

## ART. XXXV.—SIR CHARLES LYELL.

No European geologist was so well known, personally, in the United States as Lyell. His two visits to this country, in 1841 and 1845, recorded in four volumes of travel characterized by great good judgment, large mindedness and catholicity, made his name familiar throughout the land, and gave a degree of popularity here to his philosophical and technical writings which they would otherwise have hardly obtained.

Called by Mr. Lowell to Boston in 1841 to deliver a course of twelve lectures on Geology before the "Lowell Institute," Lyell was the first European, of eminence in science, who appeared upon the platform as a lecturer before an American audience. That his lectures were highly esteemed is well known, and it was a sufficient evidence of this that he was again invited to Boston on a like commission in 1845-6, and before the same institution. The personal relations and friendships commenced on these occasions endured to the end, and were rendered doubly interesting by the charm shed over every social relation by Lady Lyell, who won universal esteem by those qualities of manner which were less prominent in her often abstracted husband. The following familiar private letter from the late Dr. Mantell, written in 1841 to Prof. Silliman (the elder), gives a vivid sketch of Lyell as he appeared to his scientific associates at the time of his first visit to the United States. As all the parties named in this letter are now passed away there can be no objection to its reproduction in this connection.

"LONDON, *June* 14th, 1841.

"MY VERY DEAR FRIEND :

"I was about to write you to inform you of Mr. Lyell's intentions which he communicated to me but a short time since. I dined with him last week—a farewell party. His charming little wife, a daughter of Mr. Leonard Horner, accompanies him. I have said so much of you and yours to her that she is quite anxious to visit New Haven; if she does I am sure you will be delighted with her. And now for a strictly private sketch of my old friend. About twenty years or more ago, one beautiful summer evening, a young Scotchman called at Castle Place (Lewes\*) and announced himself as Mr. Lyell, stating that he was fond of geology, had been attending Jameson's lectures at Edinburgh, and had visited his former Alma Mater, Midhurst Grammar School, in the west of Sussex; and that, while rambling about the

\* Mantell's place of residence at that time.

neighborhood, he found some laborers quarrying in stone which they called whin. As this term is *Scoticé* trap, the young traveler was much puzzled to know how such a rock appeared in the south of England, and upon inquiry of one of the laborers why the stone was so called, the man referred him to 'a monstrous clever mon as lived at Lewes, a doctor who knowed all about them things and got curiosities out of the chalk pits to make physic with.' The man, in short, had been formerly a Lewes quarryman, and one of my collectors. Mr. Lyell being alone and on horseback and having nothing better to do, rode gently over the South Down, some twenty-five miles, and at the close of the day found himself at my residence. We were mutually pleased with each other; my few drawers of fossils were soon looked over, but we were in gossip until morning, and then commenced a friendship which has continued till now.

Mr. Lyell was educated for the bar. He practiced on the western circuit seven or eight years, and he allowed me to correspond with him only during the vacations. His father, who is a Scotch Laird, is still living, and there are several sons and daughters. Mr. Lyell is the eldest, and at the death of the father inherits the family estate, which, I believe, is moderate. However, about seven or eight years after our acquaintance, Mr. Lyell with great good sense, abandoned his profession, with his father's consent, and devoted himself wholly to geology, content with a moderate income, and living in a very unostentatious manner in an unfashionable part of the city. A few years ago he married Miss Horner, who is much younger than himself (Lyell is 45 or 46), and a more suitable companion he could not have found. He has no children. In person, Lyell presents nothing remarkable except a broad expanse of forehead. He is of the middle size, a decided Scottish physiognomy, small eyes, fine chin and a rather proud or reserved expression of countenance. He is very absent, and a slow but profound thinker. He was Professor in King's College, London, and gave lectures there and at the Royal Institution, but it so happened that I never heard him lecture. He always takes part in the discussions at the meetings of the Geological Society, but he has not facility in speaking; there is hesitation in his manner, and his voice is neither powerful nor melodious, nor is his action at all imposing. As a popular lecturer he would stand no chance with Buckland or Sedgwick. He is providing himself with very beautiful illustrations for his lectures at Boston; and I should suppose the prestige of his name and his European reputation will insure him a flattering reception. \* \* \* \* There is a hauteur or reserve about Mr. Lyell to strangers that prevents his being

so popular among our society as he deserves to be. I believe him to have an excellent heart, and he is very kind and affectionate when his better feelings are called upon." \* \* \* \*

This criticism of Lyell's style and manner as a public speaker was certainly well founded, as all will agree who ever heard him lecture. But despite all infelicities, so great was the value and richness of his matter, that he commanded the most respectful and interested attention from his auditors. The reader of his "Principles" could not fail, however, to be struck with the fact that the classic elegance of Lyell's style, for which his more important productions are so justly celebrated, must have been the result of much labor.

