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ART. I.—*Sir William Jackson Hooker.*

SIR WILLIAM JACKSON HOOKER died at Kew, after a short illness, on the 12th of August last, in the eighty-first year of his age.

Seldom, if ever before, has the death of a botanist been so widely felt as a personal sorrow,—so extended were his relations, and so strongly did he attach to himself all who knew him. By the cultivators of botany in our own country, at least, this statement will not be thought exaggerated. Although few of our botanists ever had the privilege of personally knowing him, there are none who are not much indebted to him, either directly or indirectly. It is fitting, therefore, that some record of his life and tribute to his memory should appear upon the pages of the *American Journal of Science*.

The incidents of his life are soon told. He was born on the 6th of July, 1785, at Norwich, England, where his father,—who survived to even a greater age than his distinguished and only son,—was at that period confidential clerk in a large business establishment. He was descended from the same family with “the judicious Hooker,” author of the “*Ecclesiastical Polity*.” The name William Jackson was that of our botanist’s cousin and godfather, who died young, and was soon followed by both his parents; in consequence of which their estate of Sea-salter, near Canterbury, came to young Hooker while yet a lad at the Norwich High School. He could therefore indulge the taste which he early developed for natural history, at this time mainly for ornithology. But the chance discovery of that

rare and curious Moss, *Buxbaumia aphylla*, which he took to his eminent townsman, Sir James Edward Smith, directed his attention to Botany, and fixed the bent of his long and active life. He now made extensive botanical tours through the wildest parts of Scotland, the Hebrides and the Orkneys, which his lithe and athletic frame and great activity fitted him keenly to enjoy. Coming up to London he made the acquaintance of Sir Joseph Banks and of the botanists he had drawn around him, Dryander, Solander, and Robert Brown.

In 1809 he went to Iceland, to explore that then little-known island. The exploration was most successful; but the ship in which he embarked with all his collections, notes, and drawings, was fired and destroyed and everything was lost, he himself narrowly escaping with his life. Hooker's earliest work, the *Journal of a Tour in Iceland*, in two octavo volumes, published at Yarmouth in 1811, and republished at London two years afterwards, gives an interesting account of his explorations and adventures, along with the history of a singular attempt at the time to revolutionize the island,—with which the disaster to the vessel he returned in was in some way connected, we forget how. Not disheartened by these losses, he now turned from a polar to an equatorial region, and made extensive preparations for going to Ceylon, with Sir Robert Brownrigg, then appointed Governor. But the disturbances which broke out in that island, more serious than those which attended the close of his Iceland tour, again frustrated his endeavors.

The strong disposition for travel and distant exploration, frustrated in his own case, came to fruit abundantly in the next generation, in the world-wide explorations of his son. He himself made no more distant journey than to Switzerland, Italy, and France, in 1814, becoming personally acquainted with the principal botanists of the day, and laying the foundations of his wide correspondence and great botanical collections. In 1815 he married the eldest daughter of the late Dawson Turner, of Yarmouth, and established his residence at Halesworth, in Suffolk. The next year, in 1816, besides publishing some of the *Musci* and *Hepaticæ* of Humboldt and Bonpland's collection, he brought to completion his first great botanical work, the *British Jungermannia*, with colored figures of each species, and microscopical analyses, in 84 plates, all from his own ready pencil,—a work which took rank as a model both for description and illustration. In 1828 he brought out, in conjunction with Dr. Taylor, the well-known *Muscologia Britannica*, the second edition of which, issued in 1827, is only recently superseded. The *Musci Exotici*, with 176 admirable plates, appeared, the first volume in 1818, the second in 1820. These were his principal works upon Mosses and the like,—an excellent subject for the training of a

botanist, and one in which Hooker, with quick eye, skilled hand, and intuitive judgment, was not only to excel but to lay the foundation of high excellence in general descriptive botany.

