

Indian Botanic Garden library  
BOTANICAL SURVEY OF INDIA

CLASS No ..... 505 .....

BOOK No ..... JOU - b : v - 3. ....

ACC. NO. B-15839. ....



**HORT BOX REG.**

**SCALCVTT** 1909





*Robt. Night*

M.D. F.L.S. &c

Surgeon on the East India Company's  
Establishment, Madras.



THE  
JOURNAL OF BOTANY;

CONTAINING

FIGURES AND DESCRIPTIONS

OF

SUCH PLANTS AS RECOMMEND THEMSELVES BY THEIR SOVELTY,  
RARITY, HISTORY, OR USE

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL PORTRAITS AND MEMOIRS OF BOTANICAL  
BOTANISTS;

BY

SIR W. J. HOOKER, K.H., LL.D., F.R.S., & L.S.,  
ETC., ETC., ETC.  
AND REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

VOL. III.

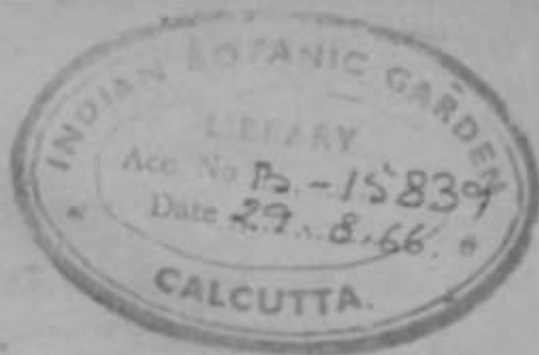


LONDON:

LONGMAN, ORME, & CO., AND WILKINSON & PAMPLIN, JUN.  
EDINBURGH: A. & C. BLACK.

MDCCCLII.

INDIAN BO  
LIBRARY  
Acc No P-15839  
Date 29.8.56.  
CALCUTTA



## JOI'IN A I. OF BOTANY.

—*Journal of M. (it ni V. MIN, Botanical Assistant at the  
Museum of Natural History, presented to the Minister of  
Agriculture and Commerce on the subject of the Expedition to  
Brazil, under the command of the late Viscount of Albuquerque  
information respecting the culture and propagation of the  
PLANT, and the introduction of this Shrub into France.*

[Translated and abridged from the *Parm.*]

Sir,—I had the honour to receive your orders that I should  
proceed to Rio Janeiro, for the purpose of procuring seeds  
and growing plants of the *Tea*, in such quantities as should  
permit of this shrub being cultivated, and an experiment on a  
large scale, in different parts of France; and in order to pro-  
mote my views, you further directed that M. Boulet, an Her-  
barist and gardener at the Museum, should accompany me. The  
Minister of the Marine directed me to give  
M. Boulet and myself a passage in a ship of war, and the  
French Minister Plenipotentiary at the court of Brazil  
received instructions for despatching the vessel which should  
contain the plants and seeds of *Tea*, in order that these should  
reach France about the month of June, 1839.

From time to time during my absence I have had the  
honour to communicate with you, and I now hasten to inform  
you that the cases of *Tea plants* have reached Paris and  
that I shall be glad to receive your orders respecting their  
distribution and destination. I may mention, that during  
the short period which intervened between my sailing on

\* *Journal of M. (it ni V. MIN, Botanical Assistant at the*

*Journ. of Bot. Vol. III. No. 17, CW. 1840.*

»

and final departure, I collected all the information in my power respecting the cultivation, preparation, and trade in Tea, as pursued in different parts of the world. M. Gaudichaud, who had visited most of the Tea countries, kindly gave me much advice, and so did the different Professors of the Museum, M. Brongniart and M. le Baron de Lessen, to the latter of whom I am indebted for letters of credit on his Brazilian correspondents. I also carefully collected the documents published by Dr Wallich of Calcutta on *the Assam and Javanese Tea*.

With the hope of gaining useful commercial and scientific information on the different valuable articles of Brazilian export, [obtained from M. Dutibourt, Professor at the School of Pharmacy, a sheet full of questions respecting the woods used for building, for cabinet-work, and dyeing, the gums, resins, and balsams, &c. which are only known to us under their vernacular, and often barbarous appellations. Mr Ward's new plan for transporting living plants on board ship having been already tried with success by Dr Wallich, I procured from Brest one of these air-tight chests, sent it to W. and filled it with two of the finest varieties of *Camellia*, intending to make presents of these charming shrubs to those Brazilian individuals who should most facilitate the objects of my mission; and having sailed on the 1st August, 1834, reached Rio Janeiro after a passage of fifty-three days. M. le Baron de Lessen, Sir, your minister plenipotentiary, to whom I delivered official letters, confirmed what M. Gaudichaud had told me, informed me that the Botanic Garden established near the Lake Itaipas, intended by Don Pedro Jose de Saldanha. To this gentleman I presented a packet of my *Camellias*, in acknowledgment. He expressed his satisfaction, and I only regretted that I had not brought any botanical or horticultural books, which I think he would have prized still more highly. The most of my *Camellias* which remained were sent to the Imperial Garden of Rio de Janeiro. M. de Serpa Brandão urged me to visit him frequently, and promised me every infor-

tion on the culture, mode of picking and preparing the Tea. As this shrub is grown in several plantations, about two days journey distant from Rio, in different directions, I hired a lodging at Si Theresa, sufficiently contiguous to all the establishments I meant to visit, and farther recommended by having a small garden attached to the house, where I could depict the growing plan of *Tea*, and sow seeds. During the month of November, except when hindered by blight incidental to the Brazilian climate, I pursued my researches and principally in the charming town of the Fijuka and the mountainous regions, where, together with Coffee, the principal products, the most valuable plants of the equatorial region are cultivated.

In the middle of November I had an opportunity of observing the method pursued when culling the Tea, which is performed by black slaves, chiefly women and children. They carefully selected the tenderest and pale green leaves, nipped off with their nails the young leaf bud, just below where the first or second leaf was unfolded. One whole field had already undergone this operation; nothing but Tea shrubs stripped of their foliage remained. The inspector assured me that the plant native to no injury from this process, and that the harvest of leaves was to become permanent by carefully regulating it, so that the first lot would have grown again on the first-tripped thence in the period when the leaves of the last plants were pulled. About 12,000 Tea shrubs are grown in this garden; they are regularly planted in quincunx, and usually about one metre distant from each other; the greater number are thin and shabby looking, probably owing to the aspect of the ground, which lies low, on the level of the tea, and is exposed to the full rays of a burning sun; perhaps the quality of the soil may have something to do with it, though this is apparently similar to what prevails in the province of Rio Janeiro. This soil, which is highly argillaceous, and strongly tinged with iron, is bounded by the base of Gneiss or granite rocks. The situation of this Tea ground is unfavorable



to the improvement of the soil, for the heavy rains which wash away the superfluous sand from staining situations, of course only consolidate more strongly the remaining component parts, where the land lies perfectly level, and thus the Tea plants suffer from this state of soil.

The kindness of M. de Brandao, Director of the Botanic Garden, induced him to invite me, shortly after I had seen (his above-described Tea ground, that I might inspect all the operations for the preparation of Tea. I found that the picking of the leaves had been commenced very early in the morning, and two kilogrammes were pulled that were still wet with dew. These were deposited in a well-polished iron vase, the shape being that of a very broad flat pan, and set over a brick furnace, where a brisk wooden fire kept the temperature nearly up to that of boiling water. A negro, after carefully washing his hands, kept continually stirring the Tea leaves in all directions, till their external dampness was quite evaporated, and the leaves acquired the softness of tin. A rag, and a small pinch of them, when rolled in the hollow of the hand, became a little ball that would not unroll. In this state the mass of Tea was divided into two portions, and a negro took each and set them on a hurdle, formed of strips of bamboo, laid at right angles, where they shook and kneaded the leaves in all directions for a quarter of an hour, an operation which requires habit to be properly performed, and on which much of the beauty of the product depends. It is impossible to describe this process: the motion of the hands is rapid and very irregular, and the degree of pressure requisite varies according to circumstances; generally speaking, the young negro women are considered more clever in this part of the work than older persons. As this process of rolling and twisting the leaves goes on, their green juice is drained off through the hurdle, and it is essential that the leaves be perfectly divested of their moisture, and even corrosive, the bruising and kneading being specially designed to break the parenchyme of the leaf, and permit the escape of the sap.

When the leaves have been thus twisted and rolled, they are replaced in the great iron pan, and the temperature raised till the hand can no longer bear the heat at the bottom. For upwards of an hour the negroes are then constantly employed in separating, shaking, and throwing the foliage up and down, in order to facilitate the desiccation, and much neatness and quickness of hand were requisite, that the manipulators might neither burn themselves nor allow the masse\* of leaves to adhere to the hot bottom of the pan. It is easy to see that, if the pan were placed within another pan filled with boiling water, and the leaves were smoothed with an iron spatula, much trouble might be obviated. Still, the rolling and drying of the leaves were successfully performed; they became more and more crisp, and preserved their twisted shape, except some few which seemed too old and coriaceous to submit to U\* rolled up. The Tea was then placed on a sieve, with wide apertures of regular sizes, and formed of flat strips of bamboo. The best rolled leaves, produced by the tips of the buds and the tenderest leaves, passed through this sieve, and were subsequently fanned, in order to separate any unrolled fragments which might have passed through with them; they produce what is called *Imprinat*, or *tih-tin*. It was again laid in the pan till it acquired the leaden grey tint, which proved its perfect dryness, and any defective leaf which had escaped the winnowing and sifting was picked out by hand. The residue, which was left from the first fanning, was submitted to all the operations of winnowing, sifting, and scorching, and it then afforded the *Common* Tea of common price; while the same operations performed on the residuum of it, yielded the *Common* *Common* and the refuse of the third quality again, afforded the *Coarse* *Common*. Finally, the broken and unrolled foliage, which were rejected in the last sifting, furnished what is called *Common* Tea, and the better kind of which is called *Chito*, and the inferior *Common*. The latter sort is never mixed, but kept for consumption in the families of the great ones. I will take the opportunity to mention that Mr. de la Trundao had the kindness to furnish me with samples, which I have the honour to present to you.

Such is the mode of preparation pursued at Rio Janeiro, though I must add, that the process employed at the IloLinic Garden being most carefully performed, in order to serve as a model for private cultivators of Tea, the produce is superior to the generality, so that we dare not judge of all Brazilian Tea by what is raised at the Garden of Rio\*. I was also assured, that at Saint Paul each grower had his own peculiar method, influencing materially the quality of the Tea\* which decided me to visit that province, where I hoped to gain valuable information respecting the culture and fabrication of Tea, specially considered as an article of commerce.

In the interim, the month of December proving excessively hot and rainy, so as to forbid any distant excursions, I turned my attention to the important object of procuring Tea plants in number and state fit for transportation, and observing that almost all the shrubs I saw were far too large for this purpose, I applied to M. de Urandao for his help and advice. This gentleman, in the most courteous manner, offered me either seeds or slips from his own Tea shrubs. The striking of the latter was, he owned, a hazardous and uncertain affair, though it had the probable advantage of securing a finer kind of plant than could with certainty be raised from seed. I, however, began by asking him for newly gathered seeds, in order to sow them in my little nursery garden at Santa Theresa, and he obligingly gave me a thousand of the seeds, perfectly ripe and sound, which is easily known by the purple-brown colour of their integument. M. Hoi: immediately set about preparing the soil in which to plant these seeds, and the earth being excessively argillaceous and hard, much digging, manuring, and dressing were needful; in a word, we neglected no precautions which could contribute to the growth of our seeds. In the interim I allowed not a single dry day to elapse without visiting the country houses near Rio, in all of which I saw something more or less interesting, either in the culture of Tea, or other vegetable productions of commercial value. When investigating the magnificent virgin forests, which afford their finest ornaments to our hot climates, and whence I brought home many charming

plants to the garden of the Museum of Natural History at Paris, I also detected the origin of many of our most precious woods used in dyeing and cabinet-work, and an enormous quantity of tannins employed as drugs. By thus collecting the specimens of the woods, along with their foliage, flowers, and fruit, I ascertained the botanical characters and names of the trees which yield the *Palissandre* or *Jacaranda*, the *Gonolobus*, the *VMatico*, and many others of such importance to our ships from Havre and other ports. I imported a our ships large cargoes of these woods, and I certainly remarked that the *liourdeaux* were especially valuable.

It may be said that these are useful trees and known than in others which are valueless to man, and possessing scarcely any scientific interest. I disagree in certain woods at the head of which I may place the famous *tirazil-uvod*, was still a subject of dispute among naturalists, and the solving of it was a matter among merchants, many of whom had

an interest in this wood, which in the opinion of its real origin I should like to be afforded another tree of the same family, and very similar to the true

*ro-x*, (the name of which I brought home specimens for the botanical gardens of Paris, and from the documents kindly furnished me to compare the extract of the bark of the *ro-x* with that of the *ro-x*).

I had often observed that the true *Itaitam* from the stems and leaves of the *ro-x* in the trunk of the *ro-x* pointed out to me a very interesting tree, growing in the mountain forests near the mouth of the *ro-x*. I had often observed that the true *Itaitam* from the stems and leaves of the *ro-x* in the trunk of the *ro-x* pointed out to me a very interesting tree, growing in the mountain forests near the mouth of the *ro-x*.

I had gathered several specimens of the *ro-x* from the foot of the *ro-x* in the mountain forests near the mouth of the *ro-x*. I had gathered several specimens of the *ro-x* from the foot of the *ro-x* in the mountain forests near the mouth of the *ro-x*. I had gathered several specimens of the *ro-x* from the foot of the *ro-x* in the mountain forests near the mouth of the *ro-x*.

far-famed tree. Anxious to establish the point of such medicinal and commercial importance, I have deposited in the Museum of Natural History in Paris flowering specimens of the *Cinchona*, found by If. Iturbe and others, collected from a tree which is known under the very incorrect name of *Rio Quinine*, but which belongs to a genus quite distinct from the *Cinchonas*. To close the enumeration of my discoveries I shall content myself with adding, that I detected, growing not unfrequently in the environs of Kio, the *Ilex Paraguayanensis* of M. Auguste de St Hilaire, perfectly identical with the tree which the Jesuits planted in the Missions of Paraguay, and whose foliage is an article of great importance throughout Spanish America, and vend under the name of *Paraguay Tea*. A living plant of this **throb** was brought home by me, and planted in the Royal Garden at Paris, as well as a species of *Vanilla*, and many other rare and interesting plants. I also made a valuable collection of woods employed for dyeing, building and cabinet-work, with samples of their flowers fruit, and leaves, to facilitate botanical determination.

Early in January, 1839, M. Houdet began anew sowing **Tea**, not only in the open ground in our little garden, but also in pans, in order to facilitate the lifting of the young plants, and putting them into the **cues** that I had brought for the purpose. The heat being excessive, we purchased mats, that we might **shelter** them from the sun, and we gave **them water** far more frequently. Many of the **seedlings** we had sown a month previously were already appearing above ground, **but** the **soil** being of too compact a nature, **some** did not come up, which warned us to make a choice in future of a lighter kind of soil.

The period now arrived when I was to visit the Tea plantations in the province of Hi Paul; and I was hoping; that the cultivator\* would give **me** some of the young plants. Mr. Kroulet with me, having the **charge** of our collections and seeds, things to a M. Ph\*ia French geologist and engineer, with whom I had formed an intimate acquaintance, and who most obligingly offered to attend to them during my absence.

Many were the influential persons at Rio Janeiro, who gave me introductory letters to the proprietors and Tea growers of St Paul ; the family of M. Venancio Gomes wrote in my favour to the governor of that province, who is their relation. M. Kit-del %l tcheç: out a minute plan for my round, and the objects chiefly worthy of my attention; and finally, M. G. Greuz gave me a most striking instance of friendly concensus, by quitting for some time his numerous patients, that he might become my patron and interpreter with the influential personages to whom I was recommended.

We started on the 15th of January, by suum-liaoai, and in two days\* reached Santos, the principal port in the province of St Paul; thence crossing the great range of mountains, named Serra do Mar, in caravans drawn by mule\*, we reached the city of São Paulo on the 20th January, where I experienced the warmest reception from the Governor, two ex-Governors, and some other gentlemen. The letters that I carried, dwelt especially on the fact, that my mission was connected with no object that could be prejudicial to the interests of Brazil, and that it was advisable to show all friendliness towards the French nation, which had ever testified an amicable disposition towards foreigners, and especially in particular. Perceiving that my residence in this city might be prolonged till the middle of February, I secured an apartment in the only hotel which it can boast: it is kept by a Frenchman, who invariably treated me with all the civility and attention due to a fellow-countryman.

Accompanied by M. J. Gomes, and a M. Beremier, a historical painter, whom the desire to visit a new country, and to see its inhabitants, had induced to become my companion, we visited almost immediately a M. de Joazeiro, ex-President of the Empire, and now President of the Provincial Senate. We found in his country-house, two leagues distant from the city, and here we saw all the proceeds pursued on the Tea Culture. We saw a quantity of foliage picked the preceding evening. The chief differ-

ence that struck me in the mode here adopted, wa% that the tender, flexible, and not brittle leaves, were gathered with the petiole and lip extremity of every bud, and that some water was put with them into the iron pan, in which the negresses twisted, **iqnoowodi broke**, and shook the masses of foliage. The operation was, on the whole, more neatly performed than at Hio. When the Tea was perfectly dry and removed from the pan, it was placed aside in a box, shaded from the air and light, and was considered ready for present use, on the \*pot; but M. I Vijo informed me, that wlu\*n sent to a distance, the cases were hermetically closed, and the T«a underwent *m extra de* siccation over the fire.

The plantations belonging to M. IVijo, and surrounding liis Chagara, are exten\*iv<, containing about 20,000 T<a shrubs, of fine growth and in high vigour, most of them six or eight years old, set in regular lines, a metre and a half from each other, and the lines with a metre and a half between them. The soil is excellent, ferruginous, and generally the case near St Paul. On another part of M. Feijo's property I noticed a complete set of ploughs, and other agricultural instruments.

In the Botanic Garden at St Paul, some squares are devoted to the growth of tea; but I am not aware that the leaves are ever subjected to preparation.

M. da LU had invited me to visit his plantation near Nona da Penha, and I went there accompanied by Messrs Do randier and others. The cultivation is admirable, the soil excellent, and the Tea plants peculiarly vigorous. I observed that the rows were so placed that a man can easily go all the way down them, and pick up the tea leaves, **its, trlf-tow:** and **«g Up**

below even the oldest one; of these off-sets it was made welcome to as many as I could take away, and I did have had a great stock, but that the ground had been very recently cleared. M. da Lux said that the tea plants were sent to the foot of the Jarigua.

**Hooca** is a name given to the proper tea at U, **DonnaG** Cediao e Lacerda, situated at

mountain famed for its gold mine\*, find passed two days in exploring this celebrated locality, and then visited the Colonel Anastosio on my way back to St Paul. These plantations are in the most prosperous condition, situated on a sloping and well-manned tract behind the habitations. The shrubs are generally kept low, and frequently cut, so as to make them branching, by which the process of picking the leaves is rendered assiduous. There may be 20,000 or 70,000 plants, but a third of them were only set out, year before. Every arrangement is excellently conducted here; the plot kept very clean, though perhaps rather thin from long use and the fierceness of the fires. But the general good order that prevails, speaks much in favour of the produce of this neighbourhood. The colonel showed me his warehouse, where the Tea is stored in iron jars, narrow-necked, and closed by a tight-fitting stopper. I ventured to put some questions to Colonel Anastosio respecting the sale of the produce. He gave me to understand that he was by no means eager to sell; but confident of the good quality, he waited till application was made to him for it, as though he thought to improve by time, and the price which he offered for a small supply, with respect to the cost of its production he said, was not so great, that he answered to me that about 1/2 franc (&c.) was the price for each pound. The whole labour in Brazil is done by slaves, who certainly do not cost much to keep, but who on the other hand, work as little as they can for the low price, and the chief utility of the slaves, is to bear a high price, and the chief utility of the slaves, is to bear a high price of money, and to augment their selling value. The Colonel presented me with 300 young plants, which he had caused his negroes to pull up (or to pull up) in an adjoining farm, where an immense tract of rich Tea, is now allowed to run to waste. I valued all

and I, tired by some slave, reeded in posse\*\*



of 3,000 young plants, which were carefully arranged in bamboo baskets (here called Cestos). To diminish the weight, M. Houlet removed as little soil as possible; but carefully wetted the roots before closing the baskets, and covering them with Banana leaves. In one garden, the largest I have seen devoted to the growth of Tea, but which is not particularly well kept, I saw that the spaces between the shrubs were planted with *Maize*; and the border of the squares which interred this vast plantation, and the whole of which is enclosed with alleys of *Araucaria Breziliensis*, were formed of little dwarf Tea plants, which are kept low by cutting their main shoots down to the level of the soil.

On the 8th of February, I again embarked in the steam-boat to return to Rio Janeiro, and when we came in sight of St Sebastian, I left M. Houlet to proceed to the city, charging him to take the very greatest care of our stock of Tea plants, as well as of the nursery (MUM) at St Theresa, while I should visit the flour-mill colony of Ubatuba, inhabited by French families, who cultivate most successfully *Coffee*, and other useful vegetables. After a delightful sail through an archipelago of enchanting islands, I landed at Ponta Grossa where I was most kindly received, and spent a week, obtaining much and varied information, both respecting cultivated plants, and the kinds of trees which grow spontaneously in the virgin forests of this lovely land, and also valuable woods for building, cabinet work, and dyeing. I finally visited the Tea plantations of M. Vigneron, which are remarkable, fine, though their management is not so profitable as in the growth of *Cinchona*, which is very lucrative. He kindly gave me a great quantity of young *Tea* and *Chamelaire Trees*. Reluctantly quitting these worthy colonies, I re-embarked in a Brazilian galliot, which took me back to Rio Janeiro on the close of February. But I found the Tea plants from St Paul, set by M. Houlet, in our garden at Botafogo, and in the *Quadrado* that I had brought from Ubatuba. All the young ones had perished on the way, from the excess

sive heat, and M. Moulct had much difficulty in saving the others.

In the hope that French vessels from the Kio Plata would touch at Brazil during the month of April, I now turned my attention to the preparatum of chests, in which I could pack my treasures; and finding that Brazilian and French carpenters asked exorbitant sums for their work, I adopted the plan of preparing the necessary wood and iron myself, and setting two negro carpenters to work by the day, at making the cases under my directions and the inspection of M. Eioulct. My first plan had been to construct boxes on Mr Ward's system; but the heavy price deterred me, while the safety with which I had brought my fruit trees from Europe in the box with sliding panels, induced me to fix finally on this latter mode of construction. Much anxiety and trouble did the formation of these chests cost me, as well as the case which should contain the hut-house plants for the Museum at Paris; but I was enabled to pursue, at the same time, my inquiries and researches in the neighbourhood of Rio Janeiro, through the months of March and April. If Dumas of the Academy of Science, having charged me to procure information respecting a remarkable wax from Brazil, in which he had found a new principle, I had procured a specimen of *Cattaba*, a substance holding a middle place between wax and rosin, and which forms an article of commerce between the north of Brazil and Montevideo, and even England.

A Kroneh ship, the *HERKONE*, commanded by Captain Cecille, arrived at Uio on the 15th of May, while I was on the Organ mountains, visiting the great agricultural establishment of M. Mathe, where I procured a quantity of plants to add to my stock. I returned to town in all haste, and was mortified to find how little progress had been made towards completing our packing these. I also wished to visit the Botanic Garden one more time, but I had not time for some Tea shrubs, as recently moved as possible, with a quantity of perfectly fresh seeds. M. Cecille instantly sent two ship-carpenters, who in a very few days despatched more

that in my negroes had done in a month, and further, he kindly caused his sailors to carry my chests from Santa Fe to the place of embarkation. After being ready, I paid my first visit to the Botanic Garden, where I received 700 well-rooted Tea plums, and 2,000 ripe seeds: the latter were given by M. Houlet, in the spaces between the growing plants, and the whole occupied 18 large chests. All my arrangements were completed on the 30th of May, when I paid a reluctant farewell to the numerous friends who had so kindly noticed me at Hilo, and embarked the same evening.

Very pleasing was the sight to me, when the day after the Heroine had sailed, I beheld my 18 precious boxes, arranged two and two in such a situation as kept them steady and level, permitted them to receive light and to breathe; the boxes were closed in case of bad weather. The vigour of my Tea plants and the lovely verdure of their foliage had been generally admired at Hilo, and I fondly anticipated the most prosperous results from my expedition. But short-lived was this satisfaction. Two days after, heavy north winds drove us off our course, the sea became more violent than is usual in these latitudes, and the necessity for closing the ports, lest the spray should irrevocably ruin my plants, caused them a great injury by the necessary exclusion of light. To the latter circumstance, I attribute the first deterioration of my plants, especially those more recently set. When the sea became calmer, and permitted us to open the port holes, the wind sweeping the surface of the wave, cast a fine salt-water spray over my boxes, which doubtless proved highly injurious, since the contents of the boxes that were exposed to the wind suffered much more than those on the other side. By the 11th of June, most of the Teas had lost their foliage, and the stalks even of several were quite dried up; but I hoped that some might sprout from the root. Some of the seeds had germinated, the young shoots were slender, long, blanched and furnished with a few pale leaves. On the 8th of July, in latitude 24° north, and longitude 42° west, the young shrubs were suffering severely, while some had put out suckers

and the young seedlings had assumed a greener tint. dipt. Cecillæ look great interest in the safety of my protégés, and while the leakage of some of the water casks had compelled him to put the whole ship's crew oil a slender allowance of water, he ordered me an increased quantity for the benefit of (he Tea shrubs.

I On the 24th of July, **the** Heroine cast anchor in the bay of Ilrcst, and while anxiously awaiting directions for the disembarking, until forwarding to Paris, of my dearly valued treasures, I visited the western extremity of the department of Finisterre. In this the soil and climate appeared to me peculiarly suitable to the culture of **the** tea, and subsequent observations have confirmed this opinion. In no part of the Breach territory are *Camellia*\* raised so fine in the open air; and the nature of the ground bears much resemblance to that of Brazil, while the low price of handiwork\* among a poor and ignorant population, would form a strong additional recommendation.

The Brazilian Tea \*shrub§ reached Paris in the middle of August, and M. Mirel charged the chief gardener at the Royal Gardens to prepare frames and beds in which to deposit the surviving plants, which are 1,041 in number, about one third of the original stock, including young seedlings. Mirel continues to pay attention to them, and I expect that by next spring, they may be fit for removal to the \*parterre if France which shall be judged most suitable for their attempted culture on an extensive scale.

Ami now to come to the important question, whether the growth and preparation of **Tea** can furnish an advantageous **bunch** of agriculture in France\*,—the decision rests on so many contingencies of the quantity of respective produce from a given portion of soil, and the price to be realised by the article when produced, that it is very difficult to arrive at a satisfactory and correct answer. In **Urn**, where, as I have stated above, the culture of the shrub succeeds perfectly well; where the gathering of the foliage proceeds without any interruption during the entire year, where the quality

(setting aside the aroma which is believed to be artificially added) is not inferior to that of the finest Tea from China, still the growers have not realised any large profits. They have assuredly manufactured an immense quantity of Tea, to judge by what I saw in the warehouses at St Paul, but they cannot afford to sell it under 6 francs for the half kilogramme, a lb. weight, which is higher than Chinese Tea of equally good quality. Indeed, the trade of Tea is still in great activity between Malacca and Brazil, partly by ships which come straight from the former country to Rio Janeiro, and partly through the United States. Could we ensure France a similar modicum of success in rearing the plants, as in Brazil, it may be fairly calculated that considerable improvement would take place, the lower price of labour would diminish the cost of its produce, more economical and expeditious plans for preparing the leaf might easily be invented; and finally, if we could succeed in importing the perfume that distinguishes the Chinese Tea, there can be little doubt that our home grown article might compete advantageously with the foreign one, especially in the event of a war with China, or other interruption of our intermittent intercourse with the East. Whatever be the tenor of our public affairs, the cultivation of the Tea plant should, under every circumstance, be carefully essayed in France; a fair trial should be given to it, and as it could not be prejudicial to other agricultural interests, requiring such a locality as is little adapted to her productions, it seems the more desirable that it merits the encouragement and favour of Government.

#### 11.—BOTANICAL INFORMATION.

MR PAMPONNET received a letter from Dr Steudel of Eslingen, dated August 26, 1840, in which that gentleman states, for the information of our friend of the Union Agraria, who have already subscribed to the Abyssinian Union, the collections of the Chimper, that upon further

**t**

upc.a sec accompanying the first dt>trU>stJbn of his ptiinu with printed tickets of names \c., as far u the species can be de termtned, instead of batting them with nttmben d lal>el\* only as was at first ifti>nded. Thi\* arrangement, which though (odious from the novel or little knowI forms of ve[t>tation iiiulcr r^-icw. is however fast advancing to co tuple-(ioi; anI it is cot, fidently hoped, thall itt t<<- nmulli of October or November at fiiriht-^t, ihe collection\* will rta<< the hands of the respective subscribers, whose patience, it n ust l>e confes>oil, hat been loRgi iBoogh unavoidably, itill we trust, not disadvantageously, tried."

*Remarks on the Genus S-I'll;r.in.w KrHAKOri amot ig Fern\$.*

MR JOHN SMITH writes to us in a letter dated Royal Botanic Gardens, Kew, August 26th, 1840. "It is now about six Tears ago that I first bec.me poascased of a Kern, which at UM time struck me as tov>ething curious. Of this, MI Bauer kind:y made me a drn wing, which satisfied me that there was sufficient clmracter to cooatituta a new (.iviius, nnd which h• lirmi given in >«i r 'Ge iwra liitcum,' tal>. xxiv, under my name of *Sphaerostephanos*, which appellation I gave to it on account of the np]»'.trance of the (then supposed) rer•inrk.'i^le elevated indusiform receptacle, the «a|»r\ of which was terminated with numerous sphav rical glands.— When the drawing wastrel for publication, I >' "• "t at that time the opportunity of compar tog it with a structure noticed by Mr Brown in bis obatratk ons on *Polypodium*. in 1! or«field's ' *Flora Javae*.' In that article iBOTi is mention made of » form (of which it I said ther\* is more than one apacies) which Mr Bi own proposes as a Genus, giving it tin\* n.nix: of *MrurhUrnti*. That gentleman ha% lately presented me «ith \* »m<ll • perimei) of it, nhuh I iWxi it> bs) lafMOHM >oy *Sphaerostephanos*.

"The character of Vrrnrnftf— I to, • « " • •liorl linear soru<, Ifm d in iho middur of th« rein, ami furnikhrd willi

mi uuluMum vludl is attached lengthways along the middle of the sori; its margin free.

'• In UM, early state of the torus the indusium is flat, but as the captules advance toward maturity, the sides of the indusium are consequently raised up, and ultimately appear to collapse, and the margins being glandulose give the appearance as represented at *Jig. 7. tab. xxiv. ((intern Filicium))* which was drawn by Mr Bauer from my too mature specimens. Thus my name of *Sp. f. k. Mnmtijktmt.* being founded upon a false view of the indusium, the necessity given by Mr Brown's more appropriate name *Mesochlora*, of which I make three species, thus:—

" MEHOCILXNA. /; . Br. in *Horsfield's Fl. Javae.* Sphaerostephanot. *J. Sm. in Hook. Gen. Fil. t. xxiv. Polypodium sp. Wall.*

" 1. *M. Moiturana.* H. Hr. m » t.

" 8. *M. Jmrmmtn.* R. Br. wuL

" 3. *M. atpltmoidu.* Sphaerostephanot. *J. Sm. loc. eii.— Polypodium villotum. H. u. L. in Herb. J. Smith."*

Mr Smith has since communicated the following additional remark\* on Mr Brown's Genus *Mesochlora*.

" Having formerly viewed this genus as having sori destitute of an indusium, I therefore placed it in the tribe *Polypodiaceae* near to *Stegodynia* of Blume; but now, having evidence of the true structure of the indusium, which is characteristic of the tribe *Apidioides*, in which tribe it must be placed, and on viewing its habit, venation, and position of the sori, it nearest ally will be with the genus *Nephrodium* (as now restricted), the technical distinction between the two resting entirely on the sori of *Nephrodium* being punctiform, whereas in *Apidioides*, the sori are linear\* the latter in that respect being nearly similar to the sori of *Lycopodium obscurum* in that in *Lycopodium* the sori are produced on the apex of the venules (terminal), which are all free; whereas in *Mesochlora* and *Nephrodium*, the lower or more pairs of the sori meet (and form an angular anastomosis) the venules of the proximate fascicle, which are produced on or about

the middle of the venules (lateral). Besides the affinity that *MtMoctdmna* has with the above mentioned genera, it also, in appearance, exhibits some similarity in habit and form of the sori to those species of *Diplazium* which have regular bipinnatifid fronds and short sori; but the latter genus is readily distinguished by having a laterally attached indusium on each side of the venules whereas in *MtMokUtina* the venules produce only a minute sinus, with the indusium attached along the centre of the venule, and like the generality of *Aspidia* very fugacious."

J. SMITH.

111.—(Cultivation \* towns & a number of Am Iriami At islands of the Pacific. By Sir W. H. HOOKER, LL.D., and G. L. W. ARNOTT, Esq. LL.D.)

I. EXTRA-TROPICAL SOUTH AMERICA.

(Continued from page 254 of *It W. o/tk\** Companion to the *li. i. i. nical Magazine*.)

Sul)tril)u II. PACCHI MtUIJt. JCS\$.

PLAGIOCHEILUS. II. *el A. De Cand. Prodr.* vi. p. U'2.

*Invotmcrum tubtruciale* U. *olis s obovaio-oblotlgis. Ilac/m hemisp. haerica. Nitre\** firm multiseriale\* in ambitu, reliquis paucis masculis. *lic. nium caivum, >hlongo><obovatum, compressum, puiK-rilum, erottre. Ovariumjt. mast, nullum. Cwolia farm, tubo brevivimo, limbo obliquo subbilabiato, labio <xteriore horizontaliter patulo, tubum subvtquante, interiore brevissimo utroque I lie mir^ci i iriio ; mate\* ttlbo brr vi-uscilo gracili, limbo campanulati.*—Herba *ramosa, erecta, pilosula. Folia aiUrma, •interrupte pinntH/hta\* laciniis inciso-pinnatifidis, t\*t\*t (iKrietslatOj an ricularis incisis, amplexantibus. Capitei la smbg4obo\$at, corfmboso-pamcMlata, Xatao, We (irangsjsj magni line.*

1039. (1.). *P. t mac\*»d< s, \ \ . t \ — : De Cand. Prodr. v. vi. p. 142.*—Coistoftbt Parana, in sand v plaes\*. *T+\*d<<^ Th-* female florets are very firm and knble, resembling the mouth of an ewer. What we here speak of as an inner lip to the



corolla\* is a mere gibbosity; it becamea therefore difficult i o say whether it ought not to be considered as a tigate florr', in which case the genv» would rank n<xt to *Sotenoyne*; but considering that the central florets are sterile, ejej pfe! er placing ,t near *I^ckroepkaim\** (*Ccufipeifa*, Less.), •nd *Gr m\** geo, with which it agrrr\* much in hi bit.

BlnsW or De Carulntle has adopted this G enus, which was comejHMicfted to him fend. has placed it in tl e "Cc... pos Mr Smtoritmukm," adding a second •pedea, tluu:—

(I. 1\*. *Umactaidet* (Hook, et Arn.) ; \*rect ramosus □ pih sulus, foliis interr upte [ >innati-p artitis besi amplev icauli- itiricuUtis pnrti tionibus incisc••kcrmtis mpitiilis cor)\*mbosis.

2: *P. solivaformis*, (DC.) ; gist riusculus demissus ramosus repens, foliis petiolatis pinnati-partitis, partitionibus linearibus parce lobatis, ultimis apice trilob liia, c.'pitulis solitariis longe pedicellatis.—H. ib. in I republica Bolivaria. *Pentland*. Pili parcissimi secus ramos et folia novell• fpani. Achr •lia parce flinn< lulosa glabra. (DC.)

1040. (1.) *Cony M Cht<nsis*, Spr.—!)'C. *Prodr.* v. p. 378. —*C. longifolia*, Ciw.—thili. *Bridges* (n. 6'2t). Maldonac io and Entro Rios. *Tweedie* (n. 1077.)—To this, and not to *C. albida*, we are mclined to ref« or *Erig•rtm Bomttri«M\$e, I.tnn* and *Dill. ih'Tt. I th, t. 257, f. 334*, in bud: although De Cand•lie consider\* that a species of *Erujtrtm* wn h which he is unacquainted.

1041. (2). *C. albida*, Willd. DC. *P*... v. p. 378.—*Eri- geron Canadense*, Don, Mst. (non Linn.). E. traim antanus, *Gil. mst.*—Memloza. ditties, fit. 156). llurnm Ayres arHJ North Patagonia. *Tweedie*. \ •Ipin.faoi Bridget, (n. 987). *C. linearis*, DC. lo\*Ir. v. p. 378, is UP J *Erigeron stenophyllus*, a. r •ad our QsafM aejlsfSM, /*Bot. of Be mk I \,y* p. 57, is an imp\* fect state of our *E. spiculosus*. Seeourobter vations on *Eri...* a, in *Comp. Bot. Mag.* v. ii. p. ...

*fftron* on>i *Comys* *risifolia*, (Weinm. in *Flora*, 1825 p. 611); he... suffruticosa erecta tota vil'—... cerea, ca... ad ct>lli; confertis... hirsuto, foliis pube breviori velutino-villosis... hirsutis elongato-linearibus acutis,

niter, hinc inde grotK serralis caeteris integerrim, panicula  
niiajMtpfelfl |>ut>t'scenle, capitulis pedicel latis, in vol. squamis  
liiu-irituis pube nppressa panra vix cinerei\*.—*DC. Prod. t.*  
*p. 178*—In pMcuis Chilembui ad Fernando. *Hrrtero*.—We  
•re unacquainted with thin, unlew il be our *Erigrton tirictu*\$  
(«. 1019), which Dr Scouler found in Juun 1 Vrnandc/, niul  
Mr Cuming at \ulparaitu. De Candollu refers to it\* with a  
question, our *Conyza ambuapta (Erigenm wpicyfonu)*.

lot 3. (4.) *C. trij/inertia, Usa. in Linnæa. 1831. p. 137.*  
*DC. / Wr. v. p. 377.*—South Hrazil. *Twm lie (n. 92'5)*—  
This tus, completty the hubit of *Bacchant*, especially of  
some species in the first section.

BACCHAKIS. *L. (tncliding MOLINA, R. et P. and Less.)*.

§ 1. It :i- i vjia\*, *nempe/oliis tri-aut triplinervii\* non tmbricatii,*  
*nec cuneatis, ramis opteris.*

104 U (I.) B. W > \* \* (*Km=• »« ^ ^ P \* CW. ii. ». 104.*)—  
*DC. Prodr. v. p. 401*.—H.—J? tony inundate 1 pl«c»s, Rio de Chili.  
*Poeppig*.—Of this, with which we are unacquain(> :. I »e Can-  
dolle tay\*. "proxime accedit ad *H. ghtimomm*, el prawrtin  
ad *B. fxtrrtjioram*, et si hybridæ facile admittenda\* rwrul, ul  
utriusque proles mixt\ fere videtur.

1045. (2.) *B. ra* MBJOM (*DC. P. Wr. v. ». 401*); fruticosa  
ramis striatis patentibus, foliis ««Milil»is rigidis ovatis acutis  
btti obto»it tup)i nerviis reticulal to-venosis itqot ad baaii  
spinul >to-cerrattt ftuprt glabris ftulx cabri»  
val!\* elevatim nervoti\*, panicula copio«« pyramulato-corym-  
bosa, involucri campanu iatt Mjuami\* linea> i-oblongis obtusis  
ntrrgine •carioso-pallidui.—\$. foliis angn stioribus.—Molina  
racemosa, *M. \* i\*nr, SifMt. p. 209.*—Bacchant aeiailifolta,  
*Less.*—*DC.PmA v. p. 418*—*B. rigida, flaok tt Am. m /lot*  
*of Beech. Voy. p. 57.*—*B. riparia, Poepp. Coll. Chil. n. 5'09*—  
Woods and groves in Chili. A.;- ajHl /Vittm. /'oi^r.  
Valparaiso. Warm Br «Wpr\* (n. 67. /9.) Mr *Cruikshank.*  
*Beechey. Vmming j. 79 t «. andi.*) *Ckmmism>.i to\* r'*-  
extremely common in Chil. t and oiw oT ib« be»l marked  
species. of Lessing

and De Candolle, which latter author place\* it in his section "*Cratamifolm*," although iha leaves are truly 3-nerved. We think it is equally certainly the *Moima racemosa* of Huii and l'avun, and therefore adopt the name of those authors though not strictly characteristic. De Candolle makes our *li. rigida* a var. of *IS. otifMf^Ufat* .<sup>rer?</sup> obscure species of Sprengel.

1046. (3.) *B. rupatohoidti* (Lhn.k. et Arn.): elata fruticosa aracu, ramis angulatis mltis pubescenti-glandulosis, foliis sessilibus submembranaceis oblongis acumatis remote bipinuloso-dentatis (dentibus angustis) basi rotundatis uninerviis supra glabris marginibus nervisque modiceeatis subtus pubescenti-scabriusculis, panicula corymboso-pyramidalis, umbellulis cump; inu. it. *tqamm* linearibus oblongis acutiusculis margine pallidius.—«. (ma<sup>?</sup>) foliis quadripollicaribus latis fere ovato-oblongis, nicciute nifremibus. Isle la Moche, South Pacific Ocean. *Dr Eight*.—β. foliis quadripollicaribus angustioribus. Chiloe. *Cuming* (n. & l.).—γ. foliis bipollicaribus angustioribus. Fields near Valdivia. *Bridges* (n. 578).—This *Memstobea venronthera* ipniia, and also a most *iktim* one, although ranking next *B. racemosa*. Its leaves are very much larger and longer; I believe nothing of the same kind and rigid character of the preceding species\*, nor of them\* copious broad triangular teeth reaching quite to the base\*.

1047. (4.) *B. iJMa* (Lhuok. et Arn.); fruticosa, ramis striatis pubescentibus, foliis exacte ovatis submembranaceis acutiusculis trinerviis fere ad basin obtusissimam denticulato-serratis brevissime petiolatis, petiolo late alato nervisque subtus laeviter elevatis pubescentibus, paniculis densis corymboso-pyramidalibus, involucri campanulati squamis linearibus oblongis interioribus apice acuminem eroso-fimbriatis.—St Mary, S. Pacific Ocean. *Dr Eight*.—Leaves 12—16 lines long, 8—16 broad, decidedly petiolated, exactly ovate, roundedly apically very regularly denticulately. In habit it approaches the preceding.

1048. (5.) *B. urrtthi*\* (Pers.); herbae erectae, caule basi tereti apice angulato, foliis petiolatis lato-lanceo-

laits acuminatis ciliato-serratis trinerviis immixtis Be punctulalia, corymbo composito terninulifloris; invol. & campanulati squamis lanceolatis acutiusculis.—DC. Prodr. v. p. 402. *Conyza serrulata* Lam. Dict. ?—β. foliis linearibus.—Buenos Ayres, Handa Orientalis and N. Patagonia. 7Vv\*rfi«, \_£. St Mary, S. Pacific Ocean. C. JarwN, Km/. Monte Video. Iso V/Zr.—Scales of the involucre linear-lanceolate pair, with ntlurkrr creeiush line i lown the centre. The corymb and young upper leaves are often nUitinous. Pappus tawny, sometimes almost rufous.

1049. (6). U. *limgrmn* (</>? Prodr. ii. p. 120); herbecea erecta L'ititimi, rnule beti tereti apice angulato, foliis petiolatis linearilanceolatis acutiusculis lwni atrnuitis trinerviis punctatis mm ste de ulatis »umnii> linearibus integerrimis, coniii'x) composito terninulifloris, involucri campanulati squamis lanceolatis acutiusculis marginibus utpuli<lis fimbriato-ciliatis>,—S. foliis angustissimis.—Molina Uncarift. *Tris. ei* <ham. (Herb. nostr.) in *Limitta, man R,* «//'. nun Hacbarik 1 HUMris. it- ft A\*—Chili, frequen. in nutiit place\*. \ .t!|>araiio. Bridges (n. 59). Cham. B.W.M.O. Conception. CuMtf(n . 800 u—/3. I Chili. Cuming (n. 78.). (ixiiift (it. 1-39.). -2—4 feet high, with a decidedly herbaceous stem and annual root. Habit of *Conyza*. De Candolle descri\*..> ii at A buffi uticose plant; uii(i omits to notice the three (tervea at) d hence probably lost sight of u affinity with bit *il. »errulata*, a spe«tea ao nearly allied to it, tl»«iexc«pt the usually broader foliage of the latter, and its more doae narrow serraturw (almost ciliæ) not teeth, direct'tl upwards, w« can »c«cely point out any difference. Capit>la exactly the same in both. It is undoubtedly the *Molina linearis* of Chamiaio ami Laning« and according to De Catullo of Poepp. (Coll. Chil. 2. n. 103). The original *linearis*, as we believe, t. a shrubby plant, well known tv in vernacular name of "Romero," or *Limgrmn* be  
*linearis* (DC. Prodr. v. p. 402); suffruticosa, foliis linearilanceolatis utrinque integerrimis i ICuMinary butb\*  
 lir>" (7). li. aMryuau  
 ooa» raaiimu ftubvUcota glabr..

polycephalis, invol. campanulati membranatis lanceolatis ciliato-  
 erosis \$ tatoribus majoribus fimbriatis. ? angustioribus, achenio  
 gibbro. DC. — Molina (Purvisiflora. R. et P. ? Baccharis parvi-  
 flora, Pers. §. mon A <>. — Valparaiso. Gaudichaud. — De Can-  
 dolle seems to have drawn up this character from Chilean  
 specimen\*, and doubts if those from Peru should be considered  
 the same species\*.

1051. (8). *B. Feuillei* (DC. / W. R. v. // 403); trutescens,  
 pubescentia subpungentia, ramis teretibus subteretibus,  
 foliis breviter petiolatis lanceolatis trinque attenuatis grosse  
 serratis nerviis capitulis in racemulis compositis ter-  
 minales subaphyllis digitatis 18—20 floris invol. ovatis  
 lanceolatis acutis stramineis. DC. — *Feuill. Per. et Chil.* ii. p.  
 750. L. 37. — 'Chili? — De Candolle does not indeed give this  
 as an inhabitant of Chili, but the species is included on the  
*Conyza frutescens*, &c. of Feuillée, which, though not expressly  
 stated, we believe to be native of Chili, and the same with  
*B. glutinosa*, Pers., under which species De Candolle again  
 quotes it in the Prodr. Perhaps *B. Feuillei* and *B.*  
*margaritalis* ought both to be referred to *B. tutinosa*.

1052. (9). *B. glaberrima* (Pers. Syn. ii. p. 425); suffruticosa  
 glaberrima v. tomentosa, foliis lanceolatis coriaceis grosse serratis  
 punctatis trinerviis et penninerviis basi attenuatis apice acutis,  
 corymbo breviter campanulato, capitulis campanulatis, involu-  
 cris squamis ovatis lanceolatis margine ciliatis fimbriatis. —  
 Chilca. *Feuill.* 2. t. 37. (excl. Syn.) Molina viscosa, R. et Pav.  
 Hook. et Arn. > n lift, & h. Voy. — Chili. • -ilp<r<<iso. *Macrae*. —  
*Mathews* (n. 217.) *Cuming* (n. 788.) *C. Darwin, Esq.* Quillota,  
 where it is called "Chilca m Qutlico." *Bridges* (n. 53.) Concep-  
 tion. *Hetkey*. Near Mendoza. *Dr Gillies*. Wood-sides of Cor-  
 doba (foliis latioribus), Tunan and Buenos Ayres. *Tweedie*  
 (n. Iti O.) — An extensively dispersed and rare plant.  
 The leaves are more or less broad, more or less dense, toothed  
 and entire, more or less veined, and more or less coriaceous.  
 The involucre like the female capitulum resembles the males!  
 In fruit, it is broadly campanulate, somewhat squarrose, of a  
 singularly dry character: the rays are orate-triangular,

destitute of nerve, but having a discoloration spot towards the apex; the margin is scarious and eroso-fimbriate. Pappus of the female capitula very white and silky.

1053. (10). *B. sphaerocephala* (Hook. et Arn.); fruticosa glabra, ramis angulatis, foliis (subquadripullicaribus) obovato-lanceolatis membranaceis v. triplinerviis reticulatis, que actus grosse dentatis basi attenuatis setilibus impunctuatis in corymbis polycephalis foliis brevioribus, capituli § cl g d compressos sphaericis, involucri hemisphaerici tunc ovato-lanceolati acutis dente carinatis uninerviis marginibus proscipui versus n. p. com. eroso-fimbriatis. — C. B. Robinson. *Cuming* (n. 58). Between Osorno and Rio da Manilla, Valdivia. *J. J. Bridges* (n. 579.) — A shrub from 4 to 8 feet high, according to Mr. Bridges, with large membranaceous coarsely toothed and dense corymbs of comparatively capitula (6 lines broad) which are shorter than the leaves.

1054. (11K 11. *mdastomifolia* (Hook. et Arn.); fruticosa? giaberrima, ramis sulcatis. foliis coriaceis (§—4—pollicaribus) ovato-lanceolatis teretibus triplicinerviis reticulatis, que tenatis brevi-petiolatis in parte rugulosis subtus pallidioribus nervii prominentibus, corymbis terminalibus axillaribusque pedunculatis aphyllis, involucri quamvis paucilaxis r. brevibus, int. linearibus uninerviis, acheniis sessilibus. Uglaberrimis, pappo 9 flavescite aereo unbanali involucri longe exsertente. — Moist woods of Tucuman. *D. M. Dir* (n. MM:.) — A very distinct and well-marked species, \* with deeply furrowed braconid branched teret leaves, wrinkled by the copious reticulation, and narrow winged of many fruitlets. The capitula nearly three-fourths of an inch in diameter.

1055. (19), *It. anomata* (DC. /V. r. v. l. 403); suffruticulosa ramosa, caule tereti, ramis puberulis, foliis petiolatis ovatis basi obtusis apice acute denuo-serratis trinerviis subtus puberulis subtus dense villosis, paniculis ramis terminantibus laxis, invol. M. U. im. U. ot. lofigo 4 tn. aribus acutis, fl. masc. stylum exsertum gerentibus. DC. — Rio Grande, St. Catharine's md woody shore of Lagoa S. Hraii. *Tweedie*. — Inclinat long, exactly omm, obtuse at the

base, or. petiole\* two lines long. Stems, as DeCandolle well observed, apparently climbing so as, in conjunction with the form of the petiolated leaf\*, to give the appearance of *Clematis*. Capitulum small. Scales of the involucre slightly erose-ciliate at the margin, with a dark green nerve down the middle. Pappus of the male flowers rufous.

1056. (13). *B. Donitii* (Hook. & Arn.); fruticosa, ramis erectis pubescentibus, foliis lanceolatis subcoriaceis acutis punctatis obscure trinerviis integerrimis rariMinutis illic dentatis Militaribus, pedicellis (bilinearibus) pibecetibus nodis monocephalis, involucris canipanulatis squamis trinerviis, ext. ovatis pubescentibus int. oblongis glabris—Cultis apice fimbriatis.—S. Brazil, *Tweedie* (n. 975.) Rio grande; Antioquia. *IMOHU*.—This is very different from any described species. The pappus of the female plant is tawny, longer than the styles, twice as long as the involucre.

§ 2. *Cuneifolia*, nempe *fivii* obaraluta utrinque (nervibus nan unibracteis, rotatis apteris. DC.

1057. (14). *B. hirta* (DC. Prodr. v. p. 405); Mitis fruticosa in digne piloso-hispida, caulibus calcarato erecto apice curvato ramis longis coriaceis sessilibus ciliatis-oblongis apice grosse inciso-dentatis trinerviis reticulatisque, corymbis densis subglobosis involucri squamis lato-lanceolatis acutiusculis Mitibus pubescentibus uniserviis bipinnatis pubescenti-ciliatis.—*B. verbenaefolia* Hook. & Arn. »\*rt.—Pappus rufous, its hairs clavate in the male flower. Maldonado, South Brazil. *Tweedie*.—De Candolle places this very well-marked plant in his first division, but in the cuneate leaves it accords well with the *pratensis*, though it must be confessed it has little natural affinity with the following species. The rough coarsely lobed leaves, with the very prominent nerves on the upper side, give the plant a great resemblance to lot of N. American species of *Verbena*.

1058. (15). *B. Magellanica* (Peruv. V. p. 425); fruticosa demissa, capitula glabra v. angustata, foliis confertis coriaceis obovato-cuneatis obtusis aliis integerrimis aliis fere obtusis tridentatis, capitalis soli-

tariis ad apices ramulorum sessilibus involvati sjuanii> marline ciliato-fimbriatis, & ovali-lanceolatis, subangustius liliatis nervinatis ahenis striatis glabris. DC.—It. iridntata. Gaud, *FL Mat.* p. 15. Cooyne Magellanic. *Ixim, Dict.* — Situated of Magellanic (f^tmark), at Fort Kgmtown and Deschamps. (Née.) Falkland islands. Gaudichaud. E. Falkland Island (MacK.) and Berkeley Sound; Falkland islands (Fourn.) *C. IMrteina, Esq.* (n. 322 and 326.) —A humble dwarf shrub, with something the habit of *Salix herbacea*. Leaves small, nearly almost spatulate in outline, female plant, viscid and quite entire; in our male, imbricated in the upper bed, some of them tridentate.

1099. (16.) *R. cuneifolia* (DC. *Prodr.* v. p. 406); *IVuculosa* demissa & glabra viscosa ramosissima, ramulis subangulatis, foliis sessilibus confertis coriaceis obovato-cuneatis obtusis ad apicem obtuse repandis lobis, capitulis ad apicem ramulorum multibus. DC.—*Conyza cuneifolia*. Lam. *Dict.* — Situated of Magellanic (Lacustris); at Port Egmont. (Née). I think there can be little doubt that this is the same with the preceding. De Candolle is properly disposed to reject the Brazilian specimens which have been referred to this. They perhaps belong to the following species.

1060. (17.) *B. tridentata* (Vahl, *Symb.* iii. p. 98); *glabra* fruticosa, ramis trifloris, foliis sessilibus cuneato-spathulatis obtusis punctatis trinerviis (nerviis lateralibus obsolete) infra rmpicem utrinque nullis, capitulis sessilibus axillaribus cylindraceis subcylindricis versus apicem ramulorum glomeratis, involucri tuberculati pauciter exterioribus ovatis int. oblongis nervis.—} (Vahl, *Prodr.* v. p. 109, —South Brazil. *Tweedie*, (n. 094). — This young leaves very glutinous, all of them of a reddish-brown in the dried state. The form between cuneate and spatulate, with the lateral opposite and one larger intermediate or terminal tooth. Pappus in the female flowers reddish, longer than the involucre. It agrees well with De Candolle's character and that of Vahl. But there is probably more than one species from the different localities given by De Candolle under this plant.



1061. (18.) *H. liakhomu* (Hook, at Arn.); fruticosa glabra, caule prostrato ramisque angulato-teretibus sessilibus lanceolatis basi cuneatis subcoriaceis unineerviis impunctatis nervulis supra medium utrinque unividentatis. capitulis pediculisque solitariis in folios supremos ramorum racemos foliorum formantibus, involucri cylindraceo-complanato 8-10-flori squamis ext. glabris, int. oblongis marginibus nudis.—M. proratii. *Herb. Baldwin.* (non R. et P.) **Mildonado.** *Dr Baldwin. Tondk.* Shore of Lagoa Maranhão, S. Brazil. *Tweddle* (n. 982.) **Lai** Reducion de la puerta del Sauce, Pampas of Buenos Ayres. *Dr Gillies.* (n. 1014\*)

1062. (19.) *B. tritocota* (Hook, et Arn.); glabra fruticosa verticillata, ramis strigosis, foliis spatulatis obtusis punctatis coriaceis uninerviis aliis integerrimis aliis (plerumque majoribus) obtusis tri-nerviis, floribus paucis sessilibus terminalibus solitariis vel binis, involucri cylindrici pauciflori squamis ext. ovalibus int. vix oblongis.—Uruguay, in marshy woods. *Tweddle.*—Apparently a until *ibmbi* much branched. Leaves small, 3-4 lines long generally entire, others much larger, nearly an inch long, more or less toothed; nerves as if varnished, distinctly dotted, and having no trace of lateral nerve.

1063. (20.) *B. axilari* (Hook, et Arn.) *Prodr.* v. p. 407.—*B. dentata*; involucris omnibus apice 3-5 denticulatis. *DC. l. c.*—Venezuela in S. Brazil, *Tweddle.* *Uruguay*, *Baird.*—What we take for this plant leaves about  $\frac{1}{4}$  of an inch long broadly cuneate, with 3 nerves, the lateral nerves obscure or obsolete, not dotted, the margin if minutely thickened revolute, deeply lobed. In the female capitula the involucre is pale reddish, much longer than the styles exerted.

1004. (21.) *ILJifellata* (Hook, et Arn.); fruticosa glabra, ramis angulatis junioribus vincotis, foliis flabelliformibus coriaceis grosse angulatis punctatis obscuris obsolete punctatis basi in petiolum attenuatis, capitulis sessilibus axillaribus glomeratis, involucri oblongis squamis univerviis int. longioribus.—Aguadita, province of San Luis. *Dr*

(*itfiies* (n. 170.) Remarkable for the broad Uuves, coarsely  
oothed or angled, tapering into a petiole- Cupiiula sumll.  
1065. (22.) *B. pedicrila* (DC. Prodr. f. p. 407)) fruticosa  
ramosissima glabra viscosa, ramis teretibus, foliis obovato-  
cuneatis sessilibus a; vix punctatis coriaceis s<sup>m</sup>-  
3-nerviis, nervis lateralibus tenuibus n<sup>o</sup>t subnullis, pedicellis\*  
axillaribus subnudis striatis >-sulcatis-ceplicis\* invol, \$ squamis  
ovalibus; acutis apice subciliatis. DC.—Chili. Hank\*.  
“Folia fere *B. cuneifolia*\*\* aut *li. oomoot*\*, viscoso-nitida, H-  
9-lin. longa, 4 lin. lata. Pedicelli bracteoli 1-2 instructi,  
7-9 lin. longi, involucraque pallida.” We have seen no  
Chilian *Baccharis* which corresponds with this.

1066. (23.) *U. Palagonica* (Hook. et A. Int.); glabra fruticosa,  
ramis angulatis junioribus vix dentatis, foliis sessilibus ovatis  
cunctis crassis univerviis punctato-rugosis superius 7-  
dentatis pedicellis foliis brevioribus axillaribus solitariis vel  
binis bracteis monocephalis involucri campanulati & et 9  
squamis ext. ovatis univerviis, int. vix longioribus nervo viridi  
omnibus margine obscure **Inbriata**\*—Port Famine, Palagonia  
(Capt. King's Voyage). Cape Negro, Strait of Magellan.  
Orah, flbf. in. 356.)—Apparently a small shrub, with  
erect stout rigid branches, and leaves of an inch (scarcely  
not) long, in shape approaching that of the following, but  
of a far more coriaceous texture and wrinkled, with more  
teeth, but smaller, only once-nerved. In the bracted pedi-  
cels it appears to approach the preceding species. Pappus, in  
the male plant, copious tawny, very long.

1067. (24.) *B. incisa* (L.) Ok. «t An.): gracilis fruticosa  
glabra, ramis angulatis, foliis univerviis ovalibus trinerviis  
(subtus conspicue) imbricatis punctatis vix coriaceis but iu-  
cuneatis apice inciso, vix dentatis dentibus crectis, pedicellis  
axillaribus monocephalis nudis longitudinis dimidio  
folii, involucri (7-8) floris ovalis squamis paucis (7-8) ovatis  
univerviis marginibus tenuiter imbricatis.—Uruguay.  
Baird.—Sent mixed with *B. (tmUign*\*, but undoubtedly dis-  
tinct. Leaves 6 lines long, almost exactly oval, rather  
acute than obtuse, only at the apex into from 3

to 5 erect teeth. Lateral nerves on the upper side obsolete, beneath conspicuous and prominent. Pedicel of the capitulum about half the length of the leaf, quite destitute of bract.

1008. (X5.) B. *Bairdii* (Hook, et Arm.) • rachnoideo-pubescent > fruticosa, ramis erectis angulatis, foliis remotiusculis • ewillii i iaceis elliptic)\* basi cuneatis obtusis obscure trinerviis apice • quinque serratis, capitulis in axillis solitariis sessilibus, involucri campanulati squamis exsertatis, int. oblongo-lanceolatis subulnatis marginibus ovatis fimbriatis. —Uruguay. *Baird.*— Difficult as it may be, in words, to describe correctly the varied form of the Ware\* < of this genus; the > of this plant are very distinct from any other\*; they are almost exact like the base; and the \* on the leaf or for not more than one-fourth of the way down, is moderately serrate. The capitula occupy the axils of several of the rather remote leaves in the superior part of the branch, and are completely solitary. The involucre (female) is half as long again as the involucre. Styles strongly exserted.

1069. (26.) B. *fotiom* (Gill, nut.); humiliter sabprastrata glaberrima, ramis revivibus angulatis copiose foliatis, foliis acasilibus oblongis coriaceis supra uniuersum minutus obsolete trinerviis (nervi ut inque exsertatis) hinc cuneatis groso regulari; serratis, pedicellis axillaribus capitulis monocephalialibus modis longitudine fere foliorum, involucris minutis ovatis acutis uninerviis.—Cordillera of the Andes. *Dr. G. tttuu*^ (n. 167.) A small alpine shrub, the branches clothed with copious harsh leaves, scarcely an inch long. The flowers are in a very imperfect state, but the plant seems to be decidedly a *fruticaria* and very distinct in its characters.

1070. (27.) B. *imb Ujbrm*, DC. /Vodr.v./., 4<>. "P<sup>o</sup> VI. < H60 at *iri. obovata*. *Uook. tiAm Bot. yf Btt*^h. Voy. p. 30, (ton Molina olwvatn *R. et Pav.*) Concepcion. *Beechey*.—\*1 ne of *obovata* being previously applied to • *PerBfim Bacekt*: ^>bov<ti we gladly adopt that of De Candolle given to a *Baccharis* of

Poeppig (from Chili?) which by the description seems to accord sufficiently with our plant. The scales of the involucre are not "dense ciliatae," but in the var. *0* of De Candolle, they are described as "minus ciliatae." The leaves of our plant are an inch and an inch and a half long, coarsely serrated from the apex to below the middle, in reality three-nerved, the lateral nerves on very flexuose and unite with the lateral nerves of the costa.

1071. (28.) *1* i. / *Wppujiana* {*DC. FWR. v. p. 410*}; fruticosa glabra vucosa ramosissima, foliis obovato basi cumatis subsessilibus nectatis repando-dentatis, capitulis pedicellatis ad apices ramorum paucis umbellatis, invol. campanulatis squamis lanceolatis vix apice subciliatis. *DC.*—\* *II. n. ternatifolia*, *V/7*. *PL CkL* <xs. 2. n. 102, (non *Kuttth.*) *Valpiste*\* *Ctwang*, (n. 793.) *Quillota* ad *Concon*. *Ihut.f\**. by whom it is marked as "*£. txinkiiq/blia*, *Bertero*."—If we are correct, as we think we are, in referring these plants of *Cuming* and *Bertero* to the *B. Poeppigiana* *DC.*, it is a plant which we have confounded with *tt. cotcava*, from which it only differs in being not tomentose on the brachia, (though the resinous particles often give them that appearance) and in the terminal beads of flowers being pedicellate and thus unobscured. We find it to be really distinct. De Candolle compares it with *li. ternatifolia*; itself a very dubious plant.

1072. (29.) *II. evneava* (*Pent.*); fruticosa ramosissima, ramulis angulatis puberulo-velutinis (potius pulverulentis) resinosis, *B. et A.*, foliis late obovato-cuneatis apice obtuse triangularibus quinque-nerviis (opacit) glabris crasso-coriaceis uninerviis *Mimis* circa caput subcoriatis, capitulis ad apices ramulorum 3—5 oogonibus ayfaawlibtis, invol. campanulatis marginibus scarioso-oblongis in *J* ul*u* i*mu*\**culu* in *♀* inter. lineamentis sulcatis acheniis compressis glabris. *DC. Prodr. v. p. 111.*—*Mflia* concava. *R. et Pav. Syst. p. 206.*—*Baccharis resinosa*, *Hort. An\* Hot. qf JSmCA. Voy. p. 31. (excl. Syn.)*.—*B. tridentata*, *Voep. Cyl. Chil. SM. (nom VmM)*.—*Chili. Valparaiso. Iriig\** <«. 54.).—1. In our specimens we do not find any difference between the scales of

the involucre in the **male** and female capitula. Like name is a very **bad** one, and only tends to mislead.

1073. (10.) *B. myrnmrnk\** (Hook. et Arn.); fruticosa ramosissima, imniult\* angulatis giabria, fulits aeasiUbos of positu obovato-cunt' i taccis nitidas S-nerviis suprema dentata u\* inetgai rimis cnpunctum capitulis glomeratis terminalibus brevipedicellatis vix umbellatis glomerulis inferne foliosis, involucri t laio-cylliuraceisquam. »III  
Uraguay. *Twudi\** (ft. KM).—A small much branching glabrous shrub, with leaves like those of *Afyrnne retmta*, glossy, ad opposite, and capitula as in // ftt«cesw clustered, scarcely pedicellate, at the extremity of the branches\*

1074. (31.) *B. Maenm* (Hook. et Arn.); fruticosa ramosissima, ramis teretibus dens\* pubescentitomeoto»U, fultibus obovato-uneatis coriaceis uninerviis superne 3-rariis 5-dentatis junioribus glutinis capitulis sessilibus solitariis terminalibus, involucri puree pwbansM canipanuluti squamis ext. ovatis interioribus linearibus oblongis umnerviis pappo duplo brevioribus. *Marr af.*— *Lca|r%* much resembling those of *B. cc.\*emu*, but the branches are stout, terete, densely downy tomentose, the capitula solitary, terminal, thrice as large as in the preceding species; the pappus much longer and more silky.

1075. (32.) *B. ru4u\*iuufui\** (Spreng.) fruticosa, ramula terminata, imbulb striato-angulatis tubulosis bittl ac\*»ihbit% obovato-tubrotuutli\* apte ilntibu\* 3—5 rrandis trinerviis obovatis »ubtus pr.vcipu\* albido\*furfuracis, capitulis 3 ad apices ramorum congestis sessilibus, % rniu\* conge\*is subspicatis in vol. obovatis, \$ in vol. »ulur<)ualibuff l ridentatis, in vol. squamia & ovato-lanceolatis 3cutimagnis elongatis vix obovatis, acbt-niis striatis glabris'.—Rio Grande, South Uraguay, Fort Argentino, N. Patagonia, *Tweedie*, Monte Video. (ex. *Erb. Baldwin. Dr Torrey*).—If we are right in referring these several plants to *B. rotundifolia*, they are, in fact, most variable species. From Rio Grande (7Vt, *die*) we have three specimens; in the state, the new ones are distinct

and prominent on both sides of the leaf\*. In the male specimens, the lower leaves are orbicular-nerved serrated about half way down, the upper arc obovate-cuneate, 3—5-toothed at the apex, all are decidedly clothed (though not white) with small furfuraceous scales. In the two other specimens (female plants), the leaves are all obovate like the upper ones in the male plant and less furfuraceous. In our plant, (female) from Port Argentino (*Tweedie*), the leaf\* is not furfuraceous, but obscurely dotted, narrow-ovate, coarsely 5-7 toothed, the nerves rather indistinct. In those (male) specimens from Monte Vieja, the nerves on the leaves are moderately conspicuous the leaves themselves more coriaceous, more oval, indistinctly toothed, and the younger ones especially, rather glutinous than furfuraceous. The female papus is scarcely longer than the involucre, in fact it seems to differ from De Candolle's\* female plant; this however may be owing to the different ages.

1076. (33.) *B. Turttin* (Hook, at Arn.); fruticosa subviscosa, ramis angulatis, foliis coriaceis late ovatis basi attenuatis subpetiolatis elevato-truncatis varie nungulato-dentatis integerrimisque, capitulis corymboso-paniculatis, corj-involvis foliosis sithnudis, involucri hemisphaerico-paniculati squamis glaberrimis ciliatis uninerviis ext. ovatis, int. ovalibus acutiusculis.\*—Maldonado, S. Brazil. *Tweedie*. El Botanico in the Pampas of Buenos Ayres. *Ilr Giliim*\*—In some respects the foliage of this plant resembles the last, but the leaves are generally larger and more attenuated at the base, so as to be almost petiolated. The inflorescence and involucre are quite different.

1077. (34.) *B. tmtmtdia* (DC. *Prodr.* v. p. 411); fruticosa glaberrima subviscosa, ramis linearibus cuneatis basi truncatis apice repando-dentatis marginatis, capitulis adscandentibus corymbosis breviter pedicellatis, involvis ovatis lanccolatis vix incutis margine scariosis, acheno striato.—Venezuela. *OmmUchaud*. *Cwmimg* {«. 70.)—De Candolle places it next *B. turttina*, and describes it as intermediate between it and

*rosmarinifolia* of the 3d section, in which be is ctrtninly correct.

1078. (35.) *B. attemtata* (D. annua.); *i* e *recta* *eiott-*  
*gata atricta, rarais angulalo-st >atis, foliis i plerisque oppositit*  
*f\*Hiarrw laaceolata obsc* *ure trinerviis remote drnuto-M rntis*  
*bast attenuates gracilibus % bpetiolatis, capitulis rloमारalii*  
*•assilibus vcl pcdunculatis »pica» intcmiptas l* *erminales for-*  
*manlibus, involucris cnmpamilaii Mjuamift ext. ovaiis, int. ovato-*  
*lanceolali\*.*—Pampas of Htieno\* Ayrei. *l>r <•illies (n. 174.)*  
*Tuxedti{\*.* *l (25), E. tialthci\* {in Herb. Nostr.} | l>aguay.*  
*Tweedie.*—Leaves 2—4 inches long, 3—(i lines broad. 1'..p-  
 pus deep tawny, considerably looger than the involucre in  
 the female plant. *l>r GilUaj ilcscribes the plant as Itaving*  
*the odour of honey.*—May *lhis not ba the same a\* B. Pia-*  
*Un\*i\*, Spr. et DC.* At any rate it ihould be placed twtwean  
*lliut anil B, mboppwUa, DC.*

1079. (36.) *B. Tucitmmutts* (Hook, et Arn.); *frutitiosa*  
*glabra, ramiserectisangulat* *is, foliis alterniss* *ubcoriacetielHi>*  
*ci lanceolatitque LMM cuneatis in pcliolum mtenuatk i^fttqiH*  
*penninenriia (costa dittincla ncrvis obscuris) acutis tnteget*  
*mis vel (in latioribus hic illic d* *entatw), capitulisi—4 ad apiossa*  
*ran lorum el in pcdtincalosalaxi* *illares Mltu* *isglomeraustinv-*  
*lert lato-campanulati niuitif* *loris qu* *rowext.uv.* *is, int. iinsv*  
*iri-4>hlongts, omnibus margia* *roso-fimbriatus.*—«*. fulitt lalio>*  
*ribus subdcnUtU.* Sides of the *muntaii St Xavii r, Tuc man,*  
*just above tbe wood\*.* *TWsa* *lie (n. 101)9 at. d 1184).*—*β. foliis*  
*angustioribus fere omnibus integerrimis.* Wood *•lilc^ l of Tu-*  
*cumin.* *Vwmdu («. 1192).*—This would seem to be a tall  
 growing «hrub, wtih leave\* three inches and more long,  
 scarcely dotted. *Peiluncles two incites and more long, be*  
*ing Klonierules of capitula at th« extremity, naked, or ocoa*  
*si on ally with one or two leaves.*

1080. (37.) *B. dapkmoid\** (Hook. et Arn.); *frutis cc^* *gla-*  
*bra, ramis angulu* *tis, foliis kIMraii aIMpticu obtutiuv* *culis trans-*  
*versim obscure pennincmi\* bui cunvmu m p\*ii.],* *im brevem*  
*attenuatis tnargiie omnino mtCKtrruniH iIM* *uiter revolutis*  
*supra coriuceis subius obscure •q«anmloso-poj»cutiiy corraaU*

axil tart bus pedunculati\* foliosis bracteattsque foliis quam in  
caul in is m tit to breviuribus, in valuer i campanulati (ma.se.) mul-  
tiflori squamia unineniis subpuburuHi ciliato-fimbriaris ext.  
ovatis, int nMflilflil.—Uruguay. *Umr*d.—Leaves two inches  
lonl and one broad, perfectly entire. Corymbs copious,  
about as Jong as the cauline leaves (including the per iuucle)  
much longer than those of the peduncul', which gradually p«ts  
intotroal! brae teas on the pedicels. Male pappus white, c la vat\*.

1081. (38). *B. bractata* (Hook, et Am.); truticosa pa-  
tent i-ram>a, ramis angulalis juniorituis. pubeaoentibus, 1  
patentibus alternis scnilibus tubcoriaceU opacii Itinccolatis  
acutis basi aitenuatU uirique im|nsin|Hiiumii uninerv-  
viis inteperrimis v. hie illic t!enticulo instructis, capitulis  
pedicel l alls in apices ratnorum vet in rumos proprios brac-  
teato\* dispositis, in singuln axilla solitarios ct ita racemos  
lulosos simulautibus involucri laLo-campaoulali pubesct ntis  
squimicis uninervjis fimbriato-c ilia tut ext. ovati\*, int. oblon-  
gts.—Bio Gri aide. *Tweedic*.—Brandies sprea>ling, slender.  
Leaves an inch to an inch and a half lung, general ly quite  
entire, occasionally with a solitary tooth on one or on IKHII  
sides, opaque. distinctly impresso-punctate on both sides, single  
ncr\ ed. Capitula (mate) solitary, j>c<dicellate in the sxils of  
nunicous ffitmll leaves or bractese, at the ixtremity of the  
comni.tri branches br on peculiar branches^ so thai they 'orm  
leafy or brae t cat it t racemcs> and arc longer than the braccoe  
wher n in full flour.

1082. (39). *B. artjut* (Gill. mst.); truticosa, romis atu-  
nib' pubescentibus foliis uninerviis profunde  
attenuatis supra  
la it\* pubescenti but, ovati\* sulxroriaceis oblique pet  
de spinoso-sarnti» acutis bast sublonga caneaio-  
gUbitssubtuipubescnti-acabrisiMnrii vaJde  
elevatis, corymbi\* terminalibui nudiuacu  
[uamii \*ti», int. Uneart-oblongis margin\*  
oso uitis\_\_\_Tuente de Marques, liocnos Ayrce.  
sias.— 1 :i. rtetmoto («. 2.) hut the leaves are not



do not properly belong to the Ah action, but on a different tint of their attitude mated or cunctate bases they are placed here\* rather than in the following division. E\*«n i» those species\* with general narrow cuneate leaves, they are often seen to vary with oblong and even lanceolate ones.

