

description—adequately illustrated—describe the general method of carrying out colorimetric determinations.

The succeeding sections deal with individual determinations, preceded in each case with the relevant references to the scientific literature. The methods, which are clear and concise, have been drawn up in collaboration with laboratories engaged in each determination. As in all colorimetric methods, it is assumed that the preliminary preparation has eliminated interfering substances and that the colour quality given by the test is precisely the same as the disks, which are permanent. As pointed out in the introduction, "if the colour of the test solution is different from the glass standards, it is a sure indication that the reagents are stale or wrong, or the technique has not been followed correctly". The colour quality of the light used is important, as there may be considerable metamerism between the colour of the test liquid and the coloured disks. The operator is therefore directed to use a "uniform source of white light, preferably a north window".

While the modern tendency is for the use of a spectrophotometer or photoelectric colorimeter instead of visual methods, it must be admitted that well-standardized and authenticated colorimetric methods such as described have distinct advantages in simplicity and speed, and avoid certain difficulties associated with complicated instruments. J. KING

#### Yorkshire Birds

By Ralph Chislett. Pp. viii + 335 + 10 plates. (London and Hull: A. Brown and Sons, Ltd., n.d.) 25s. net.

A NEW work on the birds of Yorkshire is very welcome, as many changes have taken place since Nelson and Eagle-Clarke's book was published in 1906. As is the case elsewhere, Yorkshire has suffered during the past quarter of a century from the increase of industrial development and intensive farming. The clearing of all deciduous woods and replanting with conifers has had a marked effect on the bird-life, and although the decline of game preservation and the breaking up of estates may have been good for birds of prey, it has led to a great increase in carrion crows, magpies and jays.

A chapter is devoted to these changes, and another gives a useful summary of bird migration in Yorkshire, both inland and on the coast. Spurn Point, at the mouth of the Humber, is an important point of arrival for migrants crossing the North Sea, and was formerly a great haunt of collectors. Now there is a trapping station where birds are caught and ringed, and much information is being collected on the movements of migrants on that part of the coast. The Brampton and Flamborough cliffs have long been famous as breeding places for vast numbers of sea-birds, including guillemots, razorbills and kittiwakes. Mr. Ralph Chislett writes that all is not well there: the kittiwakes have increased, but the numbers of guillemots and razorbills are much fewer than formerly, and this, he suggests, is owing to the over-collecting of their eggs and the mortality through oil pollution—a menace to which these birds are very susceptible. Certain species among the land-birds have also decreased; but, at the same time, others have increased. All this is well described in the author's interesting account of each species.

Mr. Chislett is to be congratulated on his volume, which will long remain the standard work on the birds of Yorkshire.

#### Volume and Integral

By Prof. Werner W. Rogosinski. (University Mathematical Texts.) Pp. ix + 160. (Edinburgh and London: Oliver and Boyd, Ltd.; New York: Interscience Publishers, Inc., 1952.) 10s. 6d. net.

THIS small book provides an excellent introduction to the theory of the Lebesgue integral in  $n$  dimensions.

Part 1 is devoted to the problem of volume, the geometrical aspect of the integral being stressed throughout the book. First, sets of points are considered, and then the Peano-Jordan definition of content is discussed; this is followed by the Lebesgue definition of measure.

Part 2 first gives the theory of the Riemann integral of a function of  $n$  variables, defined geometrically (that is, in terms of 'volume'), using content as the underlying notion of volume. The Lebesgue integral is then dealt with in a similar way, on replacing content by measure. Finally, the theory of the indefinite integral of a function of one variable is discussed.

I agree with the author (see preface) that the elements of the theory of the Lebesgue integral should be included in a mathematical honours syllabus. This book, which is exceptionally clearly written, would well serve the purpose of teaching such matter. Some good examples are provided, with solutions at the end of each chapter; this is an additional recommendation in a book of a purely theoretical character. R. G. COOKE

#### Pétroles naturels et artificiels

Par J.-J. Chartrou. (Collection Armand Colin: Section de chimie, No. 124.) Troisième édition, entièrement refondue. Pp. 224. (Paris: Armand Colin, 1952.) 260 francs.

THIS typically uncut, paper-covered little volume, which fits the pocket comfortably, is the third edition, No. 124, of "Collection Armand Colin (Section de Chimie)". The author endeavours to cover a wide field of petroleum technology in 224 pages, size  $6\frac{1}{2} \times 4\frac{1}{2}$  in. He states his object at the outset: to study physical and chemical properties of petroleum; exploitation and refining; a chemical industry based on petroleum products; substitute hydrocarbons and lubricants. Actually, he goes much farther than that curriculum, ambitious though it is for small space. Twelve chapters describe composition, chemical, physical properties of petroleum; geology, surface indications and exploration; exploitation by drilling, wells, shafts, galleries; storage, transport; refining; analysis, control of products; economic applications of products including chemically derived materials; world production; hazards in the oil industry. There is an afterthought on ozokerite and asphalt (two pages!); and an omnibus chapter, which includes oil shales, low-temperature carbonization, hydrogenation and synthetic products, completes the study. To me it seems a herculean task to attempt to cover in narrow compass all aspects of such a highly integrated and specialized technology as petroleum as it exists to-day, even in title. At best, it means synopsis; at worst, much severed outline. To the layman, much of this text is beyond him. To student or oil technologist, modern literature is now prodigious in its specialized subjects, and outlines as such are outmoded. Maybe there is a 'midway' public in French-speaking countries to which this little work will appeal; to this extent I wish it well. H. B. MILNER