

and debated. They are described in the excellent little pamphlet which has been put in every freshman's hand. You can at the least do what is in your power to attend and support them. You can take care that your undergraduate days do not pass without the great names of literature becoming more than names to you. Books can be had for the asking from public libraries, they can be bought for pence where they used to cost shillings. We owe to the generosity of Prof. Perry the nucleus of a college library containing books which are not scientific. He who now devotes to literary trash time which he might spend in learning something of one of the greatest literatures of the world has nobody but himself to thank if his reading vulgarises instead of refines him. Taste is educated only by tasting; and it rests with yourselves whether you will learn to appreciate the difference between the great masters of the pen and penny-a-liners, between the wit of a great humourist and the vulgarities of the funny corner of a second-rate newspaper.

A bicycle ride will be none the less enjoyable if you train yourself, not merely to travel far, but to take an interest in the sights and scenes through which you pass. For the sake of example, let me remind you that no country is so rich as England in the architecture of its village churches. It is no hard matter to learn to recognise the principal peculiarities of the architectural types which prevailed from the days of the Saxons to Sir Christopher Wren. The text-books are, I presume, to be found in the Art Library. But as soon as the elements of English church architecture are known, an old church ceases to be merely a picturesque object. It is an historical-document which you yourself can read. You do not need the aid of the sexton to tell you which is the oldest part. You can make a good guess at when that aisle was added, or that window knocked in a wall obviously older than itself. A visit to a cathedral becomes an intellectual pleasure. Weariness at the drone of the verger as he recites his oft-repeated lesson is replaced by an alert desire to know if the authorities from whom he learnt it confirm or correct the rapid conclusions as to date or history to which you yourself have come.

I might multiply such examples. Nowhere in England can you so easily or so cheaply as in London hear and learn to appreciate the best music the world has produced.

The wet half holidays of an undergraduate's career well spent in the National Gallery would give you a familiarity with all the great schools of painting which few travellers attain.

Every day as you come to or leave your work you may pass through one of the greatest art collections in the world, and it depends upon you alone as to whether you shall or shall not learn anything from it.

Understand me clearly when I reiterate that I am laying down no rules. I have tried only to lay the problem before you. How to combine the proper care for pounds, shillings, and pence with the love of knowledge for its own sake; how best to balance your various studies; how to add to the concentration required for the mastery of a single subject the open eye and the refined taste which may lead you to appreciate arts which you cannot emulate, and things beautiful which you can neither copy nor produce; these are problems in which a university may help you, but can help you only if you are willing to help yourselves. I have to-day aimed at nothing more than at reminding you that each one of the mental forces we have discussed is essential to the equilibrium of intellectual life; that if you wilfully neglect any of them, or devote yourselves too exclusively to one, you will fall short, and, it may be, sadly short, of the ideal which the true university holds up to her sons.

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#### II.

THE second period of our history begins with the arrival in India in 1848 of Sir (then Dr.) Joseph Hooker. This distinguished botanist came out in the suite of Lord Dalhousie, who had been appointed Governor-General of India. The province to the exploration of which Sir Joseph directed his chief attention was that of Sikkim in the Eastern Himalaya, the higher and inner ranges of which had never previously been visited by a botanist, for Griffith's explorations had been confined to the lower and outer spurs. The results of Sir Joseph's labours in Sikkim were enormous. Towards the end of his exploration of Sikkim he was joined by Dr. Thomas Thomson, and the two friends subsequently explored the Khasia Hills (one of the richest collecting grounds in the world), and also to some extent the districts of Sylhet, Cachar and Chittagong. Dr. Thomson subsequently amalgamated the collections made by himself in the Western Himalaya with those made in Sikkim by Sir Joseph individually, and by them both conjointly in Eastern India; and a distribution of the duplicates after the fashion of the Wallichian issue, and second only to it in importance, was subsequently made from Kew. The number of species thus issued amounted to from 6000 to 7000, and the individuals were much more numerous than those of the Wallichian collection. The immediate literary results of Sir Joseph Hooker's visit to Sikkim were (1) his superbly illustrated monograph of the new and magnificent species of *Rhododendron* which he had discovered; (2) a similar splendid volume illustrated by plates founded on drawings of certain other prominent plants of the Eastern Himalaya which had been made for Mr. Cathcart, a member of the Civil Service of India, and (3) his classic "Himalayan Journals"—a book which remains until this day the richest repertory of information concerning the botany, geography and anthropology of the Eastern Himalaya. A remoter result was the appearance in 1855 of the first volume of a "Flora Indica," projected by himself and his friend Dr. Thomson. The first half of this volume is occupied by a masterly introductory essay on Indian botany, of which it is hardly possible to overrate the importance. This remarkable essay contains by far the most important contribution to the physico-geographical botany of India that has ever been made, and it abounds in sagacious observations on the limitation of species and on hybridisation, besides containing much information on the history of Indian botanical collections and collectors. The taxonomic part of the book was cast in a large mould, and the descriptions were written in Latin. Unfortunately, the condition of Dr. Thomson's health and the pressure of Sir Joseph's official duties at Kew made it impossible that the book should be continued on the magnificent scale on which it had been conceived. After a period of about twelve years Sir Joseph, however, returned to the task of preparing, with the aid of other botanists, a Flora of the Indian Empire, conceived on a smaller scale and written in the English language. His proposals for this work were accepted and officially sanctioned by the Duke of Argyll while he was Secretary of State for India. The first part of this great work was published in 1872 and the last in 1897. In the execution of this great undertaking Sir Joseph had the assistance of Mr. C. B. Clarke, who elaborated various natural orders; of Mr. J. G. Baker, who worked out *Leguminosae* and *Scitamineae*, and of Sir W. Thiselton-Dyer, Messrs. A. W. Bennett, Anderson,

