from some of the stumps, branching roots and rootlets have been found extending laterally within the shale for more than six feet. From this abundance of plant remains and the mode of their appearance in the enclosing rocks, it has been possible to vividly portray not only the trees as they were when living but also the character of the landscape they clothed.

In the leaflet prepared for distribution on the occasion of the opening of this exhibit, Dr. Clarke writes:

> They were majestic trees, simple in structure, resembling closely the tree ferns of the present tropical jungles but singularly enough an advance in structure over these tree ferns by virtue of their seed-bearing devices. The Gilboa forests grew along the low shores of the western Catskill mountain region, facing the interior sea which at that period covered all of Central and Western New York. They grew in marshes or jungles along these lowlands which were easily covered by the rise of the tides. Their swollen roots were anchored in soft black muds, and the streams running down from the land found a meandering course among them out to the sea. The atmosphere of these coastal marshes must have been dank and heavy, and the rays of the sun sifted down among them only with softened light. They were places where the vegetation grew rank. Along with these Gilboa trees, which have now been given the name of Eospermatopteris, grew a few other plants, some simpler ferns and a strange lycopodium tree, Protolepidodendron, or the Naples Tree, as it has come to be commonly known.

The foreground of the exhibit illustrates the manner in which the fossil trees occurred at Gilboa, and shows fifteen of the tree stumps distributed along the three successive horizons of dark shales with intervening sandstone beds. In the background, full-size restoration of the trees in various stages of their growth blend with a beautiful panorama of the forest as it must have appeared in Devonian times. Water trickling down the cliffs in the foreground gathers in a pool which gives continuity to the swampy conditions depicted in the vista of the background. As a geologist views this masterpiece exhibit, his thoughts are those of satisfaction that so vivid a picture of a forest, earlier than any hitherto discovered, has been won from the record of the rocks, mingled with the hope that further discoveries may be made which will dispel the mists of the background and reveal the vegetation of even earlier periods of the earth's history.

In vividly portraying the life and conditions which existed during the Devonian period, Dr. Clarke has carried the torch forward far in advance of its position in Sir William Dawson's day, yet, "as a memorial of the admirable service rendered by Sir William Dawson to the science of paleobotany, and as a record of his personal association with the original discovery and study of these trees," Dr. Clarke has generously and appropriately chosen "to dedicate this exhibit as a testimonial to him."

J. AUSTEN BANCROFT
McGILL UNIVERSITY

JOHN VAN DENBURGH

1872–1924

DR. JOHN VAN DENBURGH, distinguished herpetologist and curator of herpetology in the California Academy of Sciences, San Francisco, died in Honolulu, October 24, 1924.

He was born in San Francisco August 23, 1872. His father, Dr. Daniel Van Denburgh, was of Holland Dutch stock that came to America at an early date, settling in New York state. His mother was Elizabeth Douglas Turrill, eldest daughter of Judge Joel Turrill, who was for several years United States consul at Honolulu. Elizabeth Douglas Turrill Van Denburgh was of English descent, her ancestry going back through ten generations to John Mather, of Lowton, Winwich Parish, Lancashire. The first American ancestor was the Reverend Richard Mather, who came to America in 1635.

Soon after their marriage at Syracuse, New York, in 1863, Dr. Daniel Van Denburgh and his wife came to San Francisco, where he was, up to the time of his death in 1911, a prominent dentist.

Early in John's childhood the family acquired a country home at Los Gatos, Santa Clara County, California, some 50 miles from San Francisco. It was there that the subject of this sketch spent his boyhood years and grew to manhood; and it was doubtless there in the beautiful environment of forest, hillside chaparral, mountains and wide expanse of valley that his interest in natural history developed rapidly and enduringly. Like many another boy who in manhood attained eminence in some field of zoological or botanical science, John Van Denburgh's first interest was in birds and their nests and eggs, his first published paper, which appeared in *The Oologist* in 1888 when he was scarcely sixteen years old, being entitled "Two large sets of quail eggs." His interest in ornithology and oology continued more or less intermittently all his life. While a student in the University of the Pacific in 1890 he, with three other congenial associates, organized the Cooper Club devoted to the study of birds, their nests and eggs. When Stanford University opened in 1891 most of this group (including Van Denburgh) entered that institution and the Cooper Club ceased to exist, temporarily at least, until June 22, 1893, when it was reorganized by W. H. Osgood (now Dr. Osgood, curator of zoology in the Field Museum, Chicago), and a few other boys interested in birds.

