

get the man himself at his highest development.—GRANT ALLEN.

---

READERS' AND STUDENTS' NOTES

1. Biographical notices and critical estimates of Tyndall are to be found innumerable in magazines and other periodicals, but perhaps the most interesting and most complete account of Tyndall's life and work available to ordinary readers is the "Character Sketch" by Grant Allen in "The Review of Reviews" for February, 1894. Grant Allen, distinguished both for his knowledge of science and his literary style, writes of his subject—it goes without saying—appreciatively and interestingly.

2. An intimate friend and associate of Tyndall throughout almost the whole of his scientific career was Professor Huxley. When Tyndall died Huxley was importuned to write his biography. He did not write his biography, but he wrote a slight sketch in which he sought among other things, "to illustrate and emphasize the fact" that in Tyndall the world lost "a man of rare and strong individuality." This sketch is the opening number of "The Nineteenth Century" for January, 1894.

3. Herbert Spencer was also an intimate friend of Tyndall for almost as long a period as Huxley was. In fact the three great scientists were the closest of friends for over forty years together. When Tyndall died Spencer also wrote an appreciative sketch of the character and achievement of his friend as a tribute to his memory. This sketch is to be found in "McClure's Magazine" for March, 1894.

Thomas Henry Huxley



XVI. THOMAS HENRY HUXLEY

1825-1895

*BIOGRAPHICAL STUDY*

BY DAVID STARR JORDAN, LL. D.

President of Leland Stanford University

Thomas Henry Huxley was born at Ealing, a suburb of London, on May 4, 1825, and died at Eastbourne, June 29, 1895, aged seventy years. He was the seventh son of George Huxley, a schoolmaster in Ealing. Why he was christened Thomas he says he never knew; "but it is a curious chance that my parents should have fixed for my usual denomination upon the name of that particular apostle with whom I have always felt most sympathy."

In a charming autobiographical sketch addressed as a letter to Louis Engel and published in Mr. Engel's volume, "*From Handel to Hallé*," Huxley gives this account of his parentage:

"Physically I am the son of my mother, so completely, even down to peculiar movements of the hands, . . . . . that I can hardly find any trace of my father in me, except an inborn faculty for drawing, unfortunately . . . . . uncultivated, a hot temper, and that amount of tenacity of purpose which unfriendly observers sometimes call obstinacy.

"My mother was a slender brunette, of an emotional and ener-



getic temperament, and possessed of the most piercing black eyes I ever saw in a woman's head. With no more education than other women of the middle classes in her day, she had an excellent mental capacity. Her most distinguishing characteristic, however, was rapidity of thought. If one ventured to suggest that she had not taken much time to arrive at any conclusion she would say: 'I cannot help it; things flash across me.' That peculiarity has been passed on to me in full strength. It has often stood me in good stead; it has sometimes played me tricks; and it has always been a danger. But, after all, if my time were to come over again, there is nothing I would less willingly part with than my inheritance of mother wit."

Of his early schooling Huxley spoke with no pleasure. His teachers "cared about as much for our intellectual and moral welfare as if they were baby-farmers." The boys were left to the struggle for existence among themselves, and "bullying was the least of the ill practices current" among them.

Young Huxley's ambition was to become a mechanical engineer, but early associations brought him to the study of medicine. He was strongly attracted by physiology, which he called "the mechanical engineering of living machines." Notwithstanding, he says, the fact that "natural science has been my proper business, I am afraid there is very little of the genuine naturalist in me. I never collected anything, and species work was always a burden to me. What I cared for was the architectural and engineering part of the business—the working out of the wonderful unity of plan in the thousands and thousands of diverse living constructions and the modifications of similar apparatuses to serve diverse ends."

The only teacher of whom Huxley spoke with pleasure was Wharton Jones, lecturer on physiology in the Charing

Cross School of Medicine. "The extent and precision of his knowledge impressed me greatly, and the severe exactness of his method of lecturing was quite to my heart. I do not know that I have ever felt so much respect for anybody before or since."

On finishing his medical course Huxley was appointed surgeon of H. M. S. *Victory*, on duty at Haslar hospital, where his official chief was the wise and capable naturalist explorer, Sir John Richardson, the author of the excellent "*Fauna Boreali-Americana*." At Richardson's suggestion Huxley was afterward made assistant surgeon on H. M. S. *Rattlesnake*. In this service he spent four years at sea, chiefly about Australia and the neighboring islands, and here he made the studies of marine life which gave him a high reputation in the scientific world before he returned to England to become aware of the fact.

