cinereo-pubescente, columna staminea exserta petalorum longitudinem dimidio excedente, carpellis nigrescentibus vel subnigrescentibus superne in medio sulcatis inferne carinatis.—Collected by C. G. Pringle, on rocky hills bordering Lake Cuitzeo, Michoacan, 20 July and 26 October, 1892 (No. 4132). Stem 10 to 20 feet high, woody, younger branches at the extremities covered with a scurfy cinereous pubescence. Leaves membranous, green, cordate; palmately 5-lobed, middle lobe longest, serrate, pubescent on both surfaces especially the young leaves, length of leaves on specimen 3–3½ inches, breadth 3–4 inches, petioles 1½–3 inches long covered with cinereous pubescence. Flowers axillary, solitary or at the end of the branches somewhat racemose. Bracts strapshaped, half inch long, shorter than the sepals. Calyx three-fourths inch long, sepals triangular or ovate, acute, inside the margin cinereous-pubescent. Petals convolute, 2¾ inches long. Staminеal tube exserted 1½ inches. Styles 10, capitately stigmatose. Fruiting peduncles straight, stiff, terete, generally slightly bent just below the fruit. Carpels 5, black or brownish, black on the back, grooved above, the groove gradually passing into a ridge below, third inch long.

This plant was distributed as *Malvaviscus acerifolius* Presl, of which there is a specimen gathered by Hænke in Mexico in the Herb. Mus. Brit. *M. Pringlei* differs from *M. acerifolius* Presl, in its leaves, bracts and flowers. The leaves are much deeper lobed in the former than in the latter and in *M. Pringlei* the bracts are shorter than the calyx and the petals nearly 3 inches long; in *M. acerifolius* the bracts are the same length as the calyx and the petals an inch long. *M. Pringlei* differs from *M. cinereus* Bak. fil. MS. in the texture of its leaves and its much larger flowers. I have named this very showy plant in honor of Mr. C. G. Pringle, who has done so much to further our knowledge of the Mexican flora.

Laphamia Toumeyi Robinson and Greenman. Many-branched from a knotted woody base, densely glandular-puberulent; branches about 4 inches long, erect, terete, striated, simple or again branched, rather cinereous: leaves spatulate, including the petioles 3 to 5 lines long, a line to a line and a half broad; entire, obtuse, thickish, cinereous; the petiole channelled above; heads discoid, 2½ to 3 lines high, equally broad, about 35-flowered, terminal upon the branchlets, together forming a pyramidal or subcorymbous inflorescence; involucral scales sub-biseriate, nearly equal, acute, the outer thickish, carinate, densely puberulent, the inner thinner and flatter: pappus of a single awn: tube of the corolla glandular-pubescent: achenes compressed, oblong-linear, about a line long, puberulent.—Collected by Prof. J. W. Toumey, in the Grand Cañon, 12 July, 1892 (No. 645).

Art. XVIII.—*Thomas Henry Huxley.* 1825-1895

by O. C. Marsh.

In the present half century of English science, four names stand forth preëminent; Darwin, Huxley, Spencer, and Tyndall, and of these masters Spencer alone survives. It has been my good fortune to know each of these men, under circumstances that brought out their prominent characteristics, intellectual and social, and my intercourse with each and all of them I recall as among the brightest spots in my life. Darwin I saw only at his own country home, but the others I met more frequently in London, and held still closer relations with them during their visits to this country. With Darwin and Huxley, as the leaders in modern natural science, my associations were more intimate than with the others, while Huxley was to me a guide, philosopher, and friend, almost from the time I made choice of science as my life work. For this reason, I cannot now bring myself to attempt an estimate of the loss to science and to the world occasioned by his death. I can only at present place on record a few facts of his life, and add something about the man himself as he appeared to me.

