

quartet of letters in your issue of November 8. I see no ground for invoking the larger public of SCIENCE. Accepting, however, the change of *venue*, permit me to say, first, I never dreamed of disparaging a rival journal, or of implying in the remotest way either that mine was or even that the *Review* was not an *Archiv*. The reference was solely to the twice-considered plan of dropping all reviews, notes, etc., from the Journal and printing only researches as long, perhaps, as those lately printed separately by Profs. Cattell, Fullerton, Nichols, Brandt, etc.

Still less, if possible, did I dream of making or implying any claim so preposterous as that I or the Journal had 'accomplished nearly everything' 'for the advancement of psychology in America.' In the development of a new academic 'department' a crucial point is, as I deem it, when an instructor is appointed whose central work and interest is in that line. Such a point, I think, was marked both at the University of Pennsylvania and at Columbia by Prof. Cattell's appointment; at Wisconsin by Prof. Jastrow's; at Toronto by Dr. Kirschmann's; at Harvard by Dr. Nichols'; at Yale by Dr. Scripture's, and long ago at Johns Hopkins by my own. This, and this alone, was my theme. Had it been of the pioneer work, no less crucial, which made these appointments possible, which was done by Profs. James, Ladd, and earlier by President McCosh and others, I should not only have desired to say nearly all they have said, but more. To Prof. James, especially, I owe a debt I can never repay, unless by trying to influence him to correct the views in which we more and more widely differ, some of which he will bear me witness I have earnestly tried to do.

I am very sorry the name of Toronto got on the list of laboratories affected by our work. It is a mistake I cannot account for, and I am glad to correct the error with due apologies to all aggrieved thereby. The difference too between the wording of the relation between the assistant editors and myself, Dr. Sanford desires me to state, was his regrettable mistake, and will be corrected, according to the original announcement, in the next number.

As to the comparative influence of Yale and Clark upon men who have attended both, I

prefer to yield all claims rather than divide the child; so I do as to Dr. Scripture, and also as to the size of my 'influence' at Princeton. As Socrates said of the disputations of the sophist Euthydemus, I would rather be refuted by such arguments than to use them.

For one, I sincerely hope that in this transition period the psychological atmosphere will not become too tense for a spirit of hearty coöperation, or too lax for healthful or virile competition.

G. STANLEY HALL.

CLARK UNIVERSITY, November 18, 1895.

#### THE BREHM CUTS AGAIN.

TO THE EDITOR OF SCIENCE: Referring to SCIENCE of April 5, 1895, p. 387, and June 21, p. 682, I beg to say that my original charge of libel against Dr. C. H. Merriam, for using the term 'piracy' in connection with the appearance of the Brehm cuts in the *Standard Natural History*, is not in the least affected by what appears in SCIENCE of October 25, 1895, p. 648. I believe the latter to be substantially correct; but it relates to an entirely different matter, viz.: action brought to recover damages for alleged breach of contract concerning resale of Brehm cuts and their subsequent use in other connections than the *Standard Natural History*. The case will be found fully and no doubt fairly stated in the Publishers' Weekly of October 26, 1895, p. 716; but it is one that I never raised, and know nothing about—only that it has nothing to do with the point I made; and I should not now bring it up again, except to correct a very possible misapprehension on the part of some who may be misled into the belief that my original charge does not remain in full force.

ELLIOTT COUES.

WASHINGTON, D. C., November 17, 1895.

#### QUATERNIONS.

EDITOR OF SCIENCE:—The communication in a recent issue of SCIENCE in reference to the formation of an International Society for the purpose of advancing the study of Quaternions is one of great significance to the friends of the subject in this country. The time is certainly fitting for the organization of such a society and

the suggestion should meet with a generous response. The project already has the support of Profs. Tait and Laisant and will, no doubt, be aided by the leading advocates of Quaternions everywhere. The movement should be encouraged in every possible way.

VICTOR C. ALDERSON.

ARMOUR INSTITUTE OF TECHNOLOGY, CHICAGO.

#### SCIENTIFIC LITERATURE.

*The Forces of Nature.* By HARROP and WALLIS.

Published by the same, Columbus, Ohio. Pp. 160, 12 mo.

The reading of this book gives rise to a feeling of wonder; wonder that it was ever written; wonder that it was ever published and wonder that it should ever be read. About half of it is included in five chapters on 'The Solar System;' 'The Atmosphere—Sound;' 'Chemistry—The Structure of Matter;' 'Radiant Energy—Light, Heat and Actinism;' 'Electricity—Magnetism.' These are large subjects, but the authors of this book do not shrink from the task, self-imposed, let us hope, of treating them in about seventy pages of large type and fair leading. Their aim has been, as stated in the introduction, to present 'the great fundamental principles of the Earth's science and the laws which govern the operations of Nature.' The importance of this presentation is forcibly shown in the following paragraph from the preface of this book: "All natural phenomena are explainable upon the simple laws of mechanics. These laws govern alike the systematic motions of worlds and the complicated functions of organic life. It only remains, then, for the reader to make himself conversant with the fundamental principles upon which the system hinges to comprehend the harmony of all things in nature." The preface further recognizes 'a class of persons who have acquired a thorough knowledge of their special callings' who unquestionably hunger after a knowledge of these fundamental principles and who desire to satisfy their ravenous appetites 'without tedious delving amongst learned volumes which they have probably neither the time nor the inclination to read.' For these the authors have written this book. It is not worth while to consume time and space in giving extensive references to its con-

tents. Nine of its pages suffice for the consideration of the solar system, including a special study of the Earth. In the chapter on chemistry one or two great fundamental principles are let loose, including the statement that ice continues to expand as its temperature is lowered, and it is on account of this expansion that water pipes are burst. In the chapter on Radiant Energy we are distinctly, almost defiantly, informed that "Polarized light has some application in Optics and Qualitative Analysis," and also that when air is compressed "the molecules are moved into such close proximity as to be unable to retain all their former motion—heat—a portion of which is delivered up to external objects either by conduction or radiation." In accordance with the plan outlined in the introduction, having in the first seventy pages disposed of the 'general aspects of nature,' the remainder of the book is devoted to a 'more particular exposition of underlying principles' as put forth in 'a series of disconnected paragraphs and essays.' Here the authors toy with 'Life on the Planet Mars;' 'Spontaneous Generation;' 'The Incandescent Lamp;' 'Argon,' etc., etc., etc., forming almost as great a variety as the contents of a modern Sunday newspaper.

In their introduction they remark that 'the necessity for *consecutive* reading' cannot be too strongly urged; the common tendency to 'skip' is deplored and the reader is urged 'to proceed slowly, being sure that he understands each paragraph before leaving it.' That interesting class for whom the book is intended, 'persons who have acquired a thorough knowledge of their special callings,' will doubtless be able to understand the, to others rather obscure, relation between 'Life on the Planet Mars' and 'Death by Lightning,' which makes a certain order of reading necessary. To the ordinary reader of the Astronomical news of the past year or two, the latter might be chosen first, last and all the time.

A really serious aspect of this case is the announcement that the authors have in press a second volume on 'The Forces of Life,' which is to be 'a study of Organic Nature,' and which is to discuss the Classification of Species, Evolution, Paleontology, Morphology, Embryology, the origin of cell life, etc. If these youthful