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BOOK REVIEWS

STEWART (G. H.), editor. *Science of ceramics.* Vol. 2. London and New York (Academic Press for the British Ceramic Society), 1965. 431 pp. Price 84*s*.

This volume contains the papers presented at the second joint biennial meeting of the British and Dutch Ceramic Societies, which attracted contributions not only from the sponsoring societies but also from Belgium, Denmark, France, West Germany, Italy, and the U.S.A. Four papers are in German, three in French, the remainder (21) in English. Though covering a wide spectrum of ceramics, the papers are conveniently grouped under four headings: I. Properties of raw materials, II. Processing of materials, III. Behaviour during firing, and IV. Structures and properties of products.

Sections I, III, and IV contain much information of interest to the mineralogist. In the first, papers on the use of X-ray and d.t.a. in quantitative analysis of kaolinite clays, on the absorption of dyestuffs by clays, and on the bound water on clay are of particular significance to clay mineralogists, whereas the crystallographer will find useful information in the paper on the characteristics of fine oxide powders. Although grouped in section I, papers on the reaction of different types of alumina with lithium carbonate and on the behaviour of feldspars at high temperatures could equally well have been placed in section III. The first of these studies was undertaken with an automatic recording differential calorimeter and by X-ray methods; the second, by means of the hot-stage microscope, not only records the effect of heat on feldspar but gives information on interactions between feldspar and kaolin; the development of mullite is clearly shown.

Section III on behaviour during firing is largely devoted to various aspects of the sintering process; the dynamic properties of grain-boundaries, the effect of the surrounding atmosphere and reactions at the point of contact between silica and alumina are particular examples.

Another paper of interest deals with the decomposition of solid solutions of the type $2CaO.(Al,Fe)_2O_3$ at high temperatures. Of more technological significance are papers on reactions and decomposition of foreign inclusions in pottery bodies, the influence of volatile substances present in the blast furnace on carbon monoxide attack on the refractories, and problems encountered in preparing vacuum-tight seals on alumina products capable of withstanding high temperatures.

In section IV, White surveys the factors determining the structure of polyphase ceramics. In particular he is concerned with chrome-magnesite refractories and the nature of the periclase bond. Recent investigations have shown that in magnesia–monticellite mixtures fired above the melting point of monticellite the equilibrium dihedral angle found in the liquid phase at junctions between periclase grains is increased by additions of Cr_2O_3 and decreased by addition of Fe_2O_3. Consequently Cr_2O_3 decreases the tendency of silicate to penetrate between the periclase grains, Fe_2O_3 having the opposite effect. Other papers in this group are concerned with connected porosity in dense sintered oxides at high temperatures, the thermodynamic order of phase-transition in rock-salt and spinel type lithium ferrites, aspects of the surface energy of ceramics, strains in glazed ceramic products, solid oxide electrolytes, effects of method of preparing titanium monoxide on its electrical properties, and on glass ceramics. This last subject is one that is exercising the minds of many workers in the ceramics and glass industries; the development of these products by controlled nucleation and crystal growth from a glassy matrix has introduced a new factor into the field of heat-resistant materials and, in effect, is a by-product of the space research programme.

Section II, which is of no immediate interest to the mineralogist, contains papers of equal merit; these should prove of value to workers more directly concerned with the ceramic field.

The present volume, which is admirably produced and illustrated, maintains the high standard of its predecessor. D. A. HOLDRIDGE

VANDERS (IRIS) and KERR (PAUL F.). *Mineralogical recognition*. New York (Wiley), xiii+316 pp., 247 figs., 49 coloured plates. 1967. Price 95*s*.

The aim of the book is to provide a text for the identification of minerals in hand specimens. In the preface to the book it is stated that it is intended for '. . . the mineral collector, the nonprofessional reader with an interest in minerals, the beginning student of mineral science, the