

cality myself, but the prints were obtained by me from the original photographer in Moab, when on a somewhat hurried return from a mine examination in the Blue Mountains to the south. The dimensions of the bridge, as estimated by the photographer, are about 500 feet in span and about 150 feet in height. A comparison of the bridge with figures shown in the original photograph in the right-hand corner and with the tree growth near by indicates that these dimensions are quite possible.

The bridge is, in all probability, a monstrous product of wind erosion. The rock appears to be one of the friable Mesozoic sandstones which are widely exposed in this region. Other examples of wind action, such as is illustrated in figure 2, were seen



FIG. 2.

by me while travelling through the country, so located that no other cause could be assigned. Strong and prolonged winds are frequent here, as any one who has sojourned in that country can testify to his misery. The sands carried by these winds are whirled about in the depressions of the rocks, and excavate wind pot-holes in the friable sandstones with great rapidity. A wall or slab of such rock is by degrees entirely penetrated, giving rise to the so-called window rocks which are frequently seen in isolated buttes high above the surrounding level. Our natural bridge, I conclude, is simply an extreme or abnormal enlarge-

ment of such a 'window.' Possibly some water channel may have assisted in the process, but the view does not indicate this, but shows the bridge to be high above the main water course. The dimensions of the bridge, or rather the shape of the space covered by it, are also against this idea, as the ordinary channel cut by a stream through rock is deep and narrow.

ARTHUR WINSLOW.

KANSAS CITY, Mo.,

February 25, 1898.

*FIFTH ANNUAL RECEPTION AND EXHIBITION
OF THE NEW YORK ACADEMY
OF SCIENCES.*

THE fifth annual reception and exhibition of the New York Academy of Sciences, of which notice has already been made in *SCIENCE*, was held in the American Museum of Natural History, April 13th and 14th, and proved to be the most satisfactory and successful of all receptions thus far given by the Academy. The number of exhibits was not as great as heretofore, but was arranged to show the progress of the last year more carefully than had been the custom previously. Hence the exhibit, as a whole, was worthy of detailed attention in every department and received such attention from the several thousand people who were present during the two evenings and one afternoon on which the reception was held. Beside the exhibit of progress in some fifteen departments of science, of which more particular mention will follow, the program included an address on the second evening by Professor George E. Hale, of the Yerkes Observatory, on the 'Functions of Large Telescopes,' which will appear in a later number of this *JOURNAL*. Mr. C. E. Tripler gave several demonstrations of the properties of liquid air to an astonished and appreciative audience. Indeed, liquid air was the exhibit of the reception concerning which the most questions were asked.

It would be difficult to notice in a short account like this all the important exhibits that ought to be mentioned from a scientific standpoint. In fact, each department contained materials which were praised most highly by those qualified to give praise from a scientific standpoint. As one entered the large hall one was greeted with a magnificent display of the astronomical results of the year, including photographs of the moon, stellar spectra, etc., which attracted a great deal of attention from the many astronomers present. On the right was to be seen the equally attractive exhibition of paleontology, including the several fossil reptiles which were unearthed last year by the American Museum of Natural History, and which are the greatest finds in vertebrate paleontology thus far made by this institution in the far West. The other exhibits in the outer hall included chemistry, philology, mineralogy, experimental psychology and ethnology. The exhibit in philology was large and comprehensive, and received a good deal of attention. This is the first time that this department has ever made an exhibit, although there has been a Section of Philology in the Academy for some time. The exhibit in experimental psychology included several instruments for psychological measurements, exhibited by Professors Cattell, Bliss and others. The exhibit in ethnology contained a few of the best results obtained by the Jesup North Pacific Expedition during the last year, and illustrations of symbolism of the Huichol Indians of Mexico. In chemistry, beside the exhibit of liquid air, the representation and processes of dyeing from the Columbia Laboratory, and the more recent results in the artistic coloring of glass from Tiffany & Co., received the most attention. The exhibit in mineralogy was very carefully arranged, and included some very wonderful crystals, and several minerals from Tasmania and

New South Wales, exhibited by Dr. A. E. Foote.

