matic woodcuts, gain a vivid impression of the unity of organization and the divergence in minor points of structure of the higher animals when compared one with another. Perhaps, however, in that enlarged edition of this book which will at no distant date appear, Prof. Parker will treat the higher animals less unceremoniously; this he might do, and yet retain that conciseness and regard for the essential which form an admirable characteristic of his method.

Mosses and Ferns are treated as the parallel among plants of Polygordius in the animal series; and in a single chapter Equisetum, Salvinia, Selaginella, Gymnosperms, and Angiosperms are surveyed (and excellently illustrated by finished woodcuts) in such a way as to give the student an accurate and highly effective survey of the great features of vegetable morphology and physiology.

Such is the outline of these "Lessons." Their merit, however, consists not merely in the general plan, but in the fact that the author is an experienced teacher and an accomplished investigator, who has developed to a high degree the art of lucid statement—one who is thoroughly familiar with the latest researches in the wide field of which he treats, and is able, whilst setting before his reader the most important generalizations of his science, to avoid redundancy, and to give a fresh and original handling to the oft-told story of the structure and functions of living things.

E. RAY LANKESTER.

CEREBRAL LOCALIZATION.

The Croonian Lectures on Cerebral Localization. By David Ferrier, M.D., LL.D., F.R.S., &c. With Illustrations. (London: Smith, Elder, and Co., 1890.)

IN these valuable lectures, Dr. Ferrier reviews the subject of cerebral localization, so far as the representation of movement and of special sense is concerned. After referring categorically, in the first of the series, to the historical experiments on the subject, arranged in order of chronological sequence, he points out the fundamental principles embodied in the term cerebral localization. Leaving the discussion of motor representation, he devotes the remaining five lectures to the consideration of the cortical representation of the special senses, beginning with that of sight.

The representation of sight is, according to all observers, mainly restricted to a definite area of the cortex. The differentiation of that area and its topographical subdivision are points of the highest interest, and naturally do not escape discussion. We are rather surprised, however, to find that Dr. Ferrier is not prepared to admit that Munk and Schäfer's experiments, besides those of other observers, establish visual representation to be situated in the occipital lobe, but is inclined to believe that the angular gyrus is the centre for clear vision mainly for the eye of the opposite side. Upon this we would only remark that it does not appear to us that the mass of evidence relating to crossed hemianopsia, whether of experimental or clinical nature, can be put aside as easily as Dr. Ferrier would seem to consider possible, but those interested in the subject will find many of the facts bearing on this question referred to in his treatment of the points at issue.

So, too, with the representation of audition, while all (save Schäfer's and Sanger Brown's) observations support Dr. Ferrier's views of the seat of representation of hearing, it would undoubtedly have been better that the rebutting evidence brought against the exceptional facts referred to should have consisted of a number of experiments, and not of a single one, even although that seems to have been a very conclusive observation.

After disposing of the centre of audition, the tactile centre receives attention, and is preceded by a discussion of the paths along which afferent impressions travel in the spinal cord to the higher centres. Of course, this subject has been very actively investigated by various observers for many years, but it has always appeared to us that sufficient attention has never been given to the simple consideration whether or not the *lower* centres are engaged in the transmission of such impulses. In the limited space at Dr. Ferrier's disposal he has evidently not been able to give this matter full discussion, and is therefore led to assume that Brown Séquard's dictum respecting the passage of afferent (tactile, not painful) impulses up the opposite side of the cord holds good. This question is now being reinvestigated, and the preliminary observations published by Mott and others throw very grave doubt on the validity of this assumption, which has so long been accepted as final.

As regards the representation of common tactile sensation in the cortex cerebri, Dr. Ferrier discovered that it was probably represented in the hippocampal region, and he reviews the results of his experiments, as well as those of Schäfer and Horsley, which tended to show that the gyrus fornicatus, as well as the hippocampus, were the seat of tactile perception, and he concludes that possibly the whole limbic lobe is concerned with this representation.

As regards, however, the representation of sensation in the excitable or motor part of the cortex, he will "have none of it." Here, again, we are afraid that the considerations of time and space, which always handicap subjects treated in lecture form, account for the fact that the critical examination of this question is not so complete as perhaps it might have been made.

On the whole, these lectures well maintain the author's high reputation as a keen observer, and an indefatigable student, gifted with singular clearness and distinctness of expression, and they will well repay perusal by all who wish to follow the progress of knowledge of cerebral localization and its most important bearings.

OUR BOOK SHELF.

Education and Heredity. By J. M. Guyau. (London: Walter Scott, 1891.)

THIS small and excellently-translated work is a posthumous publication, written by a Frenchman who died four years ago at the early age of thirty-three. He was a fluent and prolific writer, the author of no less than fourteen other publications, and is described in the introduction as a philosopher and poet. It would seem from this book that the latter temperament was his prevalent characteristic. Its prevalent literary style and the originality both of metaphor and of handling will commend itself, and so will the account of recent hypnotic in-

vestigations, and the use made of them in the argument. Interesting and appropriate quotations are inserted from numerous authors of fame and notoriety, as from Plato, Descartes, Leibnitz, and Spencer, down to Tolstoi. But when, after reading right through the book, one asks oneself what has been the net gain, what new ideas it has given, or what valuable facts it has brought together, and what are its solid and original arguments, it is rather difficult to give a satisfactory reply. The book chiefly consists of well-phrased "talkee-talkee," so that some readers may feel a little grateful to so fluent and prolific a writer that he stopped his nimble pen even as soon as he did. One has become nowadays rather satiated with *a priori* deductions.