In 1850 he returned to England, and in 1853 resigned from the naval service, determined to trust to his pen until other means of support should come to him. Apart from its rare scientific opportunities the experience of the cruise of the *Rattlesnake* gave him valuable personal discipline. It was good, he says, "to be down on the realities of existence by living on bare necessities, to find out how extremely well worth living life seemed to be when one woke from a night's rest on a soft plank with the sky for canopy, \* \* \* and more especially to learn to work for the sake of what I got for myself out of it, even if it all went to the bottom and I along with it. \* \* \* When I hear some of my young friends complain of want of sympathy and encouragement I am inclined to think that my naval life was not the least valuable part of my education."

Huxley was now candidate for the chair of natural his-



tory in the University of Toronto, his friend, Professor Tyndall, being at the same time an applicant for the chair of physics. In both cases the applicants failed, for in 1853 the names of Tyndall and Huxley were unknown in academic circles. Had both been successful the whole intellectual life of Canada would have been changed by their presence.

In 1854 Huxley was appointed palæontologist and lecturer on natural history at the Royal School of Mines, a position held by him until 1885. After that date many honors and duties came to him, the most distinguished of which was the presidency of the Royal Society.

At the beginning of his professorship, he tells us in his autobiography: "I disliked public speaking and had a firm conviction that I should break down every time I opened my mouth. I believe that I had every fault a speaker could have (except talking at random and indulging in rhetoric)." But these two faults alone are incurable in a public speaker and unpardonable to a man of science. The other faults, whatever they may have been, were overcome by persistent effort and experience.

"His writings," says Professor Lankester, "are marked by his individuality—clear, graceful, humorous, incisive. He had a very large share of the artistic temperament, as was apparent both in his skill in the use of the pencil and in his extraordinary aptitude in the use of language. He had a fine innate taste which demanded excellence in form of expression. This was gradually cultivated by his efforts to expound scientific thoughts and methods to a degree which gave him an unrivaled position as a speaker and writer. His grace and artistic finish of expression were the more noticeable from the rigid adherence to truth

and moderation which characterized all his utterances. \* \* \* He never delivered an attack without keeping shot in his locker." His strength of speech was that which has been called "honest eloquence," making his facts tell for themselves, and carrying his point by the weight of the truth on which he rested his opinions. As Professor Michael Foster has said: "One guiding principle in Huxley's life was the deep conviction that science was meant not for men of science alone but for all the world; and that not in respect to its material benefits only, but also and even more for its intellectual good."

Huxley was married in 1853 to Miss Henrietta O. Heathorn, whom he had met in Sydney while on the voyage of the *Rattlesnake*. His married life was most peaceful, and his wife, with one son and three daughters, survive him.

With the publication in 1859 of Charles Darwin's "*Origin of Species*" Huxley became one of the first and most ardent converts to the new doctrine. By Darwin's investigations a great flood of light was thrown on the problems to which Huxley had given his life. To the diffusion of the knowledge thus received he gave the whole strength of his voice and pen. He became at once the apostle and the expositor of the science of evolution.

Of his work for popular science Huxley thus speaks in the closing paragraphs of his remarkable autobiography:

"The last thing that it would be proper for me to do would be to speak of the work of my life or to say at the end of the day whether I think I have earned my wages or not. Men are said to be partial judges of themselves—young men may be; I doubt if old men are. Life seems terribly fore-shortened as they look back; and the mountain they set themselves to climb in youth turns out

