

## OBITUARY NOTICES.

Sir Isaac Bayley Balfour. By the President,  
Professor F. O. Bower, F.R.S.

(Read February 5, 1923.)

Balfour, Isaac Bayley, K.B.E., D.Sc., M.D. (Edin.), LL.D. (Edin.), LL.D. (Glas.), M.A. (Oxon.), F.R.S., F.R.S.E., F.L.S., F.G.S.; King's Botanist in Scotland; *Regius Keeper of the Royal Botanic Garden, Edinburgh*; Professor of Botany in the University of Edinburgh; Hon. Mem. Pharm. Soc. Gt. Britain; Camb. Phil. Soc.; Corresp. Mem. Deutsch. Bot. Gesell.; Soc. Nat. Sci. Naturelle et Math. Cherbourg; New York Acad. Sci.; Mem. Assoc. Soc. Roy de Bot. de Belg.; Gold Medallist of the Linnæan Society; Victoria Medal, Roy. Hort. Soc.; President, Sec. D, Brit. Assoc., Oxford, 1894; President, Sec. K, Brit. Assoc., Glasgow, 1901.

By the death of Sir Isaac Bayley Balfour the country and the world have lost a scientific personality of a type that is becoming rarer every day. Such men can be ill spared. An age of ultra-specialism does not favour the cultivation of breadth of view or length of vision. The rush for early achievement consequent on the forcing methods of selection for official posts has tended to breed a myopic intellect, which sees minutiae with surprising acuteness; but it fosters less and ever less the capacity for grasping the major problems of the world. Balfour was one of those who by birth, experience, and mentality are able to take and to hold during life the larger view. All through that wealth of fact of which he was master ran the golden thread of relation. His data were all fitted into a large frame. That was what gave a magic to his conversation and a weight to his scientific opinion that was unrivalled. For a quarter of a century he has been the most efficient all-round botanist of the British Empire: the friend and adviser of all that is best in British botany.

By his death a great personal tradition of Edinburgh is broken. He counted among his forebears the Rev. Dr G. H. Baird, Principal of the University 1793 to 1840. But, more directly, he was the son of Professor John Hutton Balfour, who, after a short tenure of the Glasgow chair, was Professor in Edinburgh from 1845 to 1879. It is a curious coincidence that both father and son occupied that position for thirty-four years: with the short interval of Professor Dickson's tenure, the two Balfours filled the Botanical chair from 1845 to 1921. Born in 1853 within a stone's-throw

of the Garden, Isaac Balfour was singularly favoured in his start in life. Edinburgh at the middle of the nineteenth century was a stimulating place to any young man. He drew his early education from the Academy and the University, completing his B.Sc. degree in 1873. But he extended it on the one hand by study under Sachs in Würzburg, and under De Bary in Strassburg. On the other hand, he acted as assistant to Huxley in 1875: as substitute for his father during his illness in the summer of the same year: as dresser to Lister: and as assistant to Wyville Thomson in 1877. Such wide experience gave a catholicity to his scientific interests which never failed him through life. Moreover, he graduated in medicine in 1877, thus rounding off the period of his apprenticeship to science.

In his earlier life he was a great traveller. In 1874 he acted as botanist with the Transit of Venus Expedition to Rodrigues, the botanical results of which were published in the *Philosophical Transactions* in 1879. Material for investigating the genus *Halophila*, collected in Rodrigues, was worked up by him in De Bary's laboratory into a memoir published by the Botanical Society of Edinburgh in 1879. It showed that, if he had cared to pursue it, morphological analysis was a natural field for him. Many a young man would have entered on some such restricted channel of investigation. But Balfour took a wider view. His life has been a remarkable record of reconstruction. He spent it in reorganising with the truest insight the factories of science, in the faith that others would use them after him in feeding the broad stream.

His second journey was to the island of Socotra, in 1879-80. He made a very searching study of the island both from the geological and the biological aspects. His collections were exceedingly rich, and the working up of them naturally took some years. He secured some 206 endemic species of flowering plants, almost all of which were new to science. Even among his collection of 130 species of lichens, 69 proved to be peculiar to the island. The description of his new plants, and their delineation on 100 plates, are embodied in the stately volume published in the *Transactions* of this Society in 1888, under the title of "Botany of Socotra." He concluded, partly from geological, partly from botanical data, that there is evidence that at one time the island formed a portion of the African continent, and that it had been broken off from Cape Guardafui; but that the separation from the mainland was of great antiquity: hence the large proportion of endemic species. His collections from these two expeditions provided material for memoirs on *Pandanus*, *Dracaena*, and *Aloe*. They were partly morphological and systematic in their treatment, but partly they resolved economic questions of the source of certain well-known drugs.

