

A SKETCH OF THE LIFE

OF

Francis Samilton (once Buchanan),

SOMETIME

SUPERINTENDENT OF THE HONOURABLE COMPANY'S BOTANIC
GARDEN, CALCUTTA.,



Calcutta :

BENGAL SEORETARIAT PRESS.

1905.

Not for sale:

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Page lxxix, lines 5 to 8 from top should read as follows:—

" There is no indication that Roxburgh recommended Hamilton's selection as Surgeon and Naturalist to accompany the Ava Mission; the actual appointment was probably secured for him through the influence and interest of Sir James Murray."

A SKETCH OF THE LIFE

OF

Jfranri* Hamilton (mt \$achanan)>* ^u^

SOME TIME

SUPERINTENDENT OF THE HONOURABLE COMPANY'S BOTANIC
GARDEN AT CALCUTTA.

1. INTRODUCTORY.

IN these Annals Sir George King has already published *A short account of Cohnel Eyd, the founder of the Royal Botanic Garden, Calcutta*¹ to whose care this institution was committed from its origin in 1786 till his death in 1793. This was followed by *A Brief Memoir of William Roxburgh, Author of the Flora Indica** who succeeded Lieutenant-Colonel Kyd and was Superintendent till 1814. In continuation of the series of sketches thus initiated the writer proposes to give here an outline of the career of Dr. Francis Buchanan (subsequently Hamilton) who was Superintendent of this garden, as successor to Dr. Roxburgh, for a brief period in 1814-15.

Notices of Buchanan Hamilton, of various degrees of merit, are to be found in Chambers' *Biographies of Eminent Scotsmen*, in the *Dictionary of National Biography*, in Higginbotham's *Men India has known*, in Anderson's *Scottish Nation*, in Britten and Boulger's *Biographical Index*, and in the *Calcutta Review* for July 1894. The basis of most of these articles has, however, been an incidental account, by Buchanan himself, in the *Transactions of the Royal Society of Edinburgh** of his service in India; the Indian portion of Buchanan's career is therefore easily followed.

As regards, however, Buchanan's career before entering the service of the East India Company and as regards his life after retiring from India, the majority of his biographers have apparently found it difficult to obtain facts and have been content at times to substitute surmises, without always clearly indicating the statements that are merely surmises.

In the Library of the Royal Botanic Garden at Calcutta are preserved many letters, written during his Indian career by Buchanan to his friend and predecessor

¹ Annals of the Royal Botanic Garden, Calcutta, ?ol. *ir.*

* Ditto ditto TOL T.

* Vol. x., p. 171, (read June 18, 1821).

Roxburgh.¹ These deal mainly with botanical subjects and therefore rarely admit of being suitably reproduced in their entirety. They do, however, in many cases throw light on his Indian career, as passages extracted from them will show. In the same collection are also preserved a number of letters written by Buchanan (now Hamilton) to his friend and successor Wallich; those are invaluable as a record of Hamilton's life after he retired.

In his endeavour to obtain further information regarding points that in previous notices seemed doubtful or inexact the writer has received much assistance from many friends, to whom his warm thanks are due for their kind interest in the subject. For information regarding Buchanan's family history and the history of the house of Buchanan since 1682, he is indebted to J. Hamilton Buchanan, Esq., of Leny and Spittal, and to A. C. Cameron, Esq., LL.D., of Edinburgh; for facts and dates relating to Buchanan's education and to his connection with the Indian Medical Service he has to thank Lieutenant-Colonel D. G. Crawford, I.M.S.; for an examination of Naval and other Records with the object of throwing light on Buchanan's career before he entered the Company's service he is indebted to J. F. Duthie, Esq., and through him to Lord Walter Kerr, J. Britten, Esq., and B. Daydon Jackson, Esq.; for an opportunity of consulting an extremely interesting series of letters regarding his father written by Buchanan's son and successor, the late J. B. Hamilton, Esq., of Leny, Spittal and Bardowie, he has to thank Sir George King and through him H. Beveridge, Esq.

To the kindness of Mr. Hamilton Buchanan of Leny the writer is further indebted for the use of two letters from Lord Wellesley and of two other very interesting documents; a sketch of the life of his grandfather Francis Hamilton (formerly Buchanan) by his own father, the late Mr. Buchanan Hamilton of Leny who was Dr. Buchanan's son and heir; and a copy of the 'Return' in the claim successfully advanced by the subject of our sketch, toward* the close of his life, to represent the house of Buchanan and to be therefore chief of the name.

2. EARLY LIFE AND FAMILY HISTORY.

Francis Buchanan was born at the Branziet, in the county of Stirling, a dower house on his mother's estate of Bardowie, on 15th February 1762. He was the fourth son of Thomas Buchanan, of the house of Buchanan of Spittal, by his second wife, Elizabeth Hamilton, daughter and eventually heiress of John Hamilton of Bardowie,

¹ These letters are 119 in number and may be classified as follows:-*

Belonging to the Burmese mission	...	...	...	1
Relating to his life in Luckipur (Puttaliaut)	...	...	...	19
Ditto the Chiitong survey	...	...	...	1
Ditto the Mysore survey	...	...	...	19
Ditto the Nepal mission	...	...	...	96
Relating to his life at Baranpore	...	...	...	2
Relating to the Bengal survey	...	...	...	U
				149
		Total	...	149

There were other 21 letters written from Nepal that were stolen or otherwise lost in transit,

Thomas Buchanan, the father of the subject of this sketch, was a younger son of John Buchanan of Spittal, a small property in the county of Dumbarton¹ consisting of a few farms and possessing now no mansion house.² As a younger son Thomas Buchanan had to adopt a profession and he is described variously as a physician⁵ and as an officer in the Dutch service;* he is, moreover, usually spoken of as Thomas Buchanan of Spittal. The statements regarding his occupation, which are not necessarily incompatible, the writer has not succeeded in verifying; his territorial designation, though correct, requires some explanation.

In an entry in the *Service of Heirs in Scotland*, dated 12th January, 1759, Thomas Buchanan is erroneously described as the son of Robert Buchanan of Spittal.⁵ Robert Buchanan was the elder brother, not the father of Thomas Buchanan. Robert inherited Spittal from his father, John Buchanan, about 1730. The estate being encumbered was disposed of by Robert Buchanan to a younger brother, Peter Buchanan, in 1735. Peter in turn sold it, in or about the year 1755, to his brother Thomas Buchanan. By an entail, dated 10th December, 1786, the succession to, as apart from possession of, Spittal was vested in Thomas Buchanan, who had already been in possession for over 30 years, and his heirs. As both Robert and Peter Buchanan⁶ died without issue, Thomas Buchanan thus, about 1755, acquired by purchase a property that he or his successors must ultimately have obtained by inheritance.⁷

Thomas Buchanan married, as his first wife, Katherine Buchanan, daughter of Henry Buchanan of Leny, in Perthshire, the head of a house that has been intimately associated with the parent house of Buchanan of Buchanan throughout their joint history. Allan Buchanan, second son of Sir Maurice Buchanan, whose charter of confirmation in the lands of Buchanan was granted by David II, married the daughter and heiress of the last male representative of the house of Leny of Leny, and founded the house of Buchanan of Leny. The last male representative of this first line of Buchanan of Leny was John Buchanan, great-grandson of Allan Buchanan, whose daughter and heiress, Janet Buchanan, married John Buchanan, eldest son of Walter Buchanan of Buchanan, whose charter of confirmation was granted by Robert II. This John Buchanan, who predeceased his father, left three sons: (1) Sir Alexander Buchanan, a notable soldier, who was killed, leaving no heir, at the battle of Verneuil on 17th August 1421; (2) Sir Walter Buchanan, who married a daughter of Murdoch, Duke of

¹ Buik: Landed Gentry for 1900—*article* Buchanan-Hamilton of Spittal, Leny and Bardowie.

² Though comparatively unimportant in a material sense this small estate has been of much historical and genealogical consequence to the branch of the house of Buchanan to whom it belongs; it was in virtue of his ability to demonstrate that he was the representative of his ancestor Walter Buchanan, younger of Buchanan and first of Spittal, that Dr. Francis Hamilton established his claim to represent also the House of Buchanan of Buchanan and to be chief of the name.

J Chambers: *Biographies of Eminent Scotsmen*. Higginbotham: *Men India has known*.

⁴ Anderson: *Scottish Nation*.

* This entry refers, it may be remarked, to his second wife, Elizabeth Hamilton, not to himself, a fact that probably explains the error.

The widow of Peter Buchanan of Spittal, whose name was Agnes Hamilton, was still living on 16th January 1809.

In connection with this it is interesting to find that although, on the death of his own elder brother Colonel John Hamilton, Dr. Francis Buchanan acquired possession of the property of Spittal in 1818, he considered it necessary, as a preliminary to the establishment of his larger claim to represent his ancestor Walter Buchanan, first of Spittal, to serve himself heir, on 13th September 1826, to his father's elder brother, and his own wife, Robert Buchanan of Spittal*.

Albany by his wife Isobel, Countess of Lennox in her own right, and inherited the Buchanan estates from his grandfather; and (3) John Buchanan, who inherited his mother's estate of Leny and so began the second line of Buchanan of Leny. Sir Walter's son, Patrick Buchanan of Buchanan, whose charter of confirmation in the Buchanan estates is dated 1460, became owner of some portion of Strathyre in 1455, and in that year was a party, along with his cousin, Andrew Buchanan of Leny, to a mutual entail of their respective estates in favour of each other and of their lineal descendants, passing over their brothers on either side. For the next two centuries the writer can trace no matrimonial alliances between the houses of Buchanan of Buchanan and Buchanan of Leny, but the ultimate Buchanan of Buchanan, Sir George Buchanan, who died in 1651, had by his second wife a daughter, Janet Buchanan, who married Henry Buchanan of Leny.

Henry Buchanan of Leny is stated to have died in 1723.¹ By his first wife he had six children: (1) John Buchanan, who died unmarried; (2) Colin Buchanan, who also died unmarried—he was served heir, on 23rd January, 1728, to his father Henry Buchanan of Leny, and to his brother, John Buchanan of Leny; (3) James Buchanan, who died without leaving descendants; (4) Robert Buchanan, who also died without leaving descendants—he was served heir to his brother Colin Buchanan of Leny on 14th September, 1734; (5) Elizabeth Buchanan, wife of Francis Buchanan of Arnpryor,² who succeeded to the estate of Leny on 22nd March, 1740, but died leaving no issue; (6) Margaret Buchanan, who succeeded her sister Elizabeth in the estate of Leny and died unmarried.

By his second wife, Henry Buchanan of Leny had two sons, Henry Buchanan and John Buchanan³ both of whom died without issue; and three daughters, (1) Lillias Buchanan, died without heir; (2) Jean Buchanan, who appears to have married but to have left no issue; (3) Katherine Buchanan, the lady who, as already stated, was the first wife of Thomas Buchanan. There were no children by this marriage, but, on the death of his wife's half-sister, Margaret Buchanan of Leny, Thomas Buchanan inherited the estate of Leny, and was thus the founder of the existing line of Buchanan of Leny.

¹ *Scottish Nation*, i., 452, This is possibly a printer's mistake for 1728.

² Francis Buchanan of Arnpryor, the husband of Elizabeth Buchanan of Leny, was the representative of a family founded by John Buchanan, younger son of Walter Buchanan of Buchanan, and grandson of the Patrick Buchanan of Buchanan who, in 1155, was a party to the joint-entail of the estates of Strathyre and Leny. This John Buchanan, to whom the estate of Arnpryor, formerly owned by one of the Menzies, had been left by testament, was the well known 'Kin' of Kippsn/ the friend of James V. His descendant, Francis Buchanan, husband of Elizabeth Buchanan of Leny, accepted a commission as Major in the Duke of Perth's rebel cavalry and was beheaded at Carlisle in 1746. As relics of his gentleman there still are preserved at Leny one of the gloves worn by him at his execution and part of his commission signed by Prince Charles' Secretary. The house of Buchanan of Arnpryor is now believed to be extinct. The name Francis is not one that was in use in the family of Buchanan of Spittal and it is just possible, though there is no direct proof of the fact, that the name borne by the subject of our sketch was bestowed in commemoration of his unfortunate kinsman. It may be remarked here that the subject of our sketch was not the first of his name to enter the Indian Medical Service; a Francis Buchanan, M.D., was appointed Assistant Surgeon on 1st July, 1758, and resigned the service on 16th July, 1769.

³ The fact that there was a John in Henry Buchanan's second family proves that the eldest son of the first family, who also was John Buchanan, must have predeceased his father; and as the *Index to Service of Heirs in Scotland* shows that Henry's second son, Colin, succeeded to the estate of Leny in 1728, it is clear that he must have succeeded his father immediately and that, although he was at the same time served heir to his elder brother John, this brother never was in possession of Leny. This being the case, the date of the death of Henry Buchanan should be 1728 and not, as has elsewhere been stated, 1723.

Elizabeth Hamilton, the second wife of Thomas Buchanan, and mother of Francis Buchanan was, in 1757, about two years after her marriage, served heir-portioner to the estates of her two brothers, John Hamilton and Robert Hamilton, and in 1759, along with her sister Mary, served heir-portioner to the estate of her father, John Hamilton of Bardowie. Subsequently she became the sole possessor of the Bardowie property¹ and an entail was executed in terms of which such of her descendants as might avail themselves of the succession to her estate were obliged to assume her own name of Hamilton.

The family of Thomas Buchanan and Elizabeth, his second wife, included five sons, Henry, John, Robert, FRANCIS, and Peter, with two daughters, Elizabeth and Marion. Henry Buchanan, born in 1753, predeceased both his parents.² John Buchanan, the second son, born in 1758, became a soldier and saw a good deal of service abroad. He married Margaret, daughter of Sir Hew Crawford of Jordanhall, and on the death of his mother succeeded to her estate of Bardowie and, in accordance with the terms of her entail, assumed the name of Hamilton. When his father Thomas Buchanan died in 1790, Colonel John Hamilton succeeded to the paternal estates of Spittal and Leny but continued to make Bardowie his residence. He died on the continent, whither he had gone for the benefit of his health, in 1818, and left no issue. Robert Buchanan, the third son, born in 1760, who predeceased his brother, Colonel John Hamilton, married and had a son, Robert Hamilton Buchanan, who entered the service of the East India Company and also died, as a Captain in the 2th Regiment of Native Infantry, leaving no legitimate descendants, before his uncle, Colonel John Hamilton. Francis Buchanan, the fourth son and the subject of this sketch, born, as already stated, in 1762, survived and succeeded his brother, John Hamilton, in all three estates of Bardowie, Spittal and Leny. Peter Buchanan, the youngest son, born in 1767, died unmarried. The two sisters Elizabeth and Marion were both married but have now no living descendants.

Francis Buchanan received part of his early education in Glasgow. The schools that he attended are not recorded but he entered the University of Glasgow at the early age characteristic of the period. The Professors at Glasgow then were William Richardson,—Humanity; John Young,—Greek; James Williamson,—Mathematics; John Anderson,—Natural Philosophy; James Clow,—Mental Philosophy; Thomas Reid,—Moral Philosophy. As his subsequent career and writings show, Buchanan in Glasgow acquired a scholarly knowledge of the classical languages and a thorough training in physics and philosophy. Of these teachers, probably the now venerable Reid, who himself

¹ In a letter dated Leny, 10th October, 1821, Pr. Francis Hamilton, referring to Sir Robert Colquhoun, Bart., then serving in India, writes:—"I am happy that Sir Robert Colquhoun is a botanist or, at least, an amateur. His sister is married to a relation of mine and her son, unless I marry, will succeed me in my maternal inheritance of Bardowie." There were thus, when the entail referred to was executed, residuary rights of succession beyond the immediate descendants of Elizabeth Hamilton. The entail she executed was removed some years ago and in consequence of this, although Dr. Francis Hamilton's son continued, till his death in 1903, to be known as J. Buchanan Hamilton, his grandson, who is now proprietor of Spittal and Leny and chief of the name of Buchanan, has been able to revert to the original family name. More recently the estate of Bardowie, as Mr. Hamilton Buchanan informs the writer, has been disposed of.

² Henry Buchanan would appear to have died young; this may explain how it happens that previous notices of the life of Francis (Buchanan) Hamilton speak of him, erroneously, as having been the third son of Thomas Buchanan of Spittal.

used the Biconian method in his lectures with such effect, had the greatest real influence on Buchanan's career, if one may judge by Buchanan's skilful and often masterly use of the inductive process with regard to those matters as to which he had only native reports and opinions to guide him. From Glasgow Buchanan obtained the degree of M.A., when he was 17 years of age, in 1779.

Being, like his father, a younger son, it was necessary for Buchanan to adopt a profession. He accordingly decided to follow that of his father and, after graduating at Glasgow, he proceeded to Edinburgh where he studied medicine. John Hope,¹ pupil of Jussieu, and friend of Linnaeus, had been teacher of Botany for eighteen years when Buchanan's studies began, while John Walker² had entered on his duties as teacher of Natural History during Buchanan's final year at Glasgow. The influence of the teaching in these two classes on Buchanan's mind and future career was evidently great. The Professor of *Materia Medica* at Edinburgh then was Francis Home,³ who possibly did not so greatly influence Buchanan, but he evidently benefited by the inspiring influence of Alexander Monro *secundus* who was then the Professor of Anatomy. A fellow-student and college friend of Buchanan while at Edinburgh was James Edward (afterwards Sir J. E.) Smith, the purchaser of the herbarium of Linnaeus and founder of the Linnean Society of London, and from Smith we learn that, after the often temporary enthusiasm for natural history which accompanies attendance on the scientific classes of a medical curriculum might have worn off, Buchanan during the intervals between the sessions of the University was still a keen collector.⁵ Buchanan obtained the degree of M.D. from the University of Edinburgh in 1783, when he was in his 22nd year.

The year following graduation appears to have been spent at home and we learn incidentally from Sir J. E. Smith that he was still collecting, and that Smith and he were attempting conjointly to identify his specimens. His attention at this time was apparently given largely to mosses.⁷ It is clear from the references that provide us with this information that Buchanan, though already a keen collector, was a collector of an unselfish type, forming no permanent herbarium for himself but making over his specimens to friends, just as he did in later years.

Early in 1785 Buchanan embarked on the first of his Eastern voyages⁸—we find from one of his subsequently published papers that on the last day of July 1785 he was in the Arabian Sea on a vessel bound for Bombay from Johanna in the Comoros. The paper in which this fact is recorded,⁹ and a later reference to the conditions of the cotton export trade in Bombay, contained in a letter dated

¹ Dr. John Hope, Professor of Medicine and Botany in the University of Edinburgh, 1761—1780.

² Dr. John Walker, Professor of Natural History* 1779—1804.

³ Dr. Francis Home, Professor of *Materia Medica*, University of Edinburgh, 1768—1798.

⁴ Alexander Monro *secundus*, *patris eminentis filius eminentior*, Professor of Anatomy, University of Edinburgh, 1754-1798.

⁵ His name is associated with the first record of a British Moss, collected at Leny, his father's home, in 1782, the year before he obtained his medical degree. *English Botany*, xxiii., t. 1690: 1805.

⁶ *English Botany*, t. 2004: 1809; another first record of a British moss.

⁷ This branch of Botany is one that Buchanan evidently did not continue to cultivate in later life, for one of his letters, given in a subsequent chapter, laments his ignorance of the group and is interesting as showing that the example and influence of Hooker and Greville almost tempted him to renew his acquaintance with these fascinating plants.

⁸ It is not clear in what capacity Buchanan's voyage was made; the point is dealt with more fully below.

⁹ *Edinburgh Philosophical Journal*, vol. v.; 1721.

1st November, 1788, which is given further on, show that Buchanan thus early in his career already possessed all the faculty for careful observation that was to be so distinguishing a feature of his later life. It is not therefore surprising to find that, just before he started on another voyage, Buchanan joined, as one of its original associates, on March 18, 1788, the Linnean Society founded in London by his friend, Dr. (afterwards Sir) J. E. Smith.

During Buchanan's second voyage his vessel, evidently outward bound, was, on May 24th, 1788, somewhere in the latitude of Walfisc'i Bay. Tao 8th of January, 1789, found him in the Sea of Celebes about midway between the Philippines and the Moluccas and on the 12th of April, 1789, his vessel, obviously homeward bound, was somewhere in the Southern Atlantic.* There is an indication, in two contemporary records, that Buchanan may have made a third Eastern voyage, for he is spoken of, in works⁴ published in 1791, as being then in the East Indies. Nothing definite has been traced with regard to Buchanan's life between 1791, assuming that he was again on a voyage in that year, and 1794 when he accepted a commission from the Honourable East India Company.

Most previous notices of Buchanan's career state that after graduating in medicine in 1783 he entered the Royal Navy as an Assistant Surgeon, but that he soon had to resign this service owing to the delicate state of his health, and on this account spent a considerable number of years at home before proceeding to India in 1794. This belief has almost crystallized into a family tradition and in a letter from his son, written in 1894, that gentleman, who was a small boy at the time of his father's death, refers to his dim recollection of a wound, which Buchanan was believed to have received in a naval engagement in the West Indies*, that gave trouble to the end of Buchanan's life.

It has to be remarked, however, in the first place, that the grade of Assistant Surgeon did not exist in the Navy between 1783 and 1794, and further, that a thorough search of our naval records for the period 1733—1794, kindly undertaken on behalf of this memoir by Lord Walter Kerr, fails to show that Buchanan ever did serve in the Navy. That Buchanan's health was, during some part of the 1783—1794 period, in an indifferent state may, the writer believes, be accepted, for it is extremely unlikely that a family tradition of this kind should be without foundation. But it is clear that the period of ill-health was at any rate shorter than has been supposed, and that there was certainly no enforced residence at home at Leny between 1783 and 1789, possibly none till after 1791. The prolonged ill-health recorded by previous biographers is thus reduced at most to the four years 1790—1794*, and is quite likely to have lasted only for two years from 1792—1794.

¹ *Edinburgh Philosophical Journal*, vol. v. j 1821.

⁴ *Statistical Account of Scotland; Callander: also Trantactiōn* of th, Linnæan Society of London, Tol i • 1791*. The Rev. Dr. Robertson, author of this account of Callander, mentions Dr. Francis Buchanan as "the most learned person who is known to have belonged to this parish" and speaks of him as "at present in the East Indies." The manuscript of this account of Callander was placed in the hands of the Editor of the *Statistical Account* in 1791. but it is of course not impossible that it was written, at least in part, two or three years before 1791, and the passage quoted may therefore very well refer to the voyage of 1788-89. This, however, can hardly be the case with the list of members given in the first volume of the Linnean Society's *Transactions**, where Buchanan's address, for the year 1791, is given as the "East Indies."

There is no reference, so far as the writer can ascertain, in any of Buchanan's own papers, to a third Eastern voyage or to his movements at all, between 1789 and 1794 when he first took service in India.

As Buchanan did certainly make two and possibly made three voyages to India and the East before he joined the Indian Medical Service, and as it has been shewn to be improbable that he ever served in the Navy, we may almost with safety conclude that, like many other adventurous young physicians of his day—his future friend and predecessor in the Botanic Garden at Calcutta, Dr. Roxburgh, may be quoted as a known example—Buchanan served during this period as Surgeon's mate, and in due course as Surgeon, on an East Indiaman. The intervals between one voyage and another would naturally be considerable, »ince the sailings of the East Indiamen were seasonal. These intervals most probably were largely spent at his father's house, at Lsnry. If so, these considerable and repeated periods of residence at home might easily, especially if his health were, as is possible, indifferent at the time, be confused by neighbours with a continuous and prolonged period of illness and inactivity.

Buchanan made no contributions to scientific literature between 1783 and 1791 and the only published observations relating to this period appeared in 1821 "in the *Edinburgh Journal of Science*, five years after he retired. But a perusal of Buchanan's papers on the language, religion and literature of Burma, published in the *Asiatic Researches* in 1798-99 affords indications that the years which intervened between his graduation at Edinburgh and his receiving a commission from the Honourable East India Company must have been marked by wide reading and extended observation of men and things.

3. SERVICE IN INDIA, 1794-1805.

SURVEYS OF AVA, CHITTAGONO, MYSORE AND NEPAL.

Dr. Francis Buchanan entered the service of the Honourable East India Company as an Assistant Surgeon on the Bengal Establishment on 26th September, 1794. Soon after his appointment he was attached to the embassy which was deputed under Captain Michael Symes to the Court of Ava. This embassy left Calcutta on 21st February, 1795 and, on its way to Rangoon, the vessel in which the embassy sailed called at Port Cornwallis in North Andaman.¹ Buchanan was thus given an opportunity of seeing something of the Andamans and of seeing and learning a good deal about Pegu and Ava before the embassy returned to Calcutta on 22nd December, 1795.

From the account of this embassy published by Symes (now a Major), in 1800,² we learn how valuable as a colleague and how delightful as a companion Buchanan

¹ This was the second site occupied by Government as a settlement in the Andamans. The site originally occupied was that which is now the head-quarters of the Andaman Commission; it was occupied by Lieutenant Blair during the cold weather of 1789-90 under orders issued by Government in September 1789*. To the harbour thus occupied Blair gave the name of Port Cornwallis. In November 1792 orders were issued for the removal of the settlement to another and more spacious harbour in North Andaman; to this new settlement, which was the one visited by Symes and Buchanan, the original name of Port Cornwallis was again applied. In 1796 orders were issued for the removal of the whole establishment to Penang. The present establishment in the Andamans dates from 1858 and, owing to the transfer of its original name "Port Cornwallis" to the harbour in North Andaman, for which that name is still used, the third settlement, which occupies the site of the first settlement of 1789, has, to prevent confusion, been named Port Blair in commemoration of the original founder.

² Symes: *An Account of an Embassy to the Kingdom of Ava*: 1 vol. 4to. London, 1800.

must have been, and we further gather both from Symes and from various papers published by Buchanan himself while in India and after he had retired,¹ that he made the most of the opportunities afforded by this journey not only in the matter of direct observation but in the way of acquiring information by questioning the more intelligent inhabitants of the country with whom he came in contact. Though only one passage is given by Symes in Buchanan's own words² we are told that a good deal of the geographical as distinguished from the political fruit of this mission was the outcome of Buchanan's assiduity. There are also, in Symes' narrative, incidental references to Buchanan's work as a botanical collector,³ and a number of the more interesting species of plants obtained during the journey, of which drawings had been made on the spot, were selected for publication and described, so Symes says, by Sir Joseph Banks, as a portion of Symes' work.* His correspondence with Roxburgh began during this journey though only one of the letters in Roxburgh's collection, "dated Rangoon, 21st May*, 1795, belongs to this period. It is too technical for reproduction in full but the closing passage:—

"any of the seeds you think worth the planting in your garden I beg you may use; the others, if any opportunity offers, be so obliging as to send to Smith in my name,"

is interesting owing to its reference to his friend the founder of the Linnean Society.

On his return from Burma, Buchanan was posted to Luckipoor (Lakshmipur) the head-quarters of the present district of Noakhali in South-Eastern Bengal. His actual residence was at Puttahaat six miles north of Luckipoor and, except for occasional visits to Comillah, Chittagong and Calcutta, he was here during the latter half of 1796, the whole of 1797, and a considerable part of 1798. He was, as we learn from his letters, in constant correspondence with Roxburgh,⁶ who took a great interest in Buchanan's welfare and career, and did much to push his fortunes at the outset of his Indian service.

Shortly after settling at Puttahaat he applied unsuccessfully to be allowed to return to Pegu. Besides travelling in the district and crossing the Megna to make occasional botanical excursions in the Eastern Sundrivers we find that he busied himself with the arrangement of his Burmese notes and papers. Thus, in a letter dated Puttahaat August 13th, 1796, he says:—

"I have finished my account of the Pegu plants some time ago and would have sent it up but am in daily expectation of bringing it up myself. It has turned out much longer than I

¹ *Asiatic Researches*, Tols. v. & vi.; *Edinb. Phil. Journ.* vols. ii., iii., i*, r., vi., vii., x., x.; *Edinb. Journ. Sci.* i.

² A note on the rivers of Burma; Symes: *Embassy*, p. 241.

³ E. g., Symes: *Embassy*, p. 437, where reference is made to Buchanan's search for the Launzan tree, which was also the subject of a short paper (*Asiatic Researches*, vol. v.) by Buchanan himself, and which now perpetuates his memory by having been made the type of the genus *Buchanania*.

⁴ Symes: *Embassy*, p. 473. Descriptions of rare and curious plants, selected by the President of the Boyl Society. We know, however, from Buchanan's letters to Roxburgh, and from his own published papers, that he prepared a full account of the collection made in Burma and that what Symes says Banks did was really entirely Buchanan's work.

⁵ The following 19 letters to Roxburgh belong to this period: 1796; August 13th, November 17th, December 14th: 1797; 16th February, 17th March, 11th April, 10th May, 26th June, 6th July, 10th July, 19th July, 26th July, 2nd August, 17th August, 20th August, 4th September, one without date received by Roxburgh on 3rd October, 30th November: 1798; 7th January.

expected; 168 folio page3. Since it was finished I have been busy in arranging my geographical paper3."

In the same letters he gives an indication of his zoological studies:—

"I believe I have discovered a new genus of animals. It is very near the *Limax* but differs in several particulars. It is impossible to preserve the animal in spirits so as to show its limbs, but I have got very good drawings."

In the next letter of the collection, dated Puttahaht November 17th, 1796, he says:—

"I should very willingly have described the new animal here, but Mr. Fleming when I offered it thought that it would not answer, and I am afraid Smith would not take it kind should I withdraw it from him."¹

He had joined the Asiatic Society at Calcutta on August 6th, 1796, and in his letters there are several allusions to the fact, only one of which, given in a letter dated Pullahaut 11th April, 1797, need be here given; the interest of the extract lies particularly in the concluding sentence, which seems to indicate that Roxburgh's *Flora Ind'ca*, which was not published in its entirety till 1832, was already, in manuscript, at the disposal of his friends. Roxburgh, as previous letters of the series show, had arranged to visit Chittagong, passing by Luckipoor and being Buchanan's guest on the way. The proposed excursion had to be abandoned, owing to the breakdown of Roxburgh's health which necessitated his making a voyage to the Cape of Good Hope.

^{w%}Two days ago I received yours and am sorry that you have given up your intention of coming thi3 way, especially as it proceeds from so bad a cause. I am much obliged to you for undertaking to make up my engagements to the Society; b3 so obliging a3 to let me know the amount and I shall procura an order on Calcutta as soon as po3-ibl3. I am also greatly obliged to you for securing the number of your *Flora Iudica*.^M

From a letter dated 10th May 1797 we learn that Roxburgh had endeavoured to obtain for Buchanan a place on an expedition then being organised to proceed to Manilla. Nothing came of this, but a subsequent recommendation of Roxburgh's that Buchanan should be posted to the 24-Pergumiahs: so as to bring him within reach of the books to be had in the libraries of Calcutti, was successful, as was another recommendation of Roxburgh's, submitted to the Board of Trade at Calcutta, that Buchanan's services should be utilized in making an economic survey of Chittagong. During the rainy season of 1797 Buchanan was still engaged in arranging his Burmese papers, for in a letter dated lyth July 1797 he says:—

^{bl}I have now nearly finished my account of the Burmese religion and should be glad to show it to Sir John Shore, whose opinion relative to the publication of a part or of the whole I should like to have. * * * I do not think tLat it would answer for a separate publication, but although rather loDg it might do for the Asiatick Researches."

