

jet to break easily under the influence of moderate impulses.

The foregoing is little more than the outlines of a new theory of jet-vibrations. The author hopes to supply in the future further experimental evidence in support of it.

BOSTON LETTER.

EVIDENTLY one should join the Essex institute in Salem if one wishes to live to a green old age. This well-honored scientific body held its annual meeting recently; and the secretary's report showed, that, of the 24 deaths during the year, all but one were of persons over fifty years of age. Moreover, of the 324 living members, two-thirds are over threescore years and ten, and seven are past fourscore. The institute is soon to go into new quarters.

Preparations are making for the celebration at Cambridge of the two hundred and fiftieth anniversary of the founding of Harvard college. It will not take place at the commencement season, but at some time the following autumn, and it seems to be generally understood that Hon. James Russell Lowell will preside. It will be a different thing from the bicentenary, when a smaller audience-room than is now available permitted even all the undergraduates to find a place. The living Harvard alumni alone are probably three times the number living fifty years ago, and certainly the undergraduates are five times as numerous as then. This event makes specially appropriate the list just published by the university, showing the literary activity of its officers during the last five years. A similar ten-years list was published in 1880; but the present, though only for half that time, not only contains a longer list of publications than the former, but a somewhat larger number of writers among the officers.

Gifts continue to come in to the university. Mrs. Draper of New York continues to further the researches to which the late Dr. Henry Draper devoted his life. Her latest gift is of a thousand dollars to Harvard college observatory, to be expended under the direction of Professor Pickering in prosecuting researches in the photography of stellar spectra; the eleven-inch photographic lens constructed by Dr. Draper will be employed in this work, and those who heard Professor Pickering's account, at the Albany meeting of the National academy last autumn, of his own work in the field in which Dr. Draper's name is so honorably associated, will believe that Mrs. Draper has made an excellent choice.

In this same connection it should be mentioned that the contest at law about the Paine bequest to

the Harvard observatory, mention of which has before been made in this correspondence, is happily closed by amicable settlement between the parties concerned. The amount which will now be turned over to the observatory, probably within the next month or two, will scarcely differ from that previously announced, and on the death of the widow it is probable that the entire bequest will exceed three hundred thousand dollars. Those who have followed the telling activity of the observatory under its present management will be confident that no other institution could make better use of such a noble gift.

At the annual meeting of the American academy, May 25, it was voted to present the Rumford gold and silver medal to Professor Langley of the Allegheny observatory, for his researches in radiant energy. Thus Professor Langley has in a single year borne off the two principal gold medals given for scientific work in America, having received the Draper medal of the National academy only last month. No one will dispute his right to them. The Rumford fund will also be used this year by the American academy in aid of researches upon the solar corona at the time of the total eclipse of August next, five hundred dollars having been appropriated in aid of Mr. W. H. Pickering's expedition to the West Indies. A letter was read from Mr. Greenough the sculptor, a fellow of the academy, announcing his gift to the academy of a portrait of Galileo, which he stated was either an old copy or a replica of the portrait in the Pitti palace. The portrait is already on its way to America.

In passing through Mount Auburn cemetery the other day I observed for the first time the monument which has been erected at the grave of Pourtalès, the colleague of Agassiz, and the pioneer in the zoölogy of the deep seas. It is a simple but massive semicircular slab of very fine-grained sandstone, on one face of which is the usual inscription, while on the other, facing the grave, has been deeply engraved a conventionalized Pecten-like sea-shell, forming a sort of niche; and on the surface of this are neatly sculptured in bas-relief a coral, a Comatula, a Gorgonia, and a magnified foraminifer, emblematic of the subjects of his study.

The topographical field-parties of the U. S. geological survey have begun their season's operations in this state, and before next winter most of the field-work will have been finished. The Appalachian mountain club, taking advantage of the work already completed, is about to issue, by permission of the survey, a photolithograph of a portion of the field-sheets on the original scale, comprising the extreme north-western corner of

the state, with Greylock, our highest mountain mass. Contours will be shown twenty feet apart, and bring out in fine relief the bolder slopes of this part of the state.

Y.

Boston, June 1.

NOTES AND NEWS.

