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WILLIAM JOHN BURCHELL, BOTANIST.

By Helen M. McKay.

Part II.: Burchell in South Africa.

Before proceeding with this paper about Burchell's activities in South Africa, I beg the indulgence of those readers who have had the opportunity of working with his herbarium and manuscripts, if these be for them a mere account of facts which they already know. My endeavour is to present to those who have not visited, or may never have the chance of visiting the Herbarium of the Royal Botanic Gardens, Kew, but who, nevertheless, may be interested in Burchell's work, an account of what material is still extant, and in what form it is to be found.

Arrival in South Africa.

Burchell sighted Table Mountain on 13th November, 1810, but owing to bad weather, was tossed about in Table Bay and did not set foot on South African soil until thirteen days later.

He was then twenty-nine years of age, and came with the intention of travelling in the country "solely for the purpose of acquiring knowledge." Being under no obligation to any society or to any individual, he was at liberty to make his plans for his excursion, without undue external interference.

He duly presented his letters of introduction: received permission to remain in the country, and was given a warm welcome by Rev. C. H. F. Hesse, of the Lutheran Church. The parsonage (now known as Martin Melck House) at 28, Strand Street, was his home while he was in Cape Town.

Route.

The accompanying map—Plate V—gives a very general idea of what part of South Africa was visited by Burchell. It shows through which districts he passed, and by collecting information from his published map in Volume One of his *Travels*, from his *Catalogus Geographicus*, his *Catalogus Insectorum*, his drawings and his letters, interesting facts come to light regarding those parts of his route not mentioned in his published volumes.

Burchell's intention was to journey beyond the boundary of Cape Colony to the country of the Bechuanas, along the route taken by Truter and Somerville ([31]) in 1801, and by Lichtenstein ([13]) in 1805. From Litákun [Kuruman]—the chief town of the Batlaping tribe, he would turn towards the west coast within the southern tropic and try to find his way by sea to St. Helena. In the early days of 1811, he had conversations with missionaries on furlough in Cape Town from the settlement of Klaarwater [Griquatown] which lay beyond the boundary of the Colony. He learned that it would be inadvisable to consider travelling westward because of difficulties likely to arise from lack of water and from the presence of hostile tribes. Hearing of the beautiful fertile land lying to the North and East of the Colony, he decided to make Litákun his objective in the North, and after reaching it, then determine whether he would journey to east or west. He arranged that he would travel as far as Klaarwater with the missionaries who intended leaving Cape Town in May, or June, 1811.

While superintending the building and equipping of his wagon, he found time to make botanical excursions with Mr. Hesse, in the immediate vicinity of Cape Town, and to go on horseback, accompanied by Mr. Poleman, a Dane who was an apothecary but also a keen botanist, on a tour as far east as Caledon and as far north as Tulbagh. He thus acquired first hand knowledge of some of the ground which had been trodden by the great Thunberg.

His trek to the interior of the country began on 19th June, 1811, and ended in Cape Town in the middle of April 1815; it covered approximately four thousand five hundred miles. From certain fixed points on his main route, he made excursions. About a month after his arrival at Klaarwater, he joined some natives and went to a "Hippo hunt." This led to his being the first white man to visit the confluence of the Riet and Vaal Rivers, and also that of the Vaal and the Orange.

At Klaarwater he found himself faced with the difficulty of procuring servants to accompany him to the north, so he decided to journey to Graaff-Reinet and ask help from the Landdrost [deputy representative of the Governor].

Along with six Hottentots, a Bechuana and a Bushman, Burchell, on horseback, was the first European to make a track between Klaarwater and Graaff-Reinet through the dreaded Bushmanland. On his return journey he made several detours from his first path, and so was able in 1813, when once more in Graaff-Reinet, to advise the missionary Campbell which track to choose when journeying to the north.

Burchell left Klaarwater for Bechuanaland on 6th June, 1812, and arrived at Litákun, about five weeks later. In the month of August, he made an excursion to the south-east at Litákun, then turning to the north, he reached the most northerly point in his route—Chué Spring [Honing Vlei]—on 4th October, 1812. From here he went in a south-westerly direction to Klaarwater which he left for the last time in February, 1813. He travelled to the Colony through the districts now known as Hopetown, Colesberg and Middelburg. He visited the new fort of Grahamstown in 1813, made excursions to the mouth of the Great Fish River and the Kowie, and then by way of Uitenhage, Fort Frederick [Port Elizabeth], Plettenberg Bay, George, Mossel Bay, the Garcia Pass [Riversdale], Swellendam and Stellenboseh, arrived once more iu Cape Town.

