

show the degree of purity and extent of overlapping of contiguous parts of adjoining belts.

In conclusion, I beg to express the hope that my protracted absence in remote parts of the West, while engaged in tracing the boundaries of the life zones, may ameliorate my offense in not having seen all of Mr. Cockerell's writings.

C. HART MERRIAM.

SAN FRANCISCO, CAL., October 11, 1898.

SCIENTIFIC LITERATURE.

Angewandte Elektrochemie. Zweiter Band: Anorganische Elektrochemie. Dritter Band: Organische Elektrochemie. Von DR. FRANZ PETERS. Hartleben's Verlag, Wien; Pest, Leipzig.

The first volume of this book was reviewed in SCIENCE by Professor Smith (April 9, 1897). In the light of this notice of the general purport of the book by so able an authority, attention need only be called to the appearance of the subsequent volumes and to their contents. The second volume, on the electro-chemistry of inorganic substances, is divided into two parts. The first deals with the electro-chemistry of the metalloids and alkali metals, including methods of obtaining hydrogen, of purifying water, of obtaining chlorine, bromine and iodine, oxygen and ozone, arsenic and antimony. It is interesting to note under carbon that it volatilizes at about 3,600° in the arc of the electric lamp, and that Moissan has succeeded in converting it into vapor in the electric furnace. It did not, however, assume the liquid state, but passed at once into vapor. The beautiful work of Moissan on highly heated carbon is taken up at some length. The electrolytic separation of lithium and sodium is then taken up, the methods of Grabau, Borschers and Castner in the production of sodium receiving special treatment.

The second part of the second volume is devoted to the alkaline earths, the earths and heavy metals.

The third volume deals entirely with the electro-chemistry of organic compounds. The extent to which organic compounds can be prepared by the action of the current is shown by the number of classes of substances included in this volume. In the paraffin series there are

thirteen classes, including hydrocarbons, alcohols, ether, ethereal salts, acids. In the aromatic series there are seventeen classes, including hydrocarbons, nitro, sulphur and amine derivatives of the hydrocarbons, phenols, alcohols, aldehydes, ketones and acids. This volume closes with an account of some of the practical uses of organic electro-chemistry, as electrolye, electroprinting, electro-tanning, etc.

Insofar as it deals with the electrolytic deposition of the metals, this book covers some of the same ground as the well known work of Borschers, which deals with electro-metallurgy in such a masterly manner. But the work of Peters covers a much wider field, and will doubtless prove to be a valuable contribution to practical electro-chemistry.

H. C. J.

Up-to-date Air-brake Catechism. By ROBERT H. BLACKALL, Air-Brake Inspector and Instructor on the D. & H. Ry. New York, N. W. Henley & Co. 12mo. Pp. 230. Illustrated.

This is a little book, but one of great value in a special field. It is the custom of the makers of air-brakes, and of the management of the best railway systems, to employ an inspector and instructor to go from point to point on the railways, inspecting the brake outfit and teaching its use, as experts. The plan is an admirable one and undoubtedly a most valuable insurance of safety to the traveling public as well as to employees. Mr. Blackall is one of these instructors and inspectors who, with rare discretion, tact and expert knowledge, has written out his instructions in this catechetical form and printed it.

The book is not only unique in its subject, in its completeness and in its comprehensiveness; but it is one which evidences in its plan, in its literary form and in detail, the talent and culture of a man of education, as well as of professional competence. Before January 1, 1900, every train must have sufficient air-brake equipment to control it, and this means the education and training of an army of railroad men of all grades; hence the value of this timely text-book. It includes a discussion of