He reverts to this subject in several subsequent letters; in one received by Roxburgh on 3rd October 17U7 he says:—

"I intend setting out for your house on the twentieth of October, * * * By the time I have come I hope Sir John and perhaps Mr. Fleming may have looked them over aiid we shall thei* be able to determine what ought to be done with them. If the contents are thought

¹ This, and another Zoological paper belonging to the same period, appeared in *Trjns. Linn. Soc.*, vol. v.

interesting enough for f uV.icaion, I con get ShcolTbred or peihaps Biuce to look over tLcm "with me and to correct the language. Both of them write with a considerable degree of elegance."¹

The temporary cessation of Buchanan's correspondence with Roxburgh, for there is no letter after 7th January 17[^]8 till 16th October 1798, was due to Roxburgh's absence from India. The letter of 16th October, which was addressed to Roxburgh at the Cape, is given below:—

«Your application to the Board of Trade for my going to Chitagong was successful and I had a chainiing botanical excursion for near 3 months; the latter part of it, however, was much interrupted by the rains which Bet in remarkably early and are not yet over. I found many places with a most excellent soil in Chittagong, but have xry fears that the climate will not be sufficiently mild for the spice plants. I however sent in a report to you, communicating it to Fleming and mentioning that I would communicate my* journal² which contains the remarks I made on the soil, produce, culture, and people of the country through which I passed, nnd that I would al*o communicate my specimens of dried plants which are pretty numerous. I have fent a good many seeds and growing plants to the garden and have laid things in such a train that I expect many more. In what condition the seeds and plants have arrived I cannot say, as I have not yet been able to go down to the garden. Among my specimens are four species of Gurgeon or wood oil trees; a tree which yields a very aciid varnish which I suppose is the same with that of the Burmas and Chinese; another the baik of which united with indigo is said to form a black dye. I saw not the fructification of either, but suspect the first to be a species of Semecarpus and the latter to be a Eicinus. I sent growing plants of both. What will be the result of my report I cannot say, ns Fleming does not intend giving it in till Smith goes away to tho eastward which he will do in a few days. He says that I will have some difficulty in getting expenses paid owing to my being so Me of making a charge.

According to your recommendation I was appointed to Barripur on the 15th May *
* I could not leave with propriety before the first of this month. I was thus fcr a long time kept in a disagreeable situation and run great li&ks of having my interests materially injured, yet as very frequently happens in our profession I did not even receive thanks from those I had so materially served. Fleming has been very angry with me for staying so long, but I know that if I had come away * * * would have raked f such a clamour about inhumanity that I should probably [have] been looked upon by every civil servant as a monster.

Fleming at one time I am told had strong intentions of going home, but as he is now as much in favour as ever I hope he will not think of it. I dined yesterday with Boswell, who is very well and in good spirits, and I am happy to hear from him that you are so much pleased with the Cape."

From tho beginning of October 1798 till the commencement of 1800 Buchanan was stationed at Baruipur in the 24-Pergunnahs, not far from Calcutta, and while here he had occasion to make several voyages in the Western Sundnbuns. Not having Roxburgh to correspond with, he appears to have given less attention than usual to botany, for he collected no specimens; any drawings or descriptions that he made were sent to his friend Smith. His zoological studies were, however, steadily pursued, more particularly bis investigation of the Gargetic fishes. This subject had already engaged his attention while at Puttahaut, for in a letter from there to Roxburgh, dated 30th November 1797, he says:—

"I have given my old painter a gold mohur a month and have him employed on fishes. I am attempting to make him do the outlines with some degree of accuracy; when he succeeds in that I shall fcegin to colour."

¹ This paper, ana another on the languages spoken in Burmo, were published in *Asiatick Researches*, vols. v. and vi.

² This journal was never published, but a good deal of the information it contaked appeared subsequently ia three papers on tli3 frontier between Bengal and Ava, in the *Edinburgh Journal of Sciencei* vols. ii., iii. and iv.

Again, in a letter, dated 7th February 1798, just before Roxburgh sailed, he remarks:—

"If you do not take Blocke and Forster's *Termini Ichthyologiei* with you, I should esteem it as a great favour to have the use of them till your return."

At Baruaipur, therefore, the fishes received his chief attention and it was here that he really laid the foundation of his great knowledge of the Gangetic species, embodied in one of his most finished publications.¹ Roxburgh returned to India in October 1799 and their correspondence was immediately renewed. Before, however, Roxburgh had returned, Buchanan was offered an opportunity of visiting Nepal, and that he was able to set out on this journey we learn from a letter dated Gorasan, 12th February 1800.

⁴⁴ We have been waiting at this place, which is the village nearest to Nepal, for 14 days. The chief minister arrived two days ago at the village next to us on the frontier of his country. There has been as yet no interview nor do I know when we shall advance, but it is expected to be in the course of a few days. I am very well pleased at the delay, as I shall have a greater chance of finding the forest trees in flower the later we are.

* * * * *

Captain Crauford who commands the escort * * * has commenced the study of Botany with eagerness. He has rather forgotten his Latin and wishes to have the families of plants and vegetables of the Litchfield Society. * * * .

The Nepal journey had, however, for the moment to be deferred, and Buchanan had once more to thank Roxburgh for an opportunity of distinguishing himself. While on his way back from the Cape in 1793 Roxburgh landed at Madras and had the privilege of an interview with Lord Clive, then Governor of Fort St. George. In the course of their conversation Lord Clive mentioned to Roxburgh his desire to investigate the newly acquired territories in his Presidency, and asked Roxburgh whether he could recommend a suitable officer for the work. On his return to Calcutta Roxburgh wrote, in October 1799, to Lord Clive as follows:—

"When in Madras I took the liberty of mentioning to your Lordship that I thought Dr. Francis Buchanan of the Bengal Medical Establishment a very proper person to be employed in your newly acquired territories above the Ghauts. He is the best botanist I know of in India and in every other respect the best qualified to furnish you with an account of the Vegetable Productions of these countries. He is also a good Zoologist; in short every way well qualified for the research. I have had a good deal of conversation with him on the subject and find him willing to be employed by your Lordship in the above manner. Could Mr. Heyne accompany him as Mineralogist and Chemist, I have no doubt but their joint endeavours would soon furnish a more complete account of the natural History, state of Agriculture, etc., of these provinces than we at present have of any of the British Possessions in Asia. Should your Lordship wish to employ this gentleman it will, I imagine, be necessary to apply to this Government for him."

When Lord Clive's suggestion reached Calcutta the Marquis of Wellesley took it up warmly and adopted it as his own. He appears to have been greatly impressed by the perusal of Buchanan's Chittagong Journal and decided to adopt Roxburgh's opinion that Buchanan was the officer to whom the duty could best be entrusted. Buchanan was therefore recalled from the Nepal frontier, and instructions, dated 24th February 1800, were issued to him to visit and report on the territories of the Rajah of Mysore, and on the country acquired by the Company after their war with the Sultan as well as on that part of Malabar previously occupied by the Marquis Cornwallis.

¹ *Account of the Fishes found in the river Ganges and its branches.* 2 vols. Text, 1 vol. 8vo. Plates 1 vol. Kojai 8vo. Edinburgh, 1822.

This place is very fortunate in two such men as Colonels Wellesley and Close. Every person is pleased with them and they are both men of great abilities and perfectly men of business. There can be no doubt of their producing a wonderful alteration in a few years. Tippoo's Government since Lord Cornwallis's war has been, dictated entirely by caprice and bigotry and together with depredations *et* hostile armies, especially the Marattahs, has reduced the country to a very wretched state. Nothing can be rarer than this place. On my last day's march of 15 miles, I hardly saw a bush large enough to make a broom. I have therefore little employment for my painter. On the Toad I got hardly anything completed by him. A most beautiful Stapelia, very different from your ascendants, is the most valuable of his performances,⁷⁷

Another letter of the series, dated Buntwal, 31st January 1801, is interesting, as the subjoined extracts show, because it gives the first indication of the interest which Buchanan subsequently took in the *Hortus Malabaricus*, to the preparation of a much-needed commentary on which he devoted about five years of his life after retirement, only in order that two-thirds of the work should be buried in the archives of a Botanical Society. It is almost equally interesting because of the light it throws on Hamilton's views regarding a subject which was only dealt with by him once again and then in what apparently is the last paper he ever wrote:—

"I got yours of the 4th and 5th instant two days ago and am obliged to you for the great trouble you have had in making the extracts from the *Horbus Malabaricus*. I am sorry that the nature of my visit to Malabar will afford very little prospect of illustrating the work of You liheede. It was performed in the middle of winter, when you know how very few plants are in fructification, and I found no native who could or rather who would inform me of the names of plants. The obstinacy of the people of Malabar is astonishing and every man you meet suspects you have an evil design in every question you ask. Without therefore making some stay in the province and breeding up a man or two to collect plants and procure their names nothing [more] can be done than to collect specimens and describe such plants as you find in a proper state.

* * * * *

I am informed that a nephew of mine, Eobert Hamilton Buchanan, came out in the *Milcil Cattle*—Captain Lamb. I do not know in what capacity, but I think it probable in the service, Civil or Military, for the Bengal establishment. I hope you will have the goodness to inquire after him and to show him any attention in your power.

I have no specimens of stones with me, but when I arrive Mr. Fichtel will be extremely welcome to such as I can spare. I must confess myself a great sceptic with regard to the theories formed concerning the present appearance of fossils. My opinion is that we should believe them to have existed from the beginning just as we find them unless the contrary can be demonstrated. In the few cases even when this can be done the agency by which the changes have been produced seems to me very seldom to be demonstrable."

* * * * *

Buchanan's practice throughout this survey was to make a stated daily march and in the morning before leaving camp to gather round him the leading people of the neighbourhood, whom he questioned on the various points enumerated in his instructions. During his march and at the places where he halted his own observations were carefully noted, and extensive botanical and geological collections and notes were made. The journal of this survey was remitted to the Court of Directors and by their orders was

published in three quarto volumes¹ exactly as it stood and not, as it should have been, and as Buchanan had wished it to be, in a digested form. Luckily, he was able to provide for it a well-ordered index.

The Nepal journey was after all only deferred by reason of the Mysore Survey, for Buchanan had hardly returned to Calcutta after the completion of the Mysore journey when he was appointed to accompany the embassy that had been despatched under Captain Knox to the Court of Nepal. Leaving Calcutta during the cold weather of 1801-02, Buchanan proceeded by river to Patna and thence from there by easy stages and with numerous halts through Saran and Tirhoot, collecting and making notes of the vegetation of the country by the way.

In a letter dated 25th January 1802 from Dacca, a small village on the Nepal frontier, which was the last halting place in the Company's territories, where the mission waited till Captain Knox should be joined by some notables from Khatmandu, he asks Roxburgh to send him up a native collector to join the mission. Roxburgh found, as was natural, that none of his Bengali collectors would fare the risk of a visit to Nepal and suggested the deputation of his son William, who had lately been appointed Assistant Superintendent of the Botanic Garden, and who was a great personal friend of Buchanan's. Replying from Bassaia on March 2nd, 1802, Buchanan shows how much this arrangement would have pleased him both on personal grounds and because the botanical work of the mission would thus have been greatly benefited. But he feared that for once Roxburgh's influence would not be able to overcome the difficulties that stood in the way. Buchanan's anticipations were correct; young Roxburgh was not allowed to join the mission.

"I shall be very happy if you succeed in sending William, but I am afraid you will not meet with success in the application to Government for the purpose. I spoke to Captain Knox on the subject, who informed me that very serious objections have been made by the Nepal Government to the number of Europeans now in company with him, although they are only the usual number attached to the number of troops composing the escort.

* > * * * * * > # # *

I have taken a particular account of the cultivation in Bettiah, which will be sent down by and by to Government. No buckwheat is raised there. The *Canabis sativus* grows there spontaneously.

I am much obliged to you for the genus named after me. Lueiraro's having given a name to the *Roxburghia* will not at all deprive you of that fine genus, but should it so happen, there are plenty of your own discoveries to which your name may be given. I had a letter from Smith the other day; he desires to be kindly remembered to you. * * * I had sent him and Sir Joseph four species of Gurgeon under the title of *Hopea*, which name he seems inclined to adopt.

* * * * *

We have made our entry into the dominions of Nepal and were received near the frontier by many of the principal men of the country with the greatest civility and attention. "We have halted after advancing about two miles and political arrangements have occasioned a long delay, but it is expected that every thing will be adjusted and that then we shall proceed towards the capital."

» *A journey from Madras, through the countries of Mysore, Canara, and Malabar, performed under the orders of the Most Noble the Marquis of Wellesly, for the express purpose of investigating the state of Agriculture, Arts and Commerce, the Religion, Manners and Customs, the National and Civil History and Antiquities in the Dominions of the Rajah of Mysore and the countries acquired by the Honourable East India Company in the late and former wars from Tippoo Sultan, 3 vols., 4to, London, 1607.*

However on March 11th Buchanan wrote again from Bassaria acknowledging a communication from Roxburgh himself 'and a letter from William/ and continues:—

"It is said that we are to advance to-morrow, but we have been so long waiting that I am quite doubtful. A ghurt time must determine, as the pestilential season is fast approaching."

Buchanan's next letter to Roxburgh, dated Norcotera, March 26th, 1802, says:—

"Since I wrote you last we have had a retrograde motion and are now again in the Company's territory, but we expect to move on again to-morrow morning, and in five days march to reach the top of the kills."

Writing from Chitlong an April 11th, 1802, he say&:—

"I have now got above the ghauts and find myself in Europe both respecting the climate and vegetable productions. I wish the people also were like those of Europe."

Four days later Buchanan writes from Tancote, April 15th, 1802:—

"We arrived here yesterday and are in sight of Catamandu in a bare ugly valley resembling many of those in Scotland before the introduction of fencoes and other improvements."

Ten days later ho writes from Khatmandu, 25th April, 1802:—

"I have much profess'onal duty, the country being most unhealthy and wish for nothing more than to be out of it again as soon as possible."

He spent, however, the next fourteen months in Nepal, in the neighbourhood of Khatmandu, bringing together a large botanical collection and making numerous drawings and descriptions. During his sojourn in Nepal, Buchanan was accompanied by a very intelligent Brahmin from Calcutta, Babu Ramajai Bhattacharji,¹ whom he employed in obtaining information of the most varied description, so far as this could be prudently done without causing alarm to the jealous Government of Nepal or giving offensa to the Resident, under whose authority Buchanan was acting.

The instructions which Buchanan received before setting out for Nepal would appear to have been much like those issued to him before his visit to Mysore. At all events the information he obtained and recorded was of the same general character.²

During his stay in Nepal Buchanan was in constant correspondence with Roxburgh. We know that he despatched, between the date of his leaving Patna in 1802 on his way to Nepal and the date of his return to Patna in 1803, 117 notes or letters and that there are £0 of these present among the Roxburghian letters. The bulk of the communications are however, for obvious reasons, very brief³ and are entirely confined to botanical subjects. When a complete round of the seasons had enabled him to

¹ Babu Ramajai BAattacharji, of whom Buchanan writes, long after his retirement, in very affectionate terms, accompanied Dr. Buchanan during his subsequent Survey of Bengal and was evidently at all times one of the most trustworthy and respected of his lieutenants.

² This information, with information subsequently gained during 1810, when Buchanan lived on the Purnea-Nepal frontier, and during 1813-14, when he was in Gorakhpur, was published in his *Account of the Kingdom of Nepal* in 1819.

³ The letters sent by the members of the Mission were doubtless often opened and perused by agents of the Kepalese Government before, perhaps even after, they reached the Company's territory, and many of them, as Buchanan explains in one of his letters, never reached their destinations at all. We see that of the 117 sent off to Roxburgh, as many as 21 disappeared on the way. For this reason Buchanan hardly wrote to any one except Roxburgh while he was in Nepal, and deliberately made his letters brief and, except as regards botanical subjects colourless.

exhaust the botanical interests of the valley of Nepal he began to realise that the life at Khatmandu was tiresome and once again expressed a wish to be back in Bengal* Thus, on 18th December 1802, he says:—

"I would write you news occasionally were it proper in a person attached to a political expedition. I am heartily tired of my situation, but hear nothing of my removal"

Roxburgh evidently recognised that this was natural and that Buchanan's talents would be more usefully employed elsewhere. We accordingly find that once more he had interested himself on Buchanan's behalf, for in a letter, dated 22nd February 1803, Buchanan says:—

"I received yesterday yours of the 5th of February. I am much obliged to you for having mentioned my wish to return to M. Malcolm, I wonder it had not been done before from another¹ quarter. The people with you are so dilatory that I suspect the season will be past before my recall comes. However, there is no occasion to trouble his Lordship further on the subject."

The news of his wished for recall reached him on 1st March but before his successor could reach Khatmandu the whole mission was recalled. It left Khatmandu on 18th March and reached Segouli on 28th March 1803. Here Buchanan was relieved and pushed on to Patna, where he arrived on April 4th.

On his return to Calcutta Buchanan took up his old appointment at Baruiপুর, in the 24-Pergumahs, as we learn from letters dated from that place in August. One of these, dated 16th August 1803, is so interesting in many ways that it is here given in full:—

"I have been so busy for some time past that I have not stirred one day from home since I left Calcutta a few days after I saw you last. I think my hurry will be over in a few months and among ^ the first visits I pay [one] will certainly be at the Botanic Garden. The *Buchanania* growing in the Sundurbuns with a dichotomous panicle is called *Amor* by the natives. The fruit is three-lobed, three-celled and of a oorioeous substance not opening or dividing into valves. Each cell has a large seed covered by a kind of aril much resembling mace. If the plant which has been sent to you as the Pursar is a *BuchaDania* there has been a mistake, for the Pursar is of two kinds—the one the *Carapa moluccensis* of Lamark and the other a new species.¹ Willdenow calls Lamark's species the *Xylocarpus Granatum*, which is a stupid name I have got a half of the *Encyclopedie Methodique* which is a noble work—by far the most satisfactory thing I Lave ever seen except *Jussieu's Genera*."

The Marquis of Wellesley, then Governor-General, had formed a menagerie at Barrackpur, for the purpose of bringing together examples of as many species of animals as possible, as part of his comprehensive scheme for investigating the natural history of India. During the cold weather of 1803-04, Lord Wellesley attached Buchanan to his staff as Surgeon to the Governor-General, and confided the management of this menagerie to his care, Buchanan's time was therefore now mainly devoted to zoological studies and was largely spent in identifying and making drawings and descriptions of the animals in the Barrackpur collection.

None of the results of his observations during the two years thus employed appear to have been published, but at least copies of some, if not all, of his descriptions

¹ That there are two very distinct *Carapas* in the Sundribuns is a fact which the writer has found botanists who have not visited the region, for some reason, unwilling to admit. It is interesting to know that a century ago Buchanan was perfectly well aware oi their existence.

and drawings belonging to this period are carefully preserved in the library of the Asiatic Society of Bengal.

In the end of 1805, when Lord Wellesley retired, Buchanan accompanied him to England. His habit of observing natural phenomena, we learn incidentally, was exercised as usual during this voyage.¹ During his stay in England Buchanan was able to prepare the excellent index which accompanies his work on Mysore, with the object of enabling readers to understand the Indian terms employed in the journal and in order to compensate, to some extent, for the absence of method in the arrangement of the work.

During this visit Buchanan renewed his old intimate intercourse with Smith. One result of this renewal of their companionship was that Buchanan gave Smith all his Nepal specimens, a gift that was subsequently to be far from beneficial to Buchanan. Smith refers to the transaction as follows²:—

« My excellent friend and fellow-student Dr. Francis Buchanan having most generously put me in possession of all his drawings of Indian plants, together with his manuscripts and an herbarium of about 1,500 species collected in his journey to Nepal, I hasten to communicate some of these rarities to the public."

Another result was that Smith took up some of the Perthshire specimens collected by Buchanan in their student days, and described them. Regarding one of these Scottish plants Smith writes³:—

" These specimens were collected by Dr. Francis Buchanan in 1782 at Leny near Sterling, his native place. The glen of Leny has recently been celebrated in the beautiful poetry of Mr. Walter Scott, and from these romantic and sequestered scenes a Jong residence in various parts of India has neither perverted the taste nor weaned the heart of our friend."

During this visit to England Buchanan joined, on 1st May 1806, the Royal Society of London.

It appears that Buchanan's official Nepal journal, and many of the drawings executed at Barrackpur, reached the Court of Directors during the course of this visit to England. The Court were so impressed by the excellence of Buchanan's work in Ava, Chittagong, Mysore, Nepal, and at Barrackpur that they nominated him successor to Roxburgh as Superintendent of the Calcutta Botanic Garden when Roxburgh should retire, and decided that in the interval his peculiar ability as a statistical surveyor should be utilized in making a survey of the territories forming the Presidency of Fort William.

4. SERVICE IN INDIA, 1806-1815.

SURVEY OF BENGAL.

Towards the end of 1806 Buchanan sailed again for India, reaching Calcutta early in 1807. The instructions from the Court of Directors with reference to his future employment were issued on 7th January 1807. The Court in their despatch observe:—

"We are of opinion that a statistical survey of the country under the immediate authority of your presidency would be attended with much utility; we therefore recommend proper steps to be taken for carrying the same into execution."

¹ *Edinb. Philosoph. Journ.*, vol. v, 1821.

* *Exotic Botany*, ii., p. 73, t. f 7 : 1805.

³ *English Botany*, xsiii., 1.1520 : 1806.

In this despatch the Court nominated Buchanan, on the ground that he had been deputed by Lord Wellesley to carry out the survey of Mysore and had afterwards been given the management of the menagerie which Lord Wellesley had formed at Barrackpur, as the Surveyor to be employed.

In accordance with this recommendation Lord Minto, then Governor-General, appointed Buchanan to the post of Surveyor. Buchanan, who had in the meantime been promoted to the rank of Surgeon (on 20th June 1807), made preparations to begin work, so that when the Government at Calcutta issued final orders on 11th September 1807, he was in a position at once to carry them out. The survey was directed to be commenced in the district of Rangpur and to be continued thence westward, district by district, throughout the Gangetic plain to the north of the Ganges, till the western limits of the Company's territories were reached. This done, the districts to the south of the Ganges were to be taken up, one by one, in reverse order, and when they had been completely surveyed, Dacca and the districts along the Company's Eastern frontier were to be dealt with. At the same time Buchanan's enquiries were to be extended to adjacent countries and to minor states with which the Government at Calcutta had no regular intercourse, though as regards all such foreign territories the information was to be obtained either by cross-examining natives of such countries or states as might be temporarily sojourning within the Company's territories, or from the reports of subjects of the Honourable Company who had travelled or resided across the Company's borders; Buchanan himself was expressly prohibited from quitting the Company's possessions.

For each district Buchanan was instructed to prepare a full topographical account. The climate and meteorology, the history and antiquities of the area were to be described. The number and condition of the inhabitants were to be reported on; their food, their habits, their diseases, the state of education among them and the resources of their poor were to be dealt with. The nature and state of their religion, the number and character of their various tribes and sects; the resources and the influence of their chiefs and their priests; the feeling of these temporal and spiritual leaders towards the Company's Government were all to be assessed. The natural productions of each district, animal, vegetable and mineral; the fisheries, forests, mines and quarries were to be enumerated and discussed. Agriculture in the widest sense, including the nature and quality of the crops grown and the stock reared; the character and conditions of the tillage, as regards methods, implements, manures, means of irrigation and the like; the size of farms and the bearing of this on the condition of the farm labourers; the state of landed property and the systems of tenure prevailing, so far as these affected agriculture, were all to be considered. The progress made by the inhabitants in the fine arts, the common arts and manufactures; the architecture, sculpture, and paintings; the processes and the machinery employed; the quantity of goods manufactured and the amount of raw material and capital available were all to be estimated. Finally, an account was to be given of the character, the channels and the extent of their commerce.

A more comprehensive programme than this was probably never entrusted to a single officer in or out of India, and it is equally probable that no officer better qualified than Francis Buchanan to undertake the task ever lived. For this, it must be recollected, was a *real* survey, undertaken on the spot by a competent observer, not an assessment, by an officer at the head-quarters of a Government, of reports submitted

by district officials, but derived, when their source is finally reached, from the often hardly responsible statements of the village watchman.

Buchanan was liberally supplied with everything that was required for the successful accomplishment of his gigantic task, save one. He entered the service of the Company after his thirty-second birthday, and had already completed 11 years of service when the huge survey began. It is therefore no matter for surprise, though it certainly is for regret, that the survey was never completed.

Buchanan's time was wholly occupied in the work for eight years, from the rainy season of 1807 till the hot weather of 1814, and the marvel, when the sustained high quality of his work is considered, is that during so short a period he accomplished so much as he did.¹

|| The itinerary outlined in the original instructions was not precisely followed. The survey commenced towards the close of the rainy season of 1807, not with Rangpur, but with the district of Dinajpur, and the examination of this district having been finished early in 1808, Buchanan began the survey of the north-eastern portion of Rangpur, which district then included a considerable part of what is now Lower Assam. By the commencement of the rainy season of 1808 he had reached Goalpara, where he had his head-quarters till the advent of the ensuing cold weather. He then continued his investigation of Rangpur till the onset of the rains of 1809. During the 1809 monsoon his head-quarters were in a house close to the town of Rangpur; this he left, as the end of the rains approached, for Purnea, the district investigated during the cold weather of 1809—10. The rains of 1810 were passed in temporary head-quarters at Nathpur, near the Nepalese frontier, and during his stay here Buchanan made carefully organised efforts to obtain information as regards Nepal supplementary to that acquired by him in 1802—03. When the cold weather of 1810—11 began, Buchanan took up the survey of the adjacent district of Bhagalpur which lies partly to the north, partly to the south of the Ganges. Having finished his work for the season in the southern part of the district, Buchanan fixed his head-quarters for the monsoon of 1811 at Monghyr. When the rains were over he undertook the survey of the two districts of Gaya and Patna, which lie to the south of the Ganges, finishing up his work for the season at Patna which became his head-quarters during the rains of 1812. The seasons of residence at Monghyr and Patna were utilized, among other things, in studying, with the assistance of a Hindu Physician, both in the field and in the bazar, the characters and identities of the various officinal plants of South Behar.² Quitting Patna on the advent of the cold weather, Buchanan devoted the dry season of 1812-13 to the survey of Shahabad, the next district to the west, still south of the Ganges. When the rains of 1813 set in Buchanan embarked on a journey up the Ganges to Allahabad and thence up the Jumna to Agra. During this journey he was able to visit and obtain information regarding the Diamond mine at Panna. Leaving Agra before the close of the rains he dropped downstream to the mouth of the Gogra, sailing up that river as far as Gorakhpur, which district he investigated during the cold and hot seasons of 1813-14.

¹ The subsequent treatment of the information he accumulated and the fate of the records he left have been the subject of a good deal of controversy. This controversy will be dealt with further on; for the moment it is sufficient to trace the progress of the survey and Buchanan's movements in connection with it.

² This particular work was undertaken on behalf of Henslie, who was at the time engaged in preparing his well-known *Materia Medica*.

Advantage was taken of his being again near the frontier of Nepal to acquire further information regarding that country. When the rains of 1814 commenced he went up the Ganges by boat to Fatehgarh, where his head-quarters were till the cold weather of 1814 set in. While stationed at Fatehgarh he was able to obtain information regarding the Corundum quarry at Singraula.

From Buchanan's letters to Roxburgh during this period¹ we learn that except when at Goalpara in Lower Assam he ijas in a country far from inviting botanically. As usual these letters refer mainly to despatches of roots or seeds for the Botanic Garden and are not of very general interest. Writing from Nathpur on 1st August 1810 he refers to Roxburgh's well-known paper on the *Seitamineae* as follows:—

"I am very much obliged to you for your paper on the Seitamineae which was very much wanted and throws great light on the subject. I have just now, in treating on the gardens of this district? had occasion to mention some of the Seitamineae and am happy to have some well-known name to which I can refer though I shall be obliged to differ from you respecting some of the eynodemes, especially those of Rumph."

From one of his letters to Roxburgh from Monghyr in 1811 we learn that his health was beginning to suffer from the survey work, and in a letter from Patna, dated 10th June 1812, we find that he had made up his mind to visit Europe:—

"I take this opportunity of a boat going with my annual report to send you such seeds as I have been able to collect here. The country is so much cultivated that it is not a good field for a botanist. I am a good deal surprised to find the *Oerbera Thevetia* with a fine yellow flower, which I think you must have introduced from America, with numerous Sangskrit names and in common use as a medicine. The same also is the case with a red or scarlet flowered sage which I believe you also introduced from America* I send you a small specimen that you may judge of its identity with your plant. I hope you will have the goodness to let me know when and from whence you procured the two plants.

Unless some very unforeseen accident happens, it is my intention, about this time next year, to bend my way towards Calcutta in order to embark for Europe and I hope that I shall then have the pleasure of finding you stout and hearty."

The unforeseen did happen and, as we have seen, Buchanan, instead of coming to Calcutta in 1813 in order to go to Europe on furlough, spent the dry season of 1813-14 in surveying Gorakhpur. The prolonged labour of the survey had, however, unmistakably told on Buchanan's health, and in place of undertaking the survey of another district in the cold weather of 1814, Buchanan returned by river from Fatehgarh to Calcutta in order to prepare for his return to Europe, not now merely on furlough, but with the intention of retiring.

However, even if Buchanan had been able to carry out his original plan, he would not have been in time to see his friend Roxburgh again. During the cold weather of 1812-13 Roxburgh's health gave way, and at the commencement of the hot season he left Calcutta for the Cape, making over charge of the Garden to Mr. H. T. Colebrooke,² an accomplished botanist and a warm personal friend. Roxburgh's voyage extended, however, beyond the Cape to St. Helena, where he arrived on

¹Only 11 letters for the whole period are preserved in the Roxburgh collection, viz., from Dinajpur, 1; from Goalpara, 4; from Kaliyachak and Nathpur in Purnea, 3; from Monghyr, 2; and from Patna, 1.

²Henry Thomas Colebrooke, who, among the many men of outstanding ability whose services it was the good fortune of the Honourable Company to command at the end of the 18th and the opening of the 19th centuries, was by no means the least remarkable, though mainly famous as a scholar, historian and antiquarian, was a true

7th June, 1813, so ill that he had to be left in the island as the only hope of saving his life. Towards the end of February 1814 Roxburgh was able to go on to England, apparently still hoping to regain health and to return to the Botanic Garden.

At the time of Roxburgh's departure the health of Colebrooke's wife was a cause of great anxiety to her friends, and the correspondence between Roxburgh, and Colebrooke at this period indicates that both he and Roxburgh hoped that, under the circumstances, the comparative exemption from social duties that a life at the Botanic Garden ensures would 'increase her health and comfort.' Apparently there was at first a marked improvement, but from a sudden illness, which she had no strength to shake off, the unfortunate lady died in October 1814. The blow was so keenly felt by Colebrooke that he decided to leave India, where he had served since 1783, at once, and on 3rd November 1814, he requested Government, as it was his intention shortly to proceed to England, to be relieved from the charge of the Honourable Company's Botanic Garden. Replying to this request on 5th November 1814, Government informed Colebrooke that Dr. Buchanan of the Medical Service on the Bengal establishment had been directed to receive charge of the Garden. A letter of the same date,¹ addressed to Buchanan, who had just arrived from Fatehgarh, informed him— that:—

"His Excellency the Vice-President in Council has been pleased to appoint you to take charge of the Honourable Company's Botanical Garden until further orders and to succeed to the situation of Superintendent of the Garden in the event of Dr. Roxburgh proceeding to England from St. Helena."

member of the Asiatic Society and a worthy companion of Jones, its founder, for his interest* included 'whatever is performed by man or produced by nature.' It appears strange that Colebrooke's biographers, including his son, are unaware of the fact that Colebrooke's first duties in India, from March 1813 till November 1814, included those of Superintendent of the Botanic Garden.