When arranging for a prolonged visit to Ceylon, it appears that he sold his landed property, and that his investment of the proceeds was unfortunate; so that the demands of an increasing family and of his enlarging collections, for which he always lavishly provided, made it needful for him to seek some remunerative scientific employment. Botanical instruction in Great Britain was then, more than now, nearly restricted to medical classes; the botanical chairs in the universities therefore mainly belonged to the medical faculty, and were filled by members of the profession. But, through the influence of Sir Joseph Banks, as is understood, the Regius Professorship of Botany in the University of Glasgow was offered to Hooker, and was accepted by him. He removed to Glasgow in the year 1820, and assumed the duties of this position. Here, for twenty years—the most productive years of his life—he was not only the most active and conspicuous working botanist of his country and time, but one of the best and most zealous of teachers. The fixed salary was then only fifty pounds; and the class-fees at first scarcely exceeded that sum. But his lecture-room was soon thronged with ardent and attached pupils, and the emoluments rose to a considerable sum, enabling him to build up his unrivalled herbarium, to patronize explorers and collectors in almost every accessible region, and to carry on his numerous expensive publications, very few of which could be at all remunerative.

The first production of these busy years was the *Flora Scotica*, brought out in 1821. The next year but one brought the first of the three volumes of the *Exotic Flora*, containing figures and descriptions of new, rare, or otherwise interesting exotic plants, admirably delineated, chiefly from those cultivated in the Glasgow and Edinburgh Botanic Gardens. Here first is manifested the interest in the flora of our own country, which has since identified the name of Hooker with North American botany,—a considerable number of our choicest plants, especially of the *Orchis* family, having been here illustrated by his pencil.

The *Icones Filicum* (in which he was associated with Dr. Greville,) in two large folio volumes, with 240 plates, begun in 1829 and finished in 1831, was his introduction to the great family of Ferns, to which he in later years devoted his chief attention.

In 1830 began, with the *Botanical Miscellany*, that series of periodical publications, which, continued for almost thirty years, stimulated the activity and facilitated the intercourse of botanists in no ordinary degree. The *Miscellany*, in royal octavo, with many plates, closed with its third volume, in 1838. The *Journal of Botany*, a continuation of the *Miscellany* in a cheaper

form, (in ordinary 8vo, issued monthly) took its place in 1834, but was itself superseded during the years 1835 and 1836 by the Companion to the Botanical Magazine (2 vols, imp. 8vo). In 1840 (after an interval in which the editor took charge of the botanical portion of Taylor's Annals of Natural History), the Journal was resumed and carried on to the fourth volume in 1842. Then, changed in title and enlarged, it appeared as the London Journal of Botany for seven years, until 1848, and finally, as the Journal of Botany and Kew Garden Miscellany, for nine years more, or to the close of 1857. The whole was carried on entirely at the editor's cost, he furnishing the MSS. for the letter-press, the drawings, &c., without charge, "so that it may be supposed his expenses were heavy, while his profits were, as he always anticipated, literally *nil*."

The plates of the Journal being too few to contain a tithe of the species in his herbarium which it was desirable to figure, an outlet for these was made by the *Icones Plantarum*, or *Figures*, with brief descriptive Characters and Remarks of New or Rare Plants, selected from the Author's Herbarium. Ten volumes of this work were published, with a thousand plates (in octavo), at the author's sole expense, and with no remuneration, between the years 1837 and 1854, the drawings of the earlier volumes by his own hand, of the later, by Mr. Fitch, whom he had trained to the work.

Botanists do not need to be told how rich these journals are in materials illustrative of North American Botany, containing as they do accounts of collections made by Scouler, Drummond, Douglas, Geyer, &c. Equally important for the botany of our western coast, especially of California, is the Botany of Capt. Beechey's Voyage (4to), in the elaboration of which Sir William Hooker was associated with Professor Walker-Arnott. But his greatest contribution to North American Botany—for which our lasting gratitude is due—was his *Flora Boreali-Americana* (2 vols, 4to, with 288 plates), of which the first part was issued in 1833, the last in 1840. Although denominated "the Botany of the northern parts of British America," it embraced the whole continent from Canada and Newfoundland, and on the Pacific from the borders of California, northward to the Arctic sea. Collections made in the British Arctic voyages had early come into his hands, as afterwards did all those made in the northern land expeditions by the late Sir John Richardson, Drummond, &c., and the great western collections of Douglas, Scouler, Tolmie, and others, while his devoted correspondents in the United States contributed everything they could furnish from this region. So that this work marks an epoch in North American Botany, which now could be treated as a whole.