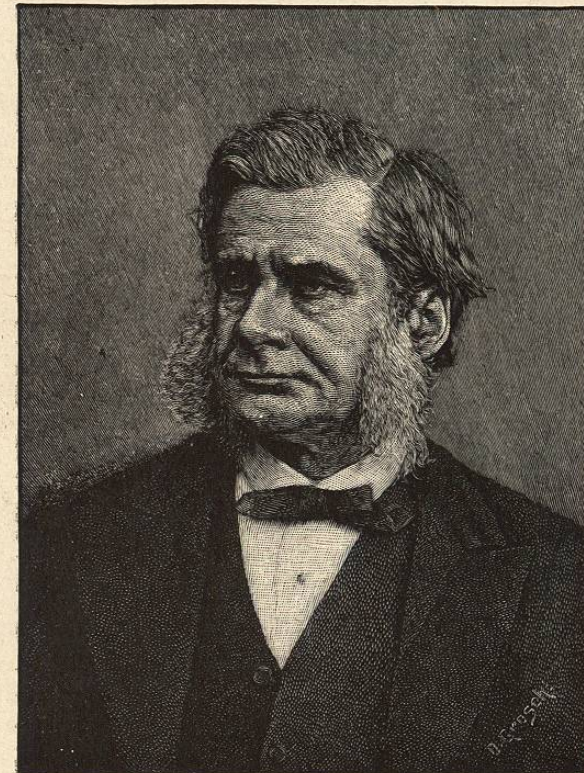


to be a mere spur of immeasurably higher ranges, when, with failing breath, they reach the top. But if I may speak of the subjects I have had more or less definitely in view since I began the ascent of my hillock they are briefly these: To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction—which has grown with my growth and strengthened with my strength—that there is no alleviation for the sufferings of mankind except veracity of thought and action and the resolute facing of the world as it is, when the garment of makebelieve, by which pious hands have hidden its uglier features, is stripped off.

“It is with this intent that I have subordinated any reasonable or unreasonable ambition for scientific fame which I may have permitted myself to entertain to other ends; to the popularization of science; to the development and organization of scientific education; to the endless series of battles and skirmishes over evolution; and to untiring opposition to that ecclesiastical spirit, that clericalism, which in England, as everywhere else, and to whatever denomination it may belong, is the deadly enemy of science.”

In a letter to Professor Lankester, Huxley says that he “has never valued the discoveries of science so much as her methods.” The methods by which truth may be won and used in the conduct of life constituted the first aim of all his efforts. In his plea for the study of biology in the schools he says somewhere that he would not “turn his hand over” to have zoology introduced in all the schools of Great Britain if it is to be taught in the old, stupid way, blind memorizing of the conclusions of some authority.

“If a man,” he says, “asks me what the politics of the inhabitants of the moon are and I reply that I do not know; that neither I nor any one else have any means of knowing; and that under these circumstances I decline to trouble myself about the subject at all—I do not think that he has any right to call me a skeptic. On the contrary, in replying thus, I conceive that I am



THOMAS HENRY HUXLEY.



simply honest and truthful, and show a proper regard for the economy of time."

This is the spirit of that which Huxley termed "agnosticism," a word which has been woefully abused by its friends and enemies since Huxley first adopted it for himself.

With Emerson, he would have no one "pretend to know or believe that which he really did not know or believe." And to get rid of all shams, to strip off all "garment of makebelieve," is the first requisite to any honest and saving faith, whether in science or in conduct or in religion.

Huxley's life work was that of a teacher of the people rather than that of a trainer of individual men. He was a lecturer to many rather than a teacher of a few, and for this reason he has left no school of followers, no band of disciples. As an expositor of popular science only Tyndall and Agassiz in modern times can be compared with him. As an essayist he stands in the front rank among English writers. As an original investigator his rank was very high, though not the highest. As a controversialist he has had no rival among men of science. His resources were unbounded; his blade was sharp; and, like a true Briton, he loved a fight. But unlike most famous debaters he was always on the right side. He never sacrificed truth or justice to make his point. It is in his power of exposition and his lifelong insistence on right thinking as fundamental to right living that Huxley's influence is greatest and most lasting.



## THOMAS HENRY HUXLEY

### SELECTED STUDIES AND REMINISCENCES

#### HUXLEY'S EARLY ACQUAINTANCE WITH ILL-HEALTH

"The extraordinary attraction I felt towards the study of the intricacies of living structure nearly proved fatal to me at the outset. I was a mere boy—I think between thirteen and fourteen years of age—when I was taken by some older student friends of mine to the first post-mortem examination I ever attended. All my life I have been most unfortunately sensitive to the disagreeables which attend anatomical pursuits; but on this occasion, my curiosity overpowered all other feelings, and I spent two or three hours in gratifying it. I did not cut myself, and none of the ordinary symptoms of dissection poison supervened; but poisoned I was somehow, and I remember sinking into a strange state of apathy. By way of a last chance I was sent to the care of some good, kind people, friends of my father's, who lived in a farmhouse in the heart of Warwickshire. I remember staggering from my bed to the window on the bright spring morning after my arrival, and opening the casement. Life seemed to come back on the wings of the breeze; and, to this day, the faint odor of wood-smoke, like that which floated across the farm-yard in the early morning, is as good to me as the "sweet south upon a bed of violets." I soon recovered; but for years I suffered from occasional paroxysms of internal pain, and from that time my constant friend, hypochondriacal dyspepsia, commenced his half century of co-tenancy of my fleshly tabernacle."—*From Professor Huxley's "Autobiography" in Louis Engel's "From Handel to Hallé."*