Equipment.

Burchell carried with him, except on his short excursions, fifty books. Those for botanical reference were Linné—*System Naturae*, ed. Gmelini: Linné—*Species Plantarum*, ed. Willdenow([32]): Jussieu([33]) *Genera Plantarum* ed. Usteri, and Forster—*Enchiridion Historiae Natureli inserviens* and the book on *Fuci* given to him by Tilesius in St. Helena. The copy of Jussieu, with a few marginal notes and an inscription in Latin in Burchell's handwriting, telling of the book being carried throughout his journeys in Africa and Brazil, was bequeathed by Mr. Langley, of Bedford, to the Hope Department Library, University Museum, Oxford.

Burchell was equipped with a press, a large collecting box, a magnifying glass and reams of paper, but we find him writing to Mr. Hesse from Klaarwater in 1813, for more paper to be sent to await his arrival at Fort Frederick [Algoa Bay]. This shortage of paper may account for a diminution in number of botanical drawings during the early months of 1813.

Collections.

In the late eighteenth century and in the early days of the nineteenth, it was the fashion among the monied classes in Europe to possess collections of things brought from foreign lands. Knowing this, Burchell,

writing in 1822, gives us his opinion about the making of such accumulations :

> "To him who is satisfied with amassing collections simply for the pleasure of possessing them, such objects can afford at best, but a childish gratification, faint and fleeting : while he who extends his views beyond the narrow field of nomenclature, beholds a boundless expanse the exploring of which is worthy of the philosopher and of the best talents of a reasonable being."*

By so writing, it would seem he was conscious of the scientific work to he done, that he was able and gifted to do it, and that he had laid the foundation in South Africa for such work to be carried on. It is well to bear this in mind for the better understanding of what he accomplished.

He shows his predilection for pure field work but he did not neglect nomenclature. Every specimen collected was carefully labelled. Every label contained a number, the date and sometimes hour of acquisition of the specimen, and in most instances, a short description of the plant. Often at the time of gathering, a drawing was made of the noteworthy characteristics of the specimen. All these notes were useful when he came to classify his material.

For the preservation of his collections he used no extraordinary methods. He explains how on one occasion he adopted what he considered "a new mode" when the regular way of pressing was not praeticable. When on an excursion to the top of Witsenberg, in April, 1811, he could not press and dry his specimens between paper, he carefully tied them in a large bundle about three feet long and a foot in diameter, binding them round as tightly as possible with twine and wrapping the whole in strong paper. This bundle was not opened for eight years, and when it was, the specimens were in a fit condition for scientific invesitgation : in fact the hard leaved plants were in better condition than if they had been pressed. He began to unpack his herbarium in September, 1816, and did not finish until October 1817. Had he known sooner that this new method was successful, he would have collected more when on his journey from Klaarwater to Graaff-Reinet.

He admits :—

> "the business of putting dry paper to my botanical specimens, which, being a mere mechanical employment, and recurring almost every day, became a most irksome task, yet one which was absolutely indispensable."†

It is due to his patience, to his ability and good judgment when

* *Travels in the Interior of Southern Africa.* Vol. I, page 505.

† *Travels*, I, page 293.

selecting specimens that his herbarium evokes the admiration of every botanist who beholds it.

Burchell sums up his collection in an entry in his MS., *Clavis Geographicus ad Herbarium Africanum*, as :—

"Specimens dried at Cape Town	4,000
Cape Town to Litákun..	5,024
Litákun to Algoa Bay..	10,507
Algoa to Cape Town	20,840
	40,371

> besides a great number which have not been counted and which may amount to 10,000 more."

He gathered also more than two thousand kinds of seeds and two hundred and seventy-six bulbs.

More than five hundred specimens collected between Cape Town and the northern boundary of the Karoo, were entrusted to a farmer to be delivered in Cape Town, but they never arrived there. Thus there was formed a hiatus which was never filled up in his *Catalogus Geographicus*.

After his death in 1863, his sister, Miss Anna Burchell, presented his herbarium and the manuscripts relative to it, to the Linnean Society of London. This donation was afterwards transferred to the Herbarium of the Royal Botanic Gardens, Kew.