We should not neglect to notice that, from the year 1827 down

to his death, he conducted that vast repertory of figures of the ornamental plants cultivated in Great Britain, the *Botanical Magazine* (contributing over 2,500 plates and descriptions); a work always as important to the botanist as to the cultivator, and under his editorship essential to both.

For the use of students at home, in 1830 he produced the *British Flora*, which ran through five or six editions before it was consigned to his successor in the chair at Glasgow, Prof. Arnott, who has edited two or three more.

We have enumerated the principal works published before he returned to England, including those which were re-edited or (as the periodicals) continued later. After twenty years' service in the Scotch University, Dr., now Sir William Hooker, K. H. (for in 1836 he accepted from William IV, —the last British sovereign who could bestow it,—the honor of Knight of the Hanoverian Order), was appointed by government to take the direction of the Royal Gardens at Kew, until then in the private occupation of the crown, but now to be developed into a national scientific establishment.

Ever since the death of Banks and Dryander, and while Aiton, the director, grew old and lost any scientific ambition he may once have had, Kew Gardens had declined in botanical importance. The little they preserved, indeed, was chiefly owing to the scientific spirit and unaided exertions of Mr. John Smith, then a foreman, afterwards for many years the superintending gardener (and well known to botanists for his writings upon Ferns), who, retired from his labors, still survives to rejoice in the changed scene.

The idea of converting Kew Gardens into a great national botanical establishment is thought to have originated either with Sir William Hooker himself, or with his powerful friend, and excellent patron of botany and horticulture, John, Duke of Bedford, the father of the present British Premier. Lord John Russell was in the ministry under Lord Melbourne when this project was pressed upon the authorities, and recommended to Parliament by the report of a scientific commission, and, succeeding to the Premiership,¹ he had the honor of carrying it into execution at the propitious moment, and in the year 1841, of appointing Sir William Hooker to the direction of the new establishment. The choice could hardly have been different, even without such influential political support; indeed his patron and friend, the Duke of Bedford, died two years before the appointment was made; but Hooker's special fitness for the place was manifest, and his claims were heartily seconded by the only

¹ We follow the article in the *Gardeners' Chronicle* in this statement. But we have an impression that Lord John Russell was not at the head of a Ministry until the year 1846.

other botanist who could have come into competition with him in this respect.² The office, moreover, was no pecuniary prize; the salary being only three hundred pounds a year (less, we believe, than the retiring pension of his unscientific superannuated predecessor), "with two hundred pounds to enable him to rent such a house as should accommodate his herbarium and library, by this time of immense extent, and essential, we need not say, to the working of the establishment, whether in a scientific or economic point of view." The salary, if we mistake not, has since been increased in some moderate proportion to the enlarged responsibilities and cares of the vast concern; but, up to his death, so important an auxiliary as his unrivalled herbarium, and the greatest scientific attraction of the institution, was left to be supported (excepting some incidental aid) out of the Director's own private means.

Such record as need here be made of Sir William Hooker as Director of Kew Gardens can be best and most briefly given mainly in the words of a writer in the *Gardener's Chronicle* (for Sept. 2), to whose ripe judgment and experience we may defer.

"Sir William entered upon his duties in command of unusual resources for the development of the gardens, such as had never been combined in any other person. Single in purpose and straight-forward in action, enthusiastic in manner, and at the same time prepared to advance by degrees, he at once won the confidence of that branch of the government under which he worked. . . . To those in office above him, he imparted much of the zeal and interest he himself felt, which was proved by constant visits to the gardens, resulting in invariable approval of what he was doing, and promises of aid for the future. Another means at his disposal, and which he at once brought to

² We refer of course to Dr. Lindley; and now while revising the proof of this article, the sad intelligence reaches us that he also is no more; that this eminent botanist and remarkable man died, of apoplexy, on the first of November, at the age of sixty-six.

