

## BOOK - REVIEWS.

*Missouri, a Bone of Contention.* (American Commonwealths.) By LUCIEN CARR. New York, Houghton, Mifflin, & Co. 16°.

THE history of Missouri, like that of the other Western States, is necessarily lacking in the interest that attaches to that of the older parts of the Union; but it has elements of interest belonging to itself, which the author of this work has skilfully availed himself of. He begins his narrative with the earliest French explorations and settlements in the basin of the Mississippi, and traces the history of the region west of that river, then known as Louisiana, down to the time of its annexation to the United States; and the chapters treating of these subjects, though they rather pass the proper limits of a history of Missouri, are among the best in the book.

From the time of the annexation the narrative is confined to Missouri itself; and the author then shows how the fertile spot which had been contended for by France, Spain, and England, became a new 'bone of contention' to the advocates and opponents of slavery. The struggle began with the application of Missouri for admission into the Union as a slave State; and though the difficulty was then thought to have been settled by the well-known Missouri Compromise, yet this proved to be only the beginning instead of the end of the trouble, which could not be removed except by the complete abolition of slavery. Accordingly, the latter portion of Mr. Carr's work is necessarily occupied almost exclusively with the various phases of the slavery contest and the civil war, so far as these affected Missouri, which they did in a marked degree. In his account of this great struggle we are sorry to find Mr. Carr's sympathies so strongly on the side of the South. He does not defend slavery; indeed, he shows a decided dislike of it. But, like most of the Southerners and of their Northern sympathizers, he fails to comprehend the moral significance of the anti-slavery movement and the moral earnestness of those engaged in it. In describing the scenes and incidents of the war, however, he shows himself a firm friend of the Union; and in his last chapter he relates with evident pleasure the action of Missouri, alone of all the Southern States, in abolishing slavery within her borders. The stirring themes of war and political struggle fill so large a portion of the later chapters of the book, that we do not get from them so full an account of the social condition of the people in the generation just passed as might have been wished. In some of the earlier chapters, however, the life and industry of the people are described more fully; and careful notice is taken of the financial disturbances that occurred at various times, and of the legislation of the State in regard to banks and railroads and the still more important subject of education.

Taken as a whole, the author's choice of topics is excellent; and he has been particularly successful in showing the connection of Missouri's history with that of the neighboring States and of the Union. The style of the work, though somewhat diffuse, like most of the historical writing of the present day, is clear and dignified; and some portions of the story, such as the conquest of New Mexico and the events at the opening of the civil war, are related in a way that is both interesting and impressive. The book will fill a useful place in the series to which it belongs.

*Popular Physics.* By J. DORMAN STEELE. New York and Chicago, Barnes. 16°.

TO quote from the author's preface, "this work has grown up in the classroom," and all those who have used any of Steele's Fourteen Weeks Series in natural science will know how admirably this series is adapted to use with elementary classes. The author was in the habit of making a memorandum of any explanation which fixed the attention of the learner, and his books were built up on this experimental method. It is not pretended that the treatises are exhaustive, but it is believed that they are such as to interest beginners, and so to place science before them that some at least may be induced to go further.

Shortly before his death, Dr. J. Norman Steele, finding that he was unable longer to perform extra labor, requested Prof. W. LeConte Stevens of the Packer Collegiate Institute, Brooklyn, to revise the text-book in physics, as so many advances had been made since the last edition of the 'Fourteen Weeks in Physics,' published

in 1878. Professor Stevens's revision has been so thorough and extensive, that it has seemed desirable to change the name to 'Steele's Popular Physics,' and it is under this title that the well-known book now makes its appearance. The book is intended for use in high schools, and gives enough in each branch of the subject to make clear to high-school pupils such physical phenomena as they see about them. All those who know the reviser will feel confidence in the thoroughness of his work.

*Our Native Ferns and Their Allies.* By LUCIEN M. UNDERWOOD, Ph.D. 3d ed. New York, Holt. 12°.

THE third edition of this useful book will be welcomed by all fern-lovers, and we predict for it a ready sale. One hundred and fifty-six species of true ferns are described as native to the territory, — sixteen more than were included in the first edition, printed in 1881; while of the related plants, lycopods, *Equisetæ*, *Isoetæ*, etc., sixty-eight species are given. The descriptive portion of the work is preceded by a carefully prepared account of the structure-habits, haunts, geological history, and the relation of *Pteridophyta* to the other sub-kingdoms of plants. This last is especially treated in the chapter on 'The Fern's Place in Nature,' including brief accounts of the several systems of vegetable classification. Professor Underwood gives greatest prominence to what he terms the 'American System,' which, dividing the *Thallophytes* into three sub-kingdoms, founded entirely on the characters of the reproductive organs, completely destroys the natural groups of algæ, lichens, and fungi, and, in the writer's opinion, is not to be commended. This is, however, quite unessential to the general purpose of the book. Older specific names for many of the species are extant, and we regret that Professor Underwood did not take the opportunity of adopting them. In the next edition he may, perhaps, conclude to do so.