In the second hall devoted to the exhibit was found on the right, first, the exhibit in botany, largely devoted to microscopical and other preparations in morphology, and the exhibition of new species and genera from various parts of the United States. Indeed, several hundred feet of wall space were attractively and artistically covered with herbarium specimens illustrating these points. In anatomy the large series of preparations of the anatomy of reptiles exhibited, by the Department of Anatomy of Columbia University, was striking, as showing the latest results in staining, preparation and mounting. An equally attractive exhibit was made in the department of zoology, including the results in insect coalescence, on the several Puget Sound expeditions of Columbia University, and the expedition to Bermuda of the New York University in 1897. On the same side of the hall there was a good-sized exhibit in photography, including an illustration by lantern of colored photography, and the latest papers and developers and their results.

On the other side of the hall, as one entered, was to be seen the large exhibit in geology, in which mention should be made of the clays and other specimens from Europe collected by Dr. Heinrich Ries in his studies of kaolins and clays abroad. The most beautiful exhibit was that of the leucite and trachytic rocks of the Italian peninsula, of Mr. Henry S. Washington, of Locust, N. J.; also photographs and specimens illustrating recent experiments in compression and flowage of marble carried on at the McGill University, Montreal, should be mentioned. The exhibit in physiography included a large number of maps of the United States Geological Survey mounted for physiographic uses, the Harvard Geographical Models, a model of

New York Island to show the topography in 1776 as contrasted with the present, and a model of the Catskills, in which the vertical and horizontal scale being the same, the exact features were reproduced. In the department of physics a number of pieces of apparatus were exhibited from Columbia University, to show the latest advances in laboratory investigations and materials therefor. The stremmatograph, and records of results obtained on the Boston and Albany Railroad, exhibited by Mr. P. H. Dudley, attracted an unusual amount of interest. The last exhibit, at the end of the hall, was in electricity, and included a number of new pieces of apparatus from Columbia University and elsewhere, among which should be mentioned an induction coil with thirty-inch spark, and apparatus illustrating the Marconi system of transmitting signals to a distance without wire.

The amount of interest that has been awakened by the annual receptions and exhibitions in New York City is very large, and has increased greatly within the last year. We all feel that such an exhibit is a most helpful way in which to bring the knowledge of science before the people, and the appreciative interest of the visitors has proved an inspiration even to the most skeptical. The annual exhibition of the Academy has come to be looked upon as one of the scientific events of the year by the inhabitants of New York scientifically interested, and will undoubtedly be repeated each spring indefinitely.

RICHARD E. DODGE.

CURRENT NOTES ON BOTANY.

A NEW PLANT CATALOGUE.

MR. A. A. HELLER, of the University of Minnesota, has compiled what must prove to be a most useful catalogue of the higher plants (Pteridophytes and Spermatophytes) of North America north of Mexico.

It is the first attempt at making such a catalogue under the 'Rochester and Madison Rules' and following the Eichler sequence of families, and for this reason is of more than ordinary interest. It is moreover the first catalogue of the plants of North America prepared by a working botanist.

There are 14,534 entries with a few duplicated numbers, which may increase the whole number by fifty or seventy-five more. Of this vast number more than 14,000 are flowering plants proper, there being 263 ferns and fern-allies and 112 gymnosperms. The largest families are Compositæ (exclusive of Cichoriaceæ, 146) with 2149 species; Papilionaceæ 1095, with 129 in the closely related Cæsalpiniaceæ and Mimosaceæ; Gramineæ, 938; Cyperaceæ, 724. The larger genera are *Carex* with 431 species; *Astragalus*, 252; *Eriogonum*, 184; *Aster*, 157; *Erigeron*, 137; *Solidago*, 114. We learn also that there are 15 North American palms, and 210 orchids.

BIBLIOGRAPHICAL DIFFICULTIES IN BOTANY.

DR. E. L. GREENE prints, in a recent number of the *Catholic University Bulletin*, a thoughtful discussion of some of the troubles which confront the systematic botanists. In it he makes some pertinent remarks upon the importance of nomenclatural accuracy in science: "There is, of course, no science without its nomenclature and terminology. And in botany nothing can be done, at least no results of research can be communicated, apart from the names of the plants or groups of plants which have been under investigation. Just as the correct and full and true name of any man is a kind of necessity of his existence as a member of society, so the name of the family, of the genus and of the species to which any tree or shrub or herb belongs is indispensable to a scientific, or, indeed, any kind of understanding and discussion of it."