§ 3. 'Ob'Ingwe, *nanpc Jolia oblongis ovalibus linearibusve tjlalris trius ttillosis urn-atU pet' ninerviis mm <iustiche imbricatis, ramu apu>is. DC.*

10^3. (40). *B. petioiata* (DC, *Prodr.* v. p. 408); glabra herbacea e recta ramoem\* ramis l«retibus apice ftxibgladuloM, foliis < petiolatis ellipticis groeM deoUtu, corymbu pedoncatatu nuditif coropositi&t involuticri % campanulau aquaaua ovato-lanceolatis tuberculatis.— Chili. *Hamke.*—<sup>M</sup> Specie distinctissima. iViioli »enc|«i-aii !i»!iicarr». i,imbu» folii 10 lin. lon^us, 4—5 lata,"—Quite unknown to us.

10HI. (41). *a Vhilquiua* (*iH'.Pndr.x* p. 419); fruticosa, junior puberula-puberula ilcin glabra subviscosa, ramulis teretiuculu, Uln linearibus • tHtgajJt waililwn acutis hixK- inde giuaw dentato-atrati» aut intrgerrimiembaniier\* viis, corymbu lermiaali polycrphaU, involucri g ovati squamis acartotu\* ttramineb glatierrit nis ovati-ili-oblongts lubobtuai\*.-. Qui ilota, (Chili. !Urt\*rx>. •• Vulgo • Chilquilla del Rio. Folia S—4 poll, longa, attquilin. i

108ft, (42). *B. pmdtmkU'* (DC, *Prodr.* v. p. 419); fruticosa ramulobaimat rirnu erecti\* gl«bri» »n^ tcarh-linnccolati\* ui. »ub«cumin« carnosis fttccilate dono en rinatis supra i obeol apice uncitmtit nunc (Utiuribus) mat copic »<b clongh tis foliosis subpyramidalis, involucri c i t n • panu- lati tquami ext. ovatis, int. »blongo-)Uiraribu\* ac< nerviis marginibu»ob»uteterceo-AaibriatU.-~ Molina line *R. et P.*—>itaccliarift pniculata. *J.C. P>o\*lr* T. p. 420. *B. ros- mirinifolia.* *Hook, tt Am. Bot. of P-<rA. ;oy.* p. 30.—Chili, frequent. Valpaniito. *HridtjeM* (v. 57). *Macrae. Cuming* (n. 791). *Conception. Be* —Having received this from t m\ under the vernacular name of "Romera," we are in-

clined, or that account, and because it in "fvticosn," lo i ou-  
sider the *Moiina iwearis* of Kuiu ami l'uvun, rather titan *B.*  
*Pingraa*, (to which l>e Candolle refers it) to be the H I M  
with this plant. We arc, however, sure thaL il if ihc *U. pam-*  
*culata* of De Candolle, and we think it aafat lo preserve iht  
mUM (o it. On the closest examination\* indeed, \* e do 'tot  
find the leaves to be ever ter rated, or otherwise than en:  
they are very c onstan ily linear or linear-lanceolate, of a ihick-  
h nml Hr>hy clmro< ter, w lien dry, at lea- it, carinated at the  
buck, channelled alcove, and a depressed 1 ne wil I be sern on  
ea<li tide the irui distinct costs in ihc broader one\*, ii  
a 3-tu i vcii leaf. TbfI flowers or capitula arc copious on UM  
very numerous erect branchlcts, thus forming a leafy pa-  
nicle upon i very large branch.

1086. (43). *B. pawcidmtatn* (DC. *Prtxlr.* v. p. 420); fru-  
licota ranioausJoia glabra\* rasiulis strtato-anguUii, foliis icasi-  
libi . lioearibus aut lineari-oblongu utrinrjue acults uninci viis  
aut mm bui sulnrincr\us integcrrimis aut detite 1—2 uinn-  
ic noiatis en, pitulis 9 ad axillos superiores subsetsilibua et  
iro in ffptc4u> 1 dignlis, involucri squamis knoeoln tis  
acutis n lftrgioe membranacei\*, ribus in i vol. circ. 10 . acha>>  
niis striatis glabris. -3. capiuult\* paucioribuiv.—Rio Grande  
(De Candolle) 1. Lo\* Loan 11 M. of Bahia bianco, N. Patagonia,  
(a. am! β.). *Twcedie.* El Rio quarto, province of Cord ova,  
and 3. Buenos Ayres. *Dr* (ull\*x.~ --The leaves of or ir pi.  
are too narrow to be considered as approach  
1 he teeth ore large and spreading,  
large, in the female plants almost cyliotd

1087. (44). *B. corutijbli'i* {l> C. *Prodr.* v. p. 423); fru-  
eosa erecu, ramis striati\* , guberulis, foliis lin <-aribus inle^ er-  
rim ti mucronalii m inerviis tftubtos utrinque obacun l-striatis  
Dtarginibttts scabris, capitulu in ramuiisgraciUbus foliosis race-  
mosu, m'volucri ( i hemiaphn rici) o van % wjuamu bubacak  
apice memb ranaccit ovaib obtotisfimim, int. longior .boa m«l-  
toque latiorib fji — fldSJI Br ail, and wuoti of Cordova.  
*Twcedie.* —\*n»e scabrous margins d «he sjoetijr U i» r 1 untire  
leaves, an.! tin unu»ua)U hrrhaccou\* n.tturr v( sbl Kaloi ol

the involucre, logcilter with the greater tin and breadth of the inner scales, will re\*<sup>lily</sup> distinguish thii specks, I as] male capital a, as I>e Candollr justly remarks, art small, almost globose and drooping, very much resembling some specie of *Art. 'mtriti* those of the female plant are larger, ci ect, with long tawny p<ppus.

io\$8. (45). *B. Mytiputomiim* (Spreng.); fru iicoaa glabra ramosissiraa, ramulis angulatis, foliu linesxibos acu tis integerrimis margine subrevolutu ectltalis uninerviwi, eapitulis ad axilla\* foliorum su prem. aolitarits sesstlibos in spicam dispo- sitis, involucri ( \$ ovali, ? sul cylindracci) squamis palaceis ext. ovatis, int. iincan-obJoogi\* ekmgai is.—*DC. Profr\** v. p. 422.— $\beta$ . foliis obtusis.— I: io Grande (>praog.) rn\*\*ato ('- 990, 992).— $\beta$ . S. BssjM raasafir (a. BN« »000).-^.\ small copiously leafy shrub. Le<\*cs { of ai inch long- <sup>1M</sup> WU plants the pappus of tte female Bowers is lo ayr than ihe in\* volucre, and the capitula are often pediccllate.

1089. (46). *B. tkymifutt* (Hook. et Arn.); iVmicutosa glu- tine wnana, ramis pubescetitibu\* \*tr>a, foliis parvis lineari- oblongi>oblitsis integerrimis crassiusculis patenti-reflexis ener- viis, capituli\* raccmoso-paniculatis pe<licellis basi foliolosis, inv niucris t Mjuamis subhemisphaericis paucis lineari-oblongis, int. paulo longioribus.—Crevices of rock\*, CicfMgtt de las Arrojaa, Andes of Mimrioiai *Dr G. he\** {m. 166),— A very distinct ami well mnked ^istjaa, with copious glutinous leaves, 2—3 lines loog.

1090. (47). 11. u/inmi (Hook. et Arn.); fruticosa ramo- sissima, ramis erectis striatis glabris, foliis angustissimis subu- IRIH ttenui-mucronulatis integris pinnatifidisque supra caiittij. culatis Iaciniis subulatis, capitulis solitariis, ram at U brrvihsm Ssrpc coryuilH>sis terminantibus, involucri subcampanulati squamis lineari-tubulatis nerv. viridi notatis.— $\beta$ . *humilis*. Woods of Cord bra in. II-ia), an, l in N. P^Usgoobj\_\_\_\_,  $\beta$ . dry bare pl ac<iot the t'ampa\* ' H. 111-). *Tweedie*.—Leaves | (.  $\frac{1}{2}$  of HI inch long, mov of them deeply pinnatid, with long slender mutcrottate segm-nts, by which characters this remarkable ipecic s may at «ucc be recognised.

1091. (48). *B. fubulaia* (Don. *ms.*); itcrbacca glabra simplex vtl ramosa, caulo ranmqc teretibus htmbus aut laevisime striatis, fol:is erect is subcarnosis a lternis remotis linearisubultiis acutis sul enervibus iriiegrrimit v. serratts si cccitate canal iculatis, cspitulU sulitni iis terminalibus in ramulosultimo: subccffymbotOSj involticri c«m|>anulttlo-l demispl i;rrici foliolis coloratis omatbut nvaiis i cumin atit» margine tin. guste scariosis.

—«. foli is involtrique squamis integerrimis.—β. foliis serratis m, voluceri squaum margine crosia.—a. Iios t Ay res (*Herb. Baldwin*). Boggy places, Bah in Bin ica, N. Pttagnia. *T'accedie* (n. 30). *W* *Uspallata*, Andes of Mendoza. *Dr Gillies* (n. 190).—β. S. Patagonia, Lat. 47°. Evident

two 400). \ . t spots, nenr the mouth of Rio tic I slightly fleshy, generally with no appearance or ne. Pata C

*C. Dtrtriti*, *Etq* I illy an annual pillies in it height from six inches to two feet, the stems rod of nches singularly rounded and even, ihickith and junci-form, spongy within. Leaves always coloured ( ) uminated :u-lies long, are tly npprcsM-il, iligl us an inch long, o of cosln apt-

tula large. It is the summ\* special data\* i the A). >a which Mr T"« • iis remotis linearibus can 'atagotiiu. It is rciuli) - ninerviis pilo vel m and leave\*, iiml the k>a> (nurple) ac scales itimes with nllly <htt< margins. Papp uninerviis lanceok inatis marginibus

109" D. *Dancinii* (Hook, at Arn.); mil'i uiicosae ramis angutalo-striatis, fol alicutaiU sul>carnosit obscure u integerrimii inolli I itis capitult^ M>IUU ttnalibus in ramulok uUimfrt suUorymbo«o«, involuceri liemUpha;

• M>y tab Dot be UM *stepk<iumikm<ititk acumii* (*Baccharis juncea*, DC. l. c. p. 423) which Le «ataf f, ys is a native of South Brazil, and not late scariosis i Use oanactsv afrws tdmby sire, Ut. i /. (\*. 397.; ^ i m arc small, and do i. hit

i the plant, ! nffic to show (hat the i\* intinct from any otl . r. Ltavat an

1094. (50.) *B. genistifolia* (DC. Prodr. v. p. 423); fruticosa ramosissima glabra, ramulis striatis, foliis (perpaucis) distantibus sessilibus linearibus obtusis integerrimis subnerviis, capitulis ad apicem ramulorum 3—5 sessilibus spicato-digestis (sub-)ebracteis (nunc solitariis terminalibus), involucri subcampanulatis squamis ext. ovatis, int. lanceolatis squamis ext. ovatis, parvis int. lineari-oblongis, omnibus uninerviis integerrimis.—An etiam *B. leptophylla* DC. Prodr. v. p. 423.—«capitulis glaucis (an distincta?).—a. Monte Video and S. Brazil (n. 988). Fort Argentino, N. Patagonia. Tweedie.—β. Boenm Ajrr. Tweedie.—Allied to *B. angustifolia* Mx. next to which De Candolle properly places it. May not *B. leptophylla* V. DIM. c. p. 1. MJ' >> 1, nr «v. of th» ? P., j., elongate, glaucous. In the glomerated var. the female capitula have the involucre much longer, and the inner scales particularly, than the specimens with solitary capitula. It will perhaps prove to be a distinct species.

§ 4. *Ihtcolores foliis multinerviis raris penninerviis, supra magis minusque virescentibus, MUUUM dense cano-tomentosis v. serotinis. ramulis apteris.*

1094. (51.) *B. ...* (Spreng. Syst. Veget. iii. p. 461.) fruticosa subteretibus albo-tomentosis, foliis linearibus patentibus mucronato-acutis uninerviis integerrimis margine revolutis supra araneosis (demum glabris nitidis) subtus albo-tomentosis, capitulis terminalibus racemosis, involucri hemisphaerici squamis ovatis acutis dense tomentosis.—DC. Prodr. v. p. 415. Rio Grande, Sello. Maldonado. Dr Gillies. Monte Video. Tweedie.—Capitula rather large. Pappus pale tawny. De Candolle describes the leaves which are nearly an inch long, as obtuse, but they are characterized by Spreng. as acute, and CY. as mucronate.

1095. (52.) *B. velutina* (DC. Prodr. v. p. 415); fruticosa ramulis teretibus, foliis sessilibus linearibus (obtusis) integerrimis 1-nerviis margine subrevolutis, capitulis axillis breviter pedicellatis racemosis pedi-

celli\* midis, HTOI. squamis oblongi\* ? ex axiliis longius  
 podicelUTis, pedicellis braeteoiatis, invol. squamisovatts ohtu-  
 sissimis laxis rufo-vclulinis, flohbus i" irul. 2 5-G, ucha?niis  
 glltbris, co rultarigula pappo pluriseriali. DC—R ochracea,  
 Spr.?-Maldonado. *Iwttdu*.—Leaves 4-6 lines long, patent or  
 reflexed. In our speci menttlie younger onei only ore wbolly  
 tomen Msr, iii ihf older ones ilu upper side is more or leas  
 barB, the under always d<nsely >elutino-innu'titosc, lite invo-  
 lucre thickEy so and ferniginous. OIT plants are all male,  
 ind tin- CAPituIn, at first nirlu, resemble tlio\*c of *Artetmtia*  
*AbstitUhtum*; the scales are sJSPCi, oval, vry obtuse, lax and  
 somejwlm spreading. D« \*an<lulle doubts if the male and  
 ft-male plants lie has described belong to the same species,  
 peri 1 apt the following has been oofounded with it.

1096. (53.) *It. arUmuiotda* (Hook, et Arn.); frutitosa  
 ranloaiastma cano-pubcacent, ram is ramulisque angulato-stri-  
 titu. foliis numeruaiatimis lim'ari-attbacicalaribus mucronaio-  
 neutU uninerviissubtus albo-tomentotis marginibus revolutis,  
 capitilis racemo«o»spicaus foliosis, involtu-rt catnpanuiati ( j  
 aobbeui, : •; \) squamis dense pube\*centi-incani\*,exi. ovatis,  
 int. ul longis obtusis, omnibus apicibus scariosis.—liclwi en  
 Rio de los Ebovillos at d el Rio Quinto, province of Sai Luis.  
*Itr GüllkM* (SJ. 185.) Salt Plaini of Bahia iiUnca, lat. 40». ii  
 N. Pa.ta^onia, and in high and dry places of Cordova.  
*2<sup>n</sup>vxtdie* (n. 1126.)—Leaves 4-6 linea long, very slender,  
 alinokt ucicular, scarcely rigid. Copiula rather utiall. I'aj-  
 pUJf twice as long as the involucri, rufo US.

1097 (54.) *B. phyllofolia* (DC. / Wr. v.p. 415): fruti-  
 COM, romit. teretibus juni oribus canescen tifcatfi lutino-lursu-  
 tis, foliU trssilibus •{>["oxima lo-pau ntibus ovato-oblongis  
 haM obtusia ftuboordaua, apice otttu^iusculit \*ul mucronatis  
 nuirgtne vim subrevolutu supra ghibris subtui cano-toroenloaU,  
 paniculu subnuda nunotissinia apice subcorymboaa, capit  
 pediriilpns ii volucris S squamia oWoogo-linearibu\* obiusts  
 dorso lanato-hirsutis. DC.—Sandy place\* of Rio Gran J\*  
 and the Banda Orientale. *Tkmdie* (n. 1023.)

1098. (55.) *B. albuL*. (Hook, et Arn.); tota albido-canescens  
 Vol. III.—No. 17.

capitulis, nervis angulatis.\*- foliis remotis linearibus longioribus acutissimis submucronatis in subtus præcipue dense albo-pubescentibus, capitulis scyphoideis, involucri squamis lanceolatis acutis uninerviis dorsum pubescentibus reliquis nudis tuberculatis.\*—Santa Fe (in the Argentina Republic?) Tweedie.—Our specimen » • solitary one, and the flowers (male) scarcely perceptible; but it seems very distinct.

1099. (56.) *W. tenella* (Hook. et Arn.); capitulis pubescentibus incanasufruticosa, nervis angulatis, foliis auriculatis remotis linearibus subulatis integerrimis acutis rigidiusculis.\* obscure uninerviis, capitulis terminalibus tuberculatis majusculis, involucri lato-campanulati squamis ovatis acutis imbricatis » • nullis—*a. gracilior*. N. Patagonia, al Bahia Blanca and Arroya de Napo. Tweedie.— $\beta$ . *magis nuda*. St Julian (S. Paconitt ?) C. Darwin, Esq. (n. 379.)—Our specimens » • all males.

§ 5. Caulopterse, *tumida*\* foliis oblongis linearibus » • nullis, ramis alas foliorum ciliatis ciliatis basi utrinque deorsum gertibus. 1100.

1100. (57.) *B. Gudkhamliana*. DC. Prodr. ? p. 424. St. Petersburg, Brauer. 7th April. Rio Grande do Sul. Isabelle.—Da Candolle says, "this very much resembles *B. articulata*, but it is not glaucous; the articulations are elliptical and broader, 7-8 lines long and 3 lines wide." Some of our specimens are most beautifully and regularly jointed like an *Opuntia*, but others pass gradually into the following species.

1101. (58.) *B. articulata* a. Pers.—DC. Prodr. v. p. 424. Conyn. I Aim. Molina, I. M.—Montrouzier. Sello. Rio Grande. Tweedie. Maldonado » and the Pampas of Buenos Ayres. (itself, am) N. Patagonia. Tweedie.—El Morro of Province of San Luis. In this species » • caudex more variable than (his plant (which however, can hardly be called glaucous) in the length of internodes, the breadth of internodes often having a wavy edge, and number (2-4) and more or less crowded position of the capitula: K, but we think it possible that the number of described species in this section will require to be generally reduced, and that probably

*B. crispa*, Spr. *li. trimera*, Lett, and *li. ruficaudrica*, Less. (all from Rio Grande) should be united with *B. verticillata*.

1102. (59.) *B. sagittali*\*. DC. v. p. 425. Molina, Inrsc. Chil. It. Chami (MK). Plains of the Andes, Province of Valdivia. Bridges. (n. 580) Chiloe («. 57) and Coquimbo (n. 83.) Cuming. Meadorn, Gillies (n. 182.) Parana, Tweedie.

1108. (60.) *B. fthpteumoiint*. Jj C. Pro. <tr.v.p.V25. Molina, Less.—S. B. axil. >ello. Banda Oricnisile, Rio Patruña and Uragtay and RWHUM Ayres. 'Weniw. —In our plants the leaves are from 2 to 4 inches long, triplicate, and penninerved. The glomerules of capitula form dense spikes.

1104. (61.) *Heterothalamus tinnoides* (Schlecht. in *Linnaea* v. 6. p. 504); *foliis linearibus integerrimis*. DC, Prodr. v. p. 816.—Melananthen nlica. Spr. Sterea Uomerilla. 7>o», msh—Mountains west of Monte Video». (Tweed\*)\* Agundita del Cerro del Infotot proprio of San Luis. Z>r. (»W.ies. (n. 16i.)

1105. (62.) *B. spartioides* (Hook. et Arn.); *rajnoaissiniis aphyllis, rachidis bracteolis calariis\*, floribus foemineis ligularibus*. —Uacchat is ligulari>. Am, nut—Los Loamos in N. T'aiagonia, Tweedie. Valley of Uspallata and from Mendocino to Rio Desaguadero. Gillies (1.188.) Coquimbo, Chili. Cuming. (n. 884).—Habit of *Ba. ochariujm* *U. folia*, mine has no leaves, and the flowers are decidedly bracteolated. No doubt, HIM, it greatly resembles *B. oyhilit* of DC. EVodr, v. p. 424, for *B. andolie* has referred to it, (though doubtfully. Iff Cuming's Chilian specimen). Even in a dried state, on bruising the flowers, they yield a most powerful balsamic smell, and Tweedie Chserrea, "I was led to discover this plant from a considerable distance, by its very strong odour. It grows in small dense tufts and when the wind blows the scent is perceived far and wide. It is called Licoba, and is the only article employed for making lirooma."

1106. (63.) *B. tritmpu* (Hook. et Arn.); *immixtum foliis oppositis pruinatis orolanceolatis integerrimis trinerviis supra nitidis, panicula terminali pyramidalata, rachidibus bracteatis, flosc. foem. filiformibus* (hsud lipil.r is!)



—*Cony la trinervis*, I Aim. *Iuccharis trinorm.*, DC.—Uruguay. 7Vwcn>.—This differs from the generic character only in the female florets not being ligulate. In all other respects it approaches *B.*, /...•/i.->da\*, Lea\*. It is surely *Ikvchari\* trinervis*, Pers. and I)e I'ami.

Subtrib. III. TARCHONANTHE. «. *LEM.*  
MICROPSIS, DC.

(LASIOPHYTON. *Hook.* et *A'n. tutf.*)

*Involucrum* scahoausa subbiv;riale. *Capitul* «\*• hciero «\*•. mum pauci-(sub-9-)-florum; flosculis fœmineis uniserialibus filiformibun in ambitu : ft. *henmapkrwi* itis tribus tubu <oaia in centro mtra rachidia unist riales isarith naadtapc sitis. *Anthe- ræ* basi biselnaai. *St\$imw* berm. ranu pulni infra n picem ««- currtntn ubaeti. *MAmmia* eatipilata erourin oblonga; MM> sericeo-vil losa, villia pappum oeculantibus; *farm*, gtabia compressiuscula, hinc linea sericea notata, bracteolis membra- nacea valde concavis apice acarioao-appci diculatis dorso gib- bis oinniuu ntvoluta. *Pappm* cooler mis coconiformis brevis- simus crenato-Icniaiiu perabteaii — *fftrba* annum, jyygmao, albo-tomentosa. *Fc•lia* obiamgo-spathmlata *CapitJa* glomer- ata, terminalia, *Jiinû* tub tafntuitM lavoftKroto, *Hook\** at jflnv.

I 107. (1.) *M. aoiM* (DC. *PrveV.* v. p. 460.) *Utiot* phyton pusilluin. *Hook, tt Am, wui.*—Chili. Valdivia. *Bridges* (n. 642). *Quillota. licrtero.*—V^c have placed thia gcutu 1 ere in cieierence to lb> opinion of I)e \*Candolle, although our observatons on the ilyle of I tlic central florets, which tlint eminent botanist baa described as male, lead u\* ratht r to insert it imoiing the *Gn npiafum*, near *OtfuJa*.

*W''\**. (1.) *M\cra\)\i\*yiobtferu\** {litrt, \n 1)\* (*Cand. Prodr.* v. />.'46U); totut niveo-toinentutus, caulibusa basi ramo\*is diffu- sis, tbliis oblongo-linearibu\*, ftoralibus latioribus ubtusas, capj. tuli< terminalibus lateralibutqu-3 invo!. *Mjimn*> plainu^esjlk inn mibus tomentosis ob tiisi>imw,—t lull, at Rancagua.— *Bertero.* We are ut• acquainted with diu.

PLUCHEA. *Cast-*

1109. (1.) *P. nuicroctpkai.i* (*Or Cowl. Prodr. Hp. 450*); herbacea?t ere:ta simplex pil<«« caule strialf. foliis ionge decurrenti but alatis infer. m-uli-oblongis terrati\* bi>i loige ntU'iiualis, super, lanccolatii lnearibusve integerimis, capiiu- lis '—8 in corynibum icrminalcm <ispositis, pe ilioellit p>l en- tiin liirsui is, involucris tomentos o-lanati\* hi) sutissimisqu'e.— *Conyzi Megapotnii.ica. Spr.--a. cntili? nn^ii>(o chilo. Hock\* Via Monte and Rio Grande. fwtcdie.—A caule latiwilali. Boggy ground near Maldonado. Tweedie.—Cauii\* nmno- poh ceplMis.*

III». (2.) [*Quitoc* (*DC. Prodr. s. p. 450*); herl m ea, fuiiis setsilibus longe in alas foiiceas decurr-entibus oblongis lanceolatisve cilloso-denticutalis, corymbo composito Mib- fastigiato, invol. »quami> IttnoeoUctisubacutii.—Rio C>rande, Mit->Grosso, ubi dicitur "(>uiioc." *Umd, {De Ctm<L) Tweedie. N. Patagonia. Tweedie.*

Kill. (3.) *P. obUmgifotm* (*De Cand. I'rodr. v. p. 451*); herbacea subfusco-pube<cent lubglutinota, foliw bow lunge decurrenii-ulnti\* vel juniorilx is ob MM truncatu te ssilibus s:rrai<t rci oso-reticulatis, corymbo termin i)i »ubcomposito, invc• 1. M|unnus ilurw) pubrhw gUiult; losis l moeolutiH acutnina- tii disco longioribM\_\_\_Victoria, s. *Brsjil. Twetdi\**.—iDur plant seems i!rubby : in tbi young branches the leaves are sctsilr and obtuse at the base. in the older ones singulariy decurnnt.

1110. (I.) *Pterocauton \$pkat\*m* (*DC. Prodr. 9, p. i154*). CODza spicatu, *Isim. i 3. • MJOM, VakL Chlaoolobos. Cass.* — *Iuenos Ayres, Rio Grmde and Maldonato. Tweedie.*

1111. (V.) *Pt. amgmt^biium* (*Mhk I'rodr. T. p. 4&4*).-- —*Btwooa Ay res, /mwdSv.*—Here the glomerulea of capitula form a dens\* gbboae head, which seems the only diffcrtM e betwe•n it an.1 *Pt. ffcicatmm.*

1114. (1.) *Tessari; alwmthuHkt* (*DC. Prodr. v. p. 457*); rinn's foliis que At|>ic>>>mime canis uib<rg<<nteis, iuil" lance- olatt utrin<iuf Ruminatis, nunc inttgrinis, nunc dentibis

grosau at utis hinc inde incis, subtua neiroao-rticaUrii, invol. quanta glabrtt acutU, dbco 7—fMloro. DC.—Baccharif al>inthoides. *II->* af Am. *Hot. \*f BmdL Voy.p. 57.* Gyneteria incana, *Spr.*—Chili. Conception. *Btttkas. C\*m-ing. (n. 822).* Valparaiw. *Bridfaa\* (i. 55.)* Mendoza. *Di Gillies. ("Fvutaro—", vern. nUol\*3.).* Monte ViWo and Banda Oricnule, and \*de of Rio P eiombolo. *Ttctnit\* [n, 1209.).*—NN'e hare at'opted, following l)e I Candolle, the *Getiera PlwchtOy Pterocaulon, txad Tesaariti*; they differ in *habnt*, but are tcarccly dutinguiabable by any characters\* *ThB* present plant does not belong lo *Tcstaha*, aj define\* l by Lessing ; tmt to his *Pluchea*.

Subtrib. IV. ECLIPTER. *Less.*

U 15. (1.) *Siegeab<ckia mrrata {O>U. Prodr. v. p. 406);* foliis ovatis acutis regulariter <lcntato->ei ratis breviter petiolatis, summit >><Mtil>u> ovato>la> sceolatis ciliatis, invol. ext. aquamit in tenure duplu longionbum /)C.—S. cordifoU», *Poepp. Di >. Jierb. ». :>». tfook.it Arm, m\*t. (an H.H.K.?)*—Chili. (*Chamisso. Betw Mi V ldivia at, 1 Lot Tarn.s, Province of Valdivia. Bridges (n. 6d9).* Wood\* i of Tucuman. *Tweedie (n. 1239.)*—De Candolle says of this, "Differre videtur a & cortifvita, peti ilosemipoH, nec 3-pollic., linbo o^ ato nee cordato, inv. ext wjuan. is brevioribus;" but t iliev differences do not appear lo u\* io be oooatu.

11 Hi. (1.) *Eclipta erecta (DC. Prodr. v. p. 490.)*—Rio St Lucia, and banks of the Uruguay, Honda \*orientale, aiu St Catharine, S. Brazil. *Tbmdie (n. 450.)*

Subtrib. V. MELAMPODIEN. *Less.*

II I?. (1.) *Polymnia titpkoid\* s - D<U. Prodr. v. p. 516);* caule tereti puberulo-glanduloso, foliis oppositis alternisve membranacei\* p puberulis triplinerviis grosse dentatis apice sul)trilobi< basi in \ petiolum alatum in rtgulai iter dentatum atteriiiialis prope basin auricular >dilatatis, inv. squamis ext. tvatis aculi\* durso villosis, at thanniis obovrr is subcompressis, ligulis aribus integris DC.—Rio Grande (*De Cand.*)

La Plata Ami Pa ran i. *I'wctdie*.— Our specimen\* from Mi Tweedie are indifferent, yet we think we are right in referring his plant to *P. silphioides*.

1118. (1.) *Kuxenia gracua* (*Cham. Flor. Peruv. Ilrool. p. 75, t. 16*); foliis late ovatis in partibus Don tlecurrentibus. *J*(*Prodr. v. p. C, in Hook. Bot. Beechey. IN ?«cA. Toy. p. 57. Ogiara triplinervia, Spr. in Anthut ovatifolius, Ixig.—Concept) in B. Matey. Cuming. (n. 131).*

1119. (1.) *E. Mitiqui* (*De Cand. Prodr. v. p. 501*); foliis ovali-lanceolatis hinc longe cuneatis apice acuminatis medio grosse Mffatsti IK.—*Podanthos Mitiqui. Limit, in De Cand. Prodr. et in Herb. nostr.—GUI. Lin. VaJpstfliso. Bridges (it. 498). Huenos Ayres and Entro Rios (cultivated) Tweedie.—De Cnidoll: notices a twr. /3f #K^ntegemmr, of this species which is the Gramia aromut, in Poepp. Pl. Exsicc. I. J08. (non Hook.), % unlive also of Chili.*

1120. (1.) *Acanthospermum xanihoide\** (*DC. Prodr. v. p. 501*!.)—\*entrospermium xmillionio, *H.H. X. Nov. Gen. Am. iv. p. 271. t. 397.*—Sunt plantae in M. Ayres («. 73tf), and at Cordova (a. 1181). *Tweedie.*

(To be continued.)

IV.—Historical notice on the late M. A. LAURENT DE JUSSIEU; translated from the French of M. FLOURENS, Perpetual Secretary to the Academy of Sciences.

(With a Portrait.)

The Jussieu family belongs originally to the little town of Montrolier, situated amid the mountains of the Lyonnais. One member of this family came to settle at Lyons towards the year 1680, there to practise Pharmacy. He married, and was the father of sixteen children, three of whom, Antoine, Lucien, and Joseph de Jussieu, have been the most celebrated Botanists of the 18th century.

The first of all this numerous and gifted family was called

Christophler; from him descended M. Laurent de Jussieu, who was destined to illumine the happtneas of adding new credit to the name which his father and uncles had transmitted to him, and the no less rare felicity of handing it to a successor adapted to support its honour; a man in which the genius of Botany seem\* to have been beredilary for now nearly two centuries, as was the spirit of mat hematic\* during a long series of years in that of Br: nouilli.

Antoine de Jussieu, with whom commenced the celebrity of the name and the taste for Botany, was a Botanist almost from his infancy. Before he attained to fourteen years of age, he had investigated while herborizing, the environs of Lyons and the adjoining provinces of Auvergne. At his first visit he cultivated in Montpellier (under M. de Lamoignon), «ho» already proposed «the nomenclature of Families, (a happy term, though then little understood,) of Affinities, and (so to speak) of Parity of Plants, and at twenty-four, he succeeded to Tournefort, the greatest Botanist of his own time, in his perhaps of any time, because it was he who first fixed the continual ideas of the science of Botany, as Linnæus, at a later period, settled its nomenclature.

Compelled to devote himself to the practice of medicine in which he excelled, Antoine did not continue to effect for Botany all that his facile and singularly precocious genius had promised to promise. But in summoning to him his second brother Bernard, he did more for this science than his own entire and undivided attention could probably have performed.

After Bernard, he sent for Joseph, whose life was to be as perturbed as his brother's should be calm, and who set off for Peru in 1735. He accompanied in his capacity of Astronomer, whom the Academy was sending, that they might measure at the equator a degree of the meridian, and thus resolve by definitive experiment the controversy on the expansion, the famous and long-debated question of the configuration of the terrestrial globe. His patience which is the result of devotion to science. » which

already reckons \*o many victims »"d enumerate\* them in nearly all parts of the world, a kind of heroism almost peculiar to modern times. Detained at first by the curiosity that such rich and novel regions might \*ell ins; \*ire, fi subsequently hindered from **depart**ing by the natives of the country, who being attacked by a never-ending epidemic, we can well imagine to lose the services of an able physician, he did *not* revisit the land of his birth till after thirty years of the severest fatigues, \*IMa worn out alike in body and mind, **baring** even lost all recollection of what he had done, he too well justified by his labors and misfortune the title that Condorcet bestowed upon him of *the Martyr to Botany*.

Of these three brethren, **only** one who exercised a powerful influence on Botany, and through Botany on Natural History in general, **WM Bernard**. He **it Wfj wbo**, while all the other French botanists, beginning by his brother Anouine, were timidly following the trace\* of Tournefort, opened to himself a new path in which there was no predecessor, and in which none was to go farther than his nephew, **Id Laurent de Jussieu**, the subject of the present memoir.

Antoine Laurent de **Jussieu** the nephew and worthy follower of Bernard, was born at Lyons, the 12th April, 1748. As soon as he had completed his earlier studies, his uncle sent for him to Paris, where he arrived in 1767, at seventeen years of age. There did he find himself once placed beside the individual who had swayed the sceptre of Botany in France ever since the time of Tournefort, and **wboae** only European rival **WA\*Linnaeus**,—a wonderful man, **wboti** name was filling the learned world, and **wbo** had written nearly nothing. But if Bernard de Jussieu had written little, he had thought much; he had passed his life in meditating on one of those questions which unravel all the other questions of a science; he solved the problem of the *Method* in Natural History, and had done so during a period when efforts of all kinds had strikingly **ad ran\***ed the human mind.

At the time when the younger **Jussieu** came to his uncle, Antoine had **ju>t** died; Joseph was yet in **Per>** and through it

trious olil man was living nearly alone, lodging in a house in the street des Bernardines, which he only quitted to go to Massacre, to the Academy, and to the Jardin des Plantes and absent in profound meditations which were only interrupted, (if interruption it may be called), by the society of a few friends chosen from among the most respected names of that epoch, Le Poivre, Le Monnier, Duhamel, and Malaherbes.

Such was the retired life of Bernard. To this simplicity of manners, which was characteristic of his nature, was added by the peculiar turn of his mind, he rather admitted the ideas which arose, than sought for them, he added the strictest and exactest regulations to all his habits. Every thing in his house was done with extreme order, in a spirit of *method* so to speak, of the most unerring kind; daily, at the same hour, and after the same fashion, had each meal its fixed and invariable limit; dinner was regularly served at nine; and when the young Laurent ventured on rare occasions to indulge himself in a visit to the theatre, he never failed to calculate the precise number of minutes which it should require for him to enter the eating-room by one door precisely at the instant when his uncle was coming in at the other. A trifling circumstance exhibited another trait of Bernard's character. That portion of his income which was not required for his running expenses, he deposited in a chest. One day, being called upon to incur a large and extra expence, he opened this chest and found in it 40,000 francs; it was then closed not to be reopened till after his death, when an equal sum was discovered there.

It is no unfair allegation to say that Bernard de Jussieu transmitted ideas as much as he did his *method*. With the same regularity and continuity, yet with a degree of carelessness which he accumulated them; at length, in the month of the troubles of his mind one happy day, he drew thence his plan for the *Natural Orders*, an undying proof of his genius; again he let them gather up, and at his decease transmitted these ideas to his nephew, as the most valuable part of his inheritance.

Bernard (Mused most of his time in thought, «ud habitu.t lly meditated in a sitting postui >. The uncle uiul IH-phew spent the days at work in the tame aparlim-nt without speaking to one another ; but in the evening, the young man read what he had written to his u tide, who in his turn communicuicd to him In\* views and reuV:tions.

It i\* easy to perctive thM the impreatioof dc ived froiu a man ol tlii> tump, mufti have influent d the ebara\*ter of ihe youthful Jussieu, as much a» they did hie pursuits. Hence •rote a similar simplkvy of imbiU, constancf at work, und perseverance in following out any great •and leading idea; never were two men apparen 11) so made lo BMerge into one, and to prolong the mn« existence, M if u they formed in fact only two ages or successive plia.se> of one and the self-same life. After five year »p<nt with his nock in active study aml inttmau) convTK-, the young Laurent, though but tweftly-year old, was already a *Doctor of Medicine*, and LeMonnier's AasisUnt in the bounx:al char at the *Jardin des t'lunh 1*. To Bernard he constantly r<ferred, consulted him in every dill iculty, applied to him under all his doubts, often as much stimulated by \*lial affection as J.i. M ientific curiosity. I M after the death of Antoine, his brother Bernard had i sunk into deep de jWHOP, B: ad at len\_k'!! lost his eye-sig iit. Nothing, per iiapa, would have sufficed i o render life tolerable to the old man, bu I tin: 11 ^eniout aebamcs b y which the youth continu.ally managed to route hi' mind, in suggesting subjects of inquiry alike striking and difficult.

In 1773. a ('lace became vacant at the Academy, and Bernard persuaded his nephew to offer himself to fill it; uui tl« latter had u yer pu blished nothing. A memoir must thrrclar l.-.iH.-sumi. u.iA KM UM ISjMer; , i I, , t,-i kb Laurent chose the *Examination of the Family of Ranunculacea*. The subja matterei little, for whatever this might L\*a,il afford ed an opp ortunity that made him feel his strength, and display his striking idras ami be accon lingly followed out and remodelled his uncle's views, impressing them with It the



stamp of his own mind and genius. Often did he repeat that this Memoir it was which made him a botanist, that the veil was\* withdrawn, to me his own words, and the great principles which he should constantly labour to enforce and demonstrate, were now first displayed to his eyes. This Memoir struck all those who heard or read it as belonging to a new order of ideas, and the new element and principle of the *Natural Method* WM thenceforth to take its place in Use science, and to alter its aspect. Up to this period much of Science had consisted in *nomenclature*; Linnaeus leaned to this opinion; now, by a process which served to bring it nearer to its true object, which is the nature of *thing*\* the study of characters should supersede the study of names. "Some\* nature," says our author, "is not to be neglected; but research into characters is a more important part of Botany." Nor are all characters\* to be held of equal value; they may be general or particular, constant or variable, primitive or secondary. Often is a single one equivalent to many, so that we should not content ourselves with counting the characteristic marks, but endeavour to appreciate their respective importance'. Characters are also indications\* of the affinities of things; for in every created object, whether organized, vegetable, or animal, each individual part has its necessary relations to all the others. Thus some judgment may be formed of all by any one, and those parts by which we form a judgment of others, are what we call *characters*.

Now, naturalists began by hunting for these characters or signs in all the respective parts, almost indifferently. Soon, however, they found that there is not an equal importance to be attached to all, whether as point\* of union or separation, and hence arose the *method of characters*, which calculation gives a solution to the problem of the *Method*.

Gesner, in the middle of the 16th century, first originated the idea of drawing the primary characters of plants from their *organs of fructification*\*: this was the first step, followed by Cæsalpinus, who demonstrated the pre\*eminence in this

respect of the whole of vegetable physiology, in order to determine the peculiar function of each portion of the flower.

A flower, as every body knows, consists of many parts. In the centre it has the Pistil or female organ; round it are placed the Stamens or male organs; the Corolla or brilliant portion, which constitutes the coloured part of the flower. (The flower itself, according to Tournefort,) surrounds the stamens; while the calyx, which prolongs the outer layer of bark or epidermis, encloses the whole.

More than a century ago, however, Tournefort was still in ignorance of the use of stamens, and even denied it, when Vahl demonstrated the fact. The theory of this latter writer on the sexes of plants was brought into notice by the ingenious system of Linnaeus, subsequently confirmed by Linnaeus, Gleditsch's, and Kuntz's Necessary experiments, and thus was the physiological difficulty explained.

The problem relating to the method, was never solved till Jussieu did so. He perceived that the corolla and calyx were deficient in a great number of plants, while the pistil and stamens, (those reproductive parts of the flower or new plant,) always exist; taken separately, each of these organs only conveys incomplete characters, while the complete and natural characters are afforded by these two organs taken together, and considered as to their respective insertion. Thus the Stamens form the primary character in the flower.

The primary distinctive character of the seed is derived from the cotyledons of the embryo or rudiment. Dried plants, which they are the first leaves, the organs which furnish it with its first nutriment. We must therefore be especially concerned with the differences that are perceptible in these primary organs, and their influence on the general development of the plant and its organization. The outer parts of the seed, which are destined to the future plant, and constitute, properly speaking, the

seed it>e!f, as the seed-coats, the perisperm, ttc, are but of secondary moment.

The Memoir in which M. de Jussieu thus laid the first bases of the science of characters, was, as above »tated, published in 1713, and procured him instantaneous admission into the Academy. The following year, 1714, he published another on a more extensive and complete scale, in which all these striking views are again taken up, handled anew, and placed in a clearer and more precise light; and the following circumstance gave occasion for this publication. The method of Tournefort, established by himself in the *Jardin des Plantes*, was still persisted in there, notwithstanding: all the changes which had taken place in science. The need of a reform was felt, especially as the number of acquired species was much increased during this protracted interval, and the old locality had become insufficient for their reception. For this purpose a new project of augmentation worthy of the title to which this name has added interest, had been laid before Louis XV., who was fond of botany, the king approved and adopted it. The Garden was at once doubled in size, and that portion devoted to the *Academy*, properly so called, was to be immediately replanted.

Nothing remained but to decide on the plan that should be pursued when planting the ground. It was impossible to preserve the system of Tournefort, at least in its whole, especially bees\*\* of the two great improvements which Linnæus had introduced; namely, defining the genera, and simplifying the nomenclature. Nor, on the other hand, was it practicable to adopt the Linnæan method, ingenious as it is, because of its being in reality still farther off from the order of nature, than that of Tournefort. The choice remained, whether to correct these great systems by the other, or to establish a new one; and the latter alternative was selected. The new system proposed by M. de Jussieu, is a scientific combination of the celebrated labours of Linnæus, Bernard de Jussieu, and Tournefort. From Linnæus it

derives the genera, species, and **naachuort**); from Bernard, the orders and natural families; and **final** owe to Tournefort the mode of multiplying the classes of Bernard, without breaking his orders and families.

\*His Genera of Linnaeus were the most correct; his Species the best defined; and his Nomenclature was admirable. This nomenclature, which gave only two words to every plant, the name of the species and genus, thus doing away with the long phrases of Tournefort and (aspar HAUhin, constituted in itself, indeed, an eminent reform in the science of Botany. Mill, when it was proposed, that this nomenclature should be adopted at the *Jardin des Plantes*, a difficulty arose, owing to the prejudice cherished by Buffon against the technical department of classification. It was utterly discarded all Linnaean names. But M. de Jussieu having pointed out to him that these names formed one of the happiest changes that Natural History had ever undergone, adding, that the *Jardin des Plantes* ought not to be behind in any improvement, Buffon adopted the *Method*, and the nomenclature of Linnaeus, with the Natural Orders of Bernard, were immediately introduced in the new system.

These *Natural Orders*, as Bernard had imagined them, were comprised in seven classes, which Laurent judiciously increased to fourteen. The *Lobes of the Embryo* constituted the three first classes; hence arises the famous division of the whole vegetable kingdom into *Acotyledons*, *MOCOTyledons* and *Dicotyledons*.

The *Insertion of the Stamens* on the pistil, on the part which bears the pistil, on the calyx, or on the corolla, affords the frequent divisions.

Thus, (here are two descriptions of characters; the first derived from the embryo, the second from the relative insertion of different parts of the flowers; and these furnish all the classes. Characters of less importance supply the other groups, families, genera, and species; the groups always holding the same rank in the general system as

their character\* in nature; and the leading principle of the method, drawn from Nature, the relative value of characters.

Again, how shall we determine the importance\* of the characters, that belong of the whole of system,—how may it be appreciated in its turn, with perfect certainty? Here two equally sure criteria occurred to our naturalist; one, founded upon reason, decides the value of any character by the importance of the part to which it belongs\*. In the plant, everything tends to the formation of the flower; and in the flower, to the formation of the embryo or future plant\*. Thus the formation of the embryo is the great object and end of all other vegetable functions\*, and •• there, consequently, in the embryo,<sup>1</sup> says M. de Jussieu, “most naturalists look for primary characters.” We find: this plan, derived from reason—this *ratiomil phm^* as it may be termed, fails, (and it soon does so in Botany,) our author supplies its place with one that is purely experimental, equally certain, and which is never-failing. In default of the function which is unknown, or imperfectly known, and therefore impossible to decide on the importance of an organ, he determines that importance by the *constancy* of the organ. Nor is this all. It is with every circumstance of an organ as with the organ itself; the most constant and most general circumstance\* is invariably the most important. Linnaeus based his system on the stamens; their number, attachment, union, and proportion; the situation of the ovaries; he viewed all this, and employs it all, and yet he does not perceive the value amid all these characters one alone is really valuable, because it alone is unvarying.—*the lament, or their lament.*

Tournefort founded his system on the presence, situation, division, and form of the corolla; all afford him diameters, variable though they be; while he overlooks the importance belonging to the attachment of this organ, which alone is constant.

Both these great men failed of discovering the Natural Order:

ami for the same reason, because they alike neglected to observe the relative importance of different characters\*. More yet may be said, which is, that taking all butanuu from the time of Cæsaner downwards, Chceew who were most correct in their views, ami who saamad, as it were, to stumble on some fragments of a *XtUral*, /rraaptn ssf, these were all following, unknown to UtemseJves, the views all ordered by the relative *tahtt of character*\$. Still farther, there are natural families all ready inn.; as the *Grasses*, the *U< \mptmtteand /mUtftytra*—let any one study these families, ami he will find that primary character by which any individual plant varies, is only »ubordinateand secqmhtry; tin- primitive, important and essential character pervade the whole (*mmUy*).

Order, gradation and subordination exist therefore in characters, and the main difficulty is to classify these characters, this was quite a novel aspect in science. Bernard de Jussieu, who had introduced the principle of the relative value of characters when classifying plants had not confidently combined: the theory and practice of this principle, but Laurent did when he showed its aim, he consummated the great change which his uncle had commenced, and exhibited the philosophy of this system.

At the time when M. de Jussieu was writing these two Memoirs which contain the germs of all that he finally accomplished, his uncle and Linnæus were both alive. These great Naturalists died soon after, Bernard in 1777, and Linnæus the following year. From thenceforth the first place in Botany was vacant, and every one perceived that it was M. de Jussieu who should fill it; he himself might have been sensible of it too, and accordingly find, in one of his letters\*\* the following remarkable words, "There are circumstances of which a man ought to avail himself, and I should be to blame if I neglected one which it now offered me. In three months, we have lost the three greatest botanists in Europe, M. de Jussieu in Switzerland, Linnæus in Sweden, and my uncle in Paris. How honourable it would have been to succeed then, and thereby secure to France the precedence which

for cigners have hitb\*erto disputel 1 wi These words reveal a consciousness of his own abilities, which wms » will more proved by ttic task th M lie ti then proposed to his own mind; thit of subjecting d the whole • jjetabi kingdom to the principles tt t forth in Us two Men noirs;—an immense enterpi isc, whose result was his grand w. rk *On the Families of Plants*, and from which may be dated lh« new s| spirit which now animates ill those who occupy thiemsejves with thr affinit m and c)\*\*ifications of Vegetables.

The *Natural Method* is the object toward\* which nil the efforts of Naturalists were tendjng, even before they found it; am) v, when once found, which became the guide of all their subsequent efforts. The ancients, .t'weexc\* pt Aristotle (and him alone), paid no attci tion to the affinities of created objects; in Natur History, and especially in Botany, they looked only to the use ul, and studied V3 solely as connected with domestic economy and medicine. The order, affi- and their arrangements: his purely scientific de jKirtnu nt of llotai escap them » nilies of species and I ingent,—all I could it be other wise, they knew too few plants. Theophrastus reckons but 500, Dioscoide s 600, nt Pliny 8H> plants. The *Satttral Order* and arrangement of created l>cings I as its materials scattered over the wb< ole surface of our globe; and may be aptly compered to the task of col lee; ing and rebuilding an edifice, many of whose com ponent parts are wanting. Of course, the greater the ; roportion of missing portions, th0 harder would be tin: tai k of putting the structure together; if too many "rre abst: it, the work would be impracticable, and t> lie perfect ly certain il hat the edifice, when finished, w u a n etly correct, every individual fragment must be there.

\^ onder rul an the discoveries made since the Middle Ages; —that of a new v world, the mc»t wonderful of all ! The curi osity of men, once roused by great events, leads them on to more oMrgsjtk and dariaf remrdsea, Bdeaosa^»bresw^! anew into notice, great expeditions are undertaken, and the known number of orgn ized bodies increases with an aug-

menting rapidly, still accelerated as it approaches our present time.

To confine our view to Botany; the number of plants which is estimated, by the early authors of the 16th century, to be from eight to nine hundred;—yet a hundred years farther on,—we find Tournefort reckoning them at ten thousand, including varieties; when reduced to the total of species, properly so called, Linnæus made the amount 7000;—20,000 according to Jussieu; and at the present day, even this large number is quadrupled! Nearly 80,000 plants will be described in M. de Candolle's great work, now in progress; the *Compositæ* only, are upwards of 8000; a single family thus containing more individual species than the whole vegetable kingdom was estimated to comprise in the times of Linnæus!

The peculiarity which it perhaps places in the powers of M. de Jussieu's mind in the arrangement, is the way in which he made use of the materials which were brought to him. As I have just said, the new material has since been quadrupled, and yet there is no real principle of the *Natural Order* which does not find a place in his book, and hardly a single combination among those established by his successors, of which the germ may not there be seen. Fontenelle admires in Tournefort, a classification in which upwards of 1200 new species, "which," he adds, "we might expect," could be placed without disturbing its foundation. What would he have said of the *Artemisia* by M. de Jussieu, when nearly 50,000 species, unknown at the period when the author was writing, might find their own position, and almost always a station indicated beforehand, "it is not surprising that they were expected?" The work in which M. de Jussieu sets forth this method of deeply calculating combinations, the number of fifteen years' unceasing labour. He sent it to the press in 1788; his mind so imbued with it before its printing began before the manuscript was completed; the author indeed never being more than two or three weeks in advance of the



printer! A still more remarkable trait is that the earlier sheets having been printed without those *Nat* which are appended to the characters of *! taafstt*, and which perhaps constitute the most highly finished, and the deepest part of the whole work, *ML < JtaawM* caused these leaves to be mercifully cancelled, not flinched in the least degree from what might have seemed like an extreme measure in a more ordinary work in order to be felt that the book he was writing would be eternal.

The priming, and consequently the composition, for they proceeded simultaneously, lasted fifteen months, and the work appeared in July, 1774. It opens by that celebrated *Jnirodwium*, in which the author displays anew, (and this time, in all their true order), those general principles which he has] asino—rail in his two *Memoirs* of 1773, and 1774. Here the treatise is seen to comprise a complete body of science. Fifteen years' diligent study might well confer in facility, combination, and strength; and here, by his reflections, his experience and profound meditation, the author rises to the highest rules of the art of method, and combine with this is an new science, a science created by himself, that of character.

Two facts [in view] of the *SatmraJ M\$tkodt* the first is the *teitrtfiUfmaw sf '\*\*\* caWacmrt* among themselves. Availing himself of reason and experience, M. de Jussieu considered, as we have seen, that organ was important according to its function, and when this function was unknown, he judged on their value from their *enmttamep*; the latter being an ingenious contrivance, whereby a fact, that it is almost impossible, and almost always difficult to ascertain, namely, the *U9Jmeti0m* of an organ, is superseded by this other test, than which nothing can be simpler, and more evident, namely, to examine.

The *ucomd* constituent principle in the Natural Method is the *subjection of the character to the Artificial Method, which I begin by selecting one character from amongst the others, and then reducing the species to this character;*

—in the *Satural Method* this order is reversed, and the character is made secondary to the species.

The **Sy**sterna tie authors descend from **Ch**asses to Genera, and from Genera to Species, and thus proceed from general to particular. M. de Jussteu completely overturn\* this proceeding; he "rise\*," according to his own statement, "from particulars to general\*." And here lies all the difference between the *Artificial* and *Sutuntf Method\**; the former subjugating specie\* to genera, and genera to classes, while on the contrary, the latter make classes depend on species; the first renders the facts independent, the second, dependent on the facts.

In this new path, opened by the author's discoveries, the author has followed the path of his own ideas.

Classes depend on genera, and genera on species; the former is subservient to the latter. The **ideas** I

eye: consists, the *Grasse* to the science of afftinoso, M. de Jussieu claims at every **Hep**, the attention of the Naturalist. Hut the seer. powers lies in the path that be followt>..! The example of Natural Families, all ready-made, guides our author to the formation of those which are less obvious, In those families which are so natural in the of all botaj. c *Composite, Legwmi*

titc. series a **leading beam** of light, in the general similarity of **structure**; character, \* were a; these **families** should disturb it\* **spe**e», imiit therefore be excluded; t ion on

hall r Here with the com hi tint ion of such **species** as are founded on the *tout tnmUi* 01 And this calculate c rela-

imporunce of characters, deduced from their affinities with the general strictui< le on which M. de Jussieu rests his whole system. The peculiar object of his book ts the dUtrihutiim of genera into families. Tourn< had already collected species into genera: I mesas bad iven a high degree of regularity and precision to these

W hat was wanting therefore, was to perform for

the groups of s higher order, for those very group\* that were known to the writer, and the discovery of the

2000, into a hundred families. He founds each of these primitive families on a fixed similarity of characters, and shows that this concurrence of characters is indispensable; for each character, taken separately, may appertain to several families; it is their assemblage, and an assemblage differing in each, which is peculiar to that family alone, which constitute its distinctive traits.

The character of each family is thus not unique nor arbitrary, as in artificial systems; it is natural, but it consists in the assemblage of characters pointed out by experience and fact, as being the most unvarying in each family.

It is easy to perceive that such a new light could not possibly be cast on all these families, these principal groups of the vegetable kingdom, *nnUm ika* author scanned the whole of its elements,—the different genera, and the characters of every genus. Throughout this formidable undertaking, his attention never slackened, the experienced eye of the Naturalist everywhere admires such consummate investigation, bappy talent, and profound sagacity, as till then had never perhaps been equalled, in any branch of science. Long ago, as I had remarked, certain ideas of plants were recognised, by all botanists, as being natural. In 1670, Morison pointed out the 6 leading features of that of the *VmUtlijrr*. Some years later Kay attempted a distribution of the whole vegetable kingdom; he brought forward into notice the grand divisions of all plants into *Dicotyledones* and *Monocotyledones*; he ranked the *Families* among the latter. Finally, in 1689, precisely a century before N. de Jussieu, Magnol published his work on the *Families of Plants*. But neither Magnol, Morison, nor Ray were able to follow the natural order of things; and their scattered ideas and happy trails were only lost. Towards the middle of the 18th century, that very Linnæus to whom Botany already owed its nomenclature, its descriptive language, and the natural system it had ever received published a suite of *Orders*, or *Natural Families*, which he first raised to the number of sixty-four, and reduced them to a tubercular period

to fifty-eight; and yet, his two Essays contain no **thing** but a series of **names**; no **explanation**, development or indication of **the motives** which can have guided the author, whether in the formation or classification of **the families**. "This was," in the words of Jussieu, "a sort of **problem**, which Linnaeus left to his successors to solve,"—and which **has** never been solved. **It is** by Adanson, published in 1763, is far more **complete**, and when viewed as regarding natural **families** of much greater importance than that of Linnaeus. The most striking feature in Adanson is his turn for reform, a **peculiarity** which may be seen in his very earliest production, the *Natural History of the Shells*, where, in the **classification** of the Shells, he completely changes the **general** mode of arrangement, placing it on the only true basis, namely, the **structure** of the shells, of which the **coverings** are, in fact, solely the coverings. **It is** usually **the** original and renovating genius appear in the **same** author's book, on the *Families of Plants*. No man has striven harder than **Adanson** to liberate science from the trammels of **system**, and to bring to light the **defect** that attaches to all **Artificial**, that is, **partial**, **deriving their** character, at they do, from a single part or organ, and that part selected **arbitrarily**;—no one ever perceived more distinctly, that **Method**, if it should coincide with **Nature**, must rest on the **unity** of the parts; but what Adanson did not see is, that some parts are **subordinate** to others. **And** as a proof of how far **prejudice** may go, even in a mind of this description, is the following curious phrase which I find in Adanson's **Report** to the Academy in 1748. **It is** in the *Journal de Trévoux*, where he says, "the principles adopted by M. de Jussieu, will perhaps find a somewhat difficult reception among those botanists who think with **metaphysical** (i.e. **metaphysical**) to be natural, but be founded on **the** **particular** view of a whole, without bestowing an exclusive preference on any one above all the rest." Here the mistake of Adanson is evident to every reader; what he rejects under the appellation of "exclusive preference," is exactly the **modification** of

different characters; and tint\* again, he objects to grouping, (at least grouping according to the most striking features in each group); families alone does he admit\* and calculates their number at fifty-eight; classes he refuses; and yet does not seem to be aware, that in this (collecting groups together into a kingdom (as he styles it), and rising from lower to higher, beginning: all the species, with a graduated ascent, from species to genera, from genera to families, and from families to the kingdom, he adopts in fact, that very method, that gradation, which he commends.

The individual by whose labours M. de Jussieu profited most, was his uncle Bernard. Still, the *Caiaff\*\** of the latter author is, like the *Order\* .: L., MUCUS*, nothing but a series of names. The principles, however, which guided Bernard, whether in forming families or in dividing genera into orders, are faithfully preserved by his nephew, and are exactly what I have already detailed,—namely, the *subordination of characters\* among genera*, and the subjection of *characters\* to orders*.

To Bernard it therefore belongs the honour of having laid the first stone of the edifice of the *Sahtrat Arrmmgmtment\** he it was who described the principles on which this arrangement is founded. But, while on the one hand, he applied these principles without clearly defining them; so on the other, in the matter of application, he gives only a string of names. In Bernard, we see nothing of that Philosophy of *L., M. Method, - , . i, !* which earned a new boration unlike natural sciences; nor of that discriminating selection (*choix raisonné*) of the characters, which, variously grouped, mark out the families; and these are the two real honours\*, the foundation of M. de Jussieu's enduring fame.

Far be it from our intention to seek to raise one of these celebrated men at the expense of the other. Linnæus is the inventor; he took the first step; and if his nephew\* went far beyond him, it is because he started from the point to which his uncle had guided him. Truth is my only object, and while staking for it in the study of their minds, I think I can

perceive that the peculiar turn of each may be distinctly seen in Bernard, by the strength of his penetrating views, described the principles of Natural Order, but he derived little advantage from the sight, and others derived still less through him; Laurent law himself while awaiting him. If and aiding others also to make use of them; thus the principles, if I may to speak, spring up in the one Jussieu, and ripen in the other; one perceives the other explains; to the former belongs the early period when genius makes its discoveries, to the latter the period when genius reasons on what it has discovered; for, most entirely analogous to the difference that exists between (hoc inu agct, is the disparity between the labour, the it; the and turn of mind between the two MM. de Jussieu.

If, after having compared the work of M. L. de Jussieu, with what had appeared before it, we equally try it by what has come since, it will prove quit as striking and important.

It has been stated above that this author established one hundred primitive families. Not one of these families has been subsequently suppressed, and more than fifty have undergone no modification. Three of the others have been united (and united entire) to neighbouring groups, which is only a different mode of association. Most of those which remain, from the inevitable effect of the immense number of species that nearly half a century has added to our herbaria and gardens, have naturally required division and subdivision, but almost all these sections have proceeded on grounds already indicated by M. de Jussieu himself. Finally there are five, and five only, which were found to be natural but in part. The errors therefore affect some scattered genera and fragments of families; and even there, a doubt, almost invariably comes in upon us in the way of attaining the truth; a truth which nothing short of the most astonishing sagacity could then have detected, when the materials which the author possessed from whence to deduce it were so scanty, and while so many new ones have

since been found requisite to enable subsequent writers to work out the points which he left doubtful, but an entirely complete and satisfactory manner; and now, if I were asked where lies the peculiar merit, the merit that marks every page of this work, and whereby it is so strikingly distinguished from all that had previously appeared in this wide and wonderful field? my ready reply would be that this merit resides chiefly in the unvarying precision of detail which assigns to every fact its right place; and which, not confined to the main leading results that are rapidly marked in each genus, neglects none of the circumstances in all the orders on which the whole is founded; a merit of essential importance in a study where all the facts are reciprocal, where hardly any one of them can be supplied by another, and where nearly all are of equally difficult acquisition, a merit perhaps the rarest of all, and illustrative of that deep axiom of Buffon's, that "patience," that is constancy in great efforts, "is genius."

M. de Jussieu has been blamed, and justly, for founding some of his classes on the *form of the corolla* and it is certainly that weak point in his method, which he himself pinpoints. "These classes," he says, "the defect of being unable to obtain, without admitting some exception;" and he adds, that if only strictness and not convenience be consulted, we ought to adhere to the sole invariable characters, the *lobes of the embryo*, and the *insertion of the stamens*. Still, in proportion as the number of species has augmented, it has become evident that even this important character, that derived from the *insertion of the stamens*, does sometimes vary, and should consequently be excluded from classical characters. Everything on the contrary has confirmed the grand division founded on the *lobes of the embryo*. M. Desfontaines, by one of the most interesting of discoveries in vegetable anatomy, has demonstrated that the distinction drawn from the organs of vegetation answer in every instance, as regards this division, to corresponding peculiarities in the organs of fructification. We

may even say that this striking confirmation, drawn from the structure of the stems, does place the three grand groups of the vegetable kingdom in a rank that M. de Jussieu's name of *Classes*, bestowed on them in *tommo* with other following groups, is far from imitating with sufficient emphasis. They may be compared with the four *Branches of the Animal Kingdom* established by ML Cutler, and BoderwincJ are arranged at a due distance, the classes, properly so termed; and it might be as well that in Uuh the animal and vegetable kingdom, a suitable and determined appellation were bestowed on these great and leading divisions.

How then may the interval which separates the three first groups of the vegetable kingdom from the *merles familles* be filled up, without adverting, between these groups and these families, somewhat of the artificial and arbitrary? Here, again, M. de Jussieu claims the merit of having indicated that way, by the association (more than once hinted in his work), which several families have one among another; and this again, has been admirably pointed out by Mr Robert Brown. "The real and present difficulty," he says, "is to combine families into larger and equally natural groups." And it is in fact, this very difficulty, that Mr Brown has himself admirably mastered in a certain number of cases, which, if effected throughout, would give us a perfect general classification.

When M. de Jussieu first published his work, he was undeniably the first Naturalist of his day, and yet it must be owned that his labours did not then meet with the just appreciation that posterity has bestowed upon them. The period was 1789, and France was then in the midst of that mighty revolution which opened to her the gate of her new destiny. So that it was little likely that much attention could be spared for the revolution which was going on in Botany. Besides, his work went too far beyond all received opinions, to be comprehended without long study. Slowly, therefore, did M. de Jussieu's ideas find a reception among Naturalists and particularly among foreign Naturalists.



In France, so soon as the restoration of social order ; permitted a **mum** | otion of peaceful studie\*» • peculiar© occurrence look place which gave unexpected force and influence to those [principles. A young Naturalist, till tllcn living in obscurity in a country town, :in.' for the honour of having first noticed whom, mm y of our contemporari have disputed, (and an honour it <] subtle «i r̄» . and of which M. de Jussieu may claim i a |>ortion), published in 1795, two Memoirs, one " (kj Mr Prinipi s of ~ rkum/kalim ammg the *Mammiftrmf* and the other " >» /Ac Unmmam < *Juss Vermes*," ami these two Memoir\* were in Zoology, what those of M. de Jimieu had been to Bolai y; they changed the aspect of that Kienoe, and thence: orth in Zoology M in Botany, the words *Natural Me* (hod 1 had their complete meaning; the *Natural Method* being the wtfihod fimnded m orga\*%za>ion.

M. Cuvier, loig afterward s, paid, on a solemn occaain, his homage to M. de Ju"»iru, and ai authoritatively declan, in his *Historical Report on the Progress that the Natural Sci-* *mirrs hart Mat laV' i: 80. ihtl M l»« work of M. de Juaa* constitutes in the sciences of observation, an equally important epoch with the *Chemistry of M. La* voisier in the experimen taJ •ciencea.\* Perhaps, howe^ver, the following tribute that M. < Cuvier pays him in the former of the above mentioned Memoirs, is vet more remarka I > /oologtau," MJ I Cuvier, " had no idea. whatever of •« ca)«ulation of characters which bolai ists hu«l keen rea ally to exist, and which one of them has K» admirably demonstrated in a work, w\*\*\*\* hap; y influence will ere lc'Ogbr felt >y all the otbei branches of Natural History, though its immediate bearing is addressed bu I to 011 s."

Zc•ology, Iwwever, ofWrcd a Iar wider field than Botany fitt the ;pplication of a Natur-\\ Mclho d, founded on reason. In anii nals, the organs are distincter, their functions more deciJed, and conaaqu ently, the characteri more <vident. The modificati HIS of t>e e>ternal organ\* depend there \*isibly on r.lodtficaaiion\* of ihe internal once; the Brain, heart, and langa, for insta for, cannot change \*ithout the neccae\* rily

corresponding parts changing also; and the reason of this strict agreement between all the modifications of the animal economy is evident in the principle of the *suitability of the organs* which comes in animal life, the very principle of the condition of its existence itself.

Thus by its union with Zoology, the science of characters took a new flight. This Method has become complete, by generalizing itself and extending from the one organized kingdom to the other; and even our two authors, who, when compared, exhibit distinct traits may yet be said to complete each other. M. de Jussieu is the fitter man to follow out the continuous chain of details with persevering patience and indefatigable sagacity, M. Cuvier the better adapted to reach the final consequences with rapid flight; the former is constituted to shrink from no difficulties in the pursuit of experiment (and this is the only method now applicable to history), the other to tarve at a glance that reasoning process which best befits the science of Zoology; both having given a new impulse to the human mind, the impulse of Method, which, (consisting in the union of objects by the qualities they possess in common to one another), is, in fact, to the sciences of observation, what analysis, or the art of reducing them to their distinct elements, is to the experimental sciences.

And in the history of Method, which took its origin in the experiments of Galileo, has gradually passed from the physical science to that of the *Philosophy of Condillac*, so does Method, the offspring of the researches of modern Naturalists, await to produce all its effects the abstract Faculty of the philosopher. And therefore, and in the history of Method, which spring from the much neglected science of *unifying ideas*, than the studied art of *unrattling the*, shall become complete.

M. de Jussieu had published his work, as above intimated in 1789. The much confinement to his cabinet which such a production entailed, permitted him to remain in a state of comparative ignorance of the political movements which were

disturbing the whole nation; but hardly was his book completed, when he found himself charged with one of the departments of the mayoralty of Paris. This office, as is well known, was then divided into several departments, and the charge of the *Paris* *UH* *libfj* *fel* *Upt* *n* *M.* *icJllfc* *sien*, on which > occ»» he published his *Report* on those institutions, a description of labour well adapted to bring the sciences into high respect, and in which our author had been preceded by only one member of the Academy, a man whose name will ever be venerated among his fellow creatures, the illustrious and unfortunate *Laillj*.

In 1793, the *Jardim da Pluntt*\* was new organized, and received the name of the *Museum dllirto*, *ire Naturelle*. *Daubenton* was its first Director, and *M. de Jussieu* succeeded him. In these stormy days, *M. de Jussieu* devoted himself wholly to the charge of this noble establishment, with which stand so closely connected the honour of his name and almost all his family recollections. From its very commencement of the *Institute*, he naturally made a part of it, and was one of the first President\* of the new *Academy of Sciences*; holding the Vice-Presidentship on every year which was distinguished by *Napoleon* being President. In 1804, the *Chair of Mairria Medica* in the Faculty of *Metlncis*, *1aa v.n* became vacant by the death of *Peyrilhe*, he offered himself to fill it, and all the other candidates withdrew. When he became Professor, he took as the basis of his lesson\*, the fruitful principle of the agreement of the properties of plants with their botanical affinity\*,—a principle which his earliest labours had pointed out; a novel application of the *datura* Method, and the most appropriate of all new methods, perhaps, for extending the influence of *Materia Medica*. *M. de Jussieu* was nominated to the council of the University in 1808. During the latter half of his life, his attention was chiefly occupied in the task of preparing a second edition of his great work. Unfortunatly, his strength diminished as the scientific matter increased, so that he left only fragments of this noble performance; these portions, however, are so

admirable, **ihll** tl« \ all one would have sufficed to found the reputation of any oilier man. These fragments form a *hieries* of Memoirs, inserted between the years 1804 to 1820, and with little interruption, in the *Annales du Muséum*. More than one half of **ibehu** hundred primitive families of our author are there revised, each being examined in detail, and every one of the genera composing it. In *Hsit*, M. de Jussieu had not had all in his power to avail himself of Gartner's great work on *Fruits*, but he afterwards takes it as a basis for comparisons,—the touchstone **which** should try all the new affinities that he attempts. **When** studying the structure of the seed, Gartner had directed his anatomic investigations to a very object on which Jussieu regards his Method, applied to the science of Botany, as an ion to that of Gartner's.

I

importance, of which M. de Jussieu has shown the value on the classification of families, and then has known in four and **irbCB** : \y\ consideration; if the observations of *Buumeft* new and peeled impossibility of science must depend on **Jusvieu** makes use to cast a fresh light on **teulaUon of characters**, his labors consisted in the art (till other lint-but of which **Botany**), of applying to each course the *Plantes*, fit, their **Ai** r alt time «  
**wl** The *Annales*, founded d. reign of Louis

f

an edict of **thrst-** merely len for **writings of an** **ki ml,** **I, \, i;** medicinal plants, to correct ad its c

II  
I

contained solely **the** 'joct—I mean the *Mfmoiret du Mushtn*. **I** during **UM** 'oyai *Gardeii* I during **UM** (111., 1> \ 162t), was at first a gan be surmounted, and the petty **thai** was its **I** **name; ai** **atiinct** of *Medicine*, which peculiarly opposed the instruction in detail > **tegioning** chairs in the Museum), "because," the Faculty **nt natural c%:il)livlmiint extant;** not to be pre **ill kind\* that** had been for an **rar waged a^**

in

»pBg«i«i m i the nev allcg- : that it hud

good and sufficient aim, and prohibited by a parliamentary decree. <> at the ;>rocer ds to mention the illustrious individuals to whom this noble establishment has owed its brightest lustre, Tournefort, Duvernay, Bernard de Jussieu, Vicq d'Azyr, and Buffon, pausing at the date of the latter writer, so that one cannot but regret that he did not pursue the theme through a later and more splendid epoch. For in this more recent epoch, it has been the duty of Haüy, unveiling the mechanism of the formal phenomena of nature to the Uwt calculation; while Juvvienti WM bringing to the test the forms of reasoning founded on experiment, the new form of vegetation that were poured in with unexampled profusion from every part of the world; and Cuvier, piercing through the layers of our globe itself, detected there unknown generations, and invented the art by which these ruin and instruments of bygone creations were re-animated, so that the laws of comparative anatomy endowed them with fresh life, and as it were with new existence; and thus to all these inhabitants of ancient worlds reanimated by him, his powerful voice has seemed to issue forth, to rise up and walk.

I would not willingly omit to notice any of the productions of M. de Jussieu's pen. His *Thesis*, published in 1770, gives the first clear ideas on those multiplied analogies of Vegetables and Animals, which seem to unite the two organic kingdoms; views, then quite new, for Pallas only had slightly hinted at them, and containing the same profound and lucid ideas as have since been so strikingly developed by Vicq d'Azyr and Cuvier. One single writing of M. de Jussieu's alone, may pass by with little notice, and might perhaps be well entirely omitted, for it is quite foreign to Natural History, his *Report on Animal Magnetism*, published in 1784. There is nothing in this production, which belongs to the deep and incontestable subjects, which formed the habitual theme of our naturalist's thoughts, consequently, it can be said as little to confess here that it is by no means

I

marked by his judicious and firm mind of him; Translator of Botany.

The Restoration had found M. de Jussieu in the Council of the University and at the School of Medicine. In 1815, the Council of the University was superseded by that of Public Instruction, and in this new council M. de Jussieu was not summoned. In 1822, he was excluded from the School of Medicine, in company with Vauquelin, Chaussier, Pinel, Deyeux, Des Genettes, &c. and in 1830, when this injustice might have been repaired, Vauquelin, Chaussier, and Pinel were dead, and M. de Jussieu himself having attained to eighty-two years of age, was too old to resume his place at the Faculty. In 1826, he resigned in favour of his son, M. Adrien de Jussieu, his chair at the Museum; and some years after, in 1831, he had the happiness to see his son enter the Academy.

Throughout his whole life, his occupation had been one of his absolute necessities, and when regular business allowed him a little leisure, he devoted it to reading, arranging and examining the plants in his cabinet. He had even a custom of reading as he walked along the streets. His peculiarity of conformation in his eye, which belonged to the whole family, his sight had been always very short, and when he was only in middle life, he wholly lost the use of one eye, and towards the close of his long career, the other became likewise so weak that he was unable either to write or make observations. From this time, being debarred from working himself, he sought to derive benefit from the labours of others; and all the tender care that he had exhibited towards his blind uncle Bernard, a still dearer individual then paid to him. His friends proposed questions to him, that might give employment to a mind, peculiarly adapted like that of Bernard, for meditation and combination. He was duly informed of all the new discoveries, and he sought among them bore any connexion with his own ideas about *Characters* and the *Method*, his botanical instinct, ever on the alert, was sure to seize upon it; every thing was quickly defined in the

in the simplest manner; M. de Jussieu afterwards remodelled these new opinions in Latin of peculiar elegance, and, preparing a second edition of his *Introduction* to his great work gave himself no rest till he could introduce them into it. This last performance of M. de Jussieu's, the work of an aged man, almost ninety years old, has just been published in the *Annales*: and wonder it is it to see to what an advanced period of life the author has preserved all the clearness of his intellects; and still more, how powerfully those ideas which he possessed himself of his mind first B 1773, and had brought forward again in 1774, remained unchanged through his protracted existence, and held their undisputed sway to the very last.

