SCIENTIFIC JOURNALS.

THE AMERICAN JOURNAL OF SCIENCE.

THE January number, beginning Volume III. of the Fourth Series, opens with an article on the *Worship of Meteorites*, by the late Prof. Newton. This article was delivered as a lecture in New Haven some eight years since, but has not before been published. In it the author has brought together a large number of facts showing the superstitious regard attached to meteorites from the very earliest times. The first case mentioned is that of the iron from an altar of an Indian mound in Ohio, which was preserved with other articles evidently regarded as of peculiar value. By some this iron is regarded as probably the same as that of which a number of masses were found about 1886 in Kiowa county, Kansas. Another case spoken of is that of the stone which fell at Ensisheim, in Alsace, in 1492, which was preserved in a church at that place. A fall of stones some nineteen years later near Milan, in Italy, is also alluded to as having probably been the occurrence recorded by Raphael by the fireball in his picture of the Foligno Madonna now in the Vatican. The sacred stone of the Mohammedans preserved in the Kaaba of the mosque at Mecca is also mentioned as perhaps a case in which a meteorite has been selected for long continued worship. The author then goes on to discuss a number of instances recorded in classical literature, and, although it is impossible to say that in each case a meteorite was the object described, in many cases it seems highly probable. The Palladium of Troy, the Needle of Cybele, the original image of the Ephesian Artemis, are some of the cases which the author describes in detail with quotations from the original authorities. On a later page of the same number a description is given by Warren M. Foote, of a new meteoric iron from the Sacramento Mountains, in New Mexico. This is a typical siderite and weighed, as found, 237 kilograms (521 pounds). It shows the common octahedral structure with unusual distinctness. Two plates accompany the article, one showing the appearance of the iron itself, one-eighth the natural size, the other the Widmannstätten figures printed directly from an etched slab. As further bearing on the same subject is to be mentioned a catalogue of the meteorites in the Yale University collection, which forms an appendix to the number.

The second article is by John Trowbridge and and T. M. Richards, on the *Spectra of Argon*. The authors have studied these spectra, the first one of which is characterized by red lines, and the other by blue, by means of a high tension accumulator giving an electromotive force of over 10,000 volts. The advantages of such a source of electricity of high potential as contrasted with the ordinary induction coil the authors found to be very great. By means of it they were able to study minutely the conditions under which each of the spectra mentioned was obtained. The argon employed was a sample of exceptional purity obtained from Lord Rayleigh, and the tube containing it was prepared with special reference to the work in hand. The authors found that the red glow in the tube was due to a unidirectional discharge, while the blue glow was due to an oscillatory discharge; the conditions determining the change of the red to the blue glow are described in detail. It appears that an argon tube is extremely sensitive to oscillatory discharges, and it is suggested that it is likely to be of great use, on this account, in the study of wave motions of electricity.

George F. Becker discusses at length the hypotheses which have been advanced to explain the differentiation of rock magmas. The segregation of a homogeneous fluid into distinguishable portions has been regarded as due to molecular flow, as is shown in ordinary diffusion or in osmosis. All the processes of molecular flow are shown to be reducible to the movements which are due to differences of osmotic pressure. The most important case of molecular flow as regards the subject under discussion (studied by Soret) is that due to the heating of the solution at the top; this, however, requires a very improbable decrease of temperature with the depth. Furthermore, when the rate of diffusion in two miscible liquids in contact is discussed quantitatively, assuming a rate of diffusion such as that already determined for copper sulphate, it is shown that this rate is *extremely slow*. Thus, in the case of copper sulphate and water in contact, at the expiration of a million years the

water would be sensibly discolored at a distance of 350 meters, while semi-saturation would have been reached only at a distance of 84 meters. When the relatively high viscosity of lava is taken into account, assumed by the author as more than 50 times greater than that of water, the rate is found to be still slower; and consequently a sensible impregnation of the lava would extend in a million years to only about 49 meters from the surface of contact. Further than this, it has been shown that convection would be to some extent unavoidable, and, so far as it acted, it would tend to destroy this action of diffusion. Segregation by the separation of the magma into immiscible portions is regarded as the least objectionable method, "but this seems to involve a superheated, very fluid magma, while the law of fusion and the distribution of phenocrysts in rocks indicate that magmas prior to eruption are not superheated to any considerable extent and are very viscous." The author concludes that "the homogeneity of vast subterranean masses called for by the hypothesis of differentiation is unproved and improbable. The differences between well-defined rock types are more probably due to original and persistent heterogeneity in the composition of the globe. Hypogeal fusion and eruption tend rather to mingling than to segregation, and transitional rock varieties are not improbably mere fortuitous mixtures of the diverse primitive, relatively small masses of which the lithoid shell of the earth was built up."

H. S. Washington describes a series of igneous rocks from Asia Minor. These include some augite-andesites from Smyrna and a biotite-dacite from Pergamon. The microscopic characters are given in full, and also a number of analyses. M. Carey Lea mentions an experiment obtained from a solution of chloride of gold, containing 1 gram to 10 cc., combined with a 10% solution of sodium hypophosphite. The result is a solution of deep green color, which is shown to be due to the presence of a small quantity of gold in its blue form, in a state of very fine diffusion, which, together with an undecomposed solution, gives the effect of green. A. E. Verrill and Katherine J. Bush discuss at length a revision of the genera of Ledidæ and Nuculidæ of the Atlantic Coast of the United States. The authors state that a somewhat extended study of the series of deep-sea bivalves belonging to these families, dredged off our coast by the U. S. Fish Commission, from 1872 to 1887, has compelled them to revise the known genera and subgenera and to propose several new groups. In view of an unexpected delay in the publication of the report upon these families, which had been completed and fully illustrated, it has seemed desirable to them to publish a brief preliminary account of the classification adopted. The present article is the result. Two plates with twenty-two figures show typical forms with details of the hinge structure. The number closes with the usual abstracts, book notices, an obituary notice of Dr. B. A. Gould, etc.; a note is given to the remarkable meteor of December 4th; also a brief account of a gigantic squid formed on the coast of Florida.

SOCIETIES AND ACADEMIES.

BOSTON SOCIETY OF NATURAL HISTORY, BOSTON, MASS.

A GENERAL meeting was held Wednesday, November 18th, 290 persons being present. An account of the work of the Boston party accompanying the sixth Peary expedition to Greenland was given by Messrs. Barton, Burton and Porter.

Prof. G. H. Barton gave a narrative of the line of travel and of the general points of interest noted during the exploration, describing with some detail the character of the inland ice and the structure and work of the glaciers in the Umanak district.

Prof. A. E. Burton described the topographic barrenness of the Umanak district; the abundance of boulders and the stunted growth of the trees was everywhere apparent. With the aid of maps thrown on the screen he showed the stations where magnetic observations were needed, and described at length the results of the magnetic and pendulum work done on the coast of Labrador, on the north shore of Hudson Straits, and in the Umanak district. Prof. Burton gave a detailed account of his study of the Karajak glacier; the motion of this and of other glaciers was carefully measured. An average of 19 feet in seven days was noted and an interesting observation con-