

contains the quantity of lime which characterizes the better class of Kentucky soils, it is supposed, that, even if soluble phosphatic manures are applied, the superphosphate becomes again insoluble by taking up a molecule of lime. It is therefore an interesting question as to the means by which the lime phosphate enters the plants. It may be that the solution is effected through the action of the various humic acids of the soil, or it may arise from some specific change which takes place at the contact of the soil with the roots. It is evident that this point requires precise determination, for on it will depend further experiments as to the methods of applying phosphatic manures.

There is yet another point on which we need experiments. Many of our rock phosphates, especially those which are distinctly bedded, contain low percentages of phosphatic matter. Many of our lime phosphates contain crystals of apatite and calcite so intermingled that it is not possible to separate them; yet from these deposits it will be easy to produce a mixture of lime carbonate and lime phosphate containing from 10 to 20 per cent of phosphoric acid. The value of such material for manure has never been determined. If it can be used in a way which will give to the fields the full value for both the lime and the phosphorus, it will open a way for an extensive production of cheap fertilizers.

The foregoing considerations give the general results of the preliminary inquiry into phosphatic manures, of which Dr. Penrose's work forms a part. Before we go further into these studies, I much desire to have the criticism and advice of others who have considered this subject. It is with this view that I have ventured to give in the foregoing pages an account of the aim of the inquiries I have in hand. The questions are at once chemical and geological, and demand much co-operation for their solution. Much of the work of searching for the unknown phosphatic deposits of this country will necessarily have to be undertaken by local students of geology or by commercial explorers in search of such deposits. Unfortunately, the unfamiliar aspect of the various forms of phosphatic deposits will make this task under any circumstances difficult. There is no substance of equally wide diffusion among those of considerable commercial importance, which, in the present state of popular knowledge, so readily escapes detection as lime phosphate.

BOOK-REVIEWS.

Social Progress. By DANIEL GREENLEAF THOMPSON. London and New York, Longmans, Green, & Co. 8°. \$2.

THIS work is an inquiry into the foundations of social life and the means and methods of progress. The first part deals with the conditions of social progress; the second, with the means of promoting it. The work contains nothing that is specially new or striking, but is rather a restatement of the general principles of free government and social improvement as viewed from the standpoint of an evolutionist. The author's style is clear and flowing, so that the book is easy and agreeable to read; and there is much in it that thinkers of all schools will agree with. Mr. Thompson begins with a discussion of liberty and law, which he declares to be inseparable. All men, he maintains, must have equal rights and equal protection under the law; but as men and classes differ in power, the maintenance of equal rights has always been difficult. In former times the difficulty arose chiefly from military ambition and priestcraft, while in our time the danger that threatens us is that of a plutocracy. The main defect in this portion of Mr. Thompson's work is its inadequate recognition of the moral element in society. He does indeed recognize it, but he gives an altogether insufficient account of it. He bases society on self-interest alone, and reduces even benevolence itself to selfish prudence. He inquires why it is that we take pleasure in promoting the good of others, and answers the question thus: "Upon investigation we cannot fail to be led to the conclusion that the foundation for this is the selfish consideration of how delightful it would be if everybody else besides ourselves were animated by the desire and purpose of helping instead of hurting his neighbor" (pp. 63, 64): in other words, we do good to others in order that they may do good to us. The second part of Mr. Thompson's treatise treats of radicalism and conservatism, of the need of frequent change in order that society may progress,

and of the best way of effecting such changes. It offers many interesting remarks on the need of care in the formation of opinion, on the folly of attempting political changes before the public is ready for them, and on other matters incidental to the subject. On the whole, this part of the work, though dealing with less fundamental questions than the first part, is more satisfactory.

Scientific Religion. By LAURENCE OLIPHANT. Buffalo, Charles A. Wenborne. 8°. \$2.50.

WHY the doctrine taught in this book should be called scientific we do not know, for its characteristics are all of the opposite kind. Mr. Oliphant sees, as most other men do, that the old religious views will no longer suffice, and he undertakes in these pages to furnish a substitute. He believes in communication with departed spirits, who will teach us many important truths and render us invaluable aid if we will but listen to them. He holds that "the unseen world teems with intelligences, whose action upon this one is very direct, and is governed by laws." "This," he declares, "is a fact of my own personal experience." Spirit, he maintains, is only a higher form of matter, and the spirits in the unseen world communicate with us by the "interlocking of atoms." It is sad to learn, however, that the unseen spirits are not all good, and that the bad ones exert a baneful influence upon us, some of our worst impulses being due to their "infestation." Insanity, also, is due to them; and "when, therefore, we read in the Gospels of the cures by Christ of men possessed by devils, the expression is literally accurate." It depends on us, however, whether we will be influenced by the good spirits or the bad ones; and, in order to obtain the highest favors from the spirit world, we must become "bisexual." Adam, we learn, before the fall, was bisexual, and though his feminine part was separable from the masculine, the two were still one, this being possible in the case of Adam and Eve because their atomic structure was "four-dimensional." Christ, also, was bisexual, and, in fact, came into the world to restore the bisexual principle. Such is the stuff that Mr. Oliphant offers us as a new religion, and he expects men to abandon the Christianity of the churches for this! A large part of his book is devoted to a mystical interpretation of the Bible, and the rest is mainly occupied with the doctrine of spirits. We regard the appearance of this work and others of a similar character as one of the strangest signs of the times, and as indicative of a mental aberration that is truly amazing.

German Commercial Correspondence. By JOSEPH T. DANN. London and New York, Longmans, Green, & Co. 16°. 80 cents.