There were many duplicate specimens in the collection. During his lifetime, Burchell gave away several of these. Some specimens of which there were no duplicates, were loaned to botanists and were never returned, hut they were, in most cases, referred to by these botanists in their various works, so cannot be considered as entirely lost. The authorities at Kew sent some duplicates of *Mesembryanthemum* to the Asa Gray[34]Herbarium at Harvard University, Mass., U.S.A. Through Professor MacOwan, South Africa acquired seven hundred specimens of various plants. These are now incorporated in the MacOwan collections in the Albany Museum, Grahamstown. A few rather small duplicate specimens were sent to the National Herbarium, Pretoria. The number of species in Burchell's collection at Kew may not now exceed three thousand.

Writings.

The only work written by Burchell was *Travels in the Interior of Southern Africa*, Vol. I, 1822 : Vol. II, 1824, published by Longman. These volumes are of value to botanists because of the graphic descriptions given of the vegetation of those parts of the country through which

he travelled. There are notes of plants collected, and descriptions of several new genera and species. The two volumes take the reader along the route to Griquatown, from there to Graaff-Reinet by way of the present day districts of Hanover, Richmond and Murraysburg: back to Griquatown, then north to Litákun in the division of Kuruman, and the records end with the date of 3rd August, 1812.

In his Preface to volume I, Burchell says:—

> "Of these [collections] a few are occasionally mentioned, and distinguished, either by a reference to the 'Geographical Catalogue,' or by the letter B: and, not to interrupt the text, short descriptions of them are added in the notes. These descriptions are not intended as specific characters, but are given merely as the more obvious or striking features, in order to convey to the botanist some idea of the more remarkable objects. Neither was it thought requisite, in the present work at least, to adopt every innovation in nomenclature which, since the travels were commenced, these sciences have from time to time undergone."

In an article he wrote in 1817, for the *Journal of Science and Arts*, edited at the Royal Institution of Great Britain, he says it is his intention:—

> "to communicate the result of my labours to the public, giving the narrative part of the travels separate from that relating to natural history: which later I intend to divide into distinct works, accompanied by figures of most of the subjects described."

He adhered to this intention for he mentions it again in 1822.*

These good intentions were never fulfilled. Why? A letter written to W. J. Hooker, in 1835, throws some light on the situation.

> "From the manner in which you express yourself with regard to my botanical collections, you appear to be under very erroneous impressions, for to say that I '*will* not publish' is quite the opposite to what has ever been my intention, and the almost only pleasure I had in my travels to alleviate the excessive toil of forming them, was the anticipating of the gratification of publishing them at my return to Europe, and of obtaining the satisfaction of being useful to science, and of securing the honour due to my discoveries: and if I have been and still am being robbed of these honours by others who have less on their hands than I have, [and] can run the publishing race with more expedition, I feel most sensibly the injury I sustain. Many circumstances have unfortunately concurred hitherto to tie up my hands, but I do and shall ever look to Natural History as a most delightful and congenial employment for my future years.

* *Travels*, I, page 18.

> When you speak of my *not* publishing my African plants, you seem to have forgotten that I have communicated a considerable number of new species to De Candolle's *Synopsis*, and that I took to him at Geneva all the *Compositae* I could then find or get at.
>
> My Mosses were a long time in your hands for the purpose of publishing the new species: as were my *Fuci* in those of Mr. Turner[30]. My ferns have been nearly three years in Dr. Greville's[35] possession, with the same intention. All my *Orchideae* have been in Lindley's hands above two years. Mr. Bentham has had all my *Labiatae* and not only published them, but has returned me my specimens. After the consumption of so much of my property by my travels and the disinterested pursuit of science all the rest of my life, the obtaining of assistance by payment is quite out of the question."*

It is to Burchell's herbarium and his manuscripts that botanists have to turn for information about the bulk of his collection. The manuscripts consist of:—

A. *Memoranda Botanica* MS. I.
   This is divided into three parts: 1. *Ephemeris*, to p. 116
   2. *Memoranda* relating to Portugal, Madeira, Teneriffe and Brazil.
   3. Catalogue of Bulbous Roots brought from South Africa (planted at Fulham in 1816).

B. *Catalogus Geographicus Plantarum Africae Australis Extratropicae quas in Itinere quinquenni ab anno* 1810 *ad* 1815 *Collegit atque descripsit.*

C. Book of Labels: folio volume of 280 pages.

D. *Hortus Fulhamensis* MS. *Catalogus Plantarum Africae Australis extratropicae* (*exceptis* 2 *ad* 51) *quorum Semina in horto propro apud* Fulham *sevit* Gulielm J. Burchell No. 52-2019.