*The Fundamental Principles of Chemistry.* By ROBERT GALLOWAY. London and New York, Longmans, Green, & Co. 12°. \$1.75.

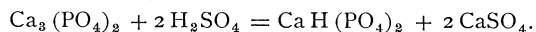
IT would probably be difficult to find a better exemplification of the fact that the critical and creative faculties are not invariably associated in the same individual than appears in several recent attempts, on the part of prominent fault-finders with existing models, to produce something better in the way of elementary text-books of science.

The volume before us emphasizes this point once more, and with force. It is an effort to replace the chemical text-books in use in the schools, and for teaching junior students generally, by a production "more in harmony with the laws of thought." The author has "long held that chemical works intended for beginners are unsuitable as educational works; if these books extend only to a few pages, the arrangement and construction is the same as that adopted in Gmelin's great work of *reference* in the science, which extends to eighteen large volumes: the plan is encyclopedic, — excellent for a book of reference, unsuitable for an educational work. In this system the facts are unclassified; the laws, the highest generalizations, are placed apart from the facts; and no plan for teaching the language of the science, which requires to be taught like any other language, is given beyond a few general observations." Twenty years ago these views were announced, and, if we are to judge from the internal evidence of the book, changes of method during the interval which has elapsed have not commended themselves to the author. The work is ostensibly devoted to the "fundamental principles of chemistry;" but examination reveals the fact, that, of three hundred and fifty-six pages, nearly one-half is given up to the exposition of the subjects of molecular attraction, heat, gravitation, the properties of gases, the elastic force of vapors, density, sublimation, precipitation, adhesion, and capillary attraction, which are regarded as the general principles of physics "suitable for the course of pure chemistry given in the after-part of the work." It is without doubt most desirable that the student of chemistry should possess a knowledge of the principles of physics, and, were this part of the work endowed with any particular novelty or merit, the misleading character of the title might be passed by; but the sad fact is, that in the preparatory half of the book we fail to find any thing but the old tale of multitudinous facts and

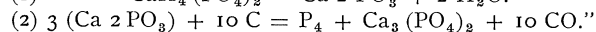
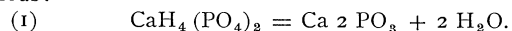
principles, presented in a manner far inferior to the best modern examples, and insufferably dull. Even in the matter of information it is not up with the times. We are told that "the two prevailing opinions with regard to the nature of heat are the *theory of emission* and the *theory of undulation*; the latter of which, it is added, is now generally accepted, but so overburdened with inherited terms of indefinite meaning as to occasion much confusion of mind, and to necessitate the admission to the student seeking exactness, that all who study the subject are impressed with their vagueness and unsatisfactoriness. After this we could hardly be surprised to note that the atomic hypothesis is an invention of the "late Dr. Dalton," who derived some suggestion of it from the ancient philosophers, by which term, we presume, reference is made to the late Lucretius, Leukippos, and others.

The latter half of the book, however, is so much worse, from an educational point of view, that we are inclined, on the whole, to admire the astuteness which led to a change of base and the filling-in of the former half with less unwieldy material, though the proceeding is somewhat suggestive of the tricks of the medical practitioner of tradition, who, failing in the diagnosis and treatment of existing complaints, possessed the art and acuteness to get his patient into fits, in the management of which he considered himself to be an adept. As in most books on elementary chemistry, we find descriptive text, directions for experiment, and problems to be solved; but the scientific method — the careful and logical adjustment of experimental conditions to the end of securing conclusions as definite as possible — is lacking. We are told that the elements combine to form compounds, and the fact is illustrated by the burning of phosphorus in oxygen, and other similar experiments; but not a particle of evidence, beyond mere assertion, is adduced to show that the action is synthetical rather than metathetical or analytical. The union of two elements in more than one proportion is not proved by appeal to the evidence of the balance, to the value of which the author has paid tribute in connection with the elucidation of the principles of its mechanism; but, instead, we are treated to the following: "We have now to inform and demonstrate to the learner that more than one compound can be formed, in many cases, by the union of the same elements. This will at once be rendered easily intelligible to him if we make use of our former comparison. There are different words composed of the same letters: there are, for instance, two different words composed of the letters *t* and *o*, viz., 'to' and 'too'; the same with the letters *b* and *e*, viz., 'be' and 'bee'; and other examples will at once recur to the student. In like manner, for example, there are two compounds of carbon and oxygen: viz., carbon monoxide, the symbol for which is CO; and carbon dioxide, which, for the present, we will represent by the symbol COO. This latter compound, it will be seen from the symbol, contains double the quantity of oxygen the former contains." This is puerile; but the pendulum swings to the other extreme, and the student, not yet informed as to the laws of combining proportions, the qualities or constitution of acids, bases, or salts, is expected to extract an intelligent idea from descriptions like the following, which, if not taken bodily from "Gmelin's great work of reference," might easily have been so derived, so far as form of statement and assumption of previous knowledge are concerned:—

