described are relevant mainly to the class of plasma devices being studied; while other papers deal entirely with technical aspects and applications of detectors such as surface–barrier semiconductor counters. Perhaps the most interesting contributions are on correlation measurements. From the autocorrelation function of variables such as magnetic field, electric field or light intensity the frequency spectrum of fluctuations and the characteristic size of energy inhomogeneities in a plasma may be derived. This is a powerful technique applicable to plasmas where fluctuations with frequencies in the ultra-high frequency range or lower are quasi-stationary.

The long time-lag between the original work and the present translation means that in these three volumes there is not much that is new for the plasma physicist. He will almost certainly find, however, some rewarding information, mainly technical ideas.

For the newcomer to the subject there exist more appropriate textbooks on plasma diagnostic techniques.

NICOL J. PEACOCK

Piezoelectric Ceramics

Piezoelectric Ceramics. By Bernard Jaffe, William Cook jun., and Hans Jaffe. Pp. ix+317. (Academic: New York and London, October 1971.) £5.50; $16.

A NUMBER of books and review articles on ferroelectricity and piezoelectricity have appeared during the last few years. In all these books the main emphasis is on the physics of ferroelectricity, as observed in single crystals and on crystal chemical questions. Little is usually said about piezoelectric and ferroelectric ceramics and their applications.

The authors of this excellent book, having worked with piezoelectric and ferroelectric ceramics for many years, are probably the world's experts in this field. It is therefore not surprising that the book is unique It is well written and covers the whole field competently. The emphasis is on ceramic materials, their properties and their applications. Much information is given on the relation between composition of the ceramics and their electromechanical and ferroelectric properties. Many figures and tables on piezoelectric, elastic and dielectric constants make this book very useful to people who work with these materials. The extensive literature survey makes it a good reference source.

After a chapter on the physics of the piezoeffect in ceramics and a chapter on measurement techniques, the authors devote a long chapter to $BaTiO_3$ (crystals and especially ceramics) and three chapters to other perovskites and solid solutions of perovskite ceramics. A chapter on non-perovskite oxides follows. The last two chapters are devoted to questions of manufacturing and applications. They contain a large number of technical details, some of them not published yet.

The book can be recommended without reservation to both scientists and engineers in university and industry. Many questions ranging from fundamental scientific to preparative and applied technological are discussed and answered in this excellent book.

WALTER J. MERZ

Changing Colour

Photochromism: Techniques of Chemistry. Edited by Glenn H. Brown. Vol. 3. Pp. xii+853. (Wiley Interscience: New York and London, November 1971.) £22.25.

PHOTOCHROMISM is an effect associated with compounds which reversibly change their absorption spectra on illumination with light. This is the first comprehensive book on the subject and is a collection of sound review articles on the different categories of photochromism written, with one exception, by industrial scientists.

Livingston writes a brief introductory chapter on photochemical and photophysical phenomena in polyatomic molecules. Some mention of experimental methods (particularly flash photolysis) would have been useful here but will be or are covered by other volumes in the *Techniques of Chemistry* series. Bertelson collects and reviews an impressive amount of information on compounds exhibiting heterolytic cleavage, particularly spiropyrans and triarylmethane dyes. This chapter in particular, and the rest of the book in general, reveals the hidden wealth of data on the subject described in obscure technical reports and patents and which is most usefully mentioned in this book. Other articles on homolytic processes by Eigemann, cis-trans isomerization by Ross and Blanc and tautomerism by Margerum and Miller are lucidly written and the authors have taken considerable care to cover much of the open and hidden literature. Inorganic compounds are discussed in short articles by Deb and Forrestal and by Araujo. Photosynthesis and visual processes feature largely in an excellent description of photochromism in living systems by Vernon and Ke. The final chapter, also by Bertelson, on applications of photochromism shows that much of the basic and applied research in the subject to date has been stimulated by commercial concerns interested in photochromic imaging systems and government agencies requiring a dynamic device for nuclear flash protection. The book is well edited and should serve as a reference source for some time.

M. A. WEST

Definitions in Science

Dictionary of Science and Technology. Edited by T. C. Collocott. Pp. xvi+1,328. (W. & R. Chambers: Edinburgh and London, 1971.) £6.50.

DICTIONARIES, especially science dictionaries, are all things to all men. To those with a tendency to mis-spell they are simply word lists; for those seeking more information they have to provide definitions that combine an economy of words with considerable lucidity.

That much can be said of all dictionaries. Science dictionaries, on the other hand, have to project not only a meaning but an unambiguous indication of the part of the broad spectrum of science to which that word usually belongs. And entries in a science dictionary must also be adequately cross-referenced, because of the frequent necessity for using other technical words in definitions, or when giving examples. This all adds up to the fact that good science dictionaries are not easy to produce.

The *Chambers Dictionary* categorizes each word into one or more of a hundred subject classifications—some wide ranging (like chemistry) and others surprisingly specific (weaving, for example). In most cases the classification procedure does not lead to ambiguity, but in one case at least the pigeonholing is misleading. The word (particle) accelerator, for example, is classified under "electronics" and defined as a "machine used to accelerate charged particles to very high energies. See also betatron, cyclotron, . . . ". Although the entry for betatron gives a classification of nuclear engineering, thus giving the game away, the original definition could easily refer to an exotic valve rather than to an instrument used as a source of particles for nuclear physics experiments. The equivalent definition in *Webster's Third New International Dictionary*, on the other hand, is rather longer, but ends: ". . . charged particles . . . are . . . accelerated . . . until they emerge as a stream of high speed projectiles". Although the *Webster* definition certainly has imperfections, the idea of using the output of an accelerator for nuclear physics has been introduced without making the definition excessively long.

To take a biological example, the *Chambers* definition of hormone is "an internal secretion produced by the endocrine or ductless glands of the body and exercising a specific stimulatory physiological action on other organs to which it is carried by blood. Important hor-