E. *Memoranda Botanica* MS. II,
   and his *Clavis Geographicus ad Herbarium Africanum.*

F. The Index to the Aboriginal, African and Dutch names of the plants of Southern Africa.

This last manuscript was published in *The Journal of South African Botany*, Vol. IV, October 1938.

In all his manuscript volumes, there are inserted many strips of paper bearing interesting notes.

A. 1. The *Ephemeris*. In Plate VI is reproduced two typical pages of this note-book. The description in Latin of *Mahernia grandiflora* occupies page 74 and its reverse side: on page 75 is an interesting note in

* *Hooker*, Sir William J. Letters (MSS.) Vol. LVIII, No. 17, Kew.

English. On page 74, Burchell indicates by "Ic 8.7.17" that he made a drawing on 8 July, 1817, of the plant raised from seed No. 307 which had been gathered on 30th October, 1812 (on his way between Chué Lake [Honing Vlei] and the Moshowa River, in Bechuanaland). He had procured specimens of the same plant on his outward journey between Litákun and Chué Lake, C.G. No. 2333 and again No. 2354. The description is made about the one grown from seed 307 C.G. 2409.

The notes in the *Ephemeris* from 1—34 were made in Burchell's youth, 1801—03. Number 35 and subsequent numbers bear dates from 1 November, 1812, up to September, 1823, and give in most cases, information about the growth of the bulbs he had planted at Fulham. By collating this information found in the *Ephemeris* with that in his Catalogue of Bulbous Roots, and in his *Catalogus Geographicus* together with that on his various slips of paper and on some of his drawings, a record can be made of the bulbs taken by Burchell from Bechuanaland, and from the North-east and Eastern Province.

Long before his time, Cape Colony was famous as the home of many bulbs cultivated in Europe. Up to his day, most of the collection had been made in the Western Province. He brought his specimens from far inland and was the first traveller to give information of them in a scientific way.

B. His *Catalogus Geographicus.*

This important manuscript contains his rotation-list of plants. Every specimen was numbered and the number, the locality and date of collection were entered in the *Catalogus*; this information also appeared on the label attached to every specimen. The numbers run from 1 to 8,739 under the dates 5 December, 1810, to 1 August, 1815. There are 572 stations recorded, some of which are repeated under different dates, for the catalogue is a faithful register of his itinerary. Allowing for his duplication, there would be appreximately 488 separate stations.

The generic and specific names are filled in against only a portion of the entries, and in many cases only the generic appears. The letter written to Hooker in 1835, helps to explain why this is so.

Burchell was working on this catalogue as late as 1860:—

> "On June 11, 1860, I finished the rubbing out of the pencil writing which I had anywhere in all my African and Brazilian Catalogues replaced in China Ink of *this* tint, consisting of 24 8vo. vols. and 1 folio (vol. 9)."*

Four years before this, he wrote on a slip of paper:—

> "All the Labels from No. 3604 to 8735 have not yet (30.1.1856) been copied into the *Catalogus Geographicus*, the original descriptions and notes made at time of collecting are to be found on the original labels which are pasted into one large folio volume."

* *Memoranda Botanica*, MS. I, Part II.

C. The volume of labels. Some labels left by Burchell in this folio have been removed and affixed to his herbarium sheets. A few are in the National Herbarium, Pretoria.

D. The record of seeds planted by him in his garden at Fulham, gives the *Catalogus Geographicus* number (the locality at which they were gathered can be obtained by referring to that volume), the date of the sowing of the seed, and the date when it appeared above ground. There is also an indication if a drawing was made of the plant and its progress in growth. Occasionally there is information such as this:—

> "*Asparagus laricinus* C.G. 1971. This specimen is still living and flourishing in my collection at Fulham 8.5.60."

The seed of thie had been gathered in the vicinity of Griquatown on 14 February, 1812.

Burchell did no laboratory research: at heart he was a herticulturist. Consider these recordings:—

> "*Amaryllis coranica.* No. 1. flowered 13.7.18, a very large umbell with 34 flowers. Flowers of a red variety with very little white. May be parted with—Given to Lord Carnarvon X.7.21. No. 2. flowered 20.7.18 umbell with 17 flowers. Flowers with much white and it is the largest bulb and is to be reserved for my own collection. No. 3, flowered 16.8.20 with umhell-flowers smaller than the other bulbs but very delicate and white at first opening and is probably the bulh from which my drawing was made in 1816. That is now the smallest bulb. It has perfected seed and is perhaps the same bulb which perfected seed in 1816.
>
> No. 4. In 1821.27.7 Flowered—32 flowers spotted *vide* the drawing of a single flower."

