although considerable space is devoted to a presentation of the principal modifications which have been proposed. While there is a great temptation to break away from the established classification and to introduce a scheme more in harmony with the actual conditions in the separate zones, the advantages of the new classifications are not sufficiently great to outweigh the simplicity and established usage of the old. However attractive may be some of the features of the proposed climatic zones of Supan, based upon common characteristics of temperature, rainfall and winds, or those of Koeppen, based upon the relations of plant life to certain critical values of temperature and rainfall of the warmest and coldest months, or of Merriam's biological zones, based upon the distribution of animal life, there are serious obstacles to their general acceptance; they all lack a simple expression for certain definite combinations of temperature, sunshine and winds. The term "temperate zone" is apparently the most objectionable, as the most extreme climates occur within its limits, especially in portions of the northern hemisphere. Still the word well describes the conditions of the zone as a whole, especially in the southern hemisphere. Even in the northern hemisphere fully half the area of the zone has a water surface, insuring temperate conditions. It is only over the continental portions that great extremes of heat and cold occur. Taking the earth as a whole, the terms warm, temperate and cold fairly well divide the climates of the globe into three natural divisions with the tropics and the polar circles as dividing lines. The secondary classification of climates into continental, marine and mountain is simple and practical and has general acceptance.

The author's summary of the characteristics of the three principal zones is especially valuable, as the student will find in these chapters a clearer and fuller synopsis of an abundant literature than is available elsewhere to those who read English only.

Hygiene in the tropics is, according to the author, mostly a question of sanitation, and a rational mode of living, as most diseases only indirectly depend upon climatic conditions. Change of residence, of habits, of occupation, or of food, is usually of more importance than change in atmospheric conditions.

Many problems of great interest relating to the life of man in the tropical, the temperate and the polar zones receive attention in chapters VIII. to X. Such topics as the labor problem and climate, the government of tropical possessions, dwellings in the tropics, race characteristics and climate, climates and crops, mental effects of weather, weather and military operations, are considered, though most of them are necessarily only touched upon. In closing his analysis of the evidences bearing upon the subject of climatic changes in historic times, the author concludes that, "Without denying the possibility, or even the probability, of the establishment of the fact of secular changes, there is as yet no sufficient warrant for believing in considerable permanent changes over large areas"—an opinion shared by most students who have given the subject attention.

Mr. Ward has succeeded in presenting a well-written volume, suitable for the classroom, being methodical in arrangement, and clear and direct in statement. The illustrations are few in number but well selected and neatly drawn.

O. L. F.

Johns Hopkins University,
November 25, 1908

Ex-Meridian Tables. By Lieutenant Commander Armistead Rust, U. S. N. New York, John Wiley & Sons. 1908.

This work is primarily designed to put at the service of the navigator convenient means for reducing altitudes of celestial bodies, when measured within defined limits of hour-angle from the observer's meridian, to the values that they would have if they had been measured at culmination on the observer's meridian, and thus to provide for the application of the simple method of finding the latitude from a meridian altitude, which consists in algebraically adding together the declination and zenith distance of the observed celestial body.

Delambre's equation, in which the whole of the reduction for practical purposes is ex-

pressed in two terms, is employed as the form of reduction to the meridian.

The major term, depending upon the second power of the hour-angle, has been tabulated by the author for each degree of latitude up to 65° and from degree to degree of declination for each two minutes of hour-angle up to sixty minutes or to such lesser extent as marks the limit at which the minor term of the reduction amounts to less than 45″.

The second or minor term of the reduction, depending upon the fourth power of the hour-angle, is expressed in the form of a diagram, from which the numerical value of this part of the reduction may be readily determined.

As the intervals between the arguments of the tabulation of the major term are such that in general the tables must be entered with the approximate latitude and the approximate declination and the approximate hour-angle, convenient auxiliary tables have been supplied for taking account of the effect upon the result of differences between the exact values and the tabular values of the data. Various other diagrams and tables, providing for the identification of stars, facilitating the solution of the equation of equal altitudes, and reducing measured altitudes to true altitudes are also presented to contribute to the completeness of the work.

A navigator who makes this book one of his possessions and utilizes the information contained in it will be repaid many times through the practical benefits that he will derive from it in his daily work. G. W. LITTLEHALES

Chemische Krystallographie. By P. VON GROTH. Vol. 2. Pp. viii + 914, 522 figures, 8vo, cloth, 32 marks. Leipzig, Wilhelm Engelmann. 1908. (Volumes 3 and 4 are in preparation.)

Two years ago the first volume of this very important work by Professor P. von Groth appeared. Since then the volume has proved of such great assistance to all interested in crystallized substances, but more especially to the chemical crystallographer, that the second volume, which was promised over a year ago, has been eagerly awaited. A review of Volume 1 may be found on pages 143 and 144, Vol. XXV., of SCIENCE.

In Volume 2 the inorganic oxy- and sulfosalts are discussed. The arrangement of the first volume is retained throughout. This consists of placing together all compounds of similar chemical composition and prefacing each group with a critical résumé of the work done upon the same, so that one can see at a glance what gaps exist and also along what lines further research may be necessary. This feature alone makes the work invaluable. The descriptions of the individual members of the group, which then follow, furnish all the data extant which are of use or interest to the chemical crystallographer. This volume is in every respect up to the high standard set by Volume 1. It is hoped that the remaining volumes, 3 and 4, may follow in rapid succession.

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House Painting, Glazing, Paper Hanging and White-washing. A book for the householder. By ALVAH HORTON SABIN, M.S. 8vo, cloth, pp. 121. New York, John Wiley & Sons. 1908.

This is a thoroughly reliable, readable book, dealing with the subjects of exterior and interior painting, varnishing, papering, kalsomining, white-washing and the painting of structural metal. Technical terms and long-winded descriptions are avoided, and the book should be read by every house user and owned by every house owner. The author's statement to the effect that "the talk about people being poisoned by arsenic in wall paper is nonsense," is unfortunate, as the reviewer knows certainly of one case proved to be due to this cause. A. H. GILL

Modern Pigments and their Vehicles, their Properties and Uses, considered mainly from the practical side. By FREDERICK MAIRE. 8vo, cloth, pp. 266. New York, John Wiley & Sons. 1908.

This is a most excellent book written by one who evidently knows the practical side thor-