

in a fair way to be more amazed at their own intellectual production than at any thing that has yet happened in human history.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The Hall effect.

IN your account of the proceedings of the section of physics, at the Philadelphia meeting of the American association, occurs the passage: "He [Mr. Hall] used not only gold-leaf, but strips of steel, tinfoil, and other metals, and clamped them sometimes at both ends, sometimes in the middle, and sometimes only at one end; and in all cases the action was the same, with the same metal, irrespective of the clamping."

This statement is not accurate. I have subjected soft steel only to the test here described, and I did not with this metal try the experiment of clamping it at one end only.

Again, it is not quite accurate to say that Mr. Bidwell attributes the action under discussion, to "one edge [of the metal strip] being compressed and the other stretched." One can best understand Mr. Bidwell's explanation by examining the illustrations accompanying his article in the *Philosophical magazine* for April, 1884.

E. H. HALL.

Cambridge, Sept. 20.

Iroquois pronouns.

Allow me to correct the entire misconception of my Montreal paper by your reporter of the anthropological section. I did not affirm that the "missionaries and all other authorities who have heretofore written on the Iroquois languages were mistaken," etc. On the contrary, I proved that my conclusions concerning the existence of an *it*, and the non-existence of *on*, were correct by quoting the 'exceptions' and so-called 'idioms' resorted to by the French missionaries to sustain their adaptation of the language to the French form of two genders, etc. This adaptation, which simplified the study for the young priests, I affirmed would be folly for us to follow when writing upon Iroquois construction for English students. I proved my position by numerous examples from the best native authority, from those who understood English or French as well as myself. I might remark here that such authority presents a vast contrast to that which the pioneer missionary could obtain, and greatly facilitates investigation. I could refer your reporter to 'vocabularies' by long-resident missionaries which to-day are worthless from this fact. As to the 'English missionaries' referred to, I know of none who have contributed to Iroquois grammar.

I mentioned Rev. Ashur Wright, an American, as recognizing three genders; also Hon. Lewis Morgan, author of the 'League of the Iroquois.'

Upon so-called 'hazardous assertions' depends the march of science, and I venture to re-assert, '*it* still moves.'

ERMINNIE A. SMITH.

Jersey City, Oct. 1.

Classification of Mollusca.

In Professor Gill's instructive comment on molluscan classification, he unintentionally misquotes me. The review in question said that no single instance of

a calcified jaw 'occurs to us,' the two words in italics (omitted by Professor Gill) making all the difference between a positive assertion and a provisional one. The Nautilus, as Owen, Lankester, and others state, has been regarded as having a calcified jaw; and I am quite confident that it is the single instance known among recent mollusks. However, there is reason to believe that the expression of Owen was used in a less precise sense than has been supposed by later writers, and that the calcification, if actually present, is at most partial, and perhaps a mere individual trait. In the only specimen of Nautilus I have had the good fortune to be able to examine, the visible parts of the jaw were wholly free from any calcification. Whether the portions embedded in the muscular tissue, or otherwise hidden from view, may have been calcified, could not be determined, the specimen being held too precious to dissect. The composition of the jaw of Spirula is entirely like that of ordinary cuttles, as far as the eye could determine; and it is evidently desirable that we should have further investigation in regard to that of Nautilus.

In regard to the Acepala, it does not seem to me necessary that they should be ordinarily divided, unless good ordinal characters can be found; and, if the characters now used are imperfect, there is no reason for retaining the divisions founded on them, except in a provisional sense.

I fully agree with Professor Gill, that the present Dimyaria are not derived from the present Monomyaria; but whether both may not have had a monomyarian ancestor, it is still too early to decide, as it is (in a less degree) about the exact homologies of the shell glands in Chitons and ordinary gastropods, whose common characters seem to me largely adaptive.

It may be added, that while, so far as we know, Ovulum has a purely involute shell, Pedicularia, in its early stages, resembles a small Erato with a distinct spire.

W. H. DALL.

U.S. national museum, Oct. 4.

The primitive Conocoryphean.

Your notice of Mr. G. F. Matthews's paper, read before the British association, though complimentary, gave no idea of the contents. Part of this communication was of exceptional importance. All accurate histories of the development of single animals are now thought well of; but Mr. Matthews has traced not only the transformations of the larval, but the characteristics of the adult period, and the transformations of old age. This author has also added the general history of the evolution of some of the most ancient groups of the trilobites, and shown that the changes they pass through correspond with the changes which the individuals of one of the groups, the Ctenocephalus Matthews, passed through during its growth. Opportunities for doing this sort of work are rare, and the men who do it still rarer.