We cite from the *Geological Magazine* edited by Henry Woodward, F. R. S., the following notice of his life and labors. A more elaborate memoir may be expected in the next annual address of the President of the Geological Society of London.

"On Monday, the 22d of February, at his residence in Harley Street, and in his seventy-eighth year, Sir Charles Lyell, after a long life of scientific labor, passed peacefully from amongst us, to his honored rest.

"To the outside world it may seem strange that the death of a man who was neither statesman, soldier, nor public orator, should arouse our sympathies so strongly, or that he should be so highly esteemed all over the world; but geologists know well what Lyell has done for them since he published the first volume of 'The Principles of Geology' in 1830.

"It is in the character of historian and philosophical exponent of geological thought that Lyell has achieved so much for our science: nor can we fail to remember that those clear and advanced views, for which he became so justly celebrated, were advocated by him forty-five years ago, at a time when scientific thought was still greatly trammelled by a strong religious bias, and men did not dare to openly avow their belief in geological discoveries nor accept the only deduction which could be drawn from them.

"Born at Kinnordy, his father's seat near Kerriemuir, in Forfarshire, on the 14th of November, 1797, Lyell received his early education at a private school at Midhurst, and completed it at Exeter College, Oxford, where he took his Bachelor's degree in 1819, obtaining a second-class in Classical honors in Easter Term. On leaving the University, he studied for the Bar, but never practised that profession, his tastes having been led by Dr. Buckland's lectures to the study of geology as a science. In 1824 he was elected an Honorary Secretary of the Geological Society of London, of which he was one of the ear-

liest Fellows. On the opening of King's College, London, a few years later, he was appointed its first Professor of Geology. He had already contributed some important papers to the 'Transactions' of the Geological Society, including one 'On a Recent Formation of Freshwater Limestone in Forfarshire, and on some Recent Deposits of Freshwater Marl, with a comparison of recent with ancient Freshwater Formations, and an Appendix on *Gyrogonites*, or Seed-Vessels of Chara;' also one 'On the Strata of the Plastic Clay Formation exhibited in the Cliffs between Christchurch Head, Hampshire, and Studland Bay, Dorsetshire; another On the Freshwater Strata of Hordwell Cliff, Beacon Cliff, and Barton Cliff, Hampshire;' and an elaborate paper on the 'Belgian Tertiaries.' In 1827 he contributed to the *Quarterly* a review of Mr. Poulett Scrope's 'Geology of Central France' (the perusal of which is said first to have stimulated him to prepare and publish 'The Principles of Geology' on which his reputation as a philosophical writer mainly rests). These lesser works all showed a power of observation and of generalization which prepared the learned world for some greater and more important treatise from his pen, which should deal, not with local details, but with the general principles of the science. Nor were they disappointed when his *magnum opus*, 'The Principles of Geology,' appeared in three successive instalments, published respectively in 1830, 1832, and 1833. The work, subsequently enlarged into two volumes, has passed through numerous editions, and is still in as much demand as ever among students of the science. The work was subsequently divided into two parts, which have been published as distinct books, viz. 'The Principles of Geology, or the Modern Changes of the Earth and its Inhabitants, as illustrative of Geology,' and secondly, 'The Elements of Geology, or the Ancient Changes of the Earth and its Inhabitants, as illustrated by its Geological Monuments.' The substance of the last-named work has also been published under the title of 'The Manual of Elementary Geology,' a French translation of which was issued under the auspices of the famous Arago.

"Already, some time previous to the publication of this work, Mr. Lyell had been chosen a Vice-President of the Geological Society; and in 1828 he had undertaken a journey into the volcanic regions of Central France, visiting Auvergne, Cantal, and Velay, and continuing his journey to Italy and Sicily. He published the results of this expedition in the 'Edinburgh Philosophical Transactions,' and also in the 'Annales des Sciences Naturelles.'