<sup>1</sup> Continued from p. 584.

Edgeworth, Hiern, Lawson, Maxwell Masters, Stapf and Gamble. The greater proportion, however, of the book is Sir Joseph's own work, and a noble monument it forms of his devotion and genius.

Since the date of Sir Joseph Hooker's visit to India, by far the most important botanical work done in India has been that of Mr. C. B. Clarke. Rather than attempt to give any appreciation of my own of Mr. Clarke's labours (which would be more or less of an impertinence), I may be allowed to quote from the preface to the concluding volume of the "Flora of British India" Sir Joseph's estimate of them. Referring to all the collections received at Kew since the preparation of the "Flora" was begun, Sir Joseph writes: "The first in importance amongst them are Mr. C. B. Clarke's, whether for their extent, the knowledge and judgment with which the specimens were selected, ticketed, and preserved, and for the valuable observations which accompany them." Mr. Clarke has published numerous papers on Indian botanical subjects in the journals of the Linnean and other societies. He has issued as independent books monographs of Indian *Cypositae* and *Cyrtandraceae*, the former in octavo, the latter in folio, and illustrated by many plates; and he is now engaged on his *opus maximum*, viz. a monograph of the *Cyperaceae*, not only of India, but of the whole world; and to the completion and publication of this every systematic botanist is looking forward with eager anxiety.

During this second half of the century, Dr. Thomas Anderson, who was for ten years superintendent of the Calcutta Garden, collected much; and he had just entered on what promised to be a brilliant career of botanical authorship when his life was cut short by disease of the liver, contracted during his labours to establish the cultivation in British India of the quinine-yielding species of cinchona. Dr. Anderson was also the earliest conservator of forests in Bengal. Sulpiz Kurz, for many years curator of the Calcutta Herbarium, also collected largely in Burma, and besides many excellent papers which he contributed to the *Journal* of the Asiatic Society of Bengal, he prepared for Government an excellent manual entitled the "Forest Flora of Burma." This was published in two volumes in 1877. Other collectors in Burma were Colonel Eyre (in Pegu), Mr. Burness (at Ava), and the Rev. Mr. Parish, to whom horticulturists are indebted for the introduction to Europe of the beautiful orchids of this rich province. And in this connection must be mentioned Mr. E. H. Man, C.I.E., who, although not himself a botanist, has given for many years past the greatest possible help in the botanical exploration of the Andaman and Nicobar groups of islands, our first knowledge of which was, by the way, derived from the collections made by the naturalists of the Austrian and Danish exploring expeditions. A large book on Burma, which contains a good deal of botany, was published by an American missionary named Mason, who resided for the greater part of his working life in that country. General Sir Henry Collett, who commanded a brigade during the last Burmese war, also made most interesting collections in that country, the novelties of which were described by himself in collaboration with Mr. W. Botting Hemsley, of the Kew Herbarium, in the Linnean Society's *Journal* some years ago. Sir Henry Collett also collected much in the Khasia and Naga hills, and in the portion of the North-western Himalaya of which Simla is the capital, and on these latter collections, together with the materials in Kew Herbarium, Sir Henry is now elaborating a local flora of Simla. The preparation of a local flora for an Indian district is an entirely new departure, and the publication of Sir Henry's book, which is to be well illustrated, is looked forward to with much interest. At rather an earlier period, Dr. Aitchison was a diligent collector of the plants of the Punjab and of the North-western Frontier. Some results of his work are to be found in his "List of Punjab Plants," which was published in 1867, and in various papers which he contributed (some of them in conjunction with Mr. Hemsley) to the Linnean Society and to the Botanical Society of Edinburgh. In Dr. G. Henderson's book on Yarkand there are also descriptions of some plants of the extreme North-western Himalaya and of Western Tibet. Mr. (now Sir George) Birdwood also made some contributions to the botany of the Bombay Presidency.

Five officers of the Indian Forest Department, viz. Dr. Lindsay Stewart, Colonel Beddome, Sir D. Brandis, and Messrs. Talbot and Gamble, have within the past thirty years made important contributions to the systematic botany of India. Dr.