¹ The precise expressions of this letter of 5th November 1814 are important in connection with misunderstandings that have arisen, and that are reflected in various notices of the lives of Buchanan and of Roxburgh, with regard to the connection of the former with this garden.

In more than one account of Buchanan's life it is said that he was appointed successor to Roxburgh by the Court of Directors in 1807. Buchanan himself states, in a paper read in 1821, that the Court of Directors had appointed him to be Roxburgh's successor, but he does not say when the Court did this. The terms of the letter quoted in the text show that the statement is literally accurate, even if the date 1807 be wrong; and though the writer has failed to confirm the date there is every reason to believe that it also is correct. The Government of Fort William were not empowered to make a permanent appointment—when, in 1816, they proceeded to do so, the Court of Directors ordered the Government of Bengal to revoke their appointment forthwith and to instal another officer nominated by the Court. The terms of Buchanan's letter of appointment therefore may be accepted as confirming the statement that Buchanan had at so early a previous date been appointed successor to Roxburgh. By a lapse of memory, however, which is unusual in him, Buchanan says he took over charge of the Garden at Calcutta on Roxburgh's death. In the *Calcutta Review* for July 189* Beveridge, detects this obvious error only to fall into another, because Beveridge says that 'Roxburgh left India for ever in 1803.' The source of Beveridge's belief the writer has failed to trace; he can only suppose that in some notice of Roxburgh which he has not seen, the printer is accountable for the date 1803, by a mistake that had escaped the proof-reader, instead of 1813, the actual year in which Roxburgh left never to return. As a matter of fact Roxburgh died in Edinburgh on 18th February 1815, so that though Roxburgh was dead five days before Buchanan left Calcutta, he was 6 till alive when Buchanan succeeded him.

One point that does not seem clear, in connection with the whole incident of Buchanan's superintendence, has hitherto escaped notice. When Roxburgh left Calcutta, Government were aware of his intention to return whether he had on this particular voyage to go beyond St. Helena or not; and even from St. Helena Roxburgh had signified his intention of returning to the Botanic Garden. This letter of 6th November 1814 indicates that Government were not yet made aware officially from London that Roxburgh had been obliged to proceed to England from St. Helena, though they probably were aware unofficially, since Roxburgh had intimated the fact in a letter to Colebrooke from St. Helena, dated 21st February 1814. They had, however, evidently made up their minds to dispense with Roxburgh's services whether he recovered his health or not, since by their order of 6th November 1814 they definitely deprived him of the post he had filled so worthily and so long.

As the state of Roxburgh's health did compel him to proceed to England from St. Helena, Dr. Buchanan therefore actually succeeded to the situation of Superintendent of this Garden.

Buchanan's tenure of office here was brief. His health, as he himself has explained, had been impaired by his long continued exertions in connection with the survey. He therefore carried out his intention of proceeding to England; and in a letter from Government, dated 10th February 1815, Dr. Nathaniel Wallich, who in 1817 was confirmed by the Court of Directors as Superintendent, was informed that Dr. Buchanan, 'the Superintendent of the Botanical Garden,'^x had intimated his intention of proceeding to England in the Honourable Company's ship *Marchioness of Ely*, and was directed to receive charge of the Garden from Dr. Buchanan until further orders.²

When Applying for permission to return to Europe Buchanan at the same time asked for official sanction to take with him the whole of his collections for presentation to the Court of Directors. He desired, in fact, to deal with the collections made during his Bengal Survey precisely as the collections made during his Burmese and Chittagong journeys had been dealt with. The only difference was that on this occasion he desired to take them home himself. The Honourable the Vice-President in Council granted the permission asked for and everything had been packed in readiness to be put on board when on 5th January 1815 His Excellency the Earl of Moira, afterwards Marquis of Hastings, who had called for the papers connected with Buchanan's application, made a note regarding the proposal which resulted in the issue of the following letter to Buchanan from the Secretary to Government, dated 31st January 1815:—

"The Governor-General having communicated his opinion to the Honourable the Vice-President in Council that the drawings³ of plants and animals which you have lately intimated your intention of taking to England for the purpose of presenting them to the Honourable the Court of Directors are already the property of the Honourable Company, the survey on which you have been employed since your return from England to India having been undertaken by their directions and at their expense, and delineations of the animal and vegetable productions of the country being particularly necessary as references to the reports on the several districts received from you, I am directed to desire that you will transmit the drawings in question to me for the purpose of being disposed of as Government may direct."

¹ From the use in this letter of the designation 'Superintendent of the Botanic Garden' it is probable that during the interval between 6th November 1814 and 10th February 1815 official intimation had reached Calcutta that Dr. Roxburgh had gone beyond St. Helena and that Dr. Buchanan had in consequence definitely succeeded him. As explained in the text Roxburgh had himself intimated the fact privately to Colebrooke."

² Permission to return to Europe was accorded to Buchanan towards the end of December, as we learn from a note by Sir George Nugent, Bart., addressed to His Excellency the Vice-President of Council, dated 23rd December 1814, in which Sir George signifies his intention of directing Mr. Assistant Surgeon Wallich, who was under orders to proceed to Nepal for the purpose of joining the army, to remain at head-quarters in order to take temporary charge of the Botanic Garden on Dr. Buchanan's departure. Wallich relieved Buchanan on 24th February 1815. On 10th December 1816, Wallich was directed to make overcharge to Dr. James Hare, who on that date was appointed Superintendent by the Government at Calcutta. Hare did not relieve Wallich till 20th April 1816. He was himself soon replaced by Dr. Thomas Casey, who on 7th December 1816 was appointed Superintendent in place of Hare. Wallich was reinstated, by an order from the Court of Directors in London, on 1st August 1817.

On 18th February 1815 Hamilton replied as follows:—

"I have been honoured with your letter of the 31st ultimo withdrawing the permission of the Honourable the Vice-President in Council for sending to the Honourable Court of Directors such drawings of natural productions as have been made at the public expense and desiring me to deliver them to you, which I have accordingly done by the bearer. I hope you will have the gODdness to return a receipt annexed to the accompanying list. I request that you will be pleased to represent to the Honourable the Vice-President *f/k* Council that upon examination it will, I am persuaded, be found that the drawings in question are little, if at all, calculated to explain the reports which I have delivered to Government, all of which were accompanied by such of the drawings made at the public expense as appeared to me likely to elucidate the subject. Have the goodnes3 also to represent that my object in requesting that I might be permitted to present the drawings to the Court of Directors did not originate in a view of claiming the merit of making a present to the Company of its own property, but arose from a conviction that their being deposited in the collection at the India house was the most probable means of rendering them useful to science. I am persuaded that they will be found of little use to natural history unless they were accompanied by the descriptions which it was my intention .to have prepared; but accompanied by these and open to the inspection of naturalists with the liberality shown at the Honourable Company's collections they no doubt would contribute to render the Natural History of India more complete. While, however, I am deprived of that access to the drawings and of the means of elucidating my descriptions by their use, which I would have enjoyed had they been deposited in the Honourable Company's collection, I shall probably be altogether deterred from wasting my little remaining time on the labour of descriptions, always imperfect without the elucidation of engravings."

Two days later, in a letter to Government, dated 20th February 1815, with which he forwarded his Statistical Report on the district of Gorakhpur, Buchanan said:—

"I now return by the bearer the papers and drawings which were collected at the menagerie, and which I obtained from your office by order of Lord Minto, as an assistance in my investigation of the Natural History of India. I hope you will be pleased to acknowledge their receipt."

Buchanan made over charge of the garden to Wallich on 23rd February 1815, and embarked that evening carrying with him, as we gather from his later writings, no very pleasant memory of this incident marking his last dnys in India.¹

As mementos of his Superintendentship two of Buchanan's official letters² are given here in full. They are selected because they refer to matters that are of as much interest to-day as they were when the letters were written.

The first letter, dated 16th December 1814, deals with *Boehmeria nivea*—China grass, Ramia or Khea, names that are now familiar but that were all quite unknown in India ninety years ago. Evidently, however, the article itself, and the difficulties connected with it, were very well understood even then.

"I have this day sent to the sub-export Warehouse-keeper two bales of Caloe hemp packed in gunny and marked "Caloe for the H. 0. of D." containing 185 lbs. each and request that the necessary orders may be given for theii being sent by one of the ships of the present season.

I beg leave to mention that the Caloe plant is by no means a new species of *Urtica* as Dr. Roxburgh supposed. It is the *Urtica nivea* of Willdenow, and the *Eaneeum majus* of Rumphius' *Iloro Amboinensis*, volume 5th, table 79, figure 1st, The plant, under the name of Kankora, has from

¹ In *Trans. Boy. Soc. Edinb.* x. 186 (1821) Buchannn refers to the incident as an ill-judged act of authority unworthy of the character of the Marquis of Hastings.

time immemorial been cultivated in the Dinajpur and Eonggopur districts of Bengal, and its fibres are used for a few purposes that require great strength with little thickness, but the expense of cleaning the fibrous part has always prevented it from coming into general use, so that the fishermen of the above-mentioned districts, even for their nets, use the *Crotoalaria juncea* or Sun. As Dr. Roxburgh has in vain made every exertion to discover means for reducing the trouble of cleaning the fibres of this plant, I consider as groundless the expectation of its turning out of general use, and unless I receive further instructions to the purpose, shall direct the cultivation and cleaning of the plant to be abandoned as an unnecessary expense."

The next letter, dated 22nd February 1815, on the subject of the Rules for the Regulation of the Botanic Garden, is the last official communication from Buchanan before he left India.

"On taking charge of this Garden it was my wish to afford every accommodation to those whose curiosity might induce them to visit the place. For this purpose I directed that no gentleman nor lady, who chose to come, might be interrupted, in full confidence that such persons would avoid doing any voluntary injury. In order to prevent such injuries as might arise from inadvertency, I directed a book to be shown to each party, in which it was requested that no person should pluck either flowers or fruit. If they wanted either, application should be made to the nurseryman, who was directed to furnish all persons that applied with whatever could be spared without injury. These measures, I am sorry to say, have not answered my expectations. On one occasion I observed some ladies who ran upon the borders and broke various plants for their flowers* and I am informed that another, notwithstanding the remonstrances of the gardener, tore up a plant, of which only one individual existed in the garden, and had been reared with great difficulty.

It would give me great uneasiness that on account of the misconduct of a few individuals many respectable persons should be deprived of an innocent and perhaps instructive recreation, and I beg leave to suggest that the inconsiderate may be deterred from injuring the garden by an order published by Government directing the Superintendent to report the names of any persons, who in future visits to the garden may assume unbecoming liberties; the publication of such persons' names with an order for any party, in which they may be, to be prevented from visiting the garden, or even a private reprimand, would probably deter the most thoughtless from doing any considerable injury."

On the way to England the *Marchioness of Ely* made a sufficiently long stay at Galle to enable Buchanan to make a cursory examination of the vegetation there, and to provide him with material for a subsequent note on the Vanderon monkey.

Except for the account of the Mysore journey, which was issued without reference to the author and without the editorial attention he had himself wished to give it, very little of Buchanan's work was published during his service under the East India Company. Articles contributed by him during this period to scientific and literary periodicals include only one short botanical paper and two literary papers relative to his Burmese journey¹ and two short zoological papers written during his service in Lower Bengal between 1796—99.² A brief geographical note by Buchanan incorporated in the account of the embassy to Ava, and at the end of that work there are some descriptions of Burmese plants with which Buchanan's name is usually associated, but for which, if we are to credit Symes, he was only partly responsible.³ All these

¹ *Asiatick Researches*, vols. v., 1799* and vi., 1799.

² *Trans. Linn. Soc.* v. (1800).

³ Symes : *An Account of an Embassy to the Kingdom of Ava*, pp. 241, 473, London, 1800.

notes and papers were written, it may be remarked, before 1800, and except for the journal of his Mysore journey, the publication of which did not primarily rest with himself, nothing that he wrote was given to the public, after 1800, until he had retired from India and could devote himself to the arrangement of the voluminous memoranda collected by him between 1795 and 1814.

Buchanan's formal retirement took place, after he had reached Europe, on 14th August 1816, with which date his direct connection with India and his lien on the Superintendentship of the Botanic Garden at Calcutta ceased.

5. LIFE AFTER RETIREMENT.

In an interesting article on the Buchanan Records in the *Calcutta Review* for 1894 Buchanan's life after retirement is briefly summarised.¹ He survived his return to Scotland for many years and resided during most of the time at Leny near Callander. He married late in life, had children, and occupied himself in gardening; he published, in 1819, a book of which only 50 copies were printed, consisting of tables of Hindu dynasties extracted from the Puranas, &c., by his pandit. This sketch, though not inaccurate, is hardly adequate as an account of Buchanan's life during the fourteen years which he devoted to rendering accessible to the world, so far as he could, the results of observations made during the previous thirty years.

Buchanan reached England about August 1815. He was apparently at first well received at the East India House, though he seems subsequently to have been indifferently treated. Soon after his arrival he received the greeting from Lord Wellesley contained in the following letter, dated East Cliff Lodge, Friday, September 8th, 1815, in which the feelings entertained for Buchanan by his former chief are shown :—

"I sincerely congratulate you on your safe return to Europe, and I trust that your native air and a season of repose from labour will soon recover your strength.

It would have afforded me great pleasure to have seen you and to have learnt from so good an authority what is really the present condition of India; a subject in which I feel a warm interest. Whenever you may be at liberty, I shall be happy to see you; if I should be at this place, I can always give you a room and your society would be particularly acceptable to me.

If I can render you any service, I shall be happy to receive your commands; being always, dear Sir, with the most sincere wishes for your prosperity and welfare, and with the greatest respect for your talents, attainments, and integrity, your faithful and obliged servant."

Buchanan's early tastes appear to have been for a country life and his long experience of Indian camps must have aggravated his natural dislike for the cramped conditions of existence in a city. He therefore left London for Scotland with the intention of settling somewhere near Callander and Leny where he appears to have thought of building a house. While passing through London he appears to have

¹ *Calcutta Review*, July 1894. In this part of a careful article Mr. Beveridge thinks that Buchanan might have done more than he did to induce the Court of Directors to make the valuable results of his last survey work available. "Beveridge's reference to a letter from Buchanan, dated 8th February 1820, 'in a feeble hand-writing' conveys the impression that after his retirement Buchanan was 'used up' by his Indian service, occupying his waning intelligence with trivialities like garden shrubs and genealogical trees. Instead, however, of discussing what Buchanan might have done, it may be well to form some estimate of what he actually did after his retirement.

arranged for a change of his status in the Linnean Society, of which he was elected a Fellow early in 1816.¹

As events turned out, it was not necessary to build a house. Buchanan's elder brother Robert, who was, however, younger than Colonel John Hamilton, had died before Buchanan returned, Robert's only son, Robert Hamilton Buchanan, who, as we have seen, joined the service of the East India Company in 1601, was, when Buchanan left India, a Captain in the 24th Regiment of Native Infantry. This officer, Colonel Hamilton having no children, was therefore next-of-kin to his uncle and heir-presumptive to his estates. Early in 1816, however, Captain Hamilton Buchanan died, and Francis Buchanan became his brother's heir.² It has been recorded that, when this happened, Buchanan at once redeemed the encumbrances on the family estates.³

When Colonel Hamilton succeeded to his mother's property he made Bardowie his home and continued to occupy the Bardowie mansion after his subsequent succession to his father's estates. The mansion at Leny was therefore at his disposal and he was able to offer it, as a residence, to his brother Francis when the latter became his heir-apparent. At Leny therefore Buchanan set up an establishment, and in spite of being in indifferent health he began at once, with characteristic energy, to arrange for publication some of the papers in which were recorded the results of many years of observation. This task, with gardening and forestry to which he was devoted, and with his duties as a county magistrate, filled his time. Though we know of occasional visits to Edinburgh and of at least one visit to London, we find that these journeys were made mainly, if not entirely, subsidiary to what was now the work of his life.

On January 27th, 1817, we find that Buchanan was elected a Fellow of the Royal Society of Edinburgh. About the same time he became a member of the two Societies of Antiquaries of London and Edinburgh.

When Buchanan left India in the end of February 1815 Dr. Nathaniel Wallich was placed in charge of the Botanic Garden at Calcutta. Circumstances prevented the confirmation of Wallich as permanent Superintendent when Buchanan's actual retirement from the Company's service took place. With the object of overcoming the difficulties that had been raised Wallich naturally invoked the assistance of friends and among others wrote to his predecessor Buchanan. Buchanan's reply, which is given below, forms part

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» AB already explained Buchanan had been, since 1788, one of the original Associates of the Linnean Society. He attended one meeting, that of 21st January 1806, when in England on furlough. His name was proposed as a Fellow on 6th February 1816; he was elected on April 2nd of that year. He does not appear to have attended a meeting of the Society during his visit to London in the winter of 1819-20, the only subsequent visit to London of which the writer can find any record, so that he never was formally admitted.

' The following notes relative to Captain E. H. Buchanan's service in India have been kindly communicated to the writer by N. L. Hallward, Esq., in charge of the Record Department of the Government of India:—

Buchanan, Robert Hamilton; Lieutenant, April 10th, 1801; Adjutant and Quartermaster, February 6th, 1810 •
 Captain-lieutenant, March 3rd, 1813 (Senior Captain-Lieutenant according to the Register of 1814);
 Captain (Regimental Rank), December 16th, 1814. Died, at Ghazipore, as Captain, 24th Regiment
 N.I., May 10th, 1816. * -----

Chambers: *Biographies of Eminent Scotsmen*. The sum expended by Buchanan in effecting this is given at £16,000[^] sterling.

of a coirespondence with Wallich¹ which continued unbroken till a few months before Buchanan's death. This letter is dated Callander, 4th February 1817.

" I was some time ago favoured with yours of the 2nd of January 1816. I would have answered it immediately had I not intended going to London where I might have had an opportunity of forwarding your views. I have however now given up all intention of ever visiting England and have taken up my abode in the Highlands of Scotland in the vicinity of this where I shall occupy my father's house which my elder brother has given me. ^I am within an easy day's journey of Edinburgh from whence vessels sail almost every day for Denmark, so that I shall be scarcely out of your way when you return to your native country, and I therefore hope for and expect a visit. In the meantime my situation is so remote from people of influence that I can do you no good in that quarter. The Court of Directors has indeed received my collection with such contempt and arrogance that I would neither ask nor receive any favour . . . * * * * *
* * * * * My collection would have been received with the utmost thankfulness by the most learned bodies here and might have gratified several of the most distinguished. Do not therefore throw any of your pearls before swine but collect largely and keep your oollection for the learned of your own country, who I have no doubt will be thankful.

I am highly pleased with the engravings and descriptions of the Asclepiades which you sent. The workmanship does great credit to the natives and the whole is highly scientific. If you can go on with your Hortus Bengalensis you will ensure your reputation as a Itotanist and above all will please our friend Browne. The expense in this country would be altogether intolerable nor is there at present any encouragement for works on natural history so that the first volume of Browne's Prodrumus Florae Novae Hollandiae, a most scientific woik, finding no sale whatever, he has stopt short, .

I am just now engaged in preparing for the press an acoount of Nepal, Asam and the Gangetic fishes. I remain with great esteem and regard, yours very truly."

Colonel Hamilton, who had gone abroad for the winter of 1817-18, died on January 10th, 1818. Buchanan consequently succeeded to the estates of Spittal, Leny and Bardowie,² and in terms of the entail regulating the succession to Bardowie, assumed the name of Hamilton, as we learn from another letter to Wallich, dated 'Leney,' 27th Apiil, 1818.

^kI have very lately received your valuable despatch of seeds, which I immediately sent to Mr. Macnabb, who has charge of the Botanical Garden, Edinburgh. He received it with great thankfulness; and as he sends very curious plants which are more suited for this climate and which I am attempting to naturalize in my hills and woods, you will much oblige me by sending him once or twice a year a dispatch of seeds directed for Mr. William Macnabb, Edinburgh, care of John Hanneman, Esq., No. 5 Meard Street, Dean Street, Soho, London, for which you will find it much easier to procure a conveyance than if the parcels were directed for Mr. Macnabb, Botanical Garden, Edinburgh, or to me at Leney, near Callander, N. Britain.

Inclosed I send you a list of those seeds which Macnabb is most desirous of procuring; but whatever else you send will be very agreeable.

I was very happy to see from your signing the list of plants that you have been confirmed as Superintendent, in which situation I am sure you will be both happy and contribute much to advance science. I should, however, have great satisfaction in hearing from you often.

¹ Only those letters of the collections are printed here which throw light on the work on which Buchanan was for the time being engaged; they enable us to give almost as complete an account of Buchanan's life in Scotland as we have been able to give of his life in India.

² He was served heir on 3rd November 1818. The entries (there are two) are as follows :—" Francis Buchanan (or Hamilton), Doctor of Medicine, to his brother, John Buchanan or Hamilton, Bardowie, who died 10th January, 1818. Heir of Taillie and provision special in the lands of Kilmatrog, the TWds of Formiston* Quilts, Treen, Little Leny, etc., Perthshire. 3rd November, 1818;" and again :-" Francis Hamilton (or Buchanan), Doctor of Medicine, to his brother, John Hamilton of Bardowie, who died 10th January, 1818. Heir of Line Special'm the land* of Burdston and Bothkennar, Stirlingshire. Dared 3rd November, 1818."

By my elder brother's death I have succeeded to his landed property, and have been under the necessity of relinquishing the name of Buchanan, and adopting my mother's name of Hamilton. I have not yet commenced arranging my botanical papers, that science being at present rather unfashionable in this country. I have prepared for the press an account of Nepal which will appear in November; an account of the Gangetic fishes which will appear in January; and an account of Asam; and I am now busy in preparing genealogical tables of the Kings and Princes of India. I find considerable difficulties in residing so far from London where my collections are deposited; but the management of my lands and the healthiness of a country life render, in my opinion, the situation where I now am more desirable. Nothing indeed I detest more than the life led in overgrown Capitals such as London. I was very unwell for some time after my arrival but my health is now completely restored. Please remember me to all old friends that may be talking of me, especially Sir John Boyds, Dr. Russell and Mr. Leny, and believe me to be most truly yours."

In 1819, the year which saw the appearance of three of Hamilton's published works,¹ he paid, in spring, as we find from the following letter, one of his visits to Edinburgh; the letter is dated Edinburgh, 12th March 1819:—

"A short time ago I had the pleasure of receiving yours of the 9th October 1817, and it was fortunate that you sent a copy of that of the 25th of July as the original did not reach me.² The success you have had especially in procuring plants from the northern mountains gives me the greatest pleasure. I have shown your letters to two of the most eminent cultivators in this country—Mr. Macnabb, who has charge of the Royal Garden here, and Mr. Shankly, of the house of Dicksons & Co., who has a most astonishing collection—I think more curious than the late Lee of Hammersmith near London. Both are eager to participate in the spoils of Nepal, and I am anxious to assist them because they would give me a share of every hardy plant they could rear, and my favourite object at present is to naturalize as many hardy exotics as I can in my woods and mountains at Leny. I hope therefore that you will have the goodness to send seeds of every kind to Mr. Macnabb, who has given me the accompanying letter to commence a direct correspondence with you. He will be an excellent correspondent for the garden as being both able and willing to send you plants from all the warmer parts of America and the West Indies. He is a most skillful cultivator and has many of our Indian plants in a very thriving state.

Mr. Shankly being a dealer of course wishes chiefly for ornamental plants with which Nepal abounds. All those from Gosaingthan I am sure would thrive here and even the greater part of those from the hills surrounding Kathmandu will, I am persuaded, bear our winters as many of the plants of Japan, Spain and the Cape of Good Hope do. The grand Rhododendron in particular ought to be tried. Mr. Shankly is anxious especially for all new species of Rhododendron, Viburnum, Androsace, Lonicera, Gentiana, Hydrangea, Clematis, Gaultheria, Andromeda, Fritillaria, Juncaceae, Primula, Lysimachia and Orchidaceae, but there are many others equally interesting, especially all trees from the higher parts of the mountains.

The seeds sent to him should be addressed to Messrs. Dicksons & Co., Seedsmen, Edinburgh, care of Messrs. Menier, Nash and Edmonds, Seedsmen, Strand, London.

In this country there is at present little turn for Botany as a science, but there is a great demand for exotic shrubs, trees and ornamental herbs, with which most country gentlemen have their seats adorned to a much greater extent than was done formerly.

Owing¹ to my living so far from London I find the utmost difficulty in having access to my collection which I consider as in a great measure lost. I hope you will take greater care of yours and never part with it.

¹ The *Account of Nepal*, the *Genealogies of the Hindu** and the *Genealogical Tables* that are associated with the second work.

* Note by Dr. Wallich: "It was sent by the missing *Atlas* in 1817."

If ever you come to this part of the world it will give me great satisfaction to know Mrs. Wallich to whom in the meantime I beg to offer my best respects and you will much oblige me by remembering me to Colonel Mackenzie, Dr. Russell and Mrs. Robertson as well as to any old friend that you may meet. If you have any opportunity of seeing my old servant Ramajayi Batacharji it would give me much satisfaction to hear how my old people are. I am much pleased with your account of Bharat Singha. Yours most truly."

Towards the end of 1819 or the commencement of 1820 Hamilton visited London. This visit had two interesting sequels. Golebrooke, from whom he took over charge of the Botanic Garden in 1814, obtained sanction from the Court of Directors to publish the antiquarian portions of Hamilton's Bengal Survey journals in the *Transactions* of the newly founded Royal Asiatic Society, which owed its origin to Colebrooke's enthusiasm and of which Hamilton became a member. At the same time Hamilton himself obtained from the East India House the botanical collections deposited there in 1815. With his usual energy Hamilton began to name and arrange them for issue. In connection with this he took up commentaries on the *Hortus Malabaricus* and the *Herbarium Amboiaeme*, tasks that occupied much of his spare time for the next five years.

The letter in which this visit to London is alluded to is dated Leny, near Callander, N. B., 8th July 1820. The passage omitted deals with matters regarding the estate of his late nephew, Captain R. H. Buchanan, who had died in India, and does not concern our narrative,

"I had the pleasure of receiving your very obliging letter of 6th December, 1819, some time ago, but deferred answering it until I received the seeds which have arrived safe. I have sown part of these from Gosaingsthan and sent part to Hacnabb and part to Shankly. I have also sown part of the rice and sent part to Maonabb. The remainder "with all other seeds I sent to the Botanical Garden at Glasgow where there has been lately appointed a professor likely to be somewhat distinguished. Mr. Hooker, this person, is, I believe a correspondent of yours. Should you be able to procure any more seeds from the higher Alps, especially of trees, I shall be much obliged to you for them. I have no hot house and it is hardy plants therefore alone that I can cultivate and an addition to our hardy trees is very desirable, the number of those which bear this climate well being rather confined.

I went lately to London and have got my dried specimens and descriptions, in arranging which for the Company's collection and for publication in such journals as may accept them I am now very busily engaged.

The paper which Mr. MacOulloch took charge of for me has not yet arrived and poor Dr. Wright is dead. When I was in London poor Sir Joseph Banks was quite gone, evidently fast hastening to dissolution. His loss will be severely felt, nor do I see any likelihood of any fit person succeeding to his situation at the head of the Royal Society. Brown refused the Botanical Chair at Edinburgh worth £1,200 a year, so that I suppose he has good prospects in London, I suppose however not equal to what he refused, but he seems to have been unwilling to part with Sir Joseph's library and collection.

I beg to be remembered to all old friends, especially to Colonel Mackenzie, Mr. and Mrs. Robertson and the Russells and please present my best respects to your Lady. I remain, dear Wallich, yours faithfully.

Fleming, whom I saw in London, is very poorly. Shoolbred I have not seen for a long time. I hear that he is at Bath."

In 1821 the Marquis of Wellesley, when appointed Lord Lieutenant of Ireland, invited Hamilton to join his staff. However, Hamilton's love for a country life and, though he does not say so, his desire to complete the arrangement of his papers and notes for publication while he had strength and health to do so, led him to decline this kindly invitation. From the letter given below which is dated Leny, 16th October 1821, we gather moreover that, though now in his 59th year, the idea of marriage had suggested itself to him. Shortly after this he married a lady named Brooke, by whom he had two children:—(1) Katherine, who died unmarried in 1839, and (2) John, who ultimately succeeded to the family estates and died in 190C.¹

"I have had the pleasure of receiving yours of the 23rd March and rejoice at your good luck in having had access to the treasures of Nepal. A great part of what I have done there has been in a sort lost as having been given to Sir J. E. Smith who is rather indolent and not likely to publish any considerable part of what he has. A Mr, Don, however, who lives with Mr. Lambert, to whom I gave duplicates of the collection presented to Sir J. E. Smith, is engaged in publishing an account of them together with those which you have sent, and I believe has both abilities and industry to produce a very valuable work. Whether or not Sir J. E. Smith will allow him the use of my drawings and written descriptions I have not learned. Your offer of joining me in a work on Nepal is very flattering, but I have no intention of taking upon myself such a labour ; indeed I have not a single note repeating any of the plants I brought with me from Nepal— Smith has the whole. I believe I shall confine myself to publishing commentaries on the *Hortus* Malabaricus* and *Flora Amboinensis*, having a good many materials for the purpose. You have my notes on the latter and I should be happy [to] have from you any new information on the subject and any corrections that may occur to you from further investigation, which in my publications shall be duly acknowledged.

My advice to you as an old man of a good deal of experience both in India and Europe is, along with your search after science, to collect money as fast as possible and, whenever you have a competence, to return to your native country. Already your collection far exceeds what you will be able to arrange and publish. From all that I can learn Copenhagen is vastly superior to London for publishing works on natural history. The expense is much more moderate and works of real science are more saleable. Nothing will pass in London without a degree of splendour which puts the work far beyond the reach of the man of science. Such, to see works of science, must now have recourse to public libraries which contain the splendid works published in the great capitals. Brown's work on the plants of N. Holland, one of the most scientific that has of late appeared, would not sell in London and he was so mortified that I believe he will publish no more of his Prospectus.

I am vastly obliged to you for offering to add to my collection, but I have none. I have given away the whole. You will, however, do me a favour in sending me seeds of anything that you think will bear the open air in Scotland, where I hope to see you on your way to Copenhagen. Between Edinburgh and this your capital is as easy a trip as from Edinburgh to London, and from Edinburgh to my house is an easy day's work, two-thirds of the way by water.

I have sent extracts from your letter to Brewster for the Philosophical Journal and shall send the descriptions of your two new Genera to Brown for the Linnean Transactions by the first

¹ Most of the accounts of Hamilton's life give this lady's name as Miss Brock ; the late J. Buchanan Hamilton, Esq., of Leny, however, gives his mother's name as Anne Brooke. An entry in Burke's *Landed Gentry*, for 1800, seems to imply that Hamilton's daughter Katherine was senior to her brother, and it is definitely stated in another passage that the late J. B. Hamilton, Esq., of Leny, was born on February 14th, 1822. As Hamilton himself explains that he was not yet married on 16th October 1821, some error has found its way into Burke's usually accurate pages.

