days we see how much is lost. These same objections of course apply, but with less force, to the scheme of Reininghaus, July 29.

Professor Chamberlin's plan would cause the month to be abandoned as a unit of time for business, and force us to use the week or day.

It is true that the same objections may be raised to the 13-month system if we use a quarter as a unit, that is, a quarter from February 15 would be May 22, two quarters, August 1 (assuming the extra month in the middle of the year). But withal this is simpler. Moreover, when we compare the amount of business done by the quarter with that done by the month and day we see which should have the greater consideration in constructing a simple calendar.

I feel sure that these objections could not have occurred to Professor Chamberlin.

SAMUEL G. BARTON
CLARKSON SCHOOL OF TECHNOLOGY,
November 29, 1910

INTERNATIONAL CONGRESSES

TO THE EDITOR OF SCIENCE: At the request of the Swedish geologists the International Geological Congress took place this year instead of 1909. This year was also that in which the International Zoological Congress naturally fell to be held. Since, for the convenience of university workers, these congresses are usually held at the same time of year, and since they, with their excursions, now extend over a considerable period, especially in the case of the Geological Congress, it was almost inevitable that the times of the meetings should clash. This may not affect a large number of participants, but it is rather hard on paleontologists, whose interests lie in both camps, and who, even with the aid of the aeroplane, can not be in two places at once. I should not trouble you with a complaint about what appeared to be inevitable this year, were there not signs of the same difficulty recurring in perpetuity, unless a protest is at once raised. As a matter of fact, the committee of "Paleontologia Universalis," when it met at Stockholm, forwarded to the council of the coungress a request that this interference should be avoided in future. That protest seems to have been without result. If so, in 1913 the paleontologist will again find himself summoned either by duty or desire to opposite quarters of the globe.

F. A. BATHER

SCIENTIFIC BOOKS

Monograph of the Okapi. By Sir E. RAY LANKESTER, K.C.B., M.A., D.Sc., F.R.S., etc. Atlas (of 48 plates). London, printed by order of the Trustees of the British Museum. 1910. 4to, pp. i–viii, plates 1–48.

Few events of recent years have aroused the interest of naturalists so much as the discovery of the okapi. It was sufficiently surprising that so large and strikingly marked an animal should have remained undiscovered for so many years; that it should prove to be related to a group now extinct increased the interest in the okapi and the known facts relating to it were promptly given in papers of scientific or popular interest, and more comprehensive memoirs were planned by those fortunate enough to be in the way of securing material. Among them was the present monograph, commenced by E. Ray Lankester while he was director of the British Museum and which having been delayed by many causes is a monograph in name only. It consists of 48 plates without text and it is stated in the preface that it is doubtful if the accompanying text will be issued, the need for any having been lessened by the appearance of Fraipont's monograph in 1907, and de Rothschilds and Neuville's paper during the present year, 1910. Fraipont's memoir, by the way, was begun by Forsyth Major, whose interest seems to have flagged after having had a number of illustrations prepared. The plates in Lankester's monograph comprise dorsal, lateral and palatal views of various skulls, drawn on a liberal scale, one third to one half natural size, and these are sufficient to afford good terms of comparison with other material. There are also views of the entire animal including one of a living calf, and plates illustrating variations in the vertebræ. As the explanations of the plates are very full a

pretty clear idea may be obtained of the character of the okapi itself, the great lack being detailed comparison of the okapi with other ungulates, living and extinct, and consequently, the absence of information regarding the relationships of the animal. A large number of illustrations are devoted to variations in the striping of the fore and hind legs, practically no two animals being alike in this particular. Some of these figures are from mounted specimens, and some from bandoliers made of okapi skin, including the first two obtained by Sir Harry Johnston, which Dr. Sclater took to be from a zebra and in this belief described the animal as *Equus johnstoni,* on February 5, 1901, the generic name *Okapia* being given by Lankester later in the same year. *Okapia liebrechtsi* was described by Forsyth Major in 1902 and subsequently Lankester based a third species, *O. erichsoni,* on a peculiarity shown in the frontal hair whorls of an individual. There is, however, little doubt that there is but a single valid species.

It was a theory of Professor Marsh that good illustrations were really more important than text, since they showed facts that might be used by any one while the text would consist naturally more or less of the opinions of the writer. From this viewpoint the volume under consideration will be appreciated by all. It is also valuable as a study in individual variation, no two specimens of the okapi being quite alike either in external appearance or internal structure. And while Lankester qualifies his remarks on these points by saying that he has not had the opportunity of examining a similar amount of material of any other species of large wild animal there can be little doubt but what the okapi is really exceptional in the amount of individual variation it presents.

F. A. Lucas

Reproduction artificielle de minéraux au XIXe siècle. By P. N. Tchirwinsky. Kief, 1903–1906. 8vo. Pp. lxxxviii + 638; 117 figures and 11 portraits.

A very comprehensive work on the artificial production of minerals has recently been published in Russia by Professor Tchirwinsky. The work contains 177 figures of various crystals, some fifty of which were produced by the author himself, and also eleven portraits of scientists who have worked on synthetical minerals.

While covering the same ground as the earlier treatises on the subject by Fuchs (1872), Fouqué and Michel Lévy (1882), Bourgeois (1882) and Meunier (1884), as well as the chapters devoted to this subject in the works on mineralogy by Doelter (1890) and Brauns (1896), the writer has not only added a very complete record of the rich and important results of scientific research in this department during the last two decades of the past century, but has revised and rearranged the earlier material, and corrected several errors in the references. The critical remarks with which he accompanies his résumés are to a considerable extent based upon his own experiments.

The work falls into two parts, a general and a special part. At the outset the writer explains that he uses the term "artificially produced minerals" only in regard to those which are produced in the laboratory, and not in reference to such as may be fortuitously produced, as for example, the diamonds which have been found in steel, or minerals formed upon metal ornaments, etc., that have been long buried (pp. 13–15). In this connection the author cites the words of St. Meunier, that the convalescent who two thousand years ago cast a coin into a mineral spring whose waters had cured him, little knew that he was initiating a geological experiment.[1]

The writer then proceeds to describe the more important kinds of apparatus employed in the laboratories for the artificial production of minerals; many of these are figured (pp. 15–24). He next passes to the consideration of the methods used for measuring artificial crystals (pp. 25–27). The fact that in a large number of cases these crystals are exceedingly small and can only be viewed through the

[1] Page 14, note: St. Meunier, "Méthodes de synthèse en minéralogie," Paris, 1891, p. 55.