During his college days at Stanford University, Van Denburgh's interest in natural history continued unabated. He was an organizer and charter member of the Stanford Zoology Club, which has continued to this day as one of the most active and potent factors in promoting and maintaining high ideals and a real scientific natural history spirit in that institution.

Van Denburgh graduated at Stanford in 1894, when he received the degree of A.B. In 1895 he received the degree of A.M., and in 1897 that of Ph.D.

During his college course he became interested, through his major professor, Dr. Charles H. Gilbert, in herpetology, and his most notable contributions to science have been in that field.

In the winter of 1896–97, he began a series of experiments with the saliva of the Gila Monster. He wished to determine (1) whether the bite is poisonous; (2) if poison is present, in which jaw is the poison located and what are the physiological effects; and (3) what are the causes of such diversity of opinion regarding the poison of this reptile. These investigations were carried out with remarkable skill and thoroughness and with infinite patience. A total of more than thirty experiments were performed, each with adequate controls. Pigeons and small mammals were used, the saliva or venom was injected subcutaneously, and the progressive effects very carefully recorded.

It was found that the saliva from the upper jaw had no toxic effect in any of the tests; it was found to be harmless at all times. On the other hand, the saliva from the lower jaw showed decided toxic effect in every case, the pigeon or other animal in which the saliva was injected usually dying in a few minutes. He thus demonstrated that the poison is present in the saliva of the lower jaw only and that it is capable of killing a pigeon in seven minutes and a rabbit in less than two minutes. From which it was concluded that a venom which would do this might, under favorable circumstances, easily prove fatal to man—"a belief which is rendered far from improbable by the extraordinary virulence of the poison and the lizard's habit of holding like a bulldog to whatever it bites."

That the bite so rarely produces serious results Dr. Van Denburgh showed to be due to the great difficulty of the fangs of the lower jaw causing a wound and of carrying the venom into the wound when caused.

The results of these investigations were published in the Transactions of the American Philosophical Society for 1897 (pp. 199–220), and in *American Journal of Physiology*, Vol. 4, No. 5 (Sept. 1, 1900), and are the most important contributions to the literature of this subject.

Dr. Van Denburgh first became connected with the California Academy of Sciences June 2, 1894, when he was engaged to look after the collections of fishes, reptiles and amphibians belonging to the academy.

On May 6, 1895, he became curator of the department of herpetology, which position he occupied (except during the period when he was in medical school in Philadelphia and Johns Hopkins), until his death.

He received his M.D. degree at Johns Hopkins in 1902 and returned to San Francisco where he entered upon the practice of medicine. He also again became curator of herpetology in the California Academy of Sciences, and it was to that department that he devoted most of his time and strength. He was always resourceful and active in looking after the interests of his department with the result that, when the disastrous fire of 1906 occurred, the collections in herpetology (practically all of which were lost in that fire) had become among the largest and most valuable in the academy. Immediately following the fire, Dr. Van Denburgh, with remarkable energy, at once began rebuilding the department of herpetology with the result that the collections in that department now number more than 56,000 specimens, a number believed to be greater than in any other institution in America, with possibly two exceptions. It was Dr. Van Denburgh's ambition to make the California Academy of Sciences the most important center in the world for research studies in herpetology, and there is good reason for believing this ambition would have been realized had he lived.

Although Dr. Van Denburgh's interest in ornithology never ceased he was not always able to give to it the time and attention he would like to have given. Nevertheless, he found time to contribute a number of short papers to various ornithological periodicals and to assemble an unusually well-selected oological collection, numbering 4,667 eggs or 1,311 sets, many of which are of great interest and value. This collection is now the property of the California Academy of Sciences, in accordance with Dr. Van Denburgh's wishes.

It is, however, through his studies of reptiles and amphibians and his contributions to herpetological literature that Dr. Van Denburgh is best known to naturalists. He was interested in the life histories of snakes, lizards, turtles and amphibians, and in the problems of geographic distribution in their relation to the problems of taxonomy.

His most notable contributions to herpetological literature, besides those relating to the venom of the Gila Monster, already referred to, were chiefly taxonomic and faunistic in character. His published papers total nearly one hundred. Perhaps the most pretentious and most useful is the monograph on "The

Reptiles of Western North America," published by the California Academy of Sciences in 1922. This is a monumental work in two volumes, 1,028 pages and 128 excellent halftone plates, indispensable in the study of western American herpetology.

