Anelasticity

Anelastic Relaxation in Crystalline Solids. By A. S. Nowick and B. S. Berry. Pp. xv+677. (Academic: New York and London, March 1972.) \$27.50.

THE names Nowick and Berry have long been intertwined with the evolution of both theory and experiment in anelasticity. This fine book—in preparation for half a dozen years—reflects the thorough knowledge and sensitive feeling they have for the subject.

The book contains two sections—the formal theory and examples of various anelastic phenomena. The theory builds on the old brief monograph by Zener, with whom Nowick worked as a post-doctoral fellow in the late 1940s. This theoretical treatment is excellent, bringing together for the first time many fragments of the subject published through the years. The short chapter on the thermodynamics of anelasticity is perhaps the only understandable treatment in existence—the brief intuitive discussion of the subject in Zener's monograph has not been very useful to most people and is rarely referred to.

The second section on anelastic phenomena is also well done. All important examples are mentioned and the state of thought for each is brought up to about 1970. These chapters are not merely a compilation of references to the topics; rather assessment is made of the state of understanding of each phenomenon. Experts might quibble about relative space given to the various sub-fields, but the balance seems about right.

One point of focus of this part of the book is establishment of a model for each relaxation. Thus, measurements of relaxation time and relaxation strengths are utilized more for elucidation of models for the relaxation than for their further use in metallurgy, ceramics or solid-state physics. For example, extensive use is made of measurements of the relaxation time and strength of the Snoek effect in defining the geometrical model of interstitials in bcc metals; much less space is devoted to the voluminous literature on use of the Snoek effect in deducing precipitation kinetics of carbides and nitrides in bcc metals. Space limitations were undoubtedly the reason for this and other exclusions.

Danger of error always exists in reviewing fields in which progress is rapid, a danger all the more acute in the publishing delays attendant on production of a hard-cover book. Examples of such error exist—the authors would certainly write the section on "Snoek peaks" due to hydrogen in metals quite differently now, for some of the interruptions they quote have turned out probably to be wrong.

Documentation the authors give to original papers is excellent: the excellent index of references will make the book useful as a catalogue of original works.

The book is well assembled. The figures are well done and the type style reads well. Altogether this will be a reference work of importance to research people and to graduate students; it should have a long, useful life.

CHARLES WERT

Plant Parasites

Biochemical and Ecological Aspects of Plant-Parasite Relations. Edited by Z. Kírály and L. Szalay-Marzó. Pp. 425. (Akadémiai Kiadó: Budapest V, Hungary, 1971.) £6.75.

THIS book contains the papers given at an international symposium held in Budapest in September 1970 to celebrate the 90th anniversary of the Hungarian Research Institute for Plant Protection. The papers are in four groups and deal with insect pests and diseases caused by viruses, bacteria and fungi. The first group of seventeen papers is on defence reactions of plants to infection and includes a wide range of topics, seven relating to viruses, six to fungal pathogens and four to pathogenic bacteria.

The second group of eleven papers, on the ecology of insect pests, includes a number on the effects of parasites on insect populations. There follow eleven papers on new approaches to pest control, mainly those that exploit the use of juvenile hormone analogues, "antifeedants" and chemosterilants.

The last section of thirteen papers is on the highly topical subject of systemic fungicides and how they act against plant pathogens. Most of the papers are about the use and mode of action of specific fungicides. There are also stimulating papers on more general aspects by two of the best known workers in this field.

The book has been attractively produced and is well illustrated. It is a little unfortunate that there is no index in view of the range of subjects covered and the very large amount of up to date information that is presented. This, however, is no more than a minor criticism of a most interesting and coherent collection of papers on four very important topics in crop protection that are currently attracting much attention. The editors are to be congratulated for their work in producing this volume especially because as Hungarians they edited forty-one papers in English and eleven in German to a standard that many whose first language was English would be glad to achieve.

R. K. S. WOOD

Chapel en le Frith

Geology of the Country Around Chapel en le Frith. By I. P. Stevenson and G. D. Gaunt. Palaeontology by M. Mitchell, W. H. C. Ramsbottom and M. A. Calver. Petrography by R. K. Harrison. Pp. xii+444+24 plates. (HMSO: London, December 1971.) £3.20.

THIS well produced and illustrated memoir is concerned wholly with Carboniferous rocks up to and including Lower Coal Measures and with the superficial unconsolidated Pleistocene and Recent deposits. The highly fossiliferous Carboniferous Limestone (Lower Carboniferous) and its contained basic igneous rocks made classic by continuing studies beginning with Martin, 1809, has a complex stratigraphy. There is a fair summary of the conflicting views which have been held and an account of the eventual proof of the correlation of the goniatite and "standard" corallachiopod zones of the upper part of the Lower Carboniferous as well as of the intricate relations of the shelf, marginal or reef, and basin facies. There are many well displayed sections in the deep cut gorges and these are fully described as well as exploratory boreholes made especially to elucidate the complexities since the interpretation has a considerable influence on the exploitation of the limestone and its contained minerals. The mineralization, confined to the limestone, provides important quantities of fluorite. The occurrence of the minerals is treated in summary since there is already an extensive literature.

The Millstone Grit Series up to 4,000 feet thick, which occupies a large part of the sheet area to the north of the Carboniferous Limestone outcrop, is given full treatment and, together with that on the adjoining sheet 100, can be regarded as the type development. This account will be the standard of reference for rocks of this age, Namurian, throughout the Pennine region and will serve as the comparative succession over a wide area. The Lower Coal Measures, confined to the Goyt Trough in the western part of the district, complete the "solid" succession.

The area is a fascinating one and a more extended discussion of its geological history might have been included although this will doubtless be forthcoming when it can be based on the completed mapping of the sheets to the south. The palaeontology is based almost wholly on macropalaeontology, which is admirably done, but the microfossils could be studied as a further aid to correlation using this sequence as a standard. Altogether a fine memoir providing a wealth of information for the quarrying, mining and water engineering interests as well as for academically based studies.

J. SHIRLEY