

his advice on the examination of thin sections and the description of rocks is excellent.

We cannot agree with his adoption of the meanings attached by Prof. Shand to the terms "saturated" and "unsaturated" as applied to minerals and rocks, meaning saturated or unsaturated with silica. It is always undesirable, we think, to take a recognised word, especially one with a definite scientific meaning already attached to it, and employ it in a more restricted sense. Perhaps the most valuable chapters in the book are those on the interpretation of analyses and their representation by diagrams. We could have wished, perhaps, that greater space could have been given to the subject of the crystallisation of magmas, but this could have been effected only by an increase in the size and cost of the book.

It is to be regretted that this work was completed before the issue of the report of the Joint Committee of the Geological and Mineralogical Societies on Petrological Nomenclature, to which Dr. Holmes, who was a member of the committee, gave most valuable assistance. It is very desirable that the use of technical terms in petrology should be standardised, at any rate so far as this country is concerned.

J. W. EVANS.

Our Bookshelf.

Insect Pests of Farm, Garden and Orchard. By E. Dwight Sanderson. Second Edition. Revised and enlarged. By Prof. L. M. Peairs. Pp. vi+707. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1921.) 26s. net.

THE first edition of the author's "Insects Injurious to Staple Crops" was published ten years ago. The advances made during the past decade have been such that it was considered necessary to rewrite practically the whole book. In its present form it covers all the more important insects affecting the crops of the farm, garden and orchard, besides including two final chapters on household insects and the pests of domestic animals. The work aims at giving a clear idea of the life-history and habits of every species concerned and the best methods of control. There are also chapters on insecticides and spraying and dusting apparatus. It is profusely illustrated, the text-figures numbering more than 600, and with few exceptions they are of a uniform level of excellence. References in the form of footnotes guide the more inquisitive reader to many of the separate bulletins and articles on individual pests.

Notwithstanding the number of text-books on economic entomology which have appeared in America, the present work will undoubtedly occupy a high place in their ranks. Its comprehensiveness is truly remarkable and, in fact, it

is difficult to quote any similar work which compresses so much well-sifted information, and so many good illustrations, within an equally convenient compass. Chap. 3, however, which deals with the structure and development of insects, is rather inadequate. In the first place it should have preceded chap. 2, which treats of beneficial insects. As it stands, the practical grower will have to read chap. 3 first if he is to understand properly the remarks in the preceding chapter. In the second place, a brief account of the principal orders of insects might have been added with advantage, even if at the expense of an additional page. But these points are comparatively trivial in what can be regarded unhesitatingly as an all-round first-rate practical book on insect pests.

A. D. IMMS.

Department of Applied Statistics (Computing Section), University of London, University College: Tracts for Computers. Edited by Karl Pearson. No. 6, *Smoothing.* By E. C. Rhodes. Pp. 60+3 diagrams. (London: Cambridge University Press, 1921.) 3s. 9d. net.

THE methods of graduating or "smoothing" a series of more or less irregular data affected by errors of observation or of sampling have of recent years received a good deal of attention; the present tract is a very valuable contribution to the subject. New methods are developed, which may be described as combinations of tangential or osculatory interpolation with the least-square method of Dr. Sheppard, and these and older methods are compared, both graphically and by finding the sum of the squares of the departures from the graduated curve. The results of this test are rather surprising. The osculating methods used give distinctly worse results than the other four methods employed. By grouping the observations it is possible to estimate what order of differences is negligible; if a higher order of differences is employed, the resultant curve tends to bring out something that is not inherent in the data, with very unsatisfactory consequences to the fit obtained.

North England: An Economic Geography. By L. R. Jones. Pp. viii+256. (London: G. Routledge and Sons, Ltd., 1921.) 6s. net.

THERE is a distinct need for sound regional textbooks of the more intensive type exemplified by this work. It deals with the coal-fields north of the Trent and the Midland Gate, and discusses the industries which have arisen upon and about them, the communications between them, and their great centres of industry and trade. The basis of discussion is very largely geological. Here there is room for broadening of both foundation and fabric. The book needs an index, and is disfigured by a number of typographical errors, but it is well illustrated with maps which, for the most part, are clear and illuminating. It makes a very useful book for secondary schools and first-year college courses.