

ical chemistry, it is excellent because it contains many things which every one ought to know, and because one can justify many of the mistakes and omissions on the ground that the beginners should first get hold of the general outlines of the subject, leaving the troublesome exceptions until later.

If one looks upon the book as a work for analytical chemists, for men who know the practical details of their subject and who would like to get a broader and more general view of the theoretical side, the book is not up to standard. Such men will be annoyed by the quantitative application of the mass law to the solubility of strong electrolytes, by the tacit implication that nitrates are not soluble in nitric acid, by the assumption that continued addition of a salt with no common ion will cause continued increase of solubility, by the statement that ion reactions are necessarily more rapid than reactions where ions are supposed not to take part. If they have read the recent work of Kahlenberg on the action of hydrochloric acid on oleates in benzene solution, they may even ask themselves whether the electrolytic dissociation theory is necessary in order to account for results in aqueous solutions which are paralleled in solutions which do not conduct and where the electrolytic dissociation theory therefore does not apply.

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*The Engineering Index; Five Years, 1896-1900.* Edited by HENRY HARRISON SUPLEE. New York and London, The Engineering Magazine. 1901. 8vo. Pp. 1030. Price, \$7.50.

The first and second volumes of this index to engineering literature, covering the years 1884-1895, were issued under the editorship of Professor J. B. Johnson from notes published monthly in the *Journal of the Association of Engineering Societies*. Since January 1, 1896, this work has been done by the *Engineering Magazine*, and the present third volume of the 'Index' is the gratifying result. It contains about a hundred pages more than the first and second volumes combined, while the amount of matter is more than twice as

much, owing to the arrangement of the page in two columns and to the smaller type. The number of periodicals indexed is about 350, nearly six times as great as in the second volume.

The index is a subject one, the titles of the articles or papers being classified under headings, each of which is subdivided into minor ones. For example, under 'Education' there are found twenty-one titles relating to engineering education in general, these being placed in alphabetic order according to the first word of the title; then follow about eighty special articles classified under sixty subdivisions, beginning with Admission Requirements and ending with Yorkshire College. Cross references are also given under both the general headings and their subdivisions, thus rendering it easy to follow special lines of inquiry in different directions. The styles of type used for the major and minor headings are good ones, although perhaps a little greater clearness might be secured with styles somewhat lighter.

The first volume of this series was called by Professor Johnson 'The Descriptive Index of Engineering Literature,' because there was added to the title of each paper a brief note giving an outline of its contents or an estimate of its value. While the name has unfortunately been changed, this excellent feature of descriptive notes has been retained, and these are of great assistance to the index searcher, for they usually give a clearer idea of the paper than can be obtained from its title. For example, under the heading 'Gas Engine' the title 'A Modern Motor' is somewhat vague, but the added note, 'The advantages of gas engines in points of economy, efficiency, cleanliness and safety,' immediately tells the reader whether or not the article is likely to be of value to him. In this volume the additional useful feature of noting the approximate number of words in each article has been introduced. The articles indexed from periodicals in foreign languages appear to be about ten or fifteen per cent. of the total number; the titles of these are given in English translation, followed by the original in parentheses.

For the use of the expert or specialist the index is not a complete one, as only the more important articles in the transactions of engineering societies are included. The oldest and most influential engineering society, the Institution of Civil Engineers of Great Britain, issues annually four volumes of proceedings, but these are not included in the list of periodicals indexed. Some important special German publications, like the *Zeitschrift für Vermessungswesen*, a high authority on geodesy and precise surveying, and *Baumaterialienkunde*, the leading journal on the testing of materials, are also not included. A few special American periodicals, like *Cement* and the *Metallographist*, are likewise omitted, but it is plain that it would be a difficult task to index all the literature of all the branches of the vast field of engineering.

Any index to literature should be prepared with the definite aim of being useful to a definite class of people. This has been done in the case of the present volume, the definite class being the readers of the *Engineering Magazine*, who include men of all professions having interest in transportation, manufacturing and construction. To these the index is admirably adapted, and it would be difficult to outline a plan that would produce better results for the engineering profession in general. The volume may appear somewhat incomplete to engineers who are experts in a special line like hydraulics, but when they turn to other headings they are likely to be astonished at the number of references and the number of periodicals that have been indexed. The expert may properly object to including titles of popular articles on engineering topics from the monthly literary magazines, but beyond this he has cause only for congratulation. The work has been carefully prepared on a comprehensive plan, and it should immediately find a place in every public library as a record of progress in the science and art of engineering, and in every technical library as an indispensable aid to research.

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*Insects Injurious to Staple Crops.* By E. DWIGHT SANDERSON, B.S., Agr. New York, John Wiley & Sons. 1902.

Under the above title Professor Sanderson, entomologist of the Delaware Agricultural Experiment Station, has brought out a handbook of 295 pages, with 162 illustrations, the subject matter being disposed in 25 chapters. Besides topics of a general nature the following are discussed: 'Insects Injurious to Grains and Grasses,' 'to Wheat,' 'to Indian Corn,' 'to Stored Grain,' 'to Clover,' 'to Cotton,' 'to Tobacco,' 'to the Potato,' 'to the Sugar-beet,' and 'to the Hop-plant.' Although the author in his preface unreservedly disclaims any originality for the contents of his work, and states that, unless otherwise noted, all the facts are merely compilations of the writings of others, it is in some respects, in the writer's opinion, the most useful book covering the subject of the insect enemies to staple crops that is extant. The typography is excellent, and most of the illustrations are well produced. In its arrangement it is, in some respects, not unlike the 'Farmers' Bulletins' that have been published on entomology by the Division of Entomology of the U. S. Department of Agriculture; and the presented matter is grouped together in such manner that any one desiring information on any of the topics considered can find ready access to them.

The main incentive for the compilation of this work, as the author states, is due to the fact that our sources of information concerning injurious insects are so widely scattered throughout the circulars, bulletins and reports of the state agricultural experiment stations and of the U. S. Department of Agriculture, a few books on economic entomology and many other publications, that the farmer, provided he be not also an economic entomologist, is unable to obtain the facts which he desires concerning any given insect, unless it so happens that the species is treated in popular form in some publication from his own state. Again, most works upon American economic entomology give such meager descriptions and accounts of the life-histories of insects that the agriculturist cannot secure a clear