observers to be attained through water absorption or drying out, and purely hygroscopic movements. Dissemination may occur by means of air and water currents, and a quite well established case is recorded in which Thysanura were responsible for carrying the brood-bodies of Aulocomnium and Androgynum. The projection of the parts bearing brood-organs above the general levels of the moss-turf is interpreted as an adaptation for dissemination through such animal forms. Hook-like organs occur (*Ephemeropsis* and *Bryum bulbilosum*), which are subject to similar teleological interpretation, though one with difficulty escapes the conviction that the point is somewhat far-fetched. Mucilaginous outer membranes, which insure adhesion to animal forms, are also present in some kinds.

Of the remaining matters perhaps the most important to mention here are the attempt to determine whether correlation occurs between the habit of producing gemmæ and the conditions under which the plants live, and to estimate the taxonomic value of the organs in question.

The typography and numerous illustrations are up to a high standard, but do no more than justice to the thorough work of the author. A full index of generic and specific names extends greatly the usefulness of the volume, which will be of very great value to those botanists who are interested in the biological matters relating to the mosses, but whose studies have not been directed to them in a taxonomic way. It will also serve a good purpose in enabling the student who may be contemplating research in these lines to orientate himself historically. This will be facilitated also by a very complete bibliography.

FRANCIS E. LLOYD.

FROM a systematic standpoint this work is of great value to American students, for of the 110 species described, 52 are known to occur in this country, and 108 out of the 187 figures refer to them. Systematic books have overlooked asexual methods of reproduction except in such cases as *Georgia pellucida*, *Aulacomnion palustre*, *Tortula papillosa*, and a few others where the means were so conspicuous as to defy ignorance; hence it will be a surprise to learn that *Dicranum sooparium*, *Funaria hygrometrica*, *Bryum argenteum* and *Dicranella heteromalla*, though commonly found fruiting, have also methods of propagation. Those species which are conspicuous for their brittle leaves are many of them rare in fruit, forming new plants from the fragments of the leaves, but an interesting addition to the list having this method is *Anomodon tristis*, which thus far is unknown in fruit. The 'Confervæ Orthotrichæ,' those brown septate bodies which occur on the leaves of various species of *Orthotrichum* and *Grimmia*, have long been familiar, but few students have realized why so many species of *Campylopus*, *Tortula*, *Bryum* and *Plagiothecium* were more often found sterile than fertile, nor how they reproduced in spite of this fact. Climates where sexual reproduction is difficult cause a greater development of other methods, and dioicous species are more apt to develop asexual methods than monoicous ones. An artificial key is given by which the asexually propagative species may be classified according to the modifications of the stem, leaves and protonema; it will be useful in encouraging the study and collection of such species as have been ignored or overlooked on account of lack of fruit. The work has paralleled that of F. De Forest Heald, published in the *Botanical Gazette* for 1898, but it is more extensive, and the author claims to have found that *Bryum annotinum*, *Pleuridium nitidum bulbillifera* and *Leptobryum pyriforme* are identical. There is a similar identity between *Pottia riparia* Austin, which antedates *Leptodontium Canadense* Kindb. and *Trichostomum Warnstorfii* Limpr., all of which propagate by clusters of septate propagulæ borne on the paraphyses, seemingly replacing the archegonia, hence all but *Pottia riparia* have thus far been only found sterile. Under whatever genus the species is recognized, that of Austin has priority, a fact to which I have already called attention.

E. G. BRITTON.

N. Y. BOTANICAL GARDENS,
BRONX PARK.

The Physical Nature of the Child and how to Study it. By STUART H. ROWE, PH.D., Supervising Principal of the Lovell District, New Haven, Conn.; formerly Professor of

Pedagogy and Director of Practice in the State Normal School at Mankato, Minnesota. New York, The Macmillan Co.; London, Macmillan & Co., Ltd. 1899. Price, $1.00.

The strictly scientific contribution of this book is rather small, but its practical value is likely to prove very great. It is a *résumé* of many of the important results of recent studies in child psychology and school hygiene, based largely upon such authorities as the *American Journal of Psychology*, the *Pedagogical Seminary*, the *Child Study Monthly*, the *Educational Review*, and the standard books and papers on child study and school hygiene. From a scientific point of view the special contribution of the book consists in the fact that it gives the reaction of a practical teacher to the more theoretical conclusions of psychologists and students of hygiene.

Among the topics considered are the senses, motor ability, nervousness, fatigue, habits of posture, habits of movement, growth and adolescence, and school and home conditions. The more common and simple tests of the senses, of motor ability, nervousness and fatigue are given; and the commonplace teachings in regard to education and health that result from psychological study are presented in a way that is likely to appeal to teachers. The keynote of the book is stated by the author as implied in two fundamental principles of education: "One of these is that action is the first law of growth; the other, that individuals vary enormously in their capabilities for different kinds of mental and physical action."

Very few direct references to literature are made in the body of the book, and the query naturally arises whether in a work so largely based on recent studies in psychology and hygiene even the popular demand for a clean page justifies the omission of explicit reference to authorities. To the scientific student, such a lack is often exasperating, and in this case only partially atoned for by the blanket acknowledgment in the selected bibliography at the end; and some ambitious teachers may wish to know, for example, who besides the author have used the tests for hearing mentioned in chapter 3; upon the results of whose investigations of fatigue are based the suggestions (pages 80–81) 'which we may accept as practically proved'; how the author knows (p. 130) that children grow more rapidly in summer than in winter; and where Eulenberg's table of scoliosis among school children (given on p. 154) can be found. The need of such references to authority is emphasized, for example, by recent investigations upon fatigue which cast discredit upon Griesbach's method, and in many places throughout the book the weight of the author's statements would be increased by direct citation of authority.

Wm. H. Burnham.

SOUTH AMERICAN LANGUAGES.

Der Sprachstoff der brasilianischen Grammatik des Luis Figueira nach der Ausgabe von 1687. Von Julius Platzmann. Leipzig, B. G. Teubner. 1899. Octavo. LIV., 247.

Der Sprachstoff der Guaranischen Grammatik des Antonio Ruiz übersetzt und hier und da erläutert von Julius Platzmann. Leipzig, B. G. Teubner. 1898. XX., 261. Octavo.

Chilidúgu. Lachrymæ salutares opera Bernardi Havestadt. Editionem novam immutatam curavit Dr. Julius Platzmann. Lipsiae, Teubner. 1898. Pp. 78.

Los Indios Matacos y su lengua por Juan Pelleschi, con introduccion por S. S. Lafone Quevedo. Dos mapas. Buenos Aires. 1897. Pp. 246.

The above mentioned publications are not facsimilarian editions of authors such as Dr. Platzmann is in the habit of issuing, but explanations in the form of translations and commentaries of vocables and grammatic forms recorded in books now difficult to obtain. Guarani and Tupi are dialects of the same family very closely related, and at the time these missionaries were composing their works Guarani was heard not only along the eastern border of Peru, but also along the La Plata, in Paraguay and on the coast of Brazil.

According to the most reliable sources Luis Figueira was born in the Portuguese province of Alemtejo in 1575, entered the seminary of Evora in 1592 and went over to Brazil in 1602. He settled in Maranhão in 1607 to found missions for the conversion of the natives, and by the year 1615 the knowledge he had acquired of Guarani enabled him to compose his 'Arte