Three of the drawings mentioned are in the Gubbins collection.

> "The seed of *Amaryllis riparia* sown in 1818 did not flower till June 1854."

E. The *Clavis Geographicus* which is an inset in *Memoranda Botanica* MS. II., would seem to have been intended as the index to his *Catalogus Geographicus.*

Many notes made by Burchell and inserted in the varieus Volumes of his Catalogue show that he had calculated the likely cost of producing the work. Here is one entry:—

> "The thirteen volumes give 655 for the mean number of each volume."

The volumes have been rebound since Burchell's day and are not quite in the order in which he left them.

Another is :—

> "596 pages besides intermediate room for names of Stations which may be at least 50 pages more or about 50 pages of size and type of Smith's *Compendium Flora Brit.*"

There are notes about the use of his abbreviations.

For instance :—

> "] is placed at the end of descriptions made on their native spot from live plants.
>
> [is placed at the beginning of those descriptions which have been made since from the *dried* specimens.
>
> ⊏ is placed at the beginning of those descriptions which have been made from *living plants in Europe.*
>
> (·) shows that the specimen was collected at only one spot.
>
> ¿ after a name denotes certainty.
>
> 6 p.m. At about 6 o'clock in the afternoon. By referring to the Journal the hour of the day serves to point out more exactly the spot where the specimens were gathered."

What more detailed information could Burchell have given us ?

Botanical Drawings.

During his South African journey, he made nearly five hundred sketches. Of this number the whereabouts of one hundred and fifteen has not been traced, but of the missing numbers, only fifty-one are of dates not covered in the *Travels*. Burchell does not say how many of his drawings were of botanical interest. In the Gubbins collection* there are eighty-four, and twenty-six others are in South Africa in the possession of individuals. Drawings of *mesembryanthemum* were given to Haworth[36], and from item 301 in the sale catalogue (1865) of Burchell's estate, it appears Mr. Hemsley of Kew bought "A Folio of Botanical Drawings and Sketches, Orchidaeious Plants, etc." As the folio has not yet been traced, it cannot be certified that it contained original drawings by Burchell : it may have been Lindley's work.

Of those in the Gubbins collection, sixty-seven were drawn in South Africa, the remaining seventeen were done in England and are records of plants grown from seeds or bulbs cultivated at Fulham.

Those made in South Africa—sometimes pencil, sometimes colour-wash sketches—are not finished works as are some of those done in

* The Gubbins Collection is housed in the University of the Witwatersrand, Johannesburg.

England, but in every case, they serve their purpose admirably and exhibit Burchell's power of accurate observation. He regarded his drawings as a means of reminding himself of things seen, and of the salient points which he wished to record.

By permission of the Gubbins Trustees, a page from one of his sketch books is here reproduced—Plate VII. It shows a pencilled record of a specimen—C.G. 3805—of *Mimusops* gathered by him on 27 September, 1813, at his Kowie Station.

It is hoped that some day if funds are available, all his drawings with his notes relative to them may be published.

Letters.*

In the few letters that Burchell wrote while on his trek, there are practically no direct references to botany, but rather to his collections as a whole. Writing to Mr. Hesse, from Graaff-Reinet, in April, 1813, he says :—

> ". . . . Your last letter, I am sorry to see, expresses too great expectations from the result of my labors. I beg you will lay aside all ideas of hearing of great discoveries."

To Mr. Polemann he wrote from Grahamstown in August, 1813 :—

> "I have indeed not been idle during my absence : but my industry has produced nothing worthy of public curiosity."

At the same time, he wrote to Mr. Hesse :—

> "I may congratulate you on the safe arrival of the 'second little stranger.' When you say that I have 'laid the foundations to births of a different nature,' it is an enigma that has puzzled me and you must give the solution of it yourself. I indulge myself in the idea that your botanical walks round Cape Town have sometimes brought me to your remembrance. I smiled at your account of having at last got the botanical books into your possession. I am sorry that Professor Willdenow is dead, I have the greatest respect for his talents and industry and should it ever have been my good fortune to have visited the Continent, I should have done myself the honour of paying him a visit : I would like also to flatter myself that I may one day have the pleasure of presenting myself before our mutual friend Professor Lichtenstein."