He was heard one day, explaining to his secretary with the utmost frankness, why he wrote in Latin preferably to French. In the first place, he said, it fills up my time, and that is always an advantage now; and then, common ideas, clad in a foreign garb, assume a less homely aspect: if I were to express them in my own tongue, I should fear they would not worth the trouble of saying at all, and should make no more account of them.

M. de Jussieu certainly felt pleasure in his own celebrity, but never did he fail to attribute the greater part of this celebrity to his uncle, and his conviction was expressed by him only a few years ago, in a very pleasing manner. Some person complimenting his son in his presence, on the advantage of bearing so illustrious a name, "yes, indeed," answered M. de Jussieu, "the name has been of very great use to me."

To the very last year of his life, he never failed, when in Paris, to attend at the Academy, and he continued to do so when he could hardly either hear or see, feeling happy in the knowledge that he was among his brethren. For sixty-three years he was a member of the Academy, and for sixty-six the Professor at the *Jardin des Plantes*, either as a substitute, or fully invested with the office.

In the country, where, toward the end of his existence, he passed a part of each year, walking was his only amuse-

ment; he still continued to gather plants, and to see distinctly, he would bring them closer and to his eyes till satisfied himself what they were. When sight finally failed him, he made them out by feeling, and was quite delighted when he found that he had succeeded, for his mind has always been addicted to solving questions and grappling with difficulties. This disposition, may be set on by these words which I borrow from one of his first compositions, and words which may be the more aptly quoted at the close of this notice. In striving to define the merits of a great botanist, appears unconsciously to have portrayed himself. "A man of talent," says M. de Jussieu, "may make errors, and vary them infinitely; but the necessary work of consummate industry, whose patience in examining details, is as conspicuous as his acuteness in drawing their consequences; forming inferences from them; thus may botany, intend of cultivating a science of memory and not of invention, become a new science, possessing its own principles and combinations like chemistry, and its properties like geometry."

The character of M. de Jussieu developed itself early, and continued always the same. The strict habits of Bernard had given that character a precocious maturity, and while still very young, M. de Jussieu was invariably treated by all who surrounded him, frequently they were persons much older than himself, with respect, heightened by his piety, like that of his uncle, to be almost twice. Though gifted with such superior genius, though enjoying such a high celebrity, he contrived to preserve on the calm coast of his way, and preserved a philosophical tranquillity of mind. Attacked, as he was, in almost all languages he replied; he said that if he were attacked, he would be attacked, and if right, these attacks would be futile.

M. de Jussieu married twice; first in 1779, and again in 1791. By his first marriage he had two daughters; by his last,



a son and a daughter; this son was ?I. Adrien de Jussieu, Member of the Academy.

Strongly contrasted with his uncle Bernard, whom he closely resembled in all other respects, was M. de Jussieu's preference for society to solitude. His society, certainly, consisted chiefly of his own family, but that family was large, and he had added to its number by adopting two nephews and a niece, the latter of whom subsequently became his son's wife, and whose death they had to deplore in 1831. He was deeply beloved by his whole family; will be known the devoted mentions, of which he was the object, from Madame de Jussieu, his second wife, and Mademoiselle de Jussieu, one of the daughters of his first marriage. An illustrious requital in kindness by the most unbounded attachment to his family, delighting especially in gathering around him his grandchildren, watching their amusements, and rejoicing that his library afforded many looks in which the pictures of flowers and animals afforded the little ones amusement. He was particularly fond of young people; like all those who are permitted to see old age, he felt the trials attached to this privilege in the gradual dropping off of all his friends, but succeeding generations helped to fill the gap, and he died surrounded with youthful botanists, who felt for him both affection and respect.

Old age had bowed M. de Jussieu extremely; he was naturally very frail, and had a strong constitution. He owed to his fondness for walking and habit of occupation (which is the exercise of the mind, and in which he persisted to his last day), and to the affectionate attention of all kinds that were bestowed upon him, an admirable state of health, which suffered scarcely any interruption, and then but slightly, to the close of life. His last malady was not such as to excite apprehension at first; but soon it had a total and irremediable want of action that supervened in the digestive organs, destroyed all hope of recovery. He died on the 17th September, 1836, eighty-eight years and a half old.

During the nearly half-century which had elapsed since the publication of his great work, M. de Jussieu's preeminence was undisputed. He beheld till the botanists who lived around him, labouring to bring his method to perfection; DeFontaine\* confirmed it by his beautiful examinations of the structure of stems; du Petit Thouars, the father of anal. rigid lan. called the Natural Method, "the first Botanist in Europe,"

the celebrated botanist, who applied it very close and minute, as their work is well known, & it grows out of the hands of others, such as M. de Jussieu, & others, who have arisen within the last century, notwithstanding the matter; to few men was it known.

and to still fewer to be the witness of a career was almost unique, since about an hundred years in the 18th and 10th century, and all the time in the same period, and in the two great periods of science that have occurred in these two centuries.

1. M. Lavoisier's great work, *Mémoires de Chimie*, & *Itckcrket ntr tet Quernou, Fouil*

[With a Plate.]

[( ; \*\* ! A.)

Our figure of *Sphermia Robertii*, Hook. Ic. Pl. tab. xi., being unaccompanied by any analysis of the fructification, we gladly give one which has been kindly sent to me by the Rev. Mr Berkeley, and we refer to the *Icones Phycogonae* for the specific name and description.

TAB. I. A. *Sphermia lioberUsii*, as it grows from the bark of the neck of a larva in New Zealand:—*mat.* » *ize.*—Fig. 1, 2. *sci* with sporidia; *f.* 3. Perithecium:—*magnified.*

VI—O» two Mhmk i'UNGI Uiomgmg to ikt IHnmom  
 Hi<sup>PI</sup>tomrorra. By the REV. M. J. BERKELEY, M.A.,  
 F.L.S.

[With . . . . .]

(TAB. I. ai.)

WE have every day fresh proof of the little dependance which can be placed upon a mere superficial examination of the objects which come under the attention of the Naturalist. Habits and form\* the most similar, belong often to productions of a perfectly different structure, and it is this circumstance amongst others, which makes it so difficult to ascertain accurately the species intended by many of the earlier writers. This is especially the case with many of Tode's species, though, for the state of Mycology at the time in which he wrote, we cannot refuse him a very high degree of merit. The two Fungi of which I propose now to give a short description, resemble each other exactly, that in might be referred to *Hydrophora minima*, Tode, but nothing can be much more different than their structure. The one I shall not presume, however, to be that species, though it is hardly probable that there should be a third possessing so nearly the same external structure, and it the same as the structure of the monoid group. Of the other, the characters are such that there cannot be the slightest hesitation in proposing a new genera for its reception.

*Hydrophora terrirrimu* (n, i.) | apana, minima, tota alba, stipite sursum flexuoso\*, apice clavato; capitulo columellis no. 00 i.

Scarcely visible to the naked eye, and when examined with a good pocket lens exhibiting nothing more than a few very slender white threads with a watery colourless globule seated on its apex. Under a high magnifier, the stem is found to be a little flexuous above, and to end in a clavate swelling beyond which is the globose columella, from the base of which is deflected all round over the apex of the stem a delicate frill which at first forms the portion of the pendulum, and by its

rupture leaves a large circular aperture at its base. I am unable to state positively whether there is an organic connexion between the tip of the stem and the columella after the rupture has taken place, or whether they are kept in apposition by means of the frill, though I suspect that such a union does exist. The peridium quite smooth, consisting of two membranes, between which there is often a considerable space, though they are sometimes in close contact. At the place where it was attached the portion which remains attached to the columella, then is often a ring of considerable size. The cavity between the second membrane and the columella is filled with elliptic sporidia, some of which occasionally are attached to the membrane.

The whole fungus is minute and delicate, that it is a matter of extreme difficulty to detach it for examination as it is instantly destroyed if any thing touches it. The only way is to remove it very cautiously, taking care that it shall fall into a dish of water. When fallen it instantly bursts, and it is only by repeated examination that a notion can be formed of its structure. All the parts being extremely transparent, and the different circles which present themselves so puzzling, that it is difficult to distinguish them accurately. It occurs not unfrequently on fallen wood especially on the smooth surface of ash in moist weather, but there are seldom more than three or four individuals together. The only way of getting it home in a fit state for examination is to secure it on the branch in a box in such a way that nothing shall touch the watery heads. Totler describes the stem in *Draxipkora mtntma*, as yellow, and it is figured at *poHhttl* T.i; i.t. Under the name of *circumstantia*, I have thought it best not to consider my plant as identical with his.

#### ENDODROMIA.

*Peridio tenerrimo stipite percurso, farcto floccis ramosis radiantibus sporidiisque globosis nucleo mobilissimo.*

*Endodromia vitrea.*

Equally minute with the last, and to be distinguished

guished without the help of a high magnifying power. Stem always I Micvi, quite straight, slightly attenuated upwards, running completely through the globose meridian; the portion within the peridium is very slender. Peridium very delicate, bursting when immersed in water, and soon breaking up into little granules; portions, filled with globose colourless sporidia and radiating branched threads of extreme delicacy. Within each sporidium is a single globose nucleus which moves about within its cells with the greatest activity, from which circumstance I have framed the generic name. I have never seen a phenomenon of this nature before in Fungi, with the exception of the motion of the particles in the milk of Agarics. Unger, however, appears to have seen something of the kind in the orange globules which are so conspicuous in young plants of *A. ramosa*.

This is found in the same situations, and in the same circumstances as *Hydrophora tenerrima*. The genus is evidently a higher development, and may be an antecedent of *Sinimmitis*.

TAIL I. I. *Hydrophora tenerrima*.

- a. Plant in which the two membranes are not distinct.
- b. Do. Showing both the outer membrane and ring.
- c. Do. Showing both the membranes, but the inner is not visible. The frill appears as if deflected from a higher part of the column.
- d. Sporidia. All highly motile.

TABLE I. C. *Endodromia tinea*.

- a. Plant before the bursting of the peridium.
- b. Do. with the peridium just bursting.
- c. Top of stem with the spores and filaments, the letter (o) marks a portion of the peridium of the base broken up into little granules.
- d. Top of stem, filamentous and porous having been washed away.
- e. Sporidia with their nuclei. All highly motile.

VII.—Notes upon the genus *KrinrsnitrM*, by J<sup>r</sup> PROFESSOR  
LIVDLBT.

FlaTiNa l;iti Iy i.ad oecation to reconsider the large genus *Epidit/rum*, I have been led to attempt its subdivision upon more natural character\* than those employed in the Genera and Species of Orchidaceous plants, the result of which is given in the following account of the subgenera I propose to adopt. In limiting them I have had recourse to the organs of vegetation as well as fructification, and I am persuaded that in the whole Orchidaceous order the same means will be necessary in any large genus, for there seems to be a universal tendency to produce a variety of modifications of the stem and leaves under the same organic type.

1.—*HO RHIDITM*. Caulis pseudobulbotutus. Floret testiles.  
L. IK Hum adnatum.

II.—*EPICLADIUM*. Caulis\* pseudobulbosus («fu»iformi»). Floret racemoti, et palmarum erumpentia. Labellum liberum.

III.—*INCURVUM*. Caulis pseudobulbotutus. Floret racinosi v. imbricati. Labellum liberum.

IV.—*DIACRYDUM*. Caulis fusiformis apice foliosus. Floret racinosi. Labellum liberum.

V.—*AULIZEUM*. Caulis fusiformis v. teres, apice foliosus. Flores racemosi. Labellum adnatum in lobis fissis.

VI.—*OSMOPHYTUM*. Caulis pseudobulbosus. Floret racinosi. Labellum adnatum indivisum.

VII.—*LANTUM*. Caulis teres squamatus, ramulis pseudobulbosus v. breves foliosus prominentes. Pedunculus racemosus v. paniculatus. Flores terminalis. Labellum adnatum.

VIII.—*SP AUUX*. Caulis\* foliosus, erectus. Pedunculus\* elongatus et spathulatus. Labellum adnatum.

IX.—*ANTHIGLOTTIUM*. Caulis foliosus erectus. Pedunculus\* elongatus et squamatus imbricatus. Labellum adnatum.

X.—*EURPIDENDRUM*. Caulis\* foliosus. Pedunculus\* brevis squamatus. Ubi\* I<sub>um</sub> sdn.t.

In some of these I have the following new species\* to add from my own herbarium or those of my friends.

§ III. Encyrtu'M ; *Jloritm\* raemmm\**.

1. *K. nemorah*; [WU«101M11 > . . . foliis . . . , seapice demk racemoso sulvulo-Horo pedunculisque acebris, eepelis petali\*que linenri-lanceolatis acuminatis vqualibus patentibus, kabeJll trilobi Inciniit lateralibustemiovMin actitiuiuv alis cucul-latis intermeUa maxim A ovati; call© ad lamina? besin stto ob-soietn antrorsum evancscentc.—A beautiful plant, with lery large flower\*, apparently pink or purple. Tho sepals and petals are two inches long, and the middle lobe of the 1>p is an inch long and \ of an inch broad.—Found by Karwinski, in May, 1827. *Paratitica* ON trtt\$ in Jfrxr ro, in groves mar Sul tepee, (herb. reg. motmc.)

5. *L. pteroc arpttmt* paradebulbis ovalibus comuTe\*^is di-phyllis, foliil . . . raemo an gusto, sepsttn peulisqiie sub sequenlibus linefribus acuminntis pa'entibus, librlli fiubrotundi trilobi cordati ls. iniis laleralibus rotundatis intrnncdU mult< lor. j>iore acuti basi call.» put>e«cente obar arè tridentatI aucta. capsult oval A trialati.—The narrow raceme bears about l«) flowers, which in the dried state are of a dull buff, between coriaceous and membranous, but very brittle. Thi lip seems to lie yellow striated with crimson—*Goiledtd* of *Tcotomtk\*\**, n the Province of OemsM, m Mexieo, by *Ktirwmtki*, (herb. Mart. Zoccar. ct reg. mona«.)

8. *E\* hostotwn*; pfeoaevuini\* . > . \* t«\*liis . . . , racemo striato \*—7-floro, tepeli' petaliaque . discolorib. l«J lance< latis acuitU imis patentibus, labello tubrotundo emargtnato s«b-angulato best utrinque supra unguem lobulo ancto venis baseos eleratis.—A very beautiful species, with deep purple striated sepals and petals and a broad ivory white lip. The latter has generally a short lateral lobe on each side of its base to at to obtain a hastate lorn), but occasionally the lobes art warnig. Near 1. vfepMS bat not pu aicled.—*San Pedro* in thr f\*nmnet of Ootosam, in *Mrrwo^* in lke temperate region, *Karwinski*. (herb. Mart. et Zuccar.)

4. *K. infderuMi* pseudobulbis ovalibus cernitibus, diphtilis, foliis linearibus trioblongis cernitibus & racemo paucifloro (4—6) subtenuibus floribus erectis, sepalis petalisque linearibus lanceolatis putulis, lacinia trilobis lobis laterulibus linearibus obtusis, in medio subrotundis basi angustis uodulatis venis rugosis elevatis, capitula angustis clavatis tripteris. — The plant when in bloom more than six inches high. Flowers apparently dull purple, with a pale lip, on long pedicels, and erect not drooping. — Near Ep. ionosmum. — *Tea'umulcy*, near *Qaxuta*, in Mexico, Karwinski. (herb. Mart. L'iccar. et reg. monac.)

§111. *infderuMi*; *foribuj xiniculitis*.

5. *E. fiacumt* pseudobulbus uvatus attenuatus: impletus foliis ensiformibus paniculis paucifloris subqualibus, tepalis petalibus patentibus sublinearibus linearibus oblongis oblongis lobis trilobis laciniis lateraliibus lineari-oblongis truncatis intermediis unguiculatis obovatis, culum sub apice auriculata. — The leaves of the plant are rather more than a foot long. The flowers are pale yellow, about an inch and a half in diameter. The panicle only panicle at the base is probably very often very often. — *decaying vegetable matter* *Ou Caza Pintado* in *Uu Pnmimct* of *Si Pttmtt k liry zil.* (herb. Mart.)

6. *E. virgatum*: pseudobulbis . . . . ., foliis . . . . ., paucis virgatis ramis longis gracilibus sepalibus lanceolatis petalibus duplo angustioribus patentibus discoloribus labello trilobis lobis laterilibus unguiculatis in medio subrotundis obovatis: callo oblongo acuminato piano basi. — The flowers: these are arranged in a very long graceful panicle, the branches of which are simple and sometimes as much as a foot long with nearly twenty flowers on each. The lip is white or nearly white. — *Star J'coxomtJcy*, in *Ou J'ro-ris* of *Oaxaco* in Mexico, Karwinski. (herb. Martii, et Zuccarini.)

7. *I. gnmUitumt* bulbis ovatis acuminatis viphyllis, foliis ensiformibus panicula multiflora brevioribus, sepalis



petalisque patentibus lanceolatis subaequalibus acutis, umbellulis trilobis (laciniis lateralibus) basi obovatis obtusis intermediis unguiculatis obovatis apice inflexo acuto: callo elevato acuminato wren\* medium canaliculato columnae sub apice auriculati.—A fine species closely allied to *K. Havum*. It has a panicle regularly branched up to the apex, nearly a foot long, with each side-branch bearing from 2—4 flowers. According to M. Schomburgk, the sepals and petals are green dotted with purple, the labellum white with a purple stain at its base, the stem (lower part) aromatic, the stem six feet high. I have only seen portions of the panicle.—Among the granitic ridges of the It. Corentin; also among the rimy places among the Cayuni and Guiana, among boulders where a little has collected Schomburgk, a. u. s. (ikerb. pr.)

8. *E. taxatili* caulibus fusiformibus apice diphyllis, foliis lanceolatis race mo paucifloro brevioribus, filamentis merobranaceis, acapulis oblongis petalisque filiformibus. Umbellulis minoribus laciniis sobrotundis lobis laciniis rotundatis membranaceis intermediis laciniis rotundatis membranaceis serratis. — Whole plant less than six inches high. Flowers numerous, purple, with darker longitudinal streaks, as in *E. Schomburgkii*.—On rocks in the Serra de Piedade, Brazil, Verrill\*. (herb. Martius.)

9. *E. rupestris*; caulibus filiformibus vasis membranaceis vestitis diphyllis, foliis lanceolatis acutis pedunculo aequalibus, racemosis membranaceis acutis pedicellis brevioribus, sepalis oblongis petalisque linearibus, spatulatis obtusis, lobis trilobis laciniis acutis margine plicato serratis intermediis rotundis. In tribus elevatis rugosis.— Flowers yellow, the size of *E. ciliata*.—On bare rocks at the base of the T. guraa in Peru, where it was found by the late Col. B. Miller (herb. Hooker.)

10. *E. aggregatum*; foliis distichis lanceolatis acuminatissimis, cernuis multifoliis brevibus, brevissimis basi squamatis floribus cumbosis, labello adnato subrotundo con-

bilamellato.—A very singular plant, allied to *E. cauliflorum*. The lower\* are apparently as large as in *E. nutans*, but they are unexpanded in the specimen\* before me, and not in a state to show the form of the sepals and petals.—fV.M., *Mathews*, 1901. (herb. Hooker, et al.)

### § VII. LANIUM,

11. *E. microphyllum*; caule repente squamato, ramulis foliosis, foliis ovatis longis acutis serratis racemose terminatis tomentoso multo brevioribus, bracteis membraceis pedicellis filiformibus ovatis, sepalis apice aristatis, petalis linearibus, labello trilobato a basi ad apicem tribus per medium elevatis.—A creeping plant, willow-like. Found in Guiana, by Mr. S. J. Tumborg, but not forming any part of the collection\* dispersed by him, (herb. propr.)

12. *E. acicula* caule repente ramulis pseudobulbis diphyllis, foliis ovatis planis margine serratis panicula tomentosa in utroque, sepalis lanceolatis acutis tomentosis, petalis linearibus, laticello acuto subrhomboidali bicalloso.—The leaves\* of this curious plant are flattened an inch long; the panicle between three and four inches. The flowers are very small, and when seen from the back may be not till aptly compared to a lark in full flight.—*Organ mountains of Brazil*, Ga. Bot. No. 6255. (IMH. propr.)

### § VIII. SATHIUM.

13. *E. spritatum*; foliis . . . . ., racemis ultimis densissimis pendulis spatulatis foliaceis fitticatis oodoplicatis vix longioribus, sepalis retortatis striatis acutis, (Kialis filiformibus, labello trilobato lacinis lateralibus subintegris intermedia ovali oblonga bilamellata brevioribus.—The masses of inflorescence\* of this plant are upwards of four and a half feet long, and consist of slender racemes procerant from the axil of falcate spatules, so as to have great resemblance to that of *Palma*.—*Peru*. . . . . ntd by Mr. M. Th. M. out of the herbarium of the *Botanic Garden*! m. I. A. Ma. (herb. Hooker.)

14. *E. adnogUmum*; foliis cymosis lineari-oblongit oblntst, racemo elongato simplici terminnli e spalhi ancipiti pedunculo brevioro, aepalis orotis reticulatis, petal is linearibus 3-veniis aculis, labello linear! basi call is 3 instruct. •. — /erst, *Mar Pangoa, Matkews*, 107.; (herb. Hooker.)

15. *E. tjrandi/hntm* foliis distichis ensiformibus obtiis, racemo dense terminal) basi fiexuoso e spatbi (lupin ei orto, atpalo dorsali ovali lateralibus dupfo latioriboa tl imidiatis, petalts linearibus, hiU-IKi subrotuiulo curdato emn rginato margine postico crispo veuu ha—rot 9 elcvatis.—A plant with the inflorescence oi *E. virienijsjn*. Flowers ooriiiceous, about twice as large as in that specie\*—*Pent, Mathewi*, 1871, (herb. Hc•otter.)

16. *E. ventricosum*; foliis lineari-lar tceouiiift acutis, racemis aogmtts multil oris e «psvtk4 linear) oru», fl« us mctnli ranaoeat, «epalis »ubscquttlbtui oUongts acoiis, petal filiformibus, coltmini ventricusi, labrillo ovato cordaio ac utissimo basi bicalloso.—A slender plant, with the Mem »IH at six in vnet up to the commencement of the spatbe. Karemai fi om 4—fi inches long, including tlie spalli e which cov m tle whole p-dunca. Flowem purple, small, membranoos.—*Peru, Mather\**, 1669. (herb. Hookt <.)

#### § IX. AMIIGLOTTIU ; *JiorUm\** racfwois.

17. *E. cornmiuu*, foliis graminets hncari-lancr<olatis acutissimis, racemo elongato -yilind mci-u mnn.), sepalis lin<ari-linu ••ul'itis acunmml i\* ottMi:-. !>!.!;• niiloriniliOBj liti bellitnlobi laciniis hutcaJHw »a nis rotundatis inte unediioornui bast 3\*callo»&.—Near I. Irinit.atis. Spathaceous bract acumina<sup>1</sup>e, imbricated, as long as ibe peduncle. Raceme 6 inches long. Fiuwcrs\*l<ite, very frag r.mt. -ft m, A|ithews, 181r>; *in trunks of tree\* at (iuackapato near Ones, Jameson*. (herb. 11ooker, and propr.)

#### § AMIIGLOTTIUM ; *ttvribus paniculatt*.

18. *E. porpkyre\*\* i* foliU distichis oblo;lgit ^ u, issimis, squamis spathaceif dense iml rricatis acuminatis pedunc alolon^ ioribus, paniculá acutá simpltci "»"l>in'»r», floribu»c«»rybutit,

sep alii oblongia aetitis laterali bus fal; ali\$,petu lis line ih-sputli-  
n lulls Inbcili trilobi laciniis )ateralibu« rotumlatis intermedia  
qu ulrnta hiticntaiii: disci ax» elevatu ba\*i et npice.ni versus bt\*  
cnllota,—A fine species with an oval panicle ind large  
fin were like tltote <f E. nutar in, but purple.—Found 6y Pro-  
fe§\$or Jamemm, in the wood\* on the we»Urn side of Pichin\*ha,  
(herb. Hooker.)

§ X. EUCPIDENDTUM ; *Jtoribu\* panieulati\**.

19. *E. tmbetems*; foliis Iblonge •-lanceulaiis acutit acapo  
plu:-u > l>eviori.'HIS, pamcoU nmplissuni flcxooaA. pelalii  
ungtucultttw scpnliv que ob longtt obntsit, label!t 1rilobi lacitiii  
intermedia subrotumU venii 3 elevatti latcraiihus obovativ  
multo majorc.—A magnificent plant, with very large pani-  
cles of delicate rose-coloured flowers as large as those of i-  
alatum.—Found at lag Amman, near Oeuaea, in Mexico,  
by Karumuki. (herb. Martii el Zucc.rinii.)

20. *K*, <luntm; folii> distichis ovato-lanceolatis acutis:  
vaginis rugosta, panicula gimplici pauciHori, brnetti\* du ris  
oval is cucultaiis acuminatis ovariiis aequalibos, sepalis oblongi\*  
acutUdur is striatis, [tetalit at gustio rihui, tabelli poslici trilobi  
tra itrerac rhombd lobis Uleralibm pn-cti\* iruncatii inlcrme-  
dio trtangulari m auto.—Stemiii mple or branch\* d, from 9 to  
18 inches high, equal!y covered with ha: d distichous leaves.  
Fiowtn Mtial\* apparently yd low. The infl ircaeenot is occa-  
kioually ti mple.—Guiana^ Schomhurpk, Villa Itica in JIraztl,  
*Pohl*. (herb. Martii, Zuccarinii tt propr.)

31. *E. c imotuMf* foliis distictii ovau>-lanceolatis aculh-  
oaUai vagiuis rugulosis, panictila rigida «trtal4 nui ltiiflora,  
brmctU diivis ov: ttii cucullalis acutii ovarii longitudinr («r|Mlii  
libus h arinatis  
lteriorib postici  
trilobi c edio  
rigid of Epid. onga-  
carnosis oblongis obtusis latera — inc git>boaia c yel-  
us, petalis aepalo dortali conformibua, labelli are  
when d' arnosi lobia lateraiibus rotuudatix en< term ery  
conico aolido.—A phut, with the hftbil A this speciel  
turn. Hirpaniclci ian>-flowcml. Flow«» an pair  
lowaccor. the M ,t«of I)r von Martiut; tbtjr

when rroetit.—/>r wörn Mart\*\*\* met wn : Mack, and eviiUntlv must bi

*the Diamond Plains mar Ty\*co, ami in rocky placet mar Itambe in Brazil; Pohl aUo fottmi tt in the tame cotmtty* (herb. Martii and Zuccarini.)

22. *E. micranthum*; foliis distichis lineari-lanceolulis acuminatis; panicula virgati, bractei\* \*elapso\*acmniitii florum dissilorum longitudine, tepali«obJongucanioakobctiibq auba> qualibus, petalis linearibus labello oblongo quadrate indiviso nudo.—A plant with flowers scarcely a liuc long, and all (the habit of *E. tridactylum*. ~ / > < TM, *Mathw*, (18 M.)' (herb, Hooker, Dcntham et propr.)

§ *EURPIDENDRUM*; *floribus paniculatis*.

23. *E. vincentinum*; caule ancipiti, foliis distichis anguste lanceolatis acutiusculis panicula filiformi brevioribus. Petalis linearibus lanceolatis petalitis filiformibus, labello subrotundo crispo.—A small delicate species, not more than 1/2 inches high, with innumerable membranous flowers, disposed in a short, loose panicle; filiform pedicels.—*St Vincent*, *Guatiling*.—(herb. Hooker.)

§ *Kfrior.NnnLM*; *Jkihbut raeemati\**.

24. *K. alternant*; foliis distichis oblongo-linearibus oblique retusis margine vagillisque ciliatis. Petalis linearibus, labello subrotundo ovato serrato bilamellato columnae nani\* adpresso. Bractei ovatis herbaceis obtusis pedicello brevibus, racemo corymbiformi, floribus majoribus. *Var. β.* bracteis minimis acutis pedicello brevioribus, racemo flexuoso, floribus duplo minoribus.—Small plants about six inches high, with small racemose flowers. The *var. β.* is smaller in all respects, but in the structure of the flower\* themselves I find no appreciable difference.—The *var. α.* was collected in the ravines of Pichiuá, at the height of 10,000 feet above the sea, by J. J. J. Jamem j 0. it from San Carlo\* in Peru, and was first seen in the collection of Mathews' collections. (herb. Hooker et propr.)

25. *E. tenue*; foliis distichis linearibus acuminatis oblique emarginatis, racemo acutiusculis angustis simplicissimis (nunc casu

**poockun** bifidts tmultifloris (10—80), bractet\* ovatis acuth  
 rigidis curulatis pedicello longioribus> floribus erectis mem-  
 branaceis, sepalis linearibus obtusis, **petalii** filiformibus,  
 labello  $\llcorner$  sili ovato actito CODAVO  $\llcorner$  itriuguc 1-di'ntato : veni-  
 baseos euvatis. — A small slender species with the habit of the  
 last—found by *Dr. Martius in the Serra do Caraca, in the*  
*Province of the Mines, in Brazil.* (herb. Mart.).

111.—On a new species\* of FISSIDENS, found by T. G. LEA,  
 Esq., in North America.

[With a figure.]

(PL. II.)

*Fissidens hyalinus* (Wils. t. Hook.): poeflita erecta simplex,  
 foliis oblongis nerviis **redtblftdi bjiKnii** nervibus, seta termi-  
 nali, capsula erecta ovata, operculo conico-acuminato. IIAH.  
 Cinritmati, N. America.  $\int$  O < /••/, **Btf.** Hart- on damj  
 earth in inoist **htdj** woxnhi.

An **KNigt** All extensive and interesting collection of North  
 American Mosses, sent to us by T. G. Lea, Esq., from Cin-  
 cinnati, we find the very remarkable one of which we here  
 offer a figure. No other species\* that we are acquainted with  
 is destitute of nerve, or has the leaves so loosely cellular, or  
 so pellucid! **M the preai** ut.

The plant grows in all parts upon the **ground.** The  
 stems scarcely exceed a line in **length,** and are simple, throwing  
 out a few fibrous radicles from the base. The leaves are from  
 4—6, very Urges in proportion to the size of the plant, disti-  
 clunis **unequal** in size, oblong, acute, equium is the upper  
 half of the base, pellucid, entire, loosely reticulated, \*ith ob-  
 long cellules. quite entire) and **qulti dtvtitatt** of nerve. **8**  $\llcorner$  ia  
 rather thick, whitish, and **lemUpellucid,**  $\llcorner$  rtinaJ arising from  
 an oblong bulb, curved. **Crp**  $\llcorner$  ulc erect, ovate. **C**  $\llcorner$  perculuni  
 shorter • **than** the capsule, conico-acuminate. Calyptra mitri-  
 form. Teeth of the peristome **it,** when moist strongly in-  
**riirvetl fttidroiceal**  $\llcorner$  in **ibi**  $\llcorner$  outh of **iliccapan** le, red, deeply  
 cut into two narrow **WutibuUc** **In** cinia.

TAB. II. *Fi*. 1. *Ptaata*, »«'. size; *f.* 2. Single plant; *f.* 3. Calyptra; / 4. Toolh of the prristome :•—magnified.

*Gr*. *O*\* *a mew* N. America\* GRIMMIA, fry \V. \S*i*. Baq.

[With a Figure.]

(TAB. III.)

GRIMMIA DRUMMONMI.

Caule sul wimplk i, foliis patuli» Unenri-lanceolali\* acut is sub-carinalts siccitate criipatis, capnult elliptic\* exannulata. operculo rottrato, en I v pint sulcati, peristomin immeno.

II M. On tract in Lou inarm. *Dntmmomd*.

*Gtndu* wmunciales crecti, aggrega ti. *Fetia* patulo-reflexa, ltneari4anceoUiU« acuminulata, iulegrrrriroa, canaliculata, craa-sius•oulu nervo SIIIK:•ntinuo, siccitate valdt crispati, abaque nitore. Satshrtvk, foliis triploloO]gior. *Ctptula* crecta, oblungo-rllyptica, ore rubru. *Peristomii* dentet MHC< ID, infra roar-ginem capsula- adnati, conniventea, lat\*- aubttlali\* tu binde p>cr-forati, apice vix fi\*»i, externe facie In aiter trabaculati, aa tu-rate fuUi, basin varan\* rubri • *Calyptra* caropanulata, Aavo-brunoea, sulcata, baai lacera, capsula brevior, illamqoa amplectens. *Operculum* e baai couvexo rottratutn, rrcium, capsula paulo breviu\*.

The absence of an annulus in ihia species, the immersed periftomc, tad tlie more criapnl dry foliage, are marks whereby this species may be raadiy distinguished from *Gr. MtUmtmrffii* ai> *Gr. crispatata*, bet» «crtt « which it is interme-din<sup>1</sup>e in size.

*Ob*\*. In the original Cape •ptdnens of *G. crispata* the capsule It su bpyriform, i.e. taperin j at the base, and the teeth of the peliitome have mo mtdial fate, b \*o wprajam ted in the figure in Miacel. Uot.; an annuliu is preaont.-^\\.

Reference to Figure.—TAB. 111. /, 5. 1. Vlanu, M, at. size; *f.* i. Magnified; / 3. Capaule with calyptra; *f.* ^ Leaf magnitied; *f.* 5- Apex of leaf, highly mag. aified; *f.* 6. Sec-tic•nofl. af; *f.* 7. Portion of the peristome.

X.—*Remarks on an anomalous form of the plum, observed in the Gardens of New Brunswick, North America, by James Robert M. H. Professor of Natural History in King's College, Fredericton, New Brunswick.*

(1834.)

CT. IV.)

WITH the exception of the *Siberian Crab*, there are no trees in the gardens of New Brunswick, which show such a profusion of blossoms as those of the *Plum* tribe. Of these there are three kinds to be found almost everywhere; one, bearing a small black damascene plum, another a red one, (very like our common plum,) and the third a smaller red plum, containing a roundish flattened stone, somewhat like a tartar stone, and having a deep groove on one side.

But though all these varieties flower with the luxuriance, few of them produce ripe fruit; a crop of plants is not gathered often perhaps than once in five years; during the last three years there have been almost none, and the tree which in June is while with blossoms found in September with two or three or perhaps ten good plums upon it. Owing to the recent settlement of the province, our fruit-trees are mostly all young, and introduced from the gardens of the United States; yet young as they are, their stems and branches are very frequently encrusted with *Lichen* and *Mosses*.

The same remark applies to the cherry and apple-trees, the latter of which especially are liable to degenerate, and no mode of treatment hitherto tried will secure for any length of time a fine quality of fruit. Almost all the apples seen at table are imported from Boston; those grown in New Brunswick being chiefly consumed in the manufacture of cider.

In the summer of 1839, I had an opportunity of watching the progress of the fruit among the plums, and it was as follows. In the first, or soon after the commencement of the fall, when the fruit had fallen off, the ovarium had become brownish-yellow, soft



flabby; as the fruit continued to increase in magnitude, its color turned darker, and of a more ruddy yellow, and at the end of a fortnight or three weeks, the size of the abortive fruit rather exceeded that of a ripe walnut. In fact, an observer might imagine himself to be wallowing in a field laden with ripe apricots, but like the fabled fruit on the banks of the Dead Sea, these plums, though tempting to the eye, when examined were found to be hollow, containing air, and consisting only of a distended skin, insipid and tasteless. By and by, a greenish mould is developed on the surface of the blighted fruit, then the surface becomes black and shrivelled, and at the expiration of a month from the time of flowering, the whole are rotten and decomposed. The flower appears about the beginning of June, and before August there is hardly a plum to be seen.

The same phenomenon occurred this year, only that it was more advanced than the natural way, and I dare say there will be a good number of plums ripened this season. What is also curious is that, if there be two flowers still from the same point in the branch, one of the ovaries will often go on to ripen in the normal way, while the other will become abortive and wither, as above described. Sometimes the abortive fruit turns mouldy and rots, while the other fruit takes the form of a rounded figure, and is larger than a ripe fruit ought to be; while again (the case occasionally becomes as noted) the fruit of a leguminous plant. The latter form was observed to have once occurred in my garden at Exeter, and the only instance which I have observed of any such degeneration of the fruit of the Plum-tree. It is mentioned by Mr. De Catdoik, in *Urb. Mamm. on the Plum-tree*, where he refers to the analogy of the plum-tree in the plants belonging to the family of the Rosaceae. In examining one of the abortive fruits, we find matter deserving of attention and record; indeed, all anomalous forms, whether in the animal or vegetable kingdom, are in the highest degree worthy of study. Modern science is now

most profitably directed to the subject of analogies, and nothing more likely to confirm theories derived from a study of the normal organization, than the finding that the same theories apply equally to the same organisation when in an abnormal (or as it was formerly called, a monstrous) form. In fact, we are persuaded that theories which do not apply to those monsters, and regularly explain them, are expressed in terms either not correct, or not sufficiently general. Monsters, whether of the animal or vegetable type, are cases left us by nature, to instruct us how forms like the perfect individual, and their usual operations may be varied and suspended in their progress. There is perhaps no theory which has thrown so much light upon vegetable Physiology, as that proposed by Goethe, in regard to the analogies which exist between a flower-bud and a leaf. According to this theory, the origin of the parts composing the flower-bud, is the same as that of the parts contained in a simple leaf. Thus, all the bractees, the sepals, the petals, the stamens, the pieces of the nectary, and the ovarian, are subject to the same laws of arrangement as the leaves themselves; in other words, they were at first in the early life of the bud, when the parts composing it might either have been developed into leaves, into stems and branches, or into sepals, petals, stamens, nectaries and ovaries. Goethe knew that we are in some cases able to pass from the normal to a transition form; that we may, by appropriate treatment, cause the one to revert back to the other, and that we can also in many cases of spontaneous anomaly, trace incontrovertible evidence of this process of metamorphosis or change having been effected. By the theory just hinted at, we are made aware that the ovary is a developed ovarium, and if an ovary be only a modified leaf or leaves, that the fruit may often exhibit proofs of its foliaceous origin. It is not to be understood that the fruit was ever a leaf or a leaf, but that it is a leaf (that it is a leaf) if it

had not been determined otherwise by the specific vital energy of the plants, or of that part of the plant.

To avoid misunderstanding, then, it will be convenient to adopt the word *pericarpium*, when speaking of any of the elements of a fruit which have become independent of the parent as a flower or of a branch.

The abortive plum, now under consideration, offers a striking confirmation of the theory of the German poet and philosopher, as we shall now proceed to state.

The fruit or *pericarpium* of the genus *Prunus*, is simple, that is, the convolute *pericarpium* of the ovary is single. In the normal form of this fruit, the exterior *pericarpium* is analogous to the *epidermis*, or *epiderm*, on the lower side of a leaf; the *mesocarpium*, or *mesocarp*, (constituting the part that is eaten), is analogous to the *Mesophyllum*, or *mesophyll*, or cellular tissue of a leaf; and like the *epiderm*, hard and long, represents the *epiphyllosum* or *epiphyl* of the upper surface of a leaf, thus:—

Hypophyllum = exocarp;

Mesophyllum = mesocarp.

Epiphyllosum = endocarp. #

In the anomalous fruit, now before us, each of these parts has its representative, but they are in condition widely different from the normal one. The *epiphyllosum* is yellow and wrinkled, not smooth and red or black; while the *mesocarpium* is a little developed as if the *pericarpium* had become more developed. Its cells are loose and dry, while the *mesocarpium*, large and very prominent, are discerned passing through it. The *epiphyllosum* is seen to arise from the *epiderm*, and to divide into several sets or bundles, and to pass upwards on all sides towards the apex, where the withered *epiderm* is attached. The two principal sets of vessels are those which run up along the inner surface of the groove or *mesocarpium*, corresponding to the line along which the edge of the *protophyllum* are united, and those which correspond in position with the midrib in the *protophyllum*. These two sets, and the other smaller ones, all anastomose

with each other, and finally converge towards the apex\* where probably they all contribute to form portions of the «yle and stigma.

The *atdocarpj* §j out as large as a coffee-bean, was membranous, and extremely vascular on its internal surface. In general, it was attached by vascular fibre\*, derived (solely from the point of origin; but sometimes there were adhesions between its sides, and) the tissue of the *atdocarp* on which it lay. In long one of its edges it was sometimes wholly or in part open, and this opening corresponded with the suture or

groove on the outer edge: sometimes it was attached near to where the style was fallen. In other instances it was attached midway between the point and the peduncle.

In some specimens it was empty and collapsed, while in others the rudiments of one or two *ovule*\* might be seen. These were not apparently connected with the endocarp; but only by a line of vessels and a fine transparent membrane proceeding from the inner surface of the *atdocarp* to the

conjoined margins of the *atdocarp*. One of the two was generally smaller than the other; and though neither of them was larger than a pin's head, yet thus early was it signified that the nutrition of one of the two ovules was defective.

If one of these two ovules was MM unlike that of a regularly formed ovule, and the whole was analogous to that of tin-fruit itself, containing without touching the other ovule. In or the was plainly seen to consist of a series of sacs, contained (in both) one within the other, and each other at the neck only. Much of the ovule was made up of three transparent shut sacs; in most of which, (representing the *atdocarp* of ML Mirbe,) contained a transparent fluid and nothing more, so far as I could observe. In the repetition of the same form of M C V and the connexion of the whole with the vessel\* arising from the peduncle to the fruit, I constituting a true placental ovule remarkable\* and helps to form a

made for the nutritio<sup>n</sup> of the embryo, it is natural to expect that it would not be developed, nor was it to be found. The ovule then either was not fecundated, or it was destroyed soon after fecundation. Now, as all (be part\* of a fruit concur towards the development and protection of the new individual,—if the new individual is not formed, in the other parts need not be developed either, which was precisely the case, as I imagine, in the present instance. By a reference to my Meteorological Journal, it appears that the mean daily temperature in Fredericton in the early part of July, 1839 and 1840, was sometimes at 50°, 60°, or 70°, (Fahr.) in the shade; but yet that there were frequent cold winds from the north and east, and in north-east, with heavy rains, continuing for days together, at the period that the plants were in flower. May and June constitute in fact the rainy season of New Brunswick; the air, cooled by the melted ice and snow, is subjected to the rays of an air rapidly powerful sun, and the weather thus becomes extremely changeable and uncertain. In the garden where I obtained the specimen accompanying this paper, every tree was blighted, except one which was exposed upon a hill, and thus protected from a hill north and east. In the tree in question there was not a single blighted part. It would perhaps be a too hasty generalization to say that this explains the whole matter; but probably, the abortive fruit of the pine-tree, and the curious appearances above described, may be considered to be materially influenced in their production by the occurrence of cold winds, and long-continued rain\* during that season when the inflorescence is expanded, and the reproductive organs are exposed to atmospheric vicissitudes.

The people of Fredericton assert that this blight of the fruit is owing to insects, and that it may be cured by immersion in water; I believe however examined with the glass hundreds of trees, and never could detect any thing but a few *Aphides* on the leaves, too few, of course, to effect so much mischief. The soil may exert some influence; but the soil in different gardens is not often alike, and a reference to (the cause) could

not suffice to explain any effect which is so very general. If my opinion upon the intricate origin of the evil is contrary to that of more experienced Horticulturists, I shall be only too happy to accept any more rational explanation of the facts described in the foregoing remarks.

J. KOMI, M.D.

*Explanation\* of the Pk\* c. Tab. U'.*

Fig. 1. Ordinary form of the abortive fruit, *tmt. »i se.*

- a. Peduncle.
- b. With rad remain\* of corolla and stamen.
- c. Groove or suture, instead of U M •dgaa of U M protophyUun.
- d. Withered atU.
- e. ••rmaJ form of the fruit.

Fig: \*. Abortiva plan which has b\* < \*m\* d o f tad lika a pod, nat. size.

Vtf. 3. Aoothar variat], rounded and niucli eormgatad, •</. >J se.

?g. 4, Sactioa of Tig. 1.. a httU magniflad.

f. f. CM \*\*\*\*\* of exocarp.

\$. CfJlalai Uama of mesocarp.

a. L<r|t< bvadU of vessels, reaching from U M ptdaada to U M Una of the >trU. alpd romvpoadiBf to U M placenta la lafamlnotts planu.

c. Endocarp, suspended from the pU-central vessels, and being almost loose MUM mesocarp.

k. JUetioa of a plan\* ripavbg la tha normal ••y.

Fig. a. Magailad mw of a piece of lha carp\*), to show U M •IUcbmttt of U M andocarp.

l. l. Marginal ><mli of tb< protophf 1-laav

• FiinirU or vaeti lar connexion of U M oval\*, and iU cortringa.

Fig. fl. Kndocarp, oitad and magni-Had\* to allow U M oral\*

• Initnal •vrfaca of Ui< endocarp.

m. Funicle or vascular cord.

a, o. The two o\*ut<< not tiactai to each other.

p. ><alt fotag oW fro\* U M pheanu, to ON of U M ovula\*

r laT • # • JaVaml the ovules.

p. Connecting vessels.

<. Ibm bm\*. by whkh U M OTUU •Uo attorhod.

r. Cit aag\* of U M mttr i u.

s. Cat <<fa of U M m.ddU me •

t. Int > m < M t that aw coolaiaMg • daar

*III.—A Sketch of the progress of Botany in Western America. By C. W. SHORR, M.D.*

[from O\* Trwtybmmi\* Jmmt of MmAcimt, No. XXX.]

[The following Nonh AawtiM h. long occupied much of our attention; and thanks to the HbawfJitjroroavowa Botanists and UMMM << the United States, there it ao b<riMh<> i< Euntfit thai Lfrfwfet •" large a collection of American plants at our own. We have ourselves in the Edinburgh Vol. III. No. 18.

*Philosophical Journal*, some years ago, given an account of the progress of Botany in the New World; and have in the *Botanical Miscellany*, and the *Companion to the Botanical Magazine*, and in the first volume of this *Journal*, published an account of the botanical travels of Dr Short, Mr Drummond, and Mr Drummond, together with descriptions of their plants; whilst our *Flora Borcali-Americana*, bears testimony to the very individuality of Dr Richard-son and the other officers of our expeditions in search of a north-west passage through the Arctic regions of America, *British possessions*. It is a most interesting and important friend and colleague of Dr Short of Lexington University, to enlarge more particularly on the discoveries that have been made in the territories of the United States, and to give a full and complete insertion to the sketch in the *Journal*. Four years ago indeed this paper was written, and Mr Nuttall's most extensive and important travels to the Pacific yet to be detailed. We trust, at a future period, to be able to resume this subject, and to bring forward many more of our friends, who have contributed to the *Journal* (A *Amru.i: I. i. c. (Mrwt. Toff)* and Gray, one of the most important works in the history of the New World.—[to.]

IN the rapid increase of knowledge which has distinguished the close of the eighteenth and the beginning of the nineteenth century, every department of science has felt the animating influence of improvement. In every branch of knowledge, and particularly in those which depend on facts and observations for their support, the increase and improvement has been great and rapid; and in every branch of Natural History the results are particularly striking. Zoology is no longer in the hands of a few individuals; quadrupeds and birds, and fishes and insects, have become distinct pursuits; even the different orders of insects have been fully occupied by different observers, and their forms and habits and splendid drapery have been delineated, until the imagination is almost bewildered with contemplating the boundless variety of organized beings, and the variety of their habits, instincts, and qualities. Mineralogy and Geology, though each treating of the inorganic portions of the globe, have been divided into distinct studies, each fully occupying all the powers of the most gifted minds.

It is scarcely a century since Botany began to claim any of the distinctions of a science; at a much later period it was considered as so small a branch of the department of Natural History, that it was generally included in it as a subordinate, although always a favourite study. Even now it may be correctly viewed under the same aspect: that no wonderfully have the limits of this great stock expanded, that Botany may now be said to comprehend many ramifications dependent on itself, each of which may occupy but amuse the leisure hours of a long life. Vegetable physiology—the distribution of plants into definite groups, comprehending the principles of classification—descriptive botany, or an examination and description of all the species of which the vegetable kingdom is composed—and even the history of the science, are each of the main inquiries of great extent. In descriptive botany, instead of the limit which was once supposed to circumscribe its objects, instead of ten thousand species which Linnaeus, with all his knowledge and in the height of his enthusiasm, believed would comprehend all the existing forms of vegetable life, we will not say in the language of poetry, that ten thousand times ten thousand are rising up before us, but it is well known that the determined species are rapidly approaching to one hundred thousand, and new species, we may safely say, new genera, if not new families, are annually added to the long catalogue of recorded names.

Nor is the perpetual expansion of this circumference the lot of the lover of Nature. It should rather be a gratification uniting an inventive to his, that his occupation will be interminable—that curiosity, insatiable, shall be supplied by fountains in themselves exhausted; and when the conqueror of the world wept that he had more to do, the student of Nature need never apprehend, that with the most industrious devotion of the longest life, he will ever exhaust the sources of his enjoyment. In no pursuit, perhaps, in which man engages, does he enter with so pure and disinterested an enthusiasm, with such devoted and exclusive ardour. There



is none in which successively resulu appear to give more unmingled pleasure. /... motto which is always inscribed on his banner.\*

Amidst this ample range which hloiany now op\*; to our view, we must oI the present occa>ion necwearily reMi rict our researches within very narrow bounds, and we, therefore, propo\*: devoting this paper to a »kc<sup>f</sup>ch of the pro;ress of Botany in \Western America. In .loing this, we will ndi ert to lite labours of thow: only who have been iimrumctitu<sup>l</sup> in forwarding the march of ibli si ience, and promoting its discoveries in tIK- more recently explored anj newly settled portions of our continent: and for the take of greater con rennee will mentio i them in the order of chronological otvurrence.

The first scientific botmist v ho vis tied t! is portion o' the Union, was André Michaux, the •lder, who having ug sludied the s<ience under the great Jtuaieu, and nth.r eminent teachers, having visited various portions a f France on botaaical excursions, and accompanied the IVrvun consu l to the East, where he spent two yeau in the exploration i>f its vegetable treasures may be supposed to have been well qualified for the u>k to which he was seteele\* l by his royal master Louis the Sixteenth—that | of exploring the continent of North America. In 1785 He sailed from France, on this mission, and for tan year\* wa> uulu>trtoulaly engaged in examining vartout portiona ui the Cool inent, from Hudson's Bay, to the Bahama Islands; and from the Atlantic seaboard, to the banks of the Mississippi. For the purpose\* of assisting his collections of living plants and roots to Europe, he established establishments at New York and Charleston in South Carolina, for their cultivation; and irponj the latter city, him in traitsportinn 1 his excursions. These establishments he formed nlsliiihnnrnu at New York, •d« em... which 4, for were especially instituted, spent a considerable portion < wh engagctl in tbc Southern Review, No. viii. were soon brought into a flouriilm

\*N:ling theo'

did much towards advancing the science of Agriculture in the United States.

In the year 1798, Michaux crossed the Allegheny mountains and visited many parts of the Western country; he traversed Kentucky, and spent some time in this part of the country. In the following year, 1794, he again descended the Ohio river, and pursued his investigations into the interior of Illinois, even to the banks of the Mississippi. The difficulties, privations and dangers to which this enthusiastic naturalist was exposed at that early day, may be easily imagined but we can as readily conceive, that the whole of his mind, by the delight in his experience in traversing a hitherto untrodden region, through which, in reference to the lights of science and the labours of civilization, it may truly be said,

"He went not by the way of the twilight sublime

O'er the birth of America."

His father, the American Botanist, returned to Europe, richly laden with the materials for a comprehensive work on the Flora of North America. But finding his country in a distracted state, growing out of the Revolution, he was induced to postpone the publication of his works, and to join an expedition then about to sail for New Holland; on which, after having visited Teneriffe, and the Isle of France, he died at Madagascar, in November, 1862.

Previously to this, however, upon Francis Andri-Michaux, commonly styled Michaux, who had been with his father in America, returned hither in the year 1801, under the auspices of M. Chapin, Minister of France for the interior, and spent nearly two years more, in further investigations of the natural productions, especially of the Carolinas, Kentucky, and Tennessee. His travels were made during a journey from the city of New York as far west as Nashville, and thence to Charleston. On this travel, he diligently examined that portion of our State bordering on the Ohio river above Maysville; and thence through the interior by the way of Lexington, to the Shenandoah. A Narrative of

this journey was published by him on his return to Paris, in which he speaks in terms of respect and gratitude, of the civilities and assistance which he received, during his stay in Lexington, from Dr Samuel Brown, late Professor of the Theory and Practice of Medicine in Transylvania University.

Soon after the return of Michaux the younger to Europe, he published in Paris two works of which his father had left the MSS. These were the *flora Bonaii-Amertrtina*. in two volumes, 8vo. and one volume on the *Oaks of North America*, in folio. The former of these was the first publication ever given to the world on the general Botany of North America; for although partial Floras of particular districts had been previously given by Cornutus, Catesby, Waller, Clayton, Gronovius, Marshall and others, yet these were all necessarily imperfect and limited. The work of Michaux comprehends descriptions of 1700 plants, and it contains forty new Genera.

Of these acquisitions made by Michaux to the Botany of America, our own State and her sister Tennessee have the honour of having furnished a due proportion; and among them some curious in their economy, and others imposing in appearance. We have only time at present to allude to the *Pachysandra* flowering among the snows of February—the aquatic *Hydrilla imptuta*, defended from the action of the water by a thick glutinous covering—the humble but useful *Podostemum ceratophyllum*, confined to the shoals of the most rapid rivers, where it serves to protect the channel from the fury of the current, by binding together gravel, shells, and stones, on one impenetrable mass—the little *Poa rrpmtu* performing the same office by matting together the dry sands of the river bank—the graceful *Virgilia lutea*, decorating our calcareous cliffs with its long racemes of snow-white flowers, &c.

His characteristic descriptions given in pure and classic Latin are exceedingly faithful; and subsequent investigations have but served to confirm the fidelity of these descriptions and the accuracy of his localities. Of this we will adduce

but a few proofs out of many which might be cited. In speaking of the *sedum pusillum*, Michaux mentions it as being found in North Carolina, at a place called "The Flat-Rock." Pursh, the author of an earlier and later work on American Botany which we shall presently mention, in attributing the same plant after Michaux, but without his precise accuracy, says it is met with "on rocks in North Carolina" and elsewhere. Now, although this latitude in the most of instances might truly be indulged in, as similar plants are for the most part found in similar localities in the same countries, yet in the present instance it has proved unfavourable to Pursh; for Mr Nuttall, of whom we shall hereafter speak more particularly, writing to us some years ago, on the subject of this particular plant, and its peculiar and restricted locality, thus expressed himself. "On this singular rock of granite of nearly five acres in area, I had for the first time, during my numerous peregrinations in the United States, the satisfaction of meeting with this extremely rare plant, and upon the same rock where so long before the unfortunate André Michaux had found it; from that time to the present no one except Michaux and myself had ever collected or met with it—it has never yet been anywhere found, but on the 'Flat-Rock,' near Camden, in North Carolina." The *Bellis integrifolia*, or American daisy, first described by Michaux (in the work now noticed, the existence of which was even questioned by some American Botanists, has since been found abundantly in Kentucky and Arkansas. And it has been our good fortune to detect the original *Cunila glauca* of this author, in the neighbourhood of Lexington, though long confounded with a totally distinct species growing around the falls of Niagara.

In the *Flora Boreali-Americana* and the volume on American Oaks by the elder Michaux, we are indebted to the former for a splendid work on the forest trees of our country, the *Sylva Americana*, forming with the Oaks, three large volumes, with beautiful and highly accurate coloured engravings. Of this work, which should be in the library of every intelli-

great farmer and physician, two or three editions\* have been published in Europe, and one in America.

The estimable and venerable author of this work is now living in the neighbourhood of Paris, in France; and to him we had the pleasure\* a short time\* since, of sending by Dr Campbell of Tennessee\* a parcel of plants\*, being chiefly such as have been discovered in this country, from the journals of his father and himself.

Soon after the purchase of Louisiana, the Government of the United States\* wisely determined upon taking measures to explore their newly-acquired territory, and the most fertile wilder-ness within its limits, in order to ascertain its physical boundaries, its soil, and natural productions. As intimately connected with this investigation before us, and as next in the order of their occurrence, we must mention the labours of those intrepid explorers Lewis and Clark, who at the instance of President Jefferson\* were sent in 1803 to the western portions of our North American continent, up the Missouri, over the Rocky mountains, and down the Columbia to the shores of the Pacific. Of the success of Capt. Lewis\* in the command of such an expedition, the President thus expresses himself in his recommendation to Congress. "Of courage undiminished; possessing a firmness and perseverance of purpose which nothing but impossibilities could divert from its direction; careful as a father of those committed to his care, yet steady in the maintenance of order and discipline; intimate with the Indian character, customs, and principles; habituated to the hunting life; guarded by exact observation of the vegetables and animals of his own country, against losing time in the description of objects already known; honest, disinterested, intelligent, of sound judgment and understanding, and a fidelity to truth scrupulous, that whatever he should report would be as certain as if seen by ourselves; with all these qualifications, as if selected by nature in one body for this express purpose, I have no hesitation in confiding the enterprise to him." Under this leader was this daring enterprise accomplished in three years, to the entire satisfaction of the government.

It is much to be regretted, however, for the cause of Natural Science, that the wisdom of President Jefferson had not perceived the necessity of attaching to this expedition some thoroughly competent naturalist; for whatever may have been the tact and discernment in observation, possessed by Capt. Lewis, he was not prepared by previous education for making those accurate and minute observations, collections, and reports, on the Botany, Mineralogy, and Zoology of those unknown regions, which would have proved most interesting and useful to his own country, and to the world at large. For making these, Mr. Nutt was and opportunely employed by this expedition which have not been surpassed by any subsequent party. Nor were they entirely unimproved by our travellers for a large collection of plants made during their slow and tedious ascent of the Missouri, which, however, was most unfortunately lost by being deposited among other things at the foot of the Rocky mountains. A much smaller, but highly interesting collection, made during the rapid return of the expedition, was placed in the hands of Pursh, a distinguished botanist, of whom we shall presently speak, for the purpose of figuring and describing such as might be new. Of this parcel, Pursh thus speaks:—"The loss of the first collection is the more to be regretted when I consider that the small collection communicated to me, consisting of about one hundred and fifty specimens, contained at least above a dozen plants well known to be natives of North America; the rest being either entirely new or but little known, and among them at least six distinct and new genera. This may give an idea of the discerning eye of their collector, who had but a little practical knowledge of the Flora of North America, as also of the richness of the extensive regions in new and interesting plants and other natural productions." What then might not have been the acquisition made to the Flora of North America, had this expedition been properly conducted by competent naturalists!

At the same time that Capt. Lewis and Clarke were performing their arduous and important services in exploring the

Vol. III. — No. 18.

unknown sources of the Missouri, Capt. Zebulon Pike, another highly meritorious officer, was despatched on a similar expedition, for the purpose of tracing the Mississippi to its head; and although but ill provided with the proper outfit, and labouring, consequently, under many disadvantages\*, he nevertheless effected the main object of his mission, in nine months, to the satisfaction of Government; and immediately on his return was selected by Gen. Wilkinson for a second expedition to the interior of Louisiana, which he prosecuted even into the Spanish territory. A narrative of these two expeditions was published in 1810, which although rich in geographical and other valuable information, is comparatively barren in its notices of the Botany and natural history of the unknown regions through which he passed; notwithstanding the subjects having been associated with him. This we have the greater reason to regret, because we know that one gentleman at least, of pre-eminent attainments\*, applied to the executive for permission to accompany those expeditions, and was appointed to accompany them.

**I**

liorn. \.. \)u u. 1M vain

A few years after this

Clark, the same

•p a j] mdun Villages on the Missouri, by M

, an English gentleman of very respectable attainments\* as a naturalist, who had been

mot 'Mni\, ai a oo ot^oct>

of seeUs and rot>

<trdei>

oed

\*hrr<

re season of 1810, he explored

the region round about, and despatched in the fall a rich collection

to Europe. In the spring he joined,

a fur-trading company and ascended with them to

the point we have mentioned. On this larger

collections, and some new discoveries were made, which being

t \TM\*\ WI tote the hands of Pun\*, and we published in 1817, in which it travels, with the

of his travels in America during the year\* 1800-10-11, in which he contained a great deal of interesting information, on the history of the Mississippi country.

It is now time that we notice more particularly a work, whose publication forms a considerable epoch in the history of American botany, not without reference on several occasions we have already mentioned.

Frederick Pursh, a German by birth, and educated at Breslau, it is that country in 1799, with the determination, at the request of his government, until he had explored North America to the utmost of his means and abilities. From the time of his arrival until the year 1801, when he returned to Europe, he seems to have been variously engaged, and at different points of the Eastern and Southern States, in prosecuting his inquiries; but his most extensive explorations were made during the years 1805 and 1806, of which he visited and examined the Northern States, and in the winter, the Southern from New Hampshire to Georgia\*

"Bolt of the lightning," in the preface to his work, "I travelled on foot, the most appropriate way for a tentative observation, particularly in mountainous countries; travelling over an extent of more than three thousand miles each season, with no other companions than my dog and gun, frequently taking up my lodgings in the midst of wild mountainous impenetrable forests, far remote from the habitation of men." It does not appear, however, that Pursh ever crossed the Alleghany or descended into the Western Valley; consequently in the present inquiry we would be much interested in tracing his footsteps, as far as our knowledge extends that they resulted in the publication of his work, by far the most comprehensive which has ever yet appeared on the subject of American Botany.

In 1811, after an absence of twelve years, Pursh returned to Europe with an ample stock of materials for a Flora of North America, which, in 1814, he published in London, under the title *Flora Americae Septentrionalis*. In the compilation of this work he is to have availed himself industri-



of the aids ('uriu>lieti him in that great emporium of all science, till British Herbaria, and particularly in referring to the extensive Herbaria there collected of American plants.

In this work of Pursh, frequent reference\* are made to Western plants and Western localities; but for all such he must have been indebted to the Michauxs, Nuttall, Bradbury, Menzies, Lyon, Lewis, and other explorers of Western America; of the labours of all of whom he appears to have freely availed himself in enriching his work, and too often, unconstrainedly to believe, without making the proper acknowledgments. Nevertheless, whatever may be the minor inaccuracies of this work, or the reprehensible mode in which some of its materials may have been collected, it must be confessed that it was the most extensive Flora ever yet published of our country.

About the year 1815, this country was visited by the Abbé Correa de Serra, a man of distinguished attainments in natural history, well acquainted with literature, whom Jeffrey, the former well known editor of the *Edinburgh Review*, calls "the learned Portuguese." On his return to Philadelphia, where he then resided, Mr Correa spoke to us in terms of the Botany of our native State, Kentucky; and especially of his astonishment in finding in our mountains an *Andromeda*, having never before seen any other than shrubby species. We are not aware, however, that this gentleman ever published any thing on the natural history of this region, except a paper in the Transactions of the American Philosophical Society, more particularly on the Geology of the West.

We come in the next place to notice the labours of an individual, much more immediately identified with the interests and advancement of Western Botany than any of those who had preceded him. I allude of course to Mr Thomas Nuttall, whom we have already mentioned more than once. An Englishman by birth, he was at an early age thrown on our shores, where he soon became acquainted with our natural productions, and has since devoted his life exclusively to their

investigation. In 1811, he accompanied Bradbury on his then perilous voyage up the Missouri; soon afterwards he travelled extensively in the Arkansas territory—then unknown regions. In 1816, we had the pleasure of meeting this gentleman in this country, and enjoyed the happiness of making with him several herborizations, in the neighborhood of this place and Cincinnati. Unthai liiu-, in addition to his zeal for botanical acquisitions, he was much interested in the examination of the aboriginal relics of this region, and assisted him in taking plani at measurements of an extensive fortification at the confluence of the great Miami and Ohio rivers, and of another in this vicinity.

In 1815, the illustrious naturalist published his *Genera of North American Plants*, the

result of personal collections and observations made during nine years' active research, throughout most of the States and territories of the union; during which time he differed essentially in character and scope from the works of Michaux and Pursh, since it professes not only to give generic characters, together with a mere catalogue of species, and detailed descriptions of such only as are new, yet the *Genera* of Nuttall is not less a useful or excellent production than either of the former; whilst in point of accuracy and minuteness of detail, it is far superior. The testimony of the public to this assertion is manifested in the fact, that a second edition of it has been long demanded.

By the publication of this *Flora* has been enriched in no small degree, and it is even more interesting, utility, and beauty, made by its diffusion in every portion of the Union. Time would not permit me were I to attempt an enumeration of them, but I cannot pass them by without a notice of a few of those—the more extensive natives of our Western woods. Amongst these are the early flowering *Erigeron*, the first harbinger of our spring—the beautiful parti-coloured *Collinsia verna*, dedicated to his friend and fellow-botanist, Zaccheus Collins of Philadelphia—the *Phalangium*, so ornamental as the cultivated Hyacinth, and having a large edible

bulb -the gay and green tul // < v *tris pin* *nattJUia* —the Osage  
 ap( le or < > rang< of Arfcantat, moat • appropriately n tntcd > n  
 honour til \ \ illimn Maclure, the American patron of the Natu-  
 ral Science\*, &c. Of late, Mr Nuttall's predilections seem  
 to run chiefly in the line of ornithology, on which he Ue\* pub-  
 lish\* d in Boston two volumes, *turne\**, illuttrat. ed with very neat w «jod-  
 cutti of many of the bird\* of America. Hccr tly, however,  
 he has given to the public two lengthy papt rs on the %ul>ject  
 of American Botany, <ne in 1- 1 ianta« tions of the Ameri-  
 can Philosophic al Society, et Hilled " Contributions towards a  
 Flora of Arkansas" coinaining descriptions ont of tbe plants,  
 w huh tic had detected in his travels throug h U at territory;  
 the other, " No (ieas of new and rare tpectea from \*ar  
 parti of tbe American Uoiot."

The lovers of Nilurml Scianca will be gratifird to learn  
 that Mr Nuttall is now engaged in making further explorations  
 of the llocky mountain\*, tbe river >rafoo, and Ilie Co anti-  
 guoui ialai nds of the Pacifio ( )c an; from w Mchi in addition  
 to hnaJrea< ly well-earned reputation, he will doubtless acuire  
 a distinguished character, i« an enterprising naturalist.

The order of our inquiry ne \t lewdt u s to notice the labours  
 of another expedition of discovery sent by the general Gov-  
 ernment to ih<- Itm . by mountains, by way of the Platte branch  
 of ihr x Missouri, and thence homeward by the Arkansas river.  
 This expedition, under the command of Major Long, had at-  
 tached to it aevvral geo tlemen eminently qualified to observe,  
 collect, and report on the natural productions of the inter-  
 esting and unknown regions throug h il w which they passed.  
 These were Drs Baldwin and Jamrs Messrs Say, Peale and  
 Jessup, the botanical investigations being particularly in-  
 vited to ibe two former. 1 'his party left Pittsburgh in  
 May, 1819, and in October of the following year tr, MMrntUetl  
 at \*Cape Gerardean, on the Mississippi, where it was dispersed.

At Franklin, on their o itwani journey, this party was  
 deprived of th e professional and scientific services of Dr  
 Baldwin, by the lamented death of that gentleman, whose  
 ardour in the pursuit of botanical knowledge, led him to

undertak an expedition to which his declining health was totally inadequate; and on the banks of the Missouri, far from the bosom of his family, and the circle of his friends, he found an untimely grave. His Diary, to which the latest is only a few days previous to his death, shows with what earnestness, even in the last stage of weakness and disease, he was devoted to the pursuit, in which he had so nobly spent the most important years of his life. He has left behind him a name which will long be honoured; his early death will be regretted, not only by those who knew his value as a friend, but by all lovers of that fascinating science, to which his life was dedicated, and which his labours have so richly contributed to advance and embellish. His Herbarium and *Monographia*, it is well known, have contributed to enrich the flora of America (see the *Journal of the Botanical Society of London*, vol. 1, p. 100). He was the friend and correspondent of Muhlenberg and Elliott, and contributed materials for the copious catalogue of the *Botanical Cabinet*, and the excellent "Sketch," of the latter. In North America, where he had travelled extensively, he met with Bonpland, the celebrated companion of Humboldt, and a friendship was established between them which continued until his death. His numerous collections made during frequent journeys through Georgia, Florida, and other parts of North America, are extensive and valuable. During the short period of his connexion with Long's expedition, he contracted a long established and incurable pulmonary disease, then rapidly approaching its fatal termination, could not overcome the activity of his mind, nor divert his attention from his favourite pursuit. Though unable to walk on shore, he caused pinpoles to be collected and brought on board the boat; and notwithstanding the many vexations attending this method of evaporation, he persevered throughout the course of the voyage from Pittsburgh to New York, and

\* Dedication after *Flora of the United States*, by W. Miller, D.D.

† Account of the Botanical Cabinet, by D. J. Smith, F.L.S.

described many new plant\*, ami adde<! many ralun ble ob-  
aervationt reinting to such <!\* were b before known.\*

After the death of Dr Baldwin, the botanical dut Mg of the  
expedition devolved upon his successor 11 J-une\*, who <!\*-  
charged them in i bigblj Mtia factory < manner, as will app<<  
from a reference to an nrrnuut of tttC opt dition, drawn u P  
by his,i>clf, ami publifthrthl in t\ volumes 8vo., in 1823. ^n  
thli work will 1: foun da ra\*t a amount of general information  
in regard to the count: red, and especial zc Ially< on t"\*  
subject of its ve-getabte \productio>%. Vreviously to the • ap-  
pearaiice of (hit work, however, the botanical result\* of the  
expedition were given by Dr James in the 2d volum\*, (N. S.)  
of the *Amer. Philos. Tran\**; and more recently a fuller  
account of the plants found exclusively on the Western side  
of the Mississippi, has been published by Professor Torrey  
in the *Annals of the Lyceum of Natural H:st:ry, of N:rw  
York*.

Within a abort time pas\*, death has robbed the republic  
of R<ence of another member of this expedition—mtir!  
naturalist of pre-eminent attainm • in\*—Mr T ioma> Say.  
This gentleman, w boa\* ni-i|uirvm:nts in some of the most  
tiitlicult (WfMU'imenU of Natural History were perhaps supe-  
rior to those of any other individual on tbi Coitinent, pub-  
lished aome year\* §i>cc, thre volume\* < n American Ento-  
mology, which li in p oint of elegance of CKCC tion, and accu-  
racy of matter, will challenge a compa>ison with any similar  
production. For the last few year\* Mr Say had resided ai  
New Harmony, Indiana, whither he •id tx- en invited by his  
friend, tin- proprietor, Mi V illiam Maclure. II. re he  
undertook the publication, periodically, of a work on the  
shells of North America, illustrated with coloured engrav-  
ings from the pencil of his accomplished icd In dy. This work,  
which is highly spoken of by those best conversant with the  
subject of which 1 it lrent\*, i< !\* the first work on any tlttoari-  
ment of Natural H istory which has yet been published in the

\* Account of the Expedition, &c.

Mississippi Valley, and constituted, therefore, a memorable epoch in the annals of Western Science. We proceed, however, with the investigation now immediately before us—the progress of botanical discovery.

The British government having failed to effect the long cherished object of discovering a North-Western passage by sea to the Pacific ocean, although successive naval expeditions, liberally outfitted and ably conducted by Captains Ross, Parry, Lyon, and Beechey, had each made most energetic and daring efforts to accomplish it, determined upon other plans of exploration, by which the long-sought and anxiously desired channel might still be found.

Among these none seemed so feasible, or so full of promise, as that of sending an expedition *occur-ta-ti* from Hudson's Bay to the Arctic Ocean, and the investigation of its route quite across the Continent. With this view two several expeditions under the command of Capt. Sir John Franklin, of the Royal Navy, were successively despatched on this new and arduous project. And although they also failed to effect the main object of government, yet as they contributed greatly towards a knowledge of the Natural History, and especially the Botany and Zoology of the Arctic and North Western portions of our continent, a brief notice of each will not be deemed irrelevant to the inquiry before us.

The first of these *occur-ta-ti expeditions*, under the command of Capt. Franklin, accompanied by Dr John Richardson, as surgeon and naturalist, embarked at York Factory on Hudson's Bay, in August, 1819, and notwithstanding the long detention, occasioned by an intervening winter of nine months' duration, by the end of the second season they had penetrated northward to the Polar Sea. Here winter, arrayed in all the horrors of an arctic climate, overtook the party early in September. They suffered dreadfully from cold and famine, so unparal- leled in the annals of human mortality; most of the party perished, and the survivors were on the verge of the grave, when the Indians

brought them supplies of provisions and conducted them to the nearest post of the Hudson's Bay Company.

By this disaster all the extensive collection\* made on their outward journey were lost—the enterprise was abandoned, and in the summer of 1322 the small remnant of the party returned to Europe.

On the return of Capt. Franklin and Dr Richardson from an expedition where they had purchased so dearly the glories of discovery, it was not asked, nor even expected by their native country, that they should again brave the perils of those distant and terrible shores. Yet so high was the ardour with which they were inspired, that scarcely had they breathed from their voyage, before they presented a new scheme for completing the outline which they had only begun to sketch. The British government cordially embraced the proposal, and furnished almost liberally every means of prosecuting the undertaking with success, and escaping the evils which had before pressed on them so heavily. Three large boats were constructed of mahogany, so light that they could be carried out by the eskimoes across the portages, yet

**K**o firmly knit together that they were able to face the waves of the northern ocean.

Provision was laid in (contact with the natives) Bay, the officers calculated for two year subsistence; and the boats being sent forward by the way of the Mackenzie, and Richardson, accompanied by Dr Drummond, as assistant naturalist,

In the first part of the journey along the chain of inland seas, they were accompanied by the eskimoes, as assistants, and proceeded from New York to the Mackenzie.

The detachment, they proceeded northward until they reached the Mackenzie river, and embarking

on its waters, reached in 6 months the Polar Sea; the shores of which, through more than

the interval of one arc of a degree, were explored during the brief

interval of one arc of a degree. In the progress of this expedition, Mr Drummond visited

the Rocky Mountains, In the route of the Saskatchewan river, I reached them at that interesting and important point which must be considered as the most elevated; that lofty chain, for here the *four mightiest rivers of the continent* interlocking their primary rills, descend in the four cardinal directions, seeking their distant ocean-hornet—the Saskatchewan runs eastward to Hudson Bay—the Mackenzie northward to the Polar Sea—the Columbia westward to the Pacific Ocean,—and the Missouri southward to the Gulf of Mexico; whilst in the same quarter, though in a much lower region, are the St. Lawrence and the Mississippi proper.

From the most elevated portion of the Rocky Mountain chain, at this interesting point, rise, in towering majesty, two rival peaks to the height of fifteen and sixteen thousand feet, between which a passage of comparatively easy ascent is offered across the mountains. These guardian giants of the pass are named in honour of two illustrious botanists of Great Britain—Brown and Linker; and thus are the *Villon* and the *Osta* of the Rocky Mountain—*Chimborazo* of the northern Andes, dedicated to the cause of botany; and whilst they rear their towering summits to the skies, clad in eternal snows, they proclaim the pure and elevated delight of our science, and staid themselves everlasting monuments of the zeal and daring of our votaries!