"The bones being freed from organic matter, and in form of ash, are treated with sufficient sulphuric acid to form an acid phosphate:—



The solution of the acid phosphate is poured off from the insoluble  $\text{CaSO}_4$ ; the solution is evaporated to a sirupy consistence; it is then mixed with a sufficient amount of charcoal, evaporated to dryness, and afterward gradually heated to full redness in an appropriate vessel. Two-thirds of the phosphorus distils over, and is condensed by the water contained in the receiving-vessel. The operation may be regarded as consisting of two stages: 1st, the conversion of the acid phosphate; 2d, the setting-free of the phosphorus:—



These examples are sufficient to show the spirit of the book, which is lacking in those qualities of method which have lately begun to appear in elementary chemical literature, and give prom-

ise of the evolution of something more in accord with advanced ideas in matters of education. In our humble judgment, this volume is entirely unsuited to the needs of the modern classroom or laboratory.

*A Companion to School Classics.* By JAMES GOW. New York, Macmillan. 16°. \$1.75.

*Chronological Tables.* By ARTHUR C. JENNINGS. New York, Macmillan. 12°. \$1.25.

THE first of these books treats a variety of subjects that students of the classics need to know about, and which cannot be adequately dealt with in the ordinary commentaries. It is divided into five parts, treating respectively of classical texts, the public economy of the Greeks and Romans, the drama, and philosophy. Mythology and geography are not included, doubtless because there are works enough on these subjects already. The Homeric age also is left untouched, on the ground that it is sufficiently illustrated in Professor Jebb's work, and others devoted to that special theme.

The second and third divisions of the work, which deal with public affairs, are the longest, and give an excellent brief description of the Athenian, Spartan, and Roman constitutions, with accounts of the public assemblies and of the various officers of state and their duties. The military and naval establishments are also described, and there are chapters on finance, on chronology, and on weights and measures. In these parts of his work Mr. Gow has presented a vast amount of information in a small compass; yet it is so well arranged and so clearly stated, that, notwithstanding its condensation, it is read with ease and pleasure. Indeed, we do not know where to look for so good an account of Athenian and Roman public affairs, in a form at once clear, concise, and full enough for ordinary students, as Mr. Gow has here given us.

The other parts of the work are of a more scholastic character, especially the first, which gives a brief history of classical texts. First comes a history of the Greek and Latin alphabets; next a description of the mode of writing and of making books in ancient times, followed by a history of classical manuscripts in the middle ages and after the revival of learning; and then a full account of the means and methods of textual criticism. The chapters devoted to these subjects are necessarily somewhat dry; but the information they contain will be useful not only to young students, but to all persons interested in the history of literature. The accounts of the drama and philosophy are briefer than the other portions of the work, but are sufficient for the ordinary purposes of classical students.

From the analysis here given it will be apparent that Mr. Gow's work is different from the other helps to classical study that are now so abundant; and it contains so much that is excellent, that we hope to see it introduced into the schools of this country. Of course, in a work dealing with so many subjects, and necessarily touching many controverted points, it is difficult to secure unimpeachable accuracy; and we can well believe the author when he says that he has found the preparation of the work extremely difficult. Nevertheless, its accuracy, so far as we have been able to test it, is of a high order; while in style and arrangement it is much superior to most of the works with which it is naturally compared.

Mr. Jennings's work is a synchronistic arrangement of the chief events of ancient history, and will be a useful companion to all students of the ancient world. It is not confined to Greek and Roman affairs, though these necessarily occupy the foremost place, but gives also the dates of the leading events in Jewish, Egyptian, and Assyrian history, and of some specially important occurrences in India and China. The tables are arranged in six columns, dealing respectively with political history; Jewish church history; wars, popular movements, catastrophes; biography and topography; inventions, discoveries, science, art; laws, literature, drama, institutions. The chronology ranges from the received date of the foundation of Rome, 753 B.C., down to the Christian era. In regard to very many facts of ancient history, exactness of date, as the author remarks, is unattainable; and he has thought it best to adhere in the main to the schemes of chronology usually found in dictionaries of dates, and other educational works. The special excellence of the work lies, of course, in its parallel presentation of