

Heavier-than-Air Aircraft:

a Brief Outline of the History and Development of Mechanical Flight with reference to the National Aeronautical Collection, and a Catalogue of the Exhibits. By M. J. B. Davy. (Board of Education, Science Museum: Handbook of the Collections illustrating Aeronautics, 1.) Second edition (revised and enlarged). Pp. 125+26 plates. (London: H.M. Stationery Office, 1935.) 2s. 6d. net.

THE second edition of this handbook contains an outline of the history and development of mechanical flight from the beginning to the present day, with special reference to the National Aeronautical Collection, and a complete catalogue of the exhibits at South Kensington.

The National Aeronautical Collection, which was founded as a historical exhibit in 1919, has enlarged rapidly since that date, and is now probably the most comprehensive exhibition of its sort in the world, and one of the most popular of the collections at the Science Museum. Much original historic apparatus has been acquired, and the collection is certainly richer in this respect than any abroad. It includes the gliders of Lilienthal, Pilcher, Chanute and Weiss; the original Wright aeroplane which made the first flights in 1903, the Vickers-Vimy aeroplane which made the first crossing of the Atlantic by air in 1919, the Supermarine Rolls-Royce Seaplane S.6.B., which secured the Schneider Trophy for Great Britain and created a world speed record of 407.5 miles an hour. A note on the development of air transport to the year 1934 is included in this edition, and some new illustrations have been added. The catalogue portion includes the additions to the Collection which have been made since 1929.

The Chemical Formulary:

a Condensed Collection of Valuable, Timely, Practical Formulæ for making Thousands of Products in all Fields of Industry. Editor-in-Chief: H. Bennett. Vol. 1. Pp. x+604. Vol. 2. Pp. ix+570. (London: Chapman and Hall, Ltd., 1933-1935.) 25s. net each vol.

THESE two volumes consist of numerous receipts for the manufacture of a wide range of materials dealt with under such varying headings as adhesives, alloys and metals, food products, explosives, ceramics, insecticides, plastic materials, etc., to waterproofing of materials. The information used in compiling these books has been obtained from a variety of sources, including industry and patent literature, and has been carefully considered by a board of editors drawn from a large number of educational institutions and industrial firms.

Although correct quantities may be used, much depends upon the method of compounding and other factors if the best results are to be obtained, and so experimental work or consultation with other workers in a similar field may be necessary. Nevertheless, the contents of these volumes supply much useful information on how various products can be obtained, and are therefore very suitable works of reference to both the educationist and the industrialist.

Wasserbauliche Strömungslehre

Von Dr. Paul Neményi. Pp. viii+275. (Leipzig: Johann Ambrosius Barth, 1933.) 28 gold marks.

DURING the past twenty years, a complete change of outlook has occurred in all subjects involving the mechanics of fluid motion. In the main, this is due to intensive aeronautical research originating in the War period. Almost without exception, writers of textbooks of hydraulics have ignored this advance and have merely rearranged and expanded the older material. Dr. Neményi, on the contrary, almost creates a new subject. The scope and arrangement are new, and much of the subject matter is ably abstracted from recent original papers.

Written primarily for the civil engineer, or perhaps rather for the advanced student, it is for the most part an exposition of the fundamental principles of flow, classified under a variety of boundary conditions. Mathematical treatment is occasionally used, but only where the matter really warrants it. Ample references, however, are given to the original papers where the full treatments can be found.

Some idea of the scope may be given by the following random selection from chapter headings: river-bed and silt movements, ice in relation to the river problem, underground water, jets and sprays, the layout of a laboratory for hydraulic model testing. All are fully illustrated by photographs, curves and line diagrams.

As this work is likely to have far-reaching influence, it is to be hoped that the author will be able to arrange for an English translation.

Hand- und Jahrbuch der chemischen Physik

Herausgegeben von A. Eucken und K. L. Wolf. Band 6: Elektrizität und Materie. Abschnitt 1B: Dielektrische Polarisierung. Von O. Fuchs und K. L. Wolf. Pp. x+237-460+12. (Leipzig: Akademische Verlagbuchhandlung G.m.b.H., 1935.) 27 gold marks.

THE subject of "Dielectric Polarisation" acquired a new interest and importance, to chemists as well as to physicists, when Debye in 1912 showed how the dipole moment of a gas could be deduced from the temperature coefficient of the dielectric constant, and J. J. Thomson in 1914 showed how, either by this method or by comparing the dielectric constant with the square of the refractive index, gases could be divided into two classes, according as their molecules do or do not possess a permanent dipole moment. Subsequent years have been marked by intense activity in correlating dipole moments with molecular structure, and especially with the configuration of molecules in space of three dimensions. In this way, many physico-chemical problems have already been definitely solved, and other subjects, such as the principle of free rotation, have been illustrated and elucidated. A monograph of 234 pages, with more than 60 figures, is supplemented by a table containing all the previously determined dipole moments, with references to 319 papers in which the data in question are recorded.