" This Inquisition was made in the Court of the Sheriffdom of Edinburgh before an honourable man George Tait, Esquire, Sheriff Substitute of the said Sheriffdom, on the 9th day of the month of July in the year of the Lord 1828, by these generous worthy men and faithful to their country underwritten, viz:-John Crahame Dalrymple, Esquire, Advocate, Chancellor, James Balfour, Esquire, Writer to the Royal Signet, David Wardlaw, Esquire, Writer in Edinburgh, George Gorse Scott, Esquire, of Sinton, James Gibson Thomson, James Buchanan, Esquires, Merchants in Edinburgh, George Buchanan, Esquire, Civil Engineer of the same place, Joseph Gordon, William Gardiner, James Burnett, George Dalrymple, Augustus Maitland, James Cunningham, James Thomson Gibson Craigh, and David Cathcart, Esquires, Writers to the Signet: who being sworn say, their great oath intervening, that the late Walter Buchanan, some time of Spittal, who lived in the year of the Lord 1519, son of Walter Buchanan of Buchanan and Spittal, great grandfather of the great grandfather's great grandfather of Francis, lately designed Francis Buchanan, of Leny, M.D., now designed Francis Hamilton of Bardowie, according to the conditions of Tailie and Settlements of the Estate of Bardowie which he holds under the same, the bearer of the presents, died at faith and peace of our Sovereign Lord the King. And that the said now designed Francis Hamilton of Bardowie is the only surviving son of Thomas Buchanan, sometime of Spittal, and brother's only surviving son of his brother Robert Buchanan of Spittal, and as such served and returned next and lawful heir male in general to the said Robert Buchanan his* paternal uncle, who was the son of John Buchanan, who was the son of Edward Buchanan, who was the son of James Buchanan, who was the son of Edward Buchanan, who was the son of Walter Buchanan, who was the son of Robert Buchanan, who was the son of Edward Buchanan, who was the son of the first-named Walter Buchanan of Spittal, who lived in the year 1519 : therefore he is the nearest blood relation and lawful heir-male of the said Walter Buchanan of Spittal, great grandfather of his great grandfather's great grandfather, who lived in the year 1519, and who is of lawful age. In Witness of which thing the seals of the greater part of those who were present at the said Inquisition together with the King's brief enclosed therein and the seal of the office of the Sheriff of the said Sheriffdom are appended to the presents, together with the manual subscription of James Wilson, clerk to the Sheriff of the said Sheriffdom and clerk in the premises in the place, day of the month, and year respectively before specified (thus it is subscribed) Ja. Wilson, elk.

This is a true copy of the principal Retour upon the premises in the Chancery of our Sovereign Lord the King remaining, extracted, copied and collated by me John Dundas, substitute of James Dundas, Depute of the most honorable James St. Clair Erskine, Earl of Rosslyn, Director of said Chancery, under this my subscription John Dundas Subt."

The last letter of the collection from which those in this chapter are taken, dated Leny, 1st November 1828,- is the longest and in one respect the most important of all, for it conveys to Wallich authority, so far as Hamilton was concerned, to make use of Hamilton's botanical collections in connection with the Wallichian distribution. It was written just after Wallich had reached Europe with the large collections made in Nepal, Penang, Burma, Assam and elsewhere, which he spent the next few years in distributing to the great European Herbaria. Whether it bears the interpretation that Wallich put upon it, and entitled Wallich to include the Hamilton plants with his own collection in the actual distribution seems doubtful.

"I am happy to learn that you have fairly settled. Mrs. H. and family are well and join in best regards to Mrs. W. with whom we should be happy to be better acquainted. Before I heard from you I had received notice of the safe arrival of the commentary on the Hortus Malabaricus.

You are perfectly welcome to use all my collections so far as depends upon me, but I have given the whole away. Those at the India House you may, I have no doubt, have free access

to on showing this to my good friend Mr. Wilkins who will oblige me much by giving you every assistance in his power to facilitate your works.

The plants I collected in Ava and Chittagong were sent to Sir Joseph Banks with descriptions and some drawings and to these you can have access through Mr. Brown, to whom I beg to be remembered.

Those which I collected at Mysore and Nepal were given to Sir James Smith with descriptions and drawings. How you are to procure these unless they are purchased by the Linnean Society I know not,

I know nothing of the Varnish tree if it be different from the Holigarna as you seem to think. By far the finest varnish work made in Ava is done at a town according to my orthography called Gnaun-u, a large town a little above Paukgan what you call Paghammew. I did not see the process but understood that the ware made even at Gnaun-u is reckoned inferior to that made in Siam. The basis used in both countries is ratan basket work which is covered with the gum and then painted or gilded.

I have considerable doubt of the cotton of Ava, at least of that produced near the Ayrawadi, which alone I know, being superior to that of Hindustan. I indeed admit that it may be rather better than what is reared in the hilly countries surrounding Gangetic India and extending from Ifajmahal to Bombay where no doubt most of the Indian cotton is reared, but what grows on the plains especially to the north-west of Dacca is vastly superior and I beg to call your attention to the report which I have made on the cultivation of that kind in my report on the Agriculture of the Dinajpur district, which you can readily procure at the India house. A small portion of the country favourable for the fine cotton extends into the south-east corner of the district and is distinguished by being sufficiently high to escape inundation and by having a considerable portion of strong clay in its composition, the hill cotton however constitutes more than nine-tenths of the produce of India and you will find reports on its management in the agriculture of Bhagalpur. Its great inferiority to the American cotton seems to me owing in a considerable measure to two circumstances: first, the want of proper machines for cleaning it and removing the seed as you justly state; secondly, the injury it receives in transportation in bales very badly secured from rain both in the carriage by land and by water; the Pateli boats especially in which it is conveyed being to the last degree miserable. Nor are those by which the cotton is brought from Surat to Bombay much better, while the manner in which the bales are exposed on Bombay green before they are shipped is truly deplorable. Were these two defects in management remedied the quality even of the hill cotton would be greatly improved and I have no doubt that the fine cotton produced near Dacca is one cause of the superiority of the manufacture, nor do I think that any American cotton is so fine, but then there can be no doubt that the American kinds have a longer filament and on that account are more fitted for European machinery. I think however that if the good Dacca cotton were sent home, which I do not suppose has ever been done, that our people would contrive to spin it and find it superior to any other; and the first experiments to be tried on the subject should I think be directed to that quarter. Although I am inclined to think that there is really only one species of cotton plant, this is to be taken in the sense used by the botanists of the true Linnean school; and by no means supersedes the necessity of choice in selecting seed of a good kind for cultivation. A Crab apple and a Newington Pepin belong to the same species, but you may work to eternity with the seed of a Crab without producing one eatable apple, much less a Pepin. I therefore think that the introduction of the best seed from America of the long stapled cotton would be of the utmost importance especially to try its cultivation on the sea coast in places similar to where it grows in America,

Cotton is not so universally cultivated in India as you seem to think. The quantity reared in the south is very trifling: the great supply there comes from the Marhatta territory in the line east from Bombay as I have mentioned before: and except in the land N.-W. from Dacca the quantity raised on the Gangetic plains is inconsiderable. The banks of the Ayrawadi is another great field and supplies a great quantity to China. The capability, however, of producing this crop,

were there any sufficient demand for it, is enormous, and probably no parts are better fitted for it than the coast and islands along the coast of Tavoy or Tenasserim.

I have already mentioned the two kinds of soil on which I have seen cotton reared: the clay level land N.-W. from Dacca, and the dry soil of the hills surrounding Gangetic India and the Ayrawadi. The produce of the former is by far the finest, but still that of the hills might be vastly more valuable were pains bestowed on bringing it to market. I think however that seed of the long stapled kinds from America should be tried in both situations, and perhaps a careful person should visit the best parts of America and examine their processes and the situations chosen for cultivation and then be sent to India to select proper places and instruct the people in a proper management. I sincerely hope that the people who have sent their cursed spinning and weaving machinery to India may suffer the penalty due to so noxious an innovation. Were they successful they would reduce the poor people there to the same deplorable state that the labouring classes here have been brought to, that is wallowing one day in the most gross dissipation, and next day starving for want of employment. It is however to be hoped that the want of fuel and of perennial streams will prove a bar to their endeavour, and I hope to see the importers return beggars.

I shall be very happy to assist you so far as I am able with the native names of plants. The best authenticated names that I have are given in the catalogue which accompanies the specimens sent to the India House. The Hindwi and Bangalore names of these were taken down by a native on the spot in their own characters, and afterwards written in English according to the plan given by Mr. Wilkins. In the account of the plants of Ava sent to Sir Joseph Banks you will also find the names written in the Burma characters by a native. The Sanscrit and Hindwi synonyms of the materia medica, which with the assistance of a learned Hindu at Mungger I made there, would afford a great many accurate names, but this collection was sent to the India House for the use of Mr. Ainslie. Whether or not he has it I know not. If you can lay your hands on it the names in the catalogue above mentioned will in general point out the plant meant. The names of plants collected in Mysore and Nepal were taken entirely by the ear, an intelligent Brahman pronouncing the words, but much reliance can be placed on these than on those as were written in a native character. All of the names are however liable to numerous mistakes, among the chief of which is that a native seldom hesitates in giving some name or other to every plant which you meet, although it is probable that with a great many he is quite unacquainted.

Should you see Mr. Tuoker please present him with my best respects. He is a person for whom I have a great regard both on account of his talent and heart. I remain, dear Wallis, yours sincerely."

There is no sign in this letter of any impairment of Hamilton's physical powers; its directness and lucidity show that his intellectual powers were as keen as ever. Nor is there any suggestion either in the tone of the letter or in its allusions that it was to be the last. This, however, it unfortunately proved to be. Dr. Francis Hamilton died at Leny, in the 68th year of his age, on June 15th, 1829,

6. JOURNALS AND COLLECTIONS.

As early as 1782, while still a student of medicine at Edinburgh, Buchanan was a collector, at all events of mosses, and was endeavouring, along with his friend Smith, to whom he gave all his specimens, to identify his species, but there is no indication that he kept any journal at this time. On the other hand there is no indication that during the period of his eastern voyages any collections were made, though from his subsequently published papers it would seem that the habit of keeping a journal had already begun in 1785.

With the commencement of his Indian service in 1793 opportunities for collecting presented themselves, and he appears both to have made collections and kept journals during the whole of his Indian career, though, just as in his student days, he made no permanent personal collection, preferring to give away the whole to his friends. Further he appears to have been somewhat chary of collecting duplicates and to have been inclined to rely on good drawing* accompanied by field descriptions as equivalent to actual specimens.

Dealing first with Hamilton's journals we find now no trace of any that may have been kept between 1785 and 1791 and only surmise their existence from the occurrence of two papers, published in the *Edinburgh Philosophical Journal* for 1821.

The journal kept while he was attached to the Embassy to Ava, under Symes, in 1795, was never published in full. Two copies of it were made and retained in Calcutta; one of these was placed in the Home office, the other in the office of the Surveyor-General. Both copies had disappeared before 1857¹ whether the original which was sent to the Court of Directors be in the India Office Library now, is unknown. Much of the information contained in this journal has, however, been made available. The philological, ethnological and historical portions were published in two papers in the *Asiatick Researches* for 1798 and 1799. The geographical portion was communicated to the Surveyor-General and was used by Dalrymple along with the results of the surveys executed by Hamilton's colleague Lieutenant Wood of the Bengal Engineers, in preparing a map to accompany Symes' account of the embassy.² A short geographical passage from the journal is given by Symes³ but the bulk of the geographical material was extracted and arranged by Buchanan himself in 1796-97; it was not, however, published till 1820—24, in the form of a series of thirteen papers, descriptive of maps he had obtained from natives of Burma. This series of papers appeared in the *Edinburgh Philosophical Journal* and the *Edinburgh Journal of Science*.

The journal kept during the survey of Chittagong in 1798, which was undertaken at Roxburgh's instance by order of the Board of Trade at Calcutta, seems to have disappeared. It was submitted to Fleming, who acted as Superintendent of the Botanic Garden during Roxburgh's absence on leave in 1798-99, and by Fleming was forwarded to Government. The historical, ethnological and geographical information it contained was published in a series of three papers in the *Edinburgh Journal of Science* during 1825-26.

The journal kept during the journey in Mysore in 1800-01 was transmitted to the Court of Directors, by whom it was ordered to be published. This journal therefore has to be dealt with in the next chapter.

The whereabouts of the journal made during the journey to, and residence in, Nepal during 1802-03 are not known. The information it contained, along with information subsequently acquired on the Nepal-Purnea frontier in 1810 and on the Nepal-Gorakhpur frontier in 1818-14 and embodied in Buchanan's journals for these two years, formed the basis of the descriptive account of the Kingdom of Nepal

¹ Yale: *Narrative of the Mission to the Court of Ava in 1866*, p. 283.

² Symes: *Embassy*, Preface; Hamilton, *Edinb. Philosoph. Journ.* ii. 90.

³ Symes: *Embassy*, p. 241.

which appeared in 1819 and which will be dealt with in the chapter relating to publications.

No journal appears to have been kept while Buchanan was a member of the Governor-General's staff during 1803-05 or during his visit to Europe in 1806; at any rate none can now be found.

The great Survey of Bengal during 1807-14 was duly recorded in a journal of the utmost value, which has never been completely published or properly edited. So much of it has, however, from time to time appeared that though the whole will be dealt with from another point of view in the chapter on Buchanan's publications, it may be convenient to enumerate the minor parts that have been issued and state when these appeared.

From the 1807, or Dinajpur portion, a brief extract on hunting was issued in 1829 by the editor of *Gleanings in Science*. From the 1808, or Goalpara portion, Buchanan himself extracted much of the historical, ethnological and scientific matter to form an account of Assam that appeared in 1820 in the *Annals of Oriental Literature*; from the 1809, or Rangpur portion, Jenkins in 1838 extracted and edited, for the *Journal of the Abiotic Society of Bengal*, a history of Cooch Behar. The transfrontier researches included in the 1810, or Purnea portion of the journal, were incorporated in the account of Nepal by Buchanan himself. A portion of the 1811, or Bhagalpui portion of the journal, relating to the minerals of the Rajmahal hills, was extracted and published in *Gleanings in Science* in 1831, while most of the archaeological results of the Surveys of 1811-13, in Bhagalpur, Patna, Gaya and Shahabad, were edited by Colebrooke as a series of four papers published in the *Transactions of the Royal Asiatic Society* in 1826 and 1830. From the journal for the rainy season of 1813, Buchanan himself published in the *Edinburgh Philosophical Journal* in 1819 the passages relating to the Diamond mine at Panna. Of the 1813—14, or Goraklipur portion, all the transfrontier information was incorporated in the account of Nepal, and from * the journal for 1814, or Fatehgar portion, Buchanan printed in the *Edinburgh Philosophical Journal* in 1820 an account of the Corundum quarry of Singraula. The India office copy of the Bengal Survey Journal was placed without reserve at the disposal of Walter Hamilton, and much of the topographical and statistical information it contains is to be found in Hamilton's *Hindustan*,¹ published in London in 1820.

An abortive attempt to publish the whole journal in India, undertaken at Calcutta in 1831, will be dealt with in the next chapter; as will the ineffective endeavour to compress and issue it as a complete work in 1838. The omission of many of the scientific references from this 1838 edition has, however, rendered it necessary for all of the matter relating to fishes and fisheries to be issued as a separate work, which forms a considerable portion of the concluding volume of the *Statistical Account of Bengal* edited by Hunter in 1877. The same cause induced Beveridge to publish, in the *Calcutta Review* for 1894, a series of interesting archaeological and historical passages that are neither dealt with in the papers edited, by Colebrooke between 1826 and 1830 nor included in the work published in 1838.

A puzzling feature about this Bengal journal is that we have three distinct accounts of its extent and condition, and that these three accounts are not in entire

¹ W. Hamilton : *A general geographical, statistical and historical description of Hindostan and the adjacent countries*** London, 2 TOIS. 4to. 1820.

accord. As all three are accounts by people who actually have handled the journal, and whose accounts are entitled to equal respect and attention, it is necessary to record them here.

When Hamilton left India in 1815 the journal and its accompanying drawings remained behind in order that the whole might be copied. As we have seen, the last portion of the journal, dealing with Gorakhpur, was handed over to Government only three days before Buchanan sailed. From the preface to the account of Dinajpur, issued in Calcutta in 1833, we learn, from the actual editor of the Calcutta copy of the journal, who had the Indian set of manuscripts before him that—

"The original records, occupying twenty-five folio volumes in manuscript, were transmitted by the Indian Government to the Honourable Court of Directors; a copy of the whole having been previously made and deposited in the office of the Chief Secretary at Calcutta. Duplicates of the drawings and maps were unfortunately not preserved with the rest, probably from the difficulty at that time of getting them executed in India.¹"

In the introductory note to his edition of Buchanan's *Fish and Fisheries of Bengal* Dr. Francis Day explains how he obtained access to the manuscript of Dr. Francis Buchanan, so long withheld from the general reader, and goes on to say:—

"His exhaustive work fills twenty-one large volumes of manuscript, besides seven more of tables of statistics, all of which have now been re-transferred from the India House to Hindustan and are at present in the charge of W. W. Hunter, Esq., LL.D., the Director-General of Statistics, who is engaged in utilising the materials they contain.

Irrespective of the twenty-eight volumes alluded to, there are others in the charge of the Asiatic Society of Bengal, but I shall only remark upon two, wherein are one hundred and forty-nine original coloured delineations of fish and forty-five copies. These drawings were made use of for the purpose of illustrating the observations in the Statistical Accounts.³"

•This interesting passage shows us that possibly the copy kept in Calcutta in 1816 was not arranged exactly as was the original one sent home to the Court of Directors. It further shows that in 1877 Sir W. W. Hunter either was unaware of the existence, or had been unable to ascertain the whereabouts, of this Indian copy of the journal.

Beveridge in the *Calcutta Review* for July 1894 gives an account which has the appearance of having been written with no knowledge of Day's one, and therefore possesses the value of being quite independent. In this notice Beveridge, criticising the statements made in the preface to the *Account of Dinajpur*, issued in 1833⁴ writes:—

"In fact there are twenty-six folios in the India Office; that is, there are twenty-two volumes of manuscript in one press,⁴ including a thin volume of statistics relating to Dinajpur and in

i As we shall see presently, there was no difficulty about this, and the reason for the despatch of the drawings without copies having been taken must have been altogether different.

» *Statistical Account of Bengal*, xx. 1877.

* It will be shown presently that Dr. Day has here confused two more or less distinct things—the set of drawings intended to illustrate the journal, and the set of drawings meant to illustrate the detailed accounts of the natural productions of the districts surveyed, which Buchanan hoped to publish, and to some extent did succeed in publishing, as ancillary to the actual statistical journal. The main point is that the original journal, arranged as Day describes, was for some time retransferred to India.

«The Scottish vernacular term for a book-case or cupboard.

another there are four handsomely bound volumes of drawings, etc. The first of these contains the costumes of Bihar; the second, figures and architecture; the third, maps and plans; and the fourth, inscriptions."

From this we see that the twenty-one large volumes of manuscript which Sir W. W. Hunter brought to India have been safely replaced in the India Office. But of the seven statistical volumes that were lent to Hunter, Beveridge was only shown one; possibly the others are present in another book-case. It is clear from this, too, that Hunter did not bring the four volumes of drawings illustrative of Buchanan's text temporarily back to India.

Turning now to Buchanan's collections of natural history specimens, drawings and descriptions, as apart from his journals, we find no proof that prior to 1785 he did more than collect mosses. The specimens were given to his friend and fellow-student Smith, in whose collection they were between 1806—09, as references in *English Botany* show, and these specimens may be in Smith's collection still.

We have no evidence that collections were made between 1785 and 1793. Drawings, however, accompany one of Buchanan's published papers—that dealing with water-spouts—taken from notes of this period.

During the Ava journey of 1795 extensive botanical collections were made, with a good many drawings and notes. All these were sent to the Court of Directors in London, Buchanan, however, keeping partly coloured copies of most of the drawings and a copy of the notes. With the assistance of his notes and drawings he prepared an account of the 'plants of Ava, which was finished by the middle of August 1796. The Court of Directors made over the collection to Sir Joseph Banks, then President of the Royal Society, to whom, as his letters explain, Buchanan also subsequently gave the manuscript account of the plants of Ava alluded to above. Banks, we know, selected—Symes says also described—a number of these Ava plants and drawings* for publication in Symes' account of his embassy. The specimens were incorporated in Banks' herbarium, so that all of them should now be in the British Museum (Natural History) collection.

Buchanan's period of residence at Puttaha (Luckipur) was largely occupied in zoological research. He kept on his old artist to make drawings, chiefly of fishes. In some instance* he was evidently unable to preserve his zoological specimens and had to be satisfied with drawings, but it appears that of some, if not all, the fishes, specimens were preserved in spirits.

The botanical collection made during the visit to Chittagong in 1798 was sent to the Court of Directors and the specimens, as in the case of the Ava ones, were by them made over to Sir Joseph Banks. These specimens should therefore also be, with the other Banksian collections, in the British (Natural History) Museum.

Owing to Roxburgh's absence from India, the stay at Baruipur and the journeys in the Sundribuns during 1798 and 1799 were not utilized, in making a botanical collection, but drawings and descriptions were obtained as usual. These were sent to Buchanan's friend Smith, in whose collection they ought still to be. The lull in his botanical activity was compensated for by increased devotion to the collecting, drawing and describing of fishes.

During the Mysore journey considerable mineralogical and geological collections were made. The bulk of these were presented to Lord Wellesley, who subsequently

placed them in the Library of the Company in Leadenhall Street, but some were apparently given to Mr. Fichtel, a mutual acquaintance of Roxburgh and Buchanan. There is no indication that Buchanan made any zoological collection at this time, but a very considerable herbarium was formed and many drawings and descriptions were prepared. This particular collection was greatly damaged owing to the carelessness of the parties entrusted with its conveyance from the vessel, in which it had come from Madras, to Calcutta. Such as it was, however, it was given, along with the drawings, to Smith. How, exactly, it happened that the Court of Directors consented to its being given to Smith and not to Banks the writer has been unable to discover. It was, as we learn from the preface to the Mysore journal, Buchanan's intention to have published some, if not all, of these drawings in a botanical appendix to the journal. The publishers were, however, unable to incur the cost of the plates and only one of the drawing?, with its corresponding description, was ever published.¹

A large herbarium was accumulated during the journey to and residence in Nepal; numerous drawings and many descriptions were also made. The whole collection was made over to Smith who explains that Buchanan gave him 1,500 specimens with all his drawings and all his descriptions.² The drawings, according to Britten and Boulger,⁸ were 400 in number. Of this fine collection Smith published only 12 species, with Buchanan's drawings, in *Exotic Botany*, and some others, without drawings, in Rees' *Cyclopeedia*. A duplicate set of the specimens of this collection, as complete as Buchanan could make it, was given to another botanical friend, Lambert. This set was put to greater use than Smith put the original set, because it formed, along with Wallich's earlier, or 1819, Nepalese collections, the basis of D. Don's *Prodromus Florae Nepahnsis*. From Buchanan's letters we gather that he had hoped that Don might be able to consult the fuller original set of specimens and the drawings and descriptions he had given to Smith, but from Don's preface we learn that in preparing the *Proiromus* he is entirely restricted to the use of the less perfect Lambertian collection. This dothness to some extent explains the fact that, as Buchanan tells us, Don's work abounds with errors. The fine original collection given to Smith should still be in Smith's herbarium; if not there, the authorities in charge of the Linnean Society's collection should be able to say where it now is. The fate of the duplicate collection which formed part of Lambert's collection is one of the minor tragedies with which the history of botany is replete. The fact of its having formed the basis of the *Prodromus Florae Nepakmis* converted its specimens into types of the species that Don had described and thus rendered it priceless. Yet, when the Lambert collection was dispersed, and the bulk of Lambert's plants were purchased by Decaisne and other botanists in charge of the large national collections in Europe, the packages of Nepalese plants provoked no competition and bundle after bundle fell to Mr. Pamplin for quite trifling sums. Even for Mr. Pamplin the adventure proved unfortunate, for there is no record of his ever having been able to resell them, and they appear now to be irretrievably lost. At all events the writer, who has been endeavouring for

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¹ *Exotic Botany* ii. t. 119, 1805, where Smith published Buchanan's figure and edited Buchanan's description of, and his notes regarding *Utricularia reticulata*.

² *Exotic Botany* ii, p. 73. The gift of this collection to Smith had consequences, which Buchanan appears not to have foreseen.

* *Biographical Index of British and Irish Botanists*, p. 76.

12 years to ascertain the whereabouts of this invaluable collection, can find no trace of it.¹

There is no record of any natural history specimens having been preserved while Buchanan was in charge of the menagerie at Barrackpur in 1803-05, but many drawings and descriptions were prepared. These were lent to Buchanan, by order of Lord Minto, when he began the survey of Bengal in 1807, and were duly returned by him to Government, on 20th February 1815, when handing in the manuscript of his report regarding Gorakhpur, the last of the districts that he had surveyed. The manuscripts and (he drawings are now in the library of the Asiatic Society of Bengal where they appear to have been deposited in or about 1839. Their history has, since 25th February 1815, become blended with that of the collections, drawings and descriptions relative to the great survey of Bengal.

From Buchanan's letters to Roxburgh we know that except during his stay at Goalpara in 1808, and except for what he was able to obtain by means of native collectors despatched across the Nepalese frontier in 1810 and again in 1813-14, he did not find *it* possible to make large botanical collections. Still the total number of specimens obtained during the seven years of survey was very respectable, because the manuscript catalogue of the collection, that he succeeded in making in 1822, reaches 2599 numbers. We know, too, that he made drawings and descriptions, and from the evidence of the native artists whom he employed, which was submitted to Government, in connection with an order received from the Court of Directors early in 1816, we learn that the preparation of these was undertaken with Buchanan's usual method and forethought. The artists he employed, who had previously been in the employment of Roxburgh, and had in fact been provided by him, assured Dr. Hare, who superseded Wallich as Superintendent of the Botanic Garden in April 1816, that they were directed to make drawings only of such plants as had not already been figured by Roxburgh. It is equally certain that his drawings and descriptions of animals were similarly reserved to species not previously dealt with by himself at Barrackpur; to ensure this being so, he borrowed these Barrackpur drawings. The drawings and descriptions of fishes were similarly altogether supplementary to those made by himself when stationed at Puttahaut and Baruipur; these latter drawings were of course his own private property and remained in his own custody during the survey; after he reached Europe, they were utilised subsequently in illustrating his account of the Gangetic fishes. Whatever the details as regards these survey period drawings may have been, we know that after asking for and obtaining permission to take all these collections with their drawings and descriptions home to the Court of Directors, Buchanan was

¹ For the benefit of worker? who, like himself, any have occasion at times to deal with the species first described by D. Don in the *Prodromus* it may be here mentioned that even as regards Wallich's specimens there is a way out of the difficulty created by the loss of Lambert's Nepal collection. Sets /Corresponding to the lost one which Wallich give to Lambert were given to Mr. A. I. DeCandolle and to Professor Hornemann so that a journey to Geneva or Copenhagen should afford an opportunity of consulting actual duplicates of Wallich's missing plants. The reason for the neglect of this particular collection was largely personal dislike for Don. The excuse was that Wallich had in the meantime distributed the great E. I. C. herbarium which included in it all Wallich's Nepal plants. This was doubtless true. *But*, the difficulty is that Wallich and the friends who assisted him in distributing his magnificent collection between 1828—32 omitted to go back on what had already been done, and the treatment accorded to the Nepalese portion of this distribution is often somewhat different from that of Wallich himself in 1819 and his little reference to what he did or said between 1822 and 1825,

deprived of the drawings relating to natural history a few days before he sailed. He was not, as the letter of 31st January 1815 shows, asked to give up anything except those drawings that dealt with animal and vegetable productions, and there is no indication that he did give up anything else. At all events his drawings of Indian scenery, some of them of a quite spirited character, are still in safe keeping at Leny. That Buchanan felt the deprivation we gather from his letter to Government, dated 18th February 1815, on the occasion of his making over the collection to Government; and from a subsequent public reference to the subject, made in 1821, which from its bearing on an incident that has given rise to some controversy, deserves to be quoted in full:—¹

"While preparing for the journey I was deprived by the Marquis of Hastings of all the botanical drawings which had been made under my inspection during my last stay in India; otherwise they would have been deposited, with my other collections, in the library at the India House. By this ill-judged act of authority, unworthy of this nobleman's character, the drawings will probably be totally lost to the public. To me as an individual they were of no value, as I preserve no collection, and as I have no occasion to convert them into money."

How far Buchanan's criticism of the action of the Marquis of Hastings is justified has been much disputed, some agreeing with Buchanan, indeed going far beyond what Buchanan has stated, since they accuse His Excellency of having deprived Buchanan of what was his private property. This latter accusation is perfectly groundless and is as unjust to Buchanan as it is to Lord Hastings.

When, moreover, this exercise of his authority is considered, it is necessary to recollect that the Marquis of Hastings was far from being indifferent to scientific studies and pursuits: he had, on the contrary, much sympathy with, and took great interest in, matters pertaining to science generally, as we learn from a contemporary allusion in a letter to Roxburgh from Jannet, then in charge of the Jardin d'Acclimatation, dated October 20th, 1813:—

"A la requisition du Noble Lord Moira qui a visité le Jardin en savant botaniste, etc."

and as we know from the fact that the Marquis (then Earl of Moira) accepted the post of President as well as Patron of the Asiatic Society at Calcutta in 1815 and again in 1822.

M'Clelland, who champions Buchanan's cause so warmly that he allows himself to alter what Buchanan actually said,² nevertheless admits that—

"In deciding that Buchanan's papers should be retained in India, it may be presumed that the object was that they should here be rendered more useful to the country than they could be in England. It could scarcely have occurred to the Marquis of Hastings that these works would be consigned to oblivion and the author in consequence superseded by his successors."

It is not necessary to do more than to remark that in the official correspondence the question of Buchanan's papers did not arise; the subject of discussion was such of his drawings as pertained to natural history generally and were moreover already the property of Government. Day, who deals soberly with what M'Clelland treats

¹ *Trans. Roy. Soc. Edinb.* x. 186.

² *Asiatic Researches* six, 219, footnote.

rather warmly, has gone carefully into the subject and explains¹ that the drawings were kept in India

"to illustrate Dr. Buchanan's statistical reports on several of the districts and it was proposed to take copies of the originals which were subsequently to be transmitted to England."

This, though given as one reason in the Governor-General's note, was not the only reason for retaining the drawings. It so happens, too, that it was the reason given by his Lordship which was least sustainable. The drawings required to *illustrate* the statistical reports were all already carefully arranged by Buchanan in their proper places and all duly referred to in the body of his reports. As we know, they accompanied from the first, and still accompany, his reports and journal. The natural history drawings which were the subject of Lord Hastings' note were meant by Buchanan to illustrate the descriptions that he hoped to base, after his retirement, on his notes and specimens. They had no immediate reference to, or bearing upon, his reports or his journal as such.

Beveridge, in his account of the Buchanan Records in the *Calcutta Review* for June 1894, thinks that if the Marquis of Hastings' action was dictated by a desire to keep the drawings in India and for the benefit of the Botanic Garden, he was right in preventing their removal to England. We know, however, that the official order was to transmit them to the Secretariat and that this order was complied with. The question of benefiting this Garden, or any other public institution in India, is not touched upon in the actual correspondence.

The author of the article on Buchanan's life in the *Scottish Nation*, more correct in this, as he is in most matters, than the majority of those who have dealt with the subject, has alone divined, or had access to, the *ostensible* official reason; the deprivation is said by him to have been ⁱprobably on account of his (Buchanan) having been officially employed to prepare them' (the drawings).

