

"Would it be too bold to imagine that, in the great length of time since the earth began to exist, perhaps millions of ages before the commencement of the history of mankind, would it be too bold to imagine that all warm blooded animals have arisen from one living filament, which the great First Cause endued with animality, with the power of acquiring new parts, attended with new propensities; directed by irritations, sensations, volitions, and associations, and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down these improvements by generation to its posterity world without end.

The ancestors of James Clerk Maxwell were none the less marked for strong intellectual traits. He descended from a line which for two centuries had produced some of the best intellectual and moral stuff, for which the rocky soil of old Scotland, like that of her transatlantic sister New England, is so justly celebrated. The father of Maxwell was a lawyer with decidedly scientific inclinations, who inheriting a small estate in Kirkcudbrightshire abandoned in early life his unimportant legal practice in Edinburgh, and thenceforth devoted himself to the cultivation of his farm and his family. He loved to do whatever he did, great or small—from the selection of a hide for his shoes to the planning of a barn—with what he called "judiciousness." He had a special fondness for applied science, and early took his son to visit various industrial establishments where he directed his attention to the useful application of scientific principles.

Not only did a valuable intellectual heritage fall to the lot of both Darwin and Maxwell, but a precious moral inheritance descended to them both. The father of Charles Darwin was known for his benevolence to the poor whom he met in his practice, and Maxwell was early surrounded on his father's side by the earnest influences of Scottish Presbyterianism, and on his mother's by the perhaps more genial and humane influences of the Church of England; and we shall see either that those were not lost in building up the character of the retired naturalist of Bromley, or of the Cambridge professor of physics.

But before proceeding a word as to the order in which our subject is to be treated. I purpose first to go over briefly the leading facts in the careers of Darwin and Maxwell, then to give a condensed summary of their contributions to science, and finally to call your attention to the personal and religious character of these men as far as the facts before the public will permit. For it is not enough for us to know what great things a man may do or write or discover, nor indeed does the mind rest satisfied with the knowledge of the great things which the author of nature has done, but we must needs ask what sort of man was he that did or wrote or found—as we also reverently ask who is this Almighty One who made the wonderful universe in which we live. And out of all this I propose not to draw myself, but let each one of my hearers draw for himself, some food for reflection—something which to young men who are looking forward to life with earnestness may be a help, an inspiration, a warning.

Charles Darwin, after receiving his primary training at Shrewsbury Grammar School, went at sixteen to Edinburgh University for two years, then to Christ College, Cambridge, where he was graduated with or-

inary degrees in 1831, in his twenty-second year. It may be of interest to recall that it was Christ College which graduated Latimer and expelled Milton. Darwin's father destined him for the church, but at Cambridge he came under the influence of a Professor Henslow, a man who combined singular purity of character and interest in natural science. We shall get some idea both of this man and of the kind of influence he exerted over his pupil, as well as of Darwin's own matured character, by what Darwin wrote concerning him, for, as one of his biographers remarks, had he not reflected something of the character of his teacher, he would never have so appreciatingly described it. The words which Goethe puts into the mouth of the Earth Spirit, whom Faust conjures up in his study with mystic symbols, apply here: "Thou art like the mind whom thou comprehendest." Darwin thus refers to his Cambridge teacher: "I went to Cambridge in 1828 and soon became acquainted with Professor Henslow. Nothing could be more simple, cordial and unpretending than the encouragement which he afforded to all young naturalists. I soon became intimate with him, for he had a remarkable power of making the young feel completely at ease with him, though we were all awe struck with the amount of his knowledge." Then he proceeded to analyze his character. He speaks of his transparent sincerity, kindness of heart, the absence in him of all self-consciousness, the objectivity of his mind, his winning courtesy to all—to the most distinguished scholar and the youngest student alike, the considerateness with which he corrected the blunders of students, the equability of his temper, his benevolence, his vigorous and determined will. In intellect his accurate powers of observation, sound sense and cautious judgment seemed predominant, and he manifested capacity for extended observations and broad views. Darwin concludes this sketch with these significant words: "Reflecting over his character with gratitude and reverence, his moral attributes rise, as they should do in the highest characters, in pre-eminence over his intellect."

Upon being graduated, Darwin, at the friendly recommendation of Prof. Henslow, had an opportunity of accompanying, as naturalist, Captain Fitzroy of H. M. ship *Beagle* upon a six year's cruise. The ship visited South America, the Pacific Islands, Australia, New Zealand and Mauritius, returning in 1836.

Three elements went to make Darwin a naturalist: his inherited aptitudes, his contact with Professor Henslow, and particularly the cruise of the *Beagle*. In the course of this extended cruise the young naturalist had large opportunities of observing nature in all her phases, and over a considerable portion of the planet. He here gathered great masses of material and cultivated his rare powers of observation. As the direct and indirect result of this voyage, Darwin wrote a series of works which continued to appear during the succeeding seventeen years. These works include a considerable portion of the "Zoology of the voyage of H. M. ship *Beagle*, 1840-43; the structure and distribution of coral reefs, 1842. The instruction given in our common school physical geographies as to the origin of atolls, embodies the result of Mr Darwin's investigations as set forth in this work. Geological observations on volcanic islands, 1844; geological observations on South America, 1846. In 1851-3 appeared