

### Fuel Testing

Laboratory Methods in Fuel Technology. By Dr. Godfrey W. Himus. Second edition. Pp. xvi+288. (London: Leonard Hill, Ltd., 1942.) 21s.

**I**NDUSTRY in general has not given adequate attention in the past to thrift in the use of fuel. In Great Britain coal has been abundant, good and relatively cheap. Fuel has usually been a minor item in cost of production. War conditions have brought a change measured by the scarcity and cost of fuel. Moreover, it is unlikely that pre-war conditions will ever return. Present conditions have caught many with plant inadequate to handle lower-grade fuels and operated by staffs lacking in technical knowledge to cope with new difficulties. One result has been the issue by the Ministry of Fuel and Power of much literature in pamphlet form full of practical advice on most of the problems facing the operational staffs of fuel consumers. Last year the British Standards Institution issued two new specifications on (a) "The Sampling of Coal and Coke", No. 1017, 1942, and (b) "The Analysis and Testing of Coal and Coke", No. 1016, 1942. These collect and codify what has previously been scattered in several specifications, representing the combined experience of many years. They give the general impression of an increase in the elaboration and refinement which is necessary in research and critical work. Anyone familiar with the conditions under which coal is bought, sampled and handled in ordinary industrial practice will doubt whether all this refinement is necessary. The book by G. W. Himus is a timely production, for not only does it incorporate the essentials of the British Standards Institution specifications, but also it goes much further, with chapters on liquid and gaseous fuels, technical pyrometry and other matters of interest to the fuel technologist. It is the most recent and comprehensive work of its kind available to those chemists and engineers who are compelled by circumstance to interest themselves in industrial fuel economy, and of these to-day there are many.

H. J. H.

### How Aeroplanes Fly

By W. O. Manning. (Oxford Air Training Manuals.) Pp. 64. (London: Oxford University Press, 1942.) 2s. net.

**T**HIS volume is yet another added to the spate of publications dealing with the several branches of aeronautical sciences from the semi-popular outlook. It is not easy to see exactly what type of reader the author envisaged when writing this. It is not the ordinary popular descriptive book, as it does not link up with aircraft by giving photographs of appropriate machines, but on the other hand its technical aspect is so elementary that it can scarcely appeal to anyone with any pretence to the elements of aeronautical knowledge.

The text is well written, very lucid, and largely free from those inaccuracies that many authors commit when endeavouring to present an abstruse subject in simple language. It presents the theory of flight in chapters on the atmosphere, sustentation of the wings, control and stability of the aircraft, propulsion by the airscrew, choice of engines, and types of aircraft for different purposes. There are a few cases where attempts at simplification have resulted in a statement that seems unnecessarily vague for a scientific work. For example, it is stated that in

certain engines the water jacket is "no thicker than a piece of tin". How thick is a piece of tin? Anyhow, the material to which the author is apparently referring is tinned sheet steel. Also the word "fuselage" is used constantly instead of "body". This practice was officially discouraged some time ago, and the more general word "body" is always used in Air Ministry correspondence to-day. The author surely sometimes underestimates the intelligence of his reader when he says that "60 miles an hour is 88 feet per second", and goes on to add that "30 miles an hour is 44 feet per second".

Altogether this is a pleasant, readable book for a beginner who will necessarily not read it too critically.

### Steels for the User

By R. T. Rolfe. Second edition, revised and enlarged. Pp. xi+356+42' plates. (London: Chapman and Hall, Ltd., 1942.) 25s. net.

**T**HAT this book has been found of practical value by users of steel is shown by the fact of a second edition being called for after three years. The author is particularly concerned with plain carbon steels; and although alloy steels are discussed when necessary, he is at pains to show that by suitable heat treatment the simple carbon steels may be given a wider range of usefulness than is sometimes supposed. The value of the book is essentially practical, and many examples of applications in service, and also of service failures, are discussed in detail. Some of the minor applications of steel which have a metallurgical interest of their own, such as needles and instrument pivots, usually neglected in text-books, are included.

The new edition contains much new matter, especially on heat treatment, welds, and fatigue testing. The short theoretical section is less satisfactory, the iron-carbon diagram on p. 35 being quite out of date, but this is not likely to mislead the user for whom the work is intended, and whose requirements are not met by the standard text-books. The presentation throughout is clear, and the numerous illustrations are representative and well reproduced.

### Bibliography of the Literature relating to Constitutional Diagrams of Alloys

Compiled by Dr. J. L. Haughton. (Monograph and Report Series, No. 2.) Pp. iv+163. (London: Institute of Metals, 1942.) 3s. 6d.

**T**HIS compilation gives, in systematic order, references to papers dealing with the constitution of metallic alloy systems. It does not include physical properties unless they have been used as a means of determining constitution. It represents the result of many years of careful card-indexing and should save investigators a great deal of trouble in searching the literature. The first 125 pages cover the binary systems, but another 34 pages are needed for the ternary alloys, a larger number than might perhaps have been expected. More complex systems have been very little investigated. The book is published at a low price by the Institute of Metals, and the author has in most instances added the page of the abstract to be found in the *Journal* of the Institute, for the convenience of readers who have it at hand. Besides metallurgists, chemists interested in phase equilibria will find the publication of value.