school education, when he enters business, he is obliged to begin at the bottom of the ladder without knowledge of many things that the farm boy has learned in connection with his daily home life.

To my mind this is the fundamental reason why boys brought up on the farm appear to make better successes in their after business life than do city boys who have not had the advantages of a similar business training in their earlier days.

President White, of the Richmond, Fredericksburg and Potomac Railroad Company, in discussing the effect of life on the farm, says:

It is preeminently, in my judgment, an experience which develops independence and self-reliance and, therefore, I think, the spirit of achievement, more than any other I know of.

Another railroad president remarks:

I believe that farm life lays a good and broad foundation for a healthy, vigorous manhood in both mind and body.

Another noted railway man, who never spent a day on the farm, says:

I am inclined to think boys brought up on the farm have better constitutions and are less liable to temptations.

President L. W. Hill, of the Great Northern Railway, says:

My present home is on a farm and my principal reason for making my home there, rather than at some of the lakes or in the city, is that I have three boys of my own I am trying to give a fair start in life. I believe there is no end of arguments that living on the farm gives the best chance for a growing boy. While my making the farm my home sometimes works an inconvenience to me, I realize that the benefits to my children are well worth the inconvenience to me of getting in and out between my office and the farm.

I have always contended that the value of farm rearing lies in the fact that on the farm there is a chance to place responsibility on the growing boy. I firmly believe that it is possible to work out a system of education that will give our schools all the advantages of the farm life. This is being done, to a certain extent, in the cities, and I believe that this fact has something to do with the increasing number of strong men who come from the city. But I must admit that the actual data on this subject are very meager and I join Dr. Woods in the hope that some careful student will give this question the investigation which its importance demands.

W. J. SPILLMAN
U. S. DEPARTMENT OF AGRICULTURE

DOCTORATES CONFERRED BY AMERICAN UNIVERSITIES

I REGRET to find that several errors were made in compiling the statistics of the doctorates conferred by American universities (SCIENCE for August 20). The number of degrees conferred by Wisconsin was sixteen (not seven), of which four were in the sciences. There were five degrees (not three) in geology conferred by Yale with geology as the major subject. On page 266, column 2, line 4, Michigan should be substituted for Washington. The assistant who compiled the data is not without excuse for these errors; for example, in the case of Wisconsin the doctorates conferred are given in two different places on the commencement program without any cross references. But I regret the occurrence of errors in statistics which I believe have hitherto been free from them.

J. MCKEEN CATTELL

THE NOMENCLATORIAL COURT

TO THE EDITOR OF SCIENCE: Some weeks ago Mr. Francis N. Balch called attention in the columns of SCIENCE to the need of a court for determination of questions in zoological nomenclature. It appears that the International Congress of Zoologists has appointed a Nomenclature Commission of which Dr. C. W. Stiles, of Washington, is secretary, which performs the functions of such a court although its work is still far from being well developed or appreciated.

It appears that the International Congress has not made any appropriation for the expenses of this court whose labors have hitherto been carried on as a work of love. As the business before the court has accumulated the need of a paid clerk becomes urgent. As I understand the International Congress has no means of raising funds for the carrying on of the business of its committee, it is obviously the duty of those who most directly profit by the activities of the committee to pay a tax

for the salary of such a clerk. I understand from Dr. Stiles that $1,200 would pay for the salary of a clerk. I would suggest, therefore, that ten of the leading Museums of the United States pay each $60 toward this expense and that $60 be paid by ten museums of Europe. Those in America to be the National Museum and those at Cambridge, Boston, New York, Brooklyn, Philadelphia, Pittsburgh, Chicago, Milwaukee, San Francisco. It would, of course, have to be recognized that this charge would be an annual one.

If the great museums of this country would thus voluntarily pay such a tax, the court of reference for questions of zoological nomenclature would become permanently established.

Chas. B. Davenport

SCIENTIFIC BOOKS

Igneous Rocks. By Joseph P. Iddings. Vol. I., Composition, Texture and Classification. 8vo, xi + 464 pages, 130 figures and two colored plates. New York, John Wiley & Sons. 1909.

It is not often that a work appears in the literature of any science which stands out so clearly from other corresponding works in respect to both its point of view and its intrinsic value that it must be accorded the rank of epoch making. But such is the fact in the writer's opinion concerning the volume by Professor Iddings which is the subject of this notice. Here is a treatise on igneous rocks which does not in the least pattern after the numerous works on the subject, but from the outset follows a new plan. The author has studied the igneous rock with the aid of modern developments in physics and chemistry and makes the understanding of composition and texture in the light of those developments the all-important thing.

The point of view of the author may be in a measure inferred from the order in which the properties of igneous rocks are presented, and the manner in which they are discussed in Part I., on Composition and Texture. The igneous rock is, of course, the product of the consolidation of a molten magma. The fundamental property which the rock shares with the magma from which it was derived is its chemical composition. Hence the work presents in Chapters I. and II. the characteristic facts as to the chemical composition of the rocks and of their constituent minerals. Groups of rock analyses are given and a full statement of the various devices used by petrographers to represent in diagrams the significance of the varying amounts of different components shown by analysis. Two colored plates represent many hundred analyses by means of diagrams of Iddings's own design.

A departure from the usual procedure in discussing the chemical composition of rock minerals is made by taking up the chemical elements known to occur in rocks and, considering them in groups of Mendeléeff's table, indicating the mineral into which they are likely to enter under the associations and restrictions of the case.

The fact that an igneous rock is derived from highly complex molten solution by crystallization is to the author abundant reason for insisting that the petrographer should understand the principles of physics and chemistry applicable to rock magmas and Chapter III. is devoted to this subject. Special attention is given to the properties of magmas as solutions, and to the chemical reactions which may take place under certain conditions in solutions, expressed in the terms of modern physical chemistry.

Following this general discussion is one in which the chemical reactions likely to take place in rock magmas under the conditions prevailing in the crustal zone of the earth are particularly considered. Taking the thirteen constituents which are prominent in most igneous rocks the controlling influence of relative chemical activity, strength of combination, affinity of certain elements for each other, and the effect of differing proportions of the elements, are considered in their bearing on the formation of observed rock minerals. To a large extent the reasons for the abundance of certain mineral molecules and the rarity of others containing the same substances are plain. The laws which control the common association of some minerals, the apparently antithetical relations of others, and the de-