In a letter headed, "In the Forest near George," written in September, 1814, he says :—

> "I am not surprized that so little is known scientifically of the

* Letters are in the Hope Dept., University Musaum, Oxford : in the Library, Royal Botanic Gardens, Kew.

nature of the forests in this part of the Colony for fatigue and time required to explore their contents is very great. They have occupied me these last six months but I must now take my leave."

His last letter written to his father from Cape Town was dated 5 August, 1815.

"I shall be obliged to draw on you for about £250 besides 84 for my passage and 50 for freight. [He had 48 packages.] This amount is so much greater than I expected owing to my being obliged to leave my oxen and waggons to be hereafter employed in the collecting of *Orchilla*."

What finally happened to his wagon is not known, but regarding the *orchilla*—a lichen yielding a violet, mauve or purple colouring matter—there were communications between the Governor of Cape Colony and the Colonial Agent for the Cape of Good Hope.*

Shortly after his return to Cape Town, in April 1815, Burchell discovered on waste land belonging to the Government, *orchilla* growing in considerable quantity. He wrote to Lieut. Col. Bird, Deputy-Colonial Secretary, pointing out that the collection and export of this weed could be made beneficial to the Colony, and suggested that he be granted exclusive permission to gather and export it during a period of seven years. He wrote :—

"It is a plant that is impossible to cultivate and which no kind of cattle will eat. After being once plucked it will grow again and may be collected annually."

In August, 1815, Lord Charles Henry Somerset† wrote from Government House to Earl Bathurst, Secretary of State, calling attention to Burchell's discovery, and requesting consideration for a reduction of the tax on the commodity if imported into England, and for preference for the South African product over that from Portuguese and Spanish settlements. What the ultimate result of this correspondence was may possibly some day be unearthed from official records, but up to the present no Burchell letters have been found to elucidate the matter. It must be remembered that he was a naturalist, and as he had proved while on St. Helena, had no flair for commercial undertakings. No doubt the *orchilla* specimens went with his other ninety specimens of *lichens* to Dawson Turner at Yarmouth.

Burchell's botanical work was accomplished principally in the divisions of Crypotgams and Phanerogams. Palaeobotany is never mentioned by him. The one hundred mosses in his collection were examined

* *Sundry Civil and Military Officers and Private Individuals*, C.O. 156, page 685, No. 31.

† *Theal. Records of the Cape of Good Hope.* XI, page 390.

and recorded by Hooker, and his fifty-six samples of Fungi by Turner. His collection of algae was, in his old age, given to Mrs. J. E. Gray(37), and no doubt went with her one which is now in Cambridge.

Haworth was the first to make a systematic classification of the species of the genus *Mesembryanthemum* and Burchell gave him not only specimens from his herbarium, but also plants grown from seed. He made drawings for Haworth, but the one reproduced here in Plate VIII was executed in South Africa in August 1811, while he was in the Roggeveld, and is of particular interest.

In 1919, Dr. N. E. Brown in his paper *New and Old Species of Mesembryanthemum with critical notes** writes about *M. campestre* :—

"Burchell has stated that it is 'allied to *M. pulchellum* Haw.' But this is quite a mistake, for it belongs to the very different section *Vaginata*."

Brown gives his reasons for his criticism, but, had he seen this drawing his argument would have been with Haworth and not with Burchell, for here, beside the plant which had been sketched *in situ* is Haworth's writing ; and there is no doubt about it for Burchell has taken the trouble to tell us it was *ex manu Haworthii*.

It was known to Dr. N. E. Brown that there were drawings made by Burchell, but he was unable to locate them. He was anxious to see the one of *M. turbiniforme*, but could not trace it : it is No. 534, and is in one of the sketch books in the Gubbins collection.

Appreciation of Burchell by South African Botanists.

During his trek, Burchell "the culler of simples," as he was called in the Quarterly Review of November, 1819, culled specimens in what is now recognised as the evergreen solerophyllus bush of the Western Province ; in the thorn country and desert shrub ; in the tall grassland of the Eastern Province ; in the evergreen and deciduous bush and sub-tropical forest along the south coast of Cape Province, and he had something to note about them all.

Many great botanists have trodden the paths he trod in South Africa ; one and all of them appreciate what he did, but no greater admirers has he had than Dr. Harry Bolus and Professor MacOwan, the two men who lived in the period bridging the days of collectors with that of workers in Botany as a pure science. Bolus's reference to Burchell as "one of the best equipped by his numerous gifts for careful researches," is very often quoted. MacOwan's pronouncement that :—

* *Journal Linn. Soc. Botany.* XLV, page 127.