Thomas Henry Huxley was born at Ealing, Middlesex, England, May 4, 1825. His early education was obtained mainly at home, and in the Ealing school of which his father was one of the masters. He began his scientific studies in 1842, at the medical school of Charing Cross Hospital, and passed the M.B. examination at the University of London in 1845. In the following year, he entered the medical service of the Royal Navy at the Haslar Hospital, and from there was appointed to the post of assistant surgeon to H. M. S. *Rattlesnake*, then preparing for a surveying voyage to the South Seas. The ship left England in 1846 and returned in 1850, having surveyed the inner route between the barrier reef and the east coast of Australia and New Guinea, and also completing a voyage around the world. Huxley's scientific work during this voyage is well known, and in recognition of it he was elected, in 1851, a fellow of the Royal Society. He left the naval service in 1853, having failed to obtain from the government the publication of his researches during his voyage. This was afterwards done by the Royal Society.

In 1854, Huxley was appointed naturalist to the Geological Survey, and in the same year was made professor of natural history in the Government School of Mines, a position which he filled with marked success until his retirement in 1885. He was appointed in 1854 Fullerian professor of physiology in the Royal Institution, and also became examiner in physiology and comparative anatomy to the University of London.

From 1863 to 1869, he was Hunterian professor at the Royal College of Surgeons, and was president of the Geological Society of London in 1869 and 1870. For three years, beginning with 1872, he was Lord Rector of Aberdeen University, and in 1875 and 1876 was acting professor of natural history in the University of Edinburgh. In 1870, he was president of the British Association for the Advancement of Science. From 1870 to 1872, he was a member of the London School Board, where, as chairman of the educational committee, he rendered important services. He was elected president of the Royal Society in 1883, having previously served as its secretary. From 1881 to 1885, he was Inspector of Salmon Fisheries. He resigned this and other offices in 1885, owing to impaired health, and shortly after removed from London to Eastbourne, on the Sussex coast, where he passed the remainder of his life.

The ten years after his return to England in 1850 were devoted to brilliant investigations in several departments of natural science and to many popular lectures, which won for him high rank in the scientific world. With this came various official positions, the arduous duties of which he faithfully performed. His publications during this period were numerous and important, but need not be enumerated here.

With the appearance of Darwin's great work on the Origin of Species, a new field was opened to Huxley, which he entered with masterly zeal. He accepted at once the theory of Natural Selection, and applied it to the evolution of the human race, giving his first results in his lectures to working men, in 1860, at the Museum of Practical Geology. These lectures, which led to bitter controversy, were published in 1863, under the title, Evidence as to Man's Place in Nature. For several years, the battle over Darwin's views raged fiercely, and Huxley was the leader who repelled the assaults of both theologians and scientific conservatives. After this victory was won, he still continued the struggle by carrying the war into new fields, involving all the relations between science and religion, and this contest he carried on vigorously until failing health caused him to give up all intellectual work.

Haeckel, the leading biologist on the Continent, ably reviewed, in 1874, Huxley's scientific work up to that time, and the following brief extracts will serve to indicate his appreciation of it:

"When we consider the long series of distinguished memoirs with which, during the last quarter of a century, Prof. Huxley has enriched zoölogical literature, we find that in each of the larger divisions of the animal kingdom we are indebted to him for important discoveries.

"From the lowest animals, he has gradually extended his investigations up to the highest, and even to man. His earlier labours were, for the most part, occupied with the lower marine animals, especially with the pelagic organisms swimming at the surface of the open sea."

"More important than any of the individual discoveries which are contained in Huxley's numerous less and greater researches on the most widely different animals are the profound and truly philosophical conceptions which have guided him in his inquiries, having always enabled him to distinguish the essential from the unessential, and to value special empirical facts chiefly as a means of arriving at general ideas."

"After Charles Darwin had, in 1859, reconstructed this most important biological theory, and by his epoch-making theory of Natural Selection placed it on an entirely new foundation, Huxley was the first who extended it to man, and in 1863, in his celebrated three Lectures on "Man's Place in Nature," admirably worked out its most important developments. With luminous clearness, and convincing certainty, he has here established the fundamental law, that, in every respect, the anatomical differences between man and the highest apes are of less value than those between the highest and lowest apes. * * * * * Not only has the Evolution Theory received from Prof. Huxley a complete demonstration of its immense importance, not only has it been largely advanced by his valuable comparative researches, but its spread among the general public has been largely due to his well-known popular writings. In these he has accomplished the difficult task of rendering most fully and clearly intelligible, to an educated public of various ranks, the highest problems of philosophical Biology. From the lowest to the highest organism, * * * he has elucidated the connecting law of development.

