

forcibly recall all she had loved and lost for ever, by short, passionate outbursts of grief, but which were always followed by a deeper and more settled melancholy than before.

(To be continued in our next.—Commenced in No. 1418.)

TWO GREAT MEN OF OUR TIME.

WE present our readers with engraved portraits of two of the most celebrated men of this generation, great as it is in great men and noble deeds. Professor Huxley and Mr. Darwin, in their separate lines, have taken the modern world of thought by storm, and probably no brace of philosophers of such eminence have ever commanded more of the public attention. Their power lies chiefly in the daring and originality of their intellectual exercises. Closely allied in the grasp and bias of their genius, they have attempted the solution of problems which have vexed and puzzled the minds of thinkers of every age. They have tried to penetrate the mysteries of creation. We are not called upon to endorse their opinions, opposed as they are to many of our prejudices, convictions, and preconceptions; but we can, without accepting or rejecting their doctrines and speculations, explain them to our readers briefly and intelligibly.

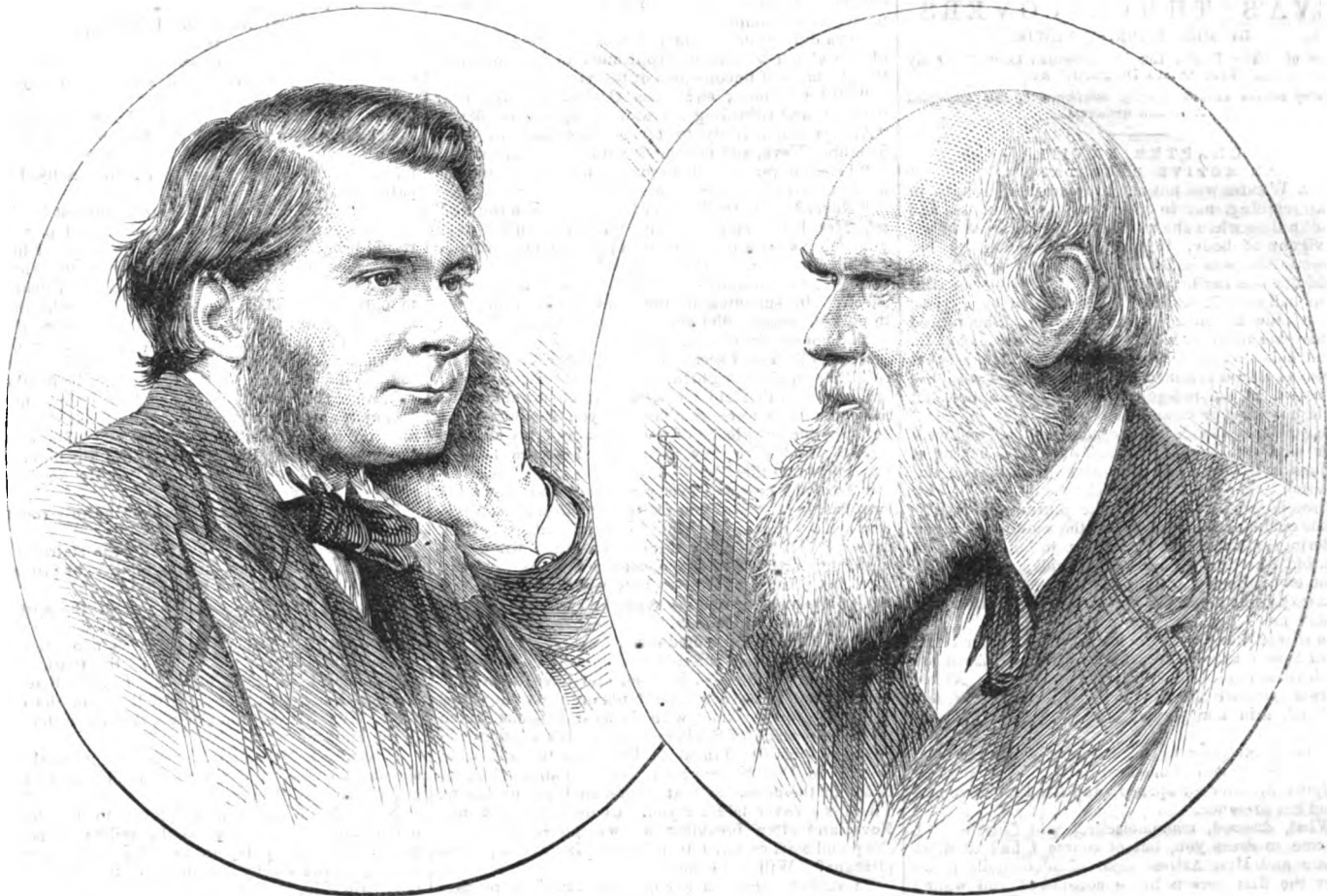
Both Professor Huxley and Mr. Darwin revel in the science which has the natural history of the animal kingdom for its subject; but they have taken up somewhat different branches, Professor Huxley being identified more particularly with the physiology and comparative anatomy of the animal series, and Mr. Darwin with its progressive development. The chief interest in the lives of such men consequently centres in their works. We know them best by what they have profusely placed before the reflective faculties.