As for the "Heredity" in the title, it is nowhere in the book, except at the end of one chapter, where neither the author in the text nor the translator in the footnotes has shown any misgiving concerning the truth of the old supposition of the free inheritance of acquired faculties, which greatly affects the argument of the work. Undoubtedly some few men of high authority still entertain the older view, but the majority of students of heredity now regard it as unproved, and at the best, that the inheritance is very slightly efficient.

The following paragraph will serve as an example of what is least good in the author's style and method:—

"Why then should not the representation of man, by hereditary tendency, excite in man himself a peculiar pleasure, and an inclination no longer of flight, but to approach, speak, be helped, to put others in his place? When a child falls under the wheels of a carriage, we precipitate ourselves to its rescue by an almost instinctive movement, just as we should start aside from a precipice. The image of others is thus substituted for the image of ourselves. In the scales of the inner balance, *I, thou*, are constantly interchanged. This delicate mechanism is partly produced by heredity. Man is thus domesticated, made gentler, and more civilized; now he is partially savage, partially civilized or civilizable. The result of education through the ages is thus fixed in heredity itself, and this is one of the proofs of the power possessed by education, if not always for the present, at least for the future."

Life is short, there is much to learn, and economy of time is important. It is questionable whether it is worth the while of a person who has some acquaintance with the subject of this book to spend half a working day in reading it, for he might not find it as nourishing as he would wish. Still it is not unlikely that those to whom the subject is unfamiliar would gain instruction from the book and would consider it throughout to be interesting.

F. G.

The Soul of Man: an Investigation of the Facts of Physiological and Experimental Psychology. By Dr. Paul Carus. (London, Edward Arnold.)

IT is in vain that a puzzled reader seeks to discover the aim of this book. It is entitled "The Soul of Man," but no explanation is given as to what is meant by the title; and at the end of forty-six rambling and discursive chapters on things in general, the reader finds himself no wiser. It is called "an Investigation of the Facts of Physiological and Experimental Psychology," but there is no investigation of facts in the book. The rudiments of anatomy, of embryology, of neurology, &c., are set forth, much in the form in which they can be found in elementary text-books on the subjects, but the facts thus presented are not investigated; they are presented in no new light, no new conclusions are drawn from them, and the object of their presentation does not appear. Here and there, indeed, the author states a belief for which in the preface he claims originality; he considers, for instance, that consciousness (which he calls a concentrated or intensified feeling—an additional element that sometimes is, and sometimes is not, attached to mental operations) is "produced" in the corpus striatum. It does not appear, however, that this hypothesis leads to anything, or has any appreciable bearing on the "problem of the human soul," whatever that may be. Dr. Carus thinks, too, that man has two souls, a central soul and a peripheral soul; and it is thus that he explains the familiar fact that certain purposive actions are unattended with consciousness; but we cannot say that this explanation makes the matter any clearer. As a contribution to science, the book cannot be commended. Whether it has a theological value, we must leave to others to say.

LETTERS TO THE EDITOR.

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The Recent Earthquakes in Italy.

WITH reference to the letter which appears in your issue of July 23 (p. 272), on the earthquakes having occurred at Vesuvius on June 7, and on the same day in Southern Australia, I would ask leave to point out that the localities mentioned lie in the vicinity of a great circle which I call the "south-west coast of Australia great circle" (that is, the coast-line between Cape Hamlin and Cape Chatham). Melbourne would be about 370 miles north of its direction, and it cuts Italy in the neighbourhood of Catanzaro, leaving Vesuvius about 65 miles to the north. This great circle is one of maximum compression on the earth's surface—that is, it lies for the most part on the ocean surface, its greatest extent on land being in traversing Arabia, which it crosses in a north-west, south-east direction.

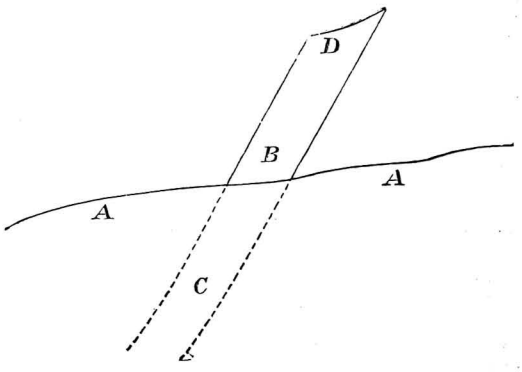
It is also worth noting that, while you cite in the same issue two shocks as having occurred in the Æolian Islands on June 24 (of these, Stromboli lies about 40 miles south of the direction of this great circle), there was recorded on that day, in the newspapers, an earthquake shock as having taken place on the 23rd (midnight) at Charleston, South Carolina, which lies about 650 miles to the north-west of the direction of the great circle in question at this point, and therefore approximatively in the vicinity.

J. P. O'REILLY.

Royal College of Science for Ireland,
Stephen's Green, Dublin, July 24.

The Great Comet of 1882.

IN your issue of May 28 (p. 82) is a communication about the comet of 1882 as seen in the act of passing close to the sun. As attention has thus been called to that comet, I desire to report a remarkable peculiarity of the tail as observed by myself, October 3, 1882, about daybreak. It was my first view of this glorious comet. Other persons on the east sides of the islands had seen it several days earlier. The peculiarity noted was the *abrupt ending* of the tail, which was cut off sharply at an oblique angle, on an incurved line. The following representation is copied



from one in my note-book made at the time. AA represents the eastern ridge of the Kahakuloa canyon on the north end of Maui, where I was sleeping. B is the brilliant end of the vast tail like a scimitar blade, fully as bright as the moon. C is