Allowing for the effects of intelligence in increasing the importance of the hereditary factor, Dr. Vernon hazards the suggestion that the relative importance of the three factors may be estimated as: heredity, 40 per cent; occupation (direct effects), 10–20 per cent; and social environment, 40–50 per cent. He gives these figures as provisional, and as a challenge to criticism and a

stimulus to the search for further much-needed information.

In his concluding chapter the writer discusses possible curative measures for the improvement of social conditions, and refers to plans which have been suggested by various authorities for a thorough-going revision of the health services of the nation.

MAY SMITH.

INFORMATION AND PROGRESS IN ENGINEERING AND INDUSTRY

Records and Research in Engineering and Industrial Science

A Guide to the Production, Extraction, Integrating, Storekeeping, Circulation and Translation of Technical Knowledge. By Dr. J. Edwin Holmstrom. Pp. xii + 302. (London: Chapman and Hall, Ltd., 1940.) 15s. net.

THE present work is a treatise on the collection and selection of information for use in the development of engineering and manufacture. Since progress in science and industry consists in the application of knowledge previously acquired, the problem of making this knowledge available in the fullest degree is a study of fundamental importance. Yet, for some reason, difficult to imagine, the laboratory worker, reading a gauge or shaking and looking at a test tube, enjoys support and prestige denied to the documentalist, engaged in processing the raw material of knowledge so obtained. Through such neglect, untold sums are wasted annually in working out engineering projects, developing inventions and conducting experimental researches which might have been saved altogether or begun from a more advanced starting point if the technique of finding out what other workers had already placed on record had been properly understood. Haphazard reading of the current issues of a few technical periodicals in moderation is not a waste of time. But, when we realize the thousands of journals, any volume of which, past or current, might contain information on a single subject, the method is seen to be essentially inefficient as a means of gathering specific information. Valuable time must not be frittered away in reading documents which are not the best for the immediate purpose.

The task of documentation is to provide a subject index that will enable us to select at will, from the millions of scientific and technical writings poured out, the particular documents relative to a specific inquiry. A single adventure in modern industry may depend for its realization

on the application of the widest range of scientific and technical knowledge. Documentation needs to be organized from the point of view of science as a whole, instead of being worked in watertight compartments as at present, with a corresponding loss of efficiency.

Following useful chapters, describing in detail the present fortuitous concourse of research institutions, and the heterogeneous aggregate of "collative organisations", as the author terms them, the work passes on to discuss, in two important chapters, the methods of gathering ideas from technical literature and of sorting and integrating these ideas. The writer shows how the co-ordination of the mass of current unrelated abstracting and indexing work is being achieved gradually by the extension of the use of a standard method of classifying references. This method is the Universal Decimal Classification. Incidentally, it may be remarked that between a third and a half of the different items in scientific and technical literature indexed are now being classified by the standard method. In the Science Library at South Kensington, all references and abstracts classified in this way are cut up, mounted on cards and amalgamated in a central index of two and a half million cards, which is growing at the rate of from 120,000 to 150,000 cards annually. From this index, supplemented with a general collection of bibliographies and lists of references on all branches of science, comprehensive bibliographies on sufficiently restricted subjects of inquiry are prepared, free of charge, by an expert staff.

The book includes a description of the Kaiser System of indexing, for non-co-operative purposes, and gives due weight to economic and commercial aspects. The work appears at an opportune time, when the achievement of the greatest efficiency in documentation is essential. As an analysis of the subject and a comprehensive guide to sources of information, the volume should be in the hands of the business man, engineer, abstractor, indexer, and librarian alike.

S. C. BRADFORD.