Dr. Van Denburgh's wide experience as a field naturalist, his knowledge of comparative anatomy and physiology, his expertness in laboratory technique, together with infinite patience and a genius for the interpretation of taxonomic relationships, enabled him to do research work of the highest order and to place him among the most able herpetologists of his time. His death while yet in his prime is an irreparable loss to the California Academy of Sciences and to herpetological science, as well as to his friends and coworkers.

BARTON WARREN EVERMANN
CALIFORNIA ACADEMY OF SCIENCES
SAN FRANCISCO, CALIFORNIA

SCIENTIFIC EVENTS

MOSELEYUM AND THE NAMES OF ELEMENTS[1]

IN the issue of SCIENCE for February 20, Professor Richard Hamer, of the University of Pittsburgh, Pa., enters a plea for naming the missing element of atomic number 43 before it is discovered; in view of the work of Bosanquet and Keeley (*Phil. Mag.*, 1924 (6), 145–147) and of others, he thinks that the discovery can not be long delayed, and also that by taking time by the forelock in this manner, subsequent controversy, like that which followed the discovery of hafnium, will not arise. Professor Hamer appeals to the scientific world to name the element "Moseleyum," in honor of the young British physicist who fell in Gallipoli, and to give it the symbol "Ms." In our view it would be a fitting tribute to the brilliant work of Moseley to perpetuate his name in some such way. Hitherto, no chemical element has been named after an individual (we exclude mercury, tantalum, thorium and titanium for an obvious reason), and opinion may be divided on the advisability of making the innovation. It is, however, a mistake to be bound by precedent in such a matter, and the only objection we can foresee to the adoption of Professor Hamer's suggestion is that the word is not particularly euphonious, and is rather suggestive of certain sepulchral monuments; but it might be argued that even this suggestiveness is not inappropriate, inasmuch as mausoleums are erected, as a rule, to the memory of the illustrious dead.

Referring to our note (*Nature*, April 11, p. 545) on Professor R. Hamer's suggestion to name the undiscovered element of atomic number 43 "moseleyum," after H. G. J. Moseley, Professor Irvine Masson writes that such action would not, as stated, be an innovation, as "one element *is* named after an individual: namely, Gadolinium, a rare-earth element, called after Gadolin." The historical facts appear to be as follows: The mineral gadolinite, discovered in 1788, was named after the Finnish chemist Johann Gadolin, who in 1794 discovered a new earth—yttria—in it. About a century later, Marignac showed that yttria (which he had obtained from samarskite) contained a new element, and when Lecoq de Boisbaudran announced to the Paris Academy of Sciences that Marignac had chosen for it the name "gadolinium," he gave no reason for the selection (*Comptes rendus*, 1886, p. 902). The case of the element samarium is somewhat similar. The complex parent mineral samarskite was, apparently, named after a Russian mine officer, Samarski. When the existence of the element was proved, Lecoq de Boisbaudran told the academy that the honor of its discovery really belonged to several investigators, and he proposed the name "samarium" because the word was "derivé de la racine qui a déjà servi à former le mot 'samarskite'" (*Comptes rendus*, 1879, p. 214). Whether the words "gadolinium" and "samarium" were derived directly, or indirectly, from the names of men or minerals appears of little moment; both perpetuate the names of individuals, and therefore, in this sense, the appellation "moseleyum" would have two precedents.

[1] From *Nature*.

THE AMERICAN ASSOCIATION OF MUSEUMS

THE American Association of Museums is holding its twentieth annual meeting at St. Louis. Sessions begin on Monday, May 18, and continue until Thursday noon. The Sunday preceding the meeting is to be the occasion of a sail down the Mississippi River and of other hospitalities tendered by the local committee.

The purpose of the association in choosing St. Louis for its meeting place is to assist a local group in efforts to establish a science museum in that city. St. Louis already has an art museum, a history museum and the best known school museum in the world. The last institution, the Educational Museum of the St. Louis public schools, is organized under the department of education and is devoted exclusively to school service.

The program of the St. Louis meeting follows:

SUNDAY, MAY 17

10:00 A. M. Registration at the Chase Hotel.

11:00 A. M. Visit to the Zoological Garden. Busses will take members and guests from the hotel.