However important these expeditions and the publications which sprang from them actually were, they formed but a prelude to the real drama of Balfour's life. This comprised three acts, the third the longest and the greatest: viz., his tenure successively of the chairs of Botany in Glasgow, Oxford, and Edinburgh. The period from 1870 to 1890 was a critical time of change. The old systematic school of Britain, at that time without a rival in Europe, had by its very success brought a withering nemesis: for the investigation of plants as living things, worked out in their anatomy and physiology, was neglected in Britain while it was being actively pursued elsewhere. It was overshadowed here by the success of the systematists. A change was needed in the whole method of study at the Universities, which are the natural feeding-grounds of scientific life. A group of young men, stimulated primarily by the influence of Huxley, Thiselton-Dyer, and Michael Foster, already perceived this. The first and the most widely effective of them all was Isaac Balfour. A renaissance is always a fascinating theme. It is this which gives the touch of romance to the story of Balfour's administrative life. Moreover, he was above all others the best qualified to carry out such reforms as were needed; for he had been nurtured in, and was fully imbued with, the old systematic methods, and so he was specially fitted to retain what was best of the old *régime* while grafting upon it the new activity.

His appointment in 1879 to the Regius Chair in Glasgow, in succession to Dickson, gave him his first opportunity. During the brief years of his tenure he secured the rebuilding of the main range of plant-houses at the Botanic Gardens, and rescued the Kibble house from meaner uses, establishing it as a winter garden. He had almost achieved the purchase of the house that is now Queen Margaret College as a botanical institute for the University, when an adverse wave of popular opinion swept his scheme away. His work in the University was no less vigorous. Youth, enthusiasm, and mastery of his subject at once brought a healthy tone into his class-room. But his presence in Glasgow was marked by a new departure. Following the precedent first established for Britain by his father in Edinburgh, he initiated laboratory teaching in Botany in Glasgow. Finding no accommodation for this provided in the new University buildings, he bartered away the botanical lecture-room for two rooms suitable as a students' laboratory: and so he provided himself and his successor with a grievance that could only be set right by new buildings for botany, such as now exist. When I succeeded him in 1885 I found the machinery for teaching in working order, and it only needed to be kept running.

Translated in 1884-85 to Oxford, he found the ancient garden and the

small institute adjoining it in disorder, and threatened with decay. He quickly brought the garden into a better state, and so thoroughly reorganised the valuable herbarium and library as to make them both better available for study. Among his pupils he found in those four short years at least one of the first rank in Professor Farmer. But the act of his during those years which has left the most permanent mark upon the science was the establishment of relations with the Clarendon Press. Gathering round him a group of botanists all interested in the new revival, he induced the Press to found the *Annals of Botany*, a quarterly journal now of world-wide repute, of which the thirty-sixth volume is in progress. The fact that, though profusely illustrated and sumptuously produced, it has paid its way is itself a witness to the business capacity of its founder and first editor. The Press also, at his instigation, issued a long series of translations of foreign treatises which were necessary for the completion of that revival of the study of botany in English-speaking countries in which he was so closely interested.

Having been in Oxford only about four years, Balfour, still a young man of thirty-five, was promoted in 1888 to his father's chair in the University of Edinburgh, rendered vacant by the death of Professor Alexander Dickson. It was then in the gift of the University Curators. At the same time he was appointed by the Crown to the Keepership of the Royal Garden, with the title of King's Botanist in Scotland. By readjustment between the Crown and the Curators the University chair is now also under Crown patronage, so that the nominations to the two charges will for the future be in the same hands. Coming thus back to his native spot, Balfour again galvanised a nerveless régime into activity. But here he found a larger problem than in Glasgow or in Oxford. The reconstruction of the Edinburgh establishment from top to bottom became the chief aim of his life, and it took him thirty-four years to accomplish it. He lived henceforth in and for the Garden, and for the University Department centred within it. He was not often seen outside its boundary, a subject of remark sometimes by those at a distance who neither knew nor understood the work or the man.