> "Compared with Burchell's collections and unpublished manuscripts it may be said that while Drège's journeys were more extensive and his recorded observations more fully and equally accurate, his collections probably twice as rich in species, his specimens in completeness, range and preservation fall far below those of the 'earlier English traveller'."*

is valuable criticism coming from one who did so much for South African botany.

In 1918, a botanical survey of the Union of South Africa was begun. The first memoir published in 1919, was one entitled *The Flora of the Division of Uitenhage and Port Elizabeth,* and the writing of it was entrusted to Dr. S. Schonland. He remarks that Burchell had passed through this area in 1814, and had given a careful record of his route, but regrets that the collections then made were not fully worked up.

Burchell's route through the Riversdale area was recalled to memory when Dr. John Muir wrote the *Vegetation of the Riversdale Area.* This work formed Memoir No. XIII, and was published in 1929. In it he relates that many species discovered by Thunberg and Burchell have not been found by more recent collectors. Dr. Muir pays further tribute to Burchell in an article he wrote for *Die Huisgenoot* in 1928, under the title of *De Garcia Pass en William John Burchell.*

In Memoir No. XIV, dealing with *Forest-Succession and Ecology in the Knysna Region,* no mention is made of Burchell having been there, but his notes on trees found there are scattered in his *Catalogus Geographicus* and other manuscripts. Time permitting, I hope to piece them together some day: they may be of some historical interest. Their existence was known to Dr. Sim and Dr. Burtt Davy, for both refer to them in their publications.

No doubt in the course of time Burchell's entire route will be worked over by specialists doing intensive study in the various divisions of the Union. Just one hundred years after Burchell, Dr. Burtt Davy journeyed over the northern end of the traveller's trek and found practically no change in the vegetation from what was recorded in 1812.

All Botanists who have assisted in the compilation of that great botanical work "*Flora Capensis,*" have worked through Burchell's herbarium and manuscripts so his material has been fully utilised and appreciated as can be realised from the Genus *Burchellia* (Rubiaceae) and numbers of species bearing his name.

The question may be raised as to what use his *Catalogus Geographicus* is to the present day botanist, for nomenclature has undergone many

* *S.A. Phil. Soc. Trans.* II, page 134. 1881.

changes since his time. It would appear to be of no value to have the manuscript published: to be helpful it must be used in conjunction with the herbarium sheets, and that being so, it is of no immediate value to anyone who is unable to handle the sheets. It has occurred to me that it might be of service to work out the records of collections he made in the individual areas covered by our modern divisions, giving, by the help of the *Flora Capensis* the modern nomenclature to his numbers. The work would then be of use to those botanists working out the history of the changes taking place in any of these areas. Burchell's own opinion on the matter is:—

> "The importance and practical utility of local catalogues, pointing out the natural stations and circumstances of the native plants, will, it may be supposed, increase in proportion as the science advances, and as the objects it embraces become more multiplied."*

The science of botany has advanced, and now in 1941, has reached a state of great specialisation, and it is a far cry from the days of the naturalist to that of the taxonomist, physiologist, morphologist and ecologist. But before these special divisions could come into being, someone had to do the pioneering. Hesse, perhaps unwittingly but nevertheless truthfully, prophesied that Burchell "laid the foundations for births of a different nature" than that of the taxonomist.

Though he would be considered in modern times a taxonomist, he stated his views on what he called geographical botany, and vegetable physiology, and pleaded for the establishment of a botanical garden in Cape Town. These matters will be considered in part four of this paper.

BIOGRAPHICAL NOTES.

The notes have been compiled for those mentioned in the paper only if they worked before or in the early part of the nineteenth century, and so may not be too well known to the average reader.

(31) TRUTER, PIETER JAN and SOMERVILLE, WILLIAM were the leaders of an expedition sent in 1802, by Lieut.-Gen. Dundas, Acting Governor of the Cape of Good Hope, to Bechuanaland.

(32) WILLDENOW, CARL LUDWIG (1765-1812), Professor of Botany, Berlin; among his works were *Bemerkungen uber die Gattung Aloë*—1811, and *Bemerkungen uber die Gattunger Brunia und Staavia.*

(33) JUSSIEU, ANTOINE (1748-1836), studied medicine at Paris: was admitted a member of the Academy of Sciences: was a great friend of Sir W. Hooker. Wrote *Genera Plantarum,* the principles of which were adopted and enlarged by De Candolle.

