SCIENCE.

FRIDAY, OCTOBER 10, 1884.

COMMENT AND CRITICISM.

THE ancient geographers drew their prime meridian through the Island of Ferro. They have been followed by the geographers of Germany and eastern Europe; while the French reckon their time from the meridian of Paris, and use that meridian in their maps; and the English, Americans, and Dutch recognize the meridian of Greenwich as that of zero longitude. With all these prime meridians, and others not so much used, there naturally arises considerable confusion in comparing maps made on the different systems; and especially is this the case in navigation, where the reduction from one system of meridians to another has to be made by men who little enjoy extra figuring. The idea of a universal prime meridian belongs to France; and as long ago as 1632, at the suggestion of Richelieu, Louis XIII. issued a decree recognizing that of Ferro. But later, to gratify the pride of Louis XIV., France returned to the meridian of Paris. That some meridian may be universally recognized as the zero meridian, an international conference on a common prime meridian was invited to meet in Washington.

The serious business of the conference was commenced last week Thursday by the discussion of a resolution presented by Mr. Rutherford, that the meridian of Greenwich should be recommended for the common use of all nations. So far as the views of the conferees were developed in the debate, it does not seem that serious opposition will be made to this proposal on the part of any nation but France. The French conferees have made a vigorous opposition to a decision in favor of any particular meridian, evidently desiring to keep the question open as long as possible. It is reported that they take this ground in pursuance of positive instructions from their government not to agree to the meridian of Greenwich. The conference adjourned on Thursday until Monday of this week, when the discussion was resumed. Commander Sampson of the U. S. naval observatory, Professor Rutherford, the author of the resolution, Professor Abbe of the U. S. signal-service, Professor Adams, and Lieut.-Gen. Strachey of Great Britain, favored the resolution, and Mr. Janssen of France opposed it. Mr. Janssen argued in favor of the adoption of what he called 'a neutral meridian.' He suggested that the international prime meridian should run either through Bering Strait or one of the Azores. Without action, the conference adjourned, subject to the call of the chairman. We can hardly share the view, which has found expression in the public prints, that the failure of France to accede to the decision will render the results of the conference nugatory. If all other nations adopt a common meridian, France will suffer much more by having one for her own exclusive use than any other nations will suffer by her action. The use of French maps, charts, books, etc., will be rendered inconvenient to others, and their circulation will thus be interfered with.

SIR WILLIAM THOMSON'S course of lectures at Johns Hopkins university has opened with every prospect of being a brilliant success. It would be difficult to find a case in which a lecturer on so abstruse a subject was greeted with so large and appreciative an audience as was collected in Baltimore to hear our distinguished visitor. It comprised not only the advanced students at the university, but professors from various parts of the country, including even the far north-west, who had left their stations to hear the latest thoughts of mathematical science on the subjects of the constitution of matter and the ethereal medium. The subject of the first part of the course is the undulatory theory of light, the

difficulties of which the lecturer did not attempt to conceal. It is, however, expected that the lectures will cover the ground of molecular physics in general, including the theory of vortex atoms, of which the lecturer himself, is, perhaps more than any one else, the originator.

At the last session of congress, provision was made for an electrical commission, to be appointed by the president, and seventy-five hundred dollars appropriated for the work of the commission. The commission was appointed, numbering among its members some of the best electricians of our country. It was generally expected that the commission would make some electrical experiments or tests pertaining to dynamos and secondary batteries. We believe such was the intention of the commission; but the Franklin institute of Philadelphia announced its determination to conduct experiments upon both these subjects, and the commission probably deem it inexpedient to make experiments in similar lines. We would suggest, that there are other subjects of as great or greater general public interest, upon which experiments might be advantageously made. We refer to underground wires and induction. These are interesting scientific questions, and of vital importance to both public and private interests. There are many patents for the laying of underground wires and for the prevention of induction. It is peculiarly proper that the merits of these different inventions should be investigated by a commission of scientific electricians, as a great difference of opinion exists between city corporations, and the telegraph, electric-light, and telephone companies, as to the use of such wires; the former requiring that all wires should be run underground, the latter contending that there is no means now known for the successful use of underground wires extending any considerable distance. The questions of induction and 'leakage' are also most important, as every one knows who has listened to a telephone connected with one of our large city exchanges.

Microscopical science has been completely revolutionized by a series of inventions, which have followed one another by such slow graduation, that the result is far more noticeable than the progress of the advance, — we see the change, but not the changing. Thirty years ago, there was little to do about a microscopical preparation. The object was placed under the microscope, and looked at. Of technique, little was known beyond squeezing the object between slide and cover-glass to make it thin, giving a dose of acetic acid, and mounting in Canada balsam. To-day a vast variety of methods are in use, the gradual accumulation of the experience and experiments of numerous workers. The most delicate and fugitive phases of organization can now be caught and fixed; the softest and the hardest materials can be made to yield sections of the extremest thinness and consequent transparency; dyes are skilfully used so that the pattern of colors shows the distribution of parts of different constitution, and that which it is desired to see is marked out from its surroundings. Perfected microtomes, working automatically and driven by mechanical power, are made to cut an entire object into sections as thin as two thousand or three thousand to an inch, and keep every section in its proper place in the series. Indeed, the present perfection of the art of preparing objects for microscopical examination was unlooked for, a generation ago. Nevertheless, the progress here has been equalled by that in the microscope itself: the cameras and illuminating apparatus, the application of the spectroscope, of photographic and measuring devices, and of the electric light, etc., have immensely increased the efficiency of the modern instrument. Yet there is another improvement greater than any of these, — the introduction of oil immersion objectives. Although the progress we have hinted at has been enormous, it still continues more rapid than ever, as the well-filled pages of the new microscopical journal, referred to in our notes this week, amply testify. Nothing is more remarkable than the rate of scientific progress to-day: men seem

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 Acephala, 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 Matthewsi, 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