tion that certainly damaged the ears to some extent. To investigate their range of hearing a Galton's whistle was used, and it was found that they could hear very high notes.

Their sense of smell was tested by means of a series of tubes containing solutions, of varying strength, of odorous substances like valerian and camphor, and the results, while not altogether satisfactory, tended to show they had no marked superiority in this respect over the members of the expedition.

With regard to taste it was very difficult to get information, as the natives, naturally enough, did not like strange objects being put into their mouths. One fact, however, was noticed, which was interesting when it is remembered that sweet and bitter are probably our most definite taste sensations, and that was the complete absence of any word for bitter. For the sense of temperature the *data* were very scanty, but it was found that the natives had points on their skin specially sensitive to cold exactly as is the case with Europeans. As to touch, when tested to see how close the points of a pair of compasses must be put on the skin before they ceased to be felt as two, their sensitiveness was in general better than that of the members of the expedition. There is a consensus of opinion that savages are less sensitive to pain than Europeans, but there is always the doubt whether they are really able to bear pain with fortitude. However, the conclusion that the Murray Islanders were distinctly less sentitive than the European in the expedition was supported not only by their subjective statements, but also by objective tests depending on the condition of the skin pressure.

In the discrimination of weight it was curious that these natives who had no abstract idea of weight, and no word to express it, and who, moreover, could have had no practice, were more accurate than a practiced European.

Finally Dr. Rivers, while commenting on the defective knowledge of some of the senses he had treated, and on the absence of comparative *data*, concluded that, in general, the sense organs of the savage were not markedly superior to those of the normal or average European, and that the recorded instances of apparent extraordinary acuteness were to be explained by his habits of observation and specialized knowledge.

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*OLIVER PAYSON HUBBARD.**

Oliver Payson Hubbard was born in Pomfret, Conn., March 31, 1809, and died in New York, March 9, 1900. After graduating at Yale College in 1828, he remained in that institution as assistant to Professor Silliman until he began his study of medicine, which he completed in 1837, when he received the degree of M.D. from the South Carolina Medical College, at Charleston.

Prior to his graduation in medicine, he was made professor of chemistry, pharmacy, geology and mineralogy in Dartmouth College. In 1871 the chair was restricted to chemistry and pharmacy, and no longer required his full time, so that he was able soon afterwards to make New York his home during much of the year. In 1883 he felt that he had already passed the age when one should retire from a professorship, and resigned his position, becoming *professor emeritus*. Thereafter he remained in New York City.

His youthful love of science led him to Yale, that he might study under Professor Silliman, then the prominent teacher of science in our country. His first publication, entitled 'Geological and Mineralogical Notices,' having reference to localities in northern New York, appeared in the *American Journal of Science* in 1837, and was followed in 1838 by a somewhat more elaborate article upon the White Mountains.

* Read before the meeting of the Section of Geology and Mineralogy of the New York Academy of Sciences on April 16, 1900.

He attended the 1841 meeting of the Association of American Geologists and Naturalists and read a paper of capital importance upon the slates of Waterville, Maine, in which he discussed the markings upon the slates and indicated their organic origin, which he regarded as proving their great age. He was present also at the third meeting and took a prominent part in the discussion of the 'drift' so that he was appointed member of the committee to prepare a report upon that subject for the next meeting. He was elected secretary of the Association for 1843 and, with Benjamin Silliman, Jr., served in the same office for 1844. His duties at Dartmouth were exacting, so that for many years he published few extended papers, but he made many brief communications to societies, all of which were characterized by keen discrimination and many of them were important contributions.

Doctor Hubbard joined this Academy in 1874 and at once became so active that when Mr. Browne, who had been Recording Secretary from 1839, resigned in 1875, Professor Hubbard was chosen as his successor. He retained this office until 1885, when he became Vice-President. At the death of Doctor Newberry in 1892, he was made President, but he served for only one term, declining re-election because of his advanced years. From 1874 until 1893 he rarely failed to attend the meetings, when in the city, and he always presented something of interest bearing upon matters under consideration. His manner was courteous to the last degree and he understood well how to discuss without disputing.

Professor Hubbard's individuality was very decided; though so gentle and considerate in his manner, he always held positive opinions and, when necessary, did not hesitate to express them. His shrewd common sense made him a good counsel and his advice was sought in many directions. He was a member of the New Hampshire Legislature in 1863–4, but one year's experience in that kind of work sufficed and he declined to be a candidate for re-election. His quiet humor and his store of reminiscences made him a delightful companion. He retained his mental vigor to the last and only two months ago he published an article correcting errors in a recently published work. When ninety years old, he attended the New York meeting of the Geological Society of America and remained throughout an afternoon listening to severely abstract papers, with as much interest, apparently, as though he were just beginning his work.

Professor Hubbard was almost the last link binding our time with that of the early geologists. Hall and Dana died within the last half decade and there remain only Boyé and Lesley of those who attended the earlier meetings of the Association of American Geologists. He passed away in a ripe old age, his life full of good works and his name absolutely unstained. This Academy owes him much, and here his name should be cherished.

J. J. STEVENSON.
ALEX. A. JULIEN.

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