Whilst this portion of North America was thus diligently explored by this party, the section of it lying west of the Rocky Mountains, on the Pacific coast, and contiguous to the Columbia river, was undergoing a similar investigation by Mr David Douglas, a very competent botanist, who was sent out by the London Horticultural Society.\* Thus a zone of at least two degrees of latitude in width, and rather

\* The fate of the lamented Douglas, was melancholy in the extreme. From the American coast he passed over to the Sandwich Islands; and whilst exploring one of these, he fell into a pit, prepared by the natives for entrapping the wild-bull, and by one of these animals was gored to death!



ing entirely across the continent, from the mouth of the (Columbia to Hudson's Bay, has been explored by three of the ablest and most zealous collectors that England has ever sent forth ; while a zone of similar width, intersecting at right angles with the other, from Canada to the Polar Sea, has been more cursorily examined by these expeditions.

The botanical results of these labours are now publishing in London, under the title of *Flora Borali-Americana*, by that able and distinguished Naturalist, Sir Wm J. Hooker. The British Government, actuated by a most laudable desire of encouraging our science, has lent a liberal aid to the undertaking, and has granted one thousand pounds to be applied towards defraying the expense of the engraving alone. About one half of this splendid work has reached us, and we are assured, it will be an invaluable acquisition to the American botanist. It will, indeed, identify the names of Douglas and Drummond, of Richardson and Hooker, with the names and progress of Western American botany.

The order of our inquiry next leads us to notice the further labours of one of the naturalists of this expedition, in a different quarter of the Continent. Having published in England, a work exclusively on the subject of the American Homes, chiefly the mountains, &c. &c. Lt. Wm M. La Boree, in 1847, Mr Drummond again sailed for America, at the instance, and through the liberal pecuniary aid chiefly of Sir W. J. Hooker and Dr Graham, for the purpose of exploring the less known parts of the Southern Western United States. Commencing his tour again at New York, in the spring of 1848, he passed through Philadelphia and Washington, wherever he met the official agents, for a prosecution of his undertaking. He crossed the Alleghenies on foot, descended the Ohio from Wheeling to its mouth, and thence up the Mississippi to St Louis. Here, and in its neighbourhood, he remained

\* The *Flora Borali-Americana* is published this year (1848), and constitutes two 4to volumes, illustrated by 240 plates.—Ed.

Batj the winter, and although his labours were greath inter-  
nip:ed by nn attack of fever and consequent bad health, he  
mode very extensive collections of plants, shells, and Zoologi-  
cni specimens.

During the following spring and summer, Mr Drmu-  
11101 and explored the neighbourhood of New Orleans with his  
accistoraed seal, and thrice examined the opposite shur< of  
Lake Poncharain. From this he extended his ln>vels  
into the iss%hbo<ffeaq Beothtfa Slates, where amidol many  
dangers, and notwithstanding the severest at lack\* of fete\*  
and cholera, he amassed a collection oi one thoissssjsjd species  
of plants.

Mr Drummond next visited Texas, from the floral riches  
of which *El Dorado* of the botanist, lie promised himself a  
rich reward, nor was he disappointed. For although his  
visit to that country was ilUtimeil, in consequence of the un-  
precedented wetness of the season (1833-4), iu cooseqient  
untxalthiness, and the unsettled position of its political  
affairs; still he made very extenive collectio as, among •!  
were many new and beautiful plants. Of the «, a number  
have been introduced to the gardens of Great Britain», and  
several have been figured and described in *The iU4u\*ieai*  
*Magazine*; whilst ir> the *GjnjMimium* to that work a generaJ  
account has been gi\ven of the labou in of Mi Drammood so  
the Bootbeni md Western Slates, bj his friend an\ ptinon  
Sir William Houker.

It appears from some of hit last letters to his frienoS in  
Scotland, that Mr Drummond had determined upon a p<r-  
manent seulement in Texas; md to tliin end had ma<le  
arrangements for returning home to remove hi> family.  
Desirous, bowercr, of still further cxlei ding liif knowledge,  
and iiminasing his collections, he touched al Havana 1n  
n> »7 hoi—ward : he was there soon seiieti with few, of  
which hi died, it. tir (all of 1HS4. Deeply has tcteno I  
deplore the martyrdom of this intre ptd traveller «  
faligable collector : had be lived, much wo »M doubtless have  
U.zn effected by him, in making known the regeuble trea-

asures of his adopted country ; and few have done more for the botany of Western America than Thorns Drummond.

About this time our Western border\* were visited by another foreign naturalist. Prince Maximilian de Neuwied, who having spent some time in the Prussian States and in Pittsburgh, determined to visit the upper Missouri, and ascend the Rocky Mountain\*. The hostility of the Indian tribes prevented him from realizing his original plan to the full extent; nevertheless, he ascended some distance beyond the confines of civilisation, and obtained a very fine collection of plants and animals; and what is also a matter of much interest considering how many of the native sons of our forests are being exterminated, he made a series of drawings, of some of the most distinguished chiefs and warriors belonging to about twenty different tribes, who are as yet but imperfectly known to the world.

Next in chronological order, we come to make mention of Mr Christian Heyrich, a Prussian gentleman of science, who, under the auspices of that government, visited America about (bar years since, passing the greater portion of that time in the diligent exploration of its botanical treasures. He spent the summer of 1833 chiefly in the Carolines and Georgia, where, and in some of the adjoining States, he amassed a fine collection of thirteen hundred species in one season. Visiting the city of Washington during the winter, and learning that a military expedition would be sent the coming spring, into the Indian territory of the Mississippi, he applied for, and readily obtained a commission. He joined the detachment at St Louis in the spring, and went with it to the frontier posts, and was with the U. S. ; engaged in their engagement\* with the Pawnees and Cutanches. On the return home this journey, richly laden with the fruits of extensive and diligent observation and with specimens from a new and unknown region, he returned to Fort Gibson, in September last. Mr Beyrich is remembered by those who knew him to have been an

amiahia. Isbtial, con iiaieatltu and unpretending man, and a profound botanist.—Science will long and deeply deplore his untimely end!

Last in our notice of foreign labourers in the field of Western Botany, we must mention Dr Joseph Frank of Germany, who after having made extensive exploration and collections in his own country and Switzerland, came over to America with the same object in view. He spent a year or two in Cincinnati, and other parts of the West: when he was commissioned by the Government of the United States in the Southern and Western States. On September 18th he ventured to New Orleans early in the fall of 1835, where he speedily fell a victim to yellow fever. What was the extent of his collections in this country, or what disposition has been made of them, we are uninform-

ed. While these researches were in progress towards the elucidation of the botany of the West, by travellers from abroad, and investigators from other portions of the Union, a few of our own citizens were not entirely inattentive to, or unobservant of it. Dr Drake was foremost in this respect. His *Botanical and Straggling View or Itinerary of Cincinnati and the Miami country*, which he published in 1815, a very copious catalogue is given of the forest trees found in that quarter; and another of such herbaceous plants as are useful in Medicine or the Arts; to these is appended a Floral Calendar, or Journal of the progress of vegetation in and about Cincinnati. During his subsequent engagements as Professor of Materia Medica in Transylvania University, he devoted a due share of attention to medical Botany, and especially in his lectures and writings he has ever strenuously advocated the cause of Botany as an important collateral branch of the science of medicine.

In the latter work of a similar character to that just mentioned, was published by Dr Mearns of Louisville, in which, among a variety of other matters, is given a catalogue of the plants growing in the neighbourhood of that city. We cannot, however, vouch for the accuracy of

that catalogue; though the locality is so fortunately a rich one, a number of the species mentioned by Dr M., have never been found there by succeeding botanists.

From about this time to 1826, Lexington was the residence of Mr C. S. Fine, who held for some portion of that time, if we mistake not, the professorship of modern languages in its University. In the course of his survey of all the natural productions, paid much attention to botany; and during his frequent and prolonged excursions through various portions of Kentucky, and the adjoining State, he formed Urge collections of animals, shells, plants, minerals and organic remains. It is to be regretted, however, that his discoveries, of which he professes to have made many—very many—in each of these departments, have been published either in foreign journals or pamphlets, so as to be lost, or rendered inaccessible to the majority of readers; and consequently they are of little or no use to the students of our country.

From this history and very imperfect sketch of the labours of our predecessors and contemporaries, we come next to mention the humble effort of ourselves and a few friends in this immediate field. For the last twenty years we have paid some attention to the botany of Kentucky, and whilst actively engaged in the practice of medicine, in that

the State most inaptly called "The Birrens" opportunities were constantly presented for admiring and noting the various vegetable productions of this interesting region. In many a long and solitary ride through these natural flower-gardens, have our fatigues been lightened, and our spirits cheered by their floral charms. Here at one point, the ground was carpeted with the flame-coloured flowers of the daaxling *Emckrtmat* and there enameled with the varicoloured blossoms of *Violets*, *Geraniums*, and *Tritiums*. In this spot, from amidst a tuft of humble beauties, the majestic *Frasera* was seen arising up its pyramidal summit crowned with "wreaths" of its very peculiar flower; and in the various *Sonchus* *Q. erubescens* the path, smiling from their clumps of

berri e» a »lower of a cici on the traveller. Now, would burat upon, the vii w a smc KHII sheet of water, skirted with the blue iiml purpk- **boa** of the *Pontederia* and *Decodon*, intermixed with the scarlet berries of the *Pri tea*, whilst its surface was covered over with the large and floating leaves and splendid flowers of the *Cpamus*; aiul then, in endless vista, was stretched before the eye a waving sea of gigantic grasses. «: n such a field as this, none but a recreant to nature and un< lerving of her pleasures, could remain indifferent to the charms spread in vuch lavish profusion mound; it I though we were not idlir. inattentive or unobservant of **ibea**, yet do we now find cause for bitter regrets, that we dul not then more inilustriously avail ourselves of the opportunities thus enjoyetl, for studying, examining and collectinc; the production of thin rich and interesting region.

In our subsequent effort\* in the cause of Western Botany, it has been our good for tun.- to be **associated**, at different times, with a few fellow-labourers, whose devotion and **ladus-try** have contributed greatly to our perseverance. Of these, the lattr Mr Eaton most first **be** mentioned; whose amiability of character, and zeal in the pursuit of natural **science**, greatly endeared him to u\*, and gave an additional incentive to our •wn. That *iem* tu him, **alas**, but too **SOOS** lighted the fire which consumed him! for of our departed friend it may with much truth be said, that

“ Science Vlf dettroywl her r\*vourit« **set**.”

aving in another place\* attempted an eulogy of thw excellent **young** niuu, we will only here **pause** a moment to **pay** the passing tribute of a sigh to one so rarely endowed—so deservodly esteemed,

About the time of the deuh of Mr Eaton, his **loss** to the cause of science in the West wa» fortunately **iapplied** by two individuals, one of whom **had** beet his fellow-student in

\* A Biographical Memoirof II iUltmt Beto». A M. lir AssMMI Professor of Caeaasiff\* ki ta« Maeiasl Daawtawnt \*f T™»»ylvania University.—*Transylvania Jour* . . . v.

the gamesInr humouo a, while in the other he had been instrumental in exciting a relish for the beams of boUi y— these were Dr Robert Peter, and Mr Henry A. Griswold. In connexion with on\* or both of these geujUsttsn, we have been dily fr «H\* MU for the last five cars, at leisure and opportunity permitted, in exploring a portiw of Kentucky. Of the localilie which bare be\* in for the moat part very thoroughly examined, and which have yielded w the riche\* harvests, may be went ioned tbc pr> cipitou wlime- tone dtffc of the Kentucky river at \«jrlom points—the tand- hills and swampy bottoesj bdi! i.i>i: ... Lkhfog riwr — the mo- untainous region roundabout the Olympian Springs, and the Blue Lic k»—the elevated p. » Mm! son county called the \*\* Big Hill"—the Knout arounci the Ceab ( trchsu, being tlir frst spun of the Cumber! and mountains—the country bordeting the Ohio river n Maysville, Ciocinnati, No>rt Bend, and especially the marshy track arouml l<> is- ville—the Barreot of Kentucky, etc., &c. The results of these explorations have been published in the form of C<sup>\*\*</sup>> logues of the Plant\* of Kentucky, in several preceding nuro- bers of the Transylvantn Journal of M-dicine, frtn w! ich it appears that nlwul one thousand species have been delected by us, as nafives of the State, which number will probe)ly be extended by future examination to fifteen hundred. tht fruit\* of these collection\* in th.. shape of w«ll prepared tpectmew have been gladly distributed among our brother botanists; ami within the time ju»l spcciAwl not less thm twenty-five ttutuand ftpeciment of Western plants, have been forwai by us. to varioua oorreBpoflMlcni in different portions of Europe and America. Sof l>ve thevs olfering\* \* O€\*n unrr<quited. On th« contrary we have great pleasure in acknowlc! ging valuable and , icl-e(UUj) e fttrluriM in ^ change, from Sir Will ir», Hoof ter of Glasgow; Dr Greville of Edinburgh; M Bentham, of London; Mr Parker, of Liver- pool; M- Mirbel, of 1 Vis, am! I > 1ischer, of St l'eUrtbun: v>thilst »>ur coun trymen, Professor Torrey and Dr Gray of New York; Mr Oakcs of Massacbos. tta, Dr Griffith and

Mr Dunoid of Philadelphia; Dr Darlington of Pennsylvania; Dr Aikin of Baltimore; Rev. Mr Curtis and Dr Loom in of North Carolina"; H<sup>v</sup>. Dr Bachman of Charleston; Dr Chapman and Mr Croom of Florida, have been prompt and liberal in exchanging specimens from their several districts with us.

By the addition of these contributions\* to our own collections, we have been enabled to form a very extensive Herbarium which is daily increasing; and thus are we becoming gradually possessed of materials and information, on which we trust may be ultimately compiled a full and faithful Flora of Kentucky.

For in Kentucky, by any means, the only Western State in which reside in botanists are actively engaged. In Ohio, on the contrary, the number of labourers is greater than with us. Among these, Dr Tidwell has published quite a comprehensive Catalogue of Western Plants.\* In Cincinnati, he is assisted by the co-operation of Dr Eberle, I. C. OKI Colby, and Messrs Buchanan, Lea and Clark; in Detroit, by Mr Vancleve; and in Wortlungtdtt, by Mr Paddock. In Western Virginia we hear of Mr Townsend, at Wheeling; in Michigan, of Dr Houghton, at Detroit; and on the

orders of Luke Michigan, in the new Territory of Wisconsin, at Milwaukee, all engaged in bringing to the light of day the herbaria ensures of their several districts. Of our South-Western State\* we regret not to be able to give a more favourable account. In Mississippi we have not the pleasure of knowing personally, or by report, a single botanist, or collector of plants resident in Tennessee, Alabama, Mississippi, Arkansas or Missouri. What a wide, interesting, and almost inexhaustible field for future discovery!

Clarendon Peck has made extensive investigations in the plants of Long Island; and Dr Haic and Ingalls are respectively engaged on the Botany of the country

\* A Synoptical View of the Plants of the Western States. By John L. Ridgell, M.D., &c., Cincinnati, 1835, p. 1.



adjacent to Alexandria and New Orleans. Whilst the extreme limits of our frontier borders have been occasionally more or less alienatively wanted and explored by Drs Learenworth and Pitcher, Surgeon in the U. S. Army» \*\* they have happened to be stationed at the different outposts. This list of labourers in the wide-spread field of Western Botany is far too trust from being complete—at all events, we hope it may be rapidly augmented by the addition of zealous devotees in all quarters, until the vegetable riches of this vast territory are fully ascertained!

In connexion with that desultory remark\* on the progress of botany in Western America, it may not be irrelevant to observe, that some two or three years ago, at the instance of the Lexington Medical Society, we read before it a paper on the subject of collecting and preserving plants for herbaria, which, having been printed and extensively circulated, had received the commendation of those best qualified to judge of the matter; and we trust the directions therein given, will be found useful in diffusing a general knowledge of that important point in practical botany—the formation of perfect specimens.

In conclusion, we regret not to have been able to give, in the proper place, some account of the discovery of Dr Soule (now M. Chalmers), on the Western coast of the Continent. The former of these gentlemen accompanied one of the British expeditions of discovery; and the latter was Naturalist to a Russian scientific voyage under Kotzebue.—Both have contributed valuable materials towards a Flora of the Pacific coast, but we are not sufficiently acquainted with the particulars of them to enter into any detail. The same may be said of two other botanists of our own country, L. C. Beck, of New York, and Mr Schweinitz of Pennsylvania, both of whom have performed tours through Ohio, Illinois, and a part of Michigan, of which some notices have been published by the former in Silliman's Journal.

XI {.—*OtHervatkm\** on the *Distinctive Character\** of the  
 PA IILIONACE\* and CJESAI.HNIR.«, *Sub-order\** of LEGUMI-  
 NOSE. By GEORGE BENTHAM, F.L.S.

My friend Dr Vogel, who has for some years past studied with great care the Order of *Legumino*\*\*\* and published several important memoirs on the subject, has communicated to me a paper on the plants of that Order collected by Meyer, in his voyage round the world\* To this paper I have prefixed some criticisms on the limits I had proposed to draw between the sub-Order\* *Japilionacea* and *Cassipitificae*, which have induced me to repeat some of the investigations I had gone into, and to give the matter further consideration, the results of which it is now my object to state.

Or Vogel's remarks are founded on the opinions emitted in a memoir I prepared at Vienna in the commencement of the year 1837, and in two abort papers read before the Linnæan Society, one on the genus *Mora*, read March 9th, 1839; (the other on *Archis* « and *Votrandxia*, read May 11th, 1838.) At the time I published these partial memoirs, I had examined but few *Gastropim*\*, and although it even then appeared to me that the attributes of the fewer would furnish the best character, I had not formed in sufficiently definite notion of what really constitute\* a papilionaceous corolla^ to make use of it as a positive character, and had been led into

\* From UM NOV. Act Acad. Cart, Uop. Carol. N>L Cur. v. xix.

† Ittblbbni in the *Annalen der v. einer Museums der Naturgeschichte*, tr, v. xi. p. 68. *tt* itf.

‡ L. jumaa *TraaMctloaa*, v. ival p. 90».

§ Linnæan *Tmasaetioat*. v. xviii. p. IW. N«itier Or Vogel aor Dr Walpers apptart to ba\*o nail thi\* paper through when ttov own\* it, far laa faran *mf\** taat 1 nltr la it. *Armckit* aad *VmHm* lo *Hedysarea*, and Dr Walpers (*Linn.*, r. i. iii. p. 331) quotes it as bk aatlority for nsaciaa r.xi», //-,» ..... *Myrtum*,^ whn, OM ,!,!,...< aataat«»' "• paper was to show, that these two genera were but slightly related, and the awhile *Archis* should be placed among *Hedysarea*, *Vandusia* be SSfi

some errors, especially in regard to *Cvria*, which I considered as papilionaceous, which it certainly is not. I have since had occasion to examine some species of above sixty Cæsalpinieous genera, more especially with reference to the structure of the flower, and to the diversity of aestivation alluded to by Vogel in the *Linnaea* (v. xi. p. 35), and the conclusions I have been induced to come to are stated in my paper on *Scheuchzeria palustris* (vol. ii. p. 65. et seq. of the *Historical Botany*). I have there given a primary importance to the aestivation of the corolla, and considered the Conn of the embryo as a more secondary character; an opinion which appears once to have been that of Dr Vogel also, but he now thinks that the most absolute value should be given to the character derived from the curved or straight embryo, to be of the ovule (i. e. of the nucleus;) an opinion to which I confess I see less reason to subscribe, the more I examine it.

It will, I believe, be generally agreed, that the essential character of the great mass of *Papilionaceæ* is to have a corolla papilionaceous in its aestivation (that is to say, the posterior petal overlaps the two lateral ones, and these in their turn overlap the two anterior or carinal petals), combined with a decidedly curved embryo, the radicle being usually conspicuously curved down on the edge of the cotyledons and directed towards the plum; and that the greater number of *Cæsalpinieæ* have an imbricate embryo, with a corolla either *cartilaginea* (i. e. with the petals outside,) in its aestivation, or more or less irregularly imbricate. The distinction lies in those cases where these characters do not go together, and especially in those general now rather numerous, where the papilionaceous aestivation is combined with a straight embryo.

These genera, such of them at least as have come under my observation, may be considered as forming a group, corresponding to (but not the same as) the recognised tribes of *Papilionaceæ* as follows:—

1. *Arachis*, which I have endeavoured in a paper quoted

above, to prove the affinity of *Stuio\$anthes* among *Hedy-*  
*sarcea*, an affinity recognized by Fleming,\* and (1) V Torrey  
 and Drnyt »'bo have'furih- r confirmed it by tht.-.mhlifiun of  
 their new genus *Chapmania*. 'this affinity appeart to me  
 to consist not only in Vhe \*©orojlp& stnietura *Stybtanlfa\**  
 simtli," but in the remarkable struc mre anil ;hysiological  
 development of the sterile and fertile Dowers' fit nil ^tfiefc  
 parts, atufcin the [KM! as well a\* in Kimit. Vo^el says indi ed,  
 "quo; vero ajmilitmlo l!> [lysareaaH diMW:terem non attinet,  
 sed in qimvis irilm occurrere potest, ita ut lumc catisam non  
 agn«\*cam,\* but he doe« not pi int out any instance, nor has  
 it (>een my lot to observe a xin^le example oi simil>r llowert  
 in any other trilm; of *Leguminosæ*.

2. *lirort'juiartii* (including *Peraitea*) and //arpo/yrr, which  
 to my eyes bear a much closer affinity to several (*ialegetr*  
 than to any genus of *Ca\$alpi»iea*^, excepting in the t-ingle  
 character of Ihe embryo.

3. *Gtoffiroya* and *Andira*, *lhptryx* ind *I'tirwdom*, *Cycloto-*  
*bium*, aiui pcrhap\* some others among *Ivy DiUtergitm*, Vherc  
 it appears to me that their nearest allies are to be met with.

4. A considerable number of genera with stame n free or  
 nearly --, (In Howew papilionaceous in aestivation, but soi ne-  
 tim<s rocaceous In <pnaai<on, the habit and inloreso I ice  
 generally that of *Datbergit\*\** or ol some *Gal<tr*, and not  
 unlike that of a few Oja/pjin'w, which I had c<ollected under  
 the uarac of *Sophor&r*, and placed at the end of *Ptppili\*mact\*f*,  
 as forming tin approach to *C^etalpimu\**. As my greatest  
 doubts have always been in re I •tion ti wnte of thete genera,  
 it is (o thcci I Lave mart especially direclM my attention on  
 this occasion.

In ord I at to ascertain what practical ad van t age inn\* be  
 gained by the examination of the ovulutn rather than of ihe  
 ripe embryo, I selet ted fo I comparison five specie\*, of  
 I happened to have abundance of flowers in various stages,  
 and in a good state for diaMctkm, Mid also ripe Mfl<sup>is, viz.,</sup>

\* *F"•vnurn Jivwir\** Rariores, p. 152.

† *Flora of North America*, v. l. p. 354.

*Sophora tomentosa*, Calp. *S. sylvatica*; Dow *Ukia viryiboidm\** (from Stbn mann's \*BaJ)& specimens w kit I take to be the same as Kunth's «peoc-), *Cercis siliquastrum*, (ajd *Casalpinia pulcherrima*).

1. *Sophora tomentosa*. This genus, itM type of the *Sopkhrtm*, has Jjy all botanists been clejised amongst *Papilionacea*. As at present commuted il as not a very natural oi»e\_f some species (*S. ola^otrpsaVs*), having coneiderabl\* \*ffii ity to *Galegea* or *AttragoU\**. other\* to OaOerysW (*S. leptaphylla*), and some of the Chilian ones approaching *Ed\*mrd\*%>* in many points, bat all connected together chiefly bj (he pod. In the species now examined, the ovule it ncarh renif >rro, and the nicletts very evidently oinrad; as the s«ed rip\*»% the cotyledons enlarge and thicien very much, and the embry<> hiposjiae almost atnig ht with an c\*oa\*dingly short radicle. !-> M»ae other species the ripe embryo is much cun ed, with a hooked radicle; but loothertagii in it is nearly as •traight aa in *S. fnaiiato*.

\*. Ga^sjmaa ayfcwratai, bslnnsjing also to a g«nw m niver-ally admitted to baton g to the PpilhiMOWVM claa. 1 here I find aa obavoi, l ovule with the nuclru. aa nearly straight as in the georai.u of CWasV/faiw. The ripe embryo ii also straight, which is the more apparent aa the radicle is remain k-ibly loag. The hilum in the ripe seed is indeed m«ch in-knied, bot t) is inde nture ieoppoaila tha ajaj aaa oi the cotyledon i, and oecMioaa ao peceptibl r curvatu << of the embryo. I f aooiaar specie\*, I. *intrusa* (of which I, h,,\*c no tpaaae. is), Vc,«el aaya. "jen radical \*» " ^ P " ««"«Um video." I.,, genus i, a much more natural one than *Sophora*.

3. *Bowdichia virg* WMW\*«. daaaetl by I De Candolle as well as by Vogel among *Cmmtpinirr*, : at on account of the t! owers refered by me to &f\*arr« an. ong F'ap\* <mac\*\*i. The ovule is modi snorter thai in *Ctlpurma* «y/ralica, the oitcWus is more perceptibly curved, but is stil l w h t t i\* usually rolled •tr»i<ht. In the ripe embryo th c ^»icU is very short, t mi the central line down the cotyledons to ib« tip of th. radicle

is a aJight curve. Of another species Vogel observes, " video .... embryonem semper rectum ....in *Bowrfichia* (saltern *major*), sed fortasse in hoc genere curvum in effini *Leptoktio* accidit, lormmn einhi -yoni\* inci-rtam es^e."

4. *Cercis sih*<*juastruw* c onsidere! by all as a true C>>>salpi- nieous plant. I had indeed as above mentioned oDOa included it among *Sopkon*\*, but that was from a mistaken notion of what constitutes a papilionaceous corolla. The estivation of *Cercis* is essentially r.irina:. The onili is about the shape of that of *Catpnr\*ia Oytvatica*, but the nucleus is most re\* markably curved, the extre nity next the foramen being booked M in the common *PptHomaemtf* ami mi.ch more %o than in *Sophora tvmatiota*. Indeed the ovule of *Cercis*« was the first instance given by Mirln-l of what he called *wmpli- tropous* ovules, from their being curved as in c;tm|tylotropous ones, but with a raphc as in nnatroptms ones. The ripe ci- bryo ig however as ttratght as in any U-gn minou I wed I have seen, and Vogel also considers it as an orthoblast, " video in *Cerciic* embnoncin semper reclum " an instance

**P** direct contradiction in to what is asserted in the preceding page : "H ryonem curvum in no fain ilia, radiculam curvatam." **I** ctiam cm! MBSjBi t-iiiiii

5. *Cmmfpinia pul imOj* or *Poimeimm ptUcAtrrima* of most author\*, which nuy be c\* d as one of *Ctrmipinivtr*\ of which it hat all the requisite\*. U very broad, the mpbi *taut*\* \ thick, the nucleus straight to near the end next the fot • when stiorly but very evidently curvttl.\* er la the ripe seed the cotyledons are of the cotyledo iuil deeply, I ; tl show a slight deg long, and in a line with i ntra i), although even here a very close e\*amina- embryc of which -gree o towards tin bdfi

**t** Among\* \<>f>h€\*rf,r v \* I find tbr HM k^ ofnvaWiasoaw other »<ci>w of IIK (r<ttttt>. Vol. iii — No. 19.

**I** \*: of v i |mTe examined the ovulea. I find a c

considerable degree of uncertainty in the curvature of the nucleus, farther instances of which it would be superfluous to particularise at present. I would only add that the ripe seeds of the common *Onmia* from Rio Janeiro, (*O. nUuia*, Vogel,) exhibit a curious anomaly which has not yet occurred to me in any other genus of the order. The cotyledons are laterally compressed\* their facet being at right angles to the valves of the pod instead of parallel to them, as in other Leguminosae, the radicle is exceedingly short and straight, and the hilum, slightly indented produces a corresponding slight indentation in the back of one of the cotyledons.

Supposing that I have not materially erred in the foregoing statements, it will be necessary, in making use of the data they furnish for testing the characters upon which the first subdivision\* of Leguminosae may be established, to bear in mind, that the same principle\* which governs the formation of the natural orders should be followed up in their subdivisions into tribes and genera; and especially that purely artificial distinction! derived from a single character should be avoided when they break up natural affinities. Upon this principle it is that De Candolle placed *Adesmia* amongst *Heisteria*, notwithstanding the free stamina, and that Brown left *Parkia* among *ifm*, though the activation of the corolla be imbricated.

An exception however is generally made, and often with reason, in favour of the form of the embryo, on account of its importance; but that importance, in this matter, appears to me to have been much overrated. The ovule in all Leguminosae is essentially anatropous, \U-; is to say, the chalazium is separated from the hilum by a raphe of greater or less length, but always very evident, and the foramen is brought down to near the hilum; there is moreover in almost all the species I have examined, at some stage of its growth, some tendency to a curvature of the nucleus, the distance from the chalazium to the foramen being shorter on the side of the hilum than on the other side; the difference between what is usually called anatropous ovule and the hetero-

pous **ovals**)\* i" Leguminosa\* being but one of degree. The curvature in the **Orloblasue** is often imperceptible without a **very nice** examination, but at **other** times quite **evident** in *Sophonty Edwardtiaj* and some others of my Sophorese, it is more apparent, (though often very much less than in (*rrcis*), and offers almost every shade from the orthoblastse to the cyrtoblast.r. to **0**.. great mass of Papilionacete it is most decided. I do not deny, that to a certain extent, this difference coincides with others in **the structure of the flower**; and MI far it **is important**, but I cannot **consider** it sufficiently positive to warrant the making it absolute in preference to all others.

Taking then\*fore the form of the embryo only as a character for the *natural* division of the **Leguminosae**, we shall find that it will oblige us, 1st, to separate *Arachis* from some species at least of *Styloiantkn*, and place it in a clan where there is no genus near it; 2d, to remove the *RnmgmiaHm*\* far away from **the** only genera that have any affinity with them in flower or vegetative characters, to place **it** also as an isolated tribe amongst those which they resemble in nothing but **the** fruit; 3d, to remove *CfdoioUum* far away from *Ammim*»»»\*• '*ndira* from *Pterocarpm*s, and probably break up, in other respects, the tribe of *alberyt*<\*, to form a third papilionaceous tribe among *Casalpin*tSSStf 4th, to break up or consider as **separate** the genera *Sopkora*, *Calpurnia*, *tlowttchia*, *Lep*toibium, and probably many others; 5th, to isolate *Ormosw* in a tribe by itself; and **if** the curvature of the embryo be tested as proposed by that of list nucleus, to break up several of those genera hitherto considered as undoubted (*Cas*atpimtm.

On the other hand, if, as originally proposed by Vogel,t the preference be given to the activation of the corolla as the

\*• • \*wy la(«««sUaf paper on the <Wn>up—t «f tbs •»•» in L\*IP»«^»w« by \*T\*MiL mi VoeH m iH\* New Acs\*. Aarf. Nat. Cur. v. xix. p. 1



distinctive character, it does not appear to be necessary to break up any really natural group. In all those cases where the general distinction between *W. I'aptiumaix\** and *Catafptnint* is most decidedly, this character also is the most evident; and although many *Sopkore\** on the OIK side, and several *LqtoMif\** on the other, approach mutually to each other in point of scotivation, these two tribes are also evenly allied to each other in many other points. The only genus, where the aestivation has been hitherto observed to be really variable or doubtful, is *Leptokbium* which may be considered in many respects as a connecting link between the two subSordcra, besides that it is scarcely yet sufficiently known to be assured that it is in fact a natural genus.

There is another secondary point of view in which a character should also be considered; when relied upon for the separation of large groups of plants that is, its artificial merit in assisting us in their practical arrangement; and for this purpose, two great requisites are, freedom from ambiguity, and facility of observation. The undue importance formerly attached to easy and artificial character\* appears, of late years, to have induced some botanists to run into the opposite extreme, and almost to prefer minute and difficult ones; but surely, when two characters are equally natural, a preference should be given to the most evident and consequently the easiest to ascertain. Few indeed, if any, are the cases where the position of the bud will not at once give decided evidence of the aestivation of the petals; but among the embryos of *Stftkorem*, *Dalbergu\** and *Cmntipimiwm*, there are many species where it would be difficult to say, whether the curvature is or is not sufficient to distinguish them from *Orthoblast*.

The following are the characters by which I would distinguish the three great divisions of Leguminotæ.

\* If nekno MT abtnauoa from the papilionaceous aestivation as non-papilionaceous.

Sub-Ordei I. *Fap&tmoeem*. Corolla activation- $\rightarrow$  papilionaceo-in»bricativn ; petalo nempe postico (vexillo) exteriore, lateralibus (ali») intermedia anticis (carina) iniimi\* \_\_\_ Calyx  $\rightarrow$ ius ultra medium gamosepalu\*. Stamina 10, fi-rtilia, v. nonailla rarius nbortictio, circa ovarium npproximata v. sjeptua connata in tubnm intpgrum v. p<»tice fissum portico tune sirpc Hbero. Seminum embryo surplus curvatut. Folia nunquam bipinnata.

T*i* this Sub-Ortier belong t*he* Tribes\*—I. IV<ln!yriea\ IK Loten-. III. Viciese. 1\ . IK clysarctt. V, Thaseoles. \I. Dalbergien. \ II. Sopborese.

Sub-Ortlr II. *Catalpinie\**. Corolla irstivatione irregulariter imbricativa nee p*ncipi*tonacca, nepiut carinali [M*o*alis anticis vxt*erior*il*us* postico intimo, interdum atari petalis lateralibus exterioribu% T. jwrtalis plerisque se inricem uno latere incumb*ui*ibus.—Calyx varius *urpc* ad basin tissue Stamina ssrpe acymmetrica v. valdc inc<|ualia, nunc nuniN rosisitma, nunc fere omnia abo: i*ran* en reglaria, M>pis time libera v. basi tantum *evite* r connata. Seminum embryo Isrpius rectus. Folia iaria, ssepe bipinn:\ta.

Tribes I. Leptolob*ies*B. III uanalpinicse. III. Cassicse. IN. Swart*zi*er. \. Amltt'i*stic*æ. \I. nnuhinies). VII. Cynometricæ. VIII. Dimorpbandre^.

Sub-Order I *M.Mimoma* \ Coroll*i* activatione valvata, rarissime apice imbricativa, pctali\* tune in tubuin longe coalitn.—Flores nibregutares. Stamina nunc symmetrica definita, nunc indefinita, MBpe nuDMroMtkima. Seminum embryo Mibrectu*o*.—Folia we}ius bi|>innala.

Tribes I. DcatuaoibosB\* 11. Eunlimosc*s*. 11I. Acaciæ.

## XIII.—BOTANICAL INFORMATION.

*Latest Ittteuignct from Mr Gardner.*

VILLA DE ARROYAS, (12° 3' S. Lat. 47° • W. Loaf.)  
PROVINCE OF GOYAS, (Jk Ma\*, 1840.

MY DKAR SI\*,—Having but little that to very partictUi to inform you of, it was not my intention to writ • from \*b» place; but i» I am on the eve of leaving it, ami as the post for the city of Ooyti is expected to pass in a few days, 1 have ibonght it better to give you some particular\* resprcting my Ill)ours since I last addrea—d you, whicb was from the Villa ile Nat i-vidade. 1 started from OK Utter placr on the 10th Fri>ruar>. BIMI raached tin\* an we 7th. fl On th» road 1 made some jpleadnl addition\* to my collections, such ea several species of the genus *DipUmtkm* a most beaut iful *Piakpkiwm*^ an upright herbaceoas plant, about two or three feet big:, which would make a fine addition to the OrcAiaVai alrvac!-• in cultiva-tion in Kiiglan d, but that its roots are not of a nature to allow of iI being Mat borne alive. I have, however, beat iful dried specimens of it for all my subscribers.

From N uividadc I giv\* you se me particulan rsapaoting a plant belonging to the seme tnbe which I bad gather\* there, and which I have sic»ce found abood ant in noiet upland campos in the oeigbbourkcHML. It will, no duob«, form • new genus, as it diflers from *Vmmdia* in habit, and in its free labellum, and from *UptttapJkimm* by being eoalyceJate. I ha% • n up «<lr- scription of i'. aa well aa a amaller •pecica of the same genva, which 1 hojK lu be able to trail\*: nit to y on, aloit. g with the spe- oiaIMBS from Rio de Janeiro. Aa you have never seat m« the last part of Limi ley's C >nki\*t, 1 cannot beer. tain w Hethrrthe genus be nondescript or not, but aa he orly givem \*«a\*f/sj and *Epittptkt*\*m us all the genera container in his o ^ Vanil- tor\*. is ly«/. Aysf. <f PaiMf (editio, tggg^ j cannot help believing Oiat it la new. If tofl inland to\* name it in honour of my kind friend, J. E. Bowman, I sq., as the plant

(a leguminous shrub, to my former *Boumtinia*) which I sent you from Villa de Crato, in the province of Ceara, and which I have since found both in Piahy, and in this neighborhood abundantly, it is no doubt well known. It is a beautiful shrub, and I have now obtained fine specimens of it. The Villa de Arroyas is situated in a little valley on the top of a broad hilly rather elevated serran, and the country around being very diversified, it affords an excellent field for botanical collection, and I am happy to inform you that I have been very fortunate during the last few months which I have remained here. My collection, since I left Natal, amounts to 869 specimens, all of them interesting to the Botanist; and since I quitted the city of Oriras, I have collected in all the parts of the greater part of which I have thirty full sets; and I flatter myself that this is no bad work for nine and a half months. The vegetation here is very different from any I have met with in Brazil. I cannot mention the number of fine plants that I have found since I last wrote you, but among others I may note four fine species of *Vellozia*, one of which bears white flowers, the other three purple ones: also six or eight kinds of *Diplazium*, an herbaceous *Angikmia*, a *Cyrtanichus*, two *Vochysia*, an *Antennaria*, several *Panax*, numerous *Meibomia*, a *Croton*, two species of *Brickellia*, an *Artemisia*, a *Loasium*, a beautiful yellow-flowered *Azoreum*, several very striking (*Impatiens* as two beautiful *Impatiens* with blue flowers and two kinds of *Exacum*, one of them about four feet high, common in upland campos, and very graceful in its habit; a most beautiful little *Anemone* its leaves exactly resembling those of *Arctostaphylos*, several species of *Aster*. Of Adiantum a few *Mosses*, a great variety of *Grasses*, numerous *Lycopodium*, *Mosses* and *Juncus*; many fine species of *Loranthus* and *Licniscus*, several *Mimulus*, and a beautiful annual *Gasparilla*, but a most splendid collection of *Compositae* in no place have I seen with so many of the latter tribe as here. Among them I would particularly mention—*Geranium* 1) *Vernonia* *glaberrima*, also three species of *Pycnanthemum*, several or tufts of *Themis*, (DC.) one of which is

nearly related to *De C. indolle* • *O. tmpifhre*, but its leaves are five- not three-partite; it is a pretty annual, and I have obtained good specimens of it, and ripe seeds. I have also found several plants that perhaps belong to *Anomostephium*, (DC.) and a host of others which I have not had time to examine. I am sure that of *Ompotim* alone I have not much farther than three hundred specks; and if Mr Bentham still continues to publish my collections of this tribe, he will have a good deal to do when these reach England. I have also a large stock of seeds for Mr Murray, and an excellent lot of the *CoUopterm* of this country for my kind friend Mr (now I suppose Dr) Joseph Hooker, who will I am sure be pleased with them as the specimens are in perfectly good condition, and being collected in this inland province, there can be no doubt many of them will be new to him.

You cannot conceive the anxiety I now experience to hear from you and my other friends. Two years have elapsed since the date of your last letters, and how many changes may not have taken place during that period. I fully anticipate, however, the happiness of receiving tidings from home on my arrival at Villa Rica, or at San Joao del Rey, in the province of Mines Geraes. The rains have now ceased, and the seasons become fine for travelling; every thing is prepared for starting, and I hope to see my departure tomorrow afternoon. During my stay here, I have acquired a little money by the practice of medicine; and these acquisitions will not only prove highly favourable to me, as I was much in want of port, and have now the money they would have cost me. My troop consists at present of sixteen horses and four men, besides a dog, monkey, and several parrots.

I am particularly anxious to quit this province without delay, as there seems every prospect of it soon being involved in civil war, similar to what now exists in Pernambuco. A few days ago, tidings came that the revolution had entered the province of Bahia, and that the possession of Sai Pedro de Macamra, which is situated on the

Rio Tenemities, and that they were about to come up the river. The national guards have been called out, and are now under drill; a most motley group they are, of all colour\*, all sizes, and nil kinds of dress. "1 in\* place contains neither arms nor ammunition, but most of the men have brought their own fowling-pieces with them, and those who have none of these implements, are furnished with a long knife, tied to the end of a short pole. These soldiers are about one hundred and forty In iuiiiilH-r; ami. I am satisfied, that half-a-doten Hntt>h military men would speedily put them all to flight.

I have just learned **thai Pianbj Is** in a \*taic of complete anarchy, and I **sal** that **sstcflmlof Sty** friends have fallen **victim** to popular fury. I would not for ten thousand poundit go back the road we have just come. There can be no doubt that Brazil is fast approaching to **reput**tlirantsm. I hope to be able to write **jou more fully from** Minas **Genes**.

Your obedient servant,

G. GARDNER.

*Reportom the Tea Plantations \*n Assam,*

(The fol lo« toy on wtmcti from » ralttmbk ^Htportum tJkc mfw^fmiw t of Tea, ami on Me /<«<nt ami I\*rofrt9\* < / the Tea Pl mfe/i\* as in Assam, by C. A. Hi vca, >u|t\*rint\*ftd<nt of ibe TVs Culture." The Hepon WM pubUttd in the SSudrtu Jomrmaiof Lite.'Oture amd SHmtt, ffyrmWr, IH3», of wbkh U OOC<M<S thirty pafta. W« omit all that rtfards tbt manuificuic, sad saouat of prodaot ctpseisd to b« abtaiat! frosi thr ptsatttioas.)

" In drawing out this rqn>rt, it gives n« much pleasure to say, that our information and knowledge respecting tea and Tea tr sets are far more extensive than when i last wrote on the subject; the number of tracts now known amounting to 126'. \*.'»• of them very extensive both on the hills air in the plai'\*. A tuficicttey of seeds and swdii««s aaighi be collected from Out\* tracts in t Iw coam <f • fcw yt»rs to

plant off the whole of Aoam ; and I feel conrincoed, from my different journey\* over the OPentry, that but a very small portion of the localities are as yet known.

“ Last year in going over one of the hills beyond Jaipore, about 300 fathoms high, I came upon a Tea tract, which must have been two or three miles in length, in fact I did not see the end of it; the trees were in most part\* as thick as they could grow, and the Tea seed\* (smaller than what I had seen before) fine and fresh, literally covered the ground; this was in the middle of November, and the trees had abundance of fruit and (lower on them). One of the largest trees I found to be two cubits in circumference and full forty cubits in height. At the foot of the hill I (beyond another tract, and when time permitted me to explore those parts, there is no doubt but I should have found many of them. The Naga hills covered with Tea\*. I have since been informed of two more tracts near this. In going along the foot of the hills to the westward, I was informed that there was Tea at /nnaaca, or near it: but I arrived too late, for I had passed it a little to the east of the Dacca river, at a place called CisWavN, a hill projecting out more than a mile to the northward, with the ruins of a brick temple on it; when I found Tea, and no doubt if there had been time to explore it, I should have found many more tracts. I crossed the Dacca river at the old bridge of I'Wpun\*, and walked towards the hills, and immediately came upon Tea. The place is called Hmmitowmk. When I remained a couple of days, going about the country, I came upon no fewer than thirteen tracts. A Brahmin who acquainted me to hunt out these tracts, and who was well acquainted with the place, at he had been in the habit of drinking tea during his residence with the Singphos, informed me that he had seen a large tract of Tea plants on the Saga ituninuiat, on a journey west of Ckiridm. I have no reason to doubt the veracity of the report; he offered to point out the place to me, or any of my men, if they would accompany him; but he

country belonged to Hnjj Poonmcii Sin^, I eouM not examine it. I feeI convinced the whole of the country is full of T

“ Again, in going further to the south-west, jurt before I came to *Gabrew* hilt, I found i the small hill\* adjoining in the eastward, covered with Tea-plans. The flowers of it I see on these hills are of a pleasant delicate fragrance, unlike the atnell of our other Tea-plants; hut the leave\* and fruit appear like same. Thin would be a delightful place for the manufacture of Tea, as the country it well populated, baa abundance of grain, and labour i\* cheap. There is a small stream called the J'Aaayy river, at a distance of two hours walk : it is navigable, I am informed, all the year round by small canoes, which could carry down the Tea, and the place is only one and a half day's journey from *JoreAamt*, the capital of Upper Assam. South-west of *Gabnw Purhd* (about two day's journey) there is a village at the foot of the hill, inhabited by a race called Norths; they are Shan\*, I believe, as they came from the eastward, where Tea abounds. I had long conversation\* with them, and the oldest man of the village, who was also the head of it, informed me, that when his father was a young man, he had emigrated with many others\*, at first settled at *Jaijarm*, on account of the constant disturbance at *Mtmkttm*, that they brought the Tea-plant with them and planted it at *Tipm* hill, where it exists to this day ; and that when he was about sixteen years of age, he was obliged to leave *Tifmm* on account of the wars and disturbances at that place, and take shelter at the village where he now resides. This man said he was now eighty years of age, and that his father died a very old man. Now true this story is, I cannot say, and do not see what good it would do the old man to fabricate it. This was the only man I met with in my journeys about the country who could give any account of the Tea-plant, with the exception of an Ahum, who declared to me that it was Sooka, or the first Kacharry Rajah of Assam, who brought the Tea-plant from *M\*\*k\*mt* he said it was written in his *Niyi* of



history. The *Ahm-Pmt*\* I have MW bun at\* u> get bold of; but this I know, that the information about the Tea-plant pointed out by the old Sorab man, a\* baiog on the *npmm* hili, is true; for I have\* efcarr,! th\* tract where it grows thicker, about 300 Tanks by SO©, moving from the foot of the hill to the top. The old man\* toW me a bit father cut the plant down every third year, that it\* might get the rang lesvaa,

"To the west of Gbfee\*. I did not find any Tea; but in the tract of the *Dkmmmt* river I found *m ap\*eaM* though not UM aim\* as in the west. It <> people\* on the tract of the *Dkmmmt* river acquainted with the tea leaf. I took the tea to the U font. I found it all in a row (the route I went, which may lead to the discovery; but people\* should be MOI to aMreh for the people\* who are really acquainted with it. I think a quantity of Tea would be brought to the tract if this were done; our tracts are distributed all over UM country.

•• In giving a man of the tract of tea, when I say that / n\*/n, or any other tract is so long and so broad, it must be understood that the tract is only a narrow cleared, being found to contain all the plant\* which grow thickly together; as it was not thought worth while at the commencement of three experiments, to go to the expense of clearing any more of the forest for the sake of a km «raf-gbngpknu. In the tract of uraggtafjulia war\* factlowdnp they would most probably be found gradually increasing more and more until you would have a tract of tea thick with tea plants; and if the tract were traced, they would gradually disappear until not one was to be seen. But if you proceeded on through the jungle\*, it is ten to one that you would come upon a Military Tea-plant, a little further on you would meet with another; until you gradually found your\* It in another new tract, you will find plants which are one you had not, growing absolutely thick at the foot of each other's growth. I thus conclude that the tea\* on\* might go on for

miles from one tract into another. All my *Tern* tracts about *Tinrr%* *A ml Kahmg\** are formed in the manner, with only a patch of jungle between them, which is not greater than what could be conveniently filled up by tinning those parcels that have too many parcels. At *Kahtmg* I have lately knocked three tracts into one, and I shall most probably have more continued till to tame till one tract shall be made of what would consist of a down. I have never met the end of *J»»g-gwdoo\** Tea tract, nor yet *Kmdoo\*\$* or *LiiajrwrV*. I feel confident that the two former run over the hills and join, or they join, some of our tracts in the *Aiuttmck* country. Nor have I seen the end of *KaJung* tract, although that part of the country being one vast succession of hills from *Am-gagvrra* on the *Dibrw,* to *Jaipur\** on the *Hurt Dekimj*. The Tea localities are thickly tea land—those that are known; and they are but a small portion compared to those that are unknown. There is in the *Sawuong* tract on the *Saga hill\**, the largest that has yet been seen and the extent of which is not ascertained. The tracts on the *BenW* hills are unknown; and this is likewise the case with *Haut Jfoiah* and *tkriiioot* so that there is a large field for improvement throughout, to say nothing of the *»jk#* tracts, which may be found to be one unbounded link to the *uo4«m*; and who knows but it crosses the *Iranraddy* to China? Many Tea tracts I know have been cut down in ignorance by the natives, to make room for the rice field, fire wood, and fences, but many of these tracts have **•proof op** again, more vigorous than before. **VVtoetl** that at *Aingrew*, where the natives say that every thing was cut down, and the land planted with rice, except on the high ground.

- With respect to the Tea plant being most productive on high or low ground, I cannot well say, as all our tracts are on the plains; but *bam* what little I have seen of the hill tracts, I should suppose they were not more productive. In *i h* na *Uw* hills tracts produce the *btti Te\**, and they may be the same here. Almost all ray tracts on the plain are nearly on the same level, I should think. *Wiro* perhaps is

• little higher than *Timgri*, and *Timgri* a little higher than *sfalamj*, but I believe they are equally productive; although if I leaned toward\* any tide, with my limited experience, I should say that the low land, which is not so low as to be mandated by the strong tides in the river, is the best. The plants love to love and court moisture, not from stagnant water, but running water. The plants have the water in and around them \ they are all in heavy tropical jungles, which makes it very expensive to clear them.

“ I may here observe, that the sun has a malarial effect on the leaves; for as soon as the trees that shade the plants are removed, the leaf, from a fine deep green, begins to turn into a yellowish color, which it retains for some time, and then again gradually changes to a healthy green. but now the leaves are thicker, and the plant produces more numerous leaves than when in the shade. The more the leaves are plucked, the greater number of them are produced ; if the leaves of the first crop were not gathered, you might look in vain for the leaves of the second crop. The Tea made from the leaves in the shade is not near so good as that from leaves exposed to the sun ; the plants in the sun are much earlier in season than of those in the shade; the leaves from the shady tract give out a more watery liquid when rolled, and those from the sunny a more glutinous substance. When the leaves of either are rolled on a rainy day, they emit less of this liquid than on a dry day. This juice decreases as the plants advance\*. The plants in the sun have flowers more numerous than those in the shade, and are far more numerous; the plants in the shade have flowers and seeds in July, and fruit in November. Numerous plants are to be seen that by some accident, either cold or frost, have lost all their flowers, and commence throwing out fresh flower-buds more abundantly than ever. Thus it is not an infrequent thing to see some plants flower so late as if (some of the China plants were in flower in April) in March (some of the new seeds, flower-buds, and full-blown

flower\*—all ni o« and the Mm\* time. The rain also greatly affects the leaves; for KMM torts of Tea cannot be made on a rainy day; for instance the P\$mkonff anil Mtngtktw. The leave\* for these ought to be collected about 10 A.M. on a sunny morning when the dew has evaporated. The Fumukat\* can only be manufactured from the leaves of the first crop; but die Mingtkm, although it requires the Mine cart in makin< at the other, can yet be made from any crop\* provided it is made on a sunny morning. The Chinese dislike gathering leaves on a rainy day for any description of Tea. utul never will do so, unless necessity require\* it.

“The China Uhtck-Tt-a plants which were brought into Muck in 1837, amounted to all to 1609—healthy and sickly. A !-« .i ||M Uttat diid, Lni tin- iciiuuilr are healthy, and flourUh as well as if they had been reared in China. All the China seedlings on jftymm hill have been destroyed by some insect.

“The AMID IND China seedlings are near each other: the Utter have a much darker appearance. I have made but few nurseries, or raised pUnts from seed, at abundance of you<ig pUnu can be procured, of any age or six?, from •ar Tea tracu. There may be abee\* «»»»»» yuung seedlings at Ombwat at Detvp\* about U.000; at Tū yri a few; and some at Pammttoak. In June and July 1837, 17,000 young plsnu were brought from Midtmk, and planted at a place called Tutrnngxmy Patar, amongst the thick tree jungles of Sadiya.

“In March of the same year six or eight thousand were brought from Muttuck, and planted in dill\*-wit thick jungle\* at Sadiyai many of these died in consequence of the buffaloes constantly breaking in amongst them; the rest are doing wci, but I am afraid will be killed from the above causes and now that I have removed to Jmpan, they are too far off for my personal superintendence.

“In 1808, 68,000 young Tea plant\* were brought from the SemmmQ #eya hill tracu, about ten miles from Jaipant a great portion of these have been lately sent to Calcutta, to

be forwarded to Madraa: should they arrive there, it is my opinion that they will never attain any height, at least not like ourn, but be dwarfed like the Chin plant\*. *Ihnyop*, *CUtoo*, *Timjri\** and *QkmlnJUn* tracts have been filled up or enlarged with plants from the jungle tract\*. In transplanting from one jungle tract to another, when done in the rainy season very few, if any, die; if the plant be removed from a deep shade to a sunny tract, the risk is greater. But still, if then it rains plenty, few only will die. If from a deep shade to a piece of ground not a Tea tract, and exposed to the sun—for instance from the Aoya lull\* to Japan; if there be plenty of rain, and the soil congenial to it in its place, the plant will die if shaded by a few trees. If taken from a deep shade and planted in a deep shade and the soil congenial, but there is plenty of rain, the greater portion will live; witness *Tom\$ Pmlmr* at *Smdipa*. If the plant be brought from deep shade and planted in the sun in uncongenial soil, let them have ever so much rain, not one plant will live. *H-* alive the *I >UM>* 30^000 brought to *Sad\*\*\**. I believe the Tea plant to be so hardy that it would almost live in any soil, provided it were planted in deep shade when taken to it. There should be plenty of water near the roots, but the plants should always be above inundation. As soon as it has taken root, which it will soon do, the shade may be removed and there will be no fear of the plant dying.\*

"In clearing a new Tea tract, if the jungle trees are very large and numerous, it would be well to remove them by a sweep of the whole, by cutting them down. The Tea plants will grow better; for it would be impossible to get rid of so much wood without the help of fire. The Tea plants, if allowed to grow, are of little use after they had been broken by the fall of the large trees, and dried up by the fire; but admitting that they could escape until the tops of trees five to twenty feet high could not be reached, and if they could, they would be almost useless for Tea manufacture, as it is the young leaves, from young trees, that produce the tea. But if all

and set fire to, we should have a fine clear tract at one\*, at the least expen\*«, an. I might expect to have a pretty good crop of Tea << one year after the cutting, or OT: furthest, the second year; for it is Astonishing with what vigour dn plant shoots up aft. r the fir« has been appJied. And we gain by this process; for, fro> every old stock or stump cut down, ten to twelve more vigorous shoots spring| tip, v» that in the place of n singl. plant you ha\\*fl now a fine Tea bosli. I think from what I have s\*«n of these plants, that if cut do \*n every third year, they would yield f\*r si perior Peas) neither am I singular in this opinion; the Green-Tea-China-men having told me that they cut down their plants every nic>h year, which may be rt'-konei equivalent to imr third year, taking into consideration the size of our trees and the richness of our soil. Our trees, or plants, are certainly more than four or five times the size of theirs, and must consequently yield MI many times more produce; theirs is the dwarf, ours the giant Tea. The site of the leaf matters nothing, in my opinion, provided it is young and tender; even their diminutive leaf, if one day too old, is good for nothing.

“ With respect to what are called the *Singpho* 1 M tracts, I am sorry to say we have not !\*een able this year to get a leaf from them, on account of the disturbances that have lately occurred there; nor do I (relieve we iii«j| get any next year, unless we establish a post at *Xinffru*; which I think is the only effectual way to keep the country .jinn, and secure our Tea. The Tea from these tracts is said to be the C >m men to be very fine. Some of the tracts are very extensive, and many may be fit to be turned into tlic jungles for what we know; the whole of the country is capable of being turned into a vast Tea garden, the soil being excellent, and well adapted for the growth of Tea, On both sides of the *Irrawaddy* river the Tea grows indigenous; it may be traced from the tract to *Hc»»»»f* tin forming a chain of Tea tract\* from the Irrawaddy to the borders of China, east of Assam. Ever since my residence at *Sadiya* this has been confirmed real after year by many of my Kamtr, Singpho, sml Dewaneah

acquaintances, who have traversed this route. It is therefore important for us to look well to our Eastern frontier, on account of our capability to extend our Tea cultivation in that direction. England alone consumes 31,829,610 lb\*, nearly four millions of maunds, annually. To supply so vast a quantity of Tea, it will be necessary to cultivate all the valleys of Assam: and on this very account a post at Ningrew becomes doubly necessary. A few years hence, it may be found expedient to advance this frontier post to the top of the *l'aikat* hill, the boundary line of our eastern frontier. Any rupture with Ilunuah would add to our Tea trade, by bringing from them *Ilonkum* and *Mmkwm*, and having the *Irrawaddy* as our boundary line. These countries are nominally under the Burmese, as they pay a small annual tribute; but this can never be collected, without sending an armed force. They are said to be thinly inhabited, the population being kept low by the constant broils and wars, which one petty prince makes upon another for the sake of plunder. All the inhabitants drink Tea, but it is not manufactured in our way; a few, indeed, cultivate the plant. I have for years been trying to get some seeds or plants from them, but have never succeeded, on account of the disturbed state in which they live. The leaves of their Tea plants have always been represented to me as being much smaller than ours.

"*Mmituek* is a country that abounds in Tea, and it might be made our axianaiva, but is not yet discovered. We have many cultivated experimental tracts in it; we know of numerous uncultivated tracts, and it appears to me that we are only in the infancy of our discovery as yet. Our Tea, however, is insecure here. It was but a month or two ago that so great an alarm was given, that many people had to retire from our Tea gardens and manufactures at Dejeny and Chubwa, which will account for the deficiency of this year's crop. Things must continue in this state until the government of the country is finally settled; for we are at present obliged, in order to follow a peaceful course, to have the means of defending ourselves from a sudden attack.

ever since the unfortunate Affair\* at Sudiya. Before the transfer of the IVa tract in this country can be made, it will be necessary, in justice to all parties, to know if Mwhmct is, or is to become our own or not. The natives at present are permitted to till a great deal of land at they please, on paying a poll-tax of two rupees\* per year; to the effect that if the country is not theirs, every man employed on the Tea will be obliged to be called on for two rupees\* per annum\* to be paid to the old Bura Senaputy's son, as governor of the country. This point is of vital importance to our Tea prospects up here. Many individuals might be induced to take to the soil if they were permitted to cultivate it in security. The ground\*, were we to look forward to the discovery of the plant will be worth millions, and I cannot but think that our country will produce to England. to India,—to the East Indies, and to the West Indies, as much as we can bear. I thought it, about fourteen years ago, that I should have been able to help a little to impel the Tea forward on our own soil, and to give a little to the haughty pride of China, I shall feel myself richly repaid. The country is full of perils and danger\* and fatigues, that I have undergone in the cause of British India Tea."

JAIPORE, 10th June, 1839.

XIV.—Notes on some South African Plants. By G. A. WALKER ARNOTT, Esq., LL.D.

The following notes were principally made about two years ago, and have since been communicated to my friends Sir W. Hooker, and Mr. Hanbury. They relate almost wholly to the third collection I have made from Dreyer, and would not have been published had I not found the same names under which



they were sent still retained in the general catalogue, printed in April this year. I presume therefore that K. Mayer who has named the specimens, and is assisting in describing them in his *Conspicua Plantarum Africæ* still adheres to the accuracy of his determinations, and my present wish is to indicate some points in which they differ from him, and to add some observations on a few other Cape plants.

I shall now mention those in the *Conspicua Plantarum Africæ* p. 6, of the catalogue dated February, 1838; the same names will be found in the catalogue of IK40, at p. 8.

The first genus mentioned is *Anemone*. From there under a species named *A. tridens*, it appears that Meyer intends this to be *Mimulus* *repens*, Thunb.; and of that there can be no doubt. As the name is applied generally to a genus of *Papaveraceæ*, a change is necessary in the present case; but it had been previously named *ITentv* by Metsner. in his *Gen.*, in 1836, and this name ought to be adopted. Alpinus, De Candolle and some others, propose to place *Uegeo* in *Jrj*—, but Ecklon & Zeyher appear to have properly referred it to *Terebinthaceæ*, subord. *Casuariceæ*. As their generic character is in several respects imperfect, I propose to subdivide the following.

### Hum\*. *Meim.*

*Roemeria*, Thunb.—*Anafrenium*, E. M.

*Flores* polygami. *Calyx* 5-(nunc 6-) partitus. *Petala* 5 (nunc 6), oblonga, recurva, sub disco inserta, aestivatione imbricata. *Stamina* 5 (nunc 6), petalis alterna, omnia antherifera, sub disco inserta. *Discus* cupulatus. *Ovarium* in flore masculo abortivum; in femineo sessile, 1-loculare; *ovulum* unicum, ex apice *fiwlauti* « *batl loeuli orti* pendulum. *Stylus* alte trifidus. *Stigmata* 3, capitata. *Cætera ut in descr. E. et Z.*

2. *Ananillis* is the next genus in the catalogue, but *Ananillis angustifolia*, K. M., *Utwshpaj dbax*, Ant. f. *ftpr—pi* in Ecklon & Zeyher, *Enumeratio*, p. 52, a name which must

be retained. Iliit i» inserted Among (he *Bursaceae*, by Kcklon and Zejber, as well u by Hutvey, in his genera of South African plant\*; but the propriety of tht\* arrangement i« doubtful. A\* (heir analytic doat not quite agree with mine, I shall add it here.

I. LOXOITYLU. *Ant. Spr.*

*Grassilis*, E. M.

*Flores* dicline\*.—NUM. *Dalyz* pr ofamk 3-partitus, segmentis lanmilaiis aciihiath. *PHala* ft, lanceolata, acuminata, calvrtm duplo uaarantla, par aati rationem imbricata torta. A a r a a &, itUMjoalia, petal\* terna, inter squamas 3 aauufinatai inatru. *Omhmm* ntillum—RXM. < <i/rx & p>> rtitus. /feria *bf* caJyce fartviora. SanatJia ol in 6or« maac. at abortiva. Qpartaw obliqaaM, > —ItocuUra, localo uaico ovuligero. *Ocellum* ex aptoi funiculi • baa\ loculi orti pcttdulam. *Styli* 1—4, distincti ve I ooahti, unim\* \*m illis, caeteri abortivi. *Stigmata* captau. *Dupa* rsiieca, ovaMa> abttajaa\* abona 1-ocularis, 1-sperma, calrot persistente aucto membranaceo MM a, eoque dimidio brevior. *Albumen* nullum. *Cotyledones* crassae, foliaceae.—Arbores. *Folia* pinnata, petiolo marginato, foliolis oblongo-linearibus vel lanceolatis. i Flo Mi albi fasciculati.

1'... this analysis, it is o twrtoaa <Ut *LmittjUs* awat b»- loog lo lh« SaaNKafeav, ami u not far riworad from *ftkmt*.

3. *Pj/CA*aparta iwamat, £. M. I pmaai\* thai tint gaaaa a) iatanded aot lo b« a *nw* one, but t% tbt *Pythagorea* of Loureiro, with waoaa rbarirtif it agraa *Pythagorea* is however the tOMM *Mmknttin* of Coatwcmia^ a nam« that is usually •nh^riTifj but aaknown at *m* ttoath Afncaa genus. How E. Majar coatd ptaot it in *Ttnkimikmetm*, *k* not quite clear, • ibam oan bt no qqaitinti aboal in babafiag lo *Homalinea*. Mr Itat v«y w •\*• faaar\* of Sonti African pi \* \* mtiooa i«o gncra of Wwaaliaia, loaad laara. Taa of\* it *THmtr\*j*, *IUt*\*. l. c. p. 417; iLu luaniiairr — " « '.\* aaHiaria aadar «b\* aaaM \*t *Celastrus ilicinus*, Burch, w.««\*»• baw of, •nriiiMWM to the short nhtiarar Baa\* »«at U

very different; and also of *Catecha poytmfo*. Ant. Spr.: I do not find it in Ecklon and Zeyher's works. The other is *Eriudaphus*, N. ab E.; this last is still retained by Endlicher, in his *Gen. Pl.* p. 923, in *Homalium*. That a far circle of one or more lumens opposite (the inner divarication of the perianth, while opposite to (the outer aegmeat there ought to be no stament, but a mere gland; at the ovary coheres at the base with the bottom of the perianth. In *Eriudaphus*, however, the ovary is distinctly free\* and there are stamens also opposite to the outer piece\* of the perianth. In the true *Homalium*, the fruit is capsulate; in *Eriudaphus*, it is baccate. These circumstances induce me to remove this genus to *Bizimium*, nor do I perceive the slightest difference between it and *Phacelium* of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, of which several species are described in Willd. *Prod. Ft. Prm.* I. Q. p. 29. In that work, from the resemblance of the genus to *Phacelia*, we improperly referred it to *Phacelia*, but the petals are simple, and Knüchler (*Gen.* p. 919) has correctly brought it near *Phacelia*. Nees ab Esenbeck\* Hi Ukr\* no notice of the beak to the anthers in his *Eriudaphus*, but in the Cape species before me. I observe this character more or less distinctly; it is particularly so in Dr. Vahl's No. 8A76, inserted among his *Phacelia*. but which I presume is *Eriudaphus Eckloni*, N. ab E., and still more in another species which I consider a variety of *Phacelia* (or *Eriudaphus*) *Zeyheri*; indeed it agrees better with Esenbeck's description of *Ph. Zeyheri*, than specimens I have from Zeyher (No. 858), in which the leaves are often opposite and acute; it is known by the name of Wolf's Thyme, and the spines are in one specimen before me 1/2 inch long, and three or four of an inch thick. The structure of the anthers to which I have alluded induces me to refer *Phacelia* of Blume likewise to *Phacelia*, and to consider his description of the fruit to be erroneous. The placenta are, at least in the above, simple, and stem to be constantly two in number.

Of this the following is the analysis:—*Phacelia* | *Phacelia*. concava, fimbriato-cillata,

••Urntione imbncau. *i'rltilu* 5, M\*p\*IU minors, i otundata, longe Unsio-Ambrists, ba\*t iatttf Mjuaina libers pel aloidea fimbriata instrucu. *Dis* IU aimulnns campletus. *Stamina* *mb* 20, intra discum inserta. *Filimnta* amheris subbrevisora, deoae si bo-pi lota. *An* 'btr\* erect\*, oblongæ, subapiculatat, bilocularct, loculia parallelis. *Ovarii* vestigi nulla. —Folia *impari-pis matat folwla ttpptcv-oUu\**ga, sub\*qualut. *Panicula ter mutatis, detua.*

For this there can be no doubt of the plant belonging to *Saxifraga*, and probably of being a species of *Protea*, Camb., with which it agrees in particulars; this however I cannot determine without the female flower and fruit.

5. *IL panciton\** Th., and *H'i, aiaia, 'A. f* These two appear to be the same species, and complitr the *fltpo\** *bronus alatus*, E. and Z<sub>M</sub> S genus which is referred by Ecklon and Zeyher, and Harvey, to *Bursera*, but decidedly belongs to *Saxifraga*, and it has been placed, but among the doubtful genera, by Endlicher (*Gen. p. 10*).

petals are destitute of a calyx or appendage, and spread over the disk. Ecklon and Zeyher think they must be *R. alata*, Th., but they refer to *Saxifraga*, Th., to a very different species, *Saxifraga* *+*/*\*aJ*, Ant. Spr.; in this last the petiole is not margined, while in *R. pamci/ioru* it is said to be so. I therefore incline to agree with E. Meyer, and think it is the same as *Saxifraga alata*. *OMMfMBij* ... *iiiiin>kiif\** *IIHI* ing sbovt t«o »p«ci<sub>r</sub>» i the 'tibtrg sre n nere varieties. •< //ip-  
*alatus.*

6. *A. o6/iyiM, Tuunb.* This species is covered with prickles, and therefore should not have escaped Thunberg, I think it grows in the mountains to be a pine. The calyx is 4-partite. The flowers solitary. Maailit, two\* Utd. row OCM tu I wo awded; its structure and that of *U. aaada u prwemlj M in \*mtko\*pkm, i» ifc# «f* *Fagara* of which genus I presume it belongs. The petiole is thick, and unsmooth. It may be *Fagara capensis*, Thunb., but De Cane refers that it is to *Elaphrium*, on account

of having eight stamens, *R. ...* removes ... 11 tL» Cape species of *Fagera* to *flarawanaa*, and form\* of them the genit *Fagarastrum*. In the above plant from Drege, there » DO flower : but the whole habit and ttroctare, to f\*r t» 1 could examine, are decidedly tboo> of *Znlkatfkm*.

*R. obliqua*, Thunb, aa wall at perhaps glanaHww *in-quala*, DC. (*m* already indieaiad by Ecklon and Zeyher) appear to me to lm the tame at ^MJTTM m y f i i , Ant. Spreng. (E. et Z. En. p. 1&8); one tb« plant it oaicaar ft tpfdea of *Amyris*, nor of *Am<sub>9</sub>rx4om%* but like almost all the Y\*\* Im! an npeciet of i4«yru, belongv to ^«raaaWca«. Tbt following k the i analyse :

*Calyx* parTus qaadrifida\*. *PrtaU* 4, hypogyna, ovalia, conciva, pateniia: akbaauaai objyriforme. *Stamina* 8, hypo-«M««, .iiiwriju»ua. Uoora. Maajaaji <ra<M, apice abruptim acaminata, *Amtkar\** obwtajpa> biloaaUrv\*, longitudinaliter daaitceatcs. *Omnmmu* ttai stidwaao l«il Jia>> bilo. cilare,tubobcorda(Bm. (*MnUa* in loculis gemina, collateralia, angalo ccatrali medio iaiarta. .s *Stylus* ab ovario distinctus et tabarticulatus, deciduus, crassus, ovarii longitudine. *Stigma* obtusum. *Boecm* tkca> %^| aayiaa aborta / loealai is, 1—2- tperma; pvrkarptum laooa, glandulosum. *Semen* inversum, te«u an membranacea, glabra. *Embryonis* recti atro-viridis exalbuminosi *cotyledones* carnosae, bau AUITta auriculatae. *Radicula* brevissima, supera, pubescens,—Arbor 10—15-pedalis. *Folia* impari-pinnata: foliolis suboppositis, inaequilateris, articulatione insertis, ovato-lanceolatis, utrinque acuminatis, crenatis, pellucido-punctatis. *Flores* ... d. ... *pani-cula* pauciflora terminalis ... *axillares*.

The habit is th•t of Cm—me. but the strinure of th« ovary approaches more to that of *IUtyn+t* from that ho». ever it differs by tka quaternary proportioo of the floral organs, and the ovotot being in pairs; approachia,, in character to *RIMVO*, bat with i vkhrij tltftWeat habit, and struc- ture of t»yW.

7. *R.* MMwxarjMT, t. M ^ McoMfiM, t, II., rn»», The undulata, Jaeq^ and \* n ^ « u , K. M.. ar« all aaaai» of

*Schmidelia*, Lin., a genus which has not hitherto been recognised as South African. In the two first, and in the last of these, the style is bifid, and the ovary 2-celled; in the two others I find only stamens. In *R. melanocarpa*, the carpels are subglobose, one of them usually abortive; the petals are furnished with a calcar. *R. kmtmrrva* appears all mixed to *Stkmiitkm Afrinma*; the carpels are usually abortive by abortion, obovate, and usually abortive. In *R. erosa*, the petals are furnished with a hairy, and the *A. lanuett* are hairy. *W. tbr* and *R. mmMatm*, be the intended by Thunberg. It is almost impossible to ascertain from the abortive characters.

8. The other species of *IUUM* in Drayton's catalogue all belong to that genus. Of these *R. tnmemtott* is *R. Ptukt* *netiana*, E. and Z.; *R. mmrxmata* does not appear to be Thunberg's plant, but agrees with Buttmann's *Iff, t. 1. pl. f. 2*, which is a type of *R. Burmanni*, DC.; but it is scarcely *R. BIPMBJI*, E. and Z., since the *intlaan* is the *Un. It.* which is quite a different species; it may, however, be *R. plicifolia*, E. and Z. (but not of Lin.) is *R. HH|aaBHi, tv, HIH* Z.; *R. pallida*, which is to be *R. denudata*, Licht.; *IM M N. tin*, B. / «. *Incida*, Lin.

9. Although not in the collection, I may here notice *Boscia undulata*, Thunb., or *Amrpkn nnoSratVr*, 1. very little known. All authors describe it with three styles and a trigonous fruit, a contradiction which has been observed. Mr. Adrien de JuMteu, in his memoir on the *ifaaVai*—hat *TbtmbrrK* may be actually *oWhbnl* *wbat b« aa»*; the flower is unisexual, and in the fruit which I have seen is only three styles while the fruit which I have seen is 4-celled, but this last is occasionally 3-celled. In the male flower, I have no doubt, to have four styles. The stigma, which remains attached like a little cup to the top of the fruit, is perfectly different from

what we Me in the ttertfe flower. The following n a n ii  
lyats, as fir as my aptcanunt will admit ;—

Bo- *fTnmb.* {*mm Lam.*}

*Asapkes, DC Duncamo, Re*

*Phrm didinva.* (*alpx brevb 4-partitu^ Amis 4, calj*  
cem malto mperanue\* mttiraliione contorto-convolm  
Mate. *Skminm B, 4 petalb oppoMta breviora, circa U*  
gynopkori overiormn rodimenta gerontta tnaerta. *FMim*  
3—4, abortiv». *StyJt* letidem, Alifermia ; aigmaU pam  
draw.—Font, fffrfcjf nultu\*. *Nioma stmiW, lium pti*  
turn, in fractu coocavum. *Frwctm\** carm»us puncUln\* 4-  
(*nme S-*) eakntna, 4-iuunc S-) loculat\* ; loc<alis monosper-  
mi, 1—3 ia\*pe abortivia. *Srmimm* ovnidoa, angeUta, dorso  
convexa, unilocularia. *Embryo subarenatus.*

From this it will be Men that innooM point does *Boscia*  
differ fro. *mKipr^noepiin* theurwotnreof tke med, wkiokm  
*Vepria* is describ *M m two-<\*led, wHk* one of the cells empty ;  
an anomalous structure, the effect of accident, and  
«hick my •peciment being only in Bower, do not permit  
me to verify. The ftrvctare of the ftret u preciatly tttmUr  
to what it detaikii in *V/JTU*, by *M \.lrion de Jna»* eu ; a id  
M ike babit of the two genera is pvcmejy alike, I feel dis-  
posed to unite them; indeed, adomitting that the structure of  
•std is not here of importance, 1 scarcdy «ee ko *Boscia*  
*undulata*, \* to be distinguished from *Vepria inermis*, except  
by the narrower feliafej am in *M Maorimw p\*ati* that

10. 1

two. and their examination in-  
clin... r Harvey in... it to the  
of it is given  
by... Lin

shown that *Botryocerus laurinus* Willd. is the same plant; lint  
 by Mr Harvey and Professor Bernhardi mainly that the  
 ovule is pendulum from the apex of the cell; this may how-  
 ever be an oversight, and the origin of the funiculus which  
 supports the ovule overlooked. In some respects allied to  
 the genus, according to Bernhardi, is it *Apodytes* *4imkKa* E.  
 M. but certainly not of the same order. The affinity of  
*Apodytes* to *Trimeria* *Stipa* (of which *Chaptalia*  
*lutea*, Sab. is a synonym) is so obvious that I feel surprised  
 at Endlicher omitting it from the list of Otartia, where  
*Trimeria* is placed. The two principally differ by the position of the  
 style, the latter being terminal in the former in the  
 former it is lateral in the latter, indicating that it were a  
 solitary simple pistillum. How far either of these belong to  
*Olaeime*, I will not take on me to say: neither can I do so if  
 Mr Brown's new order be chiefly addressed to; at  
 the same time they and the East Indian *Geophila* appear  
 more allied to *Meibomia* than to any other.

