The sketches, diagrams and maps are taken from work actually done, thereby establishing confidence in the processes described. In this connection it might be suggested that a word of caution should be uttered regarding the tendency to give the interval of contours that have been *sketched*. Beyond this one point, a careful reading has not disclosed anything but meritorious features in all that pertains to the technical side of the book.

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Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus herausgegeben von PROFESSOR DR. G. HELLMANN. No. 13, *Meteorologische Beobachtungen vom XIV. bis XVII. Jahrhundert.* Berlin, A. Asher & Co. 1901. 4vo. Pp. 70 introduction and notes + pp. 130, fac-similes. Price, 18 Marks.

This is the latest of these reprints that have been reviewed from time to time in SCIENCE, and its object is to elucidate the beginning of meteorological observations and to eradicate the impression, which is common even among specialists, that with very few exceptions there were no continuous observations before the end of the 17th century. It is here shown that already at the close of the 15th century many series of observations existed, including some simultaneous ones, and it seems probable that regular observations of the weather were made even in very ancient times. The present volume deals with two kinds of records, meteorological observations on land—those without instruments from 1337 to 1645, and those with instruments from 1649 to 1700—and observations made at sea between 1492 and 1700.

The earliest journal of the weather extant is that kept by William Merle at Driby, in Lincolnshire, England, between the years 1337 and 1344. The Latin MS. was reproduced in facsimile, with a translation, about ten years ago by the late Mr. Symons, but, as the edition was limited and hardly went outside of England, Dr. Hellmann has thought it worth while to reprint a portion. The next oldest record (1439) is also English, and then come German, Austrian, Italian, Swiss, Belgian, Spanish and Danish observations. It is certainly not known generally that observations in Brazil preceded those in this country, and that the first weather observations in North America were by a Swede, Johann Campanius, on the Delaware River, near Philadelphia, during 1644 and 1645, a summary of the weather for each month being given. The first observations with instruments were readings of the barometer each day during the years 1649, 1650 and 1651 in Clermont (Auvergne) and at the same time at Paris and at Stockholm. Of these only M. Périer's observations in Clermont have been preserved and they are reproduced. The original log-book of Christopher Columbus's first voyage (1492–93) no longer exists, but an extract relating to the change of weather on this side of the Canary Islands, and an account of a West India cyclone encountered on the return voyage, and which is the first description of such a storm, are quoted. There are nine other extracts from logs of early voyages, making, with the observations on land, 36 rare journals. Even if known to students, hitherto these have been practically inaccessible, but now they are presented as nearly as possible in the original form and enriched with copious notes by the best authority on the subject. These reprints have not been put on sale in America, but one or two copies of the current volume may be had at the publisher's price, viz., $4.50, from the Blue Hill Observatory, Hyde Park, Mass.

A. LAWRENCE ROTCH.

Die Pflanzen-Alkaloide. Von JUL. WILH. BRÜHL, Professor an der Universität Heidelberg; in Gemeinschaft mit Edward Hjelt und Ossian Aschen Professoren an der Universität Helsingfors. Mit Eingedruckten Abbildungen. Braunschweig, F. Vieweg und Sohn. 1900. Mk. 14.00.

The discovery of plant alkaloids belongs to the early part of the nineteenth century, and their subsequent study and investigation rank among the important achievements of modern chemistry. In 1803, Derosne, a French apothecary, obtained impure morphine from opium. In 1805, Sertürner, a German apothecary, isolated the pure alkaloid and, in 1817, recognized its basic character and showed it to be the active principle of opium. Since that time the study of alkaloidal chemistry has been steadily pro-

gressing, until from certain plants, as cinchona and poppy, at least twenty different alkaloids have been obtained.

The present monograph is a separate edition of Volume VIII. of 'Roscoe & Schorlemmer's Lehrbuch der organischen Chemie,' and treats of the plant alkaloids apart from the synthetic alkaloids and ptomaines. The author has divided this class of the alkaloids into certain fundamental groups, but has wisely not attempted to extend the classification further, having subdivided them according to the plants or families in which they occur. The main divisions are as follows: I. Pyrrolidin group, hygrine. II. Pyridin group, trigonellin, piperin, chrysanthemin, nicotin, sparteine and cytisin, alkaloids of the Solanaceae, jaborandi, areca nut, conium, coca leaves and bark of the root of pomegranate. III. Chinolin group, cinchona, strychnos and curare alkaloids. IV. Isochinolin group, alkaloids of opium, hydrastis, berberis and corydalis. V. Alkaloids of unknown constitution as in ergot, Lycopodiaceae, Coniferae, Gnetaceae, Liliaceae, Apocynaceae, Aristolochiaceae, Buxaceae (Cactaceæ), Lauraceae, Papilionaceae, Loganiaceae, Papaveraceae, Ranunculaceae, Rubiaceae, Rutaceae, and including glyco-alkaloids and other miscellaneous alkaloids.

Of the more than one hundred alkaloids, the constitution of only a comparatively few is known. In his treatment of these principles, Professor Brühl gives the following data concerning them: History, occurrence, preparation or method of isolation, physical and chemical properties and, wherever possible, the constitution, synthesis and the salts which have been studied.

Concerning the origin and purpose of the alkaloids in plant life, the author seems to agree with Guareschi that they are in the nature of waste products of the living protoplasm and that when once produced they are not again assimilated. It may be said, however, that this view is contrary to the recent researches of Barth, who has shown that in the seeds of *Datura stramonium* L. and *Conium maculatum* L. the alkaloids are located in the nucellus and that after germination they disappear. It would appear, therefore, that they, in some instances at least, like the glucosides, are to be considered in the nature of reserve products. Then, too, the recent discovery of the glyco-alkaloids seems to favor this view.

The author has shown a masterly treatment of the chemistry of the plant alkaloids and the book is welcome as an important contribution to the subject; it is not only of special interest to the chemist and apothecary, but also to the physician, more particularly the therapeutist, as it is being shown that the constitution of chemical compounds has a more or less definite relation to physiological action.

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ENZYMES AND THEIR APPLICATION.*

A volume of 217 pp., 8vo, has recently been added to l' Encyclopédie Scientifique des Aide-Mémoire, by M.-E. Pozzi-Escot, editor of the Revue Générale de Chimie pure et Appliquée, on the subject of enzymes and their application. The book is written, as the author states in the preface, for engineers and chemists, and not for biologists. The first part of the book, including nine chapters, deals with the general problems of enzymology, classification of enzymes, secretion, chemical composition, general properties, mode of action, etc. There are some statements in the text which physiologists at least could hardly accept as facts without more proof—for example, on p. 9, that enzymes are transformed vegetable albuminoids, or on p. 17, that enzymes are immortal, and on p. 50, that the secretion of diastase depends simply on the food furnished the cell, etc. The writer's use of the word diastase is also inconsistent. Following Duclaux he uses it most often as a general term equivalent to enzyme, but on pp. 42–43 it is used as equivalent to amylase. On p. 50 amylose is used when amylase was evidently intended, also rhamnose where rhamnase was intended (p. 28). Similar typographical errors are painfully numerous.

The second part of the book deals with enzymes in their industrial applications. This, like the first part of the book, is too briefly dealt

* 'Les Diastases et Leurs Application,' par M.-E. Pozzi-Escot. Gauthier-Villars-Masson et Cie., Paris, 1900.