This was, as we have seen, the reason given to Buchanan himself. But it was not the only reason, and to settle once for all the vague surmises to which the incident has given origin to it is only fair both to the memory of the Marquis of Hastings and of Dr. Buchanan to state, in the Marquis of Hastings' own words, why he decided to deprive Buchanan of these drawings. His Excellency's note, dated 5th January 1815, is as follows:—

"By a letter from Dr. Buchanan received here it appears that he proposes to carry to Europe all the drawings of animals and plants collected by him during the tour which he was employed to make in this country. Dr. Buchanan states that it is his object to request the Court of Directors to accept this collection as a present from him. Now, I apprehend that these drawings are already the property of the Hon'ble Court, the service for which Dr. Buchanan was employed and paid having specifically been the furnishing Government with a knowledge of the animal and vegetable productions of this country, delineations are essentially included in this service, and I am particularly informed that the descriptions given by Dr. Buchanan on his written account of specimens examined by him are so vague and indistinct as to be absolutely useless without the aid of the drawings to which they refer. I therefore beg leave to suggest the propriety of requiring from Dr. Buchanan the drawings in question. From the condition in which his observations have been left the present transmission of them to the Court of Directors could serve no end. They must be

¹ *Proc. As. Soc. P-mg.* for 187J, p. 197.

methodized here on the spot by persons sufficiently conversant with this country to avoid error in fashioning them into form. This you will perceive to be an additional reason for retaining here the drawings illustrative of the several subjects."

In this note it will be observed that His Excellency anticipates the confusion of ideas in the statement made by Dr. Day. Two very distinct things,—the passing observations, mainly of an economic character, with which Buchanan's reports and journals are replete, and the formal descriptions, of a purely scientific nature, which were to be drawn up after Buchanan's retirement, of the natural objects whereof his collections were composed—are assumed to be identical. The confusion of these two things on the part of the Marquis of Hastings is quite excusable because his sympathy with science, though great, was after all only that of the cultured and intelligent amateur, not that of the expert worker. His Excellency is by no means the first who has taken an economic reference for a scientific contribution.

To this error, in any case natural, His Excellency was further predisposed by the particular information that Buchanan's scientific descriptions were 'so vague and indistinct as to be absolutely useless without the aid of the drawings to which they refer.' A man of the Marquis of Hastings' abilities and judgment cannot be accused of accepting lightly an opinion of this kind regarding one whose work he had not seen, and whose reputation in the scientific world stood so high as did Buchanan's. His particular informant was clearly therefore some scientific man of assured position, whose opinion was entitled to the greatest consideration. Whether the opinion of Buchanan's work thus expressed be accurate or not, it is not necessary to discuss here, but the fact that the Marquis of Hastings had good reason to trust its accuracy must be admitted by us, as doubtless it would have been by Buchanan himself, to justify his action as Governor-General. What, however, does interest us is to ascertain the source of the particular information which biased a Governor-General of such high character as the Marquis of Hastings against a public servant so faithful and so eminent as Buchanan.

In seeking a solution to the problem we have to reflect on the whereabouts of all Buchanan's descriptions and drawings at the time His Excellency's note of 5th January 1815 was written. These were (1) the Ava drawings and descriptions, with Sir Joseph Banks; (2) the Chittagong ones, also with Banks; (3) the Sundribun ones, with Sir J. E. Smith; (4) the Mysore ones, with Smith; (5) the Nepal ones, also with Smith; (6) the Barrackpur ones, all with Buchanan, to whom they had been lent by order of Lord Minto, and by whom they were not returned "till 20th February, six weeks after the note was written; (7) the Bengal Survey drawings, which were also with Buchanan and for which no descriptions had been prepared. With the departure of Roxburgh in 1813 and of Colebrooke in 1818 no one was left in India capable of expressing an opinion on Buchanan's work at all. But, apart from this, no one in India on 5th January 1815 had access to any of Buchanan's drawings or descriptions except Buchanan himself. Clearly therefore the particular information so damaging to Buchanan's reputation could not have been derived from any one in India, but must have been imparted to the Marquis of Hastings before he left England.

Now in England there were two men, and two only, who possessed both drawings and descriptions prepared by Buchanan. These were Buchanan's lifelong friend and fellow-student Smith, who was the recipient of the Nepal treasures, and Banks, to whom the Court of Directors had given Buchanan's Ava and Chittagong specimens, descriptions

and drawings, but who had not received a share of the Nepal collections. What, however, His Excellency lays stress on is the vagueness, indistinctness and absolute uselessness, without the aid of drawings, of Buchanan's descriptions. The only descriptions, without the aid of drawings, *arranged for publication* by Buchanan prior to 1815 were those drawn up by him in 1796 for his account of the plants of Ava, the manuscript of which, as Buchanan himself tells us, was forwarded to Banks.

When Buchanan reached London in 1815 he presented all his collections to the Court of Directors, who sent the following despatch, dated December 10th, 1815, on the subject to the Government at Calcutta:—

"Dr. Francis Buchanan, of the Bengal Medical Establishment, who is lately arrived in this country, having made us an offer of his collections in natural history, coins and Hindu manuscripts, which he brought home with him on the *Jlarchioness of Ely*, we have accepted of the same and directed that the several articles of which they are comprised should be deposited in the Company's library.

At the same time that Dr. Buchanan made us this offer he represented that during the progress of his survey of the territories under your Prorogation, which we are informed has never been brought to a conclusion, he made a considerable collection of prepared plants and minerals and that he had employed the painters attached to the survey, who were not required in making drawings illustrative of that work, in delineating plants and minerals, and that it was his intention to have presented the whole of these specimens and drawings to us if your Government, after having directed them to be forwarded to this country freight free, had not thought fit to detain them in India as appertains to the reports which he had made of his survey.

As the proceedings of your Government of January and February last (the date of the correspondence submitted by Dr. Buchanan) are not yet arrived, we are unable to form any opinion on the circumstances under which the articles were detained by you; but as it is desirable that the whole of the materials illustrative of the natural history of India which have been accumulated by Dr. Buchanan should be deposited in the Company's library, we direct the immediate transmission to us of the drawings and collections in question, copies of such of the drawings being retained in India as may be deemed indispensably necessary for the illustration of Dr. Buchanan's reports."

The striking feature of this despatch is the inaccuracy with which it is drafted. The statement that Buchanan had made drawings of 'plants and minerals' is an obvious *lapsus calami* for 'plants and animals' but the statement that the Government at Calcutta detained any 'specimens' or 'collections' is a more serious error. The despatch admits that Buchanan had laid the correspondence before them, and the writer of the despatch was therefore aware that only certain specified drawings had been retained; it further admits that Buchanan had brought home and given to the Court all his natural history collections. Yet the despatch accuses the Government at Calcutta of retaining, and asks that Government to send home, not only the drawings of which Buchanan had, as the letters show, been deprived, but part of the collections which the despatch itself announces that the Court had already received.

From what actually happened to the drawings we know that they were not kept, as Day supposes, to illustrate Buchanan's reports, and it is not quite a fair interpretation of the facts of the case to say, as Beveridge suggests, that they were retained for the benefit of the Botanic Garden. Buchanan embarked, as we have seen, on February 23rd, 1815, and two days later Wallich, who relieved Buchanan, was requested to call at the Secretariat and take away Buchanan's drawings. The following letter, dated 25th February 1815, was subsequently sent to him:—

"I am directed by the Honourable the Vice-President in Council to transmit to you the accompanying drawings of natural productions, &c, collected by Dr. Buchanan during the period he

has been employed on a Statistical Survey of districts in the Lower Provinces, also drawings of the animals, birds, etc, in the menagerie at Barrackpore with the descriptions of them, and to desire that you will take charge of these drawings until further orders."

In the margin of this letter is the following pencil note by the Secretary to Government:—

"My dear Sir, This is the letter which I mentioned to you when you took away the drawings, that I would send you."

The acknowledgment of their receipt by Wallich, dated 26th February 1814, is as follows:—

"I beg leave to acknowledge the receipt of your letter of the 21st instant together with the accompanying descriptions and seven hundred and forty-five drawings of Dr. Buchanan, which the Hon'ble the Vice-President has pleased to commit to my charge, viz.,—

- One hundred and forty-four drawings of fishes.
- Two hundred and thirty-one ditto of birds.
- Twenty drawings of other animals.
- Twenty-seven unfinished drawings.
- One hundred and thirty-eight drawings of plants.
- One hundred and forty-seven drawing of birds of the Barrackpore Menagerie.
- Thirty-eight drawings of other animals."

The most interesting feature of these letters is the fact that not only were the botanical drawings of which Buchanan was deprived sent to the* Gar Jen, but the zoological ones as WJ!1. Moreover, not only were the zoological drawings of the Bengal Survey sent, but those made at the menagerie at Banackpore.¹ The whole occurrence shows that no attempt was made to utilise the drawings in the manner recommended by His Excellency, and that, although the duty of acting as their custodian was certainly imposed on the Superintendent of this Garden, there was no intention of making them permanently over to this institution.

Further orders were not long delayed. On receipt of the despatch of 15th December 1815, an order, dated 22nd Jun 3 181(3, was sent to Hare, who had superseded Wallich as Superintendent, along with all the correspondence in the case, calling for a report from him on the subject and directing him—

¹⁴ to send the drawings in question to the public department for transmission to the Honourable Court of Directors, after having had copies made of such as may be useful for botanical purposes."

In submitting the report asked for, Hare suggested the advisability of his being permitted to copy the zoological as well as the botanical drawings before returning them to the Secretariat for transmission to England. The reply to this suggestion, which is dated July 17th, 1816, says that—

"His Lordship in Council entirely approves of you; retaining copies accordingly, and requests on their completion that you will cause the original* to be carefully packed up for transmission to the Honourable Court of Directors by the first fleet of the season."

From this point much obscurity exists as regards the fate of the drawings. The natural history collections which they illustrated went home with Buchanan in the "Marchioness of Ely" and the mistake in the despatch of December 15, 1815, which said that certain collections had been retained in Calcutta, was no doubt pointed out. The note of 5th January 1815 by the Marquis of Hastings, which Buchanan had

i There is no indication in Wallich's or in Buchanan's letters that Wallich ever told Buchanan that the drawings* were sent to the Botanic Garden, where the bulk of them were useless, the day after he had gone. Probably he did not desire to wound the feelings of his friend.

not seen and which was not therefore among the correspondence handed by Buchanan to the Court when he arrived in England, appears to have also reached the Court of Directors and to have led to enquiries on their part from the authority who had so depreciated Buchanan's work to Lord Hastings. The result was a change of the attitude of the Court towards Buchanan and his collections which, as Buchanan explains in a letter of February 1817, they treated with 'arrogance and contempt,' an attitude which they for a time unfortunately adopted towards his journals and reports as well.

The Court in 1820 so far unbent as to permit Buchanan to take away his botanical specimens and arrange them "for the Company's collection and for publication in such journals as may accept them." About the same time, as we have seen, the Court allowed Colebrooke to extract and edit certain portions of Buchanan's reports. The interesting point is that when Buchanan (now Hamilton) obtained his botanical collections, the corresponding drawings had not reached England, so that the order of the Government of Bengal, dated July 17th, 1816, was not yet fulfilled in June 1821.

Why the order was not carried out the writer cannot ascertain. There is no record that the drawings were transmitted to Government by the Superintendents of this Garden between 1816 and 1821. At the same time it is difficult to understand how orders go definite as those quoted above could have remained unfulfilled without reminders from the Government at Calcutta, or the Court of Directors, or both.

The next reference to the Buchanan drawings that the writer is able to find is the indignant one by M'Clelland of 1836.¹ From the somewhat vigorous manner in which M'Clelland writes, we gather that M'Clelland believed the drawings which Wallich, Superintendent of this Garden, had placed at his disposal in 1833 were the original zoological drawings of which Buchanan had been deprived in 1815. Nor is there anything in Day's careful notice² to indicate that he had a different belief. As we see, however, from the letter of 25th February 1815 the drawings made over to M'Clelland included not only the drawings of which Buchanan had been deprived in 1815, but the drawings that were made at the menagerie, and if the orders of July 17th, 1816, was really carried out, the drawings, at any rate of the 1807-14 survey period, could only be copies. If there be any originals, these originals should belong only to the menagerie collections of 1803-05.

The much discussed collection is in the Library of the Asiatic Society at Calcutta at this moment. It consists of zoological drawings only, in four volumes, of which three are respectably and one, marked vol. IV, is shabbily bound. The first contains mammals for the most part, and they appear to the writer to be chiefly copies of other drawings made at Barrackpore and sent to the India House. The second and third are mainly devoted to birds, but though often endorsed by Buchanan they are not drawings of his own supervising but drawings by a Mr. Gibbons; as the endorsements show, they are, moreover, in many cases, only copies.³ The fourth volume is chiefly devoted to fishes, and is the

¹ *Asiatic Researches*, xix., 218. M'Clelland, while criticising severely the action of the Marquis of Hastings, practically repeats the accusation in the case of the descriptions of the Gangetic fishes that the particular informant of the Marquis of Hastings made as regards the descriptions of the plants of Ava,

² *Proc. As. Soc. Beng.* for 1871, p. 195.

Some of these endorsements may be quoted : —

Drawings delivered at the India House, 1806. Drawings left at India House, 1803, Drawings of Mr. Gibbons left with Dr. Fleming. Among the drawings of Mr. Gibbons left with Mr. Fleming, sent home, 1808. Drawings by Mr. Gibbons left at India House, 1809. Done after my return to Bengal. Drawings made after my return to Bengal. They are arranged without much order whether as to systematic or chronological sequence.

one which has received most attention from McClelland and Day ; the latter says that in two volumes there are 149 original coloured delineations of fish and 45 copies. The writer's opinion is that the majority, though not all of the 149, are replicas made under Buchanan's supervision of drawings that in due course found their way to the India House and are the same in the main as a set described by Günther in the *Zoological Record* for 1869¹ as preserved in the British (Natural History) Museum. The obvious copies are possibly the copies that Hare was directed to make in 1816. Whether the drawings from which these copies were made, which are the ones that were ordered to be sent home, did or did not go home after 1820 perhaps might be ascertained at the India Office. As far as the botanical drawings are concerned, we know that though they did not go home in time to be of use for Buchanan in 1820-22, or if they did go home before 1820 they were not given to him then, they certainly ultimately went home, for there is no botanical drawing made by Buchanan in the Botanical Garden now, and the collection there has not even Hare's copies of any of Hamilton's original drawings of plants.

Buchanan's bulky archaeological collections went apparently to the Asiatic Society's museum at Calcutta. Bevelidge in the *Calcutta Review* from July 1894 has cleared up satisfactorily the story of the disinterment of two statues now in the Indian Museum, and there is a letter from Buchanan, in Wallich's correspondence, recording the gift to the Asiatic Society of four carved stones. One, containing numerous figures of Buddha, was found in the ruins of Eajagriha, the city of Javersanda in Behar; the other three were found near the Kavatiya river in the southern part of Dinajpur,

The manuscripts that are associated in the Asiatic Society's collection with the four volumes of zoological drawings are in two folio volumes, one of which is endorsed by Wallich:—

"Dr. Buchanan's Zoological US3. deposited in the Botanic Garden in 1815."

The descriptions and notes are mostly but not always in Buchanan's handwriting; they appear with few exceptions to be rough drafts from which finished accounts might afterwards have been prepared. A few are copies of finished descriptions in another handwriting. Some but not all are dated. Of the dated ones, some are from Barrackpore, 1804, others are of later dates up to and including Gorakhpur, 1818.

The existence now of zoological specimens connected with much of Buchanan's work in India appears to be doubtful. Günther states that the types of the fishes to which his drawings refer have been lost.² But Day appears to question this,⁵ and refers to a passage in a British Museum Catalogue⁴ which suggests that at least some of these types may be in the Natural History Museum. The question is one on which the writer can form no opinion.

¹ Günther speaks of some of Buchanan's (then Hamilton's) figures being copies of figures by Hardwicke. It was of course Buchanan's figures that were copied by Hardwicke. McClelland says, General Hardwicke did this without acknowledgment; but as a matter of fact he did this with the consent of Buchanan, according at least to Richardson; Day thinks with only Wallich's consent. But Hardwicke and Buchanan were intimate friends, and Richardson is probably quite accurate.

² *Zoological Record* for 1869, p. 127.

* *Proc. As. Soc. Beng.* for 1871, p. 197.

⁴ *Catalogue of the Fishes of the British Museum* U. p. 11. (1861).

The botanical specimens of the 18¹⁷—14 period, as we have seen, were taken home and given to the Court of Directors in 1815. They were handed to Buchanan (now Hamilton) in 1820 for arrangement. A duplicate set of the specimens and a copy of the manuscript catalogue were given to the University of Edinburgh.¹ The original set, and the original MSS. of the catalogue, were sent back to London in 1822. When Wallich reached London with the great East India Company's herbarium he had a copy of Buchanan's manuscript catalogue prepared for his use; this copy is now in the Calcutta Herbarium. The corresponding specimens were incorporated among and distributed with the Wallichian plants between 1828 and 1832. A complete set of the plants is therefore present in the Wallichian type herbarium, at the rooms of the Linnean Society. Other herbaria, recipients of Wallichian duplicate sets, have many of Buchanan's plants, but not one of these subsidiary sets is so complete, so far as Buchanan's numbers and specimens go, as the original type Wallichian collection.

In 1808, while stationed at Goalpara, Buchanan brought together a collection of timber specimens for transmission to the Honourable Company's Master Builder at Kiddyporo. The history of the catalogue which accompanied these wood specimens belongs to the chapter which follows.

The collections of seeds, roots, or living plants sent to the Botanic Garden at Calcutta during Buchanan's various journeys were extensive. From Ava, as his letters show, more than twenty species were thus contributed; from the Gangetic delta during 1796—98 more than one hundred; from Mysore about two hundred; from Nepal about one thousand.² From Assam in 1808 a considerable number of species were thus sent, but from all the other districts surveyed between 1807—14 he sent comparatively few. The reasons for this are obvious; the flora of the districts surveyed, except Lower Assam, is not very rich; Roxburgh and Carey, too, had, between them, already pretty fully explored the greater part of the Lower Provinces and, if not Assam proper, at least a good part of Sylhet. The number of those species that eventually survived and proved to be new accessions to the Botanic Garden collection may be traced from Roxburgh's *Flora Bengalensis* and *Flora Indica*. From Ava and the Andamans one each are recorded; from the Gangetic Delta in 1796—98 about 20; from Chittagong in 1798 the same; from Mysore and Malabar about 40; from Nepal 70; from the Gangetic Plain during 1807—14 about 20.

7. PUBLISHED WORKS AND PAPERS.

In dealing generally with Hamilton's publications it will be found simpler to neglect the sequence of their appearance and to follow rather the sequence of their inception. This makes it impossible to separate the few that were published while he was still in India from the bulk of his papers, which appeared after his retirement, and in some cases were edited by others after his death. The list which closes this chapter,

¹ Madden: Elucidation of some plants mentioned in Dr. Francis Hamilton's account of the Kingdom of Nepal. *Trans. Bot. Soc. Edinb.* v. 116. As Madden points out, the Edinburgh collection is very incomplete so far as Nepal plants are concerned. This is because the Edinburgh collection includes only the plants collected in Nepal by Buchanan's native collectors in 1810 and again in 1813-14, but contains none of the specimens of the main Nepalese collection given to Smith and Lambert. Madden appears to have considered the Edinburgh copy of the catalogue the original one, which is not the case.

² There were 117 different despatches of seeds, rhizomes, bulbs, etc., rarely of fewer than six species, often of more than ten.

however, gives a chronological view of the whole¹ so that the method here adopted, while it lends itself to more satisfactory treatment from the biographical side, can cause no practical inconvenience. Had Hamilton's range of interests been less wide, the papers might have been arranged either by subject or by place of publication, but the advantages gained by such a treatment are more than counterbalanced by the drawbacks incidental to any system of artificial classification.

None of Hamilton's observations during his student days, if the subject matter of his graduation thesis be excluded, have been recorded by himself. There are, however, references to some by his friend and fellow student Smith.² A short paper published by Hamilton in 1821³ records observations made during the Eastern voyage of 1785, and another paper which appeared in the same year* records observations on water-spouts made during the similar voyage of 1788-89 and includes a reference to observations made in 1805. This latter paper is one of considerable importance and has been the subject of more than one critical reference.

Hamilton's papers relative to the Ava journey are rather numerous. The earliest of these, an account of the Launzau tree,⁵ the search for which is incidentally alluded to by Symes,⁶ gives a full description of what Hamilton deemed a new genus, though he did not venture to give it a name till botanists in Europe should 'have ascertained whether or not it be reducible to any known genus of plants.' The original paper was published in 1798 and, when copies of the description reached Europe, Sprengel, reviewing the contribution, endorsed the author's opinion and very appropriately named the genus *Buchanania* in honour of the discoverer.⁷ A curious dubiety subsequently arose with reference to the genus that should perpetuate Hamilton's memory among botanists. We find that in a letter dated Puttahaout November 17th, 1796, Hamilton (then Buchanan) had already expressed a wish to have a genus named after him:—

"As I make little doubt that the palm will prove a new genus should you be inclined to honour me with the name of a plant I would prefer this, as I have discovered it with some labour and danger."

The palm in question appears to have been the species now known as *Pinanga gracilis*, so that Hamilton's view as to its natural rank was sounder than that of Roxburgh, who was contented to treat it as an *Areca*, and was therefore unable to associate it with one of its earliest discoverers. Later on Roxburgh, as we learn from Hamilton's letters, did give the name *Buchanania* to one of Hamilton's discoveries, the tree known to the Sundribun wood-cutters as Amúr. To this tree, however, Roxburgh in his published works gave the name *Andenonia*, doubtless because he had discovered in the meantime that Sprengel had employed the name *Buchmanania* for the Launzau tree. What is odd with regard to this is that, though Roxburgh obviously followed Sprengel in this use of the name *Buchanania*, the editor of Roxburgh's works attributed the name to Roxburgh,

¹ In the list in question the writer has recorded all the writings that can be traced by him. It is more exhaustive than any previous list and probably is practically complete, though it is not impossible that some of Hamilton's minor notes may even yet have escaped him. The Hojal Society's *Catalogue of Scientific Papers* usually a safe guide in matters of this kind, is, in the case of Hamilton's contributions, somewhat inadequate

* Smith and Sowerby: *English Botany*: see t. 1590 (1806) and t. 204 (1809).

* Account of an extraordinary appearance of the sea, observed 31st July 1785, in a voyage from Johanna U> Bombay, lon^g. 61° 25' E., lat. 6° 85' N. : *Edinb. Phil. Journ.* v.

< Account of water-spouts observed at sea on voyages to and from India : *EJinb. Phil. Journ.* y.

* Description of the tree, called by the Burmas Launzin : *Anatick Researches* Y.

s Symes : *Embats*, ed. 1. p. 437.

7 Sprengel in Schrader's *Journal*: 1800.

an error¹ that has been followed in most works on Indian Botany. Smith in 1806 proposed the recognition of a second *Buchanania* in Hamilton's genus *Sussodia*—* finding? however, between the time that the plate was prepared and the text was printed, that Sprengel had already established a genus *Buchanania*, Smith in the text replaced Hamilton's name *Sussodia* by the name *Colebrookea*. Hamilton in 1796 wrote, RB we have seen, a detailed account of the vegetation of Burma which he sent to Banks, to whom the Court of Directors had given all the specimens and drawings obtained during the Embassy. Part of this paper, with the corresponding drawings, Banks selected for publication as an integral portion of the work of Symes³ in 1800. In the title to this paper and in the prefatory note, for which Banks is responsible, we find no acknowledgment that Hamilton was the author either of the names or the descriptions. The note is as follows:—

" The plants of which the following descriptions and figures are given, have been selected by the President of the Royal Society as the most rare and curious among a copious and valuable collection made by Dr. Buchanan, who transmitted to the Court of Directors an *Hortm Siccus* in excellent preservation, together with delineations of each plant, executed on the spot."

Symes in his preface further categorically states that Banks provided the descriptions. Roxburgh, who knew of Hamilton's manuscript—as a matter of fact extracts from it exist in the Roxburghian correspondence in the library of the Calcutta Botanic Garden—was aware, at first hand, of the true facts of the case, and in the *Flora Indica* consistently attributes the species first published in Symes' work to Hamilton (Buchanan), and not to Banks.⁴ In this Roxburgh has been generally followed by subsequent writers; but as Hamilton has nowhere himself claimed the authorship of these species, and as the statement of Symes is precise, the citation usually adopted is technically erroneous.⁶

Two important papers regarding the Burma journey were written while Hamilton was stationed at Puttaha in 1796, and published in the *Asiatick Researches* in 1798 and 1799.⁶ They deal with the languages, the religion and the literature of Burma; they are of much intrinsic interest and bear moreover the marks of previous extensive and critical study. In the paper on the religion and literature of Burma there is a curious and important error, the origin of which is explained by Colebrooke,⁷ where Hamilton states that there is a reference to Buddha in the Vedas.

The geographical results of Hamilton's researches in Burma, which were, at the time that they appeared, of very great importance, were mostly published, after Hamilton's

¹ This is not the only error that has escaped the editor of Roxburgh's *Flora Indica*; the conversion by the printer of Launzan into Larmzon in Roxburgh's citation, has escaped the notice of the proof-reader and may explain the omission of Hamilton's name for the tree, and of his interesting economic information regarding it, not only from the pages of Kurz's *Forest Flora of Burma* but from those of Sir G. Watt's *Dictionary of the Economic Products of India*,

² *Exotic Botany*, ii. t. 115.

³ Descriptions of Rare and Curious plants selected by the President of the Royal Society; in Symes: *Embassy ed.* i. p. 473.

⁴ Roxburgh: *Flora Indica*. iii. 142; iv. 676.

⁵ Here, as sometimes in other matters, law and equity are at variance. As the best means of reconciling the two the writer would suggest that, now that the whole facts of the case are known, the species described in Symes' *Embassy* be cited as of Buchanan and Banks conjointly: e.g. *Eeritien Fomes* Buch. & Banks in Symes: *Embassy ed.* i.

⁶ A Comparative Vocabulary of some of the Languages spoken in the Burma Empire: *Asiatick Researches*, T. ; On the Religion and Literature of the Burmas: *Asiatick Researches*, vi.

» Life of H. T. Colebrooke, by his son Sir T. E. Colebrooke, p. 261.

retirement, in the *Edinburgh Philosophical Journal* and the *Edinburgh Journal of Science*, in a series of papers explanatory of maps in which he had taught travelled Burmese to record the information they possessed.¹ By this means Hamilton filled the complete blanks that had previously existed in the charts of Indo-China, and fixed even remote places like Bhamo and Mogoung with fair accuracy. The last paper of this series, that dealing with Pegu, which was not necessary for geographical purposes, was interesting in another way; it provided a standard whereby the accuracy of the information contained in the other maps might be estimated. The painstaking work of Hamilton in this geographical study has stood the severe test of subsequent exploration and survey work in a wonderful manner, the only cardinal error into which he fell was the fashionable geographical belief of the time that the waters of the Sanpo reached the sea by way of the Irrawaddy. Besides these papers on maps there is a short note on the rivers of Burma, contributed by Hamilton, which is incorporated in Symes' work,²

While stationed at Puttahaüt in 1796, Hamilton contributed a zoological paper to the Linnean Society which was published in the Society's *Transactions* in 1800.³ This paper, as we find from his letters, was at first not considered suitable for the *Asiatick Researches*, but when subsequently it was asked for, Hamilton could not give it to the Asiatic Society as he had already promised it to Smith. Another zoological paper, written in 1793, was published in the same periodical.⁴ Hamilton did not write any other papers during his Indian Service; his copious notes on fishes, collected while he was stationed at Puttahaüt and at Baruipur, were incorporated in his *Account of the Gangetic Fisheries*, the publication of which will be referred to further on. The ethnological, geographical and historical portions of his Chittagong journal of 1798 formed the basis of a series of papers published in the *Edinburgh Journal of Science* in 1825 and 1826.⁵ The first of the papers of this series, which deals mainly with Tippera, is still our chief authority for that territory; the

* Account of a map of the countries subject to the King of Ava, drawn by a son of the King's eldest son: *Edinb. Phil. Journ.* ii. 1820.

Account of a map of the route between Tartary and Amarapura: *Edinb. Phil. Journ.* iii. 1820.

Account of a map of the country north from Ava: *Edinb. Phil. Journ.* iv. 1821.

Account of a map, constructed by a native of Taunu, of the country south from Ava: *Edinb. Phil. Journ.* v. 1821.

Account of a map of the country between the Erawadi and the Khiron duam rivers: *Edinb. Phil. Journ.* vi. 1822.

Account of a map, by a slave to the heir-apparent of Ava: *Edinb. Phil. Journ.* vi. 1822.

An account of a map of the Tarout Shan Territory: *Edinb. Phil. Journ.* vii. 1822.

Account of a map of the vicinity of Paukpan or Pagan: *Edinb. Phil. Journ.* vii. 1822.

Account of a map drawn by a native of Daw or Tavay: *Edinb. Phil. Journ.* ix. 1823.

Account of two maps of YaemsB or Yangoraa: *Edinb. Phil. Journ.* x. 1824.

An account of the map of Koshanpri: *Edinb. Phil. Journ.* x. 1824.

Account of a map of Upper Laos or the territory of the Lowa Shan: *Edinb. Journ. Ser. I* 1821.

Account of a map of the kingdom of Pegu: *Edinb. Journ. Sci.* i. 1824.

² Symes: *Embassy*, Ed. i. p. 241.

³ An account of the Onchidium, a new genus of the class of Vermes, found in Beigil: *Trim. Linn. Soc. Lond.* v.

< Description of the *Vespertilio phœatus*: *Trans. Linn. Soc. Lond.* v.

* An account of the Frontier between part of Bengal and the Kingdom of Ava; *Edinb. Journ. Sci.* ii. 1825.

An account of the Frontier between Ava and the part of Bngil adjacent to the Karnaphui river: *Edinb. Journ. Ser.* iii. 1825.

An account of the Frontier between the southern part of Bengal and the Kingdom of Ava: *Edinb. Journ. Sci.* iii. 1825.

second, which deals with northern Chittagong or the Saksah country, and the third, which treats of Southern Chittagong or the country of the Jumia Maghs, well repay perusal if only because they show how little Hamilton has left for subsequent writers to add.

The Mysore journey of 1800-01, & described in Hamilton's original journal, was published in 1807 at the instance of the Honourable Court of Directors, in three quarto volumes, under one of the exhaustive and unquotable titles fashionable at the time,¹

As issued the work consists of Hamilton's journal, precisely as it was written, without any attempt at co-ordinating and codifying the enormous mass of varied and valuable information it contains, and particularly without that patient and critical estimation of the information derived from native sources, that makes Hamilton's papers based on his Ava and his Chittagong journals so extremely valuable. It is moreover destitute of the scientific appendices that Hamilton was anxious to add to it.²

Its weak points did not escape the reviewers at the time that it appeared, and more recently Sir Alexander Arbuthnot, with whom Mr. Beveridge agrees, has expressed the perfectly just opinion that the work would have been far more useful if the journal had, been recast and condensed. There is nothing original in this view, however, seeing that it was Hamilton's *own*. In the preface that he was luckily able to supply to the work, which was in the press when he reached England on leave in 1805, he explains that it had been his desire to abridge the journal and re-arrange its matter before publication. However, the printing had already commenced before he arrived in London, and his stay in England was likely to be too short to admit of his undertaking the necessary alterations. He did, however, supply an index of a most satisfactory character, which at least renders the work easily consultable, and adds very greatly to its value. The first reviewer of the work³ sums up the discussion as follows:—

"These who will take the trouble to peruse Dr. Buchanan's book will certainly obtain a far more accurate notion of the actual condition and appearance of India and of its existing art*, usages and manners, than could be derived from all the books relating to it in existence, but they will frequently be misled as to its religion, literature and antiquities, and must submit to more labour than readers are usually disposed for, in collecting and placing together the scattered and disjointed fragments of information of which the volumes are composed."