It is well known that Dr. Lindley's health became seriously impaired a year or two ago, and that his scientific pursuits had to be given up, with slight hope that they could ever be renewed. We were under the impression, however,—perhaps an erroneous one,—that he was the author of the well-written biographical notice of Sir William Hooker which appeared in the *Gardener's Chronicle*, and from which the citations in our article were taken; and on this we had founded a hope that his vigor was returning, and that his usefulness might still be prolonged. A sketch of his life and scientific labors may hereafter be given. But we may now properly and freely speak, as we had wished to do in this article, of the paramount influence which the two eminent botanists, now taken from us, have exerted upon the condition of the science they cultivated in their own country. From forty years ago down to recent times, although neither was the most profound botanist of his age, both were unrivalled for the example they set and the active interest they took in diffusing a knowledge of Botany in Great Britain, and promoting its study generally, for which they deserve the large and lasting gratitude of their countrymen. One other name will suggest itself as worthy to be associated with theirs in this regard; but we trust the day is very distant in which that may be added to an obituary record.

bear on the work in hand, was his extensive foreign and colonial correspondence, including especially that with a large number of students whom he had imbued with a love of botany, and who were scattered over the most remote countries of the globe, and several of whom, indeed, remained in more or less active correspondence with the Gardens up to the day of his death. His views were further greatly facilitated by his friendly intercourse with the Foreign and Colonial offices, the Admiralty, and the East India Company, to all of whom he had been the means of rendering services, by the recommendation of former pupils to posts in their employment, and by publishing the botanical results of the expeditions they sent out.

"At the time of Sir William's taking office, the Gardens consisted of eleven acres, with a most imperfect and generally dilapidated series of ten hot houses and conservatories. Most of these have since been gradually pulled down; and, with the exception of the great orangery (now used as a museum for woods) and the large architectural house near the garden gates, which had just previously been removed from Buckingham Palace, not one now remains. They have been replaced by twenty-five structures (in most cases of much larger dimensions) exclusive of the Palm-stove and the hitherto unfinished great conservatory in the pleasure grounds.

"To describe the various improvements which have resulted in the present establishment,—including, as it does, a botanic garden of 75 acres, a pleasure-ground or arboretum of 270 acres, three museums, stored with many thousand specimens of vegetable products, and a magnificent library and herbarium, the finest in Europe, placed in the late King of Hanover's house on one side of Kew Green and adjoining the gardens, — would rather be to give a history of the gardens than the life of their Director."

"It might be supposed that the twenty-four years of Sir William's life spent at Kew in the above public improvements, added to the daily correspondence and superintendence of the Gardens, would have left little time and energy for scientific pursuits. Such, however, was far from being the case. By keeping up the active habits of his early life, he was enabled to get through a greater amount of scientific work than any other botanist of his age."

From this period his contributions to systematic botany, if we except the journals and illustrated works (continued until lately, and some of them to the last), were mainly restricted to his old favorites the Ferns. Some years before he removed to Kew, he found the veteran Francis Bauer, then an octogenarian, or near it, employed in drawing under the microscope admirable and faithful illustrations of the fructification of Ferns. He ar-

ranged immediately for their publication, drew up the letter-press, and so brought out, between 1838 and 1842, the well-known work entitled "Genera Filicum, or Illustrations of the Ferns and other allied Genera." His large quarto, "Filices Exoticæ, in Colored Figures and Descriptions of Exotic Ferns, chiefly of such as are cultivated in the Royal Gardens of Kew," (100 plates) appeared in 1859;—the drawings of these, as of nearly all his illustrated works for the last thirty years, by Walter Fitch, his indefatigable coadjutor, whom he had trained in Scotland, and who soon became "the most distinguished botanical artist in Europe." "A second Century of Ferns" (imp. 8vo.) was published in 1860 and 1861, the First Century being the tenth and closing volume of the *Icones Plantarum*.

But the principal systematic work of these later years was his "Species Filicum, being Descriptions of the known Ferns, accompanied with numerous figures," in 5 volumes, 8vo. The first volume of this work appeared in 1846, the last only a year and a half ago.