Mr. Charles Darwin is descended from a family of thinkers, his grandfather being that Dr. Erasmus Darwin, of Shrewsbury, who acquired a good reputation as a physician, and wrote those remarkable books, "The Loves of the Plants" and "Zoonomia," and in many of his suggestions anticipated some of the developments of his accomplished grandson. Professor Thomas Henry Huxley is a son of the late George Huxley, Esq., and was born at Ealing, Middlesex, in 1825. He was educated at Ealing School, and subsequently studied medicine at the Medical School of Caringcross Hospital. He was appointed assistant-surgeon to H.M.S. Rattlesnake in the year 1846, and remained with that vessel during the surveying cruise in the South Pacific and Torres Straits. He returned to England in 1850, and succeeded Mr. Edward Forbes at the School of Mines, Jermyn-street, in 1854. But Professor Huxley's renown is based on his being the writer of numerous papers on natural science published in the "Transactions and Journals" of the Royal Linnean Geological and Zoological Societies, and in the "Memoirs of the Geological Survey of Great Britain." He also published a separate work, "The Oceanic Hydrozoa," and among the works by which he is most popularly known are his collection of essays, called "Lay Sermons," the admirable "Lessons in Elementary Physiology," in the Clarendon Press series, and the recently-published volume on the comparative anatomy of the vertebrates. His labours in the department of biology are significant of the man and the theme. He is, as we understand him, a supporter of the doctrine that life originates from other life, but in the development of his views asserts the existence of a protoplasm, or "physical basis of life," which is common to all forms of organic life; and, as he maintains, is identical throughout in faculty, form, and composition. He asserts that, in the substance and foundation of their structure, the lichen on the rock and the botanist who examines it are one and the same.

It must, indeed, startle all but the habitually philosophic to be told that the microscopic fungus which multiplies by millions in the body of a fly, the giant pine of California, the huge finner-whale, and the jelly-fish that drains to nothing in the hand which raises it, are all made of the same "life-stuff," and owe existence, with its varied powers, to the "life property" of that primal, simple, and common "something." What, then, according to the philosopher, is this "physical basis of life?"

Professor Huxley takes a leaf of a stinging nettle to show that each of the hairs upon the leaf to which the plant owes its power of stinging is a delicate case of wood, with semi-fluid contents, filled with granules that constantly undulate up and down.

Mr. Huxley also draws blood from the finger; and, amid the well-known scarlet discs which the microscope exhibits, he points to certain colourless corpuscles exhibiting great activity, changing their forms, drawing in and thrusting out their substance, and creeping about like independent living things. These corpuscles, and the moving particles of the nettle-hair, are all "protoplasm," and "protoplasm" is found to enter into all organized living bodies. Beast, fowl, reptile, fish, mollusc, worm, polyp, and plant—all, in this respect, are the same; so that the perfect human being, and the lowest sea-animalcule, the beautiful woman and the flower which she plucks to adorn her hair, arise alike



[PROFESSOR HUXLEY AND MR. DARWIN.]

in particles of protoplasm, or "life stuff," as we have called it.

To use Mr. Huxley's own words, "Protoplasm, simple or nucleated, is the formal basis of all life. It is the clay of the potter, which, bake and paint it as he will, remains clay, separated by artifice, not by nature, from the commonest brick, or sun-dried clod."

Mr. Huxley analyzes this "life stuff" chymically. He says it is made up of the element carbon, and the three gases, hydrogen, oxygen, and nitrogen. Thereupon occurs the immense question, whether, assuming the fact that life itself originates from other life, the life particles containing these ingredients exist ready-made, indestructible, and perpetually combining into forms; or whether the "life stuff" is actually manufactured out of dead matter. The professor's reply is: "Under whatever disguise, whether fungus or oak, worm or man, the living protoplasm always dies, and could not live unless it died."

What is it, then, which makes this "protoplasm" for the huge consumption and reciprocal barter of the worlds of organization? Melt smelting-salts in water and you have the four ingredients of "life stuff;" yet no animal can get protoplasm from such a solution. But the plant can—out of that mixture it will build the matter of life. Even the plant, however, cannot manufacture this matter from the simple elements; it must have the nitrogen and hydrogen mixed as ammonia. This being furnished, the vegetable world raises the compounds to protoplasm, and supplies the animal world, directly or indirectly, with its primary stock of "life stuff." As animals must have the protoplasm created by plants, so, according to the professor, plants must have the elements combined into carbonic acid, which is carbon and oxygen; water, which is hydrogen and oxygen; and ammonia, which is hydrogen and nitrogen—before they can make the nucleated atoms of protoplasmic matter, which lives, and is the reason, the form, and the faculty of life.