"It was, however, the publication of his 'Principles of Geology' that gave him that established reputation which he

ever since continued to enjoy. 'Which of us,' asked Prof. Huxley, in his Anniversary Address to the Geological Society in 1869, 'has not thumbed every page of the "Principles of Geology?"' And he adds, 'I think that he who writes fairly the history of his own progress in geological thought will not easily be able to separate his debt to Hutton from his obligations to Lyell.' This cordial testimony of a fellow-laborer in the cause of scientific enlightenment exactly indicates Sir Charles Lyell's place in the history of that task. He was a man of singularly open mind, one of those who stand above their contemporaries and hail the dawn of new truths upon the world. His own works mark the progress of his own as well as of the public opinion on the great problems raised by scientific discovery, and he remained to the end of his life always ready for the reception of new facts, and for the corresponding modifications of opinion.

"Sir Charles Lyell had traveled and seen much. Thus in early manhood he explored many parts of Norway, Sweden, Belgium, Switzerland, Germany, and Spain, including the volcanic regions of Catalonia. In 1836 he visited the Danish Islands of Seeland and Møen, to examine their Cretaceous and Tertiary strata. In 1841 he was induced to cross the Atlantic, partly in order to deliver a course of lectures on his favorite science at Boston, and partly in order to make observations on the structure and formation of the Transatlantic Continent. He remained in the United States for a year, traveling over the Northern and Central States, and extending his journey as far southward as Carolina, and northward to Canada and Nova Scotia, his exploration ranging from the basin of the St. Lawrence to the mouths of the Mississippi. On returning from this journey, he published his 'Travels in North America,' a work of considerable interest to other persons besides geologists, and showing that he could extend his observations to the stratification of society around him as well as that of the earth beneath his feet. He paid a second visit to America in 1845, when he closely examined the geological formation of the Southern States and the coasts that border on the Atlantic and the Gulf of Mexico, and more especially the great sunken area of New Madrid, which had been devastated by an earthquake 30 or 40 years previously. Upon reaching England, he published his 'Second Visit to the United States,' a companion to his former work. For his other scientific papers we must refer our readers to the 'Proceedings' of the Geological Society, 1846-49, and its 'Transactions.'

"Late in life, about ten or twelve years ago, Sir Charles Lyell published another very important work, on 'The Antiquity of

AM. JOUR. SCI., THIRD SERIES—VOL. X, No. 58.—OCT., 1875.

Man,' summarizing and discussing all the important facts accumulated up to that time in favor of the high antiquity of the human race, viewed from the standpoints of the archæologist, the geologist, and the philologist.

"Numerous honors were conferred on Lyell in recognition of his services to science. As far back as 1836 he was elected to the Presidential Chair of the Geological Society, to which he was re-elected in 1850. He received from Her Majesty the honor of knighthood in 1848, and in 1855 the honorary degree of D.C.L. of the University of Oxford was conferred upon him. He had been for many years a Fellow of the Royal Society, and in 1833 received one of the Royal Society's Gold Medals for his 'Principles of Geology.' In 1858 the Royal Society conferred upon him the highest honor at their disposal—the Copley Medal; and in 1864–5 he filled the Presidential Chair of the British Association for the Advancement of Science. He received the Wollaston Gold Medal from the Geological Society of London in 1865 (his continued official connection with which had precluded his receiving it earlier). He was raised in 1864, on the recommendation of the then Prime Minister, Lord Palmerston, to a Baronetcy, which now becomes extinct by his decease. He was a Deputy-Lieutenant for his native county of Forfarshire.

"Sir Charles Lyell has been so long and so honorably known among the scientific teachers of the time, that though he had arrived at his seventy-eighth year, and the period of his chief intellectual and physical activity had long passed away, probably even the younger men of the present generation will feel that science is poorer by his loss.

"At the meeting of the Geological Society of London, held in the Society's room, Burlington House, Picadilly, on Wednesday last (February 24th), the President, John Evans, Esq., F.R.S., before commencing the business of the meeting, alluded to the great loss which all present had sustained. He little expected, when speaking on the last occasion, at the Anniversary Meeting, of the services which Sir Charles Lyell had rendered to science for the previous fifty years, that he should have on the present occasion to announce and lament his irreparable loss. Sir Charles Lyell had been a true philosopher and a sincere friend. He had lived to see the extension of science which he had so eagerly desired realized. In future times, wherever the name of Lyell shall be known, it will be as that of the greatest, the most philosophical, the most enlightened geologist of Great Britain or Europe.

