

the familiar formulæ of thermodynamics appear almost spontaneously.

His collected papers were published in two volumes in 1906 and two volumes of *Commentary* on these papers were published in 1936 to honour his memory.

Gibbs died at New Haven, April 28, 1903.

### Seeley, Harry Govier (1839-1909)

HARRY GOVIER SEELEY, an English palæontologist, was born in London, February 18, 1839. In the early years he found a copy of Lyell's *Principles of geology* in the London Library and this stimulated interest in natural history. Under the old regulations, it was possible for him to gain admission to the British Museum Library even at seventeen. This opportunity he used to the fullest during the next three years. He supplemented his study by attending the lectures of eminent professors like Owen, Forbes and Brayley. He also received encouragement from Woodward of the Geological Department of the British Museum.

When he went to Cambridge in 1859 for literary work, Professor Sedgwick invited him to be his assistant. The regard that the Professor had for the young Seeley is shown by a letter of his, which reads: "In youth, you had a reputation for genius. . . . It was that reputation which made me seek you out and secure your co-operation as my assistant and fellow-labourer". Till 1871, Seeley stayed in Cambridge and did considerable research work. From 1872, he held various teaching posts in London.

#### HIS PUBLICATIONS

In addition to eight books published between 1870 and 1901, Seeley contributed nearly 200 papers to the organs of learned societies. His ten years' work in the Woodwardian Museum of Cambridge resulted in the publication of the much valued *Index to the fossil remains of Aves, ornithosauria and reptilia* (1869). The most voluminous sequence of his papers entitled *Researches on the structure, organisation and classification of the fossil reptilia* appeared regularly in the *Philosophical transactions* from 1888 to 1896.

#### FIELD TEACHING

Besides the valuable addition he made to palæontological knowledge as disclosed by his papers, Seeley did much to popularise scientific knowledge and scientific method. From 1880 to 1890 he gave lectures for the London Society for the Extension of University Teaching and established the London Geological Field Class, in which he conducted excursions week by week for twenty-one years in the summer. And now it has borne fruit in the recognition by the University of London, of Field Teaching as a necessary condition for graduation in Geology.

Seeley died in London, January 8, 1909.

### Verrill, Addison Emery (1839-1926)

ADDISON EMERY VERRILL, an American Marine Zoologist, was born at Greenwood, February 9, 1839. He received his early education at Norway Liberal Institute. Even before his thirteenth year, he had learned to recognise the varieties of rocks and minerals in his native place and had built up a herbarium of several hundred species of wild flowers. At seventeen, he had acquired a collection of the local shells, insects, amphibia, reptiles and mammals and identified them.

In 1859, he entered the Harvard College and came to work under the great Agassiz. Instead of listening to lectures and studying, he was asked by Agassiz what field appealed to him. On replying he was most interested in birds, he was asked to make a study of the goose. After some weeks, when the young Verrill had completed what seemed to him an exhaustive study of the bird's anatomy, Agassiz genially pointed out to him the incompleteness of his investigation and gave him directions for several months' additional work. A new subject was then taken up.

#### HIS CAREER

Verrill was called to Yale University as its Professor of Zoology in 1864, and he held that post till 1907. From 1871 to 1887 he was also in charge of the scientific work of the United States Commission of Fish and Fisheries. In connection with this, he devised a cradle sieve, a rake dredge and a rope tangle for collecting star fishes in oyster beds.

#### DICTIONARY WORK

For several years prior to 1890, he worked on Webster's *International Dictionary* and furnished all the zoological definitions and illustrations.

#### HIS PUBLICATIONS

Verrill was a profuse writer for about 64 years. His contributions number nearly 300. While they cover a wide range, the majority deal with marine invertebrates—particularly those of the Northern New England Coast, the Gulf Stream, the Pacific Coast of Central America, the Bermudas and the West Indies. He estimated that he had discovered a thousand undescribed forms. At eighty-five, still sturdy and vigorous, he extended his exploration to the Hawaiian Islands and discovered many new species. His most exhaustive work is said to be that on corals and cœlenterates, including his studies of the collections of the Canadian Arctic Expedition. Some time before his death, he had placed in the hands of the publishers his monograph on the Alcyonaria consisting of upwards of a thousand pages of manuscripts and 150 plates.

Verrill died at his son's residence in California, December 19, 1926.