

Inside the Living Cell

Some Secrets of Life. By Dr. J. A. V. Butler. Pp. 174+16 plates. (London: George Allen and Unwin, Ltd., 1959.) 21s. net.

DR. J. A. V. BUTLER'S former book, "Man is a Microcosm", was reviewed enthusiastically in these pages some years ago. The scope of the present work is much wider, quite apart from the fact that many parts of the subject have advanced radically in the past few years.

The author describes in straightforward language many of the great advances which have been made during the past ten years in our knowledge of the mechanisms which operate within living cells. These include not only the ways in which food materials are taken and transformed into proteins, nucleic acids and other constituents, but also the way in which the ability to make all these is transmitted from generation to generation. In these processes we come very near to the basic mechanisms of life itself. In addition to his excellent account of the normal behaviour of cells the author discusses neoplasms and other abnormalities caused by ionizing radiations, those which seem to occur spontaneously and those which are caused by chemical carcinogens.

Later in the book some abilities of specialized cells, such as those which form muscles and nerves, are dealt with, and an account is given of the immense structures which living cells achieve in the higher animals and finally in man.

Altogether the reader is given some idea of what life has achieved, first, in reaching the level of the cell, and secondly, in elaborating great assemblies of cells in the higher forms of life. Finally, the author discusses the causes and significances of ageing and death, and the meaning of life in the world of atoms.

Throughout, the work is informed by the original work and thought of the author. The book is beautifully produced in every way. The illustrations are particularly good and include photomicrographs such as those by D. A. Sholl of nerve cells in the visual cortex, and by R. W. G. Wyckoff of bacteriophage. The book can be recommended warmly to many classes of reader. Most of it should appeal to the educated adult and it will be invaluable for the general reading of a good science sixth former, or university undergraduate.

W. L. SUMNER

Organic Syntheses

An Annual publication of Satisfactory Methods for the Preparation of Organic Chemicals, Vol. 37, 1957. Edited by James Cason. Pp. vii + 109. Vol. 38, 1958. Edited by John C. Sheehan. Pp. vii + 120. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) Each 32s. net.

AMONG the 32 compounds for which preparative methods are described in Vol. 37 are benzofurazan oxide, *trans*-2-dodecenoic acid, glutaric acid and glutarimide, norbornylene, parabanic acid, and *ortho*-tetrahydro- α -naphthol; and the 31 preparations of Vol. 38 include diphenylacetaldehyde, hendecanedioic acid and several related compounds, monobenzal and monobromo-pentaerythritol, monovinylacetylene, *trans*-stilbene oxide, and 2-vinylthiophen. Each volume has a cumulative index extending back to Vol. 30. Four enclosed leaflets direct attention to explosions that have been experienced in preparing ethyl azodicarboxylate, methoxyacetylene, and *o*-toluamide, and in storing *p*-tolylsulphonylmethyl-nitrosamide.

JOHN READ

Trends in Birth Rates in the United States since 1870

By Bernard Okun. (The Johns Hopkins University Studies in Historical and Political Science, Series 76, No. 1.) Pp. 203. (Baltimore, Md.: The Johns Hopkins Press; London: Oxford University Press, 1958.) 3.50 dollars; 28s.

THIS monograph consists of three essays. The first two discuss the secular trend of the declining birth-rate in the White and Negro population of the United States, respectively. The method used is an analysis of fertility indices (the ratio of children to the total population, and the ratio of children to women of reproductive age) in different States of the U.S.A. The discussion will be of interest mainly to the specialist in demography, and adds little to what is already available in the monograph by Grabill, Kiser and Whelpton, who have surveyed the material in much greater detail. The third essay, however, is of more general interest. Here Dr. Okun surveys the hypotheses and approaches used in explaining birth-rate trends, and attempts a classification and an assessment of the methods that can be used to test the hypotheses. No very definite conclusions emerge, but the essay is a useful summary.

The Structure of Glass

Proceedings of a Conference held at Leningrad, November 23-27, 1953. Translated from the Russian by E. B. Uvarov. Pp. ii+295. (New York: Consultants Bureau, Inc., 1958.) 20 dollars.

THIS translation was sponsored by the Glass Division of the American Ceramic Society and the National Science Foundation with the expressed object of providing a general look at the status of glass science in the U.S.S.R., and admirably does it fulfil its purpose. The fact that this conference was attended by more than 500 delegates from twenty-eight towns of the Soviet Union is itself impressive, and conveys immediately an idea of the large scale on which research in this field is being conducted.

As a report of a conference the volume is excellent; the printed discussion is particularly lively, and occupies 70 pages; 42 papers were communicated to the conference and these account for 228 pages of the volume. Remembering that the conference took place five years ago it would appear that at that time there was no great difference between the topics being discussed in the U.S.S.R. and in Western circles.

It would be easy to dismiss the discussion as being concerned too much with semantics and to criticize some of the ideas put forward. However, examples of similar ideas and arguments are well sprinkled through the literature. The great argument of the conference was on the rival merits of the 'random network' theory of glass structure and the 'crystallite' theory. The proponents of the crystallite theory attacked their opponents on the ground that the randomness was not complete, while their own definition of 'crystallite' was hedged by sufficient qualifications to make it clear that the majority of them did not mean that term to imply anything that could properly be described as a crystal.

Perhaps the fairest summing-up is that here there is realization that the network theory of glass is only a first approximation—a view which is receiving increasing emphasis at the present time.

The translation was well worth while, and all interested in the physics and chemistry of glasses will enjoy reading the book.

R. W. DOUGLAS