"In accordance with the wish of the Council of the Royal Society, Sir Charles Lyell will rest beside his old friend and

fellow-laborer in science, Sir John Herschel, in Westminster Abbey."

We add the following appreciative remarks from *Nature* of March 4th.

"Lyell's claim to fame lies in this, that he organized the whole method of inquiry into the history of the formation of the crust of the earth, and established on a sound footing the true principles of geological science; his theory being that, by the uniform action of forces such as are now in operation, the visible crust of the earth has been evolved from previous states.

"Lyell was not only a keen investigator of natural phenomena; he was also a shrewd observer of human nature, and his four interesting volumes of travel in America are full of clever criticism and sagacious forecasts. His mind, always fresh and open to new impressions, by sympathy drew towards it and quickened the enthusiasm of all who studied nature. Had he done nothing himself, he would have helped science on by the warmth with which he hailed each new discovery. How many a young geologist has been braced up for new efforts by the encouraging words he heard from Sir Charles, and how many a one has felt exaggeration checked and the faculty of seeing things as they are strengthened by a conversation with that keen sifter of the true from the false!

"Though by nature most sociable and genial, yet Sir Charles often withdrew from society where the object of his life, the pursuit of science, was not promoted; but when anything interesting turned up he always tried to share his pleasure with all around. Many of us will remember the cheerful and hearty 'Look here'—'Have you shown it to so and so?'—'Capital, capital'

"The little wayside flower, and, from early happy associations, still more, the passing butterfly, for the moment seemed to engross his every thought. But the grandeur of the sea impressed him most; he never tired of wandering along the shore, now speaking of the great problems of earth's history, now of the little weed the wave left at his feet. His mind was like the lens that gathers the great sun into a speck and also magnifies the little grain he could not see before. He loved all nature, great and small.

"Much we owe to Leonard Horner, himself a good geologist, for having inspired the young Charles Lyell. In after years, when already well known, Charles Lyell chose as his wife the eldest daughter of his teacher and friend. Many have felt the charm of her presence—many have felt the influence of the soul that shone out in her face; but few know how much science directly owes to her. As the companion of his life, sharing his

labor, thinking his success her own, Sir Charles had an accomplished linguist who braved with him the dangers and difficulties of travel, no matter how rough; the ever-ready prompter when memory failed, the constant adviser in all cases of difficulty. Had she not been part of him she would herself have been better known to fame. The word of encouragement that he wished to give lost none of its warmth when conveyed by her; the welcome to fellow-workers of foreign lands had a grace added when offered through her. She was taken from him when the long shadows began to cross his path; but it was not then he needed her most. When in the vigor of unimpaired strength he struggled amongst the foremost in the fight for truth, then she stood by and handed him his spear or threw forward his shield. He had not her hand to smooth his pillow at the last, but the loving wife was spared the pain of seeing him die.

"It doubtless occurred to many a one among the crowd who saw him laid to rest among the great in thought and action, that he might have been eminent in many a line besides that he chose.

"His was a well-balanced judicial mind, which weighed carefully all brought before it. A large type of intellect—too rare not to be missed. But it was well that circumstances did not combine to keep the young laird on his paternal lands among the hills of Forfarshire: it was well for science that he was induced to prefer the quieter study of nature to the subtle bandying of words or the excitement of forensic strife. Failing health had for some time removed him from debates. Still to the last his interest in all that was going on in this scientific world never failed, and nothing pleased him more than an account of the last discussion at the Geological Society, or of any new work done. As a man of science his place cannot be easily filled; while many have lost a kind, good friend."

The number of *Nature* for August 26, contains an excellent portrait of Sir Charles Lyell, accompanying a biographical notice by Prof. Giekie.\*

A list of Lyell's memoirs to the close of 1863 will be found in the Royal Society Catalogue, numbering, with his elaborate works, no less than seventy-one separate communications in his own name, and five more in connection with others.

\* Artist's proofs of this portrait (engraved on steel by C. H. Jeem) may be had at the office of *Nature*, 29 Bedford Street, Strand, London, W. C. Price 5s. each.