*Apodytes* may be recognized by the following characters:—

APODYTES E. M.

*Trimeria* p. f. Harv. ms.

*Calyx* 5-fidus. *Petala* 5, ovatione valvata. *Stamina* 5,  
 petalis alternantia; filamenta versus basin latiuscula: antherae  
 inaequales, oblongae, lineares, basi bifidae. *Ovary* (oblongum)  
 gibbom, 1-loculari. *Stylus* duo, collateraliter affixus. *Stigma*  
 laterale, AVKOOMB («C. primum directus, dein super ovarium ho-  
 rizontaliter curvatus, demum erectus») *Stigma* capitatum.  
*Fructus* coriaceo-carnosus, tuberculatus. *Semina* titurum\*—  
 Frutex foliis pinnatis, simplicibus, subellipticis, cori-  
 aceis, marginibus serratis. *Truncus* terminalis, folia  
 paulo superantes.

Found also by Zeyher (No. 673,) in the forests of Kraka-  
 kamma, in the district of Uitenhage.\*

\* Since the above was written, I have received a letter from my friend  
 Mr Bentham, in which he mentions that he has prepared a memoir on the  
*Olaeime*, with a description and figure of this genus.



The other genus placed among the Cape *T> r, M a f A w*, but which I have not seen, it *Mt\*hpmtpk\$tlwmt* the only description given of it is\* by Ecklon and Zeyher. and » imperfect, in »o far a\* it doe\* not it i u the number of ovule\* in th« ovarian\*, and the structure of the and. It is placed by the Botanist\* in *Burscraea\**; but the stamens being at few as the petal\*, form a strong objection to this arrangement, at already mentioned by Harvey; and besides, the leaves are opposite. Mr Harvey removed it to *frnfaarr\**, a group «ow more correctly referred to *Tmtkmptr\*11* but to that arrangement I am not quite prepared to agree\* although I prefer it to Ecklon and Zeyher's.

( To be continued.)

XV.—Recent Botanical Letters of Dr ROBERT WIGHT, addressed to G. A. W. ARNOTT, Esq., LL.D.

( W\* »tk m PmrUmtt o/aW Antkvr )

ONE object which we have always had in the two transactions in *Jmtrmmt of/Jojuet\**, has been to make known some further particulars in the lives of the two and travellers than can be gleaned directly from their publications. In those cases when their career of usefulness has, unfortunately for science, terminated, and where the materials are so scanty, the duty of compiling a memoir is not a light and easy, and, the more agreeable, from the circumstances, one involving requires to be withheld from a wide perusal, and of course, not of dejection towards him in whose history we are concerned. Under these circumstances we have had peculiar pleasure in bearing testimony in the preface of our Journal, to the merits of Telfair, Urquhart, Barr, Klicbard, Cunningham, Drummond, Douglas, Jack, Hall, and others. It is otherwise with living naturalists, and especially regarding the labours of those of whom, as in the present case, we have lived on terms of intimacy and confidential intercourse. We have here seen many of our countrymen and authors in doing more than before our readers some extremely interesting letters which

has been addressed by Dr Wight, 10 Mile friend and coadjutor Dr Arnott, on the subject of Indian Botany.

We shall merely premise that Dr Wight is still in the prime of life, and enjoys an excellent constitution, although he has been upwards of twenty years a resident in the Madras Presidency. He entered the Company's service at an early age as assistant-surgeon, and embarked for India with little or no more knowledge of Botany than usually falls to the lot of a well-educated medical man. During the first three years, we have heard him say, he began to direct his attention in this branch, with which he has ever since surrounded himself; but in the early part of his residence in India, he could make very little progress from being utterly destitute of books. At length he met the good fortune to become possessed of Willdenow's *Species Plantarum*, of Rumphius's *Amboinensis*, and of the Lichfield Society's translation of the *Gmelin's Plantarum* of Linnaeus. With these aids he proceeded joyously to investigate the Botany of the Presidency; and, in 1810, found himself enriched with a herbarium of nearly five hundred to six hundred species, all of which he had attached names to the best of his ability. With his characteristic generosity, and with that ardent desire to distribute his vegetable treasures wheresoever he thought they would be most useful, he despatched the whole of this collection to Edinburgh, as a present to Dr Graham; but it, unfortunately, never reached their place of destination, having perished in the wreck of the vessel in which they were embarked for the Cape of Good Hope. From that period, till 1816, Dr Wight's professional duties, and the continual movements of his regiment, were a hindrance to his Botanical studies; nevertheless, he continued to form another considerable collection, partly at Calcutta, and partly at Madras, (where he spent three months for the recovery of his health,) which was sent to England by Dr Shuter; and which, through the kindness of Mr. G. B. S. Esq., came into the possession of the Editor of this journal. On Dr Shuter's return to England, where he survived but a short period, Dr Wight was

appointed to succeed him M *Smhtrmlut*, which situation he held for two years, when the appointment was abolished by the Ooternor, Mr Lushington. While holding that interesting and important situation, it was to be expected that one of Mr Wight's energetic characteristics would be to employ himself heartily in favour of the cause in which he was engaged. He studied more systematically than he had hitherto done, and with far more adequate means, not botanical only, but all the several branches of Natural History, and made an extensive tour of investigation through the southern province, the outline of which is marked in Dr Wallich's map of India, published in his *Icones Siccæ* of that country. From the course of that journey, which occupied nine months, we know that he saw nearly two thousand species of plants about two hundred birds, many insects and animals; but his principal object was to collect. They were not a sterile or a barren or a sterile traveller. There was indeed no lack of abundance and diversity on every part; but, for want of previous experience, he had to contend with a want of accuracy of material and a want of care for the collecting and preserving so large a quantity of objects as a present to the British Museum. It was rich and fertile a country. To remedy this defect, he formed his arrangements for a longer tour in the following season, with means better suited to his wants; and was ready for setting out in January, 1818, when he received the unwelcome tidings that the British Government had appointed him to succeed Mr Wight. In the ensuing month, or thereabouts, to that effect were issued orders instead of being allowed to accomplish the most important and interesting journey, Dr Wight received instructions from the Government to proceed in the quietude of gaiety and tranquillity. Under these unfavourable circumstances, or rather from the cause of the Government was not diminished; but the fertility of the country and its productions inspired him with the most eager desire to obtain a thorough knowledge of it. He attended the whole of his laborious tour to this purpose, and in the execution of it at his own expence all over the country, and in the two and a half years that he resided at Negapatam,

he formed the greater portion of the herbarium with which he (Kuril) after proceeded to KngUml, and which constitute the principal materials from which the first volume of the *Prodromus florae Indue Orientis* has been compiled by Drs Wight and A. R. S. L.

The following letters written since Dr Wight's return to India, will prove, better than any language of our own can with what zeal and perseverance he still follows up his botanical pursuit, and what ample provision he is making for the forthcoming volume of the *Prodromus*, and for his other important publications; and all this under any disadvantageous circumstances, the full exercise of his professional duties, and frequently for a length of time confined to one small spot and that an unproductive one or its immediate vicinity. — Ed.

M. A. S. 4A September, 1834.

“ Though I have now been a month in Madras I have as yet allowed only one occasion of writing to you to pass unheeded, and that because it occurred too soon after my arrival. There was no opportunity of despatching a letter, but as I am on the point of leaving Madras on a long march, and may not find it convenient to write in for some time, I have thought it better to address to you a few lines. This I now do under considerable disadvantages, from having already put off too long, and having many matters still to attend to before me; and the day of departure is sadly close at hand. I have as yet done little in the Botanical hoe, indeed I lay aside nothing, except rottingly arranging a considerable collection of plants brought me by my collectors

\* Besides the two works noticed in the 4th volume of this Journal, Dr Wight has published several excellent botanical papers in the *Madras Journal of Literature and Science*, and, in this country, in our *Botanical Miscellany*, *Companion to the Botanical Magazine*, 1st vol. of the *Journal of Botany*; and, along with Dr Arnott, the *Prodromus Florae Ind. Or.* vol. 1st, *Contributions to the Botany of East India*, and some memoirs in *Jameson's Edinburgh Philosophical Journal*.

with the intention of tending you any things that I might find new. But when I find, as on many other occasions, I find it easier to resolve than to perform rightly; far although there are a good many new things\* yet I could not possibly find time enough to go over them a second time to lay them out and number them for printing. There are a considerable number of drawings also, among others a good one of *CoumiuM moencmrps*. What makes the circumstance more annoying is, that I am obliged to leave all my plants and books\* behind me, without a chance of seeing them for the next six or eight months. I am ported to a settlement now at I\*Ury, three hundred miles\* north-west of Madras, which corps is under orders to march about the beginning of the year to Palaowpotlab, near Cape Comorns, a distance of about 400 miles. I have with me these elegant companions\* In the course of so long a march, I hope to add greatly to my collection and I think I shall get a host of new things, as the greater part of it is through countries that have not been discovered before, or so long ago, that I derived little benefit from them.

For the purpose of agitating the subject of Botany on this side of India, I have written a paper publishing in a philosophical journal lately established here, under the name of a review of Kotle's work, but in truth presenting a general view of the objects and advantages to be derived from the study of Botany. I have also spoken to (privately) by the Secretary to our Medical Board about undertaking to prepare a set of outline drawings and description of the plants\* mentioned in Ainslie's *Materia Medica*, to be lithographed in the same way as our botanical work. It is intended to be published in a year or two it will be quite new and I hope to procure and distribute all the plates required for the work, and I shall be a prospect of its being soon published. I shall probably undertake it, finishing the arrangement of our *Prodromus*, thereby making it both a medical and botanical work.

There has within a very recent period been two small wars here, both in countries adjacent to Europeans; one, among

the western; the other, the eastern hills. Unfortunately there was not a botanist with either of our armies, so that both opportunities of investigating these districts were lost. From what I have heard, there appears strong reason to believe that the *Aamitom firm* is a native of the Peninsula, the well\* in the North Circers having been poisoned with a root in the same way as was attempted in NVptui, and unfortunately with more success; many of the troops suffered severely from its effects before the cause was discovered: as yet, we can know only conjecture that the root is an Aconite, the plant not being seen. . . . . My only discovery here is an Asclepiadeou\* plant belonging to the tribe /Vs>fcusay of which there are »peamen<> in my herbarium under the name of \* *txJkile\* amndt flora*; it is nearly allied to W. Wallich's *Finlijsajii'a*, «n• «n'i *CrypkHtrgi*^ if not the identical plant, a point which I have not yet been able to determine for want of my books. I got some species of what I think a new genus of /VtMuleime, so like \* gentian that nothing short of the positive certainty of finding the stamens opposite to the lobes of the corolla, could have made me think it any thing else. I have at\*o got \*pecinjom of *Celsstrvaeas*, wUdl was now to me, and some two or three\* other things\* \* Wob I have not yet carefully examined.

P.S.—8th Sept. I eat QBT to\*oay for Helmry, and have no time to add more.

iau^sf. lit\* October, 1834.  
(N, tau |r U', K Long. 77°.)

I inform you in my letter, that I had received grant add\*, sent to my herbarium since my arrival at Madras. I am sorry that it was not allowed me to lay out speedily for transmission to you. and not less so, that I had been obliged to leave the greater part of my books and herbarium behind me. The want of these silent monitors I feel more and more every day, owing to my having added considerably \*o my collection in the course of my journey to

this place; while for want of my phenomena I am occasionally  
 not a moment to determine, whether plants differing from the  
 the Kiiipboot, are epichim or varieties. This distinction is bare  
 of BB experienced among the A \* H k partly it is true from  
 its being said in the generic character that the lateral lobes  
 of the corolla are abortive, which is from being  
 the case, that I have now, I believe, as many as four species  
 recently collected, with the lateral lobes exceeding the alae.  
 In some they are conspicuous when growing that I at Am  
 sight took them (or HBBIMIIIJ. ife said *wkmtilt* petak re-  
 seen. ^ » ff; pretty Urge TCUIIMBS. Ptnapstha generic char-  
 acter ought to have the word *often* inserted before "abortive,"  
 which might suggest a convenient division of the genus into  
 two groups: those with those without lateral lobes or  
 petals to the corolla.\*

I have lately found *P. WW\*IMO /Wian*, and seen abundance  
 of *C^PWM mwmkmtm*, but not one in flower. Of the  
*Malvaceae* I have as yet gathered only a few, but have found  
 wild, for the first time *Hibiscus eriocarpus* in dense  
 J««lea near Nagary. a fine country far botanma, but un-  
 known to me.

1 I am sorry that, of the opportunity I had through it.  
 I could not have been able to go through it.  
 for a longer time. I have now got a Urge extract of *H\*\*\**  
*ria herbacea*, and also of *SJI...We4*. the IBM not it a  
 gBSd Mair. To r |W larBMT I ».. a little \*» early, there  
 being very little fin\* ; hi fBanar to it, I made the following  
 note with reference to the etamena : — "Filaments 10, five of  
 them sterile, somewhat ligulate, obtuse, sometimes anther-  
 bearing ; 6 fertile, each divided at the apex, each bearing two  
 one-celled anthers, or rather perhaps a single double anther,

I thought of writing the above, Dr Wright appears to have misun-  
 derstood the generic character; comparing *Xanthophyllum* with *Polypala*.  
 It will be seen that the two symmetrical petals of the former are wanting  
 in the latter; that is to say, only three petals more or less combined in  
*Polypala* (not five); moreover it is the second and third petals, not the  
 fourth which is abortive.—G. A. W. A.

with aridatj \*eperalcd ccUa." I met with it on a hill near Currumbady, among long grass and low jungle. I have at length nearly determined that *Hudleia corchorjoh\**, and *concatenata* are the same, by finding them united on different branches of the same plant: but I am not quite certain, and cannot finally determine the point here, the two species not being natives of (the district, to far at least as I have yet seen, I think, however, that I am right, and if so, *R. concatenata* is only a more advanced stage of *R. corchorjoh*. *Waltheria indica* is a most variable plant, if the varieties we meet with in the country be the same species: I gathered specimens almost all white on the same spot, with others of a deep green and comparatively labrous, and yet I could see no difference except in the quantity and harshness of the hairs of the leaves of the green one.

I have got a line new species of *Mtikama*, ("if *rupestris*, *Nob.*, leaf cordate ovate crenate serrated, villous above, whitish beneath and reticulated underneath; peduncles about 3-lined, extending the petiole of involucre leaves broad cordate at the base, acuminate, pubescent (?); sepals lanceolate — in, densely long-tubed; petals imbricate, obtuse, longer than the calyx; sterile anthers filaments united by a membrane at the base (immature) tomentose. — I saw it in a rocky glen at Ta-lap-nod-lor CwA-fap-n-dial.

*Greimia aifan*, if I have not mistaken the species, a very curious plant, it is a large scandent shrub with turn and larger branches acutely angled, and grooved between the angles: in my plant the young shoots, leaves, calyx and fruit, are beset with rigid appressed hairs a little longer than the cleft petals; the stem furnished at the apex with a tuft of erect hairs surrounding the anthers. It is a copious flowerer.

I have since seen it with it two or three times. At the same place I got specimens of *G. hirtellifolia* with pedicels not tomentose but with hairs in fruit only, with trifoliate leaves, whether a new variety, or whether it is



determine: nu»i probaMy the furnui 1 nwU\* a longci cut-  
 ·ion to-daj, ami anon\*; otbar ibings got ZHWMia acidissima  
 in fruit. I ha«c brn a tftH\*J deal pvssird « ith T<\*. \*\*/\*, in  
 coaacqaeucc of having m«i with « Tom, which 1 \*\* fuu  
 sup poaad a «·» ipaeiaa, afterward\* ibe inc T. ti»«>f iwiiwi,  
 ·ml now I wp«trt it is nvilbcr; IUt ia, 1 bar\* never met  
 with a pl anl allogctbcr ourrvapoodtiig to lb« character of T.  
 kmrnyimtm, in ao far as they ail bate fair pricfcJo» »·» the  
 carpcta: ll»e new ours oorrcapooded bctlvr in tbat natpcel than  
 tbc more oonnoo oot, and bad omcb mora wooil; lcarta\* but  
 on comparing n u ; tpeciattns I ooid fioid no li&c of demar-  
 caikm bct«wa tbem; the coott in all have four prtcaJa\*. two  
 largt, and lvo MJUJI, «b»cb I tuapaat will be equally found  
 in tha Ceylon plant, ·h h o f h man rvpraMafrd »· the figure;  
 parhapa ibto, tbay may all ba lafcrittli to T. terrestris, but  
 uo ibal pome I canmt hr aara, a\* I b«v\* n never examined  
 the genuine plant.

13th October.—I have re-examined these to-day, iraaa b»\*  
 raj aaaa ana\* plaou of law new one ; tta flown an much  
 ·mailer, ibe Mcood pair of prickles often wanting, anJ ali ways  
 aaulhi iban in the paaiaiw form, bo l inc? ·nil require to  
 b« more cafalall\* auiparad.

*Fagonia Mysorensis* is very common bar\*, it '·· variable  
 plant, the stipules being longer or aburtr tlatfi tW leaves,  
 iba Wavaa l—3-foliolate, leaflets linear lanceolate ;okl plants  
 form small procumbent very ramous thorny shrubs like  
 furze, and in this sta leaves are simple ; young plants  
 erect with tba Itaniall trifoliolate ; in middle aged ones these  
 are 1, 2, or 3-foliolate on the same individual. This fact leads  
 me to suspect that *F. Arabica*, *Mysorensis*, ·ad Ofca«r««. arr  
 ail ibt same species.—There »· a species of, 1 la»t< k, Zyyo-  
 l\*\*\*\*\* ve 7 comm.·· b here, but I have never vat aval »ub  
 ti flovr; appaftajth · species of *Balanites*, which has the  
 t r ifoliatv lawrti and axillary spines of the genus, but differs  
 from *B. Aegyptiaca*, in being a ·all pU.i .. p u « «f a tall  
 one. I f««iod to-day specimens ·.·.· aViam of a aa\* (?)  
*Solenocarpus*, it has oblong ovate, not acuminate leaflets; these

ire powdri y undlerncadi. Of *Leguminosa*, I have made e  
 rcry large collection, but there is nothing tli.it I now rtful-  
 lect very particular among them. My plant\* of the orders  
 inclnded in l>e CandY lle's thir1 and fourth volume\*, are not  
 aopioaa, nor at j et wel1 determined. Of *Cmpmtm* I bi  
 a good Rjttnv. but I can give you no information regarding  
 them through w..nt of my herbarium tpatiawn. 1 have a  
 few good *Bon\$yimt\*t* M N M new one\*, and abundance of a lit tle  
 Ctmea, the 6r»i I have Mel in l»Ui\*. To die *Asdej muk*, I  
 have >nad\*\*om\* interesting addition\*, one of the aunt gro  
 fyiay being Plain iu^f \*TW\*\*TW, Uani. | *C. Hawmikmi* \\, & A.)  
 which I find abundant all abutit this station. There w alau  
 a species of *Tylophora*, of which there are specimens in Ham-  
 ilton's herbarium, but not I believe in mine. It is a little  
 herbaceous looking spede», with a tuberous root\* rury pale  
 leave\*, and no branches 1 fergat at prornt law name gti  
 by h1M a\* well at that by ma, but 1 think he oaUa it a *Tylo-*  
*phora*ll plant about a foot long, procumbent, afterwards  
 twining a little, | <\*\*\*» Mimewhat reniibrm at the bee\*, ovate  
 obtuse, *gimmas rind ussu*, much smaller towards the  
 flower-l•urmg extremity t it grows among long grass on the  
 Copper mountains near Bellary. i have a large eapply  
 of a *Periplocious* plant, perhaps a new genus, but so very like  
 our *Toxocarpus*, tli.i'. 1 bad aJahattft *mmt^t^* it MI MMA I am

preparing \*oro« obtervation\* on the mode of impregnation of  
 t.« and tome other plant\* of the ordt • <» the genus  
 tjfayaaiiil I bare mad\* toe\*\* inUrutUog aildituo\*, finely  
 dewartartid by the furm of the petaU, or prtalokl scale\*, il  
 you like that term better~>Amoay the *Orumamm^* 1 har<  
 been particularly aWfiaHe, having got many of w which I had  
 eaatcdy a tptcJartt below, an I think there are some new  
 o«eai one of the\*\* is a very common and troublesome weed  
 in the b•-i\*ck cation aoil of this cour, try. I hare called it  
*Ischemus villosus*; an account of it is in the course of pre-

!<<•• for publication • the *MM dras Philosophical Journal*,  
 with reference to its injurious effects on agriculture. It has  
 immensely long creeping roots, which render it next to impos-

sible to lie destroyed, when once it hat established ittrIT in • field.

On the whole, my collections since my return, may amount to between four and five hundred species, although I l»ave bam very select. I exp ««ct befor\* I arrive at Courtallum to have a thousand or fifteen red. I hav« not met with many here yet, and do not expect m my, as for want of r» in the season is un favourable to vegetation; bat 1 dlaaom ed tome pretty good ones tim morning in a long and most fati :aing excursion, which kepi me oat nil past mid-day. Among these, are a lit le / «v\*a, and a beautiful *Euphorbia*, a new gram like *Poa aVatfcaa*, bat certainly different.—1 aw now preparing for an •<tive t -otannuag campaif h\*twi en •hi\* iajd r.ila«nc4>ti ili ( ^ lit. X" v . I. '«>'v' ~!' 50 ), near i. < >uriall urn; antl » \jwet in the ccxirw CM lf k« > ' . 'y in a large stock of tpedmaat, as U la my intention in the ooarav of the march to collect all and saadry, the better to enable me to tapply ipiuiaiaiai, aad to allow me more time to asra oaa\* choose, when I sl M.I \* . »M Courtallum aad il e neighbouring hills. 1 6nd that I shall require to make ap five or sis sets for dietribott. on in this country.

In my last, I wrote about aa Indian Medical Botany for which 1 am inlhfliag matariaai I purpose giving uaUms figures of all the pUnU, arranged aaoardiag la oar *Prodro- mus*; tie madirnl portion of the work it to be the yakM pro- dilaion of the Secretary to the Medieal Board aad r, yself, and in UM mean tima I have baea drawiaa; np a paper oa *Calotropis gigantea*, and *procera*, H >..\* as a tort of pa item specimen of the intended work.

PALANCOTTAI, 34 March, 1835.

I have now three collectors hard at work, one here, and two in the hilU about CoarmUnm at» d in Malabar. I expect from ftamaamm) BBa^aatflamaaal awaaaffl% W^aa> flm^aaa^mai f W ^\* already received some ama^mwW anFVJaT^aw awaaa>aww mw/w VaalaVawflaw I amja<vIB of which I had not specimens before, *Phaseolus rostratus* for tx\*m pk> and aweral othen which I do not now recol- l«et j bat upon ike whale my ataktatit here does not add much

to my stock: the other two have not returned. I have recently examined *Sesuvium* *Mmm.* it is truly a curious plant, but I have not finished my observations through want of proper specimens; the ovule is said, even by Brown, to be pendulous, but I find it erect, at least what appears to me to be the ovule. Griffith says that it is first pendulous, and afterward erect, by the circumscision of the apex, about which time it contracts a new adhesion, viz by the base, thus changing its IMM: in the course of growth; I find something like a lilium, but I may be mistaken, as it is loosely attached near the end of the seed most remote from the calyx, with the radicle pointing upwards to the calyx, or in reverse: the ovule has nearly the shape of a Florence task with a long neck, attached by the thick end, while the narrow one is continued for some distance up the stalk. In tufts of hair (abortive petals?) opposite the stamens and the glands of the calyx, appearing to be mere continuations of the disk, led me at first to consider this plant allied to *Jatropha*, but a recent examination of a *Tumjassi* upset that idea. I am now principally employed in arranging my collection and laying out specimens of all the useful medicinal plants in Aintlie's *Mai*. I am now with the view of publishing a list of them with descriptions of their medicinal and economical properties, but arranged according to the *Prodromus*, forming in that way a medical and systematic work. I have provided two or three hundred drawings of one kind or another. I have now tracings of all the Coromandel plants in a portable form, and have often thought that cheap and useful editions of Rottb. and Roxb. might be published in that way, all arranged in systematic order. I expect to have my plants that are here assorted before my collections arrive from Madras, and shall then compare and name the whole collection for the benefit of the public, at least we shall have named specimens to guide us. If I eat catnip to Bengal, I fear that I shall have to interpose my present collections to your care, even at the risk of your saying "this is rather too much of a good thing." What glorious collections we shall

have from Assam! WaUicb think\* some tbouat >ls of species.  
 A ficuc alpine country al the wot of the Himalayan! most be  
 rich, but I should like abovo all thingi b> haw a couple of  
 yeon on the Malabar range and Neelgoarriwi. I have now  
 a tfrtat many and interesting pLants from the for a m, that I  
 oavar saw before, nor any one eist I believe, bi.t of that  
 anon.

PALCOOTI 18th April, 1835.

I find myMelf must comfortably •itualed bar\*, and have my  
 hands full. \N lit rupfct lo omicmpUlr,! •rr.nurnirnt\*, my  
 present idea is, aa toon as my plant\* ai rive fr on Madras, to  
 •sake a packet of the whole of the *Cryptogamia*, and despatch  
 them to you without even iooksnj them over or taking speci-  
 mem; because to do » with some of the tribes smml d lake  
 more time than I can «par\* at present, owing to the rapidity  
 with which spirimaw are pat'ring in upon me, much faster  
 than I can find places for them. The Tree-fern of India, or  
 rather >f the Neelgberrias, is aa yon say, an *Umpkiht* I have  
 since got more specimens on the 8nwware> hills, st an eleva-  
 tion of bctwatn four and fire tnn amort feet, nearly the same  
 elevation as on thr Ncclgbcrriea. Nooe of these large Ferns  
 is fou od oo tbe plains, units\* on the Malabar coast, which  
 •bound\* \* ith Ferns; mj whtthor the tree-fain be among  
 them or not\* I cannot say. I received many farm) and  
 mgsjn from Courullum the other sky, with a ric h store of  
 other things. I have had two eollfOors in that neighbowf-  
 hood for more than a month, and have got \*<treraJ good  
 plants from them: not the least worthy of mention are *Am4»*  
*troelaitm\**, (bnl not n fruit), a very curious *Pe\*ko\** withbaau\*  
 tifully retic uiatad leaves^ a AnnMenwi plant with a (Us rnlld  
 caps ale, th c cells maoy-seadr. I like a *Hedyotis*. I W « are  
 aUi among them æ% *mmmUtt* and lot\* of \*necimens of  
 what I lusprtrt to be our («>aasn, hot m w i i s j » ith fruit  
 that I could not find a lower in good enough stau to enable  
 Me to ilcirmine the g\*aw» \*ith certainty. Asnon\*  
 are one or two I hsvr not yet made out; but among

those determined, art *M\*lica refracta*, K«i\»,., *Pamkmm montanum* f *Anthopogon monandrus*, Roxb., and *i. filiformis*, Roxb. I have also several other grasses of great interest, but which I do not yet know very well myself, and therefore am not yet prepared to tell you about them; I know however better at work upon them, even though I labour under the disadvantage of not having my pocket of reference or specimens to help me in such difficult cases. Among the Courtallum plants, are several of *Trichostema*, a new species of *S\*Jk.rr<\*-arya* in I run only\* mid two apaflafJ »f *Ore WeVa\* that I have not before seen, and do not know. With respect to the Malabar plants, I have a noble collection; there are many at least new to me. Amongst them are a curious *Otkutrimtoia\** plant, with nearly a dozen superposed ovules to each cell, a new *Anmmaetcmi* gem allied to *Mi/INM*. I but certainly distinct, specimen drawn, of *Z/aooto*, and a *fjonmtkm\**, with the recent of flower endoatdtno deep itnae ahilped involucre. (*L. lageniflorus*, W. and A^ «e# /lor4. /<-. /Vrm/. n>/ 3. t. 229, 230.) My present plan is to return through the gorges, and then introduce all my recent collections, numbering each specimen as I proceed, according to the *Prodromus* or catalogue. This I fear will take some time, as my collections are now very large, and are rapidly increasing. I really think they will not fall short of two thousand species; and, owing to the vast number of specimens, the whole forms so very bulky a concern, that I am anxious to get quit of them, in case I be ordered on a march, as one of our country carts would not hold them, a canalization of some importance as I already require more than six carts to carry my books and kit, when reduced to the usual possible dimensions; and my travelling is almost always in this country, to carry about such a quantity of things would be downright ruin. Could I calculate on remaining here for a year or two, I might get on well enough; but that I can scarcely expect, as

\* A. Palamoc 25th July, 1818. —

it is considered an inferior appointment, and my Maudslayi in the service entitles me to look for a better, which I have no doubt of obtaining, even although I make no application. I do not recollect whether or not I had it before, but I have now obtained specimens of the Candolle's *Prodr.* *tkmi\$ma\_i^\** and a Uo of *ThchoirfH^\**. A few days ago I found a new species of PV ana—in the name of *Sorimtrijia mUmmm*, Wall., a tree from Vitang, that has been first seen for the first time in the Calcutta gardens, and of which Dr Wallich has sent me a bit in a letter, along with what he reports to be the true *Sorimtrijia MnHtymumiumm*; but which certainly differs from the description I have given; I have not compared my specimens\*.

PALANCOOTTAH, 2d June, 1835.

For the last fortnight or three weeks I have done very little in Botany myself, but have had much tedious occupation, such as labelling all my plants and arranging those of the first distribution (*Uoa* (in the Jar a\* Oie etni of the *Lyntimoim*) according to our *VoaVoanu*, which I find a great convenience in working, as I am now enabled to lay my hand on any plant I wish for in one moment. While thus engaged, I discovered a curious *miaka iato* which we have named: our *Stdmdrt*. *Haiaawa* \$ I am not yet sure about the species; it looks distinct from *M. incaaa*, but when compared with a number of specimens I have, both forms, so far as regards habit, will be found to glide gradually into one. The little that my other engagements would permit me to do of late in Botany has been devoted to the incorporation, into one grand *Mrtca*, of all the plants I have procured since my return to the country.

\* The plant here alluded to is *Blepharisperum Subsessile*, DC., which is not in either genus.—A.S.

f At the time when *Prodr.* was made there was only one specimen, and an imperfect one, before us, which is now in Dr Wight's possession. I have therefore no means of verifying his observations, but entertain little doubt of his accuracy.—A.S.

•in] no very ea\*v tank ha» it Iitherto proved, (hion gh want of  
 accommodationv, whic! I delayed gettm ∴ under (car OTUM re-  
 moral, wliict I formerly mentioned. That is now •\* an end,  
 and I have been supplying myself withi •hdvea. In .. «hielt I  
 fad a va»t convriifnOB\* at 1 can now arrange my plant\* in  
 a way nearly aa con TOient for ifcrenoa M J ou do in your  
 herbarium. There are however \*» many of them that I fear  
 it •»ill take a Uwq time to^> or cr the whole. 1 name an  
 number as I go alo»g, a pal which 1 could not vei y conve-  
 niently adopt at (it st through want of proper paper ; a d ffi-  
 culty also it• iK« course of being rsmovari, by my itaring  
 coaxed a manufacturer to make m• a kind thai answer\* my  
 purpose, though not the Ust in the world. Un<W tbeee ad-  
 vantages I expect to move forward i itlt much greater rapi< lity  
 lhan hi herto, the more especially that th• monsoon has now  
 chat•gcil, ttitul liw Atmosphere ha» brcome net. rly 10° e»oler, a  
 point of no small importance, although even now it is rarely  
 Wider •<\* in the foi enoun —a great drawback to appl\*cati«m,  
 of Mich continuance as is requisite when so tm> ch is to be done.  
 I in tend in the course of tu-motruw or ne v t day to go over my  
 crypingamsB coHaetiona, and pack the vliole wj in >rder I o  
 be Mm Imme by a ship which is to sail from ibe neighbouring  
 coast in the course of this month. I will then resume tfce-Zieye\*  
 minosa, the order on which I an> now -ngmgvd, ami a I ll try  
 to «end you a few choice tpecimem in th\* parcwl of Perns.  
 By the same opp\*rtunity th>at co>veys this, you will receive  
 a copy of two Imle contribution\* of mine i o the Madras  
 Jumrmoi of Setrwrt, the ooe on Coiatnp\*\*, the other on the  
 Isc Wa », or Nuttin-grasB, which I have since dtstvered to  
 be *Spodiopogon pilosus* <sup>n^sw^si</sup> Nees & J. F., in consequence of a miser-  
 able fragment w named by htm in my collection. I h\*ve  
 notes of characters of two or three more plant\* «nkh t intend  
 to exte ml kir the nest number of the Jourual, and will c«m-  
 tinuc to do so from um. to th m, so as to emWsvosw k> U»ve a  
 paper in each number: these must generally be of a character  
 to combine the stile with the dulce, or they will not do here.  
 I have not heard from Wallich or Griseb for a long time; I



can easily suppose that they have their bauds lull of business now, making ready for their Assam trip: I heartily wish them success, am) feet very well contented to remain where I am, as I expect to have opportunities in the course\* of the next three or four months to examine with some care the Courtallum mountains, where I shall doubtless discover many fine things.

I have got a noble tupplaafi *JloBoMa urtaikoeepkaia* H<>'k., not from the mountain«SsiHil from the sea coast near Tuticorcen, but that the 1 formerly procure\*! must have been collected near Cape Comorin: perhaps Uw sea-coast, TinneiveJlvdi\*trict, % the proper habiut. I toman island off that coast I have obtained a fine new *Cassia* which is to bestow the honour of bearing your name. My Tuticoreen collection was most interesting though I am Urge, supplying me with many very nice plants, some new, some old, but rare, of which I had only bad specimens, and some described in the *Prodromus*, but of which we had not specimens in our herbarium. Among the real HS> I have *Tibiscum* (which I have\* already said is a *Mrikamta*) a fine *Ruprechtia* and a *SsVaWn* (true) with the winged fruit, which I had not before seen in the country. I have written the collector back for notice, and to try his luck again in the way of new things. My other two collectors are on the Makbar coast\* from which they must return quickly, so that the west coast usonsooi baa beg««. I expect some good psanu from them as well as from the coast trip. . . . I am fortunate in having enjoyed, and in continuing to enjoy good health. Without which I could make no progress in Botany; but, notwithstanding, I go on very slowly in every thing but collecting, being subject to pains in my legs and ankles when I stand upright, which is necessary in the business of hanging and hauling the large parcels I lift to deal with.

PALMORTRAU, aO£, September, 1825

Your letter of the 17th April, reached me late last night, when I was in Courtallum, and I almost wonder how you should have remained so long unmolested: no time to me — if here

lost, and the delay has put it into my power to inform you that, in accordance with what I mentioned in a former letter, I have dispatched a box to your address, filled with Cryptogamic plants, all except one parcel of good things, not least such as I think you will esteem good. Among the rest you will find specimens of both species of *Jlaimit*. [name: MHI no opportunity of examining recent specimens, being a general hummingbird mile distant from the place where the one grows, and the variation of the other was unknown to me, farther than that it is not useful to me. I strongly suspect that Richard is right in referring the genus to *Olicinerr*, but on this I must speak with caution, as I have not, since I discovered that he had done so, examined the plant with reference to that point, but I will soon, as I intend sending desert portions of the two to the printer for publication in the *Mtuisag Journal*, and some other things at the same time, for the January number. I have a short paper in the forthcoming number which I hope you will have an opportunity of sending you. . . . Interruptions are the order of the day: in the mean time I have undertaken the drawing of the *Belanites*, and on comparing drawing of both species with characters, I now agree with you that it is indeed referred to *Olacinea*: it seems to associate in many respects with *Cynonoma*, one of the *Rutaceae*: the calyx is 5-parted, if not 5-spalled, petals 5, stamens 10, torus large and fleshy, surrounded by the base of the ovary, which I think is 6-celled, style simple, short, stigma pointed. The drupe is pericarp dry and brittle, the aril viscid and fleshy, nut very thick and hard, 1-celled, 1-seeded, seed pruinulous, embryo and radicle superior at the apex of a fleshy albumen. I therefore think that it rather belongs to than to any other existing order, though it might, I believe, form a suborder of it along with *Cymmatum*, which does not associate very well in some points with *Ruta* or *Peganum*. . . . Amongst the plants sent, you will find specimens of the *Cryptogamic plant* marked *Cryptoh*. I was uncertain at the time I put it up, whether it really was so, but I have since laid my hands on a specimen from Willdowicz, from the Botanical Garden of Calcutta, and

find it identical; it is *C. reticniata*. Whoa I have got my herbarium all in order ( will send you a large lot of things, but when that may be I am yet unable to say. I am at present grouping the Mrw/i, ami if in better luck than I was yesterday and to-day, hope to finish them to-morrow — not that I "hail name them all, but I have every species disposed of in its proper envelope, and sufficiently well arranged to enable you readily to add (J^V additional species or species\*, which in all that follow do, but even in that I make slower progress than I could wish, as I deem myself fortunate if I get fifty species so brought together from separate collections in the course of a day, and sometime\* I cannot get as many done in a whole week. When the two collections are incorporated, I have •. I cannot tell you how many, more to add from other series brought from Malabar, Cape Comorin, and about Tuticoreen on the east coast, and last, but certainly not least, a vast quantity from Courtallur», \* hnr 1 h\*\<. but in two or three months, and have my collectors for nearly three months. I have now sent it to collectors to the Malabar coast, placing them under the observation of a friend who will afford them the convenience for drying ^ipodnriit which they could not otherwise have. I am also carrying on an extensive correspondence with Colonel Walker of Ceylon, who is soon to send me specimens of about two hundred plants collected on the highest hills of that Wvnd, among which are several European genera. I have told him that I am anxious to procure a« t extensive collections of Ceylon plants as possible, from the most common seed up to the rarest, and he writes me that he is endeavouring to • get a man well qualified from having if been long under the Moon. He or rather Mrs. W. sent me a nr. sketch of a new species of *Passiflora*, which I intend to publish shortly under the name of *P. Oryzica*.\* Colonel Walker has also promised to send me of tra-

\* It is *P. laurifolia* L., •m6mmud to be • aatn of UM W«st In 1851, on which account no notice was made of it in our *Prodromus*, although Dr Wight had specimens, probably cultivated or naturalized in the Peninsula, a circumstance which he seems to have overlooked.—ARR.

cing's of fil»ont ihirry coloured drawings of *Oreha* 7ft, n.ade  
 by *Mxt* W. . which, j;adging from two 1 have at'eady re-  
 ceived are very correct. Ilo hat *ajko* sent me i 4'tch  
 of wlint appear\* to me to be a new genii\* of *Acanthaceae*,  
 but on ihii I cannot decide until I have seen %y specimens:  
 it forms a goodly thrub, twenty feet n height, and  
 ranges imong the *Uuettie* . I lately looked over m j *Com-*  
*potm\**, nn«) find among ibajsn - versi not noticed in De  
 Candolle's >aper in the "O"t ributicus": among these are  
*Athanasia Indica* Roxb., mmd hi com telds at Bell\*ry; a  
 species of / *hjtppu\** t . ot unlike *A\$tet Chinensis*, but the  
 leaves nre tentl», stem claspin: mid .ntire, and neither in-  
 cised nor serrated: flower\* nr her large, pale yellow. I hve  
 been sndly puzzled between *Glossocardia* and *Glossogyne*,  
 owing I susp<ct to Cassini and Lening having drawn th  
 charactor\* from tillferent species, and Koxbtr gh's characters  
 are here too short to bt of iniuli use. I nm very anxious to  
 see Nees pubilbh on th *Gra nimm*, for I wt«h to put mit<< in  
 order, and wntild MI\* when about it, ti do it well, and make  
 my .elf mn\*ter of ilu- subject, which I find no easy nuitt er from  
 Kunth's *Inumrratto*, New has |perhaps multiplied genera  
 to excess, but Kunth ha- certainly fallen into the opposite  
 error, and lilt ihe whole of the large genara in cotifusion.  
 But to return,—1 have aonu other *Cmpo\**»t<r, not included  
 in thr "omtrilmtions" but which I di not rcc. collect well  
 enough to designate at present. 1 have added to tbe Penin-  
 solar Flora lbe .1 *ptatkma imberInt\** fr.xn tin- eedad dis-  
 tricts: a twining; plant, noi unlike tt«- / . *reticulata*, but not  
 so pale ami pulvi.nilnn. and it appears aJlogetber a smaller  
 shrub. The bark m not corky. Thi *T)ftopkortx* which I  
 found at Bellary is the\* *T.fud cul'g*: I again found it at  
 Cotirtallui n.

I est I should afterwards forget, I may her . mcBiion that  
 our *Spk+rocarya*, a<d I de ire us M'allich's (of which there is  
 a \_ure in the *Tent. Fl. NepafiV*), is certainly Gærtner's *E. f\*\**  
*pkorbe*; a> and Hooker's . *ry\$\*mmm\*tkm* appear\* to be \* ssmo  
 fruited species of Gærtner's *G rwnasiifci Hmthln*. I scad

fruit of a nother i'om Courtallum; they certainly agree in having interior processes to the shell of the fruit which is a more ami cnrion\* character.

Ist (ktol)er.—I have told you that I have been twice at Courtallum, and must now say aomi'ttng ab\*. At my acquisitions there, premising however that I have not yet got ill hœvz, and that, of those that I have got, there are three large parcels Mill unopene<iwJ^Hbp<e Greville will give you some informal ion regarding m\ PRng\* there, at I wrote him a long letter mi the subjekci, which I requested him to show you, and even to publish in Hooker's *Journal of Botany*, if thought worthy as an illustration of Indian Botany.\*

From what you will see that I have collected several of the *Annuaire* MB, I do not yet know how many, but I believe there may be a\* In any case all I had before | and DO dot! but there are many more there if I could only revisit the place and search for the in. There are also many new species of *Bat\$nrnnett*, one so remarkable, that I intend illustrating of the genus in an early number of the *Madras Journal*. I have a species of *Argoaiemv*ia, Wall. (*Court. Viff. m. 75*), very like his *A. verticill* (tri\$, but telrandrouw. I have also another tetrandri<ma plant {*Cmtrt. Coli. n. 758*) of the same order, nearly allied, but differing much in habit; that genus I sometimes think, is allied to *C^iwmfcutai*, near *MnkUmbenja*, a species of which with blue flowers like the St Helena one, I have also got on these hills. Another very new addition to the Mora is a species of *A\*kt\*>t. .l.tl. nng* very highly t{vneric character from the original 'uaaji; neither the sterile nor fertile stems are forked as in it, although in other respects it agrees\*, as well as in habit; it was unfortunately not in fruit. Of *D itymnmipw* or *f>r-tarnlra* (I forget at present the name) there are I think four species, two or two other plants of the same order. I have two species of *JBpmtm*, our *A. pedunculata*;

\* It is there published, Vol. I. p. 327.

the other a very curious one, quite sessile, and the flowers covered outside with a very thick coating of mucilage, which renders it difficult of preservation. I have a *JilackwtUia* [Court, *CbU. n.* 734), but I have not yet ascertained the species. There was a species of *Pathos*, nearly as big as *P. cludata* of Wallich, *Pl. Rar. It.* j perhaps it is *P. pertusa*, but I had neither RhuU nor Roxburgh to compare it with at the time, and I have ujLkim, examined it; it is a very large species, creeping on the ground, and found in very moist shady places. My collection of *Ordstata\** is very rich, that is compared with what I have hitherto seen in this country, and it might have been much better, could I have extended my excursion or remained longer there, as there were many not yet in flower. The *Euphorbiaeae* are very abundant; some new genera I have already ascertained, but most of these remain yet to be examined. *Lrgumx-MOM* form a small portion of the collection, owing to the season not having sufficiently advanced, but I am not without hopes of improving this department in a month or two, as I recognised many not yet in flower. *Ppcxospora* I found in abundance on the grassy parts of the hills, always in turf-soil. *Rubiaeem* are very abundant, and I have met with several new ones, or at least species not considered as entitled to a place in our *Prodnmuu*. I have collected plenty of *Lagentovmia parvijtora*, a most beautiful tree when in flower, also of *Solatia obiomya*, both in flower and fruit; the fruit is nearly as large as a good-sized apple, and contains several seeds; the plant is a considerable shrub, or even small tree. There was a very distinct species of *VmafrotMM*, and a very curious *Safiwdmrmut* plant {*Cyurt\* CoiL a.* 7S\*), which at first I thought might be a *Saiacia*, from the form of the fruit. *IciMrvcbihu* is really abundant on the hills, and *Hiptage nrfatoto* on the plains; *B. parvt/biia* I have also got, but did not gather it myself. The calyx of *Ancistrocladia* I find to grow with the fruit, hence that of the *Dipteromrpe\**, but I have not yet had an opportunity of examining the fruit when recent. I, nevertheless, you will find good

specimens among what I have sent you. I have a new species (to us) of *Auraniactm*^ (be genus not yet made out; the fruit is tUU a desideratum; also a splendid *Pkoberot*, which I have not yet ascertain\* tl w(, ether or not it i\_w ne W| by a comparison of specimens; it forms a large tree. I have procure\*I more *Scitaminf*\*, ill .:; I had done in all my life tmforc, but certainly not all, nor nearly .11 that grow in these bilts; it is a tribe with which I aaaJittle acquainted. *Artridt*\* are abundant, and most of ilteflewe iu-\v to me. Of *Grami-mem* I have found a few good species and of *Qfrwrao*—» several new, among which are some ven distinct *Carices*. I have collected a good many *Ferns* of tiifferent kinds, a few *Mottn* and other *Ctyptogamta*, among which is a curious *Pkalhu*.

Nov. 15.—Bcforc the tin arrived for the (lespatch of this letter, I w> inform rned thai a »hip wa» hourly exp-cted at Tuticoreen, and (hat the merchant vico had engaged her would be hnppy to tend home any thing I might with, hut rat I must only calculate on ten <IA to get my packet ready. Fortunate!y for you, mo re than twice trn havecUpaed; for I at once determined to send you H I co uld possibly accomplish it, a complete set of my Cour talluin plants, although at the time there were some hundreds not arranged. I set to work without delay, but before I got the arrangement compiled, I was lak l up fre»m the fatigtai of viatidtug so long as i»» or eight boars dai ly. I have oonatquintly not been able to tusaplete my packet which might ho ve exte aded to nearly 1600 species; by to-morrow, ho\*w >. I »hall have put up between seven and eight Imiulrnl, ai d pro hably at many thousand spn ,n»i m. The eat will fill a large box; under the circumstaTtcen mentioed \vu cai not expect eith cr names or re mark\* ; the specimens »r. simply n umU-red, not that I did not know many or even most oi IIRHI, [n n !nra«n I felt th' 'hf' more lime wtuld be requ n ed than I e ^^ ugol d to give, and because I knew thnt to YOU it wW not necem. You will occasionally ftnd tlie same plant met tioned twice, on account of sligh mrtelkms of <brm; ai and lest on examination,

they should prove distinct. I hope to send you the series  
 <lowii to *JCuphorbia*; but these are so numerous, and a\* yet  
 nil in confusion, thru I **most** stop there for a day or two, but  
 will immediately after resume the business and hope to have  
 a second remittance, bringing the series to a conclusion by  
 the first ships of next season. I will not lose an hour that I  
 can save, as I heard about a month ago, that there is a prob-  
 ability of my being employed to make a Dolaniciuivicy of  
 the Neelgherrie and W>Tnerif> hills in the nr>ghbourlu>od,  
 and I am in almost daily expectation of receiving the order,  
 >1 though I cannot say that my hopes of its arriving are very  
 sanguine. If I do obtain it, I intend forthwith to make  
 application for a garrison appointment, in **which** I am more  
 likely to succeed, and shall then set myself down to enjoy as  
 much of the *otium* of a stationary appointment as my profes-  
 sional duties will permit. I wish something of the kind  
 would turn up, for I am tired of my present uncertain kind  
 of life, and I can never **be** sure but **that** the next post will  
 bring me an order to hold myself in the calmest for some time,  
 on which account, I cannot supply myself with those com-  
 forts and conveniences\*\* which are so essential to a domestic  
 character like mine, who never wishes to go from home: jovial  
 society has no charms for me, though such is the usual kind of  
 society in this country. I have for some time been occupied  
 myself during the evenings in writing papers for the *Madras*  
*Journal*, and letters for one of our newspapers on the advan-  
 tages likely to accrue to the country from the **Goverment**  
 encouraging the diffusion of science among its servants. One  
 has been published, the second will be so in the course of a  
 week, the third **is** *breeding in my brain*, and the subject of  
 the fourth is determined on. This steak originated in the

disgust I felt at the l'ttning &c., to which I allude about  
 hit; shooting, dogs, horses, &c. I received this evening  
 in the morning, and I have just received from my collectors, &c.  
**first** remittance from Malabar, which I have just received  
 look at [Mirrored, I was bon  
 finding it to be a heavy rain\*



have been falling for savers I days. My horror was not lessened on finding the first plant to be the worthless *Cismmpe*\* *b\* crmrohnhcta*. These were bad omens, but as I proceeded, I found that the wet had not penetrated deep, and that among the plants there were really some good things, perhaps not quite so many as I anticipated; but then I believe I expected more than I had a right to, considering how many I had already received from a country so near that from which they came. I wish that I could devote a couple of months to the CourtaJtum mountains now, that is, when the rains are somewhat over. I am strongly impressed with the idea that the Flora of Mount to at least two thousand specks; indeed I may say I am quite sure of it, for I have already obtained half that number, although but a small portion only of the hills has been gone over: the whole space does not exceed ten miles in length, and at the very utmost two in depth, showing an extraordinary fertility and variety of different forms. I have gone over and numbered the whole of the collection, I intend to send a second article for publication on the subject, in which I will dwell on this fertility, calling the attention of the people in power to a circumstance so remarkable, and urging the propriety of having the country adequately explored. I have done so in some degree in my first two papers, and in the second I give more details than I could venture on in the first. M. Ulaasart has been so kind as to send me the first volume of the *Flora of Semtgambi*\*. In it I perceive that *HtiMtii* species, which have been replaced in *MtktAim* the anthers of the plant are in many respects peculiar, and well worth your examination, particularly before the seeds are put to the test; I expect it will be found when compared with other *Jistjitsitw* to be quite a distinct genus but it is one of those common plants that nobody thinks of examining carefully.

My despatch is complete, the box made, and all but ready to be filled to-morrow; I expect to be at the end of the week, so that I can come now to bid adieu to you. I have looked over the *Flora de Semtgambi* in a very

every way, and feel quite satisfied that we could red-uce  
 die numl)er of new species, if we only had the specimens to  
 compare with CM; . Thm *Cocmita Dakis* looks too like our  
*C. eortijbHa*, *Cissmmpeio*\* wmuwnni, hardly a variety of *C.*  
*amvohmJacea*, *Triumphtto pttHm&a*, reaembles our *T. angu-*  
*tataui* much that if I saw it growing in thi\* country I should  
 pass it as Mich. I shall attend mure to the varieties of that  
 plant. *Heudebtia African*^ belongs probably to the same  
 genus as our *Protitttt*, *Gilea trnm.* and it I suspect a nn<sup>1</sup>ive  
 of India, at least I found a i irge ahrul, very lik<• it, near  
 Bellary. *Dalbtffpa mtkmawifkm* aeems neither more i or  
 less than our *D. fr mdom.* I hncv had another letter from  
 Ceylon from Col. Walker, with more tracings of *Orchidee*;  
 somie time ago I received stun- drie I plan's from him, and  
 others have r cachet I Tut icoreen, for whiM I will send wlen  
 I dismiss your box.

Novembt 17th.—I have KM you veveral In the sketches of  
 generic characters, &c.; they are all numbered to correspond  
 witIt the planu to v which they belong. You have to think  
 Veragoo, my facto turn, aiiat butler, for many of the odds  
 and vmlt at the top of the box; ray time was up when (hat  
 part of the busin<< was in progress, bat I know oswsjgti to  
 have reason to th ink you will stine when you see the m.  
 Runzie (my draugbtaman) " sends compliments, and ho|>es  
 nia>ter will think drawings very goo\*l."

PALANCOTTAR, 27th Jvaaler, 1816.

I have bc<n for \*ome days past devoting all my spare time  
 to CoL Walker's plants, end have found some very inter-  
 esting ones among them. Ther • are tome dupl icates which  
 i will tend you by the next opporiunity, along with the  
 remainder of the *Courtilium platila*. I bad a letter a few  
 days ago from Griffithh aori W\$ llich, they are making great  
 progress in collecting, the whole party are in good health,  
 but getting into the midst of the rainy season. Griffith h..td  
 found I i ne<< *Chamarops*, the height of the plant WJ1\* fifteen  
 feet. I forgot to tell you in my last that there is a work on

the Flora of the Neelgherries commenced by Prnfc«\*or Zenker of Jena, in folio, with coloured plttes. He seems to have considered every species to be new, and made a new genus out of the *Abelmoschus ampdo\*\*\**, mulct the name of *Hymenocalyx variabilis*; *Fritigaria Indica*, is there called *F. Nilagirica*; for *Pauifora Le\$ckt\*mtirma*, the Professor retains its old name. There are two species of *Jasmin*.<sup>i.m</sup> with its new names, although I feel almost sure they are both old plants, and doubtfully distinct when their characters are compared, although certainly they look very different. *Parmanowia HyAitna*, in his hands becomes *P. Schmidtii*, and *Urtica heterophylla* & *U. actinifolia*. There are two species of *FtntSj* both in my herbarium, and I think both old species; these are decorated with names of *Apidium naniphyllum*, and *Grammitis cuspidata* of Zenker. Such is a specimen of the naming of the first decade; in other respects the work appears so well executed, that I requested the Professor's friend in this country, who supplies the materials, to suggest to him the propriety of sending you in future proofs of his plates before naming them, on the ground that you must be acquainted with the Peninsular Flora generally, and the Neelgherry one in particular, better than any other man in Europe, as my herbarium contains probably a greater number of species from that region than any other. I hope for the sake of science that he will adopt the suggestion. I feel surprised that no one in the days of system-writing, has thought of undertaking a "General Flora" according to the Natural System; I know no book more wanted, particularly if printed in small type, so as to make it a work of easy carriage and convenient reference. The species have now become so numerous, that it is impossible to give another synopsis like Persoon's, which is a thick octavo printed in similar type would go far towards its accomplishment, and

\* Such a work is now happily nearly completed by Stephen Endlicher, under the title of *Genera Plantarum secundum ordines Naturales disposita*.

such a volume as Persoon's second, might easily hold the character of literary even of the orders, if the genera were given in an abridged form.

PALANCOU, 1st January, 1836.

Along with this I send the last packet of **Jants** which I shall have it to my power to forward probably for a long time; it contains the concluding part of my Courallum collection, and a very few other **tbingi** which I know you will consider *good*. Peace ami quiet have never been my lot, and I see no prospect of its soon falling to my share. I am now preparing to commence a voyage, of what duration it is not easy to forecast, having been repeatedly called upon to embark in a most comprehensive course of inquiry, embracing the investigation of all the useful or likely to be useful vegetable products of the peninsula, and more especially the means of improving the culture of those fitted to afford articles of exportable value, such as tobacco, sugar, dyes, medicinal drugs, &c. I expect to make my first march in November, directing my steps towards the Malabar coast, with the view of gaining information about the cultivation and commercial value of cinnamon, and ascertaining the kinds and qualities of timber produced on that coast, and ascertaining the species that produce the best kinds. From that I return by Courallum, examining in my way, and reporting upon the **pipic gardens** as they are called, and the capabilities of the country for the production of tobacco fitted for the European market. In the course of this little excursion, which will not, I presume, occupy more than a month or six weeks altogether, I expect to get some very interesting additions to my herbarium, but not very many, and that must only form with me a secondary object; that, however, shall not be lost sight of, as I have two well-trained collectors whom I shall take care to keep employed. My after peregrinations must be partly on the low grounds, partly on the hills; the more of the latter the better, as being most congenial to my taste, and being less known to the community,

will afford me the best opportunities of making good reports on these parts of the country. I have no idea how long this office is likely to last; but if it extend\* to a year or two, I hope to be able to do some good to the country, and not the least from having the immediate ear of the government in the place of sending my report\* through revenue boards and such like impediments to improvement, by which our system

**I** is beset in all directions, and the ears of government are close to every suggested improvement, that does not before it with the recommendation of the same (that is, many is the good suggestion that is strangled in the passage through these boards, of which I hear a syllable. Such are my judgments. God grant they may be crowned with success—

I was called to fill a new appointment. I have since last an\* year. About the beginning of March, in the course of a hour, I arrived at a second settlement, and remained there for or fifteen days. I then collected many plants, and among them several new ones; but unfortunately before I had time to visit the best parts of the hills I was regularly flooded by a severe ail\* of juogic fever, » out del\* instance\* atutidii I and a part of the wind from the North, and in one night the whole party were more or less affected. We remained two or three days unharmed by the enemy we had to deal with, and then we were scarcely able to get away, every one of us being attacked. My ail\* was so severe that some of my Palamcottah friends predicted that it would be my last attack; I hope I may recover. A good constitution, however, and judicious treatment, soon enabled me to subdue the enemy; not so the

native!; they were all slow of recovery, and one of the strongest men of the party is still an invalid. I took advantage of the circumstance to visit Ceylon for a few weeks for change of air, and was fortunate enough to return as well as I ever was, and have so continued ever since.

In the course of my residence in Ceylon, I made a fine excursion with Col. Walker, and succeeded in forming a good collection of plants; take it all in all it would have been much better had my collectors been in firmer health, and my convenience at greater than they were for preserving what I got, but be that as it may, I believe I may have between five or six hundred species, more: a pretty complete set of which you may depend on receiving as soon as I can find time to look them over. Among those I have examined, (which of course were not many, during the hurry and bustle of the trip,) we found the types of two new orders: one near the *Ammac*, between it and *Magnolia* the other near *Litsea*. The first differs in having a copious but not ruminated albumen and some other points: The other (*Pomshia*, *mibi*), is remarkable for having two or three series of involucral leaves finely serrated, and resembling petals, but they are not petals, as they are alternate, not verticillate. (see p. 11.) I have since found it on this (Malabar) coast, or one so like it, that I have not been able to distinguish the two by habit and foliage: the latter plant is not in flower. On my return from Ceylon my first business was to write a long report for government in connexion with my present appointment, and then I set off on an excursion to this coast, where I have been fortunate in getting several plants which I had not formerly in my collections: these are daily increasing, notwithstanding the present rainy weather. I have a *Sambomim*, a *Simmua*, (*S. Tacca*, Roxb.), • *SmfUtuna* (apparently & *Corchorus*; Roxb., but differs in having the posterior lobe of the *Imtm* quite round, not unlike the smaller sited leaves of *Symplocos* [a spade of *Xymplocos*, (with very small) white flower smaller

than in *V. r<sup>t</sup>ndea*, but with Urge leaves like those of *N. rubra*, and like them of a dark brownish purple on (the under surface;) a species, I think new, of *Lonmtku*\* with very slender flower\* tapering to a long point during at\* tivation, but re- volnte after expansion, a Ten prett<sup>f</sup> speciea < f *Keempferia*, (perhaps AT. *GaUnga*\* Ri>xb.,) also *A fpmia Gaimpa*, Roxb., a ne *Vtilla* (*V. apkyila* of Walfer.) first discovered by Col. Wallur in Ceylon, but of this I only found one flowering specimen from which I had a dra\* ing made. Did I send you specisaatts of a gusuwin from Tuticontan coast? which I presume is & *oppomt^biia*, R. >xb. I bam now got specimens of *SommenUia aeida*, not wy like Lanark\*! fiVure; I obsenred a new apetalous specie in Ceylon, but unfortu- natcly did not pre> cure specimen\*. In the course of a few tlttvn, that i%> u soon as the weaiber will pafnil, (it is now very bad) I start on an txcursion into the interior which may perhaps end in tny crowing the l> ills to Courtallum, that beutig a near cut home, but at present not a safe one, on le- count of the unhealthy season\* and also on account of a ma: a- eating, *alia*\* *pkikmtrvpic* ttr, which inf\* ti that road,— both bad in their way, but the first upon the whole the worst. My next excursion is to the Pulncy hills, about seven tbof> sand feet high, where I expect many fine things, as I hope to protract my \*uy al least a month. At intervals, as I can!!! make time aiul n inclination combis\*. I have written papers for the Journal on the i Courtallum flora; the f» rst and second were dilatations of lh« ooe Hooker has published; the (hi rd sjkK fourth conuin some further remarks on the con\pa- ti m and gaoeraj \*m<ount of the Injdian flora. tullowe^l 1y re- mii ks oo tome of the orders, ^mrthing after the manner of Royle's work : IUcac SAcin to take, as I have rctt ntly receiv- ed letters from Kvcral utran^ers who are di-posed to com- mence studying Botany, and they will therefore U continued. I hope I shall .in-.rove as I go on. I !m\* c tfo prosasjad tb< editor ftgurca and dot\* rcriptions of r>ew an, estio-ri plants: but thi\_k» » not quite so ewy a task, M 1 experitsjc m such difficulty in determining my pl« U accurai- ly from want of

books of reference: but as figure\* to be given, less harm will be done if I go wrong. Of the plants which you write me to procure for you, *J. tffhynia*, and its twin-brother in appearance *Lunutizera*, I have not yet seen either, except at one place in Ceylon, and then I had no means of preserving a single specimen: of *Caraitia* I have specimens I believe from Courtallum, but at all events I found some voting flower-buds yesterday. I have found two or three *lihixopkorta* since I came here. I mentioned to you that I had all Roxburgh's *Coamtmdel* plants (with the exception of one or two that seem to have been accidentally omitted.) copied or traced: I have got the same done with Wellich\*\* *Ihtmt. Amat. R>r.*, and intend to have also hit *Tmtameu FL. N. lenrisd* by and by. These being all arranged, an convenient for reference; they form only two modern volumes\* and are easily carried about. I almost incline to employ a person, if I can get one, to trace (the *Hortus Mala\**

'«, for the sake of arrangement plate\* in a modern suitable for being consulted, which they are not. Griffiths W. till has returned from the Assam trip, but don't think it worth while to tell you of it. I have at

ii, except that the bard pan of *Coccvtu\$* (I mean) *Ctttampeio\** it a *ftprtma* not *n ymtamm* I *te\$ia* not *nuhcarpium*. may I

also, that it is the only case in which the placental \*utur< antious." Again he says, <sup>M</sup> Only fancy. I have been dubbing in (*omptmUr* end am prepared to prove that the ft

i an achenitum {*Cyp\*la*, *IAmdi* her it that the testae which enclose\* immediate the true testu n

n almost every instance I have examined adherent to >va> not know the value of if he icce of anatomy, not having yet had an opportunity of rftti ) give him non»; but it you find \*nt, ai .. is rip M\* is the fr .nation given of the true etnMtvrr the history,

Reserves. So far as I am acqu< ith the Mibjeal I in riul ^v w|, .fa gainr. Utcovet

pfosii ii« on«



and I therefore give you all in\* information 1 twva regarding it.

Slaf *Jtme.*~Since writing the above, I have had the benefit of a day's excursion to the wit-water swnn.ps in this neighbourhood; 1 was rather successful. 1 got two specie of *Rhizophora*, one new, distinguished by having the fl<w\*n sessile all along the peduncles like figs, and by the fur re of the leaves: several species of *Brwpiteria*, *B. §§mmoniana*, and I think four other\*; there are two species 1 suspect confounded by u» under *U. worrhiza*, one with glabrous petals except a few bristles at their points, the other with them densely ciliate or \*\* woolly along the marg:a;" plethnfj *B. cpltmbrica* is one of the others, but I Am uncertain, as I have not yet compared It heed\*• figure; it sea ma to me u» differ by the number of flowers; the remaining tpn sVslr by having what may be called wnbeU (pendnkMi) of (lower 2-3-c-bottomous; probably they are not *imtar* §\* distinct, it their principal ilifference contiats in the form of the leaves, which may arise from luxuriance or some local cause: they present however a very different appearance when growing »ide by side. Our generic character of *limgmiera* must be amended: add "BUmetM expanding at maturity with elasticity and scattering the pollen of the enclosed anthers," and delete "woolly along the margin;" add after anthers "o»ate," i nose of the new spa\* eiei being decidedly eu I found no *Caraiha*, but abundance of *LiiMHftiri*, and also a *SomtrMim* which aaeme diflet ent from *S. wuim*. I met with a new specie\* of *iMHwmia* «•ith hastate leaves, the broad base and p«oints only being prickly; th« oa!yx is 4-lobed or «enaied »nd with three bractees; it grows in rocky soil, banlu el th\* Back-waier near the Residency, Quilon; th« root\* were in the water. I obtained a specie\* of *Diftsryfii* with »hurt lunlat\* pods, leas than an inch long, hm 1 <i not yet know if it be a described species, gome dey» ngo 1 i "H! a *UtriaUaria* very like *V. vulgaris*;

perhaps M it may be (*. ^\*\*\*een*» V'ahl, or *fasciculata*, Roxb., but i: wanu the "horn\*" to the utri euli; M the same time I detected a *Villarsia* allied to *V. cristata*, b (l with excessively

minute flowers and naked petals, whence, if new, I propose to call it *M. mtrantha*.

P\*<sup>L</sup>\*<sup>Y</sup>COTTAM, 2W July, 1836.

When I came here from Qottoo, whence I last wrote to you, I resolved to devote a week to putting up for you a set of all my receipts. Owing to the IKT, and other circumstances I have found two weeks scarcely sufficient, and this without adding any more or not, further than the place where, and time when gathered. I expected, and certainly ought to have been, at least fifty miles from this now, when in my anxiety to place within your reach as large a mass of materials as possible for our second volume of the *Irixlromus*, I am still here, and must be some three or four days longer, before I can get under way. The present despatch, exclusive of Ferns and unguines amount to 1355 numbers: the whole is arranged in natural orders according to your own paper in the *J. mfiapmliaIbitimrn*, which will save you some time. Owing to bad weather for drying, deficient supplies of paper, and, still more, the sickly state of my collectors who were unable to work, my Ceylon plants have not turned out nearly so well as I could have wished. You will notwithstanding find some good things among them, and it is probable that Col. Walker, now that he has adopted my mode of collecting as he will do in one year at least, will be able to do better. He writes me that he had sent a Urge despatch to Urahm, with instructions to contribute as largely as possible to you; if they be numbered, send them as speedily as you can, a list of those you get! as he now wishes to form an herbarium of named plants, and is especially desirous of having his Ceylon ones named.

And now you may congratulate yourself that you will have no more trouble from me in the plant way for a long time to come, which I can easily imagine you are happy to bear, after the unmemorable traipses of the last few months amounting, as I believe they do, to upwards of two thousand miles of rhanropimou<sup>^</sup> plMU. I am, however

as these are, I have still to regret that they do not form a complete series, and suit more so that it is utterly impossible for me to do more now than send you a few selections of such as I believe you have not formerly received. Within four days from this date I hope to lie fairly under canvas (in tents,) there to remain during at least four months, perhaps more. In the course of that time I expect to visit much interesting country, and get abundance of fine plants: but as I know not what is to become of me afterwards, I cannot say when you are likely to reap the benefit. I will find by the present *enroi* that I have at length discovered the genus *Mboidtia* in the Peninsula. I am uncertain whether two or only one species: neither is in flower, and one only in fruit; it is a magnificent tree, and if, as I think, it be new, I intend to associate your name with it. The other, of which there are only leaves, appears to be different, and more like *I. nmanu*, Willd. Do you suppose that the one in fruit (*I. Anwtima*, mihi) is not furnished with the peculiar stipules because they are not on the pediment. For in truth it was by them that I first recognised the tree. (On the same day, but on the Courtallum side of the hills, I found that *Trichopodium* in abundance; you will receive specimens of it, as well as of another which I got in Ceylon. There appeared to be several species of that genus, as well as of *Acrotrema*: of this last those which I saw in Col. Walker's journal differ from mine, found both at Courtallum and in Malabar. Col. Uckerwy\* he sent specimen\* to Graham.

**I** 2UAJmJy—When looking out upon a plain of some species of *Nymphaea* to-day, I was led to re-examine all the gettets, as far as regards India; and, in doing so, saw reason to think that our two «*pccir*» are only one, or if they be kept distinct, they should be united. I have added three new species, really good; I have doubts about, principally the sepals. I propose to distinguish them by the relation,

and sepals. In *P. am* they are nearly equal : in *P. jpitata* the petals are minute and subulate: in *P. anna* about half the length of the calyx, obtuse, and as long as the capsule: • *P. corymbota* and *P. spadicea* they are as in *P. aurata* , I thought at first that I could distinguish these two by the relative length of the petals and capsule, but further examination shows these proportions to vary in different flowers, and to depend on their stages of growth, and I have found no fixed characters. I think you • peetmene of *MOI* forms, and perhaps my *P. nuraz* ought to form a fifth, as its mark of distinction consists only in colour. *III}»ihxia* is so much allied to *Poitytirpam* .- the only difference being the number of stamens, *S xrsus* 5: the oapttse ami attache\*nt of dis seeds are the same in both genera; that is, they are fixed by podosperms to the bottom of the capsule, and not to a raised placenta.

\**2Sth July*.—I have been half this morning examining and describing the *CrUtrimou\** plant which I formerly mentioned to you (see p. 169,) as remarkable for having several superposed ovules; I consider it a new genus, and shall send you specimens, and verha is a drawing of it; it *Bj}proaches Eleodmtrvn* in having opposite leaves and a large discoid torus, but is yet very different] I have called it *Isopkof\*€Uiitt*». on account of the curious crest with which its petals are ornamented." . . . In the present despatch you will find a considerable number of *Scitaminett*. I am truly sorry that the flowers are not better preserved; I never before had to do with them to any extent, and did not know the difficulties attending their management: in future I shall endeavour to determine their genera before drying them, and, when I can, the species also, as they are troublesome things to cut down afterwards. The *Commtintm* is another tribe that has annoyed me not a little, and I presume might be treated in the same way. When among the *Scittamm\*\*\** which abound in Malabar, I had not with me any book except *IVrsoor*, to

\* id. lii «.fro Ufa\*! friinisnii *mmmMkn* s, Wall, or *E. lucidus*, Don.—ANN.

... e them out by, and that work is long out of date : I fear therefore I lint you muit draw largely on Roxburgh, ami not confine yourself to his peninsular species, as he never visited those parts of the Peninsula when they ibound. In Malabar, as I have already said, ti ey hold a very conspicuous place, if not ior>\* °f \*pecif#, certain I v for the number of plants, the ground being absolutely covet ed with la them. . . . . In the pat ket yo D will find a new genus of *Ltgummu\**, which I fo und at Courtallum; I have called it *Acrocarpus*.

I have senl you the generic character of the genus *Ptmkmw<sub>f</sub>* which I formerly mentioned, (at\* page 185.) but I have omitted to say, ihnt ilia apparent petals and sepsis are only bractcae, aa they alternate and art not verti-cillate: they are hcrbaoaous below and petaloid above, so as to resemble their organs, and n<sup>o</sup> doubt kmi they perform their liu; tions. i had • letter from Dr Wallich, -wo dn ys ago, since his return from Assam; ha speaks in magnificent terms of their collections, and of the vast qualifies tions of Griffith, as well as ot his unconqu crable application. Griffith is undoubtedly lly all that Wa scribe\* him. . . . . Th • long journey on which I am now about to start, will occupy ma at least four or five months; in the course of which I expect to travel over nearly 1000 miles, visiting in my course the highest bills in southern India, i iz, 1st. Th« Shavag gurry, batwean 4000 and 6000 fret, at least I presume -o, from m lha lop being covered with a One grassy sward, an d being reported by th« nativaa aa Intensely cold. ttl- The t'ulney hills, said to > exceed 7000 last. 3d. The Shewarrica, between 5000 anJ 6000 feet. And bully, the Neelgherrie\*, above 8000 feet. I •um thesa last, I paw through C'oorg,« country unexplored by natural\*\*\*, and descend to Malabar auooj Cannanore; thence I pursue my route h'»me\*ardi alone thi coa»t. In the courur of this jour>ey, I shall no doobtgather a harraat of natural curiosities, but I have other duties to pj,form, which must considerably lit nit my exertions in the eaase of Botany.



finally *G. pictoria*, Roxb., *G. elliptica*, Wall., and *G. Morella*, form the fourth, on account of the united stamens and one-celled circumscissile anthers. For these, I have proposed the names *Mangostana*, *Garcinia*, *Cambogia*, and *Stalagmites*, I apply this last to Dr Graham's plant, the true Gamboge bearer, rather than to make room for it by abolishing *Xcythochymus*, a well established genus.\*

We have lately got a new editor for the Journal, and he is making great efforts to raise its character from the lowest to the highest grade of periodical literature, and there is reason to believe he will succeed to a great extent. As I was myself an instigator to the change, I feel myself in some measure called upon to support the work to the utmost of my power, and shall, therefore, publish, whatever I write, in it, in the first instance. Griffith has also promised communications on Botany, while the editor will extract from the Calcutta and Bombay periodicals, whatever appears in them worth insertion. You may, therefore, expect to find in it a nearly perfect record of the progress of Indian Botany. When new genera or species are published in it, it may be useful to get them transferred to some of the European periodicals to prevent their being lost, or superseded by writers in better known and more widely circulating journals: the last number has 240 pages of matter, principally, if not indeed entirely, Asiatic, and for the most part strictly scientific.