"In these several ways he has, in the struggle for truth, rendered Science a service which must ever rank as one of the highest of his many and great scientific merits."

The above refers only to Huxley's biological work up to 1874. During the next twenty years, his scientific labors were equally fruitful, but embraced a much wider field. The results will be estimated in so many special reviews by those familiar with each department of science he treated, that they need not be especially mentioned here.

Huxley has himself placed on record, in the following words, the main objects he kept in view during his whole scientific career:

"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 of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its ugliest 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 popularisation of science; to the development and organisation 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 striving for the attainment of these objects, I have been but one among many, and I shall be well content to be remembered, or even not remembered, as such."

Huxley was a man of strong moral nature, with a tender conscience, but he could not accept authority when his reason did not approve. The following quotation will make clear his views on religious subjects, which have been much misunderstood:

"When I reached intellectual maturity and began to ask myself whether I was an atheist, a theist, or a pantheist; a materialist or an idealist; a Christian or a freethinker; I found that the more I learned and reflected, the less ready was the answer; until, at last, I came to the conclusion that I had neither art nor part with any of these denominations, except the last. The one thing in which most of these good people were agreed was the one thing in which I differed from them. They were quite sure they had attained a certain "gnosis,"—had, more or less successfully, solved the problem of existence; while I was quite sure I had not, and had a pretty strong conviction that the problem was insoluble. * * * * * So I took thought, and invented what I conceived to be the appropriate title of "agnostic." It came into my head as suggestively antithetic to the "gnostic" of Church History, who professed to know so much about the very things of which I was ignorant."

One thing that will always be of special interest to Americans is Huxley's visit to this country, in 1876. One object of this visit was to deliver a series of lectures in New York, but he came mainly to see America and its people, and what they were doing for science. The Exposition that year in Philadelphia was also an inducement, and last, but not least, he wished to see a sister, who for many years had resided in the South. During his visit, which extended over seven weeks, he attended

the American Association for the Advancement of Science at Buffalo, gave the opening address at the Johns Hopkins University at Baltimore, another discourse in Nashville, where his sister resided, and after visiting the principal scientific centers of the country, he delivered three lectures in New York on the eve of his departure. These lectures, with his other discourses in this country, were subsequently published under the title, American Addresses.

On his arrival in New York, in August, I met him there by appointment, and a day or two later, he came to New Haven to make me a long promised visit, and see my fossil treasures from the West. These he wished to examine before delivering his course of lectures, and he devoted a week of hard labor to this object, during which time I gained new insight into his methods of work and the noble nature of the man himself. One instance, which illustrates both these points, I am glad to place on record here.

One of Huxley's lectures in New York was to be on the genealogy of the horse, a subject which he had already written about, based entirely upon European specimens. My own explorations had led me to conclusions quite different from his, and my specimens seemed to me to prove conclusively that the horse originated in the New World and not in the Old, and that its genealogy must be worked out here. With some hesitation, I laid the whole matter frankly before Huxley, and he spent nearly two days going over my specimens with me, and testing each point I made. He then informed me that all this was new to him, and that my facts demonstrated the evolution of the horse beyond question, and for the first time indicated the direct line of descent of an existing animal. With the generosity of true greatness, he gave up his own opinions in the face of new truth, and took my conclusions as the basis of his famous New York lecture on the horse. He urged me to prepare without delay a volume on the genealogy of the horse, based upon the specimens I had shown him. This I promised, but other work and new duties have thus far prevented.

During Huxley's sojourn in America, I was fortunate enough to be with him on many occasions when he met all classes of the American people, many of whom had read his works and held him in high esteem. The impression he made upon rich and poor alike was a most agreeable one, and he returned home with a deep interest in America and its people and great hopes for its future. What seemed to impress him most of all, as an ethnologist, was the identity of the American race, especially in New England, with that of his own country, and he could detect no signs of that physical deterioration which our climate was supposed to have caused.

