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## BOOK REVIEWS.

**Economic Geology.** By Heinrich Ries, A.M., Ph.D., Professor of Geology at Cornell University. Published by John Wiley & Sons, Inc., New York; Canadian selling agents, Renouf Publishing Co., Montreal. Fourth edition, 1916. 876 pages, 291 figures, 75 plates, 6x9 ins., cloth. Price, \$4.00 net. (Reviewed by J. B. Tyrrell, mining engineer, Toronto.)

The great increase in the production of mineral wealth in Canada during the past few years has raised the Dominion to the position of one of the important mining countries of the world. In many other countries in which there has been an increase in the production of the mines this increase has been in large part due to improved mechanical appliances for extracting the ore from the earth or to new or better chemical processes for extracting metals from their ores after these ores had been mined. But in Canada the increased production has been largely due to continued discoveries of the existence, or farther extent, of valuable bodies of ore of one kind or another, and on account of the vast areas of territory yet unprospected we may expect that such discoveries will continue to be made in increasing ratio for many years to come.

The work of discovering and developing bodies of ore in the rocks of the earth's crust, however we may think of it or refer to it, is simply geological work and the problems involved are problems in geology.

In order to distinguish the study of the character, extent, and value of bodies of ore or useful minerals from the study of the principles which govern the formation of rocks generally, and the relations which they bear to each other, this study is usually referred to as "Economic Geology." It will be seen, therefore, that a knowledge of our economic geology, whether we know such knowledge by that name or not, is of vital interest to us as a mining people.

We therefore welcome the fourth edition of Dr. Ries' excellent volume on economic geology of the United States and Canada, not so much for the descriptions which it gives of individual mineral fields as for the well-arranged characterizations of the ores and useful minerals that are found throughout the northern portion of the

American continent and of the various ways in which these ores and minerals occur as well, as some account of the rocks with which they are usually associated.

The book is a volume of xviii. + 856 pages and is divided into two parts of 425 and 399 pages respectively, Part I. dealing with Nonmetallics and Part II. with Ore Deposits.

Under "Nonmetallics" are 13 chapters with the following headings: 1, Coal; 2, Petroleum, Natural Gas and other Hydrocarbons; 3, Building Stones; 4, Clay; 5, Limes and Calcareous Cements; 6, Saline and Associated Substances; 7, Gypsum; 8, Fertilizers; 9, Abrasions, 10-12, Minor Minerals; 13, Underground Waters.

To illustrate his mode of treatment of a subject we may take the headings in Chapter 2, on petroleum, etc. Introductory; Properties of Petroleum; Properties of Natural Gas; Origin of Oil and Gas; Inorganic Theory; Organic Theory; Mode of Occurrence; Classification of Oil and Gas Sands; Mode of Accumulation; Yield of Sands; Life of a Well; Distribution of Petroleum in United States, with brief description of the fields from the Appalachians to Alaska and also Canada and Mexico; Distribution of Natural Gas in the United States and in Canada; Uses of Petroleum and Uses of Natural Gas; Solid and Semi-solid Bitumens, including Albertite, Anthraxolite, Ozokerite, etc.; Bituminous Rocks, Oil Shales; Production; References.

From the above list it will be seen that an enquirer would be able to find here answers to all ordinary questions that would occur in dealing with petroleum, etc., and if he should wish to pursue the subject farther the references would guide him to the places where he could obtain fuller information.

Part II., "Ore Deposits," begins with a chapter on ore deposits in general, in which, after offering a useful definition for them, he discusses their origin and mode of formation, and whether they have been formed at great, intermediate or shallow depths in the earth's crust. He also describes the various forms of ore bodies, the secondary changes which may have occurred in them since their original formation, and then suggests a classification under which they may be grouped together.

The chapters that follow deal with ores of iron, copper, lead and zinc, gold and silver, and minor metals, under which are placed nickel and cobalt. Unfortunately, the silver mines at Cobalt, Ontario, have been described under these latter metals, and more unfortunately still they have been omitted from the index, though this will doubtless be corrected in a subsequent edition.

The book will be of great interest to all who are anxious to acquire a good knowledge of the useful minerals and ores of the northern portion of this continent.

It is beautifully printed on fine glazed paper, is illustrated by 75 plates and 291 illustrations, including maps and diagrams, and is furnished with an index of 28 pages, in which almost everything referred to in the book can be found.