and rearing of Lepidoptera. The plates are most excellent and add greatly to the interest and value of the book.

A. S. Packard.

A Compendium of General Botany. By Max Westermaier. Translated from the German, by Albert Schneider. New York, John Wiley & Sons.

In the preparation of the English edition of this book the translator has endeavored, as stated in his preface, to 'adhere as closely as possible to the author's form, style and concept of the science of botany,' and 'to make it a translation in the true sense of the word.' The title of the German edition, 'Kompendium der allgemeinen Botanik für Hochschulen,' indicates that the work was intended for the higher grade of institutions in Germany, *i. e.*, for the universities; and so, in the translation of the author's preface, the literal rendering of the word 'Hochschulen' as 'high school' in this country is misleading as to the place which the book was intended to occupy. That the book was not intended for the high school, as that term is used in this country, can be seen from even a hasty examination of the text, and the preface states that "it is assumed that the pupil has a general knowledge of chemistry, of physics, of the proper use of scientific terminology, and has the ability to estimate the value of hypotheses and undecided problems."

A similar notion of the *Hochschule* caused adverse criticism to be made of the German edition, as being too technical and advanced for the 'high school.'

The work is divided into five parts which treat of the following topics: The cell, tissues and simple organs, organs and systems of organs, reproduction, the general chemistry and physics of plant life, classification of plants, taxonomy.

In Part I., the cell, the author treats of the primordial utricle and cell wall in their mutual relationship, turgor, plasmolysis, both the living and dead inclusions of the cytoplasm, as well as the cell sap, etc., the internal structure and method of growth of the cell wall, its chemical composition, subsequent changes, and the products of growth in thickness and surface of the cell walls. The chemical and physical aspects of the cell and its contents are treated more fully than the phenomena of the active cell, indirect division of the nucleus being passed by with a few illustrations and very brief descriptions of the stages represented.

Part II., tissues and simple organs, has received greater consideration than any other part of the subject, 107 pages being covered in the discussion, which with the 37 pages devoted to the Cell make 144, or more than one-half of the entire work. This part is divided into eleven chapters as follows: 1st, the function of formative tissues (meristum and cambium); 2d, structure and function of the epidermal tissue system; 3d, function of mechanical tissues; 4th, the function of the conducting system; 5th, protection of the meristematic areas of the plant body; 6th, food substances derived from the atmosphere; 7th, the function of aeration; 8th, the function of roots; 9th, the appropriation of assimilated food substances; 10th, the storing and function of reserve material; 11th, secretion.

Under the function of the conducting system a full discussion is given of the various cell forms of the system, the stem structure of mosses, vascular cryptogams, monocotyledons, dicotyledons and gymnosperms, the structure of roots, and the special physiology of the movements of food substances and water in plants.

Part III., organs and systems of organs, treats of the morphological and physiological relations of organs, their principal forms and modifications, metamorphosis, correlation, phyllotaxy, and the various kinds of inflorescence.

Part IV., reproduction, receives very brief mention, being merely an outline, with illustrations, of the development and reproduction of representative plants in the larger groups, the morphology and physiology of the seed and fruit of phanerogams, the general physiology of reproduction, pollination, hybridization, heredity, special creation and the 'so-called theory of natural descent.'

Part V., the general chemistry and physics of plant life, includes chemical physiology, the physiology of growth, the relation of light, gravity and other factors to plant life, and the physiology of plant movements.

It will be observed that the book differs greatly from most books on general botany in the great emphasis laid on the chemistry, physics and physiology of plants, less stress being put on the morphology and development. This is in accordance with what we should judge to be the taste of the author, who was long a pupil of Schwendener. In the general treatment of the subject-matter the author makes frequent use of and reference to the works of Naegeli, Sachs, Pfeffer, de Bary, Frank, Goebel and Warming, but more especially to those of Schwendener, Haberlandt and others of Schwendener's pupils. For this reason the book will be a welcome addition as a condensed reference book of the work of these investigators.

The author is a fervent disciple of the idealistic school of special creation, and accepts only those processes to be governed by natural law which have been revealed by scientific investigation as facts. Relationship and relative position of groups of plants is, in the mind of the author, only "a process of thought which the comparative study of the plant series creates in our minds; that such a series is genetic is an unverified postulate of the dogmatic teaching of descent, which allows fantasy to supplant that which empirical investigations leave unanswered." Hypnotized by the fathomless depth of life, he accepts the miraculous creation, under the influence of which the mind is closed to the philosophical consideration of fundamental relationships and modes of progress as suggested by phylogenetic evolution, and it does not appear to be realized that God working through natural law, and by processes of evolution through time, has developed the universe in accordance with the same plan which is wonderfully shown in the ontogeny of the present.

GEO. F. ATKINSON.

SCIENTIFIC JOURNALS.

AMERICAN JOURNAL OF SCIENCE.

THE July number opens with an article by Carl Barus, describing the lecture-room experiment with carbon dioxide, showing the passage of the liquid through the critical temperature. Suggestions are given in regard to the arrangement of the tube with respect to the sunlight used for illumination and the projecting lens, in order to give the best results. The experiments performed by the author seem to prove that there is no "real continuity between CO_2 gas and CO_2 liquid at the critical temperature. There is continuity between the liquid and *a gas which preserves the same molecule*, the same molecular structure as the liquid from which it issues. Doubtless at still higher temperature the gas with the liquid molecule will break up into the true gas with the gaseous molecule."

H. H. Clayton discusses in detail the question of a seven-day weather period. The investigation, the results of which are here detailed, was carried on under the auspices of the Elizabeth Thompson fund, and is a continuation of an earlier work by the same author, published in the *Journal* for March, 1894. In all, twenty-one stations were selected for the discussion; three in the Arctic regions, four in the United States, five in Europe, two in Asia, two in Oceanica near the Equator, three in middle South America, one in Mauritius, and one in Australia. The results of the investigation show that in general there are two maxima and two minima frequencies during the seven days, and at some stations there appear to be three. Charts are introduced showing the progression of these periods around the world. The author regards this department of investigation as a promising and important one in connection with weather forecasting, since "it is possible to say that in all parts of the world barometric minima will be from 10 to 20 per cent. more frequent on certain days than on certain other days, provided the interval taken is sufficiently long. It is also possible to say that certain days will average colder than other days."

S. L. Penfield describes a sulpharsenite of silver, Ag_9AsS_6 or $9Ag_2S$, As_2S_3, analogous to polybasite Ag_9SbS_6, to which the name pearceite is given. He calls attention to the fact that arsenical varieties of the species polybasite have long been recognized, but regards it as advisable that they should be grouped together as an independent species, in accordance with the general method of distinguishing between the antimonial and arsenical members of this series of minerals. The pearceite here described was