From the manner in which the information was obtained, which has been already explained, it will be seen that Hamilton was under the necessity not only of recording all that he saw, but all that he was told. The passage quoted therefore comes simply to this, that on everything which Hamilton records as having been seen by

¹ *A journey from Madras, through the countries of Mysore, Canara and Malabar, performed under the order of the Most Excellent the Marquis of Wvlesley, for the express purpose of investigating the state of Agriculture, Arts, and Commerce; the Religion, Manners and Customs, the Natural and Civil History and Antiquities in the dominion of the Bojuh of Mysore, and countries acquired by the Honourable East India Company in the late and former wars, from Tippoo Sultan.* 3 vols. 4to. London, 1807.

² One of the botanical drawings made during this journey was published in *Exotic Botany* in 1805.— *Uticularia reticulata*: *Exotic Botany*, p. U[^], t. 119.

³ *Edinburgh Review*; October 1806.

himself implicit reliance may be placed, while, as regards what he was told, it is advisable to keep the open mind that Hamilton himself kept. The summary was therefore fair and just, and fully anticipates the views expressed later by Arbuthnot and Beveridge, though it after all only confirms what Roxburgh predicted when he recommended Hamilton to Lord Clive as the most suitable officer to conduct this survey.

Shortly after the work appeared, an extract from it was republished by Tilloch in the *Philosophical Magazine*? and twenty years later another series of extracts were collated by a contributor to *Gleanings in Science*. A second edition of the work in two octavo volumes was published in Madras in 1870; this is perhaps the best evidence of the importance of the information in the journal and of its value, in spite of its author not having been given an opportunity of revising and, in the true sense, editing it.

The subject of Nepal, a region as to which Hamilton had acquired much information during his residence at Khatmandu in 1802-03, was taken up immediately he retired. The early information had been greatly supplemented in 1810 when Hamilton resided at Nathpur on the Nepal-Purneah frontier, and still further added to while he was engaged in surveying Qorakhpur during 1813-14. The result of his labour was the publication in Edinburgh in 1819 of an account of Nepal⁸ which still remains one of the principal sources of information regarding that country. In preparing this work Hamilton was able to give all that attention to arrangement of matter and revision of statement which was denied him in the work on Mysore. The result is a condensation of the corresponding information into something like one-third of the space. Thirty years later a *Blackwood* reviewer,⁴ dealing with various works on Nepal that had been published since Hamilton's work and that of Kirkpatrick, of 1811,⁵ had appeared, remarks that all these works were—

⁴ very largely indebted to the Doctor and the Colonel, although their authors very rarely remember to acknowledge their obligation*."

The work is a mine of information from which much of what has since been written regarding Nepal has been extracted.

In the account of Nepal Hamilton makes reference to a considerable number of plants, and in Rees' *Encyclopaedia** and in *Exotic Botany* some of his descriptions and notes have been reproduced.⁷ In the case of *Exotic Botany* these descriptions are accompanied by copies of the corresponding drawings. Don in his *Prodromus*, although he was perfectly well aware that the names and descriptions were those of Hamilton,

¹ Account of the manufactures carried on at Bangalore and the processes employed by the natives in weaving Silk and Cotton: *Phil. Mag.* xxx. 1808.

² Machines for Irrigation: *Gleanings in Science* i. 1829.

³ *An account of the Kingdom of Nepal and of the territories annexed to this dominion by the house of Gorkha*. 1 TOI., 4to. Edinburgh, 1819.

* *Blackwood's Magazine*; July 1862.

* Kirkpatrick: *An account of the Kingdom of Nepal, being the substance of observations made during a Mission to that country in the year 1793*. London; 1 vol., 4to: 1811.

* Rees: *Encyclopaedia*. Cfr. art. *Paris polyphylla*.

Exotic Botany, ii. tt. 97-101; t. 107, 1.108; It 113-117.

for some unaccountable reason cites Smith as the authority for them.¹ The practice, for which there was little excuse, seeing that Don not only had Hamilton's names before him, but that Hamilton had in 1819 incidentally pointed out the true state of affairs in an interesting contribution to the *Edinburgh Philosophical Journal*? has been almost universally followed. It is one of the oddities of modern citation that a different treatment should be accorded to the Hamilton plants described in Symes' *Embassy* and in Smith's *Exotic Botany* respectively. We know that in both cases the relationship of Hamilton to the actual publication was identical. Yet in the case of the Ava plants, though Symes tells us explicitly that Banks wrote the descriptions, we attribute the publication to Hamilton; in the case of the Nepal ones, though Hamilton expressly states that the names were his, we attribute the publication to Smith.³

The only other paper relative to Nepal that Hamilton issued was a brief account of the Nepalese aconites, which he was induced by Mr. (afterwards Sir) W. J. Hooker to publish in the *Edinburgh Journal of Science* for 1844.⁴ This, as it happens, is one of the most interesting of Hamilton's short papers; at the same time it is one of the least satisfactory. He was greatly interested in the question of the identity of the source of this arrow poison, but could get no satisfactory information during 1802-03. When at Nathpur in 1810 he organised a search for the plant or plants by means of native collectors, but unfortunately the men returned too early in the year, and some of the specimens he obtained are still indeterminable.⁶ A short field note sent by Hamilton from Nepal is given in full by Roxburgh in the *Flora Indica*. The note refers to *Hovenia dulcis*⁶ and, in the first edition of Roxburgh's work, the veteran Carey makes an interesting comment on the vernacular name obtained by Hamilton, which illustrates the risk of taking down names by the ear only, a practice that, as we learn from his letters, Hamilton always avoided where he could do so: the comment further gives Carey's shrewd estimate of vernacular names generally.

We find from Hamilton's letters that Wallich suggested collaboration with him in a new work on the botany of Nepal, but that Hamilton did not accept the invitation. We learn, too, from the same source, that though Don gives Hamilton's name equal

¹ Don quotes Hamilton's names or synonyms for all other species, but for those given in *Exotic Botany* he has quoted Smith as the author, in spite of what Hamilton himself has told us; though, even with regard to these species, his citation of Hamilton's name *Sussodia oppositifolia*, which Smith changed first to *Buchanania oppositifolia* and then to *Colebrookea oppositifolia*, shows that Smith was not even responsible for the suggestion that the plant dealt with was a new genus, and that, moreover, Don was aware of the fact.

» Notice of the Progress of Botanical Science in Bengal, being the substance of a letter from Dr. Wallich, Superintendent of the Botanical Garden near Calcutta to Francis Hamilton, F.R.S. & F.A.S. *Edinb. Journ.* i. 1819. This paper is usually attributed to Wallich! The authors who do this, however, are not quite just to Wallich—the age of self-advertisement had hardly begun in 1819.

³ The simplest way out of the difficulty is to recognise frankly the connection of both author and editor with these species and to cite them accordingly. Neither Banks nor Smith themselves assert their own authorship, and not that the facts are known, it is advisable to cite the names or synonyms as being of joint authorship, e.g., *EpUendrum pracoxy* Ueh. k Smith.

⁴ An account of a genus including the Herba Toxicaria of the Himalayan Mountains, or the plant with which the natives poison their arrows: *Edinb. Journ. Sci.* i. 1824.

* Stapf: Monograph of the Aconites of India: in the present volume of the *Annals of the Royal Botanic Garden Calcutta*.

⁶ Roxburgh: *Flora Indica*, ed. Carey & Wallich, ii. 415: 1824.

prominence with his own on the title page of the *Prodromus Flom Nepaknsts*,¹ published in 1825, Hamilton in no way directly assisted Don in preparing this work. His later Nepal collections Hamilton named and catalogued for the Honourable East India Company in 1822, but none of the material thus dealt with, and none of the information contained in that catalogue, was utilized by Don.

A very careful review of the plants alluded to by Hamilton in his *Account of Nepal* by Lieutenant-Colonel Madden, based on a study of the text itself, on a comparison of the plants of Hamilton's later collections, and on an examination of the manuscript catalogue given to the University of Edinburgh in 1822, was published in the *Transactions of the Botanical Society of Edinburgh in 1858*.²

The majority of Hamilton's other publications deal with the period of his great survey of Bengal between 1807—1814; those that are of a more general character, each as his commentaries on Rheede and Rumphius, his works on the genealogies of the Hindus, and his account of the Gangetic fishes, if not entirely or even mainly concerned with the survey, at any rate include observations made during its progress. The main results of the survey were not published during Hamilton's lifetime, so that for the moment their consideration must be deferred, or only incidentally alluded to, as the scientific contributions relative to the different stages of the survey are dealt with,

During Hamilton's lifetime nothing was published with regard to the work of 1807 in Dinajpur and the northern part of Rangpur. But in 1829 a brief note regarding methods of capturing wild animals in Dinajpur was edited in *Gleanings in Science* by Captain Herbert,³ and in 1838 an account of Cooch Behar was edited in the *Journal of the Asiatic Society* by Major Jenkins.⁴ The full text of Hamilton's account of Dinajpur was issued at Calcutta in 1833 under circumstances presently to be described.

The work of 1803 in Rangpur, which then included a good deal of what is now Lower Assam, afforded material for a geographical, topographical and ethnological account of Assam published in the *Annals of Oriental Literature* in 1820.⁵ This paper is of the title of the accounts of Tippera and Chittagong already referred to, but its existence does not appear to be alluded to in any of the accounts of Assam published since it was issued.

Several short botanical papers were published by Hamilton relative to the Assam or Rangpur part of the survey. One of these, which appeared in the *Journal of Science* in 1825, deals with the genus now known as *Chbranthus f* another, published in the same periodical in 1827, discusses a species of *Gardnia*.⁷ A third paper, read

¹ *Prodromu, M**N^*si>£*um<>t> Vtgetabilium, qua in Uinere per Kepaliam proprie dictam et regionesconternunasann. 1802-1803 f totf atjue hgüt D. D. Pranciscu. Hamilton (olm Buchanan) M.D. Soeiet. Ke*. et linnaeen. Londin. boc. Accedunt planta a V. Wallich nuperius mi<aa> «*,.,,»,/«., I. J. . ;• atque desenpsit Dana Dan. London ; I vol 8vo : 1825.*

T^S^E^TZ of Some PhatSm — " D< *»** " ^ton's Accout of the Ki^d- of Nepal :

* Manner of Hunting in District Dinajpur : *Gleanings in Science i*, 374.

• History of Cooch oeuar, being an extract oi a passage iroin Dr. Buchanan's account of Kaigpur (Kaigpa. pura) revised and communicated by Major F. Jenkins; *Journ. As. Soc. Beny.* vii. 1.

>An account of AMID, with .out* notices concerning the neighbouring" territorial. *Ann. Orient. Lit.* 2*4. 1820.

⁶ Account of a plant allied to the genus Piper: *Edinb. Journ. Sci.* ii, 1125.

'Description of a plant of the order Guttifera, which Dr. ttoxanrgh called *Garcuia pedunculata*: *Eduib. Jutirn Sc%*. vii. Ib27.

before the Royal Society of Edinburgh in 1828, on the structure of various *Cucurbitaceom* fruits,¹ we know from an allusion in a letter written to Roxburgh from Goalpara on 13th June 1808, to belong also to this period. Besides these a useful list of timber trees of the Goalpara district, prepared in 1808, was published by M'Cossh MI 1837.² This list was originally drawn up as an accompaniment to the collection of 90 Assam timbers prepared at Goalpara for the information of the Honourable Company's Master Builder in Calcutta. When in 1828 Wallich took home his large collection, it was arranged that he himself, with the aid of botanical friends, should undertake the distribution of all herbarium specimens. The timber specimens, however, with the sanction of the Court of Directors, were made over to the Society of Arts for arrangement and distribution.

The collection formed the subject of a paper by Aikin, Secretary to the Society, in their *Transactions* for 1831.⁵ Aikin, who had access to Hamilton's original list of Assam timbers, decided, for the sake of its vernacular names and its notices regarding the various species, to incorporate it in his general list, indicating, however, in every case the source of his information. M'Cossh, having been deputed in 1837 to prepare a topographical account of Assam, extracted from Aikin's list all the entries that Aikin had obtained from Hamilton's catalogue, and issued them as being a fair statement of the 'timbers of Assam.'

Nothing regarding the survey of Purnea in 1810, beyond what is included in the account of Nepal, was published prior to the posthumous issue of his journal.

Part of the archaeological results of the surveys of Bhagalpur, Patna, Gaya and Shahabad is dealt with in a series of interesting and valuable papers extracted from the India Office copy of the reports and journals, and edited by Colebrooke between 1826 and 1830.⁴ A paper dealing with the mineralogy of the Rajmahal hills was extracted by Captain Herbert from the Calcutta copy of the journal in 1831.⁵ The results of Hamilton's enquiries into the indigenous drugs of South Behar generally, are incorporated in Ainslie's *Materia Medica**

A paper describing a journey to the diamond field in the Panna State, made during the rainy season of 1813 in connection with Hamilton's survey work, was published in the *Edinburgh Philosophical Journal* in 1819.⁷ In the same journal

Observations on the structure of the fruit in the natural order Cucurbitacea: *Trans. Roy. Soc. Edinb.* xi. 1331.

¹ Catalogue of woods peculiar to Goalpara: M'Cossh: *Topography of Assam*. 1 vol, 8vo. Calcutta 1837. The list of timbers occurs at p. 35.

² Aikin: *List of Indian woods collected by N. Wallich*. M.D., P.B.8., Corresponding Member of the Royal Institute of France and of the Academy of Sciences at Berlin in aid of the Society of Arts of London; Superintendent of the Botanic Garden at Calcutta. *Trans. Soc. Arts Manuf. and Comm.* xviii. 439. The list, which subsequently was issued as a separate pamphlet, is by some misapprehension ascribed by Pritzels to Wallich; no doubt the greater portion, but as the text «h*»«. b/ no reason* all of the entries were made by Wallich.

⁴ Inscriptions upon rocks in South Behar, described by Dr. Buchanan Hamilton and explained by H. T. Colebrooke: *Trans. Roy. As. Soc. i.* 1826; Description* of Temples of the Jain* in South Behar and Bhagalpur: *Trans. Roy. As. Soc. i.* 1826; On the Sraracs. or Jiw: *Trans. Roy. Soc. i.* 1826; Description of the Kuirii of Buddha Gaya by Dr. Francis Buchamu Hinilto, M.B.A.S., extracted from his report of a survey of South Uohar: *Trans. Roy. As. Soc. ii.* 1830.

* On the minerals of the Hajmahal cluster of hills; *Glean, in Sci.* iii. 1831.

⁶ Ainslie: *Materia Medica*. 28 vols. 8vo. London: JS'6.

⁷ Description of the Diamond mine at Panna: *Eimb. Phil. Journ.* i. 1819.

Hamilton published in 1820 an epitome of the information derived by him from various sources regarding the corundum quarry of Singraula.

Two brief botanical papers, both of some economic importance, and both referring mainly, if not wholly, to Bengal were published in the *Edinburgh Journal of Science* in 1824 and 1827. The particular year in which the notes were originally made cannot be traced from the existing papers and correspondence. The first deals with a plant used in many parts of India in refining sugar;³ it has, however, considerable scientific as well as economic interest, and shows that Hamilton had come to very sound conclusions as to the relative position of the genera in the natural family *Eydrocharidece*, a family that, when he wrote, was imperfectly understood. The second, mainly an economic, paper, deals with two vegetables in fairly common use in Bengal.³ These exhaust the list of papers, based on or extracted from the reports and journals of the Bengal survey of 1807-U, that were published prior to Montgomery Martin's attempt to issue these documents as a whole in 1838.

Hamilton's brief visit to Galle on his way home in 1815 provided material for a short zoological note published in the *Edinburgh Journal of Science* in 1827.⁴

At the time that Hamilton was engaged in preparing his accounts of Nepal and of Assam, which were the two first subjects taken up by him on his return to Scotland, he arranged for publication tables of the genealogies of Hindu dynasties and other remarkable personalities, extracted from the Puranas and other sacred writings by his Pandit. These were published in 1819.⁵ Only 50 copies were printed, one of these is in the library of the Asiatic Society of Bengal.

As soon as these works were completed Hamilton arranged for publication the most sustained and notable of his zoological works, the account of the Gangetic fishes.⁶ In this treatise Hamilton has embodied the observations of nearly 20 years. His attention was first given to Indian fishes in 1796; his studies were carried on with hardly a break till the end of 1799; they were renewed while he had charge of the menagerie at Barrackpur during 1804-05, and were continued while he was engaged in the Bengal Survey of 1807-14. The numerous drawings made at Puttaha and at Baruipur were his own property and there is reason to believe that copies of the Barrackpur drawings were also at his disposal. Those made between 1807-U were, under circumstances already dealt with, taken from him, so that the volume of plates accompanying the text is less complete than it otherwise might have been.

McClelland says that Hamilton's specific descriptions are so obscure as to render the task of identifying individual species most difficult and uncertain, and implies that

¹ Account of the mine or quarry of Corundum in Singraula: *Edinb. Phil. Jour.* ii. 1820.

² An account of the Jang[?], or Vallisnerii alternifolia of Dr. Roxburgh, the plant used in India in refining sugar: *Edinb. Journ. Sci.* ii. 1824.

³ A Description of a plant (*Beta bengalensis*) used in Bengal as a common green vegetable (*Olus*) and of another nearly allied to it: *Edinb. Journ. Sci.* vii. 1827.

⁴ Notice respecting the Vanderon Monkey, or the Guenon a face purple of Buffon: *Edinb. Journ. Sci.* vii. 1827.

⁵ *Genealogical Tables of the Deities, Princes, Heroes and Remarkable Personages of the Hindus, extracted from the sacred writings of that people. With an Introduction and Index.* Edinburgh: 1 vol. fol. 1819. *Genealogy of the Hindus, extracted from their sacred writings.* Edinburgh: 1 vol. 8vo. 1819.

⁶ *An Account of the fishes found in the River Ganges and its branches.* Edinburgh: 1 vol. 4to. With a Volume of plates; 1 vol. Royal 4to. 1822.

Ouvier found the same difficulty in dealing with those fishes not illustrated by drawings. But, in a letter written by the late Mr. J. B. Hamilton of Leny, Hamilton's son and buccessor,¹ there is a reference to an interview with Dr. Giinther who, speaking of this work on the fishes of the Ganges, informed Mr. Hamilton that—

"he always kept it on his tabla for reference, aa he had implicit reliance on it as an authority, for it was the work of one who recorded in absolute truthfulness the results of his own observatioa and nothing moro or else."

While this work was passing through the press Hamilton, as we have seen, was engaged in preparing the catalogue of his 1807—14 botanical collection, which unfortunately was never published, though the preliminary sketch, intended evidently as an introduction to a series of botanical papers corresponding to the geographical series which he did succeed in completing, was read before the Royal Society of Edinburgh on 18th June 1821. In this paper he incidentally summarises his own Indian journeys, and gives a valuable general sketch of the physical, botanical, historical and political geography of India.² The geographical treatment was intended to provide a key to the localities he might subsequently cite, and the references to his own journeys were made in explanation of the circumstances under which the different collections were procured, and of the places in which they might be consulted. The necessity for such a key arose from his determination to employ their ancient Sanskrit names for the provinces he had explored. This determination was due to his considering the method at once more scientific and more useful, because probably more permanent, than any other. There ia much to be said in favour of his design though it has not been adopted by subsequent Indian botanists. As Hamilton very justly says, the Sanskrit names of localities continue, after the lapse of ayes—

"to be known to all Hindus of learning, while each now invasion or revolution sinks into immediate oblivion the unknown appellations imposed by modern rulers, whether Muhammadans or Christians."

The settled system of Government that has prevuilel since Hamilton wrote has made the system adopted by him less immediately necessary, but wo can only congratulate ourselves that Hamilton should have formed the resolution he did, since it has been the moans of giving us, in the excellent map of 'India according to the ancient divisions used in the Sanskrita language' the first western attempt to illustrate cartographically the old Hindu geography, and has moreover given us an attempt so satisfactory that it has not since required any serious modification.

The impossibility of getting access to the collections of specimens and drawings that the Court of Directors had given to Banks or that he himself had given to Smith, and the absence of the corresponding drawings from the later botanical collections the use of which was permitted by tte Court, diverted Hamilton from his original design and led him to devote bia energies instead to the preparation of commentaries on the works of Rheede* and Rumphius.* He seems to have begun the two commentaries

¹ Letter dated Leny, March 24, 1894, addressed to H. Beveridge, Esq., Eastbourne.

² Some notices concerning the plants of various parts of Indii, aud onceruing tho Sanskrita name* of those Regions: *Trans. Roy. &v. Edinh.* x. 171: 1826.

³ Hheede: *Hortus Indicus Ma lab uric us.* 12 vols. fol. Amsterdam: 1678—1703,

⁴ Ituinphius : *Herbarium Amboinense.* 6 vols. fol. Amsterdam : 1753.

simultaneously about 1821, but about 1825 he laid aside Rumphius after having dealt with the two first books and concentrated his attention on Rheede. With the latter his progress became more rapid, for he had finished the tenth volume early in 1826, and sent the manuscript of the last part of the work to the Linnean Society of London in 1828.

It was perhaps unfortunate that a writer of Hamilton's calibre should have devoted himself to so thankless a task as he set before himself. Yet his object in taking it up is very evident. We are apt now-a-days to forget the extent to which the figures of Rheede and Rumphius form the basis of species and even genera recognised by Linnaeus, Lamarck and other less influential exponents of the binominal method of nomenclature. The conflicting views held regarding the plants figured in these two works, and the often extraordinary identifications of the plates of the two authors, suggested in the seclusion of European herbaria by the botanists of the latter half of the eighteenth century, were only too distracting to the ordinary field worker in India and Malaya; and the serious attempt made by Hamilton to satisfactorily elucidate these two books, then considered and treated as fundamental, strikes us now as a singularly public-spirited act. He certainly brought to the task the three essential qualities of ripe scholarship, cultivated observation, and wide personal knowledge; all that was lacking for the successful accomplishment of his design was sympathy on the part of those whom he desired to benefit.

To the *Hortus Malabaricus* Hamilton devoted about six years of his valuable life.¹ The discussion of the first book was published in 1822 by the Linnaean Society; that of second appeared in 1825; that of the third in 1827; that of the fourth was not published till 1847.

The delay in publishing the fourth part till ten years after the manuscript reached the Society appears to have been due to the same cause that led to the disappearance of Lambert's Hamiltonian specimens. The distribution of the great Wallichian Herbarium in 1828 led to the idea that Rheede and Rumphius were now of minor importance. A year later Dillwyn, who had for some years been endeavouring to ascertain the names of the plants figured by Rheede, and for this purpose had consulted the libraries and collections in London, printed privately a review of the references to Rheede's work.² This public-spirited action, instead of stirring the Linnaean Society's council to a sense of their duty to their Indian and Malayan fellow workers, had the unlooked for result of putting an end altogether to the publication of Hamilton's work. Dillwyn, as he tells us, had access to Hamilton's unpublished manuscripts, and it seems to have been supposed that Dillwyn's references made further publication of Hamilton's work unnecessary. However, Dillwyn's list, excellent as it is, does not pretend to be much more than an improved Dennstedt,³ and the decision to suppress the greater part of Hamilton's *Commentary*, though doubtless in seemed wise and necessary to the council of the Linnaean Society at the time, has been a source of keen regret to botanists in India ever since.

¹ A commentary on the *Hortus Malabaricus*: I. *Trans. Linn. Soc.* xiii: II. *Trans. Linn. Soc.* xiv: III. *Trans. Linn. Soc.* xv: IV. *Trans. Linn. Soc.* xvii.

² A review of the references to the *Hortus Malabaricus* of Henry van Rheede van Draakenttein. 1 vol. 870, Swansea 1830: not published. The preface is dated Dec. 25, 1838.

³ Dennstedt: *Schlüssel zum Ritus Indicus Malabaricus*. 1 vol. 4to. Weimer; 1818.

The corresponding commentary on Rumphius was published by the Wernerian Society of Edinburgh.¹ The first part appeared in 1824: the second, which we know was completed before February 1826, was published sometime between 1826 and 1831. There is nothing to show that more of the work was ever written; probably it was not. The original rough comments, as Hamilton explains in one of his letters, are written on the backs of the pi at 38 of the copy of Rumphius which belongs to the Calcutta Garden Library; on the Calcutta copy of Rieede he has written no notes.

Hamilton's claim to represent the house of Buchanan of Buchanan was publicly presented and tried in 1826-28 and may therefore be included among his publications.² The only other paper for which he is believed to have been responsible during his lifetime, is one that was actually published after his death in the *Edinburgh Aew Philosophical Journal**

In 1831 an attempt was made in Calcutta to publish in their entirety Hamilton's reports regarding the Bengal Survey. Captain Herbert, editor of *Gleanings in Science*, being anxious to increase the local as opposed to the general interest of his excellent journal, asked for permission to publish Hamilton's manuscript. The plan suggested was to print a certain number of pages, not fewer than eight at one time, with a separate pagination, along with each number of the *Gleanings*. Government readily granted the request and the manuscript of the 1807 or Dinajpur report was made over to Herbert by Mr. Swinton, then Chief Secretary, for the purpose. When the publication of *Gleanings in Science* ceased and the newly founded *Journal of the Asiatic Society of Bengal*, under the editorship of James Prinsep, took its place, Prinsep continued Herbert's idea and completed the issue of the Dinajpur journal. The separate portions were provided with a title page, etc., and became available as a complete work in 1833.⁴

In this edition of the Hamilton manuscript nothing was omitted, even the references to drawings were left as they stood, although the drawings themselves had been sent home to the Court of Directors without copies having been kept. The hope of the editors, Herbert and Prinsep, was that even if the Court were unable to publish the original manuscript, they might publish the drawings.

The determination how far it was advisable to continue the publication of the accounts of the other districts surveyed, was made dependent on the amount of immediate interest which the Dinajpur one might command. The Anglo-Indian community in 1833 was much like the same community in 1804; no more of the work appeared.

In 1838 the records left by Hamilton were at last made available in a connected form. Permission was given by the Honourable Court of Directors to a Mr. Robert

¹ Commentary on the Herbarium Amboincense: *Mem. Worn. Son Ebinh.* y. (part 1) and vi (part 2). From the manner in which the reference to part 1 is given (read 14th June 1823, etc) it appears as if the paper may have been read by instalments.

² *Claim of Dr. Francis Hamilton Buchanan of Spittal to be considered the chief of the name as male representative of the family of Buchanan of Buchanan.* 1 vol. Edinburgh: 18-6.

³ A Uniformity of Climate prevailed over the earth prior to the time of the Deluge?: *Edinb. Sew Phil. Journ.* Tiii. 1836.

* *A Geographical, Statistical and Historical Description of the District, or Eila, of Dinajpur in the Province, or Soubah, of Bengal.* 1 vol. 8vo. Calcutta: 1833-

Montgomery Martin to 'collate' from the original documents at the East India house a work on Eastern India, which is found when critically examined to consist of Hamilton's reports of the Bengal Survey with those parts left out which the collater did not understand or which did not interest him.¹ Day found the allusions to Fish and Fisheries, one of Hamilton's favourite subjects, so casual in Martin's edition that they were useless both from the scientific and the economic point of view. With exemplary piety he printed *verbatim*, with an introduction and explanatory notes of his own, Hamilton's original account of the Bengal fisheries.² The same is equally true of the allusions to plants and vegetation ; unfortunately no one has had the time to do for these what Day has done for the fishes. Beveridge on the other hand finds that Martin has left out much less that is of value in the historical or antiquarian chapters,⁵ though he has been able to contribute a series of most interesting passages omitted by Martin.⁴ Martin's edition of the work is marred by an unsuitable introduction and a somewhat tedious dedication; the title-page⁵ is distinguished by the absence of the author's name and the substitution of Martin's own. This substitution has given rise to many severe remarks, but the writer agrees with Beveridge in believing that the procedure was a simple act of folly, and that Martin had no intention either of passing off the work as his own or of depriving Hamilton of the merit of having written it. If, however, we can with Beveridge acquit Martin of anything more serious than stupidity as regards his title-page, we must admit that Martin had extremely rudimentary ideas of the duties of an editor, and that his work in this direction is as primitive and unsatisfactory as Hunter alleges it to be. This, however, is only a misfortune and, as Beveridge says, 'one is disposed to feel grateful to Mr. Martin for having done something.' In one respect, however, Martin's conduct was truly criminal; he provided no index for the work.

The following list exhibits in chronological sequence the various publications referred to in the foregoing paragraphs:—

1. De Febribus intermittentibus medendis. 1 vol. Edinburgh: 1783. Graduation Thesis; M.D.

2. Description of the tree, called by the Burruas Launzan. *Asiatick Researches* v. 12:J: 1798.

X. A comparative Vocabulary of some of the Languages spoken in the Burma Empire. *Asiatick Researches* v. 219: 1798.

¹ Hunter : *Imperial Gazetteer of India*, vi. p. 205, footnote.

² Fish and Fisheries of Bengal; edited, with an introduction and notes, by Surgeon-Major Francis Day, Inspector-General of Fisheries in India: *A Statistical Account of Bengal*, xx. 1877.

³ Beveridge : *Calcutta Review* for July 1894.

⁴ Beveridge: *loc. cit.* The passages include the following: *Discovery of two statues in the Ganoes near Patna : the Panchpahari at Patna ; the worship of Buddha, as a Hindu goddess, at Patna ; Notes on temples at Putna and Goya; a short account of an old fort called Lakragar; the Pal Rajahs: Notes on the ruins of Tavgra : Origin of the caste of the Sarvariyas : the Kosi.*

⁵ *The History, Antiquities, Topography, and Statistics of Eastern India, comprising the districts of Behar, bhahnbad, Bhagalpoor, Goruckpoor, Dinagepoor, Puraniya, Rungpoor and Assam; in relation to their Geology, Minerology, Botany, Agriculture, Commerce, Manufacture, Fine Arts, Population, Religion, Education, Statistics, etc., surveyed under the orders of the Supreme Government, and collated from the original documents at the East India House with the permission of the Honourable Court of Directors, by Montgomery Martin.* 3 vols. 8vo. London : 1838.

4. On the Religion and Literature of the Burmas. *Asiatick Researches* vi. 163: 1799.

5. [Note on the Rivers of Burma.] Symes: *An Account of an Embassy to the Kingdom of Ava*, 241: 1800.

6. Descriptions of Rare and Curious Plants selected by the President of the Royal Society, Symea: *An Account of an Embassy to the Kingdom of Ava*, 473: 1800.—The drawings were by Buchanan, the actual descriptions are said by Symes to be the work of Banks.

7. An Account of the *Oncidium*, a new genus of the class of Venues, found in Bengal. Read 5th June., 1798. *Transactions of the Linnean Society* v. 132: 1800,

8. Description of the *Vespertilio plicatus*. Read November 5, 1799. *Transactions of the Linnean Society* v. 261 : 1800.

9. *Utricularia reticulata* [edited by J. E. Smith in] *Exotic Botany* ii. p. 119; t. 119: 1805.

10. [Figures and Descriptions of Nepal Plants, edited by J. E. Smith in] *Exotic Botany* ii. p. 73, tt. 97—101; p. 95, tt. 107, 108; p. 107, tt. 113—117: 1805.—The species figured are:—97. *EpHenirum prcecox*; 98. *Epidendrum humile*; 99, *Orchis pectinata*; 100. *Orchis gigantea*; 101. *Begonia picta*; 107. *UeJyichium coronarium*; 108. *lioscoei purpurea*; 113. *Androsace rotundifolia*; 114. *Primula denticulata*; 115. *Colebrookia oppositifolia* (*Buchanania oppositifolia* on plate, and *Sussodia oppositifolia* in Hamilton's manuscript); 116. *Leucosceptum canum*; 117. *Globba rucemosa*.

