Hand- und Jahrbuch der chemischen Physik

Herausgegeben von A. Eucken und K. L. Wolf. (1) Band 9, Abschnitt 3 und 4 : Anregung der Spektren, von W. Hanle ; Molekülspektren von Lösungen und Flüssigkeiten, von G. Scheibe und W. Frömel. Pp. 184 + 16. 18 gold marks. (2) Band 9, Abschnitt 5 : Kernspektren. Von K. Philipp. Pp. xi + 185–283 + 17–22. 11.20 gold marks. (3) Band 8 : Abschnitt 2. Lichtzerstreuung. Von H. A. Stuart und H.-G. Trieschmann. Pp. ix + 191 + 20. 24 gold marks. Leipzig : Akademische Verlagsgesellschaft m.b.H., 1936, 1937.

THESE sections of the "Hand- und Jahrbuch der Chemischen Physik", like their predecessors, are noteworthy for their completeness, good presentation of experimental facts and technique, and their convenient format. It is impossible here to do more than comment upon a few of their more striking features.

(1) Hanle's discussion of the methods of excitation of spectra is well arranged and easy to follow, and the reviewer particularly liked the manner in which potential curves are explained and introduced wherever necessary. The section by Scheibe and Frömel on the spectra of liquids and solutions contains a neat outline of the methods for the measurement of extinction coefficients, and a good treatment of the factors which affect molecular absorption, as, for example, the effects of the solvent upon fine structure.

(2) Perhaps the section on nuclear spectra by Philipp is the one most likely to be sought out by English readers, on account of the rate at which development in this branch is proceeding. The author gives very complete accounts of long-range alpha particles and their fine structure. He gives a careful analysis of β-ray spectra and the theory of β-ray disintegration, and his concise treatment of γ-ray spectra, with the discussion of the time of emission of γ-rays from the nucleus and nuclear composition, is very pleasing to read.

(3) Finally, we come to the section on the scattering of light. Stuart deals excellently with phenomena in the visible spectrum and Trieschmann with the coherent scattering of X-rays. Perhaps it is permissible to suggest that it would be well if, in English books on scattering of very high frequency radiation, a clear distinction between coherent and incoherent scattering were always drawn. L. F. B.

The Geographer's Protractor

Designed by Prof. F. Debenham. Ivorine, 6 in. × 2½ in., with 8-page Explanatory Booklet. (London : T. Murby and Co., 1938.) 6s.

THERE are several features of this new protractor that make it most acceptable. Made of ivorine encasing a metal reinforcement, it is strong and rigid and the scales and other markings stand out clearly and are unlikely to be obscured by usage. The width is half an inch more than usual, which gives greater accuracy than is obtainable with narrower instruments for angles near 90°. The edges

are well bevelled. On the edges of the reverse side are scales for the principal maps of the Ordnance Survey, six inches, one inch, and half an inch to the mile. Scales are also given for the principal Continental scales (1 : 10,000 ; 1 : 20,000 ; 1 : 50,000 ; 1 : 100,000 ; 1 : 62,500 ; and 1 : 250,000). The six-inch scale has also a scale of chains. A gradient scale for the six-inch map should also be useful on many occasions. The usual diagonal scale of inches and a centimetre scale are provided. On the upper side there are some useful features in the scales for the direct plotting of map projections, the use of which should save the student much time. All the more usual projections can thus be drawn directly.

It is in every way a most useful protractor and most pleasing to handle. Prof. Debenham is to be congratulated on his design. R. N. R. B.

Trigonometry

Part 1 : Intermediate Trigonometry. By Prof. T. M. MacRobert and William Arthur. Pp. x + 206. (London : Methuen and Co., Ltd., 1937.) 5s. 6d.

THIS attractive volume has been designed as the first part of a complete work on trigonometry and bears the sub-title, "Intermediate Trigonometry". It begins, however, with the definition and measurement of angles and proceeds quite logically and rigorously to the solution of triangles. Amongst the many commendable features of the book the following deserve mention.

Circular measure is rightly introduced in the first chapter, and is developed from the fundamental theorems upon which it is based. The chapter on graphs is not only very clearly written but also is illustrated by a series of well-drawn curves, including those of the inverse functions. Then again, in order to render the proofs valid for angles of all magnitudes, the Addition Theorems are established by an application of the theory of orthogonal projection, a very lucid exposition of which is given in the previous chapter. Finally, quite a full and stimulating chapter on the properties of quadrilaterals concludes the course.

Motor Benzole :

its Production and Use. By W. H. Hoffert and G. Claxton. Second edition. Pp. xxv + 933 + 3 plates. (London : National Benzole Association, Ltd., 1938.) 42s. net.

THE subject covered by this book is of great importance and one which continues rapidly to develop, as is witnessed by the fact that the new edition contains 50 per cent more subject-matter. New chapters contain information relating to the production of aromatics from gaseous hydrocarbons : there are those who predict that much motor-fuel is to be made this way in the future, which may mean that the whole of our tar production may be first cracked to gas and this synthesized to anti-knock petrol. If this became true, home-produced oil would be a fact at long last.