are to some extent partisans of a definite school of hypnotism, and that some of the phenomena upon which they lay stress would be otherwise interpreted by other workers, or even entirely discredited. About nothing is this caution more necessary than the results these authors describe as due to the action of the magnet. As long as it has not been proved that the normal nervous system is to the slightest degree subject to magnetic influence, it seems premature to have it play so great a part in the observation of hysterical hypnotics; and the more so, as the same results have been obtained by suggestion; and, in so far as this has been ruled out, the results have failed to follow with other experimenters.

Lectures on Bacteria. 2d ed. Tr. by H. E. F. Garnsey. Rev. by I. B. Balfour. New York, Macmillan. 12°. $1.50.

THIS book is a translation of De Bary's 'Vorlesungen über Bacterien,' and, as Dr. Balfour states in his preface, has been prepared because there is at present no book in English which gives in like manner a general view of the subject of bacteria. It sets forth the known facts in the life of bacteria in their connection with those with which we are acquainted in other branches of natural history. The second edition of De Bary's lectures appeared in October, 1886; so that we have the researches into this abstruse field of science brought down to a very recent date. In the introductory chapter the author considers the position which bacteria occupy in the vegetable kingdom among the fission-fungi or *Schizomycetes*, and their structure. He then defines the meaning of the terms 'coccus,' 'bacterium,' and 'spirillum.' In speaking of these three forms, he says that they are so exactly represented by a billiard-ball, a lead-pencil, and a corkscrew, that no one requires for his instruction the costly models which are offered for sale.

The course of development of bacteria, and the distinction between the endosporous and arthrosporous groups, next receive attention. From this the author passes on to the consideration of the much-mooted question of whether there are specifically distinct forms, species of bacteria, and, if so, how many such species can be determined. In treating of this interesting topic, he says that species are determined by the course of development, and defines the term 'species' as the sum-total of the separate individuals and generations which, during the time afforded for observation, exhibit the same periodically repeated course of development within certain empirically determined limits of variation. In the list of those who believe that the bacteria may be distinguished into species, are Leeuwenhoeck, their discoverer, Ehrenberg, and Cohn. Among those who deny this, and who consider that the observed forms proceed alternately from one another, the one being converted into the other with a change in the conditions of life, are Billroth, who, in a publication issued in 1874, included all the many and various forms which he had examined in one species, which he named *Coccobacteria septica;* and Nägeli, who has supported the same views since 1877. Nägeli says that he finds no necessity for separating the thousands of bacterium-forms even into two species, but that it would be rash to speak decidedly on a subject that is so imperfectly explored. But he also says, that, if his view is correct, the same species, in the course of generations, assumes a variety of morphologically and physiologically dissimilar forms one after another, which, in the course of years and decades of years, at one time turn milk sour, at another give rise to butyric acid in sauerkraut, or to ropiness in wine, or to putrefaction in albumen, or decompose urine, or impart a red stain to food-material containing starch, or produce typhus, relapsing-fever, cholera, or malarial-fever. In commenting on this view of Nägeli's, De Bary truly says that our practical interests require that we should obtain a decided answer to the question of species; for it certainly is not a matter of indifference in medical practice, for example, whether a bacterium which is everywhere present in sour milk or in other objects of food, but without being injurious to health, is capable or not of being changed at any moment into a form which produces typhus or cholera. The scientific interest demands that the question should be set at rest. The opinion to which De Bary himself comes, in reference to this important question, is that it may safely be maintained that continued investigation has at length arrived at the decision that there is no difference, as regards the existence of species and their determination, between this and any other portion of the domain of natural history, and that species may be distinguished provided the course of development is followed with sufficient attention. The origin and distribution of bacteria, their vegetative processes, the effects of temperature and the presence or absence of moisture upon them, and the subjects of culture, disinfection, and antisepsis, are discussed by the author, but lack of space prevents us from following him into these subjects in detail.

One of the most interesting chapters in the book is that which treats of the causal connection of parasitic bacteria with infectious diseases, especially in warm-blooded animals. De Bary regards as proved the causal connection between the *Spirochæte obermeieri* and relapsing-fever, Koch's bacillus and tuberculosis, Neisser's gonococcus and gonorrhœa, and Koch's spirillum and Asiatic cholera. Among the diseases due to the action of bacteria, he reckons also traumatic infectious diseases, affections incident to child-bearing, and others connected with the formation of groups of ulcers, abscesses, and boils. He does not think that we have any precise determination of the nature of the contagium or miasma virum of malaria. The relation of bacteria to typhoid-fever and diphtheria in men, he regards as uncertain, notwithstanding Goffky's and Löffler's model investigations. The concluding chapter of De Bary's admirable *résumé* is concerned with the discussion of the diseases caused by bacteria in the lower animals and in plants, while this is followed by a conspectus of the literature of the subject, and notes on the text. The whole volume is admirably arranged, and we know of no book which gives so concise and at the same time satisfactory an account of bacteria as the one before us. It is well translated; and its revision by Dr. Balfour, who is professor of botany in the University of Oxford, is a sufficient guaranty of its scientific accuracy.

Catalogue of the Pedagogical Library, Philadelphia. Philadelphia, Board of Education. 12°.

WHEN Superintendent MacAlister went to Philadelphia from Milwaukee four or five years ago, he saw and felt the need of having at his command the best authorities on the history, science, and art of education. The Board of Education appreciated the need, and by liberal appropriations it has been made possible for Mr. MacAlister to get together the volumes for which he has now printed a catalogue. Naturally, he has only selected from the field of educational literature, and has made no attempts to cover it in all its extensiveness. What he has gotten together is a good working pedagogical library, and "it is believed that the selection made furnishes the essentials for a pretty thorough study of the history and theory of education in the past, as well as ample materials for dealing with the living questions of our own time." Therefore it is that this catalogue, while referring to this one collection only, really serves as a carefully selected bibliography of pedagogics. In this respect it is far more useful than that of Messrs. Hall and Mansfield, published a year or two ago. That is too diffuse to be really useful, and it is disfigured by hundreds of mistakes and typographical errors. We trust that professor MacAlister has printed a sufficiently large edition of his catalogue to permit its general sale.

Natural Resources of the United States. By J. H. PATTON. New York, Appleton. 12°.

THE present volume is a concise review of the resources of the United States, compiled from the publications of the various National and State departments, and from private information obtained from the State governments. Therefore the data are presumably, as a rule, reliable; and as the book deals not only with the mineral resources, but comprises others also, it will be found handy as a brief review of the whole subject. 324 of the 523 pages of the book are taken up by a report of the mineral resources, on which D. T. Day treats in his annual summaries. This part is followed by notes on mineral springs and health resorts. The following sections, dealing with the vegetable products of the United States, grain, fibre plants, and timber, are very superficial; that on grasses, such as are the basis of American stock-raising, is even more so, the whole subject being treated in nine pages.

In the book we find a considerable number of remarks on physical geography which show that the author's knowledge of this subject is not very extensive. The authorities he quotes for his views