way the community wishes to live and to spend its resources.

Clearly, Ash will not satisfy those readers looking for a closely argued and documented analysis of urban form. Many, however, will find his spirited plea for rethinking the future pattern of development and for the virtues of the city region both absorbing and stimulating. His ideas merit serious consideration and analysis.

P. A. STONE

AMERICAN PUSH

Readings in Technology and American Life

Edited by Carroll W. Pursell, jun. Pp. ix+470. (Oxford University Press: London and New York, June 1969.) 42*s*.

THE American economy is recognized as possessing the most productive and progressive technology in the modern world: it provides butter, guns, moonshots and much else besides. The historian and the economist, the scientist and the technologist, are all therefore interested in finding out how this economic miracle has been achieved. Professor Carroll W. Pursell attempts to throw light on the causes of this phenomenon by printing a series of extracts from books, articles and speeches, beginning with Edward Johnson's somewhat over-used *Wonder-Working Providence of Zion's Saviour in New England* (1654) on the subject of the migration of craftsmen, and ending, in point of time, with an extract from a symposium on *Science, Engineering and the City* (1967) by Robert C. Wood in which the speaker estimated that by the year 2000 there will be 312 million Americans, with 187 millions of them living in fourteen major urban conglomerations. The extracts, each of which is prefaced by an admirable explanatory note, are arranged in fourteen roughly chronological sections, ranging from "Colonial Technology" to "The Postwar Years". An excellent guide to further reading is provided.

What light do these extracts, which are of varying value as evidence, throw on the causes of American economic primacy in the world, given the basic fact that the United States contains immense mineral and agricultural potential? (So does the Soviet Union, but development there has clearly been much slower and less efficient.) The challenges imposed by an enormous and sparsely populated continent, where most men and women had to be prepared to turn their hands to many trades and activities, certainly explain some of the rapid progress of the late eighteenth and nineteenth centuries. The British official observers Joseph Whitworth and George Wallis noted in 1854 the comparative lack of division of labour: "The citizen of the United States . . . seems really to pride himself in not remaining over long in any particular occupation, and being able to turn his hand to some dozen different pursuits." Although this mobility of skill is less necessary now that "the Frontier" has vanished, nevertheless the tradition of occupational adaptability still has immense power. Does "American push" explain America's wealth? (The phrase is documented here, as used by R. W. Hunt in 1876 in relation to the rapid adoption of the Bessemer process by the country's ironmasters.)

The extracts contain numerous insights into the strengths, and occasionally the weaknesses, of American scientific and engineering attitudes. For example, as early as 1913 A. D. Little wrote in an article on industrial research in America: "In striking contrast to the secrecy maintained between individual workers in large German research laboratories, is the almost universal custom in America to encourage staff discussion. In the General Electric Laboratory, as in many others, the weekly seminars and constant helpful interchange of information has (*sic*) developed a . . . spirit which greatly increases the efficiency of the organization . . . ". And may not the permanent existence of "the military-industrial complex", a phrase apparently coined in a speech by President Eisenhower in 1961, even have a stimulating effect on economic progress?

W. H. CHALONER

PINEAL SURVEYED

The Pineal

By Richard J. Wurtman, Julius Axelrod and Douglas E. Kelly. Pp. x+199. (Academic Press: New York and London, January 1969.) 107*s* 4*d*.

THE most recent text concerned wholly with the pineal concerned itself with the publication of the proceedings of a round table discussion which took place in 1965. Since then a great deal has been added to our understanding of pineal structure and function, and the small volume under review has concerned itself almost wholly with the results of the past decade, in particular the last five or so years.

The book has been sensibly divided into sections written by experts working in the particular fields covered by each chapter. There is a danger with such division of labour that subjectivity may creep into the writing, and the three authors are to be congratulated on their objective approach.

The first chapter deals with the anatomy of the pineal throughout the animal kingdom, including several recent electron micrographs of the pineals of animals ranging from frogs to rabbits. Any scientist with an interest in comparative morphology should read this chapter. The next two chapters are concerned with the biochemistry and pharmacology of the pineal and are excellent summations of the work of the last few years in this field.

Structure and biochemistry are largely descriptive branches of biological science, and when the question "What does it do?" crops up then a definite answer is much more difficult to provide. The last three chapters attempt to state what the physiological role of the pineal might be from an organ, perhaps concerned with colour change in Amphibia, to the much more sophisticated role as a transducer of light information and the controller of biological rhythms. These three chapters represent the state of our present knowledge, and the greatly increased pineal literature of the last year or two is evidence that this organ is witnessing a renewed popularity amongst endocrinologists. The danger inherent in this is that over-enthusiasm can breed lack of critical appraisal. One has only to realize that the control of anterior pituitary function is still very much under critical debate to realize that an easy answer to pineal function will not be forthcoming in the near future. This is why the great strength of this presentation lies in its relative lack of adherence to a definite party line. This is a book which must be recommended to anatomists, physiologists, pharmacologists and biochemists as the best general review of the pineal gland published to date.

H. M. CHARLTON

HORMONE RESEARCH

Methods in Hormone Research

Edited by Ralph I. Dorfman. Vol. 1 : Chemical Determinations. Second edition. Pp. xiii+531. (Academic Press: New York and London, February 1969.) 233*s* 4*d*.

THE first edition of this book was published in 1962 and was a considerable success, not only for students and research workers in steroid biochemistry, but for all clinical and reproductive endocrinologists as well as many other workers in many branches of endocrinology. This book (second edition) again includes methods for determining oestrogens, androgens, progesterone, corticoids,