The lifelong friendship that existed between Huxley and his colleagues, Darwin, Spencer, and Tyndall, men of widely different views on many subjects, is a noteworthy fact. The intimacy between Huxley and Tyndall has been recorded on many pages, and I recall many illustrations of that of Huxley and Spencer, the last at one of the long-to-be-remembered dinners of the X Club, of which Huxley was then president.

As an illustration of the warm friendship existing between Huxley and Darwin, I may perhaps be permitted here to refer to an incident that occurred during one of my visits to England. I was passing a memorable day with Darwin, during which he spoke freely of many scientific men. Referring to Huxley, he said with more than usual earnestness, "Huxley is the king of men!" A few days later I mentioned this to Huxley, and he was deeply moved by it. His reply I shall never forget: "Now you can understand why we who know Darwin all have such an affection for him, and when his enemies reviled the noble man, why my right arm was so heavy in his defense."

How kind Huxley was to every one who could claim his friendship, I have good cause to know. Of the many instances which occur to me, one will suffice. One evening in London, at a grand annual reception of the Royal Academy, where celebrities of every rank were present, Huxley said to me, "When I was in America, you showed me every extinct animal that I had ever read about, or even dreamt of. Now, if there is a single living lion in all Great Britain that you wish to see, I will show him to you in five minutes." He kept his promise, and before the reception was over, I had met many of the most noted men in England, and from that evening, I can date a large number of acquaintances, who have made my subsequent visits to that country an ever increasing pleasure.

Another characteristic remark of Huxley's, at a later date, comes back to me as I write. Speaking of the many interruptions and distractions of his life in London, which claimed the greater part of his time, he said to me feelingly, "If I could only break my leg, what a lot of scientific work I could do!"

My latest message from Huxley came last Christmas, and with it the complete new edition of his revised works, which I shall always treasure as his parting gift, the last of many tokens of his friendship.

Honors fell thick and fast upon Huxley, especially during his active life. They were all deserved, and he estimated them at their true value. A mere list of his titles would extend the present notice much beyond the limits assigned to it.

Huxley's life work extended over so wide a range, and was of such high character, that no one man now living is qualified to place a true estimate upon it. The more important of his published works are as follows: Oceanic Hydrozoa, 1859; On the theory of the vertebrate skull, 1859; Evidence as to man's place in nature, 1863; Elementary physiology, 1866; On the physical basis of life, 1868; Introduction to the classification of animals, 1869; Lay sermons, 1870; Manual of the anatomy of vertebrated animals, 1871; Critiques and addresses, 1873; American addresses, 1877; Physiography, 1877; Manual of the anatomy of invertebrated animals, 1877; The crayfish, 1879; Hume, 1879; Science and culture, 1882; Essays on some controverted questions, 1892; Evolution and ethics, 1893. A new edition of his more popular works, in nine volumes, with his latest notes and additions, was published in 1894.

The limited space and time at my command have left little opportunity to say what I wish about Huxley himself. As I recall the hours spent with him, first of all the memory of his charming personality presents itself, and in this respect, no man I have ever met surpassed him. To go further and name his chief characteristics, I should place his ability, his honesty, and his courage, next in order. His marvellous ability no one will question. One qualified to judge has said, that, in his intellectual grasp, Huxley was the greatest man of the century. His honesty, in the broadest sense of the word, was the dominant feature of the man. His love of truth for its own sake, wherever it might lead him, was one of the strongest elements in his character, and this resulted not only in his well-known intellectual honesty, but also in his hatred of the opposite, wherever found. His courage, especially the courage of his convictions, is known to all, and has borne good fruits. Every man of science to-day is indebted to Huxley for no small part of the intellectual freedom he enjoys.

Huxley was especially fortunate in his home life, and a happier family circle I have never known. Mrs. Huxley, whom he won in his student days, was a most charming companion and helpmate in all his work, while his two sons and four daughters are all worthy of such a parentage.

Huxley passed quietly away on the afternoon of June 29, at his home in Eastbourne, after an illness of several months, which came at the end of years of feeble health. He was buried July 4, in St. Marylebone Cemetery, East Finchley, where he wished to lie. His friends proposed an interment in Westminster Abbey, where Darwin was entombed, but his own wishes were respected. His works are his best monument.

O. C. MARSH.

Yale University, July 20th, 1895.