SCIENCE

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

*OBSERVATION AND EXPERIMENT.**

THE near coincidence of this anniversary meeting of the Academy with the end of the nineteenth and with the beginning of the twentieth century imposes peculiar and quite unexpected restrictions in the way of freedom of choice of a fitting subject for an address. Naturally one would like to pass in review some of the brilliant achievements of science in the past century, and perhaps forecast the still more brilliant advances that may be expected to mature in the present century. Especially might one feel tempted to present a semi-popular inventory of the more striking or recondite scientific events with which he is particularly familiar. But all this and more, strange as it may seem, has been done, or is being done, by the public press. Specialists in almost every branch of science have been employed to expound and to summarize the discoveries, the theories, and the useful applications which have rendered science, by common consent, the most important factor in the civilization of the nineteenth century. Statesmen, philosophers and divines are likewise sounding the praises of science and the scientific method with a warmth of recognition and with a stamp of approval which tend to make one who is

*Address of the President of the New York Academy of Sciences, read before the Academy on February 25, 1901.

hydroids, ten of which have never before been described.

J. J. Lister presents an extended report on a peculiar hard white organism found growing on dead coral in thirty-five fathoms of water. It was made up of a continuous skeleton of solid polyhedral elements penetrated by a system of anastomosing canals; these were lined with soft tissue and were open to the exterior. The soft tissue contained here and there what seemed to be large unsegmented eggs and other masses which had the appearance of parenchymular larvæ. Taking all these peculiarities into account, the author believed the organism to be a sponge, but of so unusual a structure as to justify the erection of a new family for its reception. The species is called *Astrosclera willeyana*, and the family Astrosclerida.

A series of embryo mound birds and one hatched nestling are reported on by W. P. Pycraft. The feather tracts of the embryo and the nestling plumage are described in detail. The birds are able to fly almost upon hatching, and this has led to the idea that they were at once provided with adult plumage. Pycraft points out that their plumage is not adult, though it is also not true nestling down.

S. J. Hickson and I. L. Hiles report on certain of the octocoralia, two species of Stolonifera and twenty species of Alcyonaria, three of which are new. The Xeniidæ are described by J. H. Ashworth. Of the sixteen known species of soft corals belonging to this genus, Dr. Willey's collection contained representatives of four, as well as material upon which the description of a new species is based.

G. H. PARKER.

The Austin [*Texas*] *Dam.* By THOMAS U. TAYLOR. Water-Supply and Irrigation papers of the United States Geological Survey, No. 40. Washington, Government Printing Office. 1900. Pp. 52, pl. xvi.

In this publication Professor Taylor, of the Engineering Department of the University of Texas, gives an account of the inception, building, and failure of the 'Austin Dam,' a municipal undertaking for the purpose of controlling the water supply of the Colorado River.

The first foundation stone was laid May 5, 1891, and the disaster, due to an unprecedented flood, occurred April 7, 1900.

As remarked by Mr. F. H. Newell, in his letter of transmittal, "There are many useful lessons to be drawn from the history of such an enterprise, for it often happens that failure is more instructive than success. Throughout the United States many communities are now discussing the utilization of water power for irrigation and other industrial purposes, and they may be saved from mistakes or be led to adopt precautionary measures by a clear understanding of the causes of the disasters which have occurred through the neglect of certain precautions."

The scope of the paper may be seen from the following general headings: Introduction, Preliminary Projects, Construction of Dam, Leak under Head Gate, Flow of Colorado River, Economic Aspect, Silting of Lake McDonald (the body of water back of the dam), Failure of the Dam. The illustrations are both numerous and excellent, some being from photographs taken immediately after the accident.

Among the errors pointed out are the following: That the minimum flow of the river had been greatly overestimated, hence the power developed upon the completion of the dam fell far short of that hoped for; that evaporation as a factor had almost been lost sight of, that the engineers in charge of the work of construction (the dam cost $611,345.29) had been hampered and interfered with in the prosecution of their labors; and that the geologic conditions prevailing at the site had been ignored. To these errors are attributed the failure of the enterprise to meet the expectations of the public and its failure as an engineering feat.