Such is the decisive front with which Professor Huxley appears to revive the most uncompromising axioms of materialism. Nevertheless, he protests that he is no materialist. While referring all phenomena to force and matter, he yet declares himself the opponent of materialistic views, as "involving a grave and philosophical error."

Is this merely a legerdemain with words, vouchsafed that we may sink more placidly to our fate, as "magnetic mockeries?" Are we to believe that the loveliest lady, and the rose in her hair, are all the same with the worm and the jelly-fish—nay, that the lady

and the flower are molecular complexities of action and formation, which do not differ in kind from those of smelting-salts or the white of egg? Happily, not so. Mr. Huxley argues, indeed, that, with the march of inductive investigation, physiology will bring the phenomena of knowing, feeling, and acting into the domain of material law.

Mr. Darwin, of whom Professor Huxley is, perhaps, the most distinguished disciple, was born at Shrewsbury in 1809, and early distinguished himself in natural science. He accompanied H.M.S. Beagle as naturalist between the years 1832 and 1836, and published a record of his observations in a book called "The Voyage of Naturalists." But his fame is built on two extraordinary works, the "Origin of Species by Means of Natural Selection," published in 1859, and "The Descent of Man," which has only recently appeared, in both of which he "flutters the Volscians" of orthodoxy in a different direction to Professor Huxley. We cannot dwell in detail on his audacious theories, having only space for the slightest summary. Mr. Darwin tells us "that we must find our primal form in an aquatic animal, which seems to have been more like the larvæ of our existing marine Ascidians than any known form," and that in process of immeasurable ages we developed through the phase of apehood into our present erect, star-confronting shape. Mr. Darwin endeavours to show us how "man became man."

Beginning with the evidences of the descent of man from the lower form, Mr. Darwin reminds us that in his bodily structure man is notoriously constructed on the same general type or model with other mammals. Bones, muscles, nerves, blood-vessels, and internal viscera, can be compared with corresponding parts in a monkey, bat, or seal: even the brain is not exempt from the rule.

Mr. Darwin enters into some very curious detail and analogy; and he concludes the first chapter of his "Descent of Man" by maintaining that "the similarity of pattern between the hand of a man or monkey, the foot of a horse, the flipper of a seal, the wing of a bat, &c., is utterly inexplicable" on any other view than that of their "descent from a common progenitor, together with their subsequent adaptation to diversified conditions." "It is only our natural prejudice, and that arrogance which made our forefathers declare that they were descended from demi-gods, which lead us to demur to this conclusion. But the time will before long come when it will be thought wonderful that naturalists who were well acquainted with the com-

parative structure and development of man and other mammals should have believed that each was the work of a separate act of creation." Passing in the second chapter of his extraordinary work from the physical to the mental comparison between man and the lower animals, Mr. Darwin rebuts the objection that the immense superiority in mental power possessed by man weighs against the theory of his descent from a lower form. Admitting all the enormous difference even between the mind of one of the lowest savages and that of the most highly organized ape, he contends that the difference is of no fundamental character—is of degree and not of kind; and that there is a much wider interval in mental power between one of the lowest fishes, such as a lamprey or lancelet, and one of the higher apes, than between an ape and a man. On both sides of the scale—between the lamprey and the ape, between the savage and the Newton or Howard—there are numberless gradations, whether of mental power or of moral disposition; and on both sides, as the author shows, there are capabilities of progressive development, through natural selection and otherwise.

A crowd of anecdotes of a very interesting sort are adduced to prove that many of the human instincts and emotions and mental faculties are common, in different degree, to the lower animals: love, jealousy or the desire of love, emulation, magnanimity, dislike to ridicule; hatred of *emus*, craving for excitement, wonder, curiosity, imitation, attention, memory, even imagination and reason—under all these heads Mr. Darwin brings authenticated facts to convict man of kinship with the inferior animals. And he goes further: for he contends that those animals are, like man, capable of progressive improvement, of in some measure using tools and weapons, and taking steps towards some of the simpler arts; while, in the power of articulate language, in the sense of beauty, and even in superior powers, the difference, as elsewhere, is not fundamental, but of degree. It is impossible not to be struck by the breadth of research, the felicity of choice, and the persuasiveness of application with which Mr. Darwin, here as throughout, labours to make us think so poorly of our origin as it his object to do.

Our portrait of Professor Huxley is from a capital photograph by Messrs. Elliott and Fry; that of Mr. Darwin from an excellent likeness by Mr. O. G. Rejlander, to all of whom our thanks are due for their courtesy in freely according us permission to copy their works.