lectureship, at a diminished salary, has been established in its place. This is filled by Professor Huxley's former assistant, who has long had entire charge of the laboratory teaching, and has just brought out an admirable atlas of elementary biology. It was certainly desirable that his merits should receive the recognition which they deserved. But this might surely have been effected without the infliction of a blow which will be felt in almost every zoölogical laboratory in the country.

The Prince of Wales has fixed Monday, November 9, for the official closing of the International inventions exhibition. Upwards of three and a quarter million visitors have thus far been admitted. A valuable series of reports, by experts, on the various classes of exhibits, is appearing in the *Journal of the Society of arts*, which has been from their commencement, the official record of these exhibitions. A scheme is on foot for forming, from this exhibition, a floating exhibition on board a large steamer, which is to visit the chief ports; and in this way the benefits of the exhibition may be extended.

Among the various agencies for creating an interest in the methods and results of scientific inquiry, on the part of artisans and persons of very limited means, the operations of the Gilchrist educational trust deserve notice. The founder, Dr. Gilchrist, a Scotch surgeon, left on an exceedingly open trust, for the benefit and advancement of scientific learning in any part of the world, the income of certain investments, which have since become very valuable. One of these was a piece of land now in Sydney, Australia, for which he paid $90, which was sold a few years ago by the trustees for $360,000. Part of the trust income is expended in scholarships, chiefly granted to students in Canada, Australia, India, etc., to enable them to study in England. Another portion is devoted to the delivery of courses of scientific lectures in English and Scotch towns, under local management, but subject to the condition that the charge for admission shall not exceed two cents. These lectures are specially addressed to large popular audiences, often comprising 2,000 persons or more. Ten such courses are now running in various towns, and the lecturers engaged in them are Dr. R. S. Ball (Royal astronomer for Ireland), Dr. Dallinger, Prof. W. C. Williamson, Dr. Andrew Wilson, and Mr. Wm. Lant Carpenter. A course usually consists of six lectures, one half on physical subjects, the other upon biological, and their aim is avowedly to awaken an interest in science. Usually the lecture halls are crowded to their utmost capacity. W.

London, October 13.

WASHINGTON LETTER.

THE improvements on the arrangement for protecting the Washington monument from damage by lightning are now being made, and will probably be completed within a week. The disturbed portion of stone-work has been very neatly drawn back into its place, and secured by bolts from within. The changes which are being made, with the hope of avoiding all possible injury in the future, are essentially as follows: Around the lower part of the aluminium pyramid which terminates the shaft has been fitted a sort of collar, from which project eight pointed metallic rods, each about three inches in length. To the corners of this collar four copper rods, about one-half an inch in diameter, are secured, extending down the edges of the fifty-five-foot pyramidal apex. These four rods are joined together at a number of points along their length by horizontal strips of metal, each having a cross-scction area nearly as great as that of the half-inch rod, but of different form, so as to fit closely into openings along the junctions of the various layers of masonry. All are securely joined to the corner or edge rods; and along both horizontal and edge rods metallic points, similar to those surrounding the base of the aluminium apex, will project at right angles to the rods, and at distances of four or five feet from each other. It will be seen that the great terminal pyramid will thus be covered with a sort of cage of metal rods, from which will project a large number of small metallic points. All of the metal thus placed upon the surface has been carefully plated with gold to prevent discoloration of the stone through the action of the weather on the copper.

The connection of this external cage with the internal conductor seems to be all that could be desired. To begin with, from the base of the small aluminium pyramid a copper rod or bolt, one and a half inches in diameter, extends to the base of the capstone, by means of which it is secured to the latter. From the extremity of this rod four rods of copper, each having a diameter of three-fourths of an inch, proceed downward, and, separating at a distance of a few feet from their upper ends, are led to the four middle piers of the iron structure which carries the elevator and the stairway. This structure extends through the whole height of the monument up to some distance beyond the five-hundred-foot level. It consists, in the main, of eight wrought-iron columns, four being six and one-half inches in diameter, and four seven and one-half, and all tied together through iron braces and stays. In addition to the electrical connection of the exterior cage through the aluminium apex, as above described, independent

connections of the corner or edge rods to the iron columns are made at several points lower down, by passing one-half and three-quarter inch copper rods through holes drilled in the stone-work of the pyramid. At the bottom the earth connection is made by four heavy copper rods, which project several feet into a well of moist sand, at the bottom of which water is always standing.

Owing to the unrivalled height of this monument, its protection from damage by lightning is a matter of scientific as well as of practical interest, and the efficiency of the plan now being carried out will doubtless be questioned in some quarters; but it is a problem which time alone can satisfactorily solve. Z.

Washington, D.C., Oct. 26.

BOSTON LETTER.

ALTHOUGH the removal of *Science* to New York is greatly regretted here, the many friends it has made in the place of its birth continue to express their great interest in its success, and their appreciation of the efforts made toward its constant improvement. Its weekly reception, too, on the very day of its publication in New York, makes a very favorable impression, since this was by no means the case when printed here; it lessens, to some degree, the regret at losing it as one of the scientific attractions of the community.

The publication of the 'Life of Agassiz' is most favorably commented on in our scientific circles. It awakens anew the enthusiasm toward our great naturalist which was always manifested in the most lively manner whenever he made a public appearance. We are all glad, moreover, to possess a clearer and fuller account of his university life, when he was laying the foundation of his remarkable career. The unity of his whole life, the persistency of his mental and moral characteristics, can here be traced as never before, while the successful outcome of his early aspirations lend a completeness to the picture, and are a source of inspiration to any reader.

No clearer case can be pointed out than his connection with Harvard, of the utmost importance to a university of securing men in its scientific posts who are not merely excellent teachers, but are also thorough and active investigators, imparting to their pupils their own ardor in scientific research. The band of students who flocked to his standard is scattered all over the country, most of them teachers in colleges, and everywhere leaders in scientific work and thought. No other such band of disciples in any science has ever appeared in our country; and his presence at Harvard raised the standard of its scientific department to a height of excellence and renown, as nothing else could have done.

It may not be known to all your readers that the designer of the Puritan has made his mark already in quite another field of science, being favorably known for many years as an entomologist. His memoirs on the anatomy of Lepidoptera and other orders of insects, and his minute technical knowledge of Diptera, easily won for him a place in our Academy of sciences. His friends in the scientific club here are very enthusiastic over his new success, and propose to give him a dinner in recognition of their appreciation of it, at which it is hoped that he will relate some of the points which have made the Puritan the fastest known yacht in the world. Yet they have some doubt whether he will consent even to this private honor; for, though the most genial companion in the world, Mr. Burgess is modest to a fault.

The bequest of the late Robert Treat Paine was mentioned in *Science* last July, when it was stated that Harvard college observatory would receive nearly three hundred thousand dollars, one half at once, the other on the death of his widow. This was particularly opportune, for the increased work of the observatory in later years had been due to an annual subscription raised by its friends for a limited period, then recently past. Unfortunately, it now transpires that the will is contested in the courts by the heirs-at-law, who claim that he "was not of sound and disposing mind and memory." Under the laws of Massachusetts, the costs of legal action of this sort are chargeable to the estate, so that there is danger that, even if the will is not broken, the amount finally received by the observatory may be somewhat diminished, and, in any event, delay must ensue; so that the observatory is now working on a sadly diminished income, for which even the zeal and ingenuity of the indefatigable director cannot wholly atone. Y.

Boston, Oct. 24.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Cruise of the Arethusa.

THE yacht Arethusa, having on board an expedition to Newfoundland, previously noticed in *Science*, returned September first to Annisquam, Mass., after a successful trip of three months.

The scientific party consisted of Prof. Alpheus Hyatt, curator Boston society natural history; Dr. E. G. Gardiner and Mr. George Barton, instructors in the Massachusetts institute of technology; Dr. Howard M. Buck, of Boston; Sidney R. Bartlett and C. L. Burlingham, students of the Institute of technology.

The weather while going and returning was not upon the whole favorable, but while on the coast of Newfoundland and Labrador, from June 17 to about