time than it now does by the natural method. The most pernicious and untenable application of this idea appears when he claims that a child's attention should be focused upon the exact mistake he has made in previous repetitions.

In spite of these and some other less important mistakes and misplacements of emphasis, the book is a fresh, stimulating and generally correct organization of the principles of education.

WILBUR S. JACKMAN.

The Study of Chemical Composition. By IDA FREUND, Staff Lecturer and Associate of Newnham College. Cambridge, University Press. 1904. 8vo. Pp. xvi + 650.

This book presents an account of the method and historical development of the study of chemical composition. The initial discoveries forming the basis of the modern views of the composition of bodies are described, and the methods by means of which further experimental facts bearing upon the subject were obtained are clearly set forth. The historical development of the important laws is traced by showing how these grew from the study of certain classes of phenomena. In the course of this presentation many well-chosen quotations from classical original articles, including actual experimental data obtained, are given in sufficient detail to enable the reader to form an idea as to the degree of accuracy attained in the experiments which are of special consequence. Though the historical method of treatment has been adopted, no attempt has been made to secure such completeness or proportion as to deserve the name of history. The aim has been to describe only the most vital discoveries, and to do this thoroughly, rather than to dwell upon a greater number of facts.

A carefully written introduction of thirty pages devoted to a discussion of the method of inductive sciences prefaces the nineteen chapters in which the subject matter is treated. The first eight chapters deal with theories of combustion and the composition of bodies by weight. Here the work of Lavoisier, Dalton, Richter, Berthollet, Proust, Stas, Morley and others is described. Chapter nine presents the views concerning the constitution of matter held prior to 1800, and the following chapter deals with Dalton's atomic theory. Chapters eleven to thirteen relate to the combination of gases by volume, the work of Avogadro and Cannizzaro, and the molecular hypothesis. After detailing the discovery of Dulong and Petit in chapter fourteen, the subjects of isomorphism, periodic law, valency and isomerism are treated in the chapters following, and the book is fittingly closed with a final chapter setting forth the modern views concerning the ultimate constitution of matter and the genesis of the elements.

Throughout the book, facts and theories have been sharply and clearly separated from each other, a matter of vital importance in a treatise of this nature. The treatment is concise, clear and conservative, yet none the less interesting. The book can be heartily recommended to students of physical science and others desiring a reasonably condensed presentation of the existing views of chemical composition. Like the other volumes of the Cambridge Physical Series, the book is well printed.

LOUIS KAHLENBERG.

SCIENTIFIC JOURNALS AND ARTICLES.

The American Naturalist, with the exception of the *American Journal of Science,* the oldest of the American scientific periodicals, announces a change in its editorial management. Dr. William McMichael Woodworth, who has so acceptably filled the position of editor-in-chief since 1898, retires and his place is taken by Dr. Glover M. Allen, the secretary of the Boston Society of Natural History. All correspondence intended for the editorial department should be directed to *The American Naturalist,* Cambridge, Mass.

THE October issue of the *Journal of Nervous and Mental Disease* opens with a report by Dr. Frank R. Fry of a case of cerebral tumor which presented some puzzling symptoms which led to the belief that the tumor was located in the left cerebellum, whereas the autopsy discovered it occupying the greater part of the site of the left inferior

frontal convolution. A paper by Dr. John Punton follows, treating of mysophobia, with a report of a case, and emphasizing the close relation which exists between the so-called neurasthenias and insanity. Dr. Theodore A. Hoch's paper on acute anterior poliomyelitis, begun in the previous number, is concluded, with an exhaustive bibliography, and Dr. William W. Graves contributes a short paper on anesthesia associated with hyperalgesia sharply confined to the areola-nipple area of both breasts, which his experience leads him to consider as a pathognomic and practically constant stigma in hysteria.

We learn from the *British Medical Journal* that the publication of a quarterly periodical, to be called the *Journal of Tropical Veterinary Science*, has been undertaken by Messrs. H. T. Pease, principal of Lahore Veterinary College; F. S. H. Baldry, professor of sanitary science, Punjab Veterinary College, and R. E. Montgomery, assistant imperial bacteriologist, Imperial Bacteriological Laboratory, Muktesar, U. P. Each number will, as far as possible, consist of original articles of scientific interest, with reviews and extracts from current literature. Nothing of a personal or political nature will appear in the journal. Amongst the subjects to be dealt with in the forthcoming numbers, for which arrangements have already been made, will be a series of articles on the anatomy, physiology, and pathological conditions of the camel and the elephant; the intestinal and other parasites of animals; the biting flies and the ticks of India, together with their importance in the transmission of disease. The first number will appear on January 1, 1906. The publishers are Messrs. Thacker, Spink and Co., Calcutta.

DISCUSSION AND CORRESPONDENCE.

CYANIDE OF POTASSIUM.

To the Editor of Science: Recently when at Minas Prietas, Sonora, at the cyanide plant of Charles Butters, Limited, I observed in one of the settling tanks which was nearly full of pulverized ore, known metallurgically as 'slime,' that the surface of this material, which was saturated with and covered by a solution of cyanide of potassium, was pitted by holes and marked by trails, which I assumed to belong to some small invertebrate. That they were of organic origin seemed too obvious to be worthy of question.

There was no opportunity for me to wait until the solution was drawn down sufficiently to permit of a careful examination of the surface of the pulverized material, so it remains for some future observer to determine the identity of the form which produced the markings.

The observation is communicated to you in the hope that it may invoke a communication of similar observations on the part of others. What seemed remarkable to the writer was that any form of animal life could exist in a solution of cyanide of potassium.

F. J. H. Merrill.

SPECIAL ARTICLES.

THE PARACHUTE EFFECT OF THISTLE-DOWN.

The importance of the down of the Canada thistle (*Carduus arvensis*) for seed distribution is a matter of common knowledge, but it may not be quite so well known just how this is accomplished from a mechanical point of view.

When the head of the Canada thistle is mature and the day dry (moisture closes up the head even though mature), the scales of the involucre spread and expose the fluffy mass to the air. At this time the achenes may be detached from the receptacle by the slightest force, permitting them to float away attached to the down. This closing of the head is brought about by the unequal turgescence of the cells in the bracts of the involucre.

The down which grows on the receptacle—not on the achenes—serves the function of helping to keep water from entering the head, thus permitting the achenes to become thoroughly dry, though the weather may be damp at the time. Dampness tends to hold the achenes fast to the receptacle, and this tends, in some measure, to defeat the purpose of the down, because it may become detached from the achene and float away without its precious burden. Both the calyx-down and the recep-