ALPHEUS HYATT.

[It was impossible for us, in the brief space at command, in reporting promptly two scientific meetings of a week each in quick succession, to do justice to any paper. Many were altogether omitted. — ED.]

Book-postage in the United States.

In reference to your remarks on the expense of using libraries through the mails, allow me to point out that this expense is in America exactly double what it is, and has been for many years, in England, and even in Canada. The English and Canadian

rate of book-postage is one cent for four ounces: the American rate is one cent for two ounces. Surely there can be no good reason for such a restriction on the diffusion of literature in this country. Distant subscribers to circulating libraries and book-clubs in England are regularly supplied through the mails. Why cannot we have similar facilities here?

A. MELVILLE BELL.

Washington, D.C.

Systematic earthquake observation.

It will give me pleasure to join in any such systematic effort to secure the observation of earthquakes as is proposed in *Science*, iv. 334, and to provide, so far as practicable, for establishing seismometers, and making observations at this observatory.

EDWARD C. PICKERING.

Harvard college observatory,
Cambridge, Oct. 4.

Abnormal form of *Trillium grandiflorum*.

Early in June, 1883, I found at North Ferrisburg, Vt., a curious specimen of *Trillium grandiflorum*, — a species given to monstrosities, as every botanist knows. In this instance the petals were twenty-one in number, and pale green, edged with purple-pink, in color. I removed the plant to my garden; and in 1884 it displayed a blossom with eighteen petals and six sepals. The petals were deeper in color than before, and their general hue was pink rather than green. At neither time were there any traces of organs of fructification.

HENRY BALDWIN.

Charlotte, Vt., Oct. 3.

GEORGE BENTHAM.

GEORGE BENTHAM died at his house in London on the 10th of September, — a few days before the completion of his eighty-fourth year. The event is in the course of nature. His scientific life came to a close in the spring of the preceding year, when he laid down his pen upon the completion of the 'Genera plantarum.' His work finished, the wearied veteran succumbed to the bodily infirmities of age, yet still with mind essentially unimpaired, and has now gone to rest. His earliest publication bears the date of 1826, fifty-eight years ago. The first part of his classical monograph of the Labiatae was issued in 1832; and hardly a year of the subsequent half-century has passed without some botanical contribution from his hand. At the age of sixty, when most men seek retirement from service, he courageously entered upon his most formidable labors, — the 'Flora Australiensis,' in which he was assisted by Von Müller in Australia; and the 'Genera plantarum,' with Sir Joseph Hooker for his

colleague, — and he lived to complete them both. Fortunately, he was able to devote all his time and powers to his favorite studies; and he steadily did so without distracting haste and without delaying intermission, for his short annual holidays were themselves usually made subservient to botanical investigation. Although he shunned official engagements and all time-consuming avocations, he did not refuse to bear his part of the burden in the administration of scientific affairs. When young, he was for ten years honorary secretary of the London horticultural society, with Lindley for under-secretary, in the most active and flourishing days of that institution. Later, he held for thirteen years the presidency of the Linnean society. In both situations he gave himself with characteristic thoroughness to his duties; he also brought to them a business tact, and a shrewdness of judgment and power of administration, which his very retiring habits would not lead one to expect. His annual addresses from the chair of the Linnean society, always pertinent to the time and the occasion, are models both in thought and in statement, and are of permanent value.

Mr. Bentham came of a notable stock. He was the nephew (and heir) of Jeremy Bentham; his father, Gen. Sir Samuel Bentham, was a naval engineer of remarkable talents; and his mother, if we mistake not, was a daughter of Dr. Fothergill. Some years of his boyhood were passed in Russia; the remainder of his youth in France, where his earliest botanical production was written and published. On his return to England he entered at Lincoln's Inn, and was admitted to the bar. About this time, to please his uncle, who had discerned his ability, he wrote a small and now very rare book upon logic, in which was first introduced the quantification of the predicate. But he soon returned to his early love, and devoted himself to phaenogamous systematic botany, in which, since his compeers, Brown, the elder Hooker, and Lindley have passed away, he has been *facile princeps*. His remarkable gift for languages, nearly every European tongue being at his command