While Professor Taylor's paper is of the greatest interest to the engineering profession, there is much of value in other lines, as, for instance, the carefully conducted investigation of the silting up of Lake McDonald.

FREDERIC W. SIMONDS.

February 19, 1901.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Geologist* for January contains an article by S. E. Bishop on 'Brevity of Tuff

Cone Eruptions.' The discussion is devoted principally to the formation of the cone Leahi, or Diamond Head, in Honolulu, which the author claims, and attempts to prove, was formed by an extremely rapid projection aloft of its material for a few hours, ceasing suddenly and finally. The article is accompanied by a plate. 'Possible new Coal-Plants, etc., in Coal,' Part III., by W. S. Grisley, Erie, Pa. The writer describes and figures about fifty fossils which he thinks may be coal plants hitherto undescribed. Most of the forms described come from a coal bed in Iowa. Mr. John Dresser discussed the 'Petography of Mount Oxford,' a large igneous mass in the Green Mountains of Vermont. The main part of the mountain consists of graywacke, serpentine, ophicalcite and sandstone. A paper follows 'On Some Newly Discovered Areas of Nepheline Syenite in Central Canada,' by Willet G. Miller. In a very interesting paper on 'Peneplains of the Ozark Highlands,' Oscar H. Hershey discusses the life histories of certain parts of the Ozark region. The changes may be briefly put as follows: (1) The entire region was reduced to base level forming cretaceous peneplain. (2) A great dome-shaped uplift occurred in the southern two-thirds of the region, and it was base-leveled again during the Tertiary. (3) A general uplift throughout the Ozarks, which was again eroded and base-leveled in some places during the Pliocene. (4) Another general uplift, greatest in southern Missouri. (5) A local uplift of the Boston Mountains during the modern epoch. Following are the 'Reviews of Recent Geological Literature' and 'Personal and Scientific News.'

In *Popular Astronomy* for April Herbert A. Howe continues his discussion of astronomical books for the use of students, taking up general popular works, descriptive text-books and handbooks. Professor Harold Jacoby, of the Astronomical Observatory of Columbia University, writes under the title of 'The Astronomer's Pole,' of the work to be done at the new Helsingfors Observatory. Illustrations of the instruments and building accompany the article. Anderson's 'New Star in Perseus' is the subject of several articles, and notes. Circular No. 56, from the Harvard Observatory, by E. C. Pickering, with reference to the Nova is printed in full; the first chart and catalogue for observing it is given by J. G. Hagen, S.J., of the Georgetown College Observatory, Washington, and Dr. H. C. Wilson, of Goodsell Observatory, adds much to the general information of the Nova, and includes a chart of its light curve. Shorter articles are by R. W. McFarland, on 'Ancient Eclipses and Chronology'; by Dr. George Bruce Halsted on 'Astral Geometry,' and by A. E. Douglass, on 'Photographs of the Zodiacal Light'; the latter is accompanied by an excellent plate. Eclipse cyclones are discussed, and there is a translation of H. Arctowski's article on 'Northern and Southern Lights illuminating the Heavens at the Same Time,' which recently appeared in *Ciel et Terre*. Planet, spectroscopic, comet and asteroid notes occupy the usual space. Among the 'General Notes' are the following: Board of Visitors at the Naval Observatory, Trouble at the Naval Observatory, Naval Observatory Legislation, Observations of Nova Persei at Seagrave Observatory, At Yerkes Observatory, At Ladd Observatory, At Vassar College Observatory, At Pomona College, Notation of New Variables, Nomenclature of Variable Stars, Crocker Eclipse Expedition to Sumatra, Spectrum of ζ Puppis, Evanescent Star Photographs.