(34) GRAY, ASA (1810-1888), curator of the Lyceum of Natural History, New York: became Professor of Botany at University of Michigan and then Fisher Professor of Natural History, Harvard. He travelled much and maintained a constant and friendly correspondence with scientists throughout the world.

* *Travels.* I, page 154.

(35) GREVILLE, ROBERT KAYE (1794-1866), botanist: settled at Edinburgh, 1816. F.R.S.E., 1821. LL.D. Glasgow in 1824. His collection of *algae* was acquired by the British Museum and that of flowering plants by Glasgow University.

(36) HAWORTH, ADRIAN HARDY (1767-1833), entomologist and botanist. He cultivated a great variety of succulent plants. His herbarium is incorporated with that of H. B. Fielding at Oxford.

(37) GRAY, MARIA EMMA (1787-1876), conchologist and algologist. Married John Edward Gray and assisted him in his scientific work in connection with the Natural History Department, British Museum. She was much attached to the study of *algae*: her own collection was bequeathed to the Cambridge University Botanical Museum.

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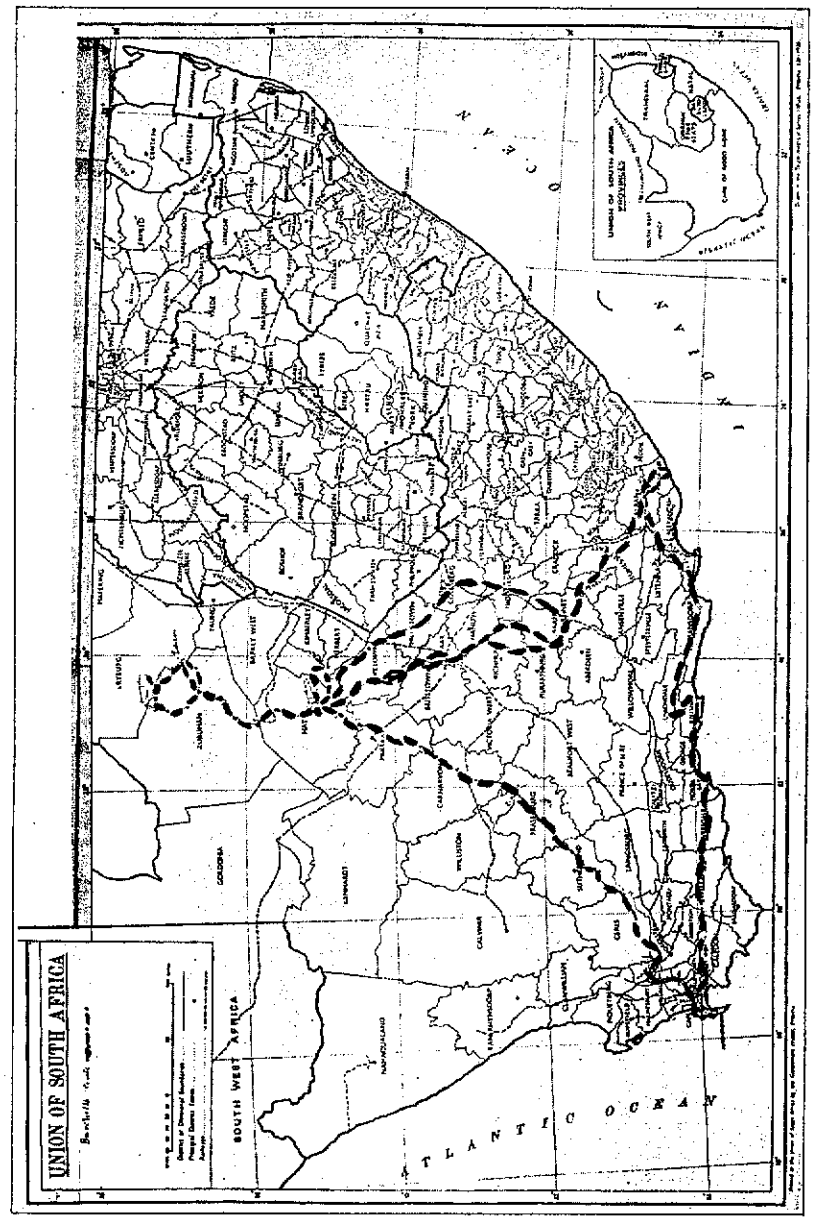
PLATE V.



Map showing Burchell's Track in 1811-15. Photograph: James L. Smith, Johannesburg.