11. A journey from Madras, through the countries of Mysore, Canara and Malabar, performed under the orders of the Most Noble the Marquis of Wellesley, for the express purpose of investigating the state of Agriculture, Arts and Commerce, the Religion, Manners and Customs, the Natural and Civil History, and Antiquities in the Dominions of the Rajah of Mysore, and the countries acquired by the Honourable East India Company in the late and former wars, from Tippoo Sultau. 3 vols. 4to. London: 1807. [*Edinburgh Review*, October 1808.]

Account of the Manufactures carried on at Bangalore and the Processes employed by the Natives in dyeing Silk and Cotton. *Philosophical Magazine* xxx. 259 and JJ22: 1808. [Reprinted by A. Tilloch from the above.]

Machines for Irrigation. *Gleanings in Science* i. 276 : 1829 [Reprinted by Captain Herbert from the above.]

Second edition. 2 vols. 8vo. Madras: 1870.

12. An Account of the Kingdom of Nepal and of the Territories annexed to this Dominion by the House of Gorkha. 1 vol. 4to. Edinburgh: 1819. [*Biac/cwood's Magazine* July 1852.]

Prodromus Florae Nepalensis, sive Enumeratio Vegetabilium, quae in itinera per Nepaliam propriè dictam et regiones conterminali, ann. 1802—1803, detexU atque legit D. D. Franciscus lianilton (olim Buchanan) M. D. Societ. Reg. et Linnsean. Londin. Soc. Accedunt plants a D. Wallich nuperius missae. Secundum methodi imturalis normaui disposuit atque descripsit David Don. 1 vol. sm. 8vo. London: 1825.

Elucidation of some plants mentioned in Dr. Francis Hamilton's Account of the kingdom of Nepal. By Lieutenant-Colonel Madden. *Trans. Bot. Soc.; Edin.* v. 116: 1858.

13. Notice of the Progress of Botanical Science in Bengal, being the substance of a letter from Dr. Wallich, Superintendent of the Botanical Garden near Calcutta, to Francis Hamilton, M.D., F.R.S., & F.A.S., L. & E. *Edinburgh Philosophical Journal* i. 376: 1819.—This paper is accredited, in the Royal Society's catalogue, to Wallich. It is, as a matter of fact, a review of a letter from Wallich, with comments by Hamilton.

14. Genealogies of the Hindus extracted from their sacred writings. 8vo. Edinburgh: 1819.

15. Genealogical Tables of the Deities, Princes, Heroes and Remarkable Personages of the Hindus, extracted from the sacred writings of that people. With an Introduction and Index. Fol. Edinburgh: 1819.

16. Description of the Diamond Mine at Panna. *Edinburgh Philosophical Journal* i. 49: 1819.

17. Account of the Mine or Quarry of Corundum in Singraula. *Edinburgh Philosophical Journal* ii. 305: 1820.

18. An Account of Asam with some notices concerning the neighbouring territories. *Annals of Oriental Literature* 244. 1820.

19. Account of a Map of the Countries subject to the King of Ava, drawn by a slave of the King's eldest son. *Edinburgh Philosophical Journal* ii. 89 and 202: 1820.

20. Account of a Map of the Route between Tartary and Amarapura. *Edinburgh Philosophical Journal* iii. 32: 1820.

21. Account of a Map of the Country north from Ava. *Edinburgh Philosophical Journal* iv. 76: 1821.

22. Account of a Map, constructed by a native of Taunu, of the Country south from Ava. *Edinburgh Philosophical Journal* v. 75: 1821.

23. Account of Water-spouts observed at Sea on Voyages to and from India. *Edinburgh Philosophical Journal* v. 275: 1821. [*Annal. de Chimie* xix. 70: 1821. Gilbert: *Annal.* lxx. 104: 1822.]

24. Account of an extraordinary appearance of the Sea observed 31st July 1785, in a voyage from Johanna to Bombay, long, 61° 25' E., Lat. 1° 32' N. *Edinburgh Philosophical Journal* v. 303: 1821,

25. An Account of the Fishes found in the River Ganges and its branches. 4to. With a volume of plates, Royal 4to. 2 vols. Edinburgh: 1822.

26. Account of a map of the country between the Eravradi and the Khiaendusen rivers. *Edinburgh Philosophical Journal* vi. 107: 1822.

27. Account of a map, by a slave to the Heir Apparent of Ava. *Edinburgh Philosophical Journal* vi. 270: 1822.

28. An account of the map of the Tarout Shau Territory. *Edinburgh Philosophical Journal* vii. 71: 1822.

29. Account of a map of the vicinity of Pankgan or Pagan. *Edinburgh Philosophical Journal* vii. 230: 1822.

30. A Commentary on the Hortus Malabaricus, I. *Linn. Soc. Trans*, xiii. 474: 1822. II. *Linn. Soc. Trans*, xiv. 171: 1825. III. *Linn. Soc. Trans*, xv. 78: 1827. IV. *Linn. Soc. Trans*, xvii. 147: 1837. [Oken; *Ins* xxi. col. 180: 1827: Dillwyn: *A review of the References to the Hortus Malabaricus of Henry van Rhede van Draafonstein*, 1 vol. 8vo.

Swansea: 1830—not published.]—This work was finished in 1821; we learn from Dillwyn, who has made full use of Hamilton's text, that the remainder of the unpublished MSS. was, when he wrote, in the library of the Linnean Society of London.

31. Account of a map drawn by a native of Dawae or Taway. *Edinburgh Philosophical Journal* ix. 228: 1823.

32. Commentary on the Herbarium Amboinense, I. *Memoirs of the Wernerian Society of Edinburgh* v. 307: 1823-4. II. *Memoirs of the Wernerian Society of Edinburgh* vi. 268: 1826—31.—Whether this work was ever completed is doubtful; the Wernerian Society, which afterwards became absorbed in the Edinburgh Botanical Society, published the commentaries on the two first books. If more was written, this must have been after the completion of the *Hortus Malabaricus*, and the whereabouts of the MSS. is unknown.

33. Account of two maps of Zaemæ or Yangoma. *Edinburgh Philosophical Journal* x. 59: 1824.

34. An account of the map of Koshanpri. *Edinburgh Philosophical Journal* x. 247: 1824.

35. An account of the Janji, or *Vallisneria alternifolia* of Dr. Roxburgh, the plant used in India in refining sugar. *Edinburgh Journal of Science* i. 34: 1824.

36. Account of a map of Upper Laos, or the Territory of the Lowa Shan, *Edinburgh Journal of Science* i. 71: 1824.

37. An Account of a genus including the Herba Toxicaria of the Himalayan Mountains, or the plant with which the natives poison their arrows. *Edinburgh Journal of Science* i. 249: 1824. [Madden: *Trans. Bot. Soc. Edinb.* v. 1858; Stapf: *Ann. Roy. Bot Gard. Calcutta* x. part 2. 1904.]

38. Account of a map of the Kingdom of Pegu. *Edinburgh Journal of Science* i. 267: 1824.

39. Observations on Mun Kokhosee [Munko-Khoshee] (dated Katumanda, 10th and 14th November 1802). *Roxburgh, Flora Indica*, ed. Carey and Wallich ii. 415: 1824; *Roxburgh, Flora Jnhca*, ed. Carey i. 631: 1832. [Carey in *Roxburgh*, ed. 1824 *l. c.*]

40. Account of a plant allied to the genus Piper. *Edinburgh Journal of Science* ii. 9: 1825.

41. An account of the Frontier between Part of Bengal and the Kingdom of Ava. *Edinburgh Journal of Science* ii. 49: 1825.

42. An account of the Frontier between Ava and the Part of Bengal adjacent to the Karnaphuli River. *Edinburgh Journal of Science* iii. 32: 1825.

43. An account of the Frontier between the Southern part of Bengal and the Kingdom of Ava. *Edinburgh Journal of Science* iii. 201: 1825; iv. 22: 1826.

44. Some notices concerning the Plants of various parts of India, and concerning the Sanscrita names of those Regions (read June 18, 1821). *Trans. Roy. Soc. Edin.* x. 171: 1826. [*Flora* ix. 689: 1826; Fries: *Notisen* xi. col. 7: 1825; *Calcutta Review*; for July 1894.]—This paper forms the basis of most of the notices of Buchanan's Indian career.

45. Inscription upon rocks in South Bihar, described by Dr. Buchanan-Hamilton, and explained by H. Colebrooke, Director (read December 4, 1821). *Trans. Roy.*

As. Soc. i. 201 : 1826.—[Beveridge in *Calcutta Review*, July 1894.] Extracted by Colebrooke from the original Buchanan manuscript in London*

46. Descriptions of Temples of the Jainas in South Bihar and Bhagalpur. *Trans. Roy. At. Soc.* i. 523: 1826.—Edited by H. T. Colebrooke, from the original Buchanan manuscript in London.

47. On the Sravacs or Jains. *Tram. Roy. As. Soc. i.* 531 -s, 1820. Edited by H. T. Colebrooke, from the original Buchanan manuscript in London.

48. Claim of Dr. Francis Hamilton Buchanan of Spittal to be considered the chief of the name as male Representative of the family of Buchanan of Buchanan. 1 vol. Edinburgh: 1826.

49. Description of a plant of the order Guttiferae, which Dr. Roxburgh called *Garcinia pedunculata*. *Elinbnrgh Journal of Science*, vii. 45 : 1827*

60. Notice respecting the Vanderon Monkey, or the 'Guenon a face pourpre' of Buff on. *Edinburgh Journal of SAence* vii. 60 : 1827.

51. Description .of a plant (*Beta bengalensis*) used in Bengal as a common green vegetable (*Olus*) and of another nearly allied to it. *Edinburgh Journal of Science* vii. 244: 1827.

52. Description of the ruins of Buddha Gaya, by Dr. Francis Buchanan Hamilton, M.B.As., extracted from his report of a survey of South Bihar (read May 5, 1827). *Trans. Boy. As. Soc.* ii# 40: 1830.—Extracted and edited by H. T. Oolebrooke, from the original Buchanan manuscript in London.

53. Manner of Hunting in District Dainajpur. *Gleanings in Science* i. 874 : 1829.—Extracted by the editor of *Gleanings in Science* from the Calcutta copy of the Buchanan manuscript.

54. A Uniformity of Climate prevailed over the Earth prior to the time of the Deluge? *E/inb. .New. Phil. Journ.* viii. 366 : 1830.—This article is incorrectly cited as to title in the *Roy. Soc. Cat. of 8c. Papers*. The authorship is not formally claimed ; no name is given in the list of contents or with the title of the paper; the signature is eimply H—N.

55. Observations on the structure of the fruit in the order Cucurbitaceae (read 4th February 1828). *Trans. Roy. Soc. Edinb.* xi. 229 : 1831-

56. On the Minerals of the Rajmahdl cluster of hills. *Gleanings in Science* iii. 1 : 1831.—Extracted by the editor of *Gleanings in Science* from the Calcutta copy of the Buchanan manuscript.

57. A Geographical, Statistical and Historical Description of the District, or Zila, of Dinajpur in the Province, or Soubah, of Bengal. 1 vol. 8vo. Calcutta : 1833.—Printed and issued with the monthly numbers of *Gleanings in Science* and afterwards of the *Journal of the Asiatic Society*, the former under the editorship of Herbert and the latter under that of J. Prinsep.

58. Catalogue of Woods peculiar to Goalpara. M'Cosh: *Topography of Assam*, p. 36: 1837.—This list of 90 timbers was drawn up by Hamilton when stationed at Goalpara in 1808, and was sent, along with the corresponding timber-specimens, to Mr. James Kyd, the Honourable Company's Maeter-Builder at Calcutta. When WallicVs Herbarium was taken home in 1828, the timber specimens were, with the permission of the Court of Directors, transferred to the Society of Arts for arrangement and examination. They formed the subject of a paper by Aikin, the Secretary to the Society, entitled *List of Indian Woods collected by N. Wallich, M.D., P.R.S., Corresponding Member of the Royal Institute of France*

and of the Academy of Sciences at Berlin, etc., and of the Society of Arts of London ; Superintendent of the Botanic Garden at Calcutta; *Trans. 803. Arts Manuf. and Comm. xlviii. 439:1831.* Aikia, for the sake of the vernacular names and the notices regarding the species, incorporated Hamilton's catalogue in his list, in all cases indicating the source of his information by adding—*Ham*, M'Cosh, who was directed to prepare a topographical account of Assam, in 1[^]37 extracted from Aikin's *LUt* (which Pritzel ascribes to Wallich) all the entries that Aikin indicates as derived from Hamilton's Catalogue, and issued them as being 'a fair statement of the Timbers of Assam.'

59. History of Cooch Behar, being an extract of a passage from Dr. Buchanan's account of Rangpur (Rangapura) revised and communicated by Major F. Jenkins, *Journ. As. Soc. Benq. vii. 1 : 1838.*—Extracted by Major Jenkins from the Calcutta copy of the Buchanan manuscript.

60. . The History, Antiquities, Topography and Statistics of Eastern India, comprising the districts of Behar, Shahabad, Bhagalpoor, Goruckpoor, Dinagepoor, Puraniya, Rungpoor, and Assam; in relation to their Geology, Mineralogy, Botany, Agriculture, Commerce, Manufactures, Fine Arts, Population, Religion, Education? Statistics, etc., surveyed under the orders of the Supreme Government, and collated from the original documents at the East India House with the permission of the Honourable Court of Directors, by Montgomery Martin. 3 vols. 8vo. London: 1838.—The original documents* in question are Buchanan's manuscript journals. The 'collation' referred to consists of the omission of passages in which Martin was not interested, or which he did not appreciate. [*Quarterly Review*, No. cxxvi., vol. 63; *Calcutta Review*, July 1894.]

61. The Fish and Fisheries of Bengal [edited, with an introduction and notes, by Surgeon-Major Francis Day, Inspector-General of Fisheries in India; from the India Office copy of the Buchanan Records in.] *A Statistical Account of Bengal*, xx. 5: 1877.

62. [Passages from the Manuscript Record of the Survey of Bengal by Dr. Francis Buchanan, afterwards Hamilton, quoted from the edition by Montgomery Martin.] *Calcutta Review*. July: 1894.—Extracted by H. Beveridge from the original Buchanan manuscript in London.

The passages are as follows:—i. Discovery of two statues in the Ganges near Patna; ii. The Panc'hpahari at Patna; iii. The worship of Buddha, *as a Hindu Goddess*, at Patna ;* iv. Notes on temples at Patna and Gaya; v. Notes on Inscriptions in the district of Shahabad; vi. A short Account of an old Fort called Lakragar; vii. The Pal Rajahs; viii. Note on the Ruins of Tangra; ix. Origin of the Caste of the Sarvariya; x. The Kosi.

8. CONCLUSION.

There unfortunately appears to be no extant portrait of Francis Hamilton,¹ and the only clues to his personal appearance are some stray allusions in his own letters and the necessarily vague reminiscences of his son and successor, the late J. B. Hamilton, Esq., who was quite a child when his father died. In a letter dated March 1894, Mr. Hamilton writes:—

"My personal recollection of him is that he was a tall man with a very ruddy complexion and very white hair."

¹ At Ltny there are portraits of Hamilton's mother a very handsome lady with a strong intellectual face, and of his brothers, Colonel John Hamilton and Robert Buchanan, *Fsq*, but none of himself.

From Hamilton's letters we gather that between the ages of 35 and 40 he was inclined to become stout* Whether this tendency was temporary or remained permanent is not recorded.

Hamilton's capacity as a public servant may be deduced from the estimate which Roxburgh, an excellent judge of character, had formed. Roxburgh recommended Hamilton's selection as surgeon and naturalist to accompany the Ava mission; there is no indication that the actual appointment was probably secured for him through the influence and interest of Sir James Murray. But we know that Hamilton was the subject of remarks in letters that passed between Roxburgh and Banks, Smith, and other scientific friends in Britain, and it is not improbable that Smith, perhaps also some of Roxburgh's Edinburgh acquaintances, may have provided Hamilton with letters of introduction and recommendation to Roxburgh when he entered the Company's service in 1794. However this may be, it is clear that Hamilton had made Roxburgh's acquaintance before he left for Burma, and that a warm friendship sprang up between the two men during Hamilton's period of residence at Puttaha after his return from Ava. We know, too, that Roxburgh showed his practical interest by endeavouring to obtain a place for Hamilton in a projected Philippine expedition in 1797 when the latter had explained that his position at Puttaha was uncomfortable. In this application Roxburgh was not successful, but he did succeed in having Hamilton deputed for special service to investigate Chittagong and in obtaining his transfer from Noakhali to the 24-Pergunnahs. We find also that Hamilton was primarily indebted to Roxburgh for the opportunity of carrying out the Mysore Survey, an undertaking which, among other things, brought him the personal acquaintance of the Marquis of Wellesley. Again, it was to Roxburgh that Hamilton was indebted for his recall from the Nepal mission when it was obvious that he could do no more useful work there. This recall gave Hamilton the opportunity of joining the staff of the Governor-General; here his previous acquaintance with Lord Wellesley ripened into a mutual friendship which endured for the rest of Hamilton's life.

The feelings entertained by Lord Wellesley towards Hamilton are shown in many ways; perhaps the strongest evidence of the Governor-General's regard is to be seen in the fact that among Hamilton's papers, in the possession of his family, are drafts of memorials or reports in which he had been requested to submit his opinions, among other matters, as to the conduct of contemplated campaigns, as to the annexation of territories, and even as to the colonisation of New Zealand! But we see the same regard displayed in the letter of welcome addressed to Hamilton on his return to England in 1815, and in the fact that Lord Wellesley subsequently invited Hamilton to join his staff in Ireland. There is, however, further evidence of the feelings with which the Marquis of Wellesley regarded Hamilton, in his Lordship's reply to the request of the latter for permission to dedicate his *Account of the Kingdom of Nepal* to his former chief. The letter, which is dated Richmond, December 27, 1817, is given below:—

"I have been wandering so much for several months past that I have not been able to return so early an acknowledgment of your obliging letter as was demanded by its tenor and by my sincere and warm sentiments of respect and gratitude towards you.

I accept the honour which you propose to confer upon me, with a deep sense of its value. No part of my Government affords me more matter of satisfactory reflection than the opportunities of which I availed myself to render your talents and knowledge useful to the world. In discharging

this duty, the intimate acquaintance and friendship which was established between us enabled me to appreciate the integrity, independence, and frankness of your character, and the manly spirit of truth and honor which animated your intercourse with all persons in power.

These advantages furnish me with the certain means, not only of anticipating the high success which must attend your work, but of estimating the benefit which must accrue to my reputation from your public declaration of our mutual esteem.

Be assured that I take a strong interest in your happiness and welfare, and rejoice in the ease and comfort of your situation.

If you should approach London, I hope to see you at this place, where you will always find the most friendly reception from, dear Sir, your most faithful and obliged servant."

It is often said that the Court of Directors suppressed Hamilton's journals and reports relating to the survey of Bengal. It certainly is unfortunate, as the editorial preface to the attempt to publish them from the Calcutta copy in 1833 says—

"that those valuable documents were not given to the public when stamped with the interest of originality and immediate applicability to the actual circumstances of the districts, and when they would have proved of great utility to the public officers of Government."¹

This one immediately admits, and one is constrained further to regret that the public interest in the reports proved to be so slight that it was not considered advisable by the Government of Bengal and the Calcutta Editors to continue the series beyond the first, or Dinajpur, report.

The Court of Directors perhaps only anticipated what the Calcutta editors themselves experienced; at any rate the accusation that the reports were suppressed either because they were deemed of no value or because they contained matter which it would be dangerous to publish,² may be dismissed at once. The only danger that could conceivably arise must have been with regard to transfrontier information; yet the bulk of this Hamilton was, as a matter of fact, allowed to publish in his accounts of Nepal and Assam. That the Court did not depreciate the value of the documents is clear; even at the time when Hamilton complains of the arrogance and contempt shown towards his collections there is no suggestion that this feeling was exhibited towards his reports. On the contrary we find that the Court gave full permission to Walter Hamilton to consult the whole, and to incorporate as much of the topographical and statistical information that they contained as was necessary for his purpose in his work on Hindustan;⁵ this information is there always fully acknowledged. We find too that the Court gave full permission to Colebrooke to publish any extracts he might care to edit for the Royal Asiatic Society's *Transactions*. That anything sinister, or indeed that anything careless, underlay the long suppression of these manuscripts is therefore not only unproven but improbable. In all likelihood the question was mainly a financial one, and while one may regret the circumstance, there is little doubt that the Court deemed it impossible at the time to vote the funds required to meet their publication. It will be noticed that when in 1820 Hamilton was

¹ Account of Dinajpur, Editorial preface.

³ Higginbotham; *Men India has known*, p. 41.

⁵ Walter Hamilton: *A Geographical, Statistical and Historical description of Hindustan and the adjacent countries. In two volumes. 2 vols., 4to. London: 1820.* In his *Hast India Gazetteer* published in 1815 this author cites freely Hamilton's Mysore journal.

given his collections for arrangement and publication, there was no suggestion that the Court should assist in publishing Hamilton's results; these were to appear in the form of papers 'in such journals as might accept them,' a circumstance that is in keeping with the suggestion made regarding the manuscripts.

It has also been suggested that it is singular that Hamilton did not make more persistent efforts to have his reports made use of.¹ Before, however, forming an opinion on this aspect of the question it is necessary to recall what Hamilton actually did. We have already seen what his publications were; it may throw light on this suggestion that the fault was Hamilton's own, if we examine the principle that underlay his action.

Considering the extent and the methodical nature of his observations Hamilton had published remarkably little before he retired. When he reached England he therefore had much material that called for publication. Some of this material, for example his Hindu genealogies, we know was prepared for issue while he was in India, and practically all that had to be done was to find a publisher and send the manuscript to the press. Other portions, such as the accounts of Nepal and Assam, must also have been nearly ready for publication before he left India, for they were issued soon after Hamilton's return to England. Still other parts appear to have only existed in the form of notes or journals which required to be revised, collated with subsequent notes, and edited.

The publication of his *Account of Nepal* in 1819 exhausted the general information he could give with reference to his fourth survey, just as the appearance of the Mysore journal in 1807 exhausted the general information he could give regarding his third survey. But when in 1819 he had completed the issue of the works mostly written and arranged in India, and could turn his attention to his other notes and journals, there still remained to be dealt with not only the results of the final or Bengal survey but those of the Chittagong survey and much of those of the Ava survey. It was only natural that he should attempt to clear off the Ava and Chittagong materials before he dealt with the Bengal ones; and as regards the Bengal results, which, in accordance with the instructions under which he had acted, included information obtained regarding countries* beyond the Company's frontiers, it was not only natural but proper that he should try to clear off the outlying transfrontier notes before attempting to edit the Bengal results. Accordingly we find that he dealt with the transfrontier results of the Rangpur survey in a separate work on Assam; incorporated the transfrontier results of the Purnea and Gorakhpur surveys in his work on Nepal; made his observations in, or information obtained from the Panna State and from Singraula the subject of separate papers; dealt exhaustively with the geographical results of his Ava journey and codified the results of his Chittagong deputation; finally, cleared off such notes as he deemed worthy of publication from the journals kept or observations recorded* during his voyages of 1785-91, of 1805-6, and of 1815.

All regards the whole of the surveys and travels prior to the Bengal series* he was greatly handicapped by the absence of his botanical collections, which had found their way into the herbaria either of Banks or of Smith, and had thus become practically inaccessible to him. He had as a matter of fact prepared a systematic account of the vegetation of Burma which he gave to Banks, but which Banks

¹*Berer*6ge: *Calcutta Review* for July 1894.

suppressed; and had at least contemplated the preparation of a similar account of the vegetation of Mysore, which the publishers of the Mysore journal were unable to accept on the score of its expense. Whether he ever intended to do the same by Nepal is not clear, at all events he was relieved of this task owing to Don having undertaken it. But it is clear that Hamilton was fully alive to the fact that economic references to natural products are very unsatisfactory if they are not accompanied by a full systematic and scientific account of the species that yield them, and it is evident that he was determined to provide the necessary scientific foundation for the numerous economic references to the animals and plants that are mentioned in the Bengal survey reports.

To meet the necessity he therefore published his account of the Gangetic fishes, which is the scientific basis of his remarks on the fishes and fisheries of Bengal, long afterwards edited by Day; and he prepared the still unpublished catalogue of plants, which is the scientific basis of his references to the vegetation of the various districts of Bengal that have never yet been adequately edited. That he never published the plant catalogue, or dealt systematically with any zoological family save the fishes, was owing to the retention in India of the drawings which related to natural history made under his supervision during the Bengal survey.

Another circumstance which delayed any attempt by Hamilton himself to deal with the body of his Bengal Reports was his having devoted his energies to the much-needed critical examinations of the works of Rbeede and Rumphius, of which the first though completed was never published in full, while the second was possibly only partially completed at the time of his death.

On the whole perhaps it was unfortunate that Hamilton devoted his attention to **the *Hortus Malabaricus* and the *Herbarium Amboinense* so scrupulously as he did. Had** he given the six or eight years he bestowed on this task to the careful editing of his Bengal journals, which, even in the mutilated condition in which Martin has supplied them, form one of the finest works of the kind that was ever written, we should have been in possession of a masterpiece of Indian statistical and topographical literature. But this cannot now be helped and, however much we may regret that Hamilton's botanical energies were diverted into the channel which they took, we cannot complain that the non-utilisation of his Bengal reports was due to any lack of energy on his part. Probably no one has ever given the whole of his life after retirement more persistently and single heartedly, and with less consideration for money or reputation, to the task of making his observations available to the public than Hamilton did. The pity of the situation, as regards Hamilton's great commentaries, does not lie so much in their preparation as their fate. The *Herbarium Amboinense* we in India miss least, because in the first place Hamilton's identifications are still available in the Calcutta copy of Rumphius, and[#] because, since then, Hasskarl has provided an excellent key to the work.¹ But the *Hortus Malabaricus* commentary, of which only one-third has been printed, is a continual regret to the Indian botanist, for the keys of Dillwyn and Dennstedt, though painstaking and useful, are not the works of men who had the great advantage of an Indian experience.

The mistake that Hamilton made, though it is one that was perfectly natural, was that he should have sent the Malabar manuscript to London and the Amboyna one to

¹ Hasskarl : *Neuer Schlüssel zu Rumph's Herbarium Amboinense* 1 vol. 4to. Cleve : 1864.

Edinburgh, Had some happy accident led him to reverse their destinations the results would probably have been very different. The study of botany had, as we learn from Hamilton's letters and as we know from other sources, become very unfashionable at the time that he prepared these two works. In England Banks was no longer able, and Smith no longer willing, to stem the tide of philistinism that had set in. Brown had attempted to face the situation but the treatment which the botanical world accorded to his *Prodromus Florae Novae Hollandiae* had so mortified him that he refused to go on with the work. This being the case with the giants who were on the spot, there is little room for surprise that the Linnean Society's council should have been induced to relegate Hamilton's manuscript to a cupboard. In Scotland, as we know, the successful termination of the Napoleonic wars was marked by the same exacerbation of indifference to science in high places. There, however, a few vigorous intellects refused to be disheartened by the conditions that prevailed, and the philistinism so rampant at the time, if it went naked, could hardly, in the presence of men like Brewster, W. J. Hooker, Greville and a few others, walk wholly unashamed. Had Hamilton's manuscript of the *Hortus Malabaricum* commentary been given to an Edinburgh journal it is highly probable that we should now be in possession of the whole, and even the Linnean Society of London might have given us the two books of the *Herbarium Amloinense* for which we are indebted to the Wernerian Society of Edinburgh.

In estimating Hamilton's place as an observer one has to take into consideration the many-sided nature of his interests. The earliest estimate of his powers that we possess is one by the Rev. Dr. Robertson, minister of Callander.¹ "la classical and medical knowledge," says this authority, writing in 1791, "he has few equals, and he is well acquainted with the whole system of nature." Beveridge, it is true, will have it that "Buchanan was not a scholar," but it is necessary in dealing with matters of the kind to define one's terms, and the statement that the author of the 'Map of India according to the ancient divisions used in the Sanskrita language,' and of the commentaries on the works of Rheede and Rumphius, was not a scholar, is one that the writer at any rate, cannot for a moment admit.

That Hamilton was keenly interested in linguistic studies we know not only from the paper on the subject of the Burmese languages in the *Asiatick Researches*, but from an interesting reference in the life of Colebrooke.² It appears that 'in furtherance of the views developed by Sir James Mackintosh' Colebrooke attempted to compile practically useful vocabularies of all the languages spoken in India. In order to obtain the necessary data Colebrooke issued to officers who were considered competent, blank forms to be filled up with vocabularies of provincial languages. Almost the only answer he received was from Hamilton.

Hamilton's interest in the literature, religion and history of the peoples of India was equally real and equally lasting. It is first shown in one of his early papers on Burma, but we find from the papers extracted from his journals and edited by Colebrooke between 1826 and 1830 that it was as keen and direct as ever towards the close of his Indian service, and the publication of his genealogical tables of the Hindu dynasties shows that it continued after his retirement.

¹ Statistical Account of Scotland: Callander 1791.

² Life of H. T. Colebrooke, by his son Sir T. E. Colebrooke, p. 228.

If Hamilton can be said to have been more eminent and to have done more to advance human knowledge in one branch of science than in another, that science was geography. One has only to allude to his excellent work in Ava, Chittagong, Assam and Nepal as evidence of this; the combined and uniformly appreciative testimony of geographers so eminent as John Crawford, Carl Ritter, Henry Yule and John Anderson renders supererogatory anything that might be said here.

M'Clelland says that Hamilton was professedly a botanist,¹ a statement which may be true; but if this was the case he certainly did not neglect zoology, and there is nothing in his writings to show that he was more interested in, or gave greater attention to, the one science than to the other. The practical testimony of Drs. Day and Giinther as to the quality of Hamilton's zoological observations renders any allusion by the writer to his merits as a zoologist unnecessary.

As regards Hamilton's place among the botanists of India at the close of 18th and the commencement of the 19th century, it is needless to do more than quote the opinion of his ablest contemporary. In a letter to Banks, dated 13th July 1797, Roxburgh says :—

"I have mentioned Dr. Buchanan in the accompanying memorandum. He is a worthy valuable man and no doubt the best botanist in India."

Looking back, as we now can, with all the advantage that a true perspective affords, and with the further advantage of being able to judge by results, we cannot entirely endorse Roxburgh's view. In spite of his limitations Roxburgh himself, though not a scholar and though, as his works show, obviously a less critical observer than Hamilton was, has proved himself the greater and more useM constructive worker of the two. But, while this is the case, there is no doubt that, after Roxburgh, Hamilton was the best botanist in India of his day, and we can readily concede that as a botanical critic he was certainly Roxburgh's superior.

Hamilton's knowledge of mineralogy and geology was well abreast of the time in which he lived, as allusions in his letters and as his various papers dealing with these subjects show. He appears, indeed, to have given the same attention to these matters that he gave to zoology and botany.

The change of name from Buchanan to Hamilton has led to some rather oddly illogical results. Cuvier suggested that as Hamilton was best known to naturalists by his earlier name he Ought always to be cited as "Hamilton Buchanan" in systematic references. M'Olelland has gone further and has said that Cuvier's suggestion should be adopted because most of Hamilton's publications appeared under the name Buchanan. It is not at all clear that Cuvier was correct in what he said; it is not known, and it is hardly to be supposed, that Hamilton had an extensive personal acquaintance with European workers while he served in the East, and before he changed his name. In any case M'Clelland's remark has been made without due consideration for facts; Hamilton only published two brief zoological papers and one brief botanical one under the name Buchanan, and only one of the journals in which economic, as opposed to scientific, references to natural products appear, was published before Hamilton had to assume his later name.

¹ *Asiatic Btsearches* xix. 223.

