a chemist and a physicist, both greatly interested in education and teaching. They have used tables, diagrams, symbols and other devices of presentation which will make the book valuable for students.

The early part is devoted principally to presenting the hypotheses of valency and chemical bonding and the experimental procedures that provide information about atomic and molecular structure. This section includes an interesting chapter on group theory which was not present in the earlier edition. The more theoretical part of the book is much more lengthy and complete than might have been anticipated, but it forms a useful basis for the rest of the book. In the more factual chapters later on in the book, the diagrams, for instance of structures, are good, and considerable use has been made of tables to present a lot of information compactly and to demonstrate similarities and differences.

Since I have had this book in my office and home I have used it for obtaining information several times and it has given good service. I have also found, on these occasions and as I have gone through it, that it is interesting because it derives not only from the knowledge of the authors but also from their attitude and thinking; and this gives the book character.

J. W. LINNETT

PRINCIPLES AND ADVANCES

Principles of Radiation Chemistry

By J. H. O'Donnell and D. F. Sangster. Pp. viii + 176. (Arnold: London, March 1970.) 45s.

Advances in Radiation Chemistry

Vol. 1. Edited by Milton Burton and John L. Magee. Pp. xi + 401. (Wiley (Interscience): New York and London, March 1970.) 155s.

WHEN a new branch of chemistry can boast a book entitled "Introduction to" and now followed by "Principles of", then I suppose it has achieved a measure of respectability. The authors of *Principles of Radiation Chemistry* argue in the preface that radiation chemistry is now far from being a narrow specialization, and that the study of the effects of radiation on chemical systems provides information about the mechanisms and rates of chemical reactions, particularly those which involve free radicals and ions, which are not readily investigated by conventional methods. The subject is therefore suitable and is increasingly being introduced into undergraduate and graduate courses, to which this book is primarily directed. A difficulty, however, is that the subject has not developed systematically and for many of the diverse systems investigated—organic, inorganic, either in the solid, liquid or gaseous state—often the only unifying factor is that each has been subjected to the influence of ionizing radiation. The chemical effects and mechanisms are often as diverse as is the chemistry of such systems.

Bearing this fundamental difficulty in mind, the authors have succeeded in producing a valuable and concise outline of the entire subject. Following a most extensive survey of the literature sources, the basic modes of interaction of radiation with matter are outlined. There follows a survey of the experimental procedures and special techniques used although, clearly, the fast reaction methods have applications in other areas of chemistry also. The chemical effects are divided into those found in gaseous systems, aqueous solutions, organic compounds and polymerization and graft copolymerization. There is a chapter also on radiation damage in relation to biological systems. Allied studies such as hot atom chemistry and the self-decomposition of labelled molecules are also discussed, and there is a general chapter on the developments such as radiation sterilization and industrial applications which have grown up alongside radiation chemistry.

Yes, the authors have succeeded in a very difficult task, and radiation chemistry generally may well benefit more from this elementary text outlining simply the basic principles than from the many symposia and advanced specialized treatises which have recently appeared.