In Italy has just appeared a new mathematical journal, issued at Città di Castello, by the publisher, S. Lapi, to whom the annual subscription, 12 francs, should be sent. It is a monthly magazine, called *Le Matematiche*, under the direction of Professor C. Alasia, with a board of collaborators, among whom the English language is represented by G. B. Halsted, of Austin, Texas, to whom communications may be sent, which will appear in Italian. On the editorial board may also be noted the Russian, Vasiliev, and the greatest of living mathematicians, Poincaré. The first number, February, 1901, contains the last thing written for publication by the illustrious Hermite, dated January, 1901, on the 14th of which month he died. The magazine has a suggestive new department, headed 'Subjects for Research.'

We have received with pleasure the first number of *School Science*, a monthly journal

devoted to the teaching of science in secondary schools, edited by C. E. Linebarger and published at Chicago, Ill. There are twelve associate editors, all teachers in secondary schools, and the contributions given in the first number and promised are chiefly from teachers in secondary schools, though the present number contains contributions from Professor Palmer, of the University of Colorado, and Professor Nichols, of Cornell University. The journal is evidently edited with care, and will exert an excellent influence.

SOCIETIES AND ACADEMIES.

ANTHROPOLOGICAL SOCIETY OF WASHINGTON.

THE 314th meeting of the Anthropological Society was held on March 12th.

Dr. J. Walter Fewkes presented some historical documents, consisting of a fac-simile of the map of Padre Menchero (1747) of the territory now embraced in Arizona and New Mexico; a fac-simile of the map of Juan de la Cosa (1500), showing the famous demarcation line of Pope Alexander II. and the discoveries in the New World at that period, and an unpublished manuscript of Antonio Alzate, describing the ruins of Xochicalco, Mexico. The Menchero map, which is rare and little known, gives the locations of the missions in the Southwest, and valuable ethnological data. It was issued at Berlin. The Cosa map was copied during the Columbian Historical Exposition at Madrid in 1892-3 from the original lent by the Vatican. Dr. Fewkes pointed out that Alzate was the first to call attention to the need for preserving the ruins in Mexico.

President W. H. Holmes presented instruments of execution and torture, exhibiting an iron cage found some years ago by workmen engaged in road building in King George County, Virginia. This cage is constructed roughly on the outlines of a human body, and on discovery contained a human skeleton, most of which is still preserved. Mr. Holmes said that no documentary evidence has yet been found of 'hanging in chains' in the United States. He called attention to a similar gibbet found in Jamaica and stated that this form of post-mortem exposure of the bodies of criminals is English, and was practised as long ago as the twelfth century. The last gibbet was constructed and used in England in 1832. There is no very reliable record of the hanging of living persons in these cages, although tradition has it that such was the practise. At the close of his remarks Mr. Holmes exhibited a large collection of instruments of torture brought to this country from Hanover, Germany, by Anton Heitmuller, of Washington.

The first paper of the evening was entitled 'Ethnology in the Jesuit Relations,' by Mr. Joseph D. McGuire. Mr. McGuire has carefully gone over the collection of Relations, recently published under the editorship of Reuben Goldthwaites, extracting all ethnologic and archeologic data. This paper is the first of a series having in view the rehabilitation of the American Indian at the period of first contact with the white man, as far as can be done by examination of the literature. Mr. McGuire's paper was listened to with much interest.

Mr. W J McGee's paper on the 'Cocopa Indians' occupied the remainder of the session. Mr. McGee went into considerable detail as to the arts and customs of the Cocopas, whom he visited last summer. The custom of burning the house of the deceased, and the communistic division of the property among the friends, exclusive of the relations, in the event of a death, coupled with the periodical removals from the flood-plain of the Colorado to higher ground, and *vice versa*, have exerted a profound repressive influence on the Cocopas. These Indians were found to be at a low ebb numerically and physically, and are without doubt rapidly tending to extinction.

WALTER HOUGH.

THE SCIENCE CLUB OF UPPER IOWA UNIVERSITY.

THE last regular meeting of the Club was held February 27th. Arthur E. Bennett described his researches among the prehistoric remains of New Mexico, including skeletons, utensils, pursuits, pottery, decorations, worship, etc. He stated that the plain, mesa and cliff dwellers were really one people. At the next meeting he proposed to discuss the prob-