The crowd of new Ferns and new knowledge which had accumulated in the interval of seventeen or eighteen years, demanded large revision and augmentation of the earlier volumes to bring them up to the level of the later ones. Moreover, a compendious work on this favorite class of plants was much needed. Both objects might be well accomplished by a synopsis of known Ferns in a single volume, to be for our day what Swartz's *Synopsis Filicum* was just sixty years ago. To this Sir William Hooker, upon the verge of fourscore, undauntedly turned, as soon as the last sheets of the *Species Filicum* passed from his hands, devoting to it the time that remained after attending to his administrative duties. Upon it he steadily labored, with unabated zeal and with powers almost unimpaired, conscientiously diligent and constitutionally buoyant to the last. He had made no small progress in the work, and had carried the sheets of the initial number through the press, when an attack of diphtheria, then epidemic at Kew, suddenly closed his long, honored, and most useful life.

Our survey of what Sir Wm. Hooker did for science would be incomplete indeed, if it were confined to his published works—numerous and important as they are—and to the wise and efficient administration through which, in the short space of twenty-four years, a Queen's flower and kitchen garden and pleasure-grounds have been transformed into an imperial botanical establishment of unrivalled interest and value. Account should be taken of the spirit in which he worked, of the researches and explorations he promoted, of the aid and encouragement he extended to his fellow-laborers, especially to young and rising botanists, and of the means and appliances he gathered for their use no less than for his own.

The single-mindedness with which he gave himself to his scientific work, and the conscientiousness with which he lived *for* science while he lived *by* it, were above all praise. Eminently fitted to shine in society, remarkably good-looking, and of the most pleasing address, frank, cordial, and withal of a very genial disposition, he never dissipated his time and energies in the rounds of fashionable life, but ever avoided the social prominence and worldly distinctions which some sedulously seek. So that,—however it may or ought to be regarded in a country where court honors and government rewards have a factitious importance,—we count it a high compliment to his sense and modesty that no such distinctions were ever conferred upon him, in recognition of all that he accomplished at Kew.

Nor was there in him,—while standing in a position like that occupied by Banks and Smith in his early days,—the least manifestation of a tendency to overshadow the science with his own importance, or of indifference to its general advancement. Far from monopolizing even the choicest botanical materials which large expenditure of time and toil and money brought into his hands, he delighted in setting other botanists to work upon whatever portion they wished to elaborate; not only imparting freely, even to comparatively young and untried men of promise the multitude of specimens he could distribute, and giving to all comers full access to his whole herbarium, but sending portions of it to distant investigators, so long as this could be done without too great detriment or inconvenience. He not only watched for opportunities of attaching botanists to government expeditions and voyages, and secured the publication of their results, but also largely assisted many private collectors,—whose fullest sets are among the treasures of far the richest herbarium ever accumulated in one man's life-time, if not the amplest anywhere in existence.

One of the later and not least important services which Sir William Hooker has rendered to botany is the inauguration, through his recommendation and influence, of a plan for the publication, under government patronage, of the Floras of the the different British colonies and possessions, scattered over every part of the world. Some of these (that of Hongkong and that of the British West Indies) are already completed; others (like that of Australia, and the Cape Flora of Harvey and Sonder, adopted into the series,) are in course of publication; and still others are ready to be commenced.

The free and cordial way in which Hooker worked in conjunction with others is partly seen in the various names which are associated with his in authorship. This came in part from the wide range of subjects over which his survey extended,—a range

which must have contributed much to the breadth of his views and the sureness of his judgment. Invaluable as such extent of study is, in the present state and prospects of our science we can hardly expect to see again a botanist so widely and so well acquainted both with cryptogamic and phanerogamic botany, or one capable of doing so much for the advancement and illustration of both.

Our narrative of Sir William Hooker's scientific career and our estimate of his influence has, we trust, clearly, though incidentally, informed our readers what manner of man he was. To the wide circle of botanists, in which he has long filled so conspicuous a place, to his surviving American friends and correspondents, some of whom have known him long and well,—and “none knew him but to love him, nor named him but to praise,”—it is superfluous to say that Sir William Hooker was one of the most admirable of men, a model Christian Gentleman.

There could really be no question as to the succession to the charge of the great botanical establishment at Kew. But we may add, for the information of many of our readers, that the directorship vacated by Sir William's death has been filled by the appointment of his only surviving son, Dr. Joseph Dalton Hooker, whose well-established scientific fame and ability, no less than his lineage, may assure the continued equally successful administration of this most interesting and important trust.

A. G.