The Edinburgh Botanic Garden in 1888 was of limited dimensions: it was separated from the Arboretum by a high stone wall. The plant-houses were of old design and decaying: the cultivation not beyond reproach. Though the collections included many and varied specimens, they had grown awkward and "leggy," owing to the cramped conditions under which they lived. The laboratories were out of date, and the administrative rooms insufficient. In fact, the whole establishment required reorganisation.

Balfour came to it, not as a tornado destroying ruthlessly; but as a new climate with storms that remove what is rotten but leave standing what is fit for use. The old palm-house, now a temperate house, and the stove, now a house for palms and cycads, still remain. But all the rest of the glass ranges, pits, and frames are new. The herbarium stands as before, also the large lecture-hall; but all else has been reorganised or rebuilt so as to form a complete and extensive institute. The very last addition was made in 1921, in time for the meeting of the British Association. It is significant that in the laboratory just completed a demonstration was given under one hundred microscopes of the structure of the newly discovered fossils of the Rhynie Chert, described in the *Transactions* of this Society. Balfour was himself present, showing the keenest interest and appreciation. This was indeed his last appearance among any collected body of botanists: it typified his breadth of vision, which embraced both the most ancient and the most modern developments of the science. The event was a fitting celebration for this last act in the revival which it had taken him thirty-four years to complete.

He entirely reorganised the outside garden. The wall shutting off the Arboretum was taken down, and the Arboretum itself absorbed. Trees thirty and forty feet high were successfully removed on specially constructed waggons to fresh and suitable sites. The collections of woody plants were enriched, and the herbaceous ground reorganised. But beyond all, the rock garden was created anew on a magnificent scale. This was Balfour's special care. He himself nursed shy plants in favoured crannies on rich schistose soil carried down on his own shoulders from Ben Lawers. His joy in showing them was no less than the pleasure of those who understood the real meaning of his success. It may be said that in the rock garden the real Balfour stood before you. The enthusiastic lover of plants in being: the practical physiologist in the open. His "ecology" was superior to that usually so called, for it was not analytic only, but constructive. At the back of it all were the facts of his early training. As a boy he had passed through the potting-sheds like any working gardener. No doubt he had absorbed from Sadler, the old curator, much ancient wisdom, but it was refined and extended by his own scientific and horticultural sense. As a student he brought together what must have been the finest Scottish herbarium ever entered for the prize in Edinburgh. As a young man he had investigated two island floras. In fact, he knew plants in the open, under cultivation, and in the laboratory, better than any man of our generation; and it was this threefold aspect of them that really gave weight to his judgment and his actions. He was by birth and by training

the natural head of a great establishment. He soon selected a highly qualified body of leading officials, and with their help won for the Edinburgh garden a special fame for growing shy plants. The cultivation in the garden is probably as good as any in Europe, and it has been carried into many new and experimental lines.

More specifically it may be said that no man knew Scotland botanically as well as Balfour did. No one ever made systematic field-work so scientific and illuminating. His knowledge in the field does not wholly die with him, for he published a volume of records of his father's excursions, in many of which he had joined as a boy; but a more modern touch was given in Notes on the Biology of Scottish Plants, some trial sheets of which were set in type, though never, I believe, brought to completion. We may hope that this work may still be produced, even though in an incomplete form.

The real marvel of Balfour's *régime* in Edinburgh is that alongside of the administration of the garden he found time to keep abreast of his science and to develop the academic side of his duties. How efficiently this was done is proved by the stream of scientific graduates who passed through his hands into creditable positions in the world. For a generation Edinburgh was, in fact, the chief centre in Britain for the teaching of systematic method as applied to flowering plants. While others were pursuing stellar details, chromosomes, or that elusive thing called "ecology," Balfour, out of the wealth of his personal knowledge and with the ample demonstration possible in the garden which he controlled, was teaching systematic botany always with the external conditions in view. It was a real modern organography that he taught, grafted upon the old systematic methods, and with knowledge such as few ecologists could aspire to. Naturally, men trained in such a school were selected for positions abroad, and filled them with distinction. To the very last Balfour kept up his own systematic work. As so often happens, his interest concentrated as life went on to certain focal points. *Rhododendron* and *Primula* fascinated him, and the stream of new collections from the Far East kept pouring in. His working up of these has been published in many volumes of the Botanical Society of Edinburgh. This careful scientific analysis was continued to the very last.

