

The methods for carrying out reactions under pressure and under reduced pressure are fully described. The properties and uses of solvents and drying agents constitute important sections and there are, in addition, sections on carcinogenic agents and on laboratory hazards. Finally, semi-micro manipulations are considered in detail.

The work is completed by full name and subject indexes and will evidently become the standard work of reference in this field. Houben-Weil occupies a unique position in the estimation of chemists and this revised and enlarged IVth Edition will be indispensable, as its forerunners were in the past, both to the laboratory technician and also to the increasing number of research supervisors who have little personal contact with the bench.

The book is very well illustrated and is handsomely produced.

R. ROBINSON

R. F. STEINER and R. F. BEERS, JR.: **Polynucleotides: Natural and Synthetic Nucleic Acids**. Elsevier, Amsterdam, London, New York, Princeton, 1961. 404 pp., £4. 5s.

DRS. STEINER and BEERS introduce their book with some interesting statistics, among which they note that in the ten years since 1947 the nucleic acid entries in *Chemical Abstracts* show a logarithmic growth with a doubling of the number every 2.7 years. This rate of growth is being maintained and could be taken as one justification for the present book. Ten years ago the general structure and chemistry of the nucleic acids became well understood and allowed the development of their study essentially along two lines, the biochemical and the physicochemical. The results of these developments have affected cellular biology and genetics profoundly. The authors feel that the physicochemical work may have reached a plateau and that further progress will be toward refinement of existing concepts. Be that as it may, it is clear that the publication of this book is most timely.

The authors attempt to cover most aspects of work on the nucleic acids. The introductory chapters on nucleotide chemistry are, perhaps, too condensed and unselective for the beginner and a later chapter on nucleic acids in relation to protein synthesis is useful but rather sketchy. The main part of the book, however, gives a valuable discussion of the biosynthetic polynucleotides, i.e. those formed *in vitro* by enzymic methods, together with a detailed description of physicochemical studies on these and on the nucleic acids themselves. Light scattering, X-ray crystallographic and hydrodynamic methods, among others are treated in some detail.

What emerges from these studies, of course, is that the nucleic acids are quite unique in their behaviour. Deoxyribonucleic acids, as is popularly known, are long thread-like double-helical systems, of considerable rigidity. The biosynthetic polynucleotides under certain conditions form double- and triple-helical systems in the study of which the authors have made valuable contributions. Studies of the helix-coil transition in polynucleotides induced by variation of such factors as temperature and pH, and the attendant theoretical treatments, have been of great interest to nucleic acid and polymer chemists alike. All of these matters are dealt with lucidly and in considerable detail.

Thus *Polynucleotides* covers topics of wide general interest; for those immediately concerned with the nucleic acids it should be invaluable.

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