Don, who published many of the Nepal species of plants during Hamilton's lifetime, always cites him, correctly, as Hamilton. Since then the erroneous and unnecessary practice adopted by zoologists has been followed by botanists who, however, usually cite Hamilton as "Buchanan Hamilton." Why, in deciding to deliberately and conventionally err, the botanist should reverse the error of the zoologist, is not at all clear. The one convention is as needless as the other and both should be dropped.

Hamilton's shrewd sense is shown again and again in his letters, and is perhaps nowhere seen to more advantage than in his early appreciation of the outstanding ability of Sir William Hooker, and in his remarks on other contemporary workers. It is perhaps least pleasantly seen in his estimate of Roxburgh, though even in this instance it was not unjust; as it was only made in a letter to Wallich, the one other person who was as greatly indebted to Roxburgh as Hamilton himself had been for opportunities, at the commencement of his service, which led to his ultimately rendering himself distinguished, there was no danger of its being misinterpreted.

Montgomery Martin, in introducing the first volumes of Hamilton's Bengal reports to the public, promised to prepare a memoir of Hamilton's life. But at the close of the third and last volume Martin explains that he had failed to find material for the purpose.

It is hard to realize that Martin could find nothing, within ten years of Hamilton's death, to aid him in enabling us to form some conception of Hamilton's interesting personality. What was difficult in 1838 is naturally still more difficult now, and we must therefore unfortunately content ourselves with a review of what Hamilton did as some substitute for a picture of what Hamilton was. The writer, however, cannot help feeling selfishly grateful to Martin, since Martin's failure has afforded him this opportunity of performing, as best he might, a pious duty to the memory of his predecessor Francis Hamilton, once Buchanan.

D. PRAIN.

ROYAL BOTANIC GARDEN, CALCUTTA;

October 30, 1904.

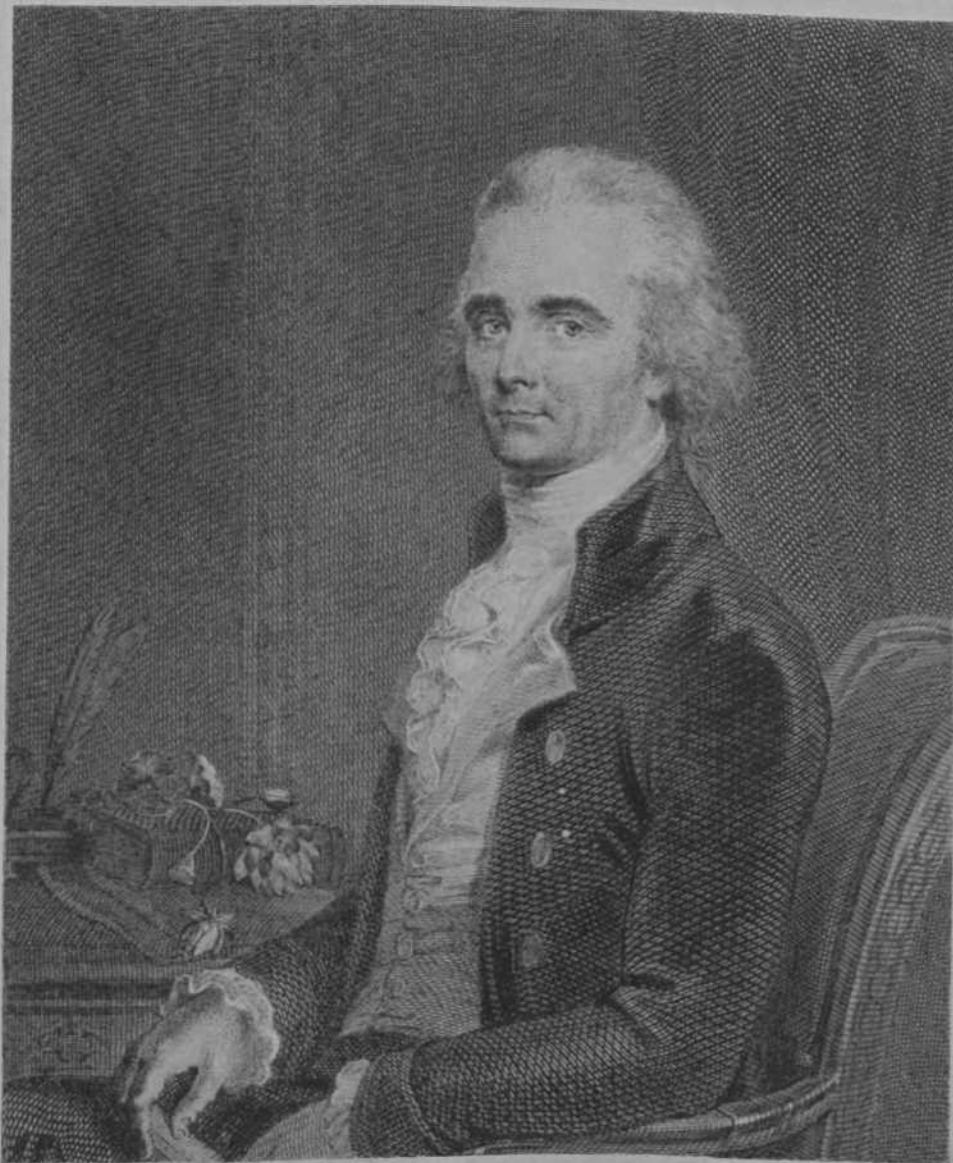


Photo-etching.

Survey of India Office, Calcutta, February 1835.

W^M ROXBURGH.

SUPERINTENDENT OF THE BOTANIC GARDEN CALCUTTA 1793 TO 1813.

Enlarged from an Engraving by C. Warren.

A BRIEF MEMOIR

OF

William Roxburgh,

Author of the "FLORA INDICA."



(Reprinted from Vol. V of the Annals of the Royal Botanic Garden, Calcutta.)



Calcutta:

BENGAL SECRETARIAT PRESS.

1895.

A BRIEF MEMOIR

OF

William Roxburgh,

Author of the "*FLORA. INDICA.*"



PREFIXED to the last volume of these Annals, I gave a short account of Colonel Robert Kyd, the Founder and first Superintendent of the Calcutta Botanic Garden. It seems fitting therefore that some account should, in the present volume, be given of the Botanist to whom this Garden owes the establishment of its reputation as a centre of botanical work.

William Roxburgh was born at Underwood in the Parish of Craigie in Ayrshire on the 3rd June 1751.* His family, although not rich people, managed to give him the kind of liberal education which, during the two centuries that preceded the introduction of school-boards, "standards" and capitation grants, used to be obtainable at almost every parochial school in Scotland. From the parish school Roxburgh went to the University of Edinburgh and, having attended as many of the medical classes there as were then required for a license to practice as a Surgeon's mate, he received (through the influence of Dr. Hope, then Professor of Botany at Edinburgh) an appointment in that capacity on one of the Honourable East India Company's ships. He accomplished several voyages to India on E&st Indiamen, and having, during the intervals spent at home, completed his medical studies at the University of Edinburgh, Roxburgh was offered, and accepted, an appointment on the same Company's Madras Establishment. Roxburgh arrived at Madras during 1776, and he there made the acquaintance of Dr. Koenig, who happened at the time to be making one of his frequent visits to Madras. Koenig had come out to India about eight years previously, and had been working at Natural History (chiefly on its botanical side) ever since. Koenig had been a pupil of Linnaeus, and was still an active correspondent of that great master. Coming originally to India at the instance of the King of Denmark, Dr. Koenig was attached to the Danish Settlement at Tranquebar. The inadequate income which he received there, however, induced him to accept service under the Nawab of Arcot, and it was while in the Nawab's service that he first met Roxburgh. From the special interest taken in him by Dr. Hope,

* In Chamber*'s Biographies of Eminent Scotchmen, the date is given as 29th June 1759, but that does not agree with Roxburgh's age at death as given on his tombstone.

† John Gerard Koenig, a native of Courland, pupil and correspondent of Linnaeus, travelled in Iceland during 1766; went to the Danish Settlement in the Carnatio as Physician and Naturalist in 1768; entered the service of the Nawab of Arcot about 1774; was employed by the Madras Board in 1778, and entered the service of the Honourable East India Company in 1780; died of dysentery at Jagrenathporum on 26th June 1788.

there is every probability that Roxburgh had, as a student at Edinburgh, shown enthusiasm for Botanical Science. Koenig had already given practical proof of his devotion to it; and there can be little doubt that the daily intercourse of two such men in an unfamiliar country, where every plant was comparatively new to them, must have afforded the greatest mutual satisfaction, as well as the strongest mutual stimulus to work. The researches of the two friends into the botanical sources of the indigenous economic products of the Carnatic impressed the Madras Government so favourably that, from 1778, the Madras Board made a monthly allowance to Dr Koenig to enable him to extend his enquiries to Siam and the Straits of Malacca, and in 1780 he was formally admitted into the Company's service. Koenig died of dysentery on the 26th of June 1785; he was attended during his last illness by Roxburgh, who makes a touching allusion to him in the following note appended to his description of *Roxburghia gloriosa* Mes, Dryand. (Fl. Ind. 11,236). "This," writes Roxburgh, «was one of the last plants Dr. Koenig saw. It was brought in when he was on his death-bed. He did attempt to examine it, but was unable; for the cold hand of death hung over him. He desired that I would describe it particularly, for he thought it was new, and uncommonly curious and beautiful. This observation from a worthy friend, a preceptor and predecessor has made me more than usually minute in describing and drawing it" Koenig was immediately succeeded in his appointment as Government Botanist by Dr. P. Russel, who, however, held the office for but a short time, and he in turn was succeeded by Dr. Roxburgh. Roxburgh, who was presumably attached to a regiment (I can, however, find no definite information on the point) was moved about from place to place; but, from his first arrival in the Madras Presidency until his transfer to the Calcutta Botanic Garden in 1793, his service was confined to the Northern Circars, and a great deal of it was at Samulcotta,* a small station about seven miles from the town of Coconada, and about twenty-two from one of the mouths of the Godavery river.

Samulcotta stands on the edge of a hilly region possessing a very interesting *Flora*. For years it had been the practice, both of Koenig and of Roxburgh, to describe and make drawings of every plant they met. During his life-time Koenig had transmitted many specimens of plants to Europe, some of which had been published in the *Supplementum Systematis Plantarum* of the younger Linnaeus and in Retz's *Observationes Botanice*; while others had been described by Schrader and by Vahl. Papers written by Koenig himself had also been published in the Transactions of the learned Societies at Berlin, Copenhagen, and Lund; and one in the first volume of the Transactions of the Linnaean Society of London. By Koenig's will, all his letters, papers, and unpublished manuscripts, as well as his dried specimens of plants, were bequeathed to Sir Joseph Banks, President of the Royal Society of London. Up to the time of Koenig's death Roxburgh had, so far as can be learnt, sent no plants to Europe, and had himself published nothing. Between the years 1791 and 1791, however, he transmitted, to the Court of Directors in London, descriptions and figures of no fewer than five hundred species. The Court placed these in the hands of Sir Joseph Banks, who selected three hundred of them which were published, at the Company's expense, in three large folio volumes

* In the article on Roxburgh in Knight's *Cyclopaedia of Biography*, it is stated that he was stationed at Samulcotta from 1781 until his transfer to Calcutta; and also that at Samulcotta he established a garden where he introduced the plants yielding coffee, cinnamon, nutmeg, arnotto, and sassafras wood; as well as the bread-fruit tree, mulberry tree, and various kinds of pepper vines. He is also said to have interested himself in the improvement of the cultivation of sugar, in the rearing of silkworms and in the manufacture of silk.

under the title *The Plants of the Coast of Coromandel*. This was Roxburgh's earliest book; the first part of it appeared in 1795, the last not until 1819. Contemporary with Roxburgh in India there were, in the end of the last and the early part of the present century, many keen Botanists, chief among whom may be mentioned Anderson, Berry, Campbell, Carey, Colebrooke, Fleming, Hardwicke, Kyd, Heyne, Hunter, Buchanan-Hamilton, John, Sir W. Jones, Klein, Leschenault, Rottler, Retzsell, Shuter, and Sonnerat. All these men probably received some stimulus from the ardour of Koenig, who appears to have been in India a sort of *avatar* of Linnaeus. The majority of them contented themselves, however, with collecting and distributing unnamed specimens of Indian plants. Many of their plants sent to Europe were published by Linnæus filius, Lamarck, Roth, Retz, Smith, Vahl, A. P. De Candolle and others; while not a few were published in India by Roxburgh himself. Kottler did indeed issue some species bearing manuscript names, some of which have been kept up. But Roxburgh was the only one of the group who attempted to give an account of any considerable number of Indian plants in the form of a *Flora*, and for this reason he has been called the "Father of Indian Botany" and "the Linnaeus of India."

Colonel Robert Kyd, the Founder and first Superintendent of the Botanic Garden at Calcutta, having died in May 1793, Roxburgh was appointed to succeed him, and he took charge of the Calcutta Garden on 29th November of the same year. Colonel Kyd had never lived in the garden; in fact there was no house fit for occupation by a European within its precincts. Roxburgh, however, determined to live in it, and one of the first matters which occupied his attention was the building of a house for himself. The spot selected by Roxburgh for his house (the present Superintendent's quarters) was on a bold promontory where the river Hooghly makes a bend. This site is marked in the old charts and maps as "thanna," and had at one time been occupied by a fort. On the left bank of the Hooghly, just opposite this promontory and on the site of the village still known as Mattiabiuj (mud-bastion), there stood in former days a similar fort; and the two formed a protection against enemies and pirates coming up the river. Roxburgh does not appear to have been so expert at building as he was at Botany. For the cost of the house erected by him exceeded the sum allotted by the Honourable Company by a considerable sum, and the Accountant-General of the period, with the obduracy hereditary to his office, refused to pay the excess.

Roxburgh appears to have arrived at Calcutta with a constitution impaired by hard botanical work in the feverish jungles of the Carnatic; for, within four years of his transfer to the Botanic Garden (*i.e.*, in 1797), he was obliged to make a voyage home for the re-establishment of his health.* In October 1799 he returned to Calcutta. But so soon as 1805 he had again to visit England on account of illness, and during this second visit he lived at Chelsea. He returned to Calcutta for the last time apparently about 1808; but during the hot season of 1813 his health completely broke down, and he was compelled to undertake a sea-voyage, which he at first intended should have been only to the Cape of Good Hope. His health, however, did not improve sufficiently at the Cape to warrant his return to Calcutta, and he therefore extended his voyage to St Helena, and finally to England. Shortly after his arrival at home, he proceeded

* According to one account, it was during this visit to Scotland that Roxburgh proceeded to the degree of Doctor of Medicine at the University of Edinburgh.

to Edinburgh, where he died at Park Place on the 18th February 1815. He was buried in the Greyfriars Churchyard there in the tomb of the Boswells of Auchinlech, his third wife having been a daughter of that house. The part of the inscription on the tombstone which refers to Roxburgh is as follows:—

Here axe deposited the remains of Doctor William Roxburgh, of the Honourable East India Company's Civil Service, who died at Edinburgh on the 18th February 1815, aged 64. Also those of Mary, his wife, daughter of the late Eobert Boswell, Esquire, W. S., who died in London on the 18th January 1859 in her 85th year. Beneath this stone are also deposited the remains of Mary, the eldest daughter of Doctor "William Roxburgh, and the wife of Henry Stone, Esquire, who departed this life on the 30th January 1814, in the 30th year of his age.

Dr. Roxburgh was three times married. Through the kindness of Mr. N. Bonham-Carter, of the Bengal Civil Service, who is a lineal descendant of the Mrs. Stone mentioned on the tombstone, I am enabled to give the under-noted family table which, however, is unfortunately for the most part without dates:—

Marriages and families of Dr. W. Roxburgh.

<i>Miss Bonté.</i>	<i>Miss Huttenmann.</i>	<i>Miss Boswell</i>
(Swiss or French; father perhaps Governor of Penang. She was one of three sisters. The other two married Mr. Amos and Baron Von Streng.)	(German.)	(of the Auohinleoh family).
<i>Child.</i>	<i>Children.</i>	<i>Children.</i>
The above named Miss Bonté had one child, Mary, who married Henry Stone, B.C.S., and had four children—	1. George, killed by lightning in Java.	1. Sibella.
1. Eiohard (?), who died, aged about six.	2. Anne, married Eobert M. Tulloh, B.as. ¹	2. Mary Anne, married H. C. Tucker, B.C.S.
2. Mary (Lady Marjoribanks).	3. Robert, Indian Army.	*3. William, married Miss A. £. Boswell.
3. Amelia (Mrs. James Mao-Arthur).	4. Bruce, ditto.	(Miss JJomtl, the third Mrs. Roxburgh, teas sister of Mrs. Egertcm of Gresford.)
4. Sibella (Mrs. G. W. Norman).	5. Elizabeth, married P. Curwen-Smith, B.C.S., and died 1891, aged 92.	
	6. Sophia, married John W.	
	7. James, Indian Army, married Miss Carnegie.	
	8. Henry (Royal Navy).	

Estimated by the amount of elaborated botanical materials which he left behind him, Boxburgh's life at the Calcutta Garden must have been one of continued hard work. When he quitted India for the last time in 1813, he left, under the charge of DT Carey not only the manuscripts of his *Hortus Benyalensis* and of his *Flora Indita* but also no fewer than 2,533 life-sized coloured drawings of Indian plants, with figures of excellent analyses of their flowers which had doubtless been made by

*There is apparently some error as to the order of the birth of the son named William; for, ID a paper written in 1801 (and printed in the Transactions of the Society of Art- Vo., xxi., page .>.,; WUUom R Mburgh, junior, j, credited with U f m ^ ^ n i.. *Asclepias speciosissima* (*Moradensis speciosissima*, W. A.) in the jungles of th, Rajmahal Hills.

himself. The majority of these drawings are of plants described in his *Flora*, so that, between his own descriptions and those figures, there is, in most cases, DO room for any doubt as to what Roxburgh's species are. With the characteristic caution of his nationality, Roxburgh had several copies made of the manuscript of the *Flora Indica*. One of these he took home with him, intending to occupy the remainder of his life in amending and passing it through the press. Another copyie left with his friend, the Revd. Dr. Carey, the celebrated Christian Missionary, who was himself an ardent Botanist, and who had brought together, in the Garden of the Mission House at Serampore, a collection of living plants second only to that under Roxburgh's charge at Sibpur. So competent a Botanist was Dr. Carey acknowledged to be, that he was put by the local Government in charge of the Botanic Garden when Roxburgh was obliged to leave it; and he continued to hold charge of it until relieved by Dr. Buchanan-Hamilton, who was nominated its Superintendent by the Court of Directors in England. Dr. Roxburgh had not long left India before Dr. Carey passed the *Horlus lievgalensis* through the press, and thus secured for his absent and sick friend priority for many of his species. The *Bortus Bengalensis* consists of two parts, the first being a list of the plants growing in the Garden when Roxburgh left it; the second a catalogue of plants described by Dr. Roxburgh in his manuscript *Flora Indica*, but not yet introduced into the Botanic Garden. The former list contains about three thousand* five hundred species, of which no fewer than fifteen hundred and ten (including many new genera) had been first described and named by himself; the second list contains four hundred and fifty-three species, mostly Roxburghian. As has already been stated, Roxburgh took a copy of his manuscript *Flora Indica* home to Scotland with him, with the intention, in the light of the most recent views of syatematic Botanists in Europe, of improving and amending it prior to publication; and (as he wrote to Dr. Carey) he hoped to have secured the assistance of Robert Brown in this matter. His ill-health, and death so soon after his return home, prevented, however, his doing anything towards this object; and the *Fhra* remained in manuscript and untouched for six years. In the year 1820, however, Doctors (arey and Wallich undertook its publication. Dr. Wallich, then Surgeon to the Danish Secernent at Serampore and a young Botanist of mtich promise, had been appointed Superintendent of the Calcutta Garden at the end of Dr. Buchanan-Hamilton's short tenure of office ; and he had employed the early years of his Superintendentship in making extensive collections in Nepal, and subsequently in the Straits of Malacca and in other parts of India which had never come within the scope of Roxburgh's efforts. It was decided that descriptions of these collections of Wallich should be incorporated with Roxburgh's manuscript, and that the whole should be published under the joint supervision of Carey and Wallich. The first volume of this work, covering the Roxburghian manuscript to the end of *Tetrandria*, appeared in 1820, and that volume contained but few of Wallich's interpolations. The second volume, which did not appear until four years later, contained, however, a great many of them, and it did not quite finish the *Pentandria* of the Roxburghian manuscripts. In fact, the decision to include Wallich's novelties was the cause of the failure of the whole project. For Wallich's capacities for collecting were so far in excess of his leisure for description and classification that he had to abandon the idea of carrying on his share of the work. TLe publication of the Carey and Wallich edition of Roxburgh's *Flora* therefore ended prematurely with the second volume. Eight years having

* Of Ibis number, three hundred were growing in the garden when Roxburgh assumed charge of it.

elapsed without anything having been done towards the completion of its publication, its author's two sons, Captains Bruce and James Roxburgh, neither of whom was a Botanist, determined to print, at their own expense, their father's manuscript exactly as he had left it. This was done under the editorship of the venerable Carey, and the book was published, in three octavo volumes, at Serampore in 1832. This edition having been for many years out of print and difficult of purchase, a verbatim reprint of it, in a single volume (paged, however, according to the original), was undertaken in Calcutta in 1874, at the expense of Mr. C. B. Clarke, F.R.S., the present distinguished President of the Linnsean Society. Mr. Clarke's reprint also includes Roxburgh's account of Indian *Cryptogamia*, which was not included in Carey's Serampore edition, but which (having been rescued from oblivion by Griffith) was published by him in 1814, in the fourth volume of the Calcutta Journal of Natural History. Mr. Clarke's objects in re-publishing Roxburgh's *Flora* are stated at length in his excellent preface to his edition of it. The main one was to put the book within the reach of the poorest Indian student, and that object was most effectually fulfilled by his issuing the volume at a price (five rupees) which could not have covered one-half of the cost of publication, even had every copy of the edition been sold within a year. Roxburgh's *Flora* is still a most useful book to persons who, without being really Botanists, desire to make themselves acquainted with the plants of the plains and of the lower slopes of the hills of Northern India and of the Madras Presidency. It contains also an account of the majority of the exotic plants which are cultivated, even at the present day, in gardens in the plains of India, and also descriptions of some plants which Roxburgh had introduced from various parts of the Malayan Peninsula and Archipelago (which he named in a general way "The Moluccas"). The descriptions of these "Molucca" plants are often meagre in the extreme, and are now practically of no value. Many of the common garden plants also are described in an imperfect way. And of the plants of the Himalaya and of the higher ranges of Southern India above levels of 500 feet or thereby, the *Flora* gives no account whatever. With reference to the imperfections of Roxburgh's *Flora* as a guide to the Botany of the Indian mountain ranges, it should, however, be borne in mind that the bulk of the indigenous population lives in the plains; and that it is only a small percentage even of the European population who actually reside in the hills.

The excellence of Roxburgh's *Flora* as a botanical work has so long been acknowledged that it is unnecessary here to enter upon any estimate of it. I would simply remark that Roxburgh's descriptions of Indian plants are, for the most part, so accurate and graphic that, while identifying a plant by his *Flora*, one can feel quite certain when he has got the very species that its author meant: one does not finish one's attempt with a headache and with the uneasy feeling that his plant may be one of half a dozen! I regard Roxburgh's accuracy as something marvellous. When an organ is not too minute for proper observation by means of the comparatively rude lenses obtainable in Roxburgh's time, one may trust to his account of it being absolutely correct. Authors since Roxburgh—and especially young authors—working chiefly with Herbarium specimens have, as it seems to me, reduced some of his species with rather too much levity. I have worked a good deal with Roxburgh's *Flora* and among Indian plants, and it takes a good deal to convince me of a Roxburghian blunder! Roxburgh's ideas of affinity are in the "highest degree sagacious; and, had he lived a few decades later, his *Flora* would have doubtless been as successfully fashioned on the natural system as

it was on the Liansean. Finally, I would claim for Roxburgh's book the merit that it does not contain a single ill-natured or unkind remark. Never once does its author insinuate that some other botanist is either an egregious blunderer, a vile filcher of another man's species, or a person of supreme incompetence.

As regards economic botany, Roxburgh's *Flora* is a perfect mine of wealth; and it is only since the publication of Dr. Watt's Economic Dictionary that it has been superseded as the standard book on Indian vegetable economics. Much of Roxburgh's time and a great deal of his attention were given to enquiries into indigenous vegetable products; and so greatly were his researches into the sources of fibres* and other useful substances esteemed in England, that on no fewer than three occasions were gold medals awarded to him by the Society of Arts. To him also much credit was due for the organization of the arrangements successfully carried out by one of his sons, for the introduction into the Honourable Company's Malayan possessions of the cultivation of the trees yielding cloves, cinnamon and nutmeg.

Roxburgh was not, as has been stated in some notices of him, one of the founders of the Asiatic Society of Bengal. As a fact he was stationed at Samulcotta when it was founded (1784); but after his settlement in Calcutta he took an active interest in its management and contributed several papers to its *Researches*.[^] Besides being a member of the Asiatic Society, Roxburgh was a Fellow of the Linnaean Society of London, of the

* In Vol. XXII of the Transactions of the Society of Arts (London, 1804), there are printed many letters of Roxburgh's giving an account of his experiments into the mode of cultivation and properties of the fibres of hemp jute, bowstring-flax, sun, agave, Hibiscus, Ac.

A list of all Roxburgh's contributions to Scientific Journals (taken from the Royal Society's Catalogue of papers) is given below :—

Roxburgh, William. On the Lac[^]sha or Lac-Insect (*Coccu* lacca*). Asiatic Researches, II, 1790, pp. 361-364; Tilloch, Phil. Mag. III, 1799, pp. 367-369.

2. A description of the plant *Butea*. Asiatic Researches, III, 1792, pp. 469-474.

3. A description of the *Jonetia*. Asiatic Researches, IV, 1795, pp. 356-358.

4. *Prosopit aculeata*, Koenig, Tshamie of the Hindus in the Northern Circars. Asiatic Researches, IV, 1796, pp. 405-408.

6. Botanical observations on the Spikenard of the ancients. Asiatic Researches, IV, 1795, pp. 433-496.

6. A botanical description of *Urceola elastica?* or Caoutchouc Vine of Sumatra and Pulo Penang, with an account of the properties of its inspissated juice compared with those of the American Caoutchouc. Asiatic Researches, V, 1798, pp. 167-177; Nicholson, Journ. III, 1800, pp. 435-440; Tilloch, Phil. Mag. VI, 1800, pp. 164-161.

7. An account of a new species of *Delphinus*, an inhabitant of the Ganges. Asiatic Researches, VII, 1801, pp. 170-174.

8. Account of the Tusseh and Arrindy Silk-worms of Bengal. [1802] Linn. Soc. Trans. VII, 1804, pp. 33-48.

9. A botanical and economical account of *Bassia lutyraea* or East India Butter Tree. Asiatic Researches, VIII, 1805, pp. 477-486; Nicholson, Journ. XIX, 1808, pp. 372-379; Gilbert, Annal. XL, 1812, pp. 334-840.

10. On the culture, properties, and comparative strength of Hemp and other vegetable fibres, the growth of the East Indies. Nicholson, Journ. XI, 1805, pp. 32-47; Gill, Tech. Rep. VI, 1824, pp. 184-194, 240-244.

11. An account of the Hindu method of cultivating the Sugarcane and manufacturing the sugar and jagary in the L'ajamundry district. Tilloch, Phil. Mag. XXI, 1805, pp. 264-275.

12. A table of the growth of trees in the Botanic Garden at Calcutta. Nicholson, Journ. XVII, 1807, pp. 110-111.

13. Description of several of the monandrous plants of India, belonging to the natural order called *Scitami**** by LinDaus, *Canna* by Jussieu and *Lrimyrhina* by Ventenat. Asiatic Researches, XI, 1810, pp. 318-862; Sprengel, Jahrb. I, 18*0, pp. 64-110.

14. Letter on various natural productions of the East Indies. Nicholson, Joura. XXVII, 3810, pp. 69-76.

16. Remarks on the Land Winds and their causes. London, Med. Soc. Trans. I, 1810, pp. 189-211; Tilloch, Phil. Mag. XXXVI, 1810, pp. 243-263.

16. Some account of the Teak tree of the East Indies. Nicholson, Journ. XXXIII, 1812, pp. 348-354.

17. *Flora Indico, Part 4*, Cryptogamous Hants Calcutta, Journ. Nat. Hist. IV, 1844, pp. 463-620.

18. On the genus *Jquilaria*, with remarks by the late H. T. Colebrooke. [1861] Linn. Soc. Trans. XXI, 1865, pp. 199-206; Linn. Soc. i'roc. II, 1865, pp. 123-125.

Society of Arts, and of the Royal Society of Edinburgh. He was not, however, a Fellow of the Royal Society of London.

There can be little doubt that Roxburgh must have made large collections of plants during his long Indian career of thirty-eight years. Comparatively few of these can, however, now be traced in collections. It is known that his earlier collections in the Carnatic were destroyed by an inundation. He, however, made later collections in that province prior to his removal to Calcutta; and, during the twenty years of his life in the Calcutta Garden, when collecting was more or less his business, such an ardent botanist must have accumulated large quantities of dried plants. No Indian plants of his, however, now exist in the Calcutta Herbarium.* It is indeed asserted by Griffith, in his report on the Calcutta Garden written while he acted for Dr. Wallich in 1834, that the latter had carried oS all Roxburgh's collections from Calcutta, and that they had (without being distinguished by any identifying mark) formed part of the great Herbarium of Indian plants distributed to the chief scientific institutions in Europe, at the expense of the East India Company, under Dr. Wallich's direction. A few of Roxburgh's Indian plants are to be found in the Edinburgh Herbarium; there are a few also at Kew and the British Museum, and doubtless there are others in some of the great Herbaria on the Continent of Europe; but the mass of them cannot be now traced. The want of complete suites of Roxburgh's plants is, however, greatly compensated for by the drawings which he left in Calcutta of the majority of the species named by him. Copies of all of these drawings were made at the expense of the late Sir W. J. Hooker, and were deposited by him at Kew, where they can be now consulted; while many of them were printed on a reduced scale in Wight's *Icones Plantarum India Orientalis*.

A few years after Roxburgh's death some of his friends erected a monument to his memory on a little mound near the great banyan tree. The inscription on this monument, which was composed by Bishop Heber, is as follows:—

Quisquis ades

Si loous suavitate mentem permuloet
Aut admonet ut pie sentias de Deo
Habendus in honore tibi

Roxburghius

Horura hortomm olim preefeotus
Vir scientise botanices laude florens
Idemque amcenitatum agrestium

Summus artifex

Oonservat cinerem Patria

Hio viget ingenium

Tu fave et perfruere

B. M. P. O. Superstites Amici A. D. 1822.

The portrait which forms the frontispiece to the present volume is a reproduction (by the process of photographic etching by my friend Colonel James Waterhouse) of the

* A number o! plants, collected at the Cape of Good Hope during his last vojage to England, were presented to tho Herbarium about twenty years ago by a surviving daughter.

picture published in thirty-third volume of the Transactions of the Society of Arts (London, 1815).

In preparing this brief memoir, I have received much kind help from my friend, Mr. Henry Beveridge, late of the Bengal Civil Service. Mr. Beveridge had the records of the parish of Craigie, as well as the Register House in Edinburgh, searched (unfortunately in vain) for the entry of Roxburgh's birth; and it was he who kindly copied for me the inscription on the tombstone in Greyfriars Churchyard.

BOTANIC GARDEN, CALCUTTA, }
June 1895. }

G. KING.