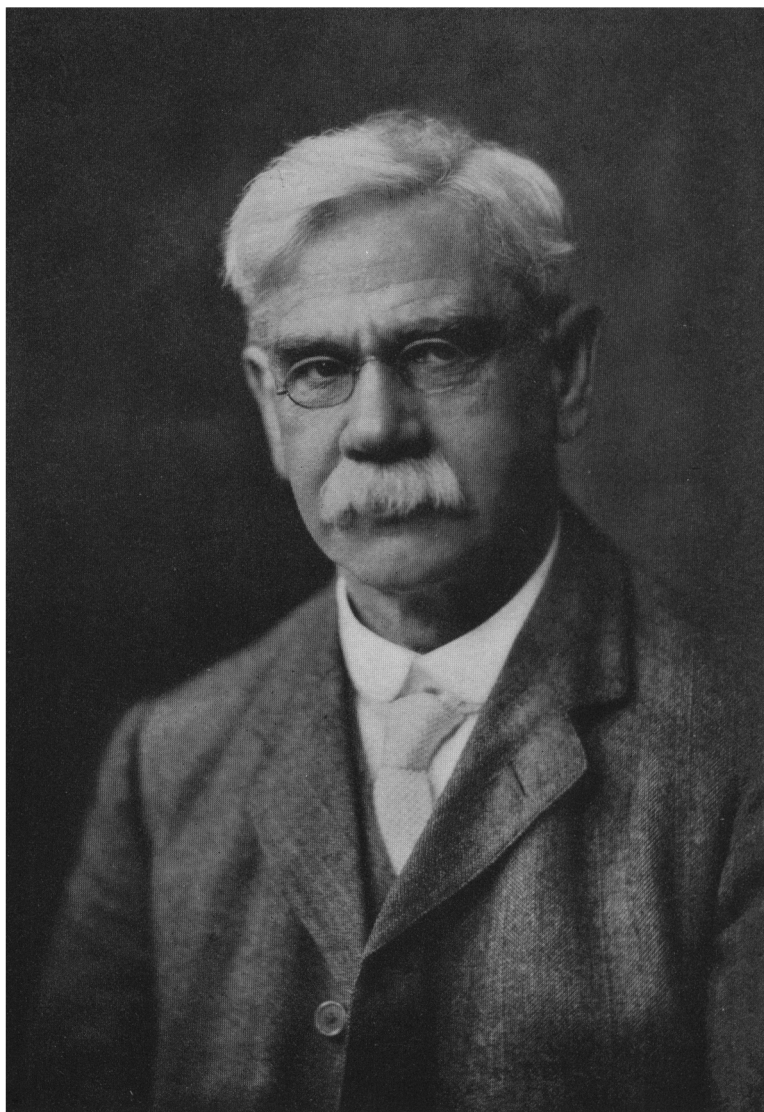
Above all stood his work with and for the medical students. I had heard him from time to time speak of his lectures to them, and of his methods. These culminated in his later years in a course of addresses on such moving biological topics of the time as relate especially to the medical curriculum. I can imagine nothing more stimulating to the mind of a

young medical aspirant of parts than to hear a man of Balfour's powers speak plainly out of his vast experience on such questions. Few even of those who feel most keenly the pressure of the overcrowded medical curriculum would wish to relieve it by the omission of such vitalising addresses as these, given in the first weeks of a medical student's life. But that last session of 1921 broke him. The strain of war, combined with a most cruel personal loss at the front, proved cumulative, and nature gave way. Retirement became inevitable in 1921, and he moved to a southern home, severing finally the ties of a lifetime.

His friends had hoped that he would have been able to use his retirement in writing a comparative and systematic treatise on the Flowering Plants. I say advisedly that no man living could have done this as he could from first-hand knowledge, wide and deep, and regulated by grasp of principle and mature judgment. Moreover, his experience as a systematist was unrivalled. But it was not to be. He had worn himself out in the service of others. That wonderful resistant and elastic fibre had been strained beyond the limit, and was past recovery. Already in the summer of 1921 the silver cord was loosed and the golden bowl broken.

In all the gallery of Scottish botanists, whose portraits and whose lives Balfour knew so well, there never was one like him—so catholic in his tastes, so willing to help others, and so able to do it from his ample store. Landowners, horticulturists, foresters, and farmers, as well as specialists in pure science, looked to him for advice and acknowledged its worth. Truly, if ever there was one, he was in the fullest sense of the words "The King's Botanist in Scotland."

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*C. E. Russell*