THE Imperial university of Japan (Teikoku-Daigaku), founded by imperial decree of March 1, 1886, includes the two institutions formerly known as the Tōkyō university (Tōkyō Daigaku) and the Imperial college of engineering (Kobu-Daigakko), these institutions having ceased to exist. The university comprises five colleges, each with its own director; and at its head is the president, Hiromoto Watanabe. The secretary is Kiuichiro Nagai. The directors of the different colleges are: College of law (Hōka-Daigaku), the president (*ex officio*); College of medicine (Ika-Daigaku), Prof. Hiizu Miyake; College of engineering (Kōka-Daigaku), (acting) Prof. Dairoku Kikuchi, M.A. (Cantab.); College of literature (Bunka-Daigaku), Prof. Masakazu Toyama; College of science (Rika-Daigaku), Prof. Dairoku Kikuchi, M.A. (Cantab.). All communications to the Imperial university, whether on its own behalf or as the representative of the two above-mentioned institutions now defunct, should be addressed to the president; communications to the colleges, to the director of each college.

—Dr. Charles Upham Shepard, well known for his collections in mineralogy, died at Charleston, May 1. For a considerable portion of his life he was identified with the South Carolina medical college, and aided greatly in giving that institution an honorable standing. He was also connected with Amherst college; and to this college he gave his vast collection of minerals, which was unfortunately destroyed in 1880.

—A note from Dr. Hyde of Honolulu, to the *Missionary herald* for June, reports that "news has just come that on March 6 the bottom fell out of the volcano, and that Kilauea is now only a black hole in the ground; no lava, no fire, to be seen. But such phenomena have been seen before; and the wonderful crater may fill up again, and be active once more. There were forty-nine earthquakes on the island of Hawaii at the time, and probably some new vent opened for the subterranean fires."

—The house committee on commerce has reported favorably the bill providing for an expert commission to visit Mexico, Brazil, Cuba, and the Central American states for the purpose of investigating the merits of the methods pursued by

Drs. Freire and Carmona for the prevention of yellow-fever by inoculation. In their report the committee say, "Dr. Carmona states, that in one series of observations during the prevalence of yellow-fever, of three hundred and eighty persons protected by inoculation, less than three per cent contracted the disease; while under the same circumstances, of one hundred and seventy-five persons not inoculated, thirty-two per cent were seized with it. He also states that seventy-six inoculated soldiers marching from Vera Cruz to Acayucan were joined by a soldier who had not been inoculated. Upon their arrival at the latter place, the unprotected soldier was seized with yellow-fever, and died, while no case of the disease occurred among his seventy-six comrades. Other facts of a similar character are related by Drs. Carmona and Freire, which certainly tend very strongly to show the success of this preventive treatment. It is therefore important that further scientific observations and experiments should be instituted in order to establish beyond controversy the facts relating to this subject, so vital to the interests of sanitary science, commerce, and humanity."

—The following assignments have been made in the topographical department of the geological survey: Mr. Mark Kerr is in Oregon; Prof. A. H. Thompson is in charge of the western division, with headquarters at San Francisco; Mr. Renshaw will be sent to Kansas and Missouri this week; and Mr. Richard Goode will go to Texas.

—The announcement of the death of Von Ranke was succeeded by that of George Waitz, one of his most painstaking and industrious pupils. Professor Waitz was born at Flensburg in 1813. He became professor of history at the University of Kiel in 1842, in 1848 he was a member of the Frankfort assembly, and in 1849 he was called to Göttingen. Waitz succeeded Pertz as editor of the 'Monumenta Germaniae historica,' and in connection with this work he has achieved a considerable reputation. His most important writings are, 'Deutsche verfassungs-geschichte' (2d ed., 1865, 4 vols.), 'Schleswig-Holstein geschichte' (1851-54, 2 vols.), 'Grundzüge der politik' (1862), and 'Die formeln der deutschen königs- und der römischen kaiserkrönung vom 10 bis zum 10 jahrhundert.' Of late years Professor Waitz has resided in Berlin.

—Pending the action of the appropriation committee, no instructions can be issued by the coast survey to continue work after June 30. As soon as the appropriations are available, preparations will be made to organize parties for field-work after July 1.