#### HUXLEY'S CHARACTER

No subtle analysis is needed to explain Huxley's character, the beauty of which consisted in being completely natural, and much that he says of David Hume, in one of his "Essays," might be applied with equal justice to himself. He possessed in a high degree that rare but open secret to which General Gordon owed so much of his marvelous influence; he was always himself, the same to young and to old, to rich and to poor, to men and to women, and had his lot been cast like Gordon's in Asia, or in Africa, he would doubtless have been the same to Orientals as to Europeans. He was frank because he was fearless; he inspired confidence because he was evidently a true-hearted man; his native self-respect was set off by a respectful manner towards others; his intolerance of sophistry sometimes betrayed him into undue vehemence in controversial writing, but there was no pettiness in his *odium scientificum*, and a pure love of truth shone through all his most trenchant diatribes, political or theological. As I shared most of his convictions on politics, we talked over such questions without reserve, but I forbore, and never had occasion, to discuss with him questions concerning religious doctrine. I have, therefore, no right to speak from personal knowledge of his attitude towards them. I cannot doubt, however, that whatever his creed, his inner life was that of a good Christian, and that his hopes went beyond his beliefs, though he was too honest to mistake hopes for beliefs, or beliefs for demonstrations.—HON. GEORGE C. BRODRICK, D. C. L., *Warden of Merton College, Oxford*, in "The Fortnightly Review."



## HUXLEY IN HIS OWN HOUSE

Mr. Huxley's relations with his friends were of a kind which may be called affectionate. It was a pleasure to see him among them and among his own family. During many years while he lived in London, I saw him often in these agreeable circumstances. His house was in Marlborough Place, St. John's Wood, a neighborhood which, though esteemed a little remote and well out of touch with the merely fashionable world, had attractions of its own. There is a St. John's Wood "set" of artists, Mr. Alma-Tadema then and now at the head of them. There is, or was, a literary set, of which the most distinguished figure was George Eliot. Then comes a very miscellaneous company of people who liked the district because it has air and space, and is not too dear. Mr. Huxley's house stood in its own grounds, of moderate size; the house itself roomy enough, well but plainly furnished. Here there used to be, every Sunday evening, a dinner, followed by a reception. You would be wrong, if you supposed that these terms implied state or ceremony. There was none, though the number of people who sat down at dinner was often as many as sixteen or eighteen, sometimes more. Mr. and Mrs. Tyndall were among the most frequent. Tyndall and Huxley were as brothers. The public looked on them as rivals, and so perhaps in a sense they were; but the rivalry, if it existed consciously to either, never affected their relations to each other. They were comrades; co-workers in a great common cause, and they loved each other. Mr. Herbert Spencer came less often. His health has never been such as to allow of much dining out, even with intimate friends.

When he came, there was almost always a discussion of high matters relating to science or philosophy, which commonly, at least often, on Mr. Spencer's part, degenerated into argument. To that, also, his health was unequal, and a sleepless night was the penalty he paid. But there was in Mr. Spencer's loyalty to his convictions, and in his belief that in all circumstances the right opinion, which of course was his own, must be defended and the wrong combated, something pathetic. The gallantry of his struggle against physical weakness touched you; it touched Mr. Huxley, who never forgot that he was host. At his own table he avoided arguments when he could. Others, or all others, did not. Mr. Huxley sat there with a serenity and patience which were admirable, joining in discussions in a way to mitigate their severity; he himself, too, of a nature averse to all compromise, but keeping under the purely intellectual view and reviving the social view, when too eager disputants seemed in danger of taking some other. If I were to name all those who used to assemble in this easy way in the reception-rooms of the house in Marlborough Place, it would be a long catalogue.—GEORGE W. SMALLEY, in "*Scribner's Magazine*."

## HUXLEY'S ONE INDULGENCE—HUXLEY AS A WORKER

Neither Tyndall nor Mr. Herbert Spencer smoked. Mr. Huxley liked his pipe, and would never admit that tobacco in moderation could hurt anybody. He rallied me when I gave it up, as if to abandon this consolation of life were to confess a defeat; and I suppose it was. But he was not a man to generalize about individuals. He was a physiologist, and a very great one, with, in that as in everything