of experience and tests. These facts are placed before the reader in concise form and the why and wherefore is followed out to the end.

Part IX. deals with disorders, deterioration, pounds, blows, and breakdowns. Part X. takes up appliances and parts such as the brick arch, injectors, water gauges, lubricators, pop safety valves, flexible staybolts, and all the many etceteras that should be understood and studied by all those running, repairing, caring for, or designing engines. Part XI. is concerned with operating conditions, qualifications and responsibilities of the operating staff. The selection of men, co-operation between enginemen, health of employees, first aid, etc., and it closes with a series of questions on the subjects with which the book deals in detail. Part XII. gives the United States Federal laws respecting boilers and safety appliances.

The work is "a new book" in more senses than one, and may be said to be the latest word on running and firing. Locomotive engineers and firemen spend about half their time on an engine and it is therefore important for them to become familiar with all the parts and appliances of the machine, and to know the latest approved practices in running and firing, particularly about those types of engines equipped with superheaters, brick arches and improved valve gears. These appliances have caused a great increase in locomotive efficiency, and for their proper operation, a demand has been created for progressive locomotive engineers and firemen, possessing a high standard of intelligence. This book contains information that engineers and firemen ought to have, in order to pass examinations and fit themselves to do good work. The study of this book will encourage them to think and to develop their faculties by solving, or endeavoring to solve, the various problems which daily arise in locomotive operating. The scope of the work is designed to teach the high value of efficiency; for the knowledge of the science of locomotive running gives to the man possessing it, a legitimate feeling of security and self reliance and he is therefore worth more to himself and to the company he serves.

Alloys and Their Industrial Applications. By Edward F. Law. Second Edition, published by Charles Griffin & Co., London; pp. 332; 6x9 ins.; cloth. Price \$3.50 net. Reviewed by A. S. L. Barnes, Hydro-Electric Power Commission of Ontario.

The main purpose of this book is indicated in the prefact to the first edition, to be the summarizing of "the existing state of our knowledge of mixed metals, paying special attention to the general principles and essential facts. . . . An attempt has also been made to present the subject in such a manner that it will be intelligible, not only to the student but also to the manufacturer and the engineer, for whom the volume is primarily written."

The author was at one time assistant to that master of metallurgy, the late Sir William C. Roberts-Austen, who has contributed so largely to our knowledge of metals, and particularly of alloys.

If association with so great a mind be of any benefit we should expect to find the subject in the present work dealt with in a thorough fashion; in this the writer has not failed, but has presented a vast amount of detailed and interesting information in well arranged form.

A great many problems connected with alloys still remain unsolved, and there is a wide field for research still open in connection with them.

Engineers with some knowledge of electricity will be interested in the fact that while, as is well known, the pure metals all show a tendency to become perfect conductors of electricity at the absolute zero of temperature, alloys by no means do so; this difference in behaviour is said to be due to the fact that in the latter electric currents circulate within the materials owing to the presence of dissimilar metals, an opposing electro-motive force being set up, thus making their ability to oppose the passage of an external electric current through them greater than is the case with pure metals. The union of certain metals bringing about a great evolution of heat is a fact now familiar to all through the well-known "thermit" process so largely employed for railwelding, etc., but a combination of metals is referred to in this volume in the union of which there is an absorption of heat to such an extent that the temperature of the mixture falls from $+17^\circ\text{C}.$ to -10°C., or a drop of nearly 50°F. The book contains tables setting forth the properties of many different alloys, together with, in some cases, remarks as to their suitability for certain purposes. Chapters on brasses, bronzes, aluminium alloys, silver and gold alloys, iron and miscellaneous alloys and analysis are given as well as much information as to methods of investigation, influence of temperature, etc. As to the last named item, however, it is remarkable that a vain search was made through the whole book for any information relating to the temperature co-efficient of expansion of alloys; apparently this point has been completely overlooked, as it can hardly be argued that it is one of no importance in practical work-in some cases it is necessary to have this information.

One unusual, though by no means objectionable feature, may be noted, and that is the insertion of a brief bibliography at the end of some chapters relating to their subject-matter, instead of putting them all together at the end of the book.

PUBLICATIONS RECEIVED.

Nova Scotia Steel and Coal Co., Limited.—Report of the thirteenth annual general meeting of shareholders, held on March 25, 1914.

Bathurst District, New Brunswick.—Memoir No. 18-E, by G. A. Young; issued by Geological Survey branch, Department of Mines, Ottawa. A report on the Bathurst District, New Brunswick, and the Nipisiguit iron ore deposit together with maps.

Ceology, and Mineral Deposits of the Tulameen District, B.C.—Memoir No. 26, by Charles Brock, and issued by the Geological Survey, Department of Mines, Ottawa. An illustrated report on the general characteristics, geology, and mineral deposits of the Tulameen District, B.C.

Some Myths and Sales of the Ojibwa of Southeastern Ontario.—Collected by Paul Radin and issued by the Geological Survey, Department of Mines, Ottawa. This interesting memoir contains myths collected by Mr. Radin in connection with the study of the ethnology and linguistics of the Ojibwa of Southeastern Ontario.

Proceedings of the First Annual Industrial Safety Conference.—This conference was held at Reno, Nevada on January 26 and 27, 1914, a report of the proceedings being published by the University of Nevada. This report includes papers, talks, and discussions by prominent members of the conference, in connection with the "Safety First" movement in Nevada.

The Quantity System of Estimating.—By G. Alexander Wright, President of the Technical Society of the Pacific Coast. This leaflet is a brief treatise on the quantity system of estimating, a subject in connection with which Mr. Bell has devoted considerable thought and activity. By this system, Mr. Bell maintains, present estimating and contracting methods will be greatly bettered.