THIS book is of the *multum in parvo* kind, containing a great deal in a small compass. Its author was at one time assistant master in University College School in London, and it is intended not only for the use of schools and classes, but also for self-tuition. Specimens of letters are given for translation from German into English and from English into German. Copious notes, sufficient to enable the student to understand and render every idiom, are supplied, being placed at the end of the book, so that students may learn them by heart before translation is attempted. At the end of each section, subjects for writing letters similar to those contained therein are given, by way of exercises, so as to enable students to turn the study of the section itself to account. Copious vocabularies, German-English and English-German, are appended, embodying all the words which the student cannot be expected to have acquired in an elementary training. The idioms and peculiarities of the language have received special attention, so that the student may know not only what to do, but what to avoid.

French Commercial Correspondence. By ELPHEGE JANAU. London and New York, Longmans, Green, & Co. 16°. 80 cents.

THIS and its companion, the "German Commercial Correspondence," mentioned above, are constructed on such a plan that they may be used separately or together. The substance of the letters, in French or German, forming the first part of each section, is the same, and the English letters forming the second part are identical in the two volumes. In the third part are subjects for letters,

giving the student an opportunity to turn to account the study of the preceding two parts, and to acquire a greater command over the language and more self-confidence than by the process of mere translation. Like its fellow-volume in German, this contains a copious double vocabulary.

Elements of Plane Analytic Geometry. By JOHN D. RUNKLE. Boston, Ginn & Co. 8°. \$2.

THE author of this work is Walker professor of mathematics in the Massachusetts Institute of Technology at Boston, and the matter composing the first eight chapters of the book has been used by the students of that institute for some few years. The needs of the students have not been lost sight of in the preparation of the book. Though it is necessary that they should become reasonably familiar with the more elementary and fundamental parts of the subject, still the time which they can devote to it is limited. Therefore the earlier chapters are treated with somewhat more fulness than is usual in books of the kind, and particular care has been taken to illustrate and enforce all parts of the subject by a large number of numerical applications. Only the simpler problems have been selected; and an effort has been made to have the number of problems proportioned to the time which the students can profitably devote to them. The latter part of the book is based on a treatise upon conic sections by Charles Smith, M.A., of Cambridge, England, the later chapters following Mr. Smith's work quite closely. Teachers and students besides those in the Institute of Technology will find Professor Runkle's book adapted to their needs.

The Beginner's Reading Book. By EBEN H. DAVIS. Philadelphia, Lippincott. 12°. 42 cents.

THIS little book contains a series of elementary lessons for youngest readers, with appropriate pictorial illustrations, and in these respects it does not differ essentially from other works of a similar kind. But the author has a theory about the best method of teaching children to read, and he explains his method in an introduction. He begins his instructions by talking with his pupils about the various objects provided for them, thus leading them to frame brief sentences about the objects. These sentences are then placed upon a blackboard in script letters, and the children are taught to read them; and not until some twenty weeks have been spent in this way are the pupils to take up their reading-books and begin to read print. Whether this is the best way to teach children to read, experience must decide; but it seems a roundabout process. However, there is an old saying that the shortest way across is sometimes the longest way round; and so Mr. Davis's method may, after all, be the best.

AMONG THE PUBLISHERS.

WE reproduce in this number three illustrations, "The Kitchen," "Jim," and "Canadian Grouse," from "B. C. 1887," a book of travel and adventure in British Columbia, published by Longmans, Green, & Co., and reviewed lately in these columns.

— A contest has long been waged among educators as to which is of greater practical value in education, the classics or the sciences. For many years the friends of the classics had it pretty much their own way, but of late the scientists have been putting in some strong pleas in behalf of their side of the case. The latest of these, about to be issued in book form by S. C. Griggs & Co., Chicago, is by the well-known author and scientist, Dr. Alexander Winchell, University of Michigan, and is entitled, "Shall We Teach Geology?" Few, if any, American writers are better qualified for discussing this question than Dr. Winchell. While his treatise is a special plea for teaching geology in the public schools, it is intended to cover the whole ground of contest between the sciences and the classics, and hence promises to be of great interest, not only to teachers, but to all who are interested in observing the tendencies of modern education.

— Charles Scribner's Sons have just ready "French Traits," by W. C. Brownell, an analysis of French character and French society. The method of criticism is comparative throughout, the social

customs, intellectual habits, art instincts, and moral standards of the French being brought into juxtaposition with those that prevail in the United States. They have also just ready a treatise on metaphysics, by Dr. James McCosh, entitled "First and Fundamental Truths," which is regarded by the author as the keystone of what



From "B.C. 1887."

Longmans, Green, & Co.

THE KITCHEN WINDERMERE STORE.

he has been able to do in philosophy, and in which he formulates and explains the fundamental law governing the associated mental exercises. Finally, they have a new and revised edition for 1889 of Thomas A. Janvier's "Mexican Guide."

— A. C. Armstrong & Son have just published three important works on the Asiatic continent,— "Through the Heart of Asia over the Pamir to India," by Gabriel Bonvalot, which has been translated



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JIM AND THE SORREL NAG.

from the French by C. B. Pitman, and is published in two volumes, with 250 illustrations by Albert Pepin; "The Industries of Japan," by Professor J. J. Rein of the University of Bonn, which gives an account of the agriculture, mining, forestry, arts, and commerce, from travels and researches in Japan, undertaken at the cost of the Prussian Government; and a second edition of the same author's work on "Japan, Travels and Researches," which, by verdict of the London *Spectator*, will be "the standard authority in such mat-