

lectual and inconclusive discussions at the postgraduate level was, on the whole, a bad training for the real world, and only men of very strong character could overcome this handicap. He was not attacking university education but directing attention to certain shortcomings which are often ignored—for example, in the 1963 Reith Lectures—and to which little attention is directed in planning the expansion of higher education. If, as Mr. Chambers reminds us, brilliant academic achievement is frequently linked with poor judgment, indecisiveness and incapacity to delegate work or control men, while the positive characteristics are frequently found in men with second- or third-class degrees, are we wise to attempt to channel so much talent into university institutions to the neglect of colleges of technology and other institutions of further education?

Mr. Chambers's lecture is important for the questions which it raises and on which the Robbins Report scarcely touches, and these questions have a significance which is far from being limited to training for management. It has implications for the universities themselves, and although the Robbins Committee, like the University Grants Committee, recognized the importance of character training, little attempt is apparent in working out the implications. Certainly it would be hard to find in Dr. Sloman's Reith Lectures any satisfactory discussion of either the development of character or of the related problem of discipline.

Mr. Chambers's lecture was thoroughly realistic on both these issues and he showed just where we are heading if we fail to devote a good deal more attention to problems which are often highly unpopular. Besides this emphasis and its call for hard constructive thinking, as in his reference to the importance of education for management, his remarks on applied science deserve to be widely read. Mr. Chambers has no use for the arrogance which regards pure science as of a higher order of intelligence than applied science. The combination of powers of intellect and judgment required for applied scientific work by brilliant scientists struggling with a specific objective may not be possessed by the pure scientist who looks down on them, nor will that scientist understand how much harder is the task of working successfully in a team than the individual attack on abstract problems, just as he will also fail to appreciate the importance of problems of management or team-work generally.

This spirited defence of applied science is important and timely, and while it includes a plea for greater respect for efficient management in the context of management generally, the importance of Mr. Chambers's address lies in its reminder that if the new business schools are to be assured of a continuous supply of suitable students, we must see that the foundations are firmly laid in our educational system as a whole. Whatever changes in the staffing or methods of our universities may be desirable, we cannot wait until the student enters the university or the college of technology before coming to grips with the related problems of discipline and the development of character. A start must be made in the schools, which must share the responsibility with the universities and the other institutions of higher education. Unless, indeed, this responsibility for the training of character is fully and speedily recognized and appropriate measures taken with real determination, neither the institution of business schools nor the expansion of higher education is likely to provide Britain with the managers, the men or the sense of purpose that is needed.

EXPERIMENTAL AND THEORETICAL TWINNING OF CRYSTALS

Mechanical Twinning of Crystals

By M. V. Klassen-Neklyudova. Authorized translation from the Russian by Dr. J. E. S. Bradley. Pp. xiv + 213. (New York: Consultants Bureau, 1964.) 19.50 dollars.

MECHANICAL Twinning of Crystals provides a good comprehensive review of experimental and theoretical work on the twinning of crystals. As with other publications of this kind, its particular advantage lies in its up-to-date survey of Russian work in this field.

The ground covered by the book is more extensive than the title at first suggests. In addition to a full treatment of the fundamentals of mechanical twinning there are interesting chapters dealing with martensitic transitions, recrystallization twins, and lattice re-orientation in inhomogeneous deformation (kink bands, deformation bands, etc.).

The book is divided into three parts. The first part deals with experimental data on mechanical twinning from the point of view of twingeometry and crystallography. A clear and detailed exposition of the geometrical laws and the methods for determining the twinning elements in the different crystal systems is given. Methods of producing mechanical twins in crystals are dealt with and there is an interesting account of elastic twinning in crystals. Short chapters deal with twinning without change of form in quartz and with the role of mechanical twinning in plastic deformation and fracture. The latter is very brief and confined mainly to Russian work on this subject. The second part of the monograph considers effects related to mechanical twinning such as recrystallization and martensitic changes. In this section, too, there is a good account of large-angle re-orientations accompanying inhomogeneous deformation. The final part of the book deals with the theory of twinning and has a chapter on twin growth considered in terms of the macroscopic theory of elasticity, and a chapter on atomic and dislocation models of twinning.

Appendixes contain tables of twin elements for metals, alloys and non-metallic crystals. There is also a short review prepared by V. I. Startsev for the English edition of selective dislocation-etch methods for examining the twinning mechanism in calcite.

The monograph is primarily a review and as such it is a good one. It is concise, possibly too concise in parts; on the other hand, the field dealt with is large and it is better in a work of this kind to provide references (there are more than 500) than to repeat the arguments in full. The book is intended for research people already working in the field. Someone new to the subject would benefit, however, from the introductory chapters dealing with the fundamentals of twinning.

The book is well produced and illustrated and the translation reads smoothly. Its publication in English is to be welcomed, but it is a pity that it should be so expensive.

J. H. BRUNTON

TUMOURS OF THE HUMAN ENDOCRINE GLANDS

Human Tumours Secreting Catecholamines

Clinical and Physiopathological Study of the Pheochromocytomas. By Prof. Henri Hermann and Prof. René Mornex. Translated by Dr. R. Crawford. (International Series of Monographs on Pure and Applied Biology, Vol. 23.) Pp. xiii + 207. (London and New York: Pergamon Press, 1964.) 60s. net.

TUMOURS of the human endocrine glands that are not easily detectable by clinical means usually secrete abnormal quantities of their characteristic hormone, and