PULNEY MOUNTAINS\* (elevation 5500 feet above the sea,)

27th September, 1836.

I HAVE now been on these rather elevated regions the better part of three weeks, and owing to bad weather and confinement to the house, have blotted not a few sheets of paper; yet I do not, I assure you, grudge the trouble of filling up one for you. . . . I hope you have written to Col. Walker, as I advised you, and before yours can arrive he

# Dr Graham has called the Gamboge plant *Hebraiodend* seems inclined to bestow *Stalagmites*, as the oldest name, *ὄνρον*, and *Xantho-cftymus*.\*—ARN.

shall have a preparatory letter from me. He wishes to see his plants published, and as you are the only English Botanist likely to do so for sometime, he has told Graham, whilst sending his last collection, to send you a good set; in my next however, I intend to tell him, that if he wishes you to name or describe his plants; he ought to send you those for your examination in a direct manner. In my last, written immediately before I started on my present tour, I told you that I had taken up the subject of the *Garcinieae*: that paper will be published in a few days. I have since written another on the *BaU samineae*, describing about fourteen or fifteen new species, all those of which I send you sketches of the flowers from Courtallum, six others from Shevagurri hills, and two from the Pulneys. I have now seen ample reason for believing my proposed genus *Koupathea*, is only a queer Balsam, which I have denominated *Impatiens auriculata*; it may, however, be published under that of *I. alata*, if the letter containing the former does not reach the editor in time to make the alteration. I have also sent to the same journal a third memoir, but of a totally different description. These may or may not reach you, but I have desired the editor to forward to you through Allen & Co., ten copies of each of my botanical papers, in order that you may distribute them in the manner you think most appropriate. Since I came here, I have had an application from a new Madras Society, (the Madras Agricultural and Horticultural Society,) for communications, with which I have complied. As what I wrote was knocked off in a couple of days, amidst a variety of interruptions, you will readily suppose that it partakes largely of the off-hand character. I presume that it will be printed, and you shall have a spare copy if I can get one. " While the iron was hot, I wrote a second one for the Calcutta Society, of the same name, but of a different description; that society has recently paid me the compliment of presenting me (although not a member,) with a copy of its transactions, I therefore feel in honour bound, when any thing good comes in the way, to make it the subject of a communication. An appro-



priateone presented itself while perusing the last part of their transactions. In it two sets of experiments are detailed ; the first by the excellent old M. Anderson, Curator of the Apothecary Garden, Chelsea, upon some Rice, the produce of the snowy tops of the Himalaya mountains, and from all accounts one of the most hardy of all the varieties of the *Cereal*ia. This proved with him so tender and tropical in its nature, that the summer heat of England was too cold for it; but as he sprouted it in a hot-house, kept it till half grown in a green-house, and then turned it out, only to *became* hardy after the previous *tenderification*—it died, as was to be expected, under the freezing nights of September ; he infers from this that England is too cold for Rice, and a committee of the Society of Arts think the same. A Calcutta gentleman, on the other hand, had been long baffled in all his attempts to raise a crop of celery, in the way usually adopted in this country, by sprouting it in a cool shady place; but having got a hot-bed made, he sprouted the seeds on it, and these, when planted out, succeeded far beyond his or any other person's expectation. The object of my paper was to reduce these apparent contradictory experiments to general principles, that could be explained by the laws of vegetable life, by showing that Anderson had changed the hardy plants into tropical ones, and that the other had merely done the same; that consequently the one failed because the seeds were raised in a cold climate, and the other succeeded because they were reared in a hot one. The facts present a most cheering prospect to tropical agriculture, since they demonstrate that heat applied to the seed in germination conferred on the plants a tropical property, which, if it was communicated to its offspring, there was reason to hope that we might be able in the course of two or three generations to produce a permanent change from hardy to tropical and thus enable us to introduce into general cultivation in India, all manner of European plants. Such ;\* .u <sup>1VaUO11</sup>  
**of m, paper. If Wdlid, ge,s m, . few t ^ Z Z**  
 shall send you one, as I trust it will amuse if \* f. .  
 u»c ir not enlighten

you. I am now partly working, partly meditating on a report for government, on the hills from whence I write, and on this I must bestow considerable pains, as I had to-day a letter informing me that " the Governor in Council had perused with much interest my letter of the 16th ult., containing the result of my recent tour on a range of mountains near Shevagurry." From all this, added to a long report, (twelve sheets,) on what I may call the present state of India, and more especially of the Peninsula, sent in a few days ago, you will not have much difficulty in concluding that my time of late, has been fully occupied ; for though it does not take long to write one of these reports when the pen is once fairly in hand, yet it takes no little time to prepare and arrange the materials for them. In the midst of these occupations, I have also devoted a good deal of time to botanizing; I can scarcely say to Botan<sup>^</sup>, for although my collections swell rapidly in bulk, and present a considerable number of new plants, I have as yet been unable to study them. I have no doubt, speaking by guess, but I have added a hundred species to the Peninsular Flora, and I have dried three or four hundred all together, among which are about twenty terrestrial *Orchidee* as *Habenaria* and its allies; but not one of which I can possibly refer to Lindley's species; perhaps however from my not having sufficiently studied the tribe to enable me rightly to understand his generic and sectional characters. We have here a new *Clematis*, perhaps two ; but the second I have not seen in flower; a *Circea*, nearly all the Neelgherry *Ranunculaceae*, (but only a few in flower at this time,) a *Geranium*, *Stellaria*, and *Cerastium*, *Dockens*, *Thrashes*, *Potentilla*, a *Magnolia*, or something very like one (but I have not found the fruit; it has five-seeded ovaries), a *Rose*, one or two species of *Passiflora*, but only one in flower, a *Galium*, *Rubia*, *Pedicularis*, *Osmunda*, *Ophioglossum*, a fig with clustered fruit as big as apples, a new *Dodonaea*, an arboreous *Osbeckia*, not in flower; and several others. There is also an arboreous *Vaccinium?* a great tree which is abundant, but so very rare in flower, that I considered myself

very fortunate to-day when I got one far enough advanced to substantiate a former conjecture regarding its affinities, which I made from the leaves and fruit. There is a *Gordonia*<sup>^</sup> but not abundant, and a magnificent new *Berberis* of the *Mahonia* group, but with subscaudent stems (it was not in flower). *Lilium longiflorum*. Wall, is very abundant, (there are probably specimens already among my plants); but it is needless to attempt remembering all that I have met with, for they are many, and as I have told you, only imperfectly studied. I set out to-morrow on a long excursion of nearly twenty miles, (which will occupy me for three days,) for the purpose of visiting some of the more productive tracts of the hills; in the course of it I expect to obtain some good plants, but not many, as it will be merely a run and back again; twenty miles of mountain travelling here being no joke, as I have but four attendants, and we have to' carry every thing along with us. I found some good plants at Shevagurry, but as I was there only three or four days, and the weather was very wet, and the place swarming with jungle leeches, which rendered botanizing most disagreeable, the collections did not come up to my expectation. I was so bit by the leeches through the stockings, that my feet are scarcely yet well, and their marks are permanent,

I there discovered certainly three, and I think four species of *Santia*, and have found another here. My collections during these two excursions have exhibited so many novelties, though made under the disadvantages of haste and bad weather, as fully to confirm me in the opinion expressed in my letter to Greville from Courtallum, that we do not yet know one half of the alpine Flora of India, and to make me daily regret that my other engagements prevent me from pursuing the subject in a more satisfactory manner. The Pulney hills are very rich but exceedingly difficult to botanize over, owing to the great depth of the valleys or glens, and their extremely steep sides near the bottom, which make it almost dangerous to descend; and as each of them has a rapid stream in the hollow, it is equally difficult to ascend from the outlet. The jungle too,

which is in scattered patches, is so dense that it is nearly impossible to penetrate it. These difficulties, however, I might contrive to overcome in a great measure, if I had time and a more favourable season of the year than I have at present, which is so raw and wet as to have begun to spread fever among my attendants. There is reason enough to induce me to leave this, independent of other considerations which render a more prolonged residence impossible. My next point of ascent is the Shewarrys near Salem, but, had I time for it, I long to go over some other hills, a large detached mass about twenty or twenty-five miles distant from this. From the Shewarrys I visit the Neelgherries for a short time, and then must be guided by circumstances as to my future progress.

*October* 1. (Half-way down the hills.)—Your letter of the 21st May reached me on the 27th, that of the 2d on the 30th September, on my return from my excursion. Many thanks for your *clavis* of the *Convolvulaceae*; I shall set about collecting them with good will, for hitherto I have paid little or no attention to them, because I never could be sure of either genus or species; now the case is altered. I have as yet seen only two to examine; the one came out readily, *Ipomoea obscura*; the other *Argyreia, cuneata*, is not an *Argyreia* but a *Rivea*, having a 4-celled ovary : the mistake has originated from the fruit examined being somewhat advanced, and not in the state of the ovary, one half of which becomes abortive at an early stage ; even when considerably advanced this shows the abortive ovules, each in their more abortive cell. Notwithstanding this error of Choisy, from whose memoir principally you mention having drawn up the *clavis*, I intend having it copied out and published in the *Madras Journal*, as a communication from you, with drawings of some species to illustrate the mode of using it, and I shall accompany it with a request that those who find species in the peninsula not referrible to any one in it, will have the kindness to send me specimens to enable us to render that portion of our work more perfect. I shall keep a sharp look

out myself for those we have not. I have met with two if not three species of *Cuscuta*, one the other day on the hills, but not in a very good state ; it seems to prefer the *Guatteria ovalifoUa* as its domicile; the flowers are rather large and prettily speckled. I have at length detected flowers of the *Vaccinium* ? mentioned above, and enclose you a small drawing of it; it forms a large tree with a short trunk, and many large spreading branches, leaves somewhat coriaceous and glabrous, flowers white. To-day I have procured fruit of a *Magnolia*^ but the tree looks somewhat different from the one I saw on the tops of the hills, so that I cannot at present, without examination, decide if it be the same; the carpels burst down anteriorly from top to bottom, and not transversely, which I believe makes the difference between *Magnolia* and *Michelia*; that which I got to-day is a noble tree. What makes me think it not distinct from the species on the hills is, that the number of seeds, together with one or two that are abortive, (but of which I see the remains,) correspond to the number, of 3—5 ovules, in the other. Yesterday's herborizing yielded me a few specimens of what I consider a new *Parnassia*; it has capitate glands by way of nectaries, and very small flowers. But you must have patience about getting specimens of these things, for I know not when I shall see them again myself. I send all off in a few days to Palamcottah, and continue my journey; but be my return soon or late, I shall not relax my efforts to improve on the past. When I came to that part of your letter in which you speak of seeds, I could not avoid exclaiming " et tu *Brute* !" for in truth these are the pests of my life ; people suppose that there is nothing more easy than for a Botanist to collect seeds : according to my experience, nothing is more difficult. There is the widest possible difference between seeds on a specimen, and seeds *per se*: the one I always look for the other I never think of, and have made and broken so many promises on that point, that I fear to make more. I shall however do what I can both for you and De Lessen. I have at present three plant collectors, all as bad as myself at col-

lecting seeds, but shall endeavour to procure a fourth for the express purpose, so that there is hope that I shall in future be able to supply at least a part of the applications which are made to me for them.

P.S. I have just been examining the supposed *Vaccinium*, and find it a *Thibaudia* or *Gaylussacia*, or neither; unfortunately, I have not Kunth's Synopsis by me, and Sprengel is my only authority; but I suspect it to be a new genus which will embrace several other Indian species. The pendulous placentae with pendulous ovules all round the margin are very peculiar, and the after enlargement and union of the placentae with the axis, forming ten cells out of five is not less so; such is the case. I may one day make it the subject of a paper for our *Journal*^ but I shall first write to Wallich for specimens of the other species in order to have them all well examined.

[The *Vaccinium*? belongs to Don's genus *Agapetes*, but the character given does not accord with any species I have examined: the anthers have two small recurved aristae or horns at their back at the bottom of the tubes, which are quite free, and open each by a round pore at the apex.—ARN.#]

---

## XVI.—BOTANICAL INFORMATION.

---

[The letter from Mr Gardner printed at page 134 of this volume, was soon succeeded by the following one of so late a date as the 4th of August, of the present year, 1840; and we are sure our readers will rejoice at the invariable success which has attended the researches of this zealous Botanist.]

» Soon after this letter, Dr Wight received an appointment at Madras, where he is actively engaged superintending the publication of his *Illustrations of Indian Botany, and his Icones*.

Vol. III.—No. 20.           2 D

CIUDADE DIAMANTINA, (formerly Tijuco),

August 4th, 1840.

I MAKE use of the first opportunity that is afforded of sending letters from this place, to inform you that I arrived here safely, eight days ago. Gladly would I give you a particular account of my journey from the Villa de Arrayas, but as I am now very much occupied with drying and arranging, preparatory to sending off our late collections, it is needful to defer these details till some future time. I may however mention that we started from Arrayas on the 6th of May, and arrived at San Romao on the Rio Francisco, on the 21st of June. During the journey I collected upwards of four hundred species of plants, among which there are many fine *Composite*, particularly from the Serra Qual, which divides the province of Goyaz from those of Pernambuco and Minas Geraes. Between the Rio San Francisco and this place, my researches were also tolerably successful; and though I am unable to state the exact number of species, there cannot be much fewer than two hundred and fifty. You will perceive that (from this and my former statements) I have collected during last year considerably more than two thousand species. Although the country in this neighbourhood has a bare, rocky, and barren like appearance, it is very rich in new and striking plants. Owing to my arriving with all my drying papers full to the very brim with green specimens, I have as yet been able to make but two or three short excursions in the neighbourhood, during which I have found many fine plants, such as three species of purple *Vellozia*, one of them very dwarfish and growing in clusters, exactly resembling the purple variety of *Crocus vermis*; two kinds of *Physocalyx*, several *Vaccinia*, a beautiful *Arbutus* and *Mubus*, two *Lupines* of which forms a large shrub, many noble *Melastomaceae* numerous *Composite* particularly those belonging to Dé Candolle's subdivision *Albertini* many *Lychnophoraceae* *Hallostegium*, *Lychnocephalus*, ^ The genus *Lychnophoraceae* ^ £ most remarkable one, some of the species have the habit of

*Pines* and others of *Vellozia*. I have also found some fine species of *Barbacenia*, *Diplusodon*, *Eriocaulon* > *Hyptis*, *fyc*.

I would willingly make a stay of a month in this place, where the botanical treasures would well reward my labours, but want of pecuniary funds prevents me.<sup>#</sup> Notwithstanding all my care, I find my stock reduced to thirty dollars, and here there is no means, owing to want of communication with Rio, for raising any more. My situation is thus very embarrassing. On the journey I was obliged to buy more horses, my own saddle horse having been stolen from me at San Romao. Many of those now with me are so cut up by the bad roads and worse pasture, that they have become perfect *Rozinantes*; and I cannot exchange them for better ones, not having money to give to boot. I had expected to find an English physician here, who would have lent me some money on a bill on Mr Harrison's house; but, a few months ago, this individual removed to Minas Geraes. I am however told that there is an English Mining Company about a day's journey from Valla de Principe, and so there I shall apply, trusting that they will not be so deficient in Christian feeling as to allow me to ask in vain, for what a countryman only can be expected to supply. Here every thing is so dear that I do not think above half a dozen dollars will be left me on my departure from this city, and how long that small sum may last I would have you to imagine. Another consideration which renders me most anxious to proceed, is the hope of receiving letters from yourself and from my friends and relations. It is now two years since the date of the last communications that have reached me, and what changes may not have taken place in that period !| I can hardly doubt

<sup>#</sup> Could our letters have reached Mr Gardner which were written two years ago, or any communications from Messrs Harrisons' house at Rio, he would have had the satisfaction of knowing that his pecuniary resources are in a very favourable state, owing to the readiness of Botanists to purchase his valuable collections,—ED.

<sup>t</sup> Mr Gardner's forebodings were too well founded; his father having died in Glasgow, early in the present year (1840); it is now nearly twelve months since we attended his remains to the grave.—ED.



that my first news, after this long lapse of time, will communicate the tidings that some beloved relative is no more, and this anticipation is a sad drawback to the delight which such a journey as mine affords to the Botanist. As I have not time to write to my parents by this opportunity, I shall consider it a great favour if you will inform them that I am in excellent health and spirits, and they will soon hear from myself.

It is impossible for me to form any idea of the state of my funds, as I have heard nothing of my collections, sent from Ceara and Piauhy, but I trust they reached you in good order, and if my present collection arrives safe, it will bring me much more than will cover the expenses of the journey, and thus afford me some recompence for the toils, privations, and fatigues that I have undergone during the last three years. Besides my dried plants, I have gathered many valuable seeds, including: those of the finest flowering shrubs and herbaceous plants of Brazil. Among these there are no less than twenty species of *Diplusodon*, which as you know is a noble genus, two of *Physocalyx* and many kinds of *Vellozia*.

I do not expect to be able to reach Rio Janeiro before the beginning of October, nor do I believe that it will be possible to send any thing home earlier. I have collected a few charming *Orchidece*, among them a fine species allied to *Cattleya*; it is rare to find it in flower at this season, but I have obtained a few specimens in that state. *Cacti* are very uncommon here.

I have visited some of the Diamond mines in this neighbourhood, and have seen abundance of beautiful diamonds; but alas! those which I was able to bring away are few in number! From the elevation of this place, and this being also the coldest season of the year, we are all suffering somewhat from the cold, to which we are rendered the more susceptible from coming from the hottest provinces in the country. At night we feel it most, and I regret that I can neither give to my men, nor afford myself the money to purchase, an additional supply of bed-clothes. In the times however will soon, I trust,

mend with us all. This morning was particularly chilly; the thermometer down to 60° at dawn, so that I shiver when I write at such a change from what I have been accustomed to for three years, when the thermometer has continually ranged from 80° to 90° and upwards. I have been informed to-day of the death of St Hilaire, who is still well remembered by many people here. A newspaper from England would be a great treat to me, but I must still have patience.

G. GARDNER.

---

[While the above letter was in print, we are gratified by the receipt of the following, which is the more welcome to Mr Gardner's friends and to his family, as coming at a time when reports were in circulation of his having come to an untimely end, (previous to its date,) owing to the fury of the populace in the disturbed district through which he was passing. The letter alludes to circumstances indeed of a private nature, yet I have been unwilling to withhold them from those readers who have felt an interest in this meritorious naturalist; for the manner in which he mentions them is alike creditable to his head and heart.]

MORRO VELHO GOLD MINES, NEAR SABARA,  
PROVINCE OF MINAS GERAES, *Sept. 2d*, 1840.

MY DEAR SIR,—I hasten to inform you of my safe arrival here on the 29th of last month, and of my having found waiting my coming all the letters which have been sent to me from England, since the last parcel which reached me at Crato, and among these I have to acknowledge the receipt of eight from you, viz., 18th Feb., 1838, and 22d Oct. of same year; 2d Jan., 20th June, and 27th June of 1839; and also 29th Dec. of same year, 6th Feb., and 10th April of 1840. These, as you may well imagine, I cannot at present answer seriatim, this being more intended as an acknowledgment of having received them than any thing else. The melancholy accounts, of which several of them are the bearers, have affected me not a little—knowing the bad state of health under which my mother has laboured for a long series of years, I counted as almost certain upon news of her death—and although happily disappointed, the intelligence of the decease

of my father, being altogether unlooked for, has affected me the more deeply. I beg of you to accept of my best thanks for the kind attentions which you paid to the family, and to his remains, as well as for the feeling letter which I have received from you on the subject. Believe me that I feel more than I am able to express, the deep obligations which I owe to you, as well as to my excellent friend Mr Murray, for the very great interest which you have both taken in my welfare ever since I had the good fortune to become acquainted with you; and your present attentions cannot fail to render these obligations deeper than ever. Of your son William's death I had accounts a few days before I reached this place, from Roger Rigby, Esq., who I believe is a cousin of Lady Hooker. I met with him at the Cochaes Mines, and from him I had indeed a very kind reception. Poor William! cut off so early, and under such melancholy circumstances! The duke of Bedford's death has been a source of deep regret to me on many accounts. He was indeed a noble patron of science, and I feel certain, that "take him all in all, we ne'er shall look upon his like again." I am much obliged to you for your kindness in sending me the very interesting memoir which you have drawn up on him. I have read it with great interest, and from it have learned more than ever the extent of the interest, which, through you, he took in my wanderings, and the extent of his liberality towards me. It would indeed be selfish in me to wish that he had lived longer on my account: what I regret more, and what every lover of our favourite science must deeply regret, is, that he did not live to finish, or at least make a beginning, of the great national scheme which he had so deeply at heart, and with which you were to have been so intimately connected.

Since I last wrote you I have met with a severe loss. The very day on which I sent away my last letter to you, which was dated from Tijuco, three of my horses died, and shortly afterwards five more. This was no doubt occasioned by the cold rainy weather which set in for about a week after our arrival, they having been always accustomed to the great heat

of the inland provinces. The others getting into a miserable state, I was obliged to sell them for almost nothing, and since then I have been obliged to hire mules at a considerable expense to take me on. Harrison's people are the agents for this mine, and from Mrs Herring, the lady of the Chief Commissioner—he himself at present being at Rio—and from Mr Crickitt, who is acting in his place, I have received the greatest kindness and attention. Mrs H. is intimately acquainted with De Candolle, of whom she often speaks. She tells me also that the unfortunate Sellow was a frequent visitor at their house during his journeyings in Minas. I have been very particular in my inquiries both of her, and many other individuals of his acquaintance, respecting his death; and I am happy to be able to inform you, for the sake of the memory of this excellent man, that the universal impression is, that it was *accidental* and not *intentional*. Between Tijuco and this place I have made another splendid collection of plants, which I am sure will give satisfaction to my subscribers. I have in all now somewhere about 2400 species. Of late I have been very ill off for want of money, and I thought it very hard to be travelling in the famous *El Dorado* without a sixpence in my pocket. I am now however in a place where all my wants are willingly supplied. It is indeed a great satisfaction to me to have met with the great kindness which I have experienced here after a journey of about 3000 miles through the inland deserts of Brazil. I expect to be in Rio about the middle of October, and will then send you a long letter. You did right in sending my collections, for distribution, to Pamplin. The long letter which I have received from my friend Dr Joseph, I intend to answer also from Rio. With every good wish for the happiness of yourself and family, believe me ever to be, your most grateful and obliged servant,

GEORGE GARDNER.

XVII\_\_ *On the Genus HARPALYCE.* By GEORGE BENTHAM, ESQ, F.L.S., &c, &c, &c.

AMONG the *Leguminosa* collected by Mr Gardner in the Province of Ceara, is a very handsome red-flowered perennial, in which the structure of the flower is so peculiar, and so unlike any hitherto described Brazilian genus, that Mr Gardner, in sending it home with the No. 1548, thought himself justified in considering it as a new one, and requested that he might be allowed to dedicate it to his friend Mr Bowman,

On receiving my set, I immediately recognised this plant as one which I had examined and obtained specimens of when at Vienna in the winter of 1836-7, from the rich Brazilian collections of the late Dr Pohl. I then characterized it as new, but unable to satisfy myself as to its affinities, deferred the publication of my genus. On my return to this country I received it again from the Imperial Academy of St Petersburg, and was about to insert a note upon it in my account of Mr Schomburgk's Guiana *Leguminosce*, when the **second parcel of Martius's "Herbarium Flora Braziliensis,"** reached me, containing the same plant under the No. 587; and the fear of adding another to the numerous Leguminous genera published under two names at the same time by different authors, has deterred me from noticing it, although it occurs again amongst Claussen's *Leguminosce*, which I owe to the kindness of M. Delessert, and which I have undertaken to name; and much as I should be desirous of complying with the wishes of so zealous and intelligent a collector as Mr Gardner, I should still have thought it better to wait till I could ascertain whether it has or has not been named by Dr Martius, were I not now persuaded that it belonged to a genus already published, but -which it is not likely any botanist should refer it to, unless led to it as I was in some measure by mere chance.

In studying the characters of the Leguminous « *Genera non satis nota?* with a view to a general arrangement of the

order, I was struck with the peculiarities of the *Hai'palyce* of Moçino and Sesse's *Icones*, as published in the *Prodromus*, and having obtained through the kindness of Professor de Candolle, a copy of the original drawing from which his generic characters were taken, I am now convinced, that, making due allowance for evident inaccuracies in the drawing itself, the two plants belong to one genus. I have therefore no scruple in adopting the published name, and subjoining an amended character for the genus, with a description of the Brazilian species.

HARPALYCE, *Mof. et Sess. PL Mex. ined.*—*DC. Prod. II.*  
p. 5\*23.

*Calyx* tubo brevissimo, limbo elongato bipartito, laciniis integris deciduis. *Corolla* papilionacea; *vexillum* amplum, ovato-orbiculatum, basi breviter unguiculatum, ecallosum, exappendiculatum; *alee* vexillo breviores, oblongo-falcatae, basi hinc auriculatae; *carina* vexillo sublongior, linearis, obtusa, apice cum genitalibus contorta, petalis basi liberis auriculatis, superne dorso connatis. *Stamina* monadelphica, tubo superne fisso, filamentis vexillari supra medium (v. interdum a basi\*?) libero. *Antherae* lineares basifixae, alternae dimidio breviores. *Vagina* in disco nulla. *Ovarium* sessile lineare, pluri-ovulatum, glabrum. *Stylus* *RYrior mis.* *Stigma* parvum, capitatum. *Legumen* oblongum, compressum, coriaceum, bivalve, intus transverse multiloculare. *Semina* oblonga, strophiolata. *Embryo* rectus. *Cotyledones* carnosae. *Radicula* brevissima.—Herbae perennes, erecta, ramosae. Folia impari-pinnata. Racemi axillares v. terminates. Pedicelli solitarii unijlori.—Bractesae et bracteolae lineares, deciduae.

1. *H. formosa* (*Mof. et Sess.*—*DC. I. c.*) foliis obovato-oblongis basi angustatis.—In Mexico. (Char, ex Icon. TAB. V.)

In the specimens I examined for making the drawing, the stamens appeared to be truly monadelphous, with a cleft above, yet Mr Gardner in his notes describes them as "diadelphous, one-nine."—ED.

TAB. V. *Harpalyceformosa*; from the original drawing in possession of Professor De.Candolle. *Fig.* 1. Calyx and pistil; *f.* 2. Petals ; *f.* 3. Stamens :—*slightly magnified*.

2. *H. Brasiliana*, foliolis oblongo-ellipticis basi rotundatis subcordatisve. (TAB, VI.)—In Brasilia. Sierra do Manuel Gomez, *Pohl.* in petrosis, Aldea do Chapada, *Herb. Acad. Petrop.*; *Martius, Herb. Bras. n. 587*; **Caxoeiras do Campos** prope Rio San Francisco Prov. Minas Geraes, P. *Claussen*; **Prov. Ceara, Gardnern. 1548.** (Piauhy. *Gardner n. 2111.* ED.)

Herba perennis, erecta, 2—3-pedalis. Caulis ramosus, striatus, uti folia racemi et calyces dense velutino-tomentosus, tomento siccitate ssepius rufescente. Stipulas nullas vidi. Foliola opposita exstipellata, 5—10-juga cum impari, brevissime petiolulata, 1— $\frac{1}{2}$ -pollicaria, obtusa, penninervia. Folia floralia paucifoliolata v. suprema unifoliolata. Racemi in axillis supreniis 2—6-pollicares, laxiusculi. Bracteseante anthesin deciduse. Pedicelli 3—5-lin.longi. Bracteolae sub calyce lineares, ante anthesin ssepius deciduse. Alabastra linearifalcata, obtusa, demum pollicariav.parum longiora. Calycis tubusvix 1 lin. longus, late campanulatus, limbi pollicaris lacinia superior apice cucullata, inferior acuminata. Corolla rubra.\* Legumen rectum, glabrum, 2—3 poll, longum, 6 lin. latum, intus dissepimentis transversalibus cartilagineis inter semina septatum. Semina fusca, funiculo 1<sup>^</sup> lin. longo, strophiola crassa albida, testa dura laevi, cotyledonibus cypsis carnosus, embryo brevissimo, radícula obtusa vix prominula.

TAB. VI. *Harpalyce Brasiliana.* *Fig.* 1. Vexillum ; / 2. One of the alse; / 3. Carina; / 4. Calyx and pistil *slightly magnified*; *f.* 5. Pod partly laid open to show the cells and seeds :—*nat. size*.

The Mexican figure (TAB. V.) represents a rather stunted

\* Mr Gardner gave to his plant the specific name of *coccinea*: on the label to the Petersbiiirgh specimen is written *Fl. purp.* It is probable that the real shade of colour may be between the two.

side branch springing almost from the root, the central stem being cut off. The foliage and inflorescence are the same as in the Brazilian species with the exception of the form of the leaflets. The flowers, very rudely represented, are also very similar, the buds are of the same form but rather thicker, the bracteolæ are generally misplaced, and to some buds as many as four are given. In a separate representation of the calyx both divisions are made to terminate in a long sharp point, though the bud is as blunt as in *H. Brasiliana*. The ovary is represented precisely as in *H. Brasiliana*^ the pod is sessile, narrow and without seeds at the base, broad in the upper part, where five or six seeds are represented as forming protuberances in the pod. This pod is stated to be bilocular, though with some doubt, and it is not mentioned in which direction the cells are placed; I should suspect it to be transversely plurilocular as in *H. Brasiliana*.

The evident affinities of *Harpalyce* are with *Brongniaria*, (including *Peraltea*, now generally, and probably with reason, united to it), which has also the peculiar combination of the habit and flower of *Galegea*, with the fruit of a *Cassia*; and following up the principle I have elsewhere adopted, of giving more importance to the aestivation and relative position of the parts of the flower, than to the characters derived from the pod and the seed, both genera would be included amongst *Galegece*. Perhaps, however, when the *Brongniartice* are better known, as well as some other Mexican and Peruvian plants which appear to have some relation to it, it is not unlikely that a distinct subtribe may with propriety be formed to receive them.

Mr Don has established a genus *Megastegia*, which he suggests may be the same as *Harpalyce*, but his character, if accurately given, is at complete variance with it. There is nothing in *Harpalyce*, at all resembling the large bracts he mentions, unless it be the divisions of the calyx, which cannot have been mistaken for them, as Mr Don distinctly describes a calyx within them; *Megastegia* is probably therefore a third genus belonging to the same group.



XVIII.—*Contributions towards a Flora of South America.—Enumeration of Plants collected by MR SCHOMBURGK in British Guiana.*—By GEORGE BENTHAM, ESQ., F.L.S., &C. &C.

(Continued from Vol. II. p. 3\*24.)

**RIJBIACEJE.**

Tribe, GARDENIE;E.

440. *Amaioua saccifera*, Mart.—DC. *Prod.* iv. 370.—Swamp on the Rio Padawire, *Schomburgk*.—The flowers in the single specimen before me are all male by abortion, the ovarium being rudimentary only.

441. *Genipa Americana*, Linn \_\_DC. *Prod.* iv. 378.—British Guiana, *Schomburgk*. n.208.—Presl's *G. barbata* appears to me to be the same plant.

442. *G. Caruto*, Humb. et Kunth \_\_DC. *Prod.* iv. 378.—Rio Branco, *Schomburgk*. n. 796.

Gardner's n. 1042 from Pernambuco is a *Genipa*, apparently new.

443. *Sphinctanthus rupestris*, gen. nov.—Rocks on the Rio Negro, *Schomburgk*. n. 900.

*Char. gen. Calycis tubus* turbinatus, *limbus* brevis, laxis, breviter 5-dentatus. *Corollae tubus* calyce longior, superne sub luce contractus, intus annulo pilorum barbatus; *limbus* 5-lobus laciniis patentibus, aestivatione contorta. *Stamina* superioribus inserta, antheris oblongis subexsertis. *Ovarium* carnosius, bilobis ovulis numerosis in placentis pulposis nidulantibus. Stigmata exserta, lobos duos stigmatiferos incrassatus.

*S. rupestris.* Frutex 6-pedalis, ramulis glabris, sub axillis ssepe compressis. Folia 2-3-pollicaria, ovato-lanceolata v. oblonga, utrinque angustata, obtusè acuminata, membranacea, glabra. Stipulae utrinque solitariae, adpresse, breves, latae, acuminatae. Flores ad apices ramulorum 1-2, sessiles. Calyx 3 lin. longus, limbo 3 lin. diametro, dentibus parvis acutis. Corollae tubus 6 lin. longus, elongato-conicus, crassus, striatus, tomento brevissimo pubescens, laciniis obtusiusculis fere 5 lin. longis. Stigmata exserta.—Flores, teste Schomburgkio, luteae.

This genus, of which I have not seen the fruit, is evidently

near *Posoqueria* and *Bandia*, having something of the habit of the latter, but the calyx and corolla are of so peculiar a form, that I am induced to consider it as distinct. The structure of the ovary leaves no doubt as to its being rightly placed amongst *Gardenieae*.

444. *Randia hebecarpa*, (sp.n.); spinis oppositis, foliis ovatis membranaceis junioribus pubescentibus, floribus ad apices ramulorum sessilibus solitariis pentameris, calyce tomentoso hirto, laciniis limbi lanceolatis acutis, corolla extus pilosula, tubo calycis limbo duplo longiore, limbi laciniis oblongo-ovatis vix tubo brevioribus.—*JR. armatce* affinis. Spinae oppositae ad apices ramulorum sub gemma florifera anni sequentis ortae. In fructu juniore, calyces extus pilis brevibus densis canescunt. Corolla alba, tubo semipollicari.—British Guiana\* *Schomburgk*. n. 775.

445. *Randia Mussandce*, *DC. Prod.* iv. 388—British Guiana, *Schomburgk*. n. 330.

Gardner's n. 1692 from Ceara is a *Randia*.

446. *Posoqueria lo?igiflora*, *Aubl. DC. Prod.* iv. 375.—British Guiana, *Schomburgk*. n. 330.

447. *P. latifolia*, *Cham, et Schlecht.*—*DC. I. c.*—British Guiana, *Schomburgk*.—There are two single specimens from different localities; in the one the corolla is about five inches long, in the other it is more slender and scarcely four inches long; in the latter the leaves are also smaller. In both they are thick and shining with the lateral veins scarcely prominent.

448. *P. Trinitatis*, *DC. I. c.*—British Guiana, *Schomburgk*^ a single specimen.—Leaves larger than in *P. latifolia*^ the veins prominent on the under side. Flowers numerous, slender, full five inches long. Stipules ten lines long.

Gardner's n. 449 from the Organ Mountains is also a *Posoqueria*. His n. 2197 from Piahy is *Tocoyena hirsuta*, Moric, and his n. 1043 from Pernambuco, and 1337 from Alagoas are also specimens of *Tocoyena*, a genus which I do not find among *Schomburgk*'s.

449. *Coccocypselum canescens*, *W'dld.*—*DC. Prod.* iv. 397.—British Guiana, *Schomburgk*. n. 268.

450. *C. Tontanea* *Humb. et Kunth.*—*DC, I. c.*—French GmV

na, *Leprieur*.—Gardner's n. 459 from the Organ Mountains is *Coccocypselum nummularicBfolium*^ Ch. et. Schl.

Tribe, CINCHONEJE.

451. *Cinchona Roraimce*, (sp. n.); foliis amplis ovali-ellipticis basi cuneatis crassis supra glabris, subtus ramis paniculae oblonga dense rufo-pubescentibus, calycis limbo 5-dentato, corollae crasse extus hispidse laciniis limbi intus glabriusculis.—*C. macrocarpce*, Vahl. similis, sed in hac folia basi truncata, corolla crassior tubo parum brevior adpresse pubescente nee hispido, limbi lacinae latiores. Folia in *C. Roraima* fere pedalia. Panicula plusquam sex poll, longa, parum ramosa, axi sub ramificationibus compressa. Bractee ovato-lanceolatae deciduae. Calycis dentes breves, lanceolatae, acutae. Corolla pollicaris vel parum longior, alba, odoratissima, laciniis crassis oblongis.—A single specimen from among undershrubs in the Roraima mountains at an elevation of about 4000 feet, *Schomburgk*.

452. *Remijia teriuijlora*, (sp. n.); ramulis compressis pedunculisque leviter tomentosus v. demum glabratis, foliis ovali v. oblongo-ellipticis vix coriaceis glabris, racemis interruptis folio brevioribus v. parum longioribus, cymis inferioribus remotis pedicellatis, floribus pentameris, corollae tubo calyce pluries longiore.—Frutex habitu *Remijiis* australibus simillimus. Folia 4-6-pollicaria, acuta v. obtusiuscula, basi cuneata. Stipulae foliaceae, lanceolatae, deciduae. Pedunculi et pedicelli compressi, apice uti flores et bractee tomentosis v. brevi canescentes. Flores in cymis subsessiles. Bractee lanceolatae, acutae. Calycis limbi lacinae parum inaequales, acutissimae, post anthesin auctae. Corolla gracilis, alba, tubo 6-7 lin. longo, laciniis linearibus crassiusculis 4-5 lin. longis, aestivatione valvata. Antherae medio tubo subsessiles. Stylus filiformis, lobis linearibus crassiuscule stigmatiferis, capsula oblonga, 7 lin. longa, septicide dehiscens, valvulis intus. Placentae lineares, crasse. Semina pauca, placentas appressa v. subimmersa, peltata, utrinque in alam oblongam membranaceam producta.—Barcellos on the Rio Negro, *Schomburgk*, n. 952.

453. *R. densiflora* (sp. n.); ramulis compressis pedunculisque adpresse pubescentibus, foliis ovali-ellipticis coriaceis glabris supra nitidis, pedunculis folio longioribus apice corymbosis, floribus tetrameris, corollae tubo calyce vix longiore. —Frutex 12—15-pedalis. Folia 4—5-pollicaria, acuminata, basi in petiolum brevem angustata. Stipulae membranaceo-foliaceae, lato-lanceolata?, obtuse, deciduae. Pedunculi infra corymbum 7—8-poll. longi. Folia sub corymbo duo ovata, acuta, corymbo breviora. Bractea lineares, floribus breviores. Corymbus densus. Flores sessiles. Calycis laciniag post anthesin auctae, valde inaequales. Corolla extus villosa, tubo vix 3 lin., laciniis 1<sup>^</sup> lin. longis. Genitalia et fructus ut in praecedente, niscapsula parumlongior tenuior.—Mount Parima. *Schomburgk*.

Both De Candolle and Endlicher, in drawing up the character of *Remijia*, from Aug. de St Hilaire's description, state the valves of the capsule to be bifid, but this is a mistake. St Hilaire's words are, "s'ouvrant en deux valves par le milieu de la cloison, dont chaque moitié présente alors dans son milieu une interruption linéaire," an obscure expression, in which however the relative *dont* refers to the *cloison* not to the *valves*. It is true he adds " (dehiscence loculicide)," but this is evidently a slip of the pen, as it neither accords with what immediately precedes, nor yet with the positive statement (p. 5) that the three plants in question agree with *Cinchona* in their septicial dehiscence, and that *Macrocnemum* differs from them by the loculicidal dehiscence. In both the new species described above, the valves are perfectly entire.

*Exostemma australe*, A. de St Hil., *E. formosum*, Cham, et *Schlecht.*, and probably also *E. cuspidatum*, A. de St Hil. which last I have not seen, are certainly not truly congeners to the West Indian *Exostemmata*, for besides the marked difference in the form of the flower and anthers, and in the habit, the ovules of the South Brazilian species are horizontal without any perceptible membranous expansion, whilst those of the true West Indian *Exostemmata* are ascending, imbricate, flat and membranous at the time of flowering.

454. *Calycophyllum coccineum*, DC. *Prod.* iv. 367.—San Gabriel on the Rio Negro, *Schomburgk*, n. 1011.—The specimens are perfectly similar to those I have from Trinidad.

455. *Buena triflora*; foliis ovali-ellipticis obtusis, floribus ternis pedicellatis, corollae limbi laciniis oblongis obtusis.—Arbor 20—30-pedalis. Ramuli crassi, subcarnosi. Folia 3—5-pollicaria, petiolata, crassa, nitida. Stipulae ovatae obtusae v. emarginatae, membranaceae, deciduae, vel florales subpedicello persistentes. Pedicelli fere pollicares. Calycis tubus turbinatus, limbus deciduus, breviter 5-fidus. Corollae tubus 3—3 | poll, longus, crassiusculus, glaber; limbi lacinae ultrapollicares, intus minute subpuberulae, aestivatione contorto-imbricativa. Antherae superiori tubo insertae, lineares, obtusae, basi sagittatae, e fauce dilatata breviter exsertae. Stylus breviter exsertus, stigmatibus crasso bilamellato. Ovarium biloculare, placentae in quoque loculo magnae bilobatae, ovulis numerosis adscendentibus imbricatis, appendice membranacea apice lacera terminalis.—Falls of the Rio Quitaro, *Schomburgk*. n. 553.

The above species is truly congener to the Peruvian *B. acuminata*, and *B. obtusifolia*, and form a very natural genus very nearly allied, it is true, to *Hillia*, but perfectly distinct from *Cinchona* by the form of the flower, and more especially by the aestivation of the corolla. The *Buena hexandra* of Pohl, and *Cosmibuena ochracea* of Endlicher, on the contrary, are as unlike them in habit as in character; they have the valvate aestivation, and as far as I can see, all the essentials of true *Cinchona*, with nearly the habit of *C. macrocarpa*, *C. Roraimae*, fyc

Gardner's n. 450, from the Organ Mountains is *Coutarea speciosa*, Aubl., his 2195 from Piahy is a new species of *Coutarea*, so also n. 2196 from the same province, notwithstanding its pentamerous flowers. No. 455 and 456, from the Organ Mountains, and 1699 from Ceara, belong to *Manettia*. Blanchet's n. 2838, from Serra Acurua, is *Coutarea mollis*, Cham.

## Tribe, RONDELETIÆ.

456, *Aspidanthera Rudgeoides*, gen. nov.—Islands on the Rio Negro, *Schomburgk*, n. 969.

CHAR. GEN. *Calyx* obovoideus, limbo brevissimo 4-dentato. *Corolla* tubus longus gracilis, faux dilatata nuda, limbi lacinae 4, latae, obtusae, patentes, assivatione contorto-imbri-cativa. *Stamina* 4, medio tubo inserta, exserta. *Anthers* lato-ovatae, recurvo-convexae. *Ovarium* subcarnosum, biloculare, ovulis in quoque loculo plurimis biseriatis, deorsum imbricatis. *Stylus* filiformis, stigmatibus 2 brevibus divergen-ti bus. Fructus . . . .

*A. Rudgeoides*. Frutex glaber. Folia ovata v. ovato-lanceo-lata, 4—6-poll. longa, acuminata, basi late cuneata, membra-naceo-chartacea, suprema, sub inflorescentia, saepe parva co-lorata. Stipulse subfoliaceae, lanceolatae, 7—8-lin. longae, deciduae. Panicula thyrsoidea, densa, terminalis, ram is bre-vibus trichotomis, floribus subsessilibus. Flores albi, juniores tomento pulverulento cito deciduo vestiti. Corollae tubus 8—9-lin. longus, limbi lacinae crassiusculse, margine undulato-crispse. Ovulse in quoque loculo ovarii circa decem.

The appearance of the specimens is precisely that of the figure of *Rudgea lancecc/oUa*, Salisb., *Linn. Trans*, v. ix. t. 18; but the characters of the flower are totally different from that given by Salisbury. The genus is probably allied on the one hand to *Catesbaa*, on the other to *Rondeletia*.

457. *Rondeletia capitata* (n. sp.); foliis ovatis obtusiuscu-lis basi rotundatis utrinque ramisque hirsutis, stipulis longe subulato-acuminatis, pedunculis axillaribus folio brevioribus apice cymoso-capitatis, bracteis lineari-subulatis hirtis, flori-bus tetrameris, calycis hispidi laciniis linearibus, 2 niajoribus corollae hirtae tubo dimidio brevioribus.—Specimen unicum tantum suppetit. Folia pollicaria, brevissime petiolata, venis lateralibus utrinque circa 5 subtus valde prominentibus. Sti-pulse utrinque solitarise, hirtae, petiolo longiores. Corollae tubus tenuis 2 lin. longus, limbi lacinae J£ lin. Stamina inclusa. Stylus subexsertus, lobis stigmatiferis 2 subulatis.

Ovarium carnosulum biloculare, ovulis in quoque loculo pluribus, placentae crassiusculae affixis.—Mount Roraima, *Schomburgk*.

458. *Sipanea pratensis*, Aubl.—DC. *Prod. iv*, 414.—French Guiana. *Leprieur, Herb. Par. n. 173*.

459. *S. dichotoma*, Humb. et Kunth—DC. *l. c.*—Moist savannahs, British Guiana. *Schomburgk, n. 15 and 95*.

Tribe, HEDYOTIDEJE.

460. *Oldenlandia herbacea*, DC. *Prod. iv*, 425.—British Guiana. *Schomburgk, n. 17*.—Pernambuco, *Gardner n. 928*.—This plant varies much in the length of the peduncle, which is longer or shorter than the leaves, and though generally one-flowered, occasionally bears two or three flowers.

Tribe, HAMELIEJE.

461. *Evosmia ? corymbosa* (sp. n.); foliis petiolatis ovatis acuminatis supra glabris subtus junioribus ramulisque puberulis demum glabratis, pedunculis terminalibus corymbosis pubescentibus.—Frutex elatus v. arbor parva. Folia bipollicaria, longiuscule petiolata, subtus secus venas saepe barbata, demum subcoriacea. Stipulae anguste lanceolatae, acuminate utrinque solitariae, citissime deciduae. Corymbi trichotomi, ramulis compressis. Flores in ultimis ramis sessiles. Bracteolae calyce breviores, membranaceae, deciduae. Calycis tubus ovatus, limbus persistens 4—5-lobus, laciniis ovali-oblongis membranaceis obtusis tubo aequilongis, sinu obtuso separatis. Corolla breviter infundibuliformis, tubo 1 lin. longo, limbo patente 4—5-partito, laciniis oblongis fere 2 lin. longis, basi intus dense barbatis. Stamina tubo inserta, exserta. Antherae ovatae. Ovarium 4—5-loculare, loculis pluri-ovulatis. Stylus filiformis, apice in lacinias 4—5-lineares stigmatiferas divisus. Fructus (in specimine nondum maturus) fere globosus, vix carnosus, 4—5-locularis, loculis pleiospermis, seminibus angulatis, pulpo nullo—British Guiana (on the Berbice?) *Schomburgk n. 325*, on the *Qui taro*, n. 558, and on the Rio Branco, n. 794. Mr

Schomburgk states the wood to be deleterious, and that Indians have been poisoned by using it to make spits for roasting.—The inflorescence and some points in the character of the plant do not quite coincide with *Evosmia*, Humb. and Kunth, but the differences are scarcely sufficient to characterize a genus.

462. *Brignolia pubigera* (sp. n.); foliis subtus ramulis inflorescentiaque breviter pubescentibus, panícula ovata.—In omnibus fere cum descriptione *B. acuminata* convenit. Stipulse eadem. Folia in specimine unico 6—7-pollicaria, supra glabra lasevia, subtus pube brevi praesertim in venis donata. Paniculse rami oppositi v. verticillati, dichotomi. Flores in dichotomiis sessiles, rosei. Calyx turbinatus, limbo inaequaliter sinuato-dentato. Corollae semipollicaris lacinae limbi ovali-oblongae, patentés, tubo breviores. Stylus filiformis, apice globosus emarginatus, emarginatura stigmatifera. Ovarium 4-loculare. Csetera *B. acuminata*.—British Guiana, *Schomburgk*.—A single specimen.

463. *Sabicea cinerea*, Aubl.—*DC. Prod.* iv. 439.—French Guiana, *Leprieur, Herb. Par. n.* 101. and 102.—Gardner's n. 1697 from Ceara, appears to be a mere variety of this species with somewhat narrower leaves.

464. *S. glabrescens* (sp. n.); foliis oblongo- v. ovali-ellipticis acuminatis junioribus ramulisque hirtellis adultis glabratiss, stipulis late cordato-ovatis obtusis membranaceis, floribus pentameris fasciculatis sessilibus, calycis laciniis linearibus tubo corollae ter quaterve brevioribus.—Affinis *S. hirtella*, Swartz. Folia basi minus angustata et demum fere omnino glabra. Calycis lacinae 1 lin. longse, glabrse. Corolla hirta tubo fere 4 lin., limbi laciniis 1 lin. longis.—Abandoned Indian settlements on the Rio Quitaro, *Schomburgk, n.* 538.

465. *S. velutina* (sp. n.); foliis ovatis acutis basi rotundatis crassis supra velutino-hirtis subtus tomento subfloccoso denso albidis, stipulis ovatis acutis, floribus pentameris fasciculatis sessilibus, calycis lanati laciniis lanceolatis tubo corollae dimidio brevioribus.—Calycis lacinae 2 lin. longse, acutae. Co-



rolla rosea, hirta, tubo 4 lin. longo, laciniis limbi brevibus.—  
A single specimen from Mount Canaupang, *Schomburgk*.

Gardner's n. 1687 from Ceara, and 2198 from Piauhy, are two new species of *Alibertia*. Of 1151 from Pernambuco, I have male flowers only, but it appears to be the same species as 1687.

466. *Patima* ? *laxiflora* (sp. n.); foliis ovali-ellipticis utrinque glabris, pedunculis elongatis 5—9-floris.—Frutex divaricato-ramosus, glaberrimus, resinosus. Folia petiolata 2—4-pollicaria, obtusa, basi acuta. Stipulse breves, vaginantes. Pedunculi terminales v. demum axillares, 2-pollicares. Pedicelli oppositi distantes subsemipollicares. Flores pentameri, abortu dioici: MASC. Calyx tubulosus, truncatus, obscure 5-dentatus. Corolla? tubus breviter exsertus, intus armulo pilorum barbatus, limbus 5-fidus, laciniis sestivatione contorto-imbricativa. Stam. . . . Stylus filiformis superne incrassatus, acutus, ex ovarii rudimento carnosio ortus. FCEM. Bacca globosa, costata, calyce coronata, 5-locularis (in 5 coccus secedens?) placentis 5 duris bifidis. Seminumerosissima, minutissima, pulpa tenui involuta.—Of this I have seen two branches only, the one with a few male flowers half destroyed by worms, the other bearing two or three berries not yet ripe. On account of the remarkable structure of these fruits, I have placed the species under *Patima*; but perhaps the flowers when better known, may show it to be a new allied genus.

Tribe, ISERTIEJE.

**467. *Isertia coccinea*, Vahl—DC. *Prod.* iv. p. 437—**  
French Guiana, *Herb. Par.* n. 98.

468. *I. hypoleuca* (sp. n.) ; foliis ovalibus acuminatis basi acutis subtus albo-tomentosis, thyrso paniculato brevi multifloro, bracteis ovatis, calycis limbo truncato subintegerrimo.—Affinis *I. coccinea*, sed praeternotas supra datas, differt etiam petiolis longioribus, et corollis plus quam 2 poll, longis. In speciminibus suppetentibus corollae nonnullae, ah insectoquo-

dam punctae, breves evadunt infundibuliformi-campanulatse.—British Guiana, *Schomburgk*, n. 281.

Tribe, CORDIERE<sup>AK</sup>.

469. *Cordia*? *actiminata* (sp. n.); foliis oblongo-lanceolatis acuminatis utrinque acutis subcoriaceis glabris, corollae laciniis acuminatis acutis.—Frutex glaber, divaricato-ramosus, ramulis compressis. Stipulae utrinque integrse, ovato-lanceolatae, acutissimae, ramulo adpresse, parum conspicuae. Folia 3—4-poll. longa, supra nitidula, glaberrima. Flores in specimine suppetente abortu masculi, ad apices ramulorum terni, sessiles. Calycis liminis cupuliformis, margine pellucido truncato integro, tubo cum ovarii rudimento connato. Corolla hypocrateriformis, tubo 5 lin. longo, in sicco extus canescens, consistentia firma crassiuscula, laciniis 4 lanceolatis acuminatis, aestivatione contorto-imbricativa. Faux intus pubescens. Stamina infra faucem corollae inserta. Anthera 3 subsessiles, incluse, oblongo-lineares. Ovarii rudimentum carnosum, disco carnosio libero coronatum. Stylus erectus, inclusus, apice acutus. Flores feminei . . . . Bacca depresso-globosa? plurilocularis? Semina circa 10, irregulariter late ovoidea, compressa, hinc plana, testa membranacea, albumine subcorneo albido. Embryo brevis rectus, teres, cotyledonibus conferruminatis, radícula juxta hilum.—British Guiana, *Schomburgk*; a single specimen with male flowers only, and a loose berry too much broken to admit of ascertaining the number of cells, but on account of the few large seeds combined with the general appearance of the plant, it appears probably to be a *Cordia*.

470. *C.*? *latifolia*; foliis ovali-ellipticis obtusis v. breviter acuminatis basi cuneatis submembranaceis glabris, calycis margine obliquo, corollae laciniis acutiusculis.—Ramuli compressi. Folia 5—6-pollicaria. Flores in specimine unico omnes masculi, iis *C. acuminates* similes, nisi calyce paullo majore, margine obliquo, corollae tubo crassiore, laciniis paullo brevioribus.—British Guiana, *Schomburgk*.

Of Gardner's n. 1689 from Ceara, and 2460 from Piahy,

I have also male flowers only. The former appears to be allied to the preceding, the flowers are some tetramerous, some pentamerous. His n. 2460 is rather perhaps an *Aliberlia*.

It appears to me not improbable that *Gardeniola*<sup>^</sup> Cham., and possibly *Octavia*, JDC, will, when better known, prove to be referrible to *Cordia*, and that this genus will be found to have a four or five-celled ovary, with two ovules in each cell, of which either all or a portion only ripen into seeds. *Thieleodoxa*, Cham., would then differ only in the cells of the ovary being reduced to three. *Scepseothamnus gardenioloides*, Cham., described as having two cells with one ovule in each cell attached to the dissepiment by its flat face (which is unusual in the order), must remain doubtful. The two other species of *Scepseothamnus*, of which the male flowers only are known, may belong to any of the above genera or to *Aliberlia*.

471. *Retiniphyllum scabrum*, (sp. n.); foliis obovato-oblongis vix brevissime acuminatis basi angustatis coriaceis, supra demum nitidis, subtus scabro-pubescentibus, pedunculis terminalibus brevibus bifloris.—Frutex ramulis pilis rigidis hirtus. Folia ramulorum sterilium 3-4-pollicaria, supra ssepe praesertim versus marginem pilis minutis sparsis scabrida, caeterum nitida, subtus pilis rigidis brevibus appressis scabra; stipulae vaginantes, petiolo subaequilongae, acuminatae, utrinque apice bifidae, dense hirtee. In ramulo florifero stipulae (an delapsae?) ad vaginam brevem truncatam reductae; folia breviora quam in ramo sterili, omnia supra lasevia nitida. Pediculi gemini, rigidi, 2-3-lin. longi. Flores in quoque pedunculo gemini, subsessiles. Bracteolae breves cupulatae, dentatae. Calyx oblongus, 4-5-lin. longus, basi attenuatus, limbo tubuloso breviter 5-dentato. Corolla coccinea, extus pubescens; limbi lacinae oblongae, 5-lin. longae; tubus pollicaris, intus supra annulum pilorum pubescens, infra glaber. Stamina fauci inserta, exserta. Filamenta laciniis corollae parum breviora. Antherae ovatae, connectivo in acumen producto. Ovarium disco coronatum 5-loculare, loculis 2-ovulatis. Stylus pubescens, stigmate incrassato indiviso.—Axilla foliorum, pedun-

culi et calyces resinosi.—Gathered by *M. Schomburgk* in his excursion to Roraima and Esmeralda, but without the precise locality being indicated.

472. *Commianthus Schomburgkii*. (gen. nov.) Savannahs of British Guiana, *Schomburgk. n.* 179.

CHAR. GEN. *Calycis limbus* tubulosus truncatus, dentibus 5 brevibus setaceis persistens. *Corolla* tubus brevis, limbus 5-partitus, patens, laciniis aestivatione contorto-imbri-catis. *Stamina* fauci inserta, exserta. *F'damenta* crassius-cula. *Antherce* lineares. *Ovarium* carnosum, disco corona-tum, 5-loctilare, ovulis in quoque Ioculo 2 collateralibus. *Stylus* filiformis, superne incrassatus, apice brevissime 5-lobus, lobis stigmatiferis. *Bacca* globosa, calyce coronata, 5-ocularis, lo-culis abortu monospermis.

*C. Schomburgkii*. Frutex 10-15-pedalis. Ramuli pube brevi exasperati. Stipulae utrinque solitariae, late triangu-lares, breves. Spicse terminales simplices viscoso-pubes-centes uti flores gummam resinosa exsudantes. Flores fere oppositi sessiles, delapsi cicatricem oblongam in rhachide relinquunt. Calyx 2<sup>^</sup> lin. longus. Corollae tubus calycem vix excedens, glaber; limbus utrinque pilis adpressis pubes-cens, laciniis oblongo-linearibus 3<sup>^</sup> lin. longis.

#### Tribe, GuETTARDEIE\*

473. *Guettinvdamacrantha*, (sp.n.); foliis late ovatis breviter acuminatis basi obtusis, supra sparse pubescentibus, subtus sericeo-villosis, stipulis ovatis acutis undulatis, pedunculis folio brevioribus, floribus dense cymosis, bracteis lineari-lan-ceolatis calyce truncato integro parum brevioribus, corollae sericeae tubo longissimo, limbi laciniis 5-6-planis v, vix undu-latis.—Folia ampla fere *G. crispiflorae*, Inflorescentia *G. scabrce*. Corollae demum plus quam 2<sup>^</sup> poll, longse, albae, odore Rosae—Dry savannahs, British Guiana, *Schomburgk. n.* 778.

Gardner's n. 1152 from Pernambuco), and 1696 from Ceara belong to *Guettarda*.

## Tribe, CEPHAELIDJE.

474. *Cephaelis tomentosa*, Willd.—Z(7. *Prod.* iv. 538.—woods of the Essequibo, *Schomburgk*, n. 30.

475. *C. rosea*, (sp. n.); fruticosa, glabra, ramis teretibus, foliis elliptico-oblongis subovatisve utrinque longe acuminatis, stipulis utrinque binis subulatis basi breviter junctis, capitulis pedunculatis terminalibus glabris, bracteis numerosis late cordato-ovatis acuminatis flores longe superantibus.—Affinis *C. bracteocardiae*, sed capitulis glabris majoribus, bracteis majoribus numerosis et foliis latioribus abunde distincta.—Banks of the Essequibo, *Schomburgk*. n. 156.

476. *C. bracteocardia*, DC. *Prod.* iv. 533. **French Guiana.** *Leprieur*, *Herb. Par.* n. 156.

477. *C. violacea*, Willd.—DC. 1. c.—**French Guiana,** *Leprieur*.

Gardner's n. 1041 from Pernambuco, and 1317 belong to *Evea* of Aublet, as characterized by Chamisso, (*Linnaea* ix. 237), the ovary and fruit, however, of Aublet's original species are as yet unknown. One species (n. 1041,) is the same as *Salzmannia nitida*, DC, the other, (n. 1317,) appears to be Chamisso's *Evea Brasiliensis*. The ovary in both is bilocular, with one pendulous ovule in each cell; the fruit as described by Chamisso.

Gardner's n. 451 and 452 from the Organ Mountains, are species of *Suteria*, the former is very near to the *S. calycina*, which I have also from the neighbourhood of Rio Janeiro.

## Tribe, PSYCHOTRIE;E.

478. *Palicourea crocea*, DC. *Prod.* iv. 526 ?—British Guiana, *Schomburgk*,—A single specimen; stipules as in *P. riparia*.

479. *P. riparia*, (sp. n.); ramulis glabris, foliis breviter petiolatis ovali-lanceolatis acuminatis basi rotundatis v. vix angustatis margine undulatis supra glabris subtus secus venas hirtellis v. demum glabris, stipulis vagina brevissima parvis demiformibus, panicula longe pedunculata subcorymbosa. —Frutex. Folia 4-6 poll, longa. Pedunculus folium

superans, superne angulatus compressus. Corolla lutea, tubo intus annulo pilorum barbato, basi gibbo, laciniis limbi brevibus reflexis. Bacca (teste Schomburgkio) nigra.—Affinis *P. crocece*.—Banks of rivers, British Guiana, *Schomburgk*, n. 337—In these specimens the anthers are included within the tube, and the style is exerted, but in *Palicourea*, as well as in *Psychotria*, the proportionate length of the stamens and style is variable in the same species, depending apparently on sexual distinctions.

480. *P. Guia?iensis* §, Aubl—DC. *Prod.* iv. 509.—Sandy soil, British Guiana, *Schomburgk*, n. 497.—I have two specimens: in the one, with exerted stamens, the leaves are near a foot long, of the form figured by Aublet, and nearly smooth; in the other, with exerted style, the leaves are broader and rough on the surface.

481. *P. rigida*, *Jffumb. et Kunth*—DC. *I. c.*—Savannahs, British Guiana. *Schomburgk*, n. 264.

Gardner's n. 447, and 448, from the Organ Mountains, and 1040 from Pernambuco belong to *Palicourea*.

482. *Psychotria Mapouria*, *Ream. et Schull*—DC. *Prod.* iv. 509.—British Guiana, *Schomburgk*—a single specimen.—The characters by which the group of *Mapoutrice* are maintained by Endlicher as distinct from *Psychotria*, appear scarcely sufficient to constitute more than a section.

483. *P. (Mapouria) remota* (sp. n.); glabra, foliis ovalibus ovato-oblongis v. ovato-lanceolatis acuminatis basi rotundatis cuneatisve nitidis, stipulis lato-ovatis acutis deciduis petiolum sequantibus, pedunculis terminatis demum lateralibus elongatis, ramis oppositis verticillatisve inferioribus remotis apice cymiferis trichotomis, calycibus brevissime dentatis, corollae glabræ ad faucem barbatae laciniis limbi tubo subcampanulato aequilongis.—Forte *P. sororice*, DC, nimis affinis. Duæ adsunt varietates, in altera folia coriacea, nitida, 4—6-poll. longa, 2—2½-poll. lata; in altera folia minus coriacea, latiora, basi potius enneata quam rotundata—On the Rio Negro, *Schomburgk*, n. 963.

484. *P. (Vene) chlorantha* (sp. n.); glaberrima, ramis  
*Journ. o/Bot.* Vol. III. No. 21, *Feb.* 1841. 2 G

compressis, foliis oblongis acuminatis basi longe angustatis coriaceis lucidis, stipulis deciduis in duas axillares fuscas late ovatas obtusissimas connatis, pedunculis trichotomis ramis apice dense cymiferis, calyce truncato minute ciliato, corolla profunde fissa intus dense barbata.—Arbor 30-pedalis, ligno albo, molli. Folia 4—6-poll, longa, in petiolum longe angustata. Pedunculus terminalis, petiolo sequilongus; rami primarii elongati, ultimi brevissimi, omnes compressi. Corolla viridis (teste Schomb.), vix 1<sup>^</sup>-lin. longa. Iconi Kuntheanse *P. lucidce* similis, sed in hac stipulse acutse dicuntur et corolla alba.—Sandy hills, British Guiana, where it is called "Surrysurrero," by the Indians, *Schomburgk, n. 488.*

To this group, distinguished chiefly by the brown membranous deciduous stipules and paniculate inflorescence, without any, or with very small bracts, belong the *P. Carthaginensis, alba, elliptica, &c.*

485. *P. fimbriata* (sp. n.); glabra, dichotoma, foliis subsessilibus ovatis acuminatis basi rotundatis cuneatisve membranaceis, stipulis ovatis apice cartilagineo-fimbriatis, pedunculis terminalibus trifidis dichotome cymosis folio brevioribus laxis, calycis limbo campanulato truncato, corollae fauce pubescente.—Frutex 12—16-pedalis. Folia 2—4-pollicaria. Rami paniculae virides, breves, subcompressi. Bractes minutae. Flores in dichotomiis sessiles. Calyx pentagonus, limbo laxo viridi tubo suo sequilongo. Corolla alba, tubo fere 1 lin. longo, limbi laciniis tubo aequilongis. Antherse et stylus breviter exsertse.—Banks of the Essequibo, *Schomburgk, n. 51.*—This species has the stipules of some *Coffeace*, but the flowers are certainly those of *Psychotria*. The fruit in this case, as in that of most of the *Rubiaceae* of the collection, is unfortunately wanting.

486. *P. (Paniculatse) cordifolia, Humb. et Kunth, Nov. Gen. iii. p. 365.*—*Siderodendron paniculatnm, Willd—DC. Prod. iv. 478*—Paniculse, uti in *Psychotriis* nonnunquam observatur, ut primum terminales sunt, demum ramulo axillari elongato laterales evadunt. Flores, etsi tetrameri, omnino *Psychotrice*—A single specimen from the Conocon Mountains, *Schomburgk.*

487. *P. (Paniculatae) subundulaia*, (sp. n.); glabra, ramis compressis, foliis ovatis oblongisve acuminatis basi rotundatis v. supremis angustatis, stipulis utrinque brevissime bidentatis, panícula pedunculata foliis brevioribus, ramis oppositis dichotomis flexuosis ebracteatis, floribus sessilibus parvis, calycis limbo minute 5-dentato; corollae imberbis laciniis limbi tubo brevioribus.—Rami valde compressi. Folia 4—8-pollicaria, margine saepius undulata. Flores 1<sup>^</sup> lin. longi.—On the Rio Negro, *Schomburgk* n. 972.

488. *P. (Paniculatae) longistipula* (sp. n.); ramulis vix compressis junioribus puberulis, foliis ovali-ellipticis acuminatis basi longiuscule angustatis supra glabris subtus ad venas puberulis demum glabratis, stipulis utrinque binis longis linearibus vagina fimbriata, panícula brevi puberula ramis sparsis dichotomis ebracteatis, floribus sessilibus parvis, calycis limbo minute 5-dentato, corollae imberbis laciniis limbi tubo subbrevioribus.—Folia semipedalia. Stipulae 6-8 lin. longae. Flores vix sesquilineares.—Rio Negro, *Schomburgk*, n. 948.

489. *P. (Paniculatae) cornigera* (sp. n.); glabra, ramulis compressis, foliis ovali-ellipticis longe acuminatis basi angustatis cuneatis, stipulis utrinque binis e basi latiuscula subulato-acuminatis, panícula corymbosa ramis subumbellatis ad axillas saepe barbatis dichotomis ebracteatis, floribus sessilibus, calycis tubo minute 5-dentato, corollae ad faucem barbatae laciniis limbi tubum subaequantibus apice patentibus dorso cornutis.—Folia 4—6-pollicaria, supra nitidula, pergamacea, margine saepius undulata subsinuata. Flores numerosi, 2 lin. longi.—Habitu ad *P. Bahiensem*, DC, accedit, et flores ejusdem magnitudine, differt tamen foliorum et stipularum forma, corollis cornutis.—British Guiana, *Schomburgk*, n. 251.

490. *P. (Paniculatae) crassa* (sp. n.); glabra, ramulis teretibus crassis, foliis obovato-oblongis acuminatis basi angustatis crassiusculis rigidis, stipularum vagina laxa membranacea persistente integra, cyma terminali corymbosa folia superante, bracteis parvis lanceolato-subulatis, floribus tetrameris, calyce acute dentato, corollae ad faucem barbatae limbo tubum subsequente, laciniis apice dentatis dorso cornigeris.



—Frntex erectus. Ramuli, folia et inflorescentia fere i<sup>7</sup>. *parasiticce*. Folia 2—8-pollicaria. Corymbus regulariter trichotomus. Flores roseo-albi. Corollse 3 lin. longae, tubo tenui, fauce abrupte ampliata.—Marawaca, *Schomburgk*; a single specimen.—The two latter species differ from others of the group by the appendages on the back of the divisions of the corolla near the apex, but in those genera of *Rubiacece* which, like *Psychotria*, have a valvate aestivation, and a tendency to a general thickening of the divisions of the corolla, these appendages do not appear to be of much importance, and the tetramerous flowers occur occasionally in most of the groups into which this extensive genus may be distributed. I doubt much, however, whether any characters can be found to raise any of these groups into distinct genera, at least as to the American species.

Among the group which I have called *Paniculate*, (distinguished by the loosely paniculate or corymbose flowers, minute bracts and persistent stipules consisting of a membranous sheath, often very short, with two teeth or rigid green stipules on each side,) I would include Gardner's n. 1339 from Alagoas, and probably his 454 from the Organ Mountains; besides *P. Bahiensis*, DC, and many other published Brazilian species. Amongst the latter is the *P. leiocarpa*, Cham., which is Gardner's\* n, 453 from the Organ Mountains, and which I have received from Martius under n. ] 12 of his Herbarium Brasiliense. The n. 232 of the same herbarium, also referred by Martius to *P. leiocarpa*, is, in my set at least, a species of *Faramea*.

491. P, (Bracteate) *setifera* (sp. n.); glabra, foliis oblongo-lanceolatis setaceo-acuminatis basi angustatis, stipulis utrinque binis subulatis petiolum brevem aequantibus, panicula, folia superante trichotoma, bracteis anguste linearibus setaceo-acuminatis flore parum brevioribus, corollae glabrae imberbis laciniis limbi tubo parum brevioribus.—Folia 2-2J-pollicaria. Flores numerosi, 3 lin. longi.—A single specimen which was in my set amongst those of *Sipanea dichotoma*, the No being probably lost.

492. *P.* (Bracteatae) *inundata* (sp.n.); glabra, foliis ovali-oblongis v. ellipticis longe acuminatis basi cuneatis, stipulis utrinque binis subulato-acuminatis acutis petiolo longioribus basi dilatatis breviter v. ultra medium connatis subdeciduis, panicula pedunculata ovata laxa multiflora, bracteis lineari-oblongis membranaceis corolla glabra parum brevioribus.—Frutex. Folia 3-4-pollicaria, subcoriacea, venis utrinque prominentibus parallelis arcuatis. Pedunculus folio subbrevior, irregulariter ramosus, ramis apice cymiferis. Flores sessiles. Bracteae 2-3-lin. longae. Corollae tubus 3-lin. longus, faucibus ampliata, limbilaciniae latiusculae, tubo dimidio fere breviores.—On the banks of the river Essequibo, where they are liable to inundation.—*Schomburgk. n. 21.*

493. *P.* (Bracteatae) *arcuata* (sp. n.); glabra, foliis ovalibus v. ovali-oblongis acuminatis basi rotundato-cuneatis, stipulis utrinque binis linearibus acutis petiolo longioribus persistentibus, panicula pedunculata ovata laxa multiflora, bracteis lineari-oblongis membranaceis corollae glabrae tubo parum brevioribus.—Very near to the last species of which I at first considered it a mere variety, but the leaves are shorter and more veined, the stipules, which are half-an-inch long as in *P. inundata*, are, however, free immediately above the short sheath, and do not appear to fall off, and the flowers are larger, the tube of the corolla being about 3 lines long—On the Berbice, *Schomburgk, n. 415.*

494. *P.* (Bracteatae) *bracteata*, DC. *Prod.* iv. 510? On the Rio Negro, *Schomburgk, n. 861.*

495. *P.* (Bracteatae) *nervosa* (sp. n.); glabra, ramulis compressis, foliis subsessilibus ovali-oblongis acuminatis basi cuneatis submembranaceis supra nitidis, stipulis utrinque brevissime bidentatis, cyma pedunculata trichotoma densa, bracteis foliaceis oblongis mucronatis nervosis margine nudis corollas glabras subaequantibus.—*P. lupulince* affinis sed foliis angustioribus stipulis bracteisque distincta videtur. Corollae albse, majores, laciniis limbi acutissimis tubo sequilongis—Low marshes of the Essequibo, *Schomburgk, n. 26*, in the earlier sets—The *Cephaelis justicicefolia* of Rudge appears to

me from his figure to be rather a *Psychotria* very near to this species.

496. P. (Bracteate) *lupulina* (sp.n.) ; glabra, ramulis compressis, foliis breve petiolatis ovatis acuminatis basi rotundato-cuneatis membranaceis, stipulis e vagina brevissima utrinque binis linearibus, cyma pedunculata trichotoma densa, bracteis ovatis membranaceis obtusis mucronatis margine ciliatis corollas glabras cequantibus.—Folia 5-6-pollicaria. Stipulse  $\frac{1}{2}$  lin. longse. Pedunculus sesquipollicaris, compressus. Bractese vix venulosae, exteriores 6-lin. Ionise. Corollae laciniae tubo breviores.—British Guiana, *Schomburgk*, n. 26, in the later sets.

497. P. (Bracteate) *amplectens* (sp. n.); glabra, foliis sessilibus oblongis acuminatis cordato-amplexicaulibus coriaceis, stipulis utrinque binis brevibus aristaeformibus, cyma pedunculata umbellaeformi, bracteis linearibus exterioribus flores tetrameros subsequantibus.—Frutex 2-pedalis. Folia circa 3-poll. longa, rigida. Pedunculus brevis, pluriradiatus. Bracteae 3-lin. longse, coloratse. Calycis limbus brevis, dentibus 4-brevissimis. Corollae 2-lin. longse, albae. Ovarium omnino *Psychotric*<sup>^</sup>—On the Rio Branco, *Schomburgk*, n. 879.

To the same group of *Bracteate* belongs Gardner's n. 1039 from Pernambuco. The species of this group with the inflorescence and usually the stipules of the true *Psychotria Paniculate* have membranous or foliaceous bracts much longer than the calyx, and sometimes exceeding the corolla in length.

498. P. (Capitellatse) *capitellata* {DC. *Prod.* iv. 514?) glabra v. junior puberula, foliis ovatis v. ovato-oblongis acuminatis basi angustatis breve petiolatis supra demum nitidis, stipulis utrinque minute bidentatis, cyma pedunculata trichotoma densa subcapitata, bracteis paucis lineari-lanceolatis corolla extus puberula intus barbata longioribus—Folia 2-3-pollicaria. Pedunculi terminales, interdum complures, folio breviores, compressi. Flores albi, vix lineam longi, sessiles, 4-5-meri; limbi lacinise tubo breviores. Styli latinise stig-

matifere lineari-clavatae, pilosae. Fructus parvus, didymus, leviter costatus.—*Currass&waka, Schomburgk, n. 680.*—Also in other collections from British Guiana.

499. *P. (Capitellatse) polycephala* (sp. n.); glabra, foliis ovali-oblongis acuminatis basi cuneatis subcoriaceis marginatis, stipulis utrinque binis subulatis petiolo brevioribus, florum capitulis in racemum terminalem dispositis, supremis sessilibus, bracteis lanceolatis basi latis, exterioribus corolla glabra intus barbata vix brevioribus.—Folia 2-4-pollicaria. Racemus folio plerumque brevior, capitula minora densiora quam in *P. capitellata*. Corollae tubus tenuis, vix linea longior, limbi lacinae tubo multo breviores. Ovarium *Psychotrice*. Fructus non vidi.—British Guiana, *Schomburgk, n. 139*, and Rio Negro n. 942.

500. *P. (Capitellatae) Schomburgkii* (sp. n.); tota, inflorescentia villosa excepta, glabra, foliis ovato-lanceolatis oblongis longe acuminatis basi cuneatis coriaceis marginatis nitidis, stipulis utrinque bidentatis, pedunculis rufo-villosis apice 4-5-radiatim ramosis, cymis capitatis, bracteis lanceolatis obtusis corolla villosa intus barbata brevioribus.—Frutex, excepta inflorescentia, ex omni parte glaberrimus nitidus. Folia 3-5-poll. longa. Pedunculus foliis bis terve brevior. Capitula 3-4-lin. diametro.—British Guiana, *Schomburgk*.

501. *P. (Capitellatae) spicata* (*Coffea spicata Humb. et Kunth.*—*DC. Prod. iv. 502*); tota glaberrima, foliis ovatis obovatisve vix acuminatis obtusisve crassis coriaceis marginatis, stipulis utrinque brevissime bicuspidatis, capitulis in summo pedunculo sessilibus subspicatis, bracteis ovatis obtusis.—Frutex humilis, dichotome ramosus.—Pacaraima chain, *Schomburgk*.

502. *P. (Capitellatse) hyptoides* (sp. n.); tota, inflorescentia rufo-pubescente excepta, glabra, foliis oblongo-ellipticis breviter acuminatis basi angustatis coriaceis marginatis, stipulis utrinque vix minutissime bidentatis, pedunculis rufo-pubescentibus racemosisve subradiatim ramosis, cymis capitatis, bracteis late ovatis imbricatis corollam glabram imberbem subsequantibus.—Folia *P. Schomburgkii*, at vix nitida. Florum capitula

majora. Bractese exteriores 3-4-lin. longae, latae, concavae, extus rufovillosae—Parime mountains, *Schomburgk*.

503. *Coffea subsessilis* (sp. n.); foliis ovali-oblongis acuminatis basi cuneatis coriaceis supra nitidis subtus ad venas ramulisque strigoso-pilosulis demum glabratis, stipulis brevibus subulato-acuminatis deciduis, floribus pentameris ad axillas fasciculato-capitatis sessilibus, calycis limbo truncato obscure dentato, corollae laciniis lanceolatis tubo brevioribus. —Frutex siccitate nigricans. Folia 2—3-pollicaria, saepe asperula. Flores plerumque petiolo breviores. Corollae albae, vix 3 lin. longae. Ovarium biloculare, loculis uniovulatis. Styli lobi stigmatiferi lineares.—Rio Negro, *Schomburgk*, n. 994.

504. *C. tenuiflora* (sp. n.); foliis ovatis acuminatis basi cuneatis subtus ramulisque puberulis, pedunculis solitariis axillaribus elongatis, floribus aggregato-corymbosis, corolla 5-fida laciniis linearibus tubo sequilongis. Frutex humilis. Folia 2—3-pollicaria, subcoriacea, supra glabra, nitida. Stipulae latse, breviter subulato-acuminatae. Pedunculi 1-3-pollicares. Flores ad apicem pedunculi in capitula 3-5 sessilia v. pedunculata, aggregati. , Bracteas minutae v. rarius sub ramis pedunculi 2-foliaceae. Calycis limbus brevissime 5-dentatus. Corolla alba, 5-lin. longa. Antherae incluse, lineares. Ovarium <sup>fc</sup>2-loculare, ovulis in quoque loculo 2-ascendingibus. Fructus (in specimine immaturo) dicoccus coccis monospermis, seminibus endocarpio membranaceo inclusis.—Pirara, *Schomburgk*, n. 735.

505. *C. cahjcinia* (sp. n.); foliis ovato-lanceolatis v. ovali-oblongis longe acuminatis basi in petiolum brevem longe angustatis, subtus ramulisque puberulis, pedunculis solitariis axillaribus v. aggregatis terminalibus, floribus aggregato-corymbosis capitatisve, calycis limbo ampliato foliaceoobscure 5-dentato, corollae 5-fidae laciniis linearibus tubo sequilongis. —Frutex. Folia 4-6-pollicaria. Stipulae latse, acute. Pedunculi pollicares. Flores albi, sessiles. Calycis limbus viridis, pubescens. Corolla fere glabra, 5-lin. longa, laciniis <sup>^ s t p l. one</sup>vix contortis. Antherae incluse, lineares. Ovari-

um biloculare, ovulis in quoque loculo 2 ? adscendentibus, uno semper post anthesin jam abortivo. Stylus brevis, stigmate obtuso. Currassawaka, *Schomburgk*.

506. *C. crassiloba* (sp. n.); glabra, foliis ovali-oblongis acuminatis basi cuneatis breviter petiolatis coriaceis nitidis, stipulis latis cartilagineis apice fimbriatis, pedunculis brevibus terminalibus apice ramosis, floribus capitato-corymbosis sessilibus.—Flores tetrameri. Calycis limbus profunde partitus, laciniis crassis obtusis subcarnosis. Corolla 4 lin. longa, alba, membranacea, laciniis oblongis, tubo sequilongis, apice dorso brevitei\*\*et obtuse cornutis, revolutis, intus supra basin barbatis. Stamina exseiga. Antherae ovali-oblongae. Stylus inclusus, lobis sti^matiferis oblongis. Ovarium biloculare, loculis 1-ovulatis.—British Guiana. *Schomburgk*^ n. 199 and 363.

The genus *Coffea*, distinguished from *Psychotria* (where the fruit is unknown) by the aestivation of the corolla and the form of the stipules, and from *Faramea* by the ovarium, of which the cells are completely distinct, appears to contain several distinct groups and perhaps genera, but until the fruit of the several species shall be better known, it is impossible to define them satisfactorily. Gardner's Nos. 185 and 199, both from Rio Janeiro, appear to me to belong to it.

507. *Faramea corymbosa*? *Aubl*—*DC. Prod.* iv. 496.—Iconi et descriptioni Aubletii similis, nisi folia vix coriacea, calycis limbus obscure 4-dentatus, et corollae laciniis vix acutae. Ovarium 1-loculare, 2-ovulatum. Styli lobi stigmatiferi oblongi.—British Guiana, *Schomburgk*, n. 120.

508. *F. crassifolia* (sp. n.) ; foliis ovatis suborbiculatis breviter acuminatis marginatis crassis coriaceis, stipulis latis rigide aristatis, corymbis trichotomis terminalibus multifloris, calycis limbobrevi 4~dentato.—Affinis *F. odoratissima*. Folia breviora, latiora et multo rigidiora, margine crasso cartilagineo circumdata. Stipularum aristae rigidae, appressae, stipulae ipsae vix longiorae. Bractae in corymbo subulatae. Calycis tubus oblongo-clavatus apice constrictus, limbus membranaceus truncatus, dentibus brevibus inaequalibus acutis. Discus epigynus mag-

and less obtuse. Presl's *Anisomeris spinosa*, also a *Chomelia*^ differs slightly from the last mentioned species in the still greater inequality of the lobes of the calyx, and in the form of the leaves broader at the base. Gardner's n. 1694 from Cearà is apparently a new species, also very near to Presl's.

The genus *Chomelia*, as well as the two following, differ from the true *Psychotria* in their pendulous ovules,\* and should perhaps be referred to *Guettarda*, where De Candolle has placed *Malanea*, or possibly with some others form a distinct tribe, but of which I have not examined species enough to establish the characters at present.

**514. *Malanea sarmentosa*, Aubl\_\_DC. Prod. iv. 459—**Ovula 2, pendula.—Sides of rivers, British Guiana, *Schomburgk*, n. 384\_\_This plant answers to Aublet's figure and description much better than the Brazilian plant, distributed by Martins under the n. 394 of his Herbarium Brasiliense, and referred by him to Aublet's species, but which is probably a new one.

515. *Chiococca nitida* (sp. n.); foliis oblongo-ellipticis, breviter et obtuse acuminatis, coriaceis, nitidis, racemis axillaribus binis laxis subramosis, dentibus calycinis brevissimis filamentis villosis.—Folia 3-5-pollicaria. Stipulae brevissimae, vix apiculatae. Corolla 4-lin. longa, fere campanulata. Antheras lineares, inclusae.—British Guiana, *Schomburgk*, n. 1055, probably from Roraima.

Gardner's n. 1418 from Alagoas belongs to the same genus, and appears to be the *tj. densifolia*, Mart.

**516. *Geophila reniformis*, Ch.etSchl.—DC. Prod. iv. 537,**—British Guiana, *Schomburgk*, n. 194.

**517. *Declieuxia chiococcoides*, Humb. et Kunth.—DC. Prod. iv. 479—**Stony savannahs, Pirara, *Schomburgk*, n. 723—Gardner's Nos. 1701 and 1702 from Cearà, appear to me to be mere varieties of this species.

Tribe, SPERMACOCE^.

518. *Diodia scandens*, Sw.?\_DC. Prod. iv. 563.—French Guiana, *Leprieur*, *Herb. Par. n. 166 and 172,*

519. *D. barbata*, DC. *I. c.* ?—This agrees with Poiret's description as far as it goes. It is very near to *D. setigera* DC, and like it has remarkably costate globose fruits, but these fruits are larger, the leaves longer and narrower, and the corolla much larger, being near eight lines long.—Arid savannahs of the upper Rupunoony and Pirara, *Schomburgk*, n. 161 and 707.

520. *D. articulata*, DC. *Prod.* iv. 564.—Shores of the Essequibo, *Schomburgk*, n. 11—The specimens sent in the earlier sets are precisely similar to Pohl's, those in the latter sets have the leaves broader and somewhat rough, and the flowers more numerous, yet they appear to belong to the same species.

521. *Borreria verticillata* > *Mey.*—DC. *Prod.* iv. 541.—Moist Savannahs, British Guiana, *Schoniburgk*, n. 618.

522. *B. alata*, DC. *Prod.* iv. 544.—Gaulis alse angustae, hinc hinc ciliatse. Capitula numerosa, ramulos axillares breves v. caules terminantia. Fructus omnino *Borrerice*. Caetera omnia ut in icone et descriptione Aubletii.—On the Rio Negro, *Schomburgk*, n. 864.

523. *B. suaveolens*, *Mey.*—DC. *Prod.* iv. 546.—Dry Savannahs, British Guiana, *Schomburgk*, n. 250.

524. *B. sphaerica*, DC. *Prod.* iv. 547—French Guiana, *Herb. Par.* n. 171.

525. *B. Perrottetii*, DC. *Prod.* iv. 548?—Pirara, *Scho?nburgk*, n. 763.

The genera *Diodia*, *Borreria* and *Spermacoce* are certainly very closely allied in character, and do not appear, as at present\*constituted, to be distinguished by any peculiarities in habit. Supposing, however, their present artificial characters to be retained, Gardner's species would be distributed as follows:—55 from Rio Janeiro, 1037 from Pernambuco, 2190 and 2191 from Piauhy are *Diodice* of the section *Eudiodia*, 1037 being apparently a narrow-leaved variety of *D. setigera*; 445 from the Organ Mountains is *Diodia* (*Dasycephala*) *alata*, Nees et Mart.; 1033 from Pernambuco, and 2189 from Piauhy are the *Borreria ramisparsa*, DC;



1036 from Pernambuco (the same species as 1707 from Ceará), 1034 from Pernambuco, 1708 and 1711 from Ceará are all *Borreria*; 2193 from Piahy, as far as I can ascertain from my specimen, is a true *Spermacoce*, and 443 from the Organ Mountains, is too young to determine.

526. *Richardsonia divergens* > DC. *Prod.* iv. 568.—Savannahs of the Rio Branco, and near Currassawaka, *Schomburgk*, n. 630.—The Rio Branco specimen, a single one, agrees precisely with Salzmänn's; those from Currassawaka are rather less hairy, but the characters are the same.

Gardner's n. 54 from Rio Janeiro, is *R. scabra*, and 1035 from Pernambuco, appears to be *R. grandiflora* Ch. et Schl.

The same collector's n. 444, from the Organ Mountains, is a *Triodon*.

527. *Mitracarpium puberulum* (sp. n.); annuum, procumbens? foliis elliptico-oblongis lanceolatisve acutiusculis basi angustatis utrinque cauleque puberulis, stipulis multisetis ciliatis, floribus parvis dense capitato<sup>^</sup>verticillatis, capitulo terminali tetraphyllo.—In omnibus cum descriptione Chamissoniana *M. Torresiani* (ex Manilla) convenit, nisi pubescentia brevissima. Flores numerosi minimi fere ad omnes nodos. An hue referenda *Spermacoce prostrata*, Aubl.?—British Guiana, *Schomburgk*, n. 394.

528. *M. scabrellum* (sp. n.); annuum, erectum? foliis linearibus v. lineari-lanceolatis setaceo-mucronatis utrinque cauleque scabro-hirtellis, stipulis paucisetis, capitulis terminalibus et paucis axillaribus parvis, calycis dentibus 4, 2 duplo majoribus tubo corollae brevioribus.—Herba dura, 4—9-pollicaris. Rami stricti. Folia majora pollicaria. Capitula pleraque 2 lin. diametro—On the Rio Branco, *Schomburgk*, n. 856.

529. *M. rude* (sp. n.); annuum? erectum, foliis lanceolatis acutissimis utrinque cauleque setoso-hispidis, stipulis longe multisetis, capitulis axillaribus et terminali 4-phylo<sup>^</sup>ensis, calycis dentibus 2 tubum corollae<sup>^</sup>quantibus, 2 minutis.—Herba 1—2-pedalis. Rami parce ramosi. Folia

1—1<sup>^</sup>-pollicaria. Capitula 3—4 lin. diametro. —Savannahs, British Guiana, *Schomburgk*, n. 409 —This plant resembles much Aublet's figure of *Spermaceoce aspera*, but he describes the fruit as separating into two monospermous capsules, and Schomburgk's plant is without doubt a *Mitracarpium*.

I have not any *Mitracarpium* amongst Gardner's plants, but his 1335 from Alagoas, and 2187 and 2192 from Piauhy all belong to the adjoining genus *Stcelia*.

530. *Perama hirsuta* (Aubl. PI. Gui. i. 54. t. 18); caule dense hispido, paniculato-ramoso, foliis oppositis ovato-lanceolatis v. superioribus lanceolatis, corollse tubo dentibus calycinis brevioribus, laciniis limbi 4 acutis muticis.—British Guiana. *Schomburgk*, ft. 100 in the earlier sets.—French Guiana, *Leprieur*, *Herb. Par.* n. 167.—Bahia, *Blanchet* n. 2551, *Salzmann*.

531. *P. stricta* (sp. n.); ramis strictis pilis raris strigosis, foliis oppositis lanceolatis v. superioribus lineari-lanceolatis basi ciliatis subglabris, corollse tubo dentes calycinas superante limbi laciniis 4 acutis muticis,—Foliorum forma, corollis majoribus, glabritie et habitu a *P. hirsuta* sat distincta videntur.—British Guiana, *Schomburgk* n. 100 in the later sets.

532. *P. humilis* (sp. n.); hispida, basi ramosa, ramis simplicibus, foliis ternis lineari-lanceolatis, corollse tubo dentibus calycinis brevioribus, limbi 5-fidi laciniis setaceo-acuminatis.—Calyces majores, corollse minores quam in *P. hirsuta*.—Roraima, *Schomburgk*, a single specimen—The species answers in many respects to the description of *P. hispida* (Humb. et Kunth, under *Mattuschkea*) but the corolla is different. *Perama*, still rejected by some from *Rubiaceae*, is very near *Stcelia*, the capsule opens in the same way in two oblique valves, but being 3-celled, each valve comprehends the upper portion of one cell and a-half.

Gardner's 440 and 44U from the Organ Mountains, are the *Emmeorhiza* Pohl. (*Endlichera Brasiliensis*, Pohl., *Machaonia Brasiliensis*, DC.) a plant very nearly allied to *Machaonia*, but probably a good genus. Gardner's n. 1336 from Alagoas, and 1600 from Cearà, are true *Machaonia*.

## LOGANIACEÆ.\*

Tribe, SPIGELIÆ.

533. *SpweYia antkelmia*, Linn. Sp. i. 213.—British Guiana, Schomburgk, n. 671.—French Guiana, Leprieur, Herb. Par. n. 200.—Pernambuco, Gardner, n. 1067.

534. *S. Schomburghiana* (sp. n.); annua? foliis lanceolato-ovatis floralibus quaternis, spicis a basi floriferis, clementibus calycis minimi brevissimis, genitalibus inclusis, capsulis bevis.—A descriptione *S. Flemingianæ* {Cham, et Schlecht. Linnæa, i. 203) differt præcipue ramis tenuibus, foliis pollicaribus, spicis vix 20-floris.—On the Essequibo, Schomburgk, n. 14.

535. *S. humilis* (sp. n.); annua, foliis lanceolatis omnibus oppositis, spicis 2—4-floris, genitalibus inclusis, calycis dentibus capsula lævi dimidiobrevioribus.—Planta vix semipedalis. Folia inferiora ovato-lanceolata, suprema lineari-lanceolata, trinervia. Corolla alba, fere 6 lin. longa.—Affinis *S. Schlechtendaliæ*, Mart., at pluribus notis distincta—On the Essequibo, Schomburgk) n. 20, on the Quitaro, n. 536, and on the Rio Negro, n. 926.

Gardner's n. 724, from the Organ mountains, appears to be an undescribed *Spigelia* with opposite leaves.

Tribe, ANTONIÆ.

536. *Antonia pilosa*, Hook. Ic. PL L §\>.—Endl. Iconogr. L 56—*A. pubescens*, Bong, in Mem. Acad. Petrop. ser. vi. v. iii. p. 2. t. 1.—On the Essequibo, Schomburgk, n. 85, a.

Tribe, STRYCHNÆ.

537. *Strychnos toxifera*, Schomb.—Hook. Ic. PL t 364 and 365; ramis scandentibus cirrhisque pilis longis patentibus vufis dense obtectis, foliis ^dlibul ovali-oblongis acuminatis membranaceis trinerviis Turinque pilis longis rufis hirsutis, floribus . . . fructibus maximis globosis.—Folia

\* I here adopt this order as extended by Meisner, Gen. PI\*

3—4-pollicaria.—British Guiana, *Schomburgk, n.* 155.—This plant furnishes the celebrated Wourali poison, referred to by M. Schomburgk in the narrative of his expedition.

538. *S. ? cogens* (sp. n.); ramis scandentibus petiolisque puberulis, foliis breviter petiolatis lanceolato- v. oblongo-ovatis acuminatis basi rotundatis coriaceis 3—5-nerviis supra glabris subtus puberulis v. demum glabratis, floribus . . . . .

Folia 4—6-pollicaria.—British Guiana, *Schomburgk, n.* 156. This plant, according to M. Schomburgk, is a ligneous twiner like the Wourali, and the juice is mixed with that poison to give it consistency. On this account, as well as from the peculiar venation of the leaves, I have little hesitation in referring it to *Strychnos*, although I have seen neither flowers nor fruit.

539. *Pagamea Guianensis*, *Aubl PL Guian.* i. 112. t 44.—A small tree in sandy soils, British Guiana, *Schomburgk, n.* 510 (in some sets corrected by mistake to 467) and 985.—French Guiana, *Leprieur*.—This genus belongs to the tribe of the *StrychneoB*) and not to the *Gartnerece*, as will appear from the following description of the ovary and fruit. Ovarium breviter bilobum, biloculare, loculis multiovulatis, placentis carnosis, ovulis minutissimis, vix conspicuis. Bacca (2—3 lin. diametꝑ) obovoideo-globosa, dipyrena v. abortu monopyrena, pyrenis unilocularibus polyspermis. Placentae carnosae undulatae. Semina numerosissima, minuta, in placentis imbricata, pulpa nidulantia.

#### APOCYNE^E.

##### Tribe, CARISSE^.

540. *Couma Guianensis*, *Aubl—Endl. Gen.* p. 579.—French Guiana, *Leprieur, Herb. Par. n.* 100.

541. *Allamanda grandiflora*, *Lam. Diet.* iv. p. 601—French Guiana, *Leprieur, Serb. Par. n.* 144.

ou<sup>c</sup>

##### Tribe, OPHIOXYLE^.

542. *Rauwolfia polyphylla* (sp. n.) ; glabra, foliis verticil\*

Vol. HI.—No. 21. 2 i

latis (quinis) petiolatis oblongo-lanceolatis acuminatis basi rotundatis, pedunculis terminalibus corymbosis petiolo brevioribus.—Frutex 10-12-pedalis. Folia 4-6-pollicaria, in verticillo parum inaequalia, petiolo 8-10 lin. longo. pedunculi 3—5, semipollicares, apice cymas corymbiformes 12—20-flores gerentes. Flores albi, odorati. Calyces *B. nitidce*. Corolla paullo longiores. Ovula in loculis erecta, solitaria.—Islands of the Rio Negro, *Schomburgk*, n. 891.

Tribe, PLUMERIEJE.

543. *Odontadenia speciosa*, gen. nov.—On the Berbice, *Schomburgk*, n. 309.

CHAR. GEN. *Calyx* profunde 2-fidus. *Corolla* late infundibuliformis, tubo brevi, fauce ampla, laciniis limbi latis, aestivatione contorta. *Stamina* ad faucem inserta, e tubo exserta, filamentis brevissimis, antheris in conam connatis, postice bimucronatis, extus villosis. *Glandulce hypogyn*\* 5, dentate. *Ovaria* 2. *Ovula* numerosissima, in placentis plano-compressis dissepimento bipartiente utrinque adnatis imbricata. *Styli* 2, apice conniventes. *Stigma* conicum carnosum, inferne dilatatum. *Folliculi* (2, altero saepius abortiente) oblongi, crassi, carnosi, endocarpio coriaceo, *placenta* lignosa mobili fructum bipartiente. *Semina* numerosissima, oblongo-linearum, in stipite brevi extremitate affixa, exalata, ecomosa, albuminosa. *Embryo* \_\_\_\_ 0. *speciosa*. Frutex scandens, succo lacteo, glaber. Folia sparsa, semipedalia v. majora, breviter petiolata, ovali-elliptica, acuminata, basi rotundata, subcoriacea. Pedunculi axillares, multiprijolio subbreviores, ramis oppositis racemoso-pauciforis. Bractea minutes. Pedicelli semipollicares. Calyces laxi, 4 lin. longi, laciniis obtusis latis, glabris, margine membraticeis, aurantiaco-coloratis. Corolla bipollicaris, lutea /undo aurantiaco, glabra, tubo subglobose 4 lin. longo, intus inter stamina piloso, limbo plus quam pollices duo diametro. Antherae\*^ lin. longa, mucronulatae, extus pilis nitentibus obtectae, circa stigma arete cohaerentes. Glandulce hypogynae, latice, truncatae apice 4—5-dentatae, ova-

*rium subcequantas*.—Of this handsome plant I have but one fruit, which is above five inches long, and an inch and a half thick, tapering a little towards the extremity. The seeds are very numerous (above a hundred), an inch and a quarter long, of a brown colour, but apparently in my specimen not quite ripe, as I have not succeeded in finding a single perfect embryo in above a dozen that I have opened.

544. *Tabernsemontana grandiflora*, Linn.—Savannahs, Pirara, *Schomburgk*, n. 767.

545. *T. undulata*, Vahl, *Eel* ii. 20.—On the Essequibo, *Schomburgk*, n. 42.—A tree of 30 to 40 feet. Flowers yellow.

546. *T. alba*, Mill., *Rcem. et Schull Syst* iv. 402 ?—A single very imperfect specimen from the banks of the Essequibo, *Schomburgk*. He states it to be a tree of twenty to thirty feet, with white, rather succulent, flowers.

547. *T. longifolia* (sp. n.); foliis subsessilibus oblongis acuminatis basi longe angustatis, cymis dichotomis multifloris, corollse tubo inflato apice constricto limbi laciniis vix longiore.—Folia 6—10-pollicaria. Cymae bis dichotomae. Flores albi, cymse in quoque ramo 6—8, vel interdum numerosiores. Corollse tubus 7—8 lin. longus.—Affinis *T. undulata* et forte *T. speciosce*, Poir., mihi incognita?—British Guiana, *Schomburgk*, n. 41, and 292.

548. *T. odorata*, Vahl, *EcL* ii. 22.—Barcellos on the Rio Negro, *Schomburgk*, n. 951.—This answers in every respect to Vahl's description; but not quite so well to Aublet's account of his *Cameraria Tamaquerima* quoted by Vahl. The flowers according to Schomburgk are white and odoriferous.

549. *T. heterophylla*, Vahl *Eel* ii. 22.—On the Essequibo, *Schomburgk*, n. 3; I have it also from Trinidad.

550. *T. rupicola* (sp. n.); foliis sessilibus oblongo-vel lanceolato-ellipticis breviter acuminatis basi inaequilateris, pedunculis brevibus paucifloris, calycis laciniis parvis obtusis, folliculis obovoideis lsevibus.—Frutex 4—5-pedalis. Ramuli subteretes, pallidi, dichotomi. Folia 3—4-pollicaria, altero interdum minore, basi hinc angustata, hinc rotundata, subtus venulosa, nervis subparallelis utrinquelaeviterprominentibus.

Pedunculi communes brevissimi, pedicellis 3 lin. longis, Flores in pedunculo 4—5, albi. Corollas tubus seinipollicaris, basi parum inflates, limbi lacinise latse, tubo longiores. Folliculi incurvi § poll, longi.—Amongst rocks at Pedrero on the Rio Negro, *Schomburgk*, 7i. 898.

551. *T. laxa* (sp. n.) ; foliis petiolatis ovali-ellipticis obtusis basi rotundatis cuneatisve coriaceis obscure nervosis margine revolutis, cymis terminalibus dichotomis multifloris, calycis laciniis brevibus obtusis.—Frutex in aqua crescens (teste Schomb.). Folia 2—3-pollicaria. Inflorescentia *T. l&tce* (Mart. Gardner, Rio, n. \*75). Bractese parvae ovate. Corollse tubus 4 lin. longus, basi parum inflatus, limbi laciniæ oblongae, obtusse, tubo vix longiores. Stamina inclusa. — On the Rio Negro, where the wood from its excessive lightness, is used for various purposes instead of cork. *Schomburgk*, n. 919.

552. *T. gracilis* (sp. n.); foliis petiolatis oblongo-ellipticis lanceolatisve breviter acuminatis basi angustatis venosis supra demum nitidis, pedunculis brevibus paucifloris, calycis laciniis brevibus acutis, corollse limbi laciniis ovatis tubo gracili brevioribus, folliculis oblongo-linearibus divaricatis laevibus. —Frutex habitu fere *T. heterophyllce*. Folia subaequalia, 3—4 poll, longa, petiolo 2 lin. longo. Pedunculus communis petiolo aequilongus. Flores 3—7, nivei, pedicellis pedunculo sublongioribus. Bractee parvse, acutae. Corollae tubus semipollicaris, basi et medio (ad insertionem staminum) leviter inflatus. Stamina inclusa. Stylus simplex. Folliculi 1—2-pollicaresj subteretes. Semina pauca, oblonga, lsevia, ecomosa.—Stony ground on the Upper Essequibo, *Schomburgk*, n. 39.

553. *T.* (sp. n.) ?— Hotitjou of the Tarumas, a tree of from fifty to sixty feet in height, yielding a copious milky juice, *Schomburgk*.—A single specimen from the Taruma country, without flowers, but evidently near *T. odorata*, which it resembles in the branches, compressed at the bifurcations, and of a dark colour almost shining in the dry specimens; in the venation of the leaves, and judging from the

old peduncles, in inflorescence also; but the leaves are from five to seven inches long.

554. *T. sp. ?*—A tree of the first size. Juice milky and made into varnish and glue, *Schomburgk, n. 168.*—My specimens having no flowers, I do not describe this plant, which has all the appearance of a *Taberncemontana*.

555. *Pltyrferia attenuata* (sp. n.); glabra, ramis vix incrassatis, foliis oblongis basi longe angustatis superne latioribus acumine brevi obtuso, paniculæ ramis articulatis, bracteis oblongis acutis tubo corollæ tenui parum brevioribus, deciduis.—Ramuli tenuiores quam in caeteris speciebus. Folia coriacea 6—9 poll, longa, petiolo fere pollicari. Ramipaniculæ pauci, alterni, crassiusculi, foliis breviores, interdum bifidi. Bractese 6—8 lin. longæ. Calyx minimus. Corolla alba, tubo 9 lin. longo tenui sequali; limbus patens, laciniis obovatis tubo brevioribus. On the Padawire, *Schomburgk*.

556. *Aspidosperma excelsum* (sp. n.); foliis petiolatis ellipticis obtusis coriaceis supra nitidis subtus incanis, cyma corymbosa densa multiflora.—Arbor excelsa, truncoprofunde sulcato, ramulis angulatis, glabris. Folia 4—6-pollicaria, venis impressis transversis basi parallelis. Inflorescentia et flores fere *A. subincani*, Mart., pedicelli tamen, et calyces, rigidiores. Folliculi compressi, 2 poll, diametro, coriacei, rugosissimi. Semina pauca, cum ala membranacea 1<sup>^</sup> poll, diametro.—*Yarroura* or *Hussara* of the Indians. The wood is very valuable, and called by the colonists *Paddkwood*.—Flowers yellow.—Sandy soil, British Guiana, *Schomburgk, n. 468.*

557. *Thyrsanthus Schomburgkii*, gen. nov.—On the Rio **Quitaro, Schomburgk, n. 556.**

CHAR. GEN. THYRSANTHUS.—*Calyx* 5, partitus, laciniis ovatis, sestivatione imbricatis. *Corolla* tubo brevissimo, fauce nuda, limbo subrotato profunde 5-fido, laciniis sestivatione leviter contorto-imbricatis lanceolatis obtusis. *Stamina* 5, imo corollæ inserta. *Filamenta* brevia, filiformia. *Anthers* introrsse, biloculares, membrana basi bifida apiceacuta aucta, circa stigma coherentes, corolla breviores. *Ovarium* bilo-



culare, loculo quoque pluriovulato. *Stylus* filiformis, brevis ; stigma conicum, breviter bifidum. *Folliculi* 2, v. abortu solitarii, lineares, subcarnosi. *Semina* plurima, oblongo-lineararia, anguste membranaceo-alata, ecomosa.—Frutices *scandentes, prae*ter flores *glaberrimi, ramulis lenticellis maculatis*. Folia *opposita*. Paniculae *thyrsoides, terminatae v. nonnulli ex axillis supremis, ortice, ramis oppositis, cymiferis*. Bractae minutae. Flores *parvi, numerosi, extus puberuli*—*T. Schomburgkii*; foliis ovali-v. obovato-ellipticis breviter acuminatis, pedunculis compressis, pedicellis rigidis, floribus erectis, corollis calyce triplo longioribus.—Folia 4—5 poll, longa. Corollas flavescens, fere 2 lin. longae.

558. *T. ? gracilis* (sp. n.) ; foliis ovalibus v. obovato-ellipticis acuminatis, pedicellis filiformibus, floribus nutantibus, corollis calyce duplo longioribus.—Folia 2—3-poll. longa, membranacea. Corollae virescentes vix lineam longae. Fructus non vidi.—Curassawaka, *Schomburgk, n. 608*.

#### Tribe, EcHiTEiE.

559. *Thenardia ? laurifolia* (sp. n.) ; foliis ovali-oblongis acuminatis basi rotundato-cuneatis, coriaceis nitidis ramulisque glabris, cymis brevibus axillaribus densis, floribus puberulis, laciniis calycinis corollinisque obtusis.—Frutex scandens. Folia circa 3 poll, longa, breviter petiolata, axillis venarum subtus foveolatis. Cymae semipollicares. Flores numerosi. Corolla calyce duplo longior, 2 lin. diametro, tubo brevissimo, fauce pilosa, limbo subrotato 5-fido, extus tomento tenui canescente intus glabro, laciniis ovalibus. Stamina imo tubo inserta, filamentis basi dilatatis, antheris e fauce breviter exsertis, circa stigma coherentibus. Stylus apice incrassatus, stigmate elongato-conico bifido. Folliculi abortu saepius solitarii, lineares, 2—3-poll. longi, crassiusculi, curvati. Semina plura, elongata, angustissime membranaceo-alata, in specimenibus meis apice jam breviter comosa, at nondum matura.—Barcellos on the Rio Negro, *Schomburgk, ?i. 953*.

560. *T. ? corymbosa* (sp. n.) ; foliis obovati-oblongis acuminatis basi rotundatis emarginatis ramulisque glabris, cymis

terminalibus corymbosis, floribus minute puberulis, laciniis calycinis corollinisque acutis.—Frutex ut videtur scandens, praececedenti aenis. Folia circa 3 poll, longa, non coriacea. Flores majores quam in *T. laurifolia*. Antherse longius exsertae, filamentis filiformibus. Fructus non vidi.—British Guiana, *Schomburgk, ?i. 277*.

561. *Echites angustifolia* (sp. n.); glaberrima, suberecta, foliis oblongo-linearibus obtusis mucronulatis margine revolutis ciliatis supra nitidis, pedunculis subspicatis multifloris, laciniis calycinis obtusis, corollis infundibuliformibus.—Specimina a vermibus exesa, speciem tamen distinctissimam demonstrant, *E. nitida*, Vahl, affinem. Ramuli crassiusculi. Folia ternatim verticillata, 1—2 pollicaria. Racemi rhachis flexuosa. Pedicelli breves, crassi, in rhachide articulati. Corolla aurantiaca, fundo coccineo, sesquipollicaris, tubo tenui, fauce longa campanulata. Folliculi graciles, apice connati.—Among underwood in the sandstone regions of Roraima. *Schomburgk, n. 1053*.

562. *E. subcarnosa* (sp. n.); glaberrima, volubilis, foliis ellipticis utrinque obtusis, apice acumine brevi obtuso auctis, coriaceis, nitidis, margine revolutis, pedunculis subspicatis multifloris, laciniis calycinis acutiusculis, corollis infundibuliformibus.—A single specimen from Roraima, much injured by worms, but remarkable by the thick almost fleshy stems; the leaves two to three inches long, thick and marked with transverse parallel veins as in *Plumeria*. Inflorescence and flowers nearly the same as in *E. angustifolia*.

563. *E. tomentosa*, Vahl, *Symb.* iii. 44,  *Ic. t.* 4.—*E. hirsuta*, Rich. *Act Hist Nat. Par.* 107—*E. Richardi*, *Rcem. et Schult. Syst.* iv. 391.—French Guiana, *Leprieur, Herb. Par. n.* 138, also in Salzmann's Bahia collection\*—This species, with the two preceding, and the two following ones, belong to a group or subgenus with the flowers almost spicate; that is, borne on very short pedicels along a simple thickened rhachis, with infundibuliform corollas, and the follicles in most (if not in all) of the species connate at the apex before they are ripe. The stamens are by some authors described as exserted,

by others as included in the tube; but this depends upon whether that part of the corolla only is considered a tube which is cylindrical, the broad upper part being then designated as the throat; or whether the whole of the corolla below the limb be included under the name of the tube.

564. *E. rugosa* (sp. n.); volubilis, ramulis junioribus scabro-puberulis demum glabris, foliis oblongis breviter acuminatis basi ad petiolum emarginatis rotundatis aut cuneatis subcoriaceis rugosis, supra scabro-pubescentibus v. demum glabris nitidis, subtus albo-tomentosis v. demum fere glabris, pedunculis incrassatis subspicatis multifloris, calycis laciniis brevibus acutissimis, corolla infundibuliformi glabra.—Folia bipollicaria. Bractee lanceolato-subulatae, calycem brevissime pedicellatum subaequant. Corollae lutescae tubus pollice parum longior, teres, rectus, intus ad insertionem staminum pilosus, faux tubo brevior, ampla, lacinae latae. Stamina, uti in affinis, in fundo faucis e tubo exserta.—British Guiana, *Schomburgk*, n. 550, in some sets.

565. *E. brachystachya* (sp. n.); volubilis, ramulis pubescentibus, foliis ovali-ellipticis obtusis mucronatis basi rotundatis et sinu angusto cordatis membranaceis, supra pubescentibus, subtus albo-tomentosis, pedunculis incrassatis subspicatis multifloris, calycis laciniis brevibus acutissimis, corolla infundibuliformi glabra.—Sent under the n. 350 with the last species, of which it may be a mere variety; but appears different in the form and consistence of the leaves, of which the veins are much less prominent, and in the short spikes. Both may possibly even be varieties of *E. symphytocarpa*, (G. T. W<sub>t</sub> Meyer), but neither agrees precisely with his description.

566. *E. macrostoma* (sp. n.); caule volubili glabro, foliis ovatis v. oblongis mucronatis basi cordatis supra glabris subtus tenuissime tomentellis, pedunculis folio longioribus apice plerisque bifloris, calycis laciniis lineari-subulatis reflexo-patentibus glabris corollae tubo brevi tenui, fauce longissima ampla.—Affinis ex descriptione *E. domingensi*, Sw., sed calyces glabri, et corolla (teste Schomburgkio) rosea. Folia forma variabilia, nunc obtusissima cum mucrone, nunc

acuta v. acuminata, I—3 poll, longa, mem bran acea, subtu tomento vix conspicuo rufescentia, tactu mollia. Pedicelli crassiusculi, 2—3 l'm. longi. Bractee parvse. Calyx tubo brevissimo, laciniis 1<sup>l</sup> lin. longis. Corollae tubus 3 lin\*, faux fere 1<sup>l</sup> poll, longa, limbi lacinias latae. Stamina in fundo faucis. Pise ad insertionem staminum. Folliculi maturi 4 poll, longi, apice liberi.—British Guiana, *Schomburgk, n. 329.*

567. *E. nitida*, Vahl, *Eel.* ii. 19. t. 13.—French Guiana, *Leprieir, Herb. Par. n. 146*—This and the two following species are remarkable for the peculiar and elegant venation of the leaves.

568. *E. elegans* (sp. n.) ; volubilis, glaberrima, foliis ovali-oblongis acutissime acuminatis basi rotundatis tenuiter coriaceis nitidis eleganter venosis, pedunculis laxe racemosis paucifloris, laciniis calycinis obtusis corolla subinfundibuliformi glabra.—Folia circa 3 poll, longa, venis transversalibus inter nervos obliquis integris bifidisve raro anastomosantibus. Pedunculi oppositi, tortuosi, 3—6«flori. Bractese parvae. Pedicelli 8—9 lin. longi, solitarii v. bini. Corollae tubus ultra pollicaris, in faucem brevem superne ampliatus, intus ad insertionem staminum nudus; Hmbi lacinae amplas, tubo breviores. Stamina medio tubo inserta, inclusa.—Ab *E. nitida* differt foliorum forma, floribus paucioribus, tubo corollae infra faucem longiore.—A twiner, hanging in festoons from the tops of the highest trees on the banks of the Rio Negro. Flowers yellow, red in the centre. *Schomburgk n. 965.*

569. *E. coriacea* (sp. n.) ; volubilis, glaberrima, foliis ovali-oblongis obtusis v. brevissime acuminatis basi obtusis coriaceis nitidis eleganter venosis, pedunculis laxe racemosis paucifloris, laciniis calycinis obtusis, corolla subinfundibuliformi glabra.—Praecedenti similis, sed folia multo crassiora, venis minus prominentibus, pedunculi et pedicelli crassiores, flores minores, corollae tubus vix pollicaris.—Pirara, British Guiana, *Schomburgky n. 738.*

51p. *E. tubulosa* (sp. n.) ; volubilis, glabra, foliis ovatis v. ovali-oblongis acuminatis basi subcordatis supra nitidulis,

pedunculis brevibus incrassatis subbifidis racemoso-multifloris, pedicellis calyce longioribus, laciniis calycinis ovali-oblongis obtusis, corolla hypocrateriformi glabra.—A description *E. subspicata*, (Vahl) differt foliis latioribus et pedicellis 3—4 Hn. longis.—Folia basi supra 2—3-glandulosa. Bractee parvae. Corollae roseae tubus pollicaris, supra insertionem staminum paullo incrassatus, intus intra stamina pilis paucis barbatus; faux leviter constricta et obscure annulata, at non squamata. Limbi lacinae breves, latse, aequilaterae. Folliculi 8—10 poll, longi, maturi, liberi.—British Guiana, *Schomburgk, n. 311.*

571. *Hsemadictyon marginatum* (sp. n.); volubile, glaberrimum, foliis oblongis acuminatis basi angustatis coriaceis supra nitidis, margine subtus incrassato leviter recurvo.—Folia 2—3-pollicaria. Pedunculi folio longiores, apice racemosi, pluriflori. Bractee minutae. Calyx et corolla omnino *H. venosi*.—Pirara, British Guiana, *Schomburgk, n. 713.*

572. *Prestonia latifolia* (sp. n.); foliis brevissime petiolatis late ovatis acuminatis supra pubescentibus subtus ramis inflorescentiaque rufo-lanatis, corymbis congestis, calycis laciniis tubo corollae vix brevioribus.—Folia 4—5 poll, longa, 3 poll, lata, mollia. Corymbi breviter pedunculati, densi, multiflori. Calycis lacinae foliaceae, fere semipollicares, intus pubescentes, et basi squama ciliata auctae. Corolla lutea, extus villosissima, tubo elongato conico, laciniis limbi ovatis intus glabris. Faux annulata et 5-squamata. Antherarum apices e tubo exsertae. Squamae hypogynae ovario longiores, in urceolam connatae.—Savannahs, Pirara, *Schomburgk, n. 755.*

573. A scandent *Apocynaceous* plant with small hypocrateriform flowers, probably a new genus, but which I refrain from describing as the fruit is unknown—On Indian fields, Curassawaka, *Schomburgk, n. 599.*

574. A shrubby *Apocynaceous* plant, perhaps an *Ambelania*, but of which, without the fruit, I am at present unable to determine the genus. —In the Conocon Mountains, *Schomburgk, n. 779.*

(To be continued.)

**XIX.—On some South African Plants. By G. A. WALKER  
ARNOTT, ESQ., LL.D.**

*{Continued from page 156.}*

10. The next order mentioned in Drege's catalogue, is that of the *Rhamnace*, and of these the first genus and species is *Dovyalis zizyphoides*, E. M. This however is the same as the *Flacourtia rhamnoides* of Ecklon and Zeyher, En. pi. Afr. p. 15, and on the other hand these authors consider their plant to be that of Burchtli. What Mr Burchell's plant actually is, I have not the means of ascertaining; but from the character given by De Candolle, (Prod. I. p. 256,) it is not improbable that it may be the female of *Dovyalis*. I am not aware of any analysis being yet published of this genus, and therefore add the following: —

DOVYALIS, E. M.

*Flores* dioici.—MASC. *Perianthium* profunde 5-fidum, pubescens. *Corolla* nulla. *Receptaculum* glandulis (ut in *Gelojiio*) dense onustum. *Stamina* 18—20, *filame?ita filiformia*, receptaculo inter glandulas inserta: *antherce* semiglobosse, biloculares; loculis connectivo crassiusculo disjunctis, longitudinaliter profunde unisulcatis. *Ovarii* vestigia nulla.—FiEM. *Perianthium* profunde 5-fidum, pubescens, glandulis stipitatis ciliatum. *Corolla* nulla. *Discus* annularis, carnosus, 5-lobatus, lobis perianthii laciniis oppositis. *Ovarium* liberum, basi disco cinctum, imperfecte biloculare (marginibus carpellorum oppositis introflexis vix ad axin connatis.) *Ovula* 2, in utroque loculo solitaria, appensa; funiculus hinc ovulo adnatus; chalaza infera. *Styli* duo, hinc intus sulcati. *Stigmata* minuta, truncata. *Fructus* carnosus (in exemplo suppetente semidestructus,) perianthii aucti laciniis varie flexis subulatis induratis glandulis spinescenti-stipitatis ciliatis suffultus—*Frutex spinosus*. *Spinse axillares, teretisubulata, horizontaliter patentew, in ramos juniores subpectinatw, 2-2& polllongoB. Folia alterna, decidua, ovata, crenato-dentata, basi triplinervia, venosa, 1 & poll, longa, breviter petiolata. Flores*

*breve pedicellate axillares* ; masc. *plures fasciculati*; faem. *siibsolitarii*.

That this genus can have no relation to the *Rhamnea* must be at once apparent. In several respects it approaches to *Euphorbiaceae*, and particularly to *Gelonium*, but if the ovarium be truly unilocular, and perhaps the furrow which is observable along the inner side of each of the styles is confirmatory of that structure, such an affinity must be abandoned. On the other hand, the very deeply introflexed margins of the ovary, and the reduced number of ovules remove it from *Bixinem*; while from *Flacourtianei* it differs by the same points, and also by having simple placentas along the introflexed margin of the ovarium, and more than one style. My own opinions lean to its being most connected with *Euphorbiaceae* but the habit is most that of a *Flacourtia*.

11. *Olinia cymosa*, and n. 3468, which is *O. capensis* of Klotzsch, form a group nearly allied to the Memecyleae and Myrtaceae, and are far removed from Rhamneae.

12. *Helinus ovatus*, E. M. (*IVillemetia scandens*, E. and Z., and *Rhamnus mystacinus*, Ait.) is admitted as a genus by Endlicher; but with the exception of the fruit being destitute of wings, I do not see how either in habit or structure of the flower, it differs from *Reissekia*, a genus retained by Brongniart as a mere section of *Gouania*, and founded on *Gouania smilacina*, Sm., (*Celastrus umbellatus* Flor. Flum. II. t. 137, and *G. cordifolia* Raddi.)

13. No. 9123 is a species of *Rhamnus*, and probably *R. prinoides*, L'Her. The *R. celtifolius*, Thunb., which is usually placed next this in our systematical works, is, as far as relates to *Burnt. Afr. t. 88*, a species of *Celtis*, and apparently the same as that distributed by Drege under No. 8261. b.

14. The remaining genus of *Rhamneae* is the Linnean *Phyllica*, but from this must be excluded *Ph. abietina*, E. M. which is a species of *Spathalla*, one of the Proteaceae, and *Ph. mucronata*, E. M., which is a species of *Stilbe*.

*Phyllica*, Lin., was divided by Brongniart into three genera; *Trichocephalus* (*IVatpersia*, Reiss.) with setaceous small

petals; *Phylica* with cucullate petals, and the ovary contained in the bottom of the calyx-tube, and *Soulangia* which differs from *Phylica* by the ovary filling up the whole calyx-tube. These at least are the more prominent differential characters. Reissek has further subdivided *Phylica* into *Tylanthus* which has the calyx-segments ovate and acute, and a short indistinct conical style, and *Phylica* proper with subulate calyx-segments, and a clavate or filiform style; and has added a new genus *Petalopogon*, having subulate calyx-segments, a short style, and cucullate fringed petals. Keeping these in view, I shall indicate how far Drege's specimens agree with such characters. *Ph. tortuosa* is a *Tylanthus*.—*Ph. squarrosa* agrees with all the characters of *Tylanthus*^ except the calyx, the segments of which are subulate as in *Phylica*.—*Ph. tricolor* accords with *Phylica*^ except that the calyx-segments are ovate and acute, as in *Tylanthus*.—*Ph. imberbis* is a *Tylanthus*^ as are also *Ph. ericoides*, *Ph. parviflora*, a, and No. 6775.—No. 6717, a, is a true *Phylica*.—No. 1917, a, and also PA. *Thitnbergiana* are species of *Tylanthus*, but the sepals have a subulate point.—Of *Ph. cylindrica* I have no flowers—No. 6779, which is the same as Sieber's flora mixta, No. 90, and apparently *Ph. capitata*, L. belongs to *Trichocephalus*, where also must be brought *Ph. spicata*, No. 6787, 6788 a, 6790, 6752 b, *Ph. callosa*, and *Ph. stipularis*.—*Ph. reirorsa* agrees with *Trichocephalus* in the petals, but the calyx-segments are ovate.—*Ph. plumosa*, No. 6770, 6772, *Ph. pedicellata*, *Ph. rosmarinifolia*, *Ph. parviflora*, c, e, and *Ph. oleoides*, all exhibit the characters of *Soulangia*. Besides these I may mention a species which was in Mr Harvey's first distribution, No. 202, which I had called *Trichocephalus Harveyi*^ floribus capitatis, petalis apice dilatatis cucullatis margine membranaceo fimbriato, ovario glabro, ramis junioribus villosis, foliis exstipulatis angustis basi cordatis margine revoluto subtus incanis. But this must, I presume, be referred to *Petalopogon*, (and perhaps to the species already described, but the leaves are not cuspidate) although I cannot see any material character to separate it from *Tru*



*chocephalus*, in which the linear or setaceous petals are often fringed with hairs at the apex. As to the separation of *Tylanthus* from *Phyllica*, the above notes will show that it is not well-founded.

15. The *Celastrineae* follow; and before noticing them especially, I may allude to Endlicher's genera, in which the principal character between these and *Ilicineae* is made to consist in the structure of the ovary, and in the minute embryo of the latter and its superior radicle; while in the former the embryo is of considerable length and the radicle superior; these characters were indeed indicated by Brongniart, (*Ann. Sc. Nat.* X. p. 329,) but he added others, such as the absence of a disk in *Ilicineae*, and the disposition of the corolla to become monopetalous, which restricted the order almost entirely to *Ilex* and *Prinos*. From my specimens of most of the Cape genera, about which there can be no doubt as to the order to which they belong, being almost universally destitute of fruit and ripe seeds, I cannot be perfectly certain of the genus to which they are referrible, but shall indicate such structural differences as may be useful to others occupied with the Cape Flora. But first, let me observe that Ecklon and Zeyher have divided the genus *Celastrus* into several; of the new ones generic characters are given, but no new one is proposed of the original genus, so that it is difficult to say to what species it is to be restricted, although by comparison of the others, their *Celastrus* appears to include all the Linnean *Celastris*, with a wingless capsule; the other genera having either a winged capsule or a drupe. But, however, simple as this character may be, in practice it is almost useless, from the usual absence of fruit, and similarity of habit of the whole allied genera. Endlicher in his genera unites all (except *Asterocarpus*, E. and Z., or more properly *Pterocelastrus* Meisn.) to *Elceodendron*, but such an union renders that genus too polymorphous: he further divides *Celastrus*, as proposed in the *Prod. Fl. Penins. I. Or.*, so that all the Cape *Celastris* (with the exception of *C. pyracanthus*, or *Putterlickia pyracantha*) will belong to *Catha*, Forsk., but in the generic

character, the ovarium is said to be always trilocular, whereas, in several of the Cape species, it is decidedly 2-celled, so that it is doubtful what is intended to be done with these.

I shall now take the species in the order in which Drege distributed them.—I. *Celastrus obtusus*, *laurinus*, and No. 1925, have the ovary immersed in the disk, a bifid style, stigmas flat, oval and spreading, and belong to *Scytophyllum*, E. and Z.—2. No. 6727, *b.*; here are five petals and stamens, the latter inserted between the lobes of the disk; style one, cylindrical; stigmas three, patent; ovary nearly quite immersed in a fleshy 5-lobed and crenulated disk, 3-celled; ovules 2, collateral in each cell: this I refer to *Pterocelastrus*.—3. No. 6725. Petals five, patent; style one, short and thick; stigmas three, short; ovary immersed in the disk, 3-celled; ovules 2, collateral, in each cell; the other characters nearly as in No. 6727, whence I refer this also to *Pterocelastrus*.—4. *C. lanceolatus*; this belongs to *Celastrus* E. and Z., and is perhaps *C. stenophyllum*, E. and Z.; the style is thick, stigmas two, erect, ovary seated on a 5-lobed fleshy disk, and 2-celled; the last character separates it from *Catha*, Entfl., but it is nearer that than *Celastrus*, Endl.—5. *C. linearis*, Th. seems correctly named; it is very closely allied to the last species, and exhibits the same structure of flower and ovary; in both, the ovules are in pairs in each cell, and collateral.—6. *C. refracta*, E. M.; petals erect, oblong, and stamens five; ovary scarcely half immersed (nearly sessile) in a crenulated disk; style short, thick; stigmas two, emarginately 2-lobed, erect; ovary 2-celled, 4-ovuled. The leaves are opposite, and the branches acutely 4-6 angled or almost winged; hence I infer that it is *Cassine scandens*, E. and Z.; but it cannot be a true *Cassine* if Endlicher be correct in referring that genus to *Ilicinece*, although I have reason to entertain doubts about this.—7. *C. buxifolius*: this differs from the cultivated plant by the inflorescence much shorter than the leaves, and is perhaps rather *C. patens*, E. and Z., stamens five; ovary seated on a crenulated fleshy disk, 9-furrowed, globose-ovate, 3-celled, 6-ovuled; ovules collateral; style

almost none; stigmas 3. This is a true *Catha* of Endlicher, and has the habit of the East Indian and Senigambian species.—8. *C. pyracantha* is correctly named, and now forms the genus *Putterlickia*.—9. No. 6736 *b*, and 6737 6, appear to belong to *Mystroxylon*, E. and Z.; petals orbicular, and stamens five; ovary half immersed in the fleshy 5-angled disk, 2-celled, 4-ovuled; ovules in pairs, erect; style one, short, thick; stigmas entire, truncated.

16. *Cassine Capensis*, L.: this has an evident cylindrical style, stigmas 2-3 patulous; ovary seated on a 5-lobed crenulated fleshy disk, 2-3-celled, with *two erect ovules in each cell*; now Endlicher not only places this in *Ilicinece*, but describes the ovules as solitary in each cell, and pendulous from its apex; unfortunately he does not say what species he examined, but the above is the structure of *C. Capensis*; for the specimens are accurately determined. I have seen neither fruit nor seed, so I cannot ascertain the nature of the embryo; but if it be, as I expect, similar to that of *Elceodendron*, then *Cassine Capensis* will be very nearly allied to that genus, and to *Hartagia*, if indeed it ought not to be united to the latter. Gaertner's analysis of the fruit and seed, relates only to *C. mauracenia*, of which I have not yet seen even the flowers.

17. *Hartagia*.—1. *H. Capensis*; here the disk is fleshy, 4—5 lobed, the lobes ustulate on the margin; ovary seated on the disk, 2-celled; ovules two in each cell, erect. Now Endlicher, (*Gen. p.* 1088) says the ovules are solitary, while I find them in pairs in each cell; but I quite agree with him in removing the genus from *Ilicinece*, near to *Elceodendron*.—2. No. 6740; of this I have no flower, and the fruit is immature, but obviously a drupe; there are however four persistent calyx-segments; the venation of the leaves is very unlike that of *H. Capensis*, and agrees better with what occurs in the following—3.<sup>#i7</sup> *Thea*, E. M. Here I have neither flower nor fruit, but if, as I suspect from the specific name, this be the Bosjesman's thea of the natives, it is the *Methyscophyllum glaucum* of E. and Z. (*En. p.* 152), already referred to; that it belongs however to *Celastrinecc*, and not to *Terebinthacece*,

there can I think be no doubt, although supposing the character proposed by Ecklon and Zeyher really to apply to it, the genus may be new, differing from *Celastrus*, by having opposite leaves, and from *Hartogia* by the capsular fruit.

18. *Ilex crocea*; this is *Crocoxylon excelsum*, E. & Z. I find the ovary to be immersed in a 4-angled thick fleshy disk, 2-celled, with two erect ovules in each cell; style thick and conical, and the stigma entire; whereas in the generic character proposed by Ecklon and Zeyher, the ovary is said to be 4-celled and 8-ovuled, and the stigma subquadrid. My plant does not seem to differ from *Hartogia*.—2. *Ilex flexuosa* has all the structure of *Ilex crocea*, except having five petals and stamina; the leaves also are alternate; it seems to belong to *Mystroxylon*, E. & Z.—3. No. 6745; this appears to me to differ only from *Celastrus rupestris*, E. & Z., by the somewhat smaller leaves. Calyx-segments 5, rounded, membranaceous on the margin; petals orbicular, patent; disk 5-angled; filaments 5, short and broad, persistent, inserted under the angles of the disk; anthers orbicular, with a broad connectivum at their back, by the middle of which they are attached to the filament, 2-celled, cells nearly parallel and dehiscing vertically; ovary immersed in the disk, 3-celled, with two ovules in each cell; style short and thick; stigma very slightly 3-lobed. This may belong to *Catka* of Endlicher, but differs widely in habit. I possess another species, closely allied to these, collected between Cape and Grahams-towns; this is destitute of flower, but with the valves of the last year's capsule still adhering; it is probably a mere variety with younger foliage. 4. *Ilex livida*, E. M., differs in structure from the last only by having four petals, stamens, and calycine segments; the leaves are however much larger, more lanceolate, and tapering much at the apex.

19. *Curtisia faginea* requires no observations; it is now generally removed far from *Celastrinece*.

From the above notes it will be seen that in all the species of Cape genera usually referred to *Ilicinece*, which I have examined, I have never found fewer than two ovules in each

cell of the ovary, and consequently that, unless the structure of the seed forbid, they all belong to *Celastrinece*. The other species of *Cassine*, however, require to be ve-examined, as I can scarcely suppose that the accurate Endlicher, if he made the analysis himself, could have mistaken the position<sup>ffi</sup> of the ovules. As to the genera *Scytophyllum*, *Lauridia*, and *Mystroxylori*) I am unwilling to unite them all with *Elceodendron*, as the first and third of these have alternate leaves, and other characters, but which are perhaps of less value; if however they be all united, I scarcely see how *Hartogia*, and *Cassine* are to be separated.

20. Under the *Flacourtianece*^ the only remark\* necessary is that *Kiggelaria integrifolia*, E. M.?, and Drege, cannot be the plant of Jacquin; it is in fact *Pappea capensis*, E. & Z.; this is considered as one of the doubtful genera by Endlicher, but there can, I presume, be little doubt of its affinity with the *Sapindacece*. Another curious, and apparently Sapindaceous genus was previously distributed by Drege. I allude to *Erythrophila undulata*^ E. M. As no notice has been taken of it by Endlicher, and no character so far as I know yet proposed, I add the following :—

ERYTHROPHILA, E. M.

*Flores* subdiclines.—MASC. *Calyx* campanulatus, obliquus, petaloideus, 5 lobus, lobis obtusis. *Petala* 4 (quintse loco vacuo), unguiculata, submargine disci inserta; ungue calycem eequante subpiloso, angustissime lineari; limbo flaccido, oblongo-lanceolato, basi subcucullato et squama petaloidea cristato-dentata instructo. Z^'scwscupulatus. *Stamina* 8, extra discum ad latus floris ubi deest petalum quintum fasciculatim inserta, adscendentia. *F'damenta* elongata, glabriuscula. *Anther*<z biloculares, basi breviter bifidse, dorso supra basin insertse. *Ovarium* inter staminum fasciculum et discum inserta, sterile, breviter stipitatum, 3-angulare.—FCM. *Calyx* ut in mare. *Petala* . . . . *Stamina* (ex vestigiis) fertilia. *Ovarium* sessile triangulare, apice rostratum et in *stylum* subulatnm attenuatum, triloculare. *Ovula* in loculis solitaria.

*Fructus* inflatus? 2—3-spermus. Frutex ramosus. Folia ad ramulorum apices fasciculata, impari pinnata; rachis interrupte alatus, alis anguste obovato-oblongis basi attenuatis; foliolaobovata, complicata, undulata, integerrima, mucronata, basi acuta, subsessilia. Flores corymboso-racemosi, rubri.

My observations on the female flower were made on a very advanced ovary; the petals had fallen away, but the filaments of the stamens remained, and presented the same appearance as in the male flower; hence they are probably fertile. The only fruit I have seen is far from mature, and is so much pressed by the process of drying that I cannot ascertain its form; the pericarp is thinly crustaceous, much larger than the seeds, and as there seems no trace of pulp I presume it is allied to that of *Cardiospermum*, and *Aitonia*, although this last genus cannot be united to the order of *Sapindaceae*.

21. As these notes principally relate to the genera, I shall pass on to *Lythraceae*. The only new genus here is *Tolypeuma* (*T. gloridum*, E. M.), but how this differs from *Nescea* I cannot discover.

22. *Myrtaceae*: of these *Jambosa cyminifera*, E. M., is a *Syzygium*; No. 5366, is *Eugenia Zeyheri*, Harv., and No. 5367, is *Eugenia? Capensis* Harv. No. 3576, is *Phoberos Eckloni* (*Eriudaphus Eckloni* N. ab E.), as I have already noticed.

23. *Loaseae*; the genus *Cnidone* (*C. mentzelioides*, E. M.) is, I am informed by my friend Mr Bentham, the same as *Fissenia* (*F. arabica*) Brown mst.

24. *Onagraceae* require no remark, farther than *Vahlia* is now removed to a very different order.

25. *Bruniaceae*; on the genera of this order few alterations have been made since these genera were determined by Brongniart, but it nevertheless appears to me that some modifications are required. *Raspallia* is described with a perfectly free ovary, upon the lower half of which the petals and stamens are inserted; now in the original species, *B. microphylla* the lower half of the ovary certainly does cohere with the calyx-

tube; but by immersion and maceration in hot water, previous to examination, the ovary usually becomes detached, carrying with it the lower half of the disk, to the upper edge of which the stamens and petals are attached; thus the difference between *llaspallia* (if, as I think, the fruit is dioecious) and *Berardia*, is weakened, and the principal character must depend on the free petals of the former, and the gamopetalous corolla of the latter; I therefore remove *Ber. phyllicoides* to *Easpallia*. *Thamnea* and *Audouinia* are separated by Brongniart, the one being said to have a 3-celled and the other a 1-celled ovary; of *Thamnea* I have seen no specimen, but I am inclined to suspect, from an examination of *Audouinia*, that Brongniart may have overlooked the dissepiments, and that it does not essentially differ from the latter, except in having five instead of three cells, which is here of little importance; that other botanists entertain a similar opinion I may perhaps be allowed to infer, from having received a specimen of *Audouinia capitata* from my friend Mr Bentham, under the name of *Thamnea multiflora*. *Brunia* has been divided by Brongniart into two sections, one of which has been separated by Ecklon and Zeyher under Thunberg's name of *Beckea*; but their *B. virgata*, with the habit of *Brunia*, has the character of *Beckea*, and is left by Ecklon and Zeyher in their restricted *Brunia*, with which it does not agree in the structure of the flower; it is therefore preferable again to unite them. I shall here give a *clavis analytica* of the genera of the order :—

I. Calyx 5-cleft.

A. styles 2, or 1 divided to the middle ; ovary 2-celled.

Fruit indehiscent, 1-seeded : petals not clawed . . . 1. *Brunia*.\*

Fruit dicoccus.

Ovary 2-ovuled,

Petals free, sometimes convolute,\* . . . 2. *Raspallia*.

Petals cohering into a tube at the base, . . . 3. *JSerardia*.

Ovary 4-ovuled, petals free, convolute, . . . 4, *Linconia*.

\* *Brunia* however has not the fruit always truly indehiscent: in one species I examined, it splits in a septicial manner, the cells gaping at the apex like a coccus.

I B. style simple ; calyx adherent.

- Ovary 1-celled, 1-ovuled, . . . . . 5. *Berzelia*.  
 Ovary 2-celled, 2-4-ovuled,  
 Petals cohering at the base into a tube; fruit  
 dicoccous, anthers sessile in the throat, . . . . . 6. *Graveihostia*.  
 Petals free : calyx-segments more or less callous  
 at the apex.  
 Ovules 2; style 2-furrowed ; petals ses-  
 sile lanceolate ; fruit dicoccous, . . . . . 7. *Staavia*.  
 Ovules 4 ; style conical; petals clawed ;  
 fruit spherical, indehiscent, . . . . . 8. *Tittmannia*\*  
 Ovary 6-10-ovuled ; calyx-segments large, imbricated,  
 scarious.  
 Ovary 3-celled, 6-ovuled, style trigonous, . . . . . 9. *Audouinia*.  
 Ovary 1- (or 5-?) celled, about 10-ovuled, style  
 cylindrical . . . . . 10. *Tharnea*.  
 II. Calyx 10-cleft; five teeth shut and obtuse,  
 5 alternate ones elongated, flat, dilated and  
 truncated : styles 2 connate at the base. . . . . 11. *Heterodon*.

Of Drege's specimens, I refer the following to *Brunia*:  
*B. verticillata* (*B. virgata* Brongn.,) No. 6856. *b*, *B. Race-*  
*mosa*, No. 6854. *c*. and *B. macrocephala*: as also *Bernardia*  
*la-vis*, and perhaps *Linconia tamariscina*. To *Staavia*, *St.*  
*glaucescens*, No. 6873, *a*, and *St. radiata*. To *Berzelia*; *B.*  
*lanuginosa*, No. 6863, 6864, 6862, *c*, and 6857. *a*. To *Ras-*  
*pallia*; *R. teres*, No. 6868, *R. angulata*, *Brunia phyllicoides*,  
*Br. capitellata*, and perhaps *Br. villosa*: this last has the habit  
of the second section of *Brunia*, but the stamens are inclu-  
ded : the structure of the ovary is as in *Raspallia*. To *Titt-*  
*mannia* belongs *Brunia lara* E.M. and apparently also of  
Thunberg. Under *Bernardia* ought to be brought *Brunia*  
*paleacea*, which indeed is the type of that genus. From the  
whole order must be excluded *Raspallia* No. 6869, which is  
*Griesbachia incana*, one of the *Ericinece*.

26. *Passiflorece*.—*Modecea septemloba* E. M., is *Ceratosicyos*  
*Eckloni* N. ab E.; a genus, which with *Acharia*, has been  
already commented upon in *the Annals of Natural History*,  
**III. p. 420.**



27. *Cucurbitaceae*. There are only three worth noticing: the one is *Momordica qinqueloba*, which is a species of *Cephalandra*, and apparently *C. quinqueloba*, Schrad.; another is *Bryonia grossulariifolia*, E.M., which is a species of *Coniandra*. The third is *Bryonia scabra*: this belongs to *Pilogyne*, Schrad., and probably *P. Eckloni*, Schrad.; it has the stigma nearly as described in that genus. But the *Bryonia scabra*, variet. E.M. has the style trifid, and the stigmas precisely as in *B. dioica*; it nevertheless seems to be *Pilogyne velutina*, Schrad.\* Now this induces a question,—is *Pilogyne* a good genus? If it is to be retained, the character must not depend on its being dioecious, nor on the stigmas or style, but on the filaments being dilated at the apex into a cordate connectivum along the margin, of which at the back are placed the linear straight (i. e. not flexuose) cells: whereas *Bryonia* would be restricted to those with the anther-cells placed along the back margin of a sinuated and lobed connectivum. In both genera the style is surrounded at the base with a thick annular fleshy, usually lobed disk. To *Pilogyne* in this extended sense (style entire or trifid; stigma one pileate, or three flabelliform and horizontal,) would then belong to the above mentioned *B. Scabra* Var. of Drege; also *B. Maysorensis* herb. Madr., *B. Hookeriana* W. and A., *B. umbellata* § herb. Madr., and probably some others from

# This division of the genus, or subgenus, had been previously described by Endlicher, under the name of *Zehneria*.

f *B. Maysorensis*. MALE : filaments 3, dilated at the apex, leaving along each margin a linear one-celled anther ; the whole resembling a round 2-celled one: there is a fleshy gland at the bottom of the perianth. FEM. : style trifid at the apex with stigmas as in *Bryonia*, arising from a fleshy disk.

% *B. Hookeriana*. MALE : filaments 3, dilated at the apex, bearing a linear 1-celled anther on each margin at the back, the whole resembling a reniform 2-celled anther: bottom of the perianth with a gland. FEM. as in *Br. dioica*.

§ *B. umbellata*. MALE : filaments 3, dilated at the apex into a large flat reniform body, having the linear anther-cells along the margin at the back: apparently no gland in the bottom of the perianth. FEM. style arising from a 5-lobed and lacerated gland, entire : stigma 3-lobed, sometimes 3-partite.

East India: while the only instance of *Bryonia*, in the *Prodr. Fl. Penins. I. O.*, would be *B. lacinosct*\* Linn. But if *Bryonia* is to be broken down, the other species must be disposed of. Thus *B. Scabrella*, Linn, has the style arising out of a fleshy disk as in *Bryonia* and *Pilogyne*; it is undivided, and has three ovate erect stigmas more or less united together; but the male flower has all the anthers united, the cells posticus, linear, and straight: it thus approaches *Cephalandra*, but then the anthers are gyrose. In *B. tubiflora*, W. and A. (of which the male only exhibits flowers in my specimens) there are three slender filaments, with the anthers cohering into one conical mass covered on the outside with slender linear anfractuose anther-cells; it thus also approaches to *Cephalandra*, but the tube of the perianth is slender and long: not having seen the male of *Cephalandra*, I am uncertain whether the stamens be united or free at the apex; they are however united at the base, according to Schrader. *Br. rostrata*, Kottl. belongs yet to another group: here the style is entire, stigma large, deeply lobed, lacerated, and recurved; anthers three, anticous, nearly sessile with the connectivum produced beyond them at the back into a short beak. *Br. epigaa*, Rottl. has a similar style, but my male specimens are not sufficiently perfect for examination. Now if we adopt Schrader's tabular view (Linn. xii. p. 403,) *B. rostrata*, *epigcea*, and *deltoidea*, Arn., would form a new genus (*Aechmandra*) between *Coniandra* and *Cyrtonema*; *B. tubiflora* would form another (*Gymnopetalum*,) near *Trichosanthes*; and *B. Scabrella* would not agree with any of his sections, but might be placed under the name of *Mukia*, in a section intermediate between those to which *Pilogyne* and *Bryonia* belong, in which last the anther-cells are flexuose, gyrose, or anfractuose.

28. Among the *Conifera*, we find inserted *Ophiria stricta*, L., with which it has certainly no affinity. This genus is entirely

\* *B. laciniosa*. Anther-cells anfractuose or rather sinuose along the margin (at the back) of the sinuated dilated apex of the filament: there is no gland in the bottom of the perianth.

omitted by Mr Harvey in his genera of South African plants, and by Sprengel in his genera. It was founded on a plant of Burmann's, and appears to me from the short original description given of it, and the remark that it is similar to *Gnibbia*, to be precisely that genus. Both are said to have a 2-valved, 3-flowered involucre, and 4 petals; but *Ophiria* is said to have a superior corolla, *Grubbia* an inferior one. Now whether the segments of the perianth be so called, or are petals, they are nevertheless superior; and therefore the "character of *Ophiria* agrees better with specimens of *Grubbia* than that by which the latter was described. The original *Ophiria stricta*, L., may indeed be considered as identical with *Grubbia rosmari?ifolia*,<sup>1</sup> Berg>\* Lamark, however, in his "Illustrations de Genres," t. 293, has figured a very different plant under the name of *Ophiria*^ while the description given in the *EncycL Methodique* (except the portion relating to the leaves and fruit,) is derived from the previously published character. The *Ophiria* of Lamark, or that figured by him, is by the French botanists denominated *Ophiria*, although they do not seem to be aware that it is not the original one; as however the latter must be united with *Gnibbia*^ there can be no difficulty in retaining *Ophiria* for Lamark's plant. *Ophiria stricta* of Drege's collections is that of Lamark. Endlicher in his genera, has very correctly united the Linnean *Ophiria* to *Grubbia*, but has unfortunately cited also Lamark's figure, and in addition given such a character to the genus, taken partly from the one, partly from the other, as applies to neither. Klotzsch in the *Linncea*, XIII. p. 379 has given a new generic character to *Grubbia*, and described a new genus *Strobilocarpus* without being aware that this last was the *Ophiria stricta* of Lamark, with which however his only species, *S. diversifolius*, is identical.

\* To this belongs *G. rosmarinifolia* of Drege's last distribution, and also, as appears to me, his No. 8161: the *G. hirsuta* E.M. seems to be distinguished by being much more hairy, indeed almost villous, and the branchlets which bear the leaves being very short, so that the leaves seem nearly to be fasciated.

Having endeavoured to elucidate the synonyms of these plants, I shall advert to the structure of the ovary and their place in the system. Endlicher states the ovary to be 1-celled, with 2-3 ovules suspended from the apex of a free central placenta. Klotzsch gives the same structure to the ovary, but attributes only one ovule to *Grubbia*, and two to *Ophiria*. Endlicher with doubt, and Klotzsch with certainty, refer them to Santalaceae and were there indeed a free central placenta, such an affinity would be at once acknowledged; but my examination leads to a different conclusion.

In neither genus can I discover the least trace of a genuine free central placenta. But M. Decaisne in an excellent memoir on these and other plants in the 12th volume of the new series of the *Ann. des Sc. Naturelles*, observes: "Hitherto the ovary of *Grubbia* has been described as unilocular; nevertheless, on examining the flower before or even at the period of its expansion, we see the ovary divided into two portions by a thin and membranous dissepiment at the summit, and on each side of which is suspended an anatropal ovule; afterwards one only of these ovules becomes developed, pressing the dissepiment against one of the sides of the ovary cell. In *Ophiria*, this structure is observable in the ovary, and resembles exactly that described and figured by M. Brongniart in the genus *Berzelia*, belonging to the *Bruniaceae*."

My observations on these genera do not precisely coincide with those of Decaisne; but in both there is a decided tendency towards a bilocular ovarium. In *Ophiria*, the dissepiment I have always found to be imperfect, and attached only to the one side of the cell, constituting an elevated internal ridge: there is one pendulous ovule from each side of this dissepiment or ridge, at the apex. In *Grubbia* I also find constantly two ovules; and although I have never been so fortunate as detect the complete membraneous dissepiment mentioned by Decaisne, I find a tree very small and thin membrane separating the ovules, which are pendulous from its apex; and along each side of the inner surface of the ovary are two slightly elevated lines, to which it is highly probable the membrane was attached in

a very early state; this loosened septum must be what had been previously supposed a free central column, but while it is detached from the sides, its connexion with the base is also interrupted, so that it soon adheres only to the apex of the ovarium.

The seed has not been seen by Klotzsch or Endlicher. I find it to contain in *Ophiria*, a small green cylindrical embryo at the upper end of a copious fleshy and somewhat oily white albumen; I have not the seed of *Grubbia*; Decaisne however attributes the above structure to both genera. I quite agree then with that botanist when he says that these two <sup>is</sup> have been improperly classed among the *Santalaceæ*" and with Mr Harvey that the structure of the anthers relates them to *Hamamelidæ*, or as I had the pleasure of indicating to Mr Harvey, that they form a small group intermediate between that Order and *Bruniaceæ*, but most allied to the latter. It is indeed with *Bruniaceæ* that M. Decaisne also allies them, an affinity which would be still more decided if his analysis of the ovary were to prove correct.

Endlicher, Klotzsch, and Decaisne, state these genera to be without petals. Harvey in *Grubbia* describes what they call the segments of the perianth, as petals. In both I find the calyx truncated, and the petals (4, or sometimes but rarely 5 in *Ophiria*), inserted within the margin of the calyx that is continuous with the inner but not with the outer surface of the calyx; these touch each other, but scarcely cohere at the base, are valvate in aestivation, and deciduous. To this group I long since proposed to Mr Harvey to give the name of *Ophiriaceæ*, in preference to *Grubbiaceæ*, for reasons obvious to an English ear; its place would be towards the end of the class *Discantheæ* of Endlicher.

I have only further to add, that Endlicher states the stamens to be placed in pairs before the segments of the perianth (petals) ; while Klotzsch observes them to be on a double row, " exteriora sublongiora perianthii laciniis opposita, interiora subbreviora cum iisdem alterna." I cannot discover that they are so placed, and moreover if any are longer than

the others; but there is scarcely any difference in that respect: they are those which alternate with the petals, such being exactly the reverse of what has been described by Klotzsch. Those opposite to the petals are slightly attached to their base, while the alternating ones serve to connect the bases of the petals in the state of aestivation; a cohesion, however, which is very slight, and soon destroyed by the expansion of the flower.

29. Of the "incerti sedis," of Drege's catalogue of February, 1838, I do not possess his *Laurophyllus capensis*; the true plant approaches most to *Terebinthacea*, while in Drege's catalogue for 1840, his plant is placed at the end of *LaurUnece*, along with No. 2311, which however is *Trichocladus crinitus*, Presl, one of the *Hamamelidea*. Mr Harvey's character of this genus is so different from that given by Endlicher in his genera, that some explanation is necessary. Mr Harvey seems to have examined only the male flowers with a sterile ovary; while Endlicher, and I have corroborated his analysis, examined the female or rather a bisexual flower. Moreover, the plant analyzed by Mr Harvey is probably a different species from that of Endlicher; Mr Harvey's has leaves slightly cordate at the base, acute, and very hairy underneath; this is No. 625 of Zeyher's collections from the forests of Adow and Krakakamma in the district of Uitenhage, and appears to be *T. crinitus*, E. and Z., but not I think of Thunberg. Thunberg describes and figures his plant with acuminate leaves, which are also acute at the base, and pale underneath; this is No. 2311, b. of Drege above referred to, and I have the same collected between Cape and Grahamstown; this I believe to be *T. ellipticus*, E. and Z. In this last, even the male flowers have the calyx only 5-lobed, and by no means cleft to near the base, a structure alluded to perhaps by Ecklon and Zeyher in the following words, « Calyx cupuliformis, exacte 5-dentatus."

30. No. 8262 of Drege, is *Polpoda capensis*, Presl, or *Blepharolepis Zeyheriana*, Nees ab Esenb. in Lindley's *Int.*

p. 442; this genus is entirely omitted by Mr Harvey; it belongs however to the *Portulacece*, where it is arranged by Fenzl and Endlicher. I have strong reasons for thinking this is the *Herniaria lenticulata* of Thunberg (not of Linnaeus, which according to Vahl and Smith, is *Cressa cretica*). It is also No. 26 of Sieber's *Flora Mixta*.

The above observations relate to Drege's distribution at the end of 1838, and beginning of 1839. There are however some other Cape genera on which I have made a few notes, which I shall here add.

*Cycloptychis*, E. M.—This genus of *Cruellera*, has the petals as in *Brachycarpece*; the silicule (but not nearly mature in my specimen), is orbicular-ovate, acuminate with the persistent elongated conical style, somewhat compressed and nucamentaceous. I suspect it is quite indehiscent; the valves are furnished with a keel along their middle, which is more prominent in the middle and provided with several elevated wrinkles radiating from that point. The septum is somewhat bony and orbicular. Ovules solitary in each cell. Embryo (which I have only seen in the advanced 3vary with unripe seeds), has linear accumbent cotyledons, [not at all spiral, but rather bent back towards their apex. It may perhaps be placed among the *Spirolobea*, nucamentaceae latiseptae, but I prefer making a small group for it, in which case, *silicula nucamentacea latisepta cotyledonibus linearibus* will suffice both for a sectional and generic character.

*Cavanilla*, Th., or *Moldenhauera*, Spr.—The species before me is No. 680 of Zeyher's Uitenhage collections, and was found in the forests of Krakakamma; it is obviously likewise that mentioned by Mr Harvey in the note at p. 140 of his Genera, and appears as he says to differ from the original species (*C scandens*, Th., or *M.scandens*^ Spr.), by the acute instead of obtuse leaves. I have not seen the male flowers, but the following analysis of the female may not be unacceptable.

MOLDENHAUERA. *Spr.**Cavanilla*, Thunb.

*Flores* dioici.—FCEM. *Perianthium* simplex 4-(vel rarius 5-) partitum, segmentis oblongis obtusis. *Stamina* sterilia 4-(nunc 5), brevia, hypogyna, perianthii laciniis alterna. *Ovarium* cylindraceo-oblongum, perianthii longitudine, dense setosum, setis erectis adpressis, uniloculare. *Ovula* duo, ex apice loculi pendula, unum subsessile, alterum funiculo crasso instructum. *Stylus* nullus. *Stigma* peltatum, concavum, radiatim multi-(sub. 9-)-partitum.—Frutices: *caules* volubiles, ramosi, hispiduli. *Folia* alterna, exstipulata, petiolata, hirsuta, subtus molliora, nervo medio venisque primariis subtus albis, subangulato-lobata vel grosse dentata. *Racemi* axillares, pedunculatè breves, pauciflora. *Pedunculi* petiolum cequantés. *Pedicelli* breves in axilla bracteae parvè sita. *Setae* (praecipue ovarii) rigidi, fragiles basi subbulbosi.

There is no order with which I can satisfactorily point out that this genus has any affinity. In many respects the leaves resemble those of some *Loaseae*, and *Turneracem*; but the perianth being perfectly free from the ovary removes it from the former, and with the latter there is little resemblance. The ovules being in pairs forbid its being placed in *Urticeae*, with which Mr Harvey is disposed to ally it, but it may be conveniently placed in that neighbourhood until the male flowers and fruit be known.

*Trichilia Ekebergia*, E. M., is a genuine species of *Ekebergia*, as restricted by Adr. de Jussieu in his valuable memoir on the *Meliaceae*. It chiefly differs from my specimens of *Ekebergia capensis*, Sparm. (or *Trichilia capensis*, Pers.) by the larger size of the foliage and panicles; but that may be the effect of accident. In *T. capensis*, which is in Zeyher's Uitenhage collection, No. 559, the ultimate branches are almost destitute of leaves except at the apex, but are covered with numerous tubercles from which the previous leaves seem to have fallen off.

*Pentameris* E. IV., of which there are two species, *P.*



*macrophylla*, and *P. microphylla*, I cannot distinguish from *Lebretonia*, now united to *Pavonia* by Endlicher.

Among *Rubiacece* Drege has some new genera, *Alberta*, (described by Endlicher in his genera, p. 565, but more fully by E. Meyer in the *Linnaea* xii. p. 258,) a genus not far from *Musscenda*; *Carpothdlis* E. M., a genus near *Coffea*, if not the same as De Candolle's second section, *Crocyllis*, and *Lagotis*. These last two belong to the group *Anthospermece*; the first of them appears to be congener with *Anlhospermum Lichtensteinii* Cr., while the other is identical with *Anth. spermacoceum* Reich. Of the *Anthospermece*, and closely allied to *Coprosma*, I possess what seems to be an undescribed genus, found by Bridges (No. 762) in fields near Valdivia in Chili: it may be called and characterized shortly thus:—

LE#TOSTIGMA.

*Calyx* 4-dentatus. *Corolla* tubulosa, 4-fida. *Stamina* 4, didynama, ducbus longioribus exsertis. *Stigmata* duo, hirsuta, elongata, filiformia.— *Suffrutex* *pusillus*, *radicans*, *glaber*. *Caules* 2—3-unciales. *Folia* *rotundo-ovata*, *obtusa*, *petiolata*, *marginē ciliato-scabra*; *petiolis basi ope stipularum brevium truncatarum connatis*. *Flores* *terminates*, *solitarii fernive sub\* sessiks*.—Differta *Coprosma* corolla tubulosa, staminibus in-sequalibus, et habitu.

In concluding these remarks on some of the Cape Genera and species, in the course of which I fear I have made several unnecessary and tedious digressions, I cannot resist expressing my regret that more care has not been bestowed on the determination of Drege's superb collections. It is well known that Ecklon and Zeyher not only brought to Europe a rich harvest of Cape plants, but that a great portion are named and described in their *Enumeratio plantarum Africa Australis extratropicce*: the descriptions however are short, and even omitted entirely when the species is not new; so that without an actual comparison the identity of Drege's specimens, with those of Ecklon and Zeyher, cannot be made out. This however the subscribers to Drege's plants had some right to ex^

pect; but on the contrary, as the *Leguminosa* and *Umbellifere* show, no pains have been taken to refer them to Ecklon and Zeyher's already published species, while new names have been given frequently to the same genus. An interchange of specimens between these collectors, would have been beneficial to both parties, as well as to those who have received a portion of them.

XX.—*On the* CUCURBITACEJE. By G. A. WALKER  
ARISTOTT, Esq., LL.D.

IN the preceding paper on Cape plants, I took the opportunity of making a few remarks on *Bryonia*, relatively to Schrader's new arrangements of the genera of this order. This has been published in the *Linncea* xii. p. 401, but from the circumstance of characters not being added to the genera, except in one or two instances, the conspectus cannot be of much use to the Botanist. My intention is here to exhibit Schrader's subdivisions, and to give short generic characters: in doing so, I shall adopt as far as possible Schrader's definitions, form new sections, and break up the old genera when requisite, so as to carry out his method. I do not however express my own opinion as to the propriety of these dismemberments, further than that they will bring to view differences of structure of considerable importance in this extremely difficult order.

One genus introduced here by most Botanists as well as by Schrader, I exclude without any hesitation from the whole order; I mean *Erythropalum* of Blume: this I have not seen, but from an attentive examination of the description in Blume's *Bijdragen*, p. 921, I have no doubt of its intimate affinity with my *Mackaya*, published in No. 12 of the *Magazine of Zoology and Botany*, if indeed the two genera, and perhaps the species, be not identical. *Allasia* of Loureiro is very imperfectly known; perhaps it is the same as *Telfairia* or *Jolifla*, but very inaccurately described. *Myrianthus* P. B. has surely no connexion with the order. *Turia* Forsk., is

probably made up of different genera, but chiefly belongs to *Luffa*. *Thladiantha* of Bunge is as yet imperfectly described as to the insertion of the stamens, but may possibly form a distinct tribe. *Zucca* and *Kolbia* are too obscure to permit me to hazard any conjecture upon them. *Gronovia* can scarcely belong to the *Cucurbitaceæ*. I shall enumerate the species which I myself possess, and a few others which also I have examined.

CUCURBITACEÆ, Juss.

Div. I. *Cirrhis axillaribus*.

Trib. I. NHANDIROBÆ. *St Hil*\_\_\_Flores dioici. Calyx 3 ? vel 5 fidus. Stamina 5, distincta vel basi connata, interdum totidem sterilibus alternantia. Antherse didymse biloculares et apice filamentorum adnatae. Fructus triloculares indehiscens, placenta (axi) centrali: ovula erecta.

1. *Feuillea* Linn.:—Calycis fem. limbus semisuperus, ovarium semi-inferum. Bacca globosa, medio limbi calycini cicatrice zonata. Semina submarginata. Antherarum loculi longitudinaliter dehiscentes.

1. *F. trilobata* Lin.

2. *Zanonia* L.,—Calycis fem. Jimbus superus, ovarium inferum. Fructus elongato-turbinatus v. hemisphaericus superne calyci cicatrice zonatus. Semina ala foliaceâ magnâ cincta, vel testa crassiuscula rugulosa. Antherse loculis secus apicem rima transversali dehiscentibus, itaque pseudo-uniloculares.\*

1. *Z. Indica*, L. 2. *Z. Wightiana* Am.

• De Candolle, Endlicher, and most other Botanists, ascribe to this genus a 3-lobed male calyx, a 5-partite corolla, and unilocular anthers. In all the species I have examined, the male calyx is 5-cleft, (although in *Z. Indica* the lobes often cohere in pairs,) and the anthers are as above described. In *Z. Indica* the petals are connected at the base, but in *Z. Wightiana* a species from Ceylon, (foliis trisectis, segmentis breve petiolulatis ovato-lanceolatis remote serratis, racemis masculis compositis folium subsequantibus, caule flexuoso filiformi glabro, floribus minutis,) the petals are quite distinct, agreeing in these respects with *Z. sarcophylla* Wall. Fl. As. Rar. t. 133, which also has bilocular anthers, and a 5-cleft male calyx. I have some doubts if *Z. Wightiana* be really distinct from *Z. laza*, Wall.; the habit of the two is the same, except that in the latter the leaves are usually

## Div. 11. Cirrhis lateralibus.

Trib. II. *Telfairice*, *Endl.* (*Joliffieaa*, *Schrad.*)—Flores dioici. Calyx 5-fidus. Stamina 5, versus basin corolla inserta, basi triadelpa. Antheras laterales rectse. Ovarium e carpidiis 3—5 compositum, carpidorum marginibus seminiferis intra loculum porrectis, parietem haud attingentibus. Semina plurima, nucamentacea, horizontalia, parietem spectantia.

3. *Telfairia*, *Hook.* (*Joliffia*, *Boj.*—*Ampelosicyos*, *Pet.Th.*)

1. *T. Pedata*, *Hook.*

Trib. III. CUCURBITE<sup>^</sup>, *Schrad.*—Flores monoici, rarius dioici, rarissime polygamo-monoici vel hermaphroditi. Calyx 5-fidus vel 5-dentatus. Stamina 5, rarius 3 vel 2, corollae inserta, libera vel varie cohaerentia. Antherae nunquam annulares. Ovarium e carpidiis tribiis rarius duobus compositum, carpidorum marginibus intra loculum revolutis parietem attingentibus. Semina plurima, vel pauca, "placentarum divisionibus exterioribus (*Cucurbita*, *Lagenaria*, *fy.*,) vel angulis loculamentorum externis (*Cucumis*) affixa, rarius dissepimentis per maturitatem evanidis velut parietalia." *Schrad.*

Sect. 1. *Filamenta 5<sub>9</sub>fauci inserta. Antherce liberce vel 3-adelpk<sup>t</sup>c, anticce<sup>^</sup> rectce, uniloculares.* Fructus baccatus, oligospermus.

4. *Coniandra*, *Schrad.*—Corolla 5-partita. Anth. connectiva conniventia oblongo-conica. Fructus rostratus.

1. *C. grossularicefolia* (*Bryonia grossularicefolia*, *E. M.*); *hujus an\* tliera oblongce.*

5. *Cyrtonema*, *Schrad.*—Corollse limbus 5-partitus. Filamenta incurvata 5; connectiva incrassata 3-adelpa, antheris sub apice lateraliter affixis, oblongis. Fructus rostratus.

pedately divided into 5 leaflets, and Dr Wallich describes the stem as furnished with a double row of hairs, which however in the only specimen I have seen as not perceptible. In *Z. cissoides*, *Wall.*, of which I observe a female specimen in Sir W. Hooker's herbarium, the ovarium is hemisphaerical, 3-celled, each cell with only one ovule; the fruit is globular, about the size of a small pea, and contains two or three seeds, which have a thickish regular testa, slightly compressed, but destitute of a wing or margin. I have not seen the female flowers or the fruit of the other species with compound leaves, but it is probable that some may agree with *Z. cissoides*, in which case they may justly form a distinct genus.

Sect. 2. *Filamenta triadelpka, tubo inserta. Antherce laterales, recta, 3-adelpha, vel omnes cohcerentes.*

6. *Sicydiuniy* Schlecht.—Corolla 5-petala, petalis indivisis. Filamenta 3-adelpha, apice dilatata et incurvata; antherse muticae, triadelphae.

7. *Bryonopsis*.—Corolla 5-partita, lobis obovatis integerrimis undulatis. Filamenta 3-adelpha, fauci inserta; anthera? muticae triadelphse. Stigma fimbriatum. Bacca oligosperma.

1. *B. Courtallensis*>

8. *Aeckmandra*.—Corollse lobi indivisi. Filamenta 3-adelpha, brevissima; antherae triadelphse secus connectivi margines antice inserts lineari-oblongae, connectivo dorso ultra antheram in rostrum breviter producto. Fructus baccatus, (semper?) rostratus.

1. *J32. rostrata* (*Bryonia rostrata*, Hottl.)—2. *JE. epigcea* (*Br. epigcea*, Rottl.)—3. *JE. deltoidea* (*Br. deltoidea*, Am.)—4. *JE. n. sp.* ex insula Ceylana.

9. *Melothria*, Linn.—Corollse lobi indivisi denticulati. Filamenta 3, connectivo mutico. Antherse biloculares triadelphse. Fructus baccatus, erostris.

1. *M. pendula*, L. (*Bryonia Guadalupensis*, Spr.)

10. *Ceratosanthes*, Schrad.—Filamenta 3. Antherse triadelphse. Corollae lobi lineares bifidL

11. *Apodanthera*.—Antherse monadelphae, sessiles. Corollas lobi integerrimi. Calyx tubulosus.

1. *A. Mathewsii*.—E Peruvia, (Mathews, No. 932). Affinis *Gymnopetala*, at antheris rectis, filamentorum defectu diversa, hinc nomen.

SECT. III. *Stamina diadelpka, tubo vel fauci inserta. AnthercB 1—Z-adelphe) lineares, sursum et deorsum flexa?, secus margines connectivi integri antice vel lateraliter applicitce. Calyx tubulosus vel infundibuliformis.*

12. *A?iguria*, Linn.—Antherse 2-adelphe tubo vel fauci sessiles: connectivum apice mucronulatum.

Species plurimas vidi e Peruvia, Mexico, Guiana, &c, at omnes indeterminatas: hic referenda Mathews, No. 1218, Schomburgk, No. 500.

13. *Psiguria*, Neck?—Filamenta brevia fauci inserta. Antherse omnes cohaerentes; connectivum muticum.

Hujus exemplum in herb. Hookeriano examinavi, quod verosimiliter. *Anguria trifoliata*, L.

SECT. IV. *FUamenia 3-adelpka, summo tubo corollce inserta, Antherce omnes connectivis cohcerentes et secus connectivi margines dorso applicitce, sigmoidea, biloculares.*

14. *Schizostigma*—Stylus simplex; stigma peltatum, in lobos lineares carnosos 10—12 radiantes fissum.

1. *S. asperata* (*Cucurbita asperata*, Gill.)

SECT. V. *Filamenta distincta vel triadelpha, fauci inserta. Anther<z5, vel 3-adelphce, gyrosce, antics.*

15. *Sphenantha*, Schrad.—Flores hermaphroditi. Fructus capsularis, 3-ocularis, evalvis. Stylus basi disco haud cinctus, trifidus; stigmata 3, subpeltata.

SECT. VI. *Filamenta 3-adelpha<sub>9</sub> basi perianthii inserta. Anthem laterales^ rectos^ triadelpha.*

16. *Pilogyne* Schrad.—Calyx campanulatus. Corollse laciniae patentes, calycem multo superantes. Antherae 1-loculares. Stylus indivisus. Stigma plicatum.

1. *P. Ecldonii* Schrad.? (*Bryoniascabra*, E. M.)

17. *Zehneria*, Endl.<sup>#</sup>—Corollas lobi integerrimi. Fructus baccatus, oligospermus.

1. *Z. maysurensis* (*JBryonia maysurena*, Herb. Madr.)—2. *Z. Hookeriana*, W. & A.)—3. *Z. velutina* (*Br. scabra*, var. E. M.—*Pilogyne velutina*, Schrad. ?)

18. *Karivia*.—Calyx urceolato-campanulatus. Corolla vix exserta, lobis minutis integerrimis. Antherae 2-loculares. Stylus indivisus, basi glandula 5-loba lacerata cinctus. Stigma magnum pileiforme, 3-fidum. Fructus obtusus, vel crasse ac breviter rostratus, subpeponideus.

1. *K. umbellata* (*Bryonia umbellata*, Herb. Madr.)—2. *K. amplexicaulis* (*Br. amplexicaulis*, Lam.)

19- *Hhynchocarpa*<sup>^</sup> Schrad.—Corollae lobi denticulato-ciliati. Stylus trifidus. Stigmata 3, inciso-dentata. Fructus tenuiter rostratus.

• Perhaps following Endlicher, this and *Pilogyne* ought to be united; but as the style and stigma differ considerably, they ought at least to form distinct subgenera.

SECT. VII. *Filamenta triadelpa, basi perianthii inserta. Anthem omnes cohwentas, posticce, Uneares, recta.*

20. *Mukia-Ferianthium* maris fundo glandula instructo. \*em. Stylus basi glandula annular! carnosus cinctus, indivisus. Stigmata 3, plus minusve cohserentia, erecta.

1. *M. scabrella* {*Bryonia scabrella*, Linn.}

SECT. VIII. *Filamenta 5 vel 3 (sc. 5-triadelpa) basi perianthii inserta. Anther\* secus margines connectivi dorso apphcatcB, flexuosa, vel gyrosa, vel anfractuosce. Connectivum aentatum vel lobatum.*

21. *Bryonia*, Linn.\*-Corolla 6-fida. Anther® 3-adelphaj, uniloculares. Stylus 3-fidus; stigmata subreniformia vel whda. Fructus ovoideus vel globosus, baccatus, oligospermus.

1. *B. alba*, L.—2. *B. dioica*, L. (In utraque ovarii loculi 2-ovulati).—3. #. *ganiosa*, L.—4. *B. tenuifolia*, Gill, (hujus anthers triplicate ut in TMTM«o, at fructus Bri/o?ii<z).—5. *B. Garcini*, Willd.—6. ? *B. leiosperma*, W. & A. (In ultima penultimaque speciebus, flores masculos nunc non possideo).

22. *Citrullus* Schrad.-Corolla persistens, 5-partita, subo|ata. Antherae triadelphe, biloculares? Stylus trifidus. ^tigmata obcordata, convexa. Fructus carnosus vel demum sicco-fibrosus, peponideus, polyspermus.

<sup>bU</sup> <sup>l</sup> <sup>Col</sup> <sup>l<sup>a</sup></sup> »a» *officinalis*, Schrad.-*Cucumis colocynthis*, L.)

23. *Ecbalium*, Rich.—Corolla 5-fida. Antherae triadelphe. Ovula biseriata. Stigmata tria, bicornia. Pepobasi elastice dissiliens.

L J- *B. officinamm*, Rich. (£. *purgmSt* Schrad.—*Momordica elaterium*,

*tJnt* <sup>Echin0?</sup> <sup>Stis\*</sup> **Torr. & Grny.-Corolla 6-partita, rota o-campanulata. Stamina 3, diadelpa. Anthers omne, coh.rentes, anfractuos., Stigmata ^ obcor( ^ conni-**

\* *Boylinia trispora*, Nutt., which I have seen in S' w herbarium, seems in no respect to differ from *Bryonia* <sup>tr</sup> <sup>...</sup> <sup>Hooker's</sup>

t I have only met with this in Sir W. Honk <sup>></sup> <sup>o\</sup> <sup>er</sup> <sup>3</sup> herbarium, and ^ specimens have not the female flowers or fruit.

ventia. Bacca inflata, globosa, setoso-echinata, demum exsucca, 2—4-locularis, 4-sperma, apice? elastice dissiliens.

1. *E. lobata*, T. & G. (*Momordica echinata*, Willd.)

25. *Momordica*, Linn.\*—Petala 5, basi calycis adnata, decidua. Antherae omnes cohærentes. Ovula uniseriata. Stigmata biloba. Pepo capsularis 3-valvis, elastice dissiliens.

1\**M. Balsamina*, L. (*Neurospermum cuspidatum*, Raf.)—2. *M. charantia*, L.—3. *M. dioica*, Roxb.—4. *M. mixta*, Roxb.—5. *M\* Garriepensis*, E. M.

26. *Luffa*, Cav—Corolla 5-petala, basi calycis inserta, decidua. Antherae nunc distinctae, nunc 2—3-adelphae. Stylus 3-fidus. Stigmata reniformia vel bipartita. Pepo demum sicca intusque fibrosa, sæpius operculo terminali dehiscens, rarius indehiscens.

«. Stamina 5-distincta.

1. *L\* pentandra*, Roxb.—2. *L. acutangula*, Roxb.—3. *X. Kleinii*, W. & A.

3. Stamina 3-adelpha. (*Hæ, ut videntur, species plurimæ Turiaë Forsk.*)

4. *L. amarcs* Roxb.

y. Stamina diadelpha ; fructus indehiscens.

5. *L. tuberosa*, Roxb\*

27. *Benincasa*, Savi.—Corolla 5-partita (flava), patens. Antherse triadelphæ. Stylus indivisus, brevissimus. Stigma magnum, crassum, irregulariter lobatum plicatumque. Pepo carnosus indehiscens.

1. *B. cerifera*, Sav.

28. *Lagenarid*) Ser.—Corolla 5-petala (alba). Antherae triadelphæ. Stylus subnullus. Stigmata 3, crassa, 2-loba. Pepo carnosus, indehiscens.

1. *L. vulgaris*, Sav.—2. *X. sphaerocarpa*, E. M.

SECT. IX. *Filamenta triadelphe^ perianthii tubo inserta. Connectiva Integra. Antherce tri-v.-monadelph&) posticce, sursum et deorsum flexce\* Calyx elongatus^ tubulosus.*

29. *Trichosanthe* Sy L.—Corollæ (albæ) lacinae lacerato-fimbriatæ. Stylus 3-fidus. Stigmata oblongo-subulata.

\* I still consider *Mouricia* to be the same genus. Loureiro places it in ««*Syngenesia*,» from the cohesion of the anthers, although he also asserts these to be "invicem distinctæ." Like Loureiro's other descriptions, that of the present plant is not to be trusted to.



\* *Eutrichosanthes* *maSCULi bractea ma* *9nafoliacea hand suf-*  
/ *itt.*

1. *T. nervifolia*, Linn.-2. *T. anguina*, L.-3. *T. cucumerina*, L.  
ft involucrena; anthera omnes cohrenles; flores masc. foliaceo-  
oracteatu

4. *T. palmata*, Roxb.

30. *Gymnopetalum*.—Calyx fauci constrictus. Corolla (flava), 5-partita, laciniis integerrimis. Antherse omnes in conum arete coherentes. Fructus baccatus, ovatus, rostratus, oligospermus. Semina teretiuscula, margine obtusa.

1. *G. Ceylonicum*; calyce glabro, foliis 5-lobis (*Bryonia tubiflora*, W. A.;— *G. Wightii*; calyce hirto, foliis angulato 3—5-lobis.

SECT. X. *Filamenta scepius triadelpa, basi perianthii inserta. Connectiva Integra, nisi dum ultra antheras producta. Anthera lineares posticce, sursum et deorsum flexa. Calyx subcatnpa?iulatus.*

31. *Cucumis*, Linn—Corolla 5-partita, integerrima. Antherae triadelphae, vel omnes leviter coherentes, apice appendiculatae. Pepo carnosus indehiscens vel rarius irregulariter dehiscens, Polyspermus. Semina ovata, compressa, margine acuta.

1. *C. melo*, L.-2. *C. momordica*, Roxb.—3. *C. sativa*, L.—4. *C. pubescens*, W.-5. *C. trigonus*, Roxb.—6. *C. arenarius*, Schrad. (*C. prophetarum*, E. M.)-7. *C. Africanus*, Th.-8. *C. rigidus*, E. M.-9. *C. flezuosus*, L. i o. *C. «^w,7'a, L.*

32. *Cucurbita*, Linn.—Corolla campanulata, integerrima. Filamenta basi triadelpa, vel omnino monadelpa. Antherae cohserentes, exappendiculatae. Pepo carnosus, indehiscens, polyspermus. Semina margine subtumido cincta.

1. *Cucurbita*, Linn.—Corolla campanulata, integerrima. Filamenta basi triadelpa, vel omnino monadelpa. Antherae cohserentes, exappendiculatae. Pepo carnosus, indehiscens, polyspermus. Semina margine subtumido cincta.

\* Elsewhere I have ascribed to the species of this section triadelphous anthers; but *Cucumerina* (ZihozT\*) is a specimen which appears to cohere; in the filaments are inserted almost at the top of the tube of the

coriacea 1-locularis, 2—3-valvis, elastice dissiliens, oli<sup>o</sup>-sperma.

(Hue pertinere videtur, quamvis dioica, *Sicyos angulata*, Hook. Fl. Bor. Am. quod ad exempla ad oras Bor. Am. Occid. lecta; at fructifera non vidi.)

34. *Schizocarpum*, Schl.—Corolla infundibuliformis integerrima. Filamenta triadelphica. Antherae omnes cohserentes. Pepo in valvas plures apice cobaerentes dehiscens, polyspermus.

(Hue etiam forsitan trahendum *Elaterium pubescens*, Benth., cujus autem fructus non vidi.)

35. *Coccinia*, W. & A.—Corolla campanulata, laciniis acuminatis integerrimis. Filamenta monadelphica. Antherae triadelphicae, conniventes, exappendiculatae. Pepo subbaccatus, trilocularis, irregulariter dehiscens, polyspermus.

1. *C. Indica*, W. & A.

SECT. XI. *Filamenta monadelphia* in columnam apice capitato-antheriferam connata. *Anthera gyrosce, posticce*.

36. *Cephalandra*, Schrad.

1. *C. quinqueloba*, Schrad. (*Momordica quinqueloba*, E. M.)

Trib. IV.—SECHINEJE, Schrad. Flores monoici. Calyx 5-fidus. Stamina 5, connata in cylindrum centralem, superne 5-fidum, divisionibus antheriferis. Antherae in cujusvis divisionis apice lineam constituentes bis deorsum semelque sursum repentem. Ovarium 1-loculare, 1-ovulatum, ovulo pendulo. Fructus (magnus) carnosus, apice unilocularis, monospermus.—Schrad. (praecipue).

37. *Sechium*,\* Browne.

Trib. V. SICYOIDEJE, Schrad. Flores monoici. Calyx 5-dentatus. Stamina 5, in columnam centralem, apice capitato-antheriferam monadelphica. Antherae apicem columna<sup>3</sup> incrassatum omnino tegentes. Ovarium uniloculare, uniovulatum, ovulo pendulo. Fructus (nucamentaceus) unilocularis, mo.

\* I have seen no specimen of this genus ; Endlicher however, from the similarity of the ovarium, places *Sechium* and *Sicyos* into one tribe, and apparently with justice, as the principal difference lies in the divided or entire staminal column.

nospermus. Semen funiculo filiformi, ex apice descendente suspensum.

38, *Sicyos*) Linn.

1. *S. angulatus*, L.—2. *S. Baderoa*, Bert.—3. *S. vitifolia*, W—4. *S. pachycarpus*, H. & A.

Trib. VI. CYCLANTHERE<sup>^</sup>, *Schrad.* Flores monoici. Calyx 5-dentatus. Filamenta in columnam integram monadelpham, apice in discum depresso-orbiculatum explanatam : antherse in annulum marginalem circa discum horizontaliter dispositae, oblongo-lineares, imbricatse. Ovarium uniloculare ? tri- (vel pluri)-ovulatum. Fructus spinis mollibus obsitus, "carnosus, unilocularis, oligo-vel-polyspermus. Placenta centralis, deorsum dependens, margine utrinque seminifera. Semina horizontalia." *Schrad.*

39. *Cyclanthera*, *Schrad.*

1. *C. hystrix* (*Momordica Tiystrix*, Gill.) cui fructus obliquus oligospermus, elastice dissiliens.—2. *C. Jfyathewsii* (Mathews herb.<sup>^</sup> Peruv. n. 736.)—3. *C. dlgitata* (Math. herb. Peruv. n. 298.)—4. *C. dissecta* (Druramond herb. Texan. II. n. 39. *Discanthera dissecta*, Torr. and Gray.)—Hue etiam pertinet *C. pedata*, *Schrad.*, (*JE'laterturn ribifolium*, Schl. in *Linnaea*, vii. p. 388.)

## XXI.—BOTANICAL INFORMATION.

### *Notes on Vegetation in Khorasaun.*

THE following interesting remarks on the vegetation about "Bamean" have recently been communicated from that place by a highly talented Botanist, in a letter dated August 6, 1840:—

"I have just come to this place from Cabul; but as I was here nearly at the same season last year, I have met with

\* Schrader ascribes to this genus subglobose anthers : the whole mass is globose, but each anther is linear-oblong, applied vertically round the capitulum; the cells appear to me to be not straight, but bent again downwards.

but little that is new. The south European vegetation continues, so far as such a statement is assumable by one who never was beyond Paris; but it answers to the definitions of those provinces, not kingdoms, by Schouw, of which I have had a glimpse in Murray's geography. The mountains, if possible, increase in barrenness, and few trees are to be found even among the cultivated tracts, which are always confined to such *rivers* as really contain water. At this place we are on the Tartary side of the Hindookoosh (which is not as has been stated, covered with forests, but absolutely bare of trees) and we are at least 7000 feet above the Tartar plains. There is little difference in the vegetation of either side at these elevations; but that of this side is decidedly poorer in forms and individuals, and has from the saline soil, a greater preponderance of curious succulent *Chenopodiaceae*, mostly, I assume, preferable to *Kochia*. %The only green spots visible are those confined to the banks of the river, and in such places as are not under cultivation, cool green turf sward occurs, with **thickets of *Hippophae*, *Herberts*, *Tamarix*, and *Rosa***. **Throughout** Khorasaun Eastern, no tropical forms are found even at comparatively low elevations, if we except a few grasses, such as *Holcus*, *fyc*, but such if I rightly remember occur on the shores of the Mediterranean. The European nature of the vegetation of the low tracts is almost totally opposed to the received opinions of the effects of temperature; for they are among the hottest climates in the world, and the European forms are not as in northern India, mere annuals confined to the winter months. The Flora of Khorasaun bears on many important points connected with vegetable geography. It shows forcibly the great effect in variety of form, of humidity; it illustrates admirably the similarity of the Flora over a great extent, where no chains of lofty mountains, no seas occur; indeed no obstruction of any sort occurs. The highest ridge crossed *en route* to this, is nearly 13,000 feet; but in consequence of the extreme summer heat, this is not within perhaps 2000 feet of the general inferior limit of snow. At such elevations, the mountains are dotted over

with hemispherical bushes of prickly *Statice*s, and with different sorts of *Thistles*, and *Artemisia*; and it is only in damp ravines that any thing approaching to variety is to be found. In such *Euphrasia*, *Primula*, *Juncus*, various *Carices*, *Swertia*, *Gentiana*, *Parnassia*, *Pedicularis*, *Ranunculi*, *Silene*, *Astragali*, &c, occur. One is perhaps, on the whole, most struck with the abundance of the prickly *Statice*s, and prickly *Astragali*. The grand orders are *Composite*, especially *Carduacee*, *Leguminosce*, *Labiatae*, *Boraginee*, *Umbellifera*, *Crucifera*, *Silenacee*, *Chenopodiacee*, *Graminea*?. From what I remember of the superb *Flora Græca*, I think that a Bauer could produce one much similar by coming to this country."



*Rough Notes on Ceylon Scenery*, by CAPT. WILLIAM CHAMPION;  
and *Observations on the Banyan Tree*, *Ficus INDICA*.

THE following notes on Ceylon scenery and vegetation were made during our friend's very brief stay in that most interesting island, and were communicated along with some very clever sketches, to which the remarks refer, and which we regret it is not in our power also to lay before our readers. The first drawing represents the

VEANGODAH LOTUS TANK.—When Bishop Heber visited Ceylon, *Veangodah* possessed a double Bungalow Rest House. It is now a ruin; but we were able to sketch the *Lotus Tank* mentioned in his journal. The tree to the left is a *Sappan*, with its branches of black pods. Beneath it the *Siritilla*, or *Ipomœa Zeylanica*, is trailing its rose-coloured blossoms. Over the tank waves a bamboo, and the *Nelumbium* in flower is the rose-coloured variety. The Palms are *Cocoa* and *Areca*. The tree with horizontal branches is the *Ceiba*, *Wolf*, or *Bombax pentandrum*; its pods are filled with cotton. Above it rises a *Teak* (*Tectona grandis*,) with enormous leaves and heads of white flowers several feet long. The Pepper vine occasionally attaches itself to it.

BETWEEN VEANGODAH and AMBLESSOOSE.—My intention was to illustrate the journal of an expedition from Columbo

to Matelai, made in August, 1839. This rough sketch is done from memory, and consequently cannot be depended on. We found a valley entirely flooded, which we passed with considerable risk, myself in my Bandy, (Ceylon Buggy) and Mr Hume on horseback. We saw several cattle carried off by the stream, and the inhabitants of the village represented, were seated on the roofs of their huts, the water flowing through the doors and windows.

OTIAN KANDY.—Probably three thousand feet above the level of the sea, looking down on the district called four Korles. In the foreground is a Ceylon oak-tree (*Schleichera trijugd*), Kohngaha, and a *Bombax heptaphyllum*.

The KANDY LAKE, and its beautiful border of Thespesia trees; their thin green foliage dotted with large primrose-coloured hollyhock-like flowers, or turning into yellow sear; screening hills covered with "dell," (brush-wood,) or mounted by trees, bamboos, and cocoa-palms, bewitchingly intermingling their plumage. In sunshine they seem to overhang the waters of the lake; obscured, they retire, darkening to a neutral tint from deep green to purple with green marbling. At sunset, the fleeced clouds frequently become roseate. I have seen the waters of the lake borrow the reflection, rivalling in glaucous hue the famed Andalusian morning-stars, and afterwards becoming a silken blue. In the sultry forenoon, a breath of air ruffles the Bamboo; they bend over like reeds, but so droopingly and so languidly, and recover themselves with such grace, that the effect is charming. One evening at sunset, the waters of the lake became roseate. At night

It is a clime whose veriest decay  
 Adds fresh luxuriance to the tangled maze  
 Of jungle parasites. Glittering in the rays  
 Of the bright orb of night,  
 The fire-fly's purer light,  
 Adds brilliance to the lovely flower,  
 Of the *Thespesia's* foliaged bower.

STOREHOUSE, MATALAI.—The two principal trees are a jungle Nutmeg (*Myrisika Syria* (?) Moon), and behind it a

Ssedumba (*Celtis?*) The large-leaved tree is the Kakuraa (*Aleuritis triloba*). A Citron is behind the store-house, and in the right hand corner is the *Acacia hamata*, or Fish-hook thorn, a sensitive creeper of great beauty, which festoons trees all over the interior.

BANYAN TREE (*Ficus Benghalensis*).—The sketch of this tree, *Ma Nuga* of the Cingalese, was taken in the Cinnamon Gardens from near the lake in which Sir Robert Arbuthnot's residence, Kew, is situated, and overhangs its waters. A Moosman of the lowest caste is represented in the foreground under a *Paudanus* or Screw Pine, so common in Arabia as well as on the coast of Ceylon. It is very frequently mentioned by oriental poets under the name of *Cetaca*. Thus in translations of the songs of Jaya-dena,— "a breeze like the breath of love, from the fragrant flowers of Cetaca, kindles every heart, whilst it perfumes the woods with the dust it shakes from the Mellica (*Nyctanthes*) with half-opened buds." Again, "the Cesara (*Crocus*) gleams like the sceptre of the world's monarch, love; and the painted thyrse of the Cetaca resembles the darts by which lovers are wounded." The Cingalese do not follow the example of the Hindu women, who roll up its flowers in their long black hair, after bathing in the Ganges.—At a distance is a Cashew nut-tree, (*Anacardium occidentale*), not unlike an apple tree in its growth, here the commonest of trees, and encouraged as a shade to the Cinnamon, and for the sake of its nuts which are collected in April, by women furnished with long poles.—Among the Cocoa-trees in the distance, is the Kitul, or Jagghery Palms, *Caryota urens*, easily distinguished at a nearer approach.

Banyans are the favourite resort of the rose-winged parrots (*Palceouris torquatus*), Jamboo pigeons, and others of the feathered race; and in thick jungles they are the abode of numerous parasitical plants, the most common of which is **the *Pathos scandens*, and the most beautiful the *Cycas circinalis*** (Madu Gaha). The green sward which encircles the Lalu (turquoise set in emerald), is enlivened by the rose-

coloured flowers of the Madagascar periwinkle, the specious blue of the *Exacwn Zeylanicum*, Roxb., and by the delicate *Burmanna disticha*. Early in the morning, the Paddy-Bird, or white Egret, raises its plaintive cry, or is seen floating over the lake, while the *Passiflora fctida* bespangled with dew, stars the dim grove with its moss-sheathed and snow-white petals. The marshy margins encourage the growth of the weeping-bamboo, of the lotus-lily, and Sumatran Cassia (*Cassia Sumatrana*), the latter in flower forming a golden expanse, seen afar off, and the haunt of ultramarine kingfishers ; and the waters themselves are often bordered by the azure-spiked Balnahuta (Dog's tail), *Stachytarpheta Indica*, which for some miles around Herat Goddah form a natural carpeting. We also find an insignificant Larkspur. The most common brush-wood at this part of the lake consists of Idda Gar (a plant with white flowers and pods like French willows), *Carissa spinarum*, Osbeckias, *Crotalaria retusa*, and *laburnifolia*; Cassias, and the blue, scarlet, and white flowers of the *Samara Iceta*,\* the *locora coccinea*, and the *Pavetta Indica*, together with the wax-berried *Ehretia aspera*, and the *Catesbcea spinosa*, or yellow-flower lily-thorn. Many of these shrubs mingle their foliage with the Kahaga-mula-nati-wala (*Cuscuta reflexa*), and the scarlet and black-seeded *Abrus precatorius* called Olinda. We have also the *Ulmus integri-foia*; but the most common trees here are the bread-fruit, wild bread-fruit, and jack, the Java almond and cinnamon, the *Dillenia aquatica*, not unlike an alder, and *Tabernamontana dichotonia*, or forbidden fruit, the *Avcrrhoa Bilimbi*, and Cashew. There is likewise the handsome *Morinda citrifolia*, and *Calophyllum inophyllum*^ the lofty Coral and the Pippal tree. The same vegetation extends over the Cinnamon-gardens to the belt of Cocoa-nuts which overhang the sea, and nearer which grow in profusion the beautiful *Mertensia dichotoma*, and the *Lycopodium cernuum*, used as a shelter for the young cinnamon. In marshy ground occurs the Pitcher Plant,

\* A species of *Memecylon* is probably here meant.—ED.



and in sand under sheds, the sweet perfumed *Pancratium Zeylanicum*, the showy *Gloriosa superba*, and *Hibiscus Surattensis*, whilst *Hibiscus sp.* <sup>^</sup> *Vitex trifolia*, *Memecyhn ramiflorum*, *Eugenia Zeylanica*, and *JZlaocarpus serratus*, are common trees. I know not of any more beautiful than the last when in blossom from its bird-cherry-like cluster of profuse and fringed flowers, and its leaves in sear turning to a brilliant scarlet. *Lantana aculeata*, or an allied species, is likewise common near the lake.

The above sketch of the *Ma Nuga*, or Banyan tree, is not one which Strutt would have chosen. I mean to say, that so far from the specimen being that of a Banyan remarkable for size or beauty, it is (although an old tree), rather under the usual proportions ; but it was the only specimen on which, at that time, I could conveniently exercise my pencil.

At Matalai in the interior of Ceylon I saw a very interesting specimen of the same species, which had just arrived at maturity, and was said to be about fifty years old. Its branches were of great length, extending on all sides to about forty feet from the stem, with a few rooting shoots dropping from them to the ground, all of which were carefully protected by the natives. If its age has been correctly reported, it would appear that this Banyan may remain a long time without requiring the support for which its species is so celebrated. But when the growth of the branches becomes too great and too heavy for the stem, the first care of nature is to fortify the latter, before she resorts to the archway system. Such, at least, was beautifully exemplified in this tree, which had (apparently not long previously) thrown out from the lower branches an enormous fringe of radiating shoots, encircling the whole stem, of equal length; and when I saw the tree, hanging to within a few feet of the ground. This fringe was several feet broad; and in rain, could have afforded perfect shelter underneath, supposing there had been no foliage to the branches. The twigs of the Banyan when broken, yield a clammy white milk. The nuts (or figs) are in pairs and of an orange red colour, except the base which is

green with red spots. It is probable that Major Forbes may have a drawing of this very tree.

---

*Further Notes on the BANYAN.*

(TAB. XIII. XIV.)

Captain Champion lost no time in writing to Major Forbes, asking him for a copy, if he had such a drawing, for me. "He has kindly sent me one," writes Captain Champion in his recent letter to me, "with the following account, which is so graphic, that I transcribe it verbatim." (See TAB. XIII.)

"We were inspected on Saturday," says Major Forbes, "so after that was over, I looked through my box of sketches, and was glad to find one of the *Nuga tree* you mention, viz., at Marakona on the road to Kandy from Matalai. I believe it is correct, as the tree then was. At that time (now ten years ago), none of the shoots were allowed to reach the ground, being always nipped off by the nails of an old woman who regularly swept all round the tree every day. This was no point of religion in the old *wify*, but merely an occupation by which she got a few *pice* from travellers who rested under its shade. In this sketch, Dombura peak is seen beyond the lowest branch. The clammy white juice, has, I believe, all the properties of India rubber.\* The *Nuga* is not held sacred by the Boodhists, although the Brahmins respect it. All the Buddhas choose different Bo trees, and the *Ficus religiosa* is that which Gantama (the Buddha now worshipped,) selected, and it is therefore now called the "*Bo-gaha*," *par excellence*. It was under one of that species he reclined and meditated during his sojourn in the wilderness, and he had *his call*.—The ancient city of Amuradhapoona, in Ceylon, owed much of its celebrity to the Bo-tree, still existing there, and brought from the continent B.C. 307. It was a branch of the one under which Gantama reclined when he became a Buddha. All

\* As is the case with the juice of all of the Genus *Ficus*. The East Indian *F. elastica*, now so common in our greenhouses and stores, is the species that yields a great deal of Caoutchouc of commerce.—ED.

the sacred Bo-trees in Ceylon are shoots or seeds of that tree, or are reputed to be so, and are generally built round to protect them from animals.

" Under the shade of the Nuga tree at Marahona, numbers of an insect that showed a bright light at night were always crawling about; they have a scaly back, were an inch or an inch and a half long, and one-fourth of an inch broad. (Probably a female glow-worm, as one was brought to me at Matalai, answering exactly to Major Forbes' description. *W. Champion.*) In *Cordiner's Ceylon*, 2 vols. 4to, published about 1804, there is an engraving of a very famous Banyan which grows somewhere on the continent of India."

The above remarks of Major Forbes, as well as of Captain Champion, are extremely interesting, discriminating at once, as they do clearly, between the Banyan\* tree (*Ficus Indica*), so remarkable and so peculiar for its vast rooting branches, and the Pippal, Peppul, or Sacred Fig of India (*Ficus religiosa*), readily known from the Banyan by its rootless branches, and its heart-shaped leaves, with exceedingly long attenuated points; upon which leaves, the parenchyma being removed, and the skeleton varnished, most beautiful drawings of birds, insects, and flowers, are made by the Chinese, and commonly sold to Europeans. Now, these two celebrated Figs are continually misunderstood by unscientific travellers; and, which is worse, Botanists seem to be very ill acquainted with them; and in the two most popular and scientific works of reference in this country (we allude to Lindley's *Introduction to the Natural System of Plants*, and Loudon's *Encyclopedia of Botany*, where it is called *F. religiosa*), the Banyan tree is wrongly named. Our friend Captain Champion too has been slightly misled, in the name given in his letter and upon his drawing, by the Botanist Moon, who, in his Cinghalese Catalogue, calls the Banyan tree of Ceylon *Ficus Benghalensis*, while his (Moon's) reference to Rheede,

\* Another source of error among unscientific inquirers arises from the similarity of the name *Banyan*, with that of another well-known eastern plant, the *Banana* or *Plantain*.

*Hort. Malabar*, vol. i. t. 28, proves it to be *Ficus Indica*, Linn., and certainly of Roxburgh, whose clear account of the plant, and his great knowledge of Indian Botany, render him the highest authority in such a case. Our Herbaria, too, I suspected to be miserably defective in specimens of the true Banyan, which every body speaks of, but which few have discriminated. Our own Herbarium, rich as it is in the productions of our eastern possessions, does not yet possess a single specimen; and Dr. Arnott, among the vast collections which he has received from Dr. Wight, has only one indifferent specimen, which he has allowed us to examine; but our figure (TAB. XIV.) is a faithful copy from No. 682 of Dr Roxburgh's drawings in the East Indian Company's Museum. Our readers, also, will not be displeased to see Roxburgh's description; and Dr. Arnott has assisted us in elaborating the synonyms, so that we trust, henceforth, all ambiguity respecting the scientific name of the Banyan will be removed, and that our figure will render the species intelligible to all who may feel interested in this tree. With regard to the Linnaean *Ficus Indica*, it would appear from his character of the leaves, and his reference to Rheede, vol. 3. t. 63, (Roxburgh's *F. Tsiela*) that he drew up his account partly from the popular history of the true Banyan, and partly from Rheede's figure above quoted. When, however, we consider that he says of his plant, "ramis radicanibus," and that Roxburgh observes, that "he knows of no other species of *Ficus* which sends forth fibres from the branches that descend to the ground and *become trunks*," we are disposed to agree with Sir James Smith, in believing he had the Banyan in view when he described his *F. Indica*. No more can we doubt that Southey has the same tree in view, when, in the *Curse of Kehama* he says—

*Si* It was a goodly sight to see  
 That venerable tree,  
 For o'er the lawn irregularly spread,  
 Fifty straight columns propt its lofty head;  
 And many a long depending shoot,  
 Seeking to strike its root,  
 Straight like a plummet, grew towards the ground.

Some on the lower boughs, which cross'd their way,  
 Fixing their bearded fibres round and round,  
 With many a ring and wild contortion wound,  
 Some to the passing wind at times, with sway  
 Of gentle motion swung.  
 Others of younger growth, unmoved, were hung  
 Like stone-drops from the cavern's fretted height.  
 Beneath was smooth and fair to sight,  
 Nor weeds nor briars deform'd the natural floor,  
 And through the leafy cope which bower\*d it o'er,  
 Came gleams of chequered light.  
 So like a temple did it seem, that there  
 A pious heart's first impulse would be prayer."

In the *Madras Journal of Science*, Colonel Sykes speaks of a Banyan tree at the village of Mhow, in the Poona collectorate, with sixty-eight stems descending from the branches, and capable of affording shade, with a vertical sun, to 20,000 men.

The name *Ficus Benghalensis* was taken up by Linnaeus from Commelyn, 1. t. 62, and he has been followed by Willdenow; but most authors seem now agreed that by this is equally intended the Banyan, *F. Indica*. Commelyn, unfortunately, added to the confusion, by quoting as a synonym the Hindoo name "Pippal," which is certainly a totally different species; and, as we have before observed, the *F. religiosa*. Of this we shall probably take an opportunity of giving a figure in our Journal.

*Ficus Indica*; branches dropping roots which become as long as the original trunk; leaves ovate-cordate; fruit in sessile axillary pairs. (TAB. XIV.) Roxb. *Fl Ind.* 3. p. 539.

*Ficus Indica*, Linn. *Amain. Acad.* 1. p. 27. Smith in Rees' Cycl—*Ham. in Linn. Trans*, vol. 13. p. 489. (non Willd., nee Moon, nee Spreng.\*)

*Ficus Benghalensis*, *Commelyn. Hort.* 1. 62.—Linn.—*Willd. Sp. PL* 4. 1135. *Moon. Ceyl. Fl.* p. 71. *Spreng. Syst. Veget.* 3. p. 780. *Thunb. Fl. Jab.* p. 817.f

*Vuta. Asiatic Res.* 4. p. 310.

\* Which is *Ficus Tsiela*. Roxb.

t *F. Benghalensis* of Roxburgh's drawings, No. 687, is, according to Dr Arnott, *F. tomentosa* of his *Flora Indica*.

Peralu. *Rheede Hort. Malab.* 1. t. 28.

*Varinga latifolia.* *Rumpk. Arnb.* 3. t. 84. (fig. ~~bad~~)  
*Pluk. Phyt. t.* 178./1. 1.

Native names. Bengh. *Bur*, or *But*. Sanscr. *Vuta*. Cingh. *Bagha* and *Ma-nuga*. Brahm. *Vallhoe*. Teling. *Marie*.

•" An account of this immense and most beautiful tree is to be met with in almost every history of India.

" It grows wild about the skirts of the Circar mountains, but in greatest perfection about and in villages where it is planted<sup>1</sup> for the sake of its extensively cool, grateful shade; it is there the tree is found in its greatest perfection and beauty. Flowering time the hot season. I know of no other species of *Ficus*, which sends forth fibres from the branches that descend to the ground, and become trunks.

" Trunk; when young it is distinct, and single; at all times its form, thickness and height, very variable; still more so than that of *F. religiosa*, because generally reared from branches procured naked, and stuck in the ground. Branches spreading to a great extent, dropping capillary roots here and there; these enter the ground as soon as they reach it, gradually becoming as large as, and similar to, the parent trunk, by which means the extent becomes almost incredible; the height of the tree is at the same time slowly increasing: some I have seen fully five hundred yards in circumference round the extremities of the branches, and about one hundred feet high, the principal trunks of which might be more than twenty-five feet to the branches, and eight or nine in diameter: they are largest about the villages situated in fertile valleys among the mountains. The bark is smooth and of a light ash-colour. The wood light, white and porous. Leaves alternate, about the extremities of the branchlets, petioled, ovate-cordate, three-nerved, entire; sometimes the border is very slightly waved; when young very downy on both sides; when old, less so, particularly above; from five to six inches long, and from three to four broad, at the apex of the petiole: on the under side, is a broad, smooth, greasy-looking gland. Petioles a little compressed, from one to two inches long: downy. Sti-

pules within the leaves, sheathing, downy, falling, leaving their annular marks on the branchlets. Fruit paired, axillary, sessile; when ripe, the size and colour of a middle-sized red cherry: downy. Calyx of the fruit three-nerved.

" Note.—Fig. 1. of Plukenet's 178th table is a much better figure of this tree than fig. 4. of the same table.

" The Bramins are partial to the leaves of this tree to make their plates to eat off; they are jointed together by inkles.

" Bird-lime is prepared from the tenacious milky juice, which every part of the tree yields on being wounded.

" Birds eat the fruit, and the seeds grow the better for having passed through them; if they drop in the alæ of the leaves of the Palmyra tree, (*Borassus flabelliformis*, ) they grow and extend their descending parts so as in time to embrace entirely the parent Palmyra, except its upper parts. In very old ones, the top thereof is just seen issuing from the trunk of the Banyan as if it grew from thence, whereas it runs down through its centre, and has its root in the ground, the Palm being the oldest. For such the Hindoos entertain a religious veneration; saying it is a holy marriage instituted by Providence."—*Roxburgh*.

TAB. XIII. Sketch of a remarkable Banyan tree in the island of Ceylon, from a drawing by Major Forbes.

IAB. XIV. Portion of a branch of the Banyan tree (*Ficus Indica*) from Dr Roxburgh's collection of drawings. Fig. 1. portion of a branch, showing the fruit growing in pairs; f. 2. fruit, *nat. size*.

---

**F**LORA OF NORTH AMERICA; *containing abridged descriptions of all the known Indigenous and Naturalized Plants north of Mexico, arranged according to the Natural System.* By Drs JOHN TORREY and ASA GRAY. Vol. I. Parts III. and IV.

THE first two parts of this invaluable work we have already noticed, in an early number of our *Journal of Botany*, and much as we have commended them, the continuation is

worthy of still' higher praise, inasmuch as it has been published under more favourable circumstances; one of the authors (Dr Gray) having since the appearance of the first two portions, made a very extensive tour in Europe, for the purpose of examining the various herbaria which can throw light on the species already published by different authors ; and we can bear ample testimony to the great energy, untired patience, and distinguished talent which the authors have employed (both Dr Torrey and Dr Gray, each in his respective visit) in unravelling confused synonyms, and in clearing up doubtful species. Thus, as shown in the preface, besides the numerous authentic specimens largely contributed by travellers and botanists from all quarters, these able naturalists have carefully examined the treasures in the herbaria which formed the ground-work of Hooker's *Flora Boreali-Americana*, and Hooker and Arnott's *Botany of Captain Beechey's Voyages*, and the fine collections made by Mr Drummond in Texas. Under the auspices of Mr Brown, the Banksian Herbarium, and the Herbaria of Clayton, Catesby, Plukenet, &c, were thrown open to them ; as were also the very complete collections of the late Mr Douglas, deposited in the Horticultural Society's Museum, and that of Mr Bentham and Dr Lindley. The Linnaean Herbarium was examined; that of Pursh, of Bradbury, and of Nuttall, in Mr Lambert's possession ; and that of Walter, the property of Mr Fraser. In France, the plants of Lamarck and Poiret were identified in the collections of Prof. Adrien de Jussieu, and of his distinguished father; those of Michaux, in the Museum of the *Jardin des Plantes*. The readiest access was granted to the rich and varied stores in the Baron Benjamin Delessert's immense Herbarium, and to those of P. B. Webb, Esq., which includes the Herbarium and numerous American plants of Desfontaines, while Mr Spacli supplied specimens of dubious or interesting American plants which had long been cultivated in the Botanic Gardens of Paris. Dr Gray has carefully gone through all the families that were published in the *Prodr. Syst. Fegct.*, as far, as they



bore on North American Botany, in the large and important Herbarium of Professor De Candolle of Geneva. Germany was visited : the Herbarium of Willdenow, and the other rich collections of the Royal Berlin Herbarium, under the auspices of the zealous curator, Dr Klotzsch; the Imperial Herbarium of Vienna, in charge of Dr Endlicher and Dr Fenzl; the Royal collections and Garden of Munich, through the liberality of Dr Von Martius, and Professor Zuccarini; Schlechtendal's at Halle, possessing as it does so many plants which that author and Chamisso had described from California, and N. W. America, and the *Carices* and entire Herbarium of Dr Schkuhr; the plants of Mexico and New Spain, collected by Humboldt and Bonpland, in possession of Professor Kunth ; those of Dr Lehmann of Hamburg, so rich in Greenland plants, and in the genera *Potentilla*, (*Enothera*^ and family of *Boraginece*; and lastly, those of the Imperial Academy of Sciences at St Petersburg, where Dr Trinius and the late M. Bongard laid open to him the various collections that had been received from Russian North America. These most useful investigations, not accomplished till after the appearance of the first two parts of the *Flora*, have induced the necessity of making several changes and corrections, which are done with great candour and judgment in an *Appendix* or supplement at the end of the volume. " This," they justly observe, "will give the work an important value in respect to authenticity of the specific names, so that future changes of the kind will not be to any considerable extent necessary."

Nor can we look at the list of American Institutions and Naturalists named in the preface, which have contributed to this great undertaking, without being satisfied that Botany is making rapid strides in the United\* States; that a *Flora*, like that under review, is imperatively called for; and that *it* must and will be a powerful means towards making the entire vegetation of this vast continent thoroughly known to the scientific world. We are anxious that the names of these individuals who have so ably promoted the cause of

American Botany, should be recorded in the pages of our Journal. At the head of them, justly stands Mr Nuttall, to whom the authors are indebted (independently of the immense mass of information derived from his valuable publications, which are known wherever Botany is studied), for a nearly complete series of the plants collected during his recent journey across the Rocky Mountains to Oregon and California, accompanied with manuscript descriptions of his new genera and species, and also for many plants obtained during his travels in Arkansas in the year 1819. The Academy of Natural Sciences at Philadelphia, afforded the opportunity of examining the chief collections of Mr Nuttall, those of Mr Von Schweinitz of Mechlenberg, and Professor Benjamin Smith Barton. The daughter of the lamented Elliott sent whatever was needful for examination of her father's Herbarium; and Dr Bachman, and Professor Gibbes of Charleston, South Carolina, supplied many plants of the fertile territory. Professor Bigelow, B. D. Greene, Esq., Mr E. Tuckerman, Mr Oakes, Dr Jacob Porter, Mr T. A. Greene; Professors Hitchcock, Emmons, and Dewey, sent the productions of Massachusetts, of Maine, and New Hampshire; Dr Barratt of Middleton, Connecticut, distinguished by his knowledge of North American *Willows*, communicated specimens from that neighbourhood, and from the White Mountains of New Hampshire, and Professor Tully from the vicinity of Yale College. Plants of the state of New York, most of which must have been already familiar to the authors themselves, have further been supplied by Dr Stevenson, Dr Bradley, Dr H. P. Sartwell, Mr David Thomas, Dr Crowe, Dr Aikin, Professor Lewis, C. Beck, Mr A. J. Downing, Professor Bailey, Mr William Cooper, Mr Halsey, Professor Eaton, Mr R. J. Brown, and Mr John Carey. Of the plants of Pennsylvania and New Jersey, the chief contributors have been Dr Pickering, Mr Durand, and Dr Darlington. Of those of Virginia, the Rev. Professor Ruffner. For plants of North Carolina, they are chiefly obliged to the Rev. Mr M. O. Curtis, the late Mr Von Schweinitz, and to

the late Mr Croome, who also made very interesting collections in Florida. From South Carolina and Georgia, the late Mr Elliott, Major Le Conte, and the late Mr Lewis Le Conte, Professor Gibbs, Dr Boykin, Dr H. Loomis, and Dr Bacon supplied valuable materials; while from Middle Florida, Dr A. W. Chapman, and Dr Alexander; from southern and eastern Florida, Dr Leavenworth, Dr Burrows, Dr Hulse, Lieutenant Alden, and Dr John F. Baltzell from Apalachicola, have sent very important communications. The vegetation of Alabama has been made known by Dr Gates, Dr Fletcher, and Dr Jervett.

From Louisiana, the chief collections from the United States' botanists have been from Dr Ingalls, Dr Riddell, Dr Hall, and Professor Carpenter; from that state and from Arkansas, and the borders of Texas, through Dr Leavenworth and Dr Pitcher. From Tennessee, Dr Currey has sent interesting plants; from Kentucky, Professor Short, Dr Peter, the late Mr H. K. Eaton, and Mr Rafinesque. From Illinois, (as also from Virginia and Alabama), Mr Berkeley has communicated many plants; Dr Clapp from Indiana; Mr T. G. Lea, Mr Sullivant, Mr Samples\* and Dr Paddock from Ohio; while the vegetable productions of Michigan, and from near the sources of the Mississippi, have been received from Dr Houghton, Dr Wright, Major B. D. Douglas, Dr Pitcher, and Dr Letham. To Dr Holmes, Mrs Percival, Mr and Mrs Sheppard, and Mr M'Crae, they are indebted for numerous plants of Canada; and, lastly, they mention Dr Edwin James as the source from whence so many of the plants of the Rocky Mountains have been derived.

It is now time for us to notice something of the contents of the two Parts (III. and IV.) of the *Flora* in question. The 3d part commences with the continuation of the *Leguminosæ*, and with the greater portion of the Genus *Desmodium*, which here extends to twenty-one species. *Lespedeza* has six species, and we have the interesting remark, that the fruit of the first section, *Eulespedeza*^ is chiefly produced by the apetalous flowers, which are small, and commonly escape

notice till the legumes are formed. Authors have sometimes described the calyx from apetalous flowers, which has caused some discrepancies. *Lupinus*, being mainly a genus of Western America, most of the species (forty-five in number) have been detected by Douglas. There are fourteen species of *Baptisia*. *Virgilia lutea*, here constitutes the genus *Cladrastus* of Rafinesque. Of the genus *Hoffmanseggia*, two species are now known to inhabit North America, *H. Drummondii*, from Texas, and // *Jamesii*, from the sources of the Canadian River. *Ccesalpinia pulcherrima*, and *Guilandina Bonduc*, are denizens of the southern extremity of Florida. *Algarobia* too, a genus of South America (a section of *Prosopis* in De Candolle), (and the species *Prosopis glandulosa* of Torrey) has been found by Dr James at the Canadian River, and by Drummond in Texas. The remainder of the *Mimosece* are few in number in point of species.

The *Rosacem* occupy a considerable portion of the pages of Part III. *Chrysobalanus Icaco*, or Cocoa Plum, (together with several other tropical plants,) seems to have attained its northern limits in South Florida. *Spircea* extends to thirteen species, exclusive of *Gillenia*. *Geum* and *Sieversia* of Brown are united, and *Slylopus* (Rafinesque) is also received into *Geum*, and the number of species is fourteen. *Daliharda lobata*, (*Baldw. and Hook. Ic. pL L 76*.) is united to *Waldsteinia*, and we have the remark that *Comaropsis*, DC, is not distinct from it. Of the curious and rare Genus *Cercocarpus*, there are three new species of Nuttall, all of them figured in *Hook. Ic. plant*, (tabs. 323, 324, 325.) *Horkelia* (of Cham, et Schlecht.) has six species, *Potentilla* 38, (exclusive of *Comantm.*) The genus *Rubus*, (23 species,) is worked up with great care. The *Roses* (here amounting to 15,) scarcely seem to possess more tangible characters than those of Europe. The North American species of *Cratagus*, (17,) seem to us to be here for the first time clearly defined. *Peraphyllum* is a new genus of Nuttall, allied to *Amelanchier*, forming a low much-branching shrub in the Blue mountains of the Columbia.

Among *Lythracece*, *Hypobrichia* (M. O. Curtis, mst., 1836,) is the same with *Ptilina aquatica*, Nutt. mst., (1838.)—*Rhizophora Mangle*, the Mangrove-tree, is found in swamps in Louisiana and Florida; and *Terminalia Catappa* in South Florida.

The genus *Epilobium* extends to 14 species, and (*Enothera* to no less than 62. *Gaura* to 9; *Stenosiphon* (Spach.) being separated from it. *Ludwigia* has 15. *Myriophyllum* receives *Hylas* of Bigelow. (*Plilophyllum*^ Nutt.) and thus reckons 7 species. *Bartonia* is united with *Mentzelia*; so is *Trackyphyllum* (Nutt.), and *Acrolasia* (Presl.); and thus there are 12 species. *Cevallia* of Lagasca, (*Petalanthera* Nutt.,) is here first reduced to its proper natural order, viz. *Loasacece*.

*Echinocystis* (Torr. and Gr.) is a new genus, destined to receive the *Sicyos lobata*, Mx.

*Ribes*, which begins the last (or 4th part) of vol. i. musters 28 species. The *Cactece* are 2 *Mammiliarice*, 1 *Echinocactus*, 1 *Cereus* ? and 5 *Opuntice*. The Order *Saxifragacece*, with its suborders, *Escallonicz*, *Hydrangea*^ and *Philadelphicece*, is a more interesting one; and besides extending the North American species of the genus *Saxifraga* to the number of 46, we have the new genus of *Boykinia*, Nutt., and its 2 species, the one from North Carolina, the other from the Columbia. *Heuchera* has 15 species; the // *Menziesii* is made *Tolmiea* of Torrey and Gray, (not Hook, which is *Cladothamnus*, Bongard.) *Tellima parviflora*, Hook., and *T. heterophylla*, H. and A.; and 3 new species constitute the genus *Lithophragma*, Nutt., all natives of North-west America. *Jamesia* is a new genus of *Hydrangea*; from the Platte, or the Canadian river, near the Rocky mountains, gathered only by Dv James. %

The *Umbelliferce* include several genera previously undescribed, *Edosmia*, Nutt., is substituted for *Atcenia*, Hook, et Arn.; it being shown that these authors overlooked the *viita* in the fruit, from the absence of which they derive their specific name. *Nenrophyllum longifolium* is an entirely new

genus from Middle Florida and North Carolina, and is allied in appearance to *Archemora ternata*. *Euryptera lucida*, Nutt. mst., is from California. *Eurytzenia Texana* is a Drummondian plant from Texas. *Glycosma occidentalis* is another new genus of Nuttall, from the Columbia, as is *Cynapium apiifolium*. *Deweyia*, Torr. and Gray, is the *Ligusticum argutum*, Nutt. mst. The *Seseli divaricatum*, Presl. and Hook., and three new species, all from the Rocky mountains, form the Genus *Musenium*, Nutt. mst. *Leptocaulis jnermis*, Hook, et Am., and an allied species, constitute Nuttall's new genus *Apiastrum*.

Under *Cornus* are some admirable remarks, tending to elucidate the species which have been hitherto much confused. No *Loranthus* has yet been found in North America, or rather none north of Mexico; and of the Order there are only two species of *Viscum* (*V. flavescens*, Pursh., and a new species *V. villosum*, Nutt.) and *Arceuthobium Oxycedri*. This family concludes the 4th or last part of the first volume extending to 655 pages, and comprising the polypetalous division of the Dicotyledonous or Exogenous Plants.

The supplement, as we have already observed, contains some very important additions and emendations. *Enemion*, Rafinesque, is restored to *Isopyrum*. *Croomia* is a very curious genus of *Menispermaceae*, growing in Middle Florida under the shades of *Torreya taxifolia*, Arn., with the habit of a **Monocotyledonous, some Smilacineous or Dioscoreaceous plant**; it is figured by Torrey in *Ann. Lye. N. York.* 4. t. 7. *Castela* is a genus added to the North American Flora by Drummond, who found the same species in Texas, (*C. Nicholsoni*, Hook. Bot. Misc. I. t. 55.) which had been discovered in Antigua. *Pavonia* and *Melochia* are two tropical genera, detected among Drummond's Texas plants. *Discanthera* is a new genus\* of *Cucurbitaceae*, derived from the same source.

We shall hail with peculiar pleasure the appearance of the second volume of this great undertaking.

\* # United by Dr. Amott to *Cyrtanthera* : vide p. 288 of this Journal.

*A Catalogue of the PLANTS growing in BOMBAY AND ITS VICINITY, spontaneous, cultivated, or introduced, as far as they have been ascertained.* By JOHN GRAHAM, Bombay, 1888.

BESIDES the late John Graham, Esq., Deputy Post-master-General of the Bombay Presidency, whose name stands as the Author of this Catalogue, Joseph Nimmo, Esq. of Bombay, has been long known as deeply interested in the Botany of Western India, and with both of them we have enjoyed correspondence. The Mst. of this work in question was presented to the Agricultural and Horticultural Society of Bombay in 1888, accompanied by the following letter, addressed to James Little, Esq., Secretary to the Society :—

SIR, I beg to present to our Society a List of the Vegetable productions of the Bombay Presidency, and to signify my willingness to see it correctly through the press, should the Society deem it worthy of publication. It has been drawn up with great care, through the assistance of Mr Nimmo, and not a single plant is put down which has not been seen and examined by one or other of us. I need hardly say, that such a List is much wanted by all who pay any attention to the study of Botany, and will save much time and double in consulting books and figures.—I am, &c.

JOHN GRAHAM,

*Member of the Agric. and Hortic. Society.*

The Committee of the Society promptly and liberally accepted the offer, and the printing of the Catalogue had proceeded under Mr Graham's superintendence, as far as the main design of his death terminated his labours. The result has been completed, the preface tells us, under the superintendence of Mr Nimmo, who has been for many years a zealous and successful labourer in the same field of service, and who has given the gratifying assurance that he will contribute to the investigation of this hitherto neglected part of India, much of which still remains unexplored, and that he will print supplements to their Catalogue.

from time to time, as additional species and additional information present themselves. Various have been the assistance and contributions received from different sources towards promoting the interests of this volume, but acknowledgments are more especially expressed to Mr Law of the Civil Service, together with Drs Lush, Gibson, Murray, and Headle of the Medical establishment, with all of whom the Author was in constant correspondence, and from whom he received very important aid. With regard to Mr Graham himself, we learn that he was a native of Dumfries-shire, and that he arrived in India in 1828, under the patronage of the late Sir John Malcolm, who was at that time Governor of the Bombay Presidency, and that he was honoured with his friendship and esteem, and resided in his family until he was nominated by him Deputy Post-master-General, an appointment he held till the period of his death. He possessed a combination of qualities which peculiarly fitted him for that office. The performance of his arduous duties, indeed, left him little leisure for the prosecution of his favourite pursuit; but the few and brief opportunities, which were afforded him, were eagerly seized and improved; and one of the objects he had most at heart while superintendent of the Society's Garden, shortly after its establishment, was to store it with an extensive assortment of rare, wild, as well as useful Indian plants, chiefly collected by himself. He expired at Khandalla, the favourite scene of his botanical researches, on the 28th of May, 1839, at the age of 34, after only a few days' illness. The intelligence of his decease was received at every station within the Presidency, with an almost universal feeling of sorrow and regret, and his friends have testified their admiration of his character, and their grief for his death, by the erection of a handsome monument over his grave.

To Mr Nimmo, this country, Britain, and the Glasgow Botanic Garden in particular, is indebted for the introduction of several rare and beautiful Indian plants: amongst them the singular *Impatiens scapiflora* (W. and A.), in the *Botanical Magazine*, tab. 3587, the splendid *Habenaria gigantea*;



(Bot. Mag. t. 3374.) the *Habenaria goodyeroides*, (Bot. Mag. t. 3397.) and many others.

The arrangement of the work under notice is that of Be Candolle's *Prodromus*, and the number of species, including *Ferns*, is 1799, exclusive however of several new plants mentioned in the supplements, and some new genera. The book is much more than a catalogue; there are tolerably copious synonyms, references to figures, remarks on the uses, properties, &c, and frequent poetical and classical allusions and characters of the new species. That such a publication in the presidency itself will tend materially to promote the study of the Botany of the Western side of India, we cannot for a moment doubt; nor that this stimulus will induce many who have the inclination and the opportunity to explore the great chain of the Ghauts, (which could not fail to yield an abundant harvest,) and much interesting country to the north of Bombay, particularly Guzerat, Cutch, and the great sandy deserts bordering on the Sindy and on Moultan.

---

DRUMMOND'S *American Mosses*.

It gives us pleasure to announce that several copies of the *Specimens of Mosses of North America*, those of the more northern or British possessions, and those of the extreme southern of the United States, collected by the late Mr Thomas Drummond, are in a state of very great forwardness, and will soon be ready for publication. The selection of suitable specimens, and the arrangement of them, and the determination of the species, have been mainly undertaken by one of the most distinguished Muscologists in Britain, whose discriminating eye, unexampled neatness in all manual labour, and indefatigable research, are beyond all praise. Under such auspices, the editor of this Journal is sure that he can recommend their fasciculi to all who are interested in the study of Mosses, as peculiarly worthy of their attention. Further particulars will be given as soon as the sets are fully completed. In the mean<sup>11</sup>TM<sub>e</sub>, it may be sufficient to say, that orders for sets may be

given to William Wilson, Esq., Breech Cottage, Warrington, to Mr Pamplin, Jun., 9, Queen Street, Soho, London, of to the editor of this Journal, Glasgow.

---

*Notice of the* WURTEMBERG UNIO ITINERARIA.

THE first part of Wilhelm Schimper's Botanical Treasures from Abyssinia, viz., the plants collected in the neighbourhood of Adoa, "Plantse Adensis; sectio prima," will here-with reach the hands of the several subscribers; and we feel assured