

THURSDAY, DECEMBER 18, 1879

BOSTON AND HARVARD

TO the common remark that nowhere in the United States does an Englishman feel himself so much at home as in Boston; a student of science may add that nowhere else does he meet with so much to remind him of the intellectual activity and enthusiasm for science that mark the great centres of life in the old country. Boston can boast of one or two of the oldest and most active scientific societies in America, which for generations have gathered together and sustained an able succession of workers. In the neighbouring venerable Harvard it enjoys a perennial fountain whence it may draw for ever fresh stores of inspiration and encouragement. This influence of the University is everywhere apparent. Among those who take a lead in promoting science by discovery and exposition among the Boston citizens, Harvard men occupy always a foremost place. A stranger, however, with leisure and opportunity to note some of the more salient features in the scientific life of Massachusetts soon comes to realise the pervading influence of one man. He sees it in the ordinary cultivated society of Boston, he meets with it at every turn in Harvard, he finds it uniting as a common bond of sympathy the younger scientific men of the state. The name of Louis Agassiz has become a household word in the community, and, among the scientific workers, sounds as a rallying cry to unite them for common sympathy and support. Great as were Agassiz's solid contributions to the literature of science, they form a monument to his genius not perhaps more honourable or enduring than the impetus which his example and ceaseless enthusiasm gave to the progress of science in his adopted country. To have written the immortal "*Recherches sur les Poissons fossiles*" and to have founded so vigorous a school of science at Harvard combine to give him a high place in the temple of fame.

It is delightful to hear in general conversation in Boston spontaneous recognitions of Agassiz's eminent services. Many stories are current of his indomitable courage in carrying out schemes for the advancement of his favourite studies, of his consummate address, which enabled him to win over into active assistance men who were disposed to be indifferent if not hostile. One interesting anecdote is told of a dinner party at which he was present, when Mr. Ticknor gave an account of an early meeting of the British Association. At the Geological Section there had been a paper on fossil fishes, and, said Mr. Ticknor, one speaker who evidently knew the subject profoundly, proceeded to show the audience the characters of the types of ancient fishes, and remarked that he had no doubt a specimen would yet be discovered exhibiting a certain structure, which he illustrated by a drawing on the board. Murchison, who was in the chair, thereupon pulled out from a drawer a specimen which had just come up from Scotland and had not yet been exhibited. It completely bore out the prognostication. Agassiz had been listening to the tale with undisguised interest, and when Mr. Ticknor turned round and pointing to him said, "There is the man," he started up flushed with excitement and exclaimed, "It was the proudest moment of my life." Such anecdotes affectionately preserved show how he

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lives in the memory of the community he strove so earnestly to benefit. The little misunderstandings which are always sure to arise in the pathway of a man absorbed in one great aim are now forgiven and forgotten. Men remember that it was not for himself but for the cause of science that he solicited and strove.

Among the younger men of science the influence of the teaching and example of Agassiz has been profound. It is not that they have adopted his views or even that they have chosen his branch of science. On the contrary many of them have espoused evolutionary doctrines against which he protested, and have taken to sciences remote in subject from his. But he infused into them a genuine love and enthusiasm for scientific progress. By this common sentiment they are united in a bond of sympathy which cannot but be very helpful to their own studies and to the advancement of science. One of the most interesting tokens of this community of feeling is the establishment of a club or society which has no name, no office-bearers, and no laws, but which has for its object the reunion of its members for social intercourse at stated intervals. It began its existence in a meeting of two or three of Agassiz's students, and now it has drawn into its circle most of the scientific zeal and ability of the younger men of the district. Nor is it wholly confined to the younger generation. At one of the simple but most excellent and jocund dinners of the club the writer of this notice found the genial and universally beloved veteran in botany, Dr. Asa Gray, as well as that long-tried explorer of the deep sea, Count Pourtales.

Nor among the benefits bequeathed to Harvard by Agassiz can we forbear an allusion to his son. With enthusiasm not inferior to that of his father and with an ample fortune for the furtherance of his views, the present distinguished keeper of the Museum of Comparative Zoology is gathering together at Harvard the most extensive and valuable collection of recent invertebrate zoology in the world. So far as exhibition space will admit, a large and varied series of specimens is displayed. Some departments are marvellously rich. The dredgings by Prof. A. Agassiz and Count Pourtales have supplied a large suite of living corals, some of them undistinguishable from Tertiary Mediterranean species. In one of the rooms is an altogether unique collection of crinoids from the Carboniferous Limestone of Burlington. A European accustomed to the usually fragmentary condition of palæozoic echinodermata can hardly at first believe that these exquisite specimens of many species and genera, with every plate and joint in position, come from so ancient a formation. As at Yale, cellars are crowded with treasures awaiting examination and display. The work-rooms attached to the Museum are likewise full of material in all stages of investigation, and bearing witness to the amount and value of the original research carried on here by Prof. Agassiz, Count Pourtales, and their assistants. The only regret a visitor can justly express is that the plan of the building has not secured a larger amount of internal light. The windows at the sides form the only entrance for light, and they are not large or numerous enough for the size of the rooms. Would it not be possible, in the contemplated additions to the Museum, so to modify the plan as to secure, at least for the exhibition galleries and floors, some amount of light from the roof?

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Within the walls of the Museum Prof. J. D. Whitney has accommodation for geological work. He is engaged in the completion of the memoirs of his great Californian survey. He has recently issued the first part of an exhaustive monograph of the auriferous gravels of California, which is published in the *Memoirs of the Museum of Comparative Zoology*. One of the most generally interesting and important features in this essay is the cautious and masterly way in which the author states the evidence for the existence of human remains in the gravels beneath sheets of basalt, and at a depth of 130 feet from the surface. It is impossible to resist the cogency with which he marshals the facts and maintains the genuineness and high antiquity of the Calaveras skull. The second portion of the memoir, devoted to a discussion of the origin of the auriferous gravels and of the glacial phenomena of the Pacific coast and of North America generally, is awaited with much interest. Prof. Whitney, in the course of his prolonged researches in the west, made a large and important collection of rocks. These are now being carefully investigated by his associate, Dr. M. E. Wadsworth—a young petrographer, who in recently taking the degree of Doctor of Philosophy at Harvard, presented, as his thesis, a remarkable essay on rock classification, largely based on these collections. The Professor, with the devotion to geology which has characterised his long and distinguished career, carries on this work at his own expense. The results will be published in full in the *Memoirs of the Museum of Comparative Zoology*.

There is much more than the name of Cambridge to remind one of its namesake at home. Its quiet air of studious retirement, its quaint buildings and tree-shaded walks have much of the mother-country about them. One or two features of the place, however, are characteristically American. Thus in the great library at Gore Hall, most of the work of receiving and distributing books is done by young women, and done, too, with a noiseless decorum and celerity worthy of all praise. A magnificent Memorial Hall to those graduates of Harvard who fell in the late Civil War bears witness in its crowded lists of names that culture and courage may go hand in hand. The simple eloquence of these lists, where every class and division of the faculties is represented, brings home to the mind in a startling way the terrible realities of a war. May the occasion never arise for another range of tablets either there or here!

While Harvard is necessarily the great centre of scientific research, much admirable work is done in Boston in the way of practically expounding science. The Institute of Technology has for its primary object the education of the community in these branches of scientific knowledge conducive to progress in the arts and industries of life. In pursuance of this aim the methods of tuition are so practical and thorough that the results must be felt far beyond the industrial circles. Established mainly through the enlightened zeal of the present venerable President of the National Academy, Prof. W. B. Rogers, it began a few years ago to languish, but its founder has recently come back to its rescue, throwing himself into its affairs with all his old heartiness and kindness until, freshened and stimulated by his influence, it is once more shooting up into lusty vigour. But besides

this establishment, wholly devoted to scientific instruction, the Boston School Board has made the practical teaching of science an important part of education in the public schools. At an early age the pupils are led to take an interest in physiology by references to the experience of their own bodies, and thus the laws of health are firmly lodged in their minds. From simple beginnings they are conducted through successive years of progress and are well grounded in physics, chemistry, botany, and zoology, until before they leave, if they choose to go so far, they are found at work in laboratories repeating experiments, making analyses, or dissecting plants or animals. The thoroughness of the whole system, and the length to which such State-paid education goes (for it must be remembered that all this training is free), would make most members of our School Boards stand aghast, were any utopian to propose its introduction in this country.

A student of science from this side of the Atlantic besides finding himself at home among lovers of science in New England is astonished and gratified to find that if he has himself done anything to advance our knowledge of nature, his work is as well known there as at home. The welcome he receives is all the heartier from men who have long known him by name and have come already to regard him as in some measure a personal friend and fellow-worker. A brotherhood of this kind, so cosmopolitan, so genuine, and so kindly, carries with it an enduring helpfulness. One comes away from a participation in it strengthened and cheered, with wide enlargement of ideas and sympathies that seem to fill the mind with aspirations and to brace the whole frame for endless exertions to achieve them. Undoubtedly, in spite of all that demagogues may declaim, there is in American society of the more cultured kind a deep undercurrent of affection for the old country. It shows itself in many ways and sometimes crops up unconsciously and almost to the confusion of the native-born American as if he would rather be thought indifferent in the matter. The writer is tempted to conclude with an illustrative story told him by a Harvard friend to whom the incident occurred. Some years ago, just at the time that the famous pamphlet, "The Battle of Dorking," was making a stir in the States as well as here, this friend was in Kentucky with an acquaintance of his who, like so vast a number of his countrymen, had been engaged in the Civil War, and had lost heavily in friends and fortune. This man knew well what were the horrors of war, yet after he had finished reading the pamphlet, and was appealed to by his companion as to what he would do if the picture drawn in its pages were a reality instead of a fiction, he paused and after a little reflection replied, "Well, I think I'd have to go for the old country." There are many thousands of Americans who would have no objections to thrash England themselves, but who would not sit quietly and see the castigation bestowed by any other people.

A. G.

PLANTE'S "RESEARCHES IN ELECTRICITY"
Recherches sur l'Électricité. Par Gaston Planté. (Paris, 1879.)

M. GASTON PLANTÉ has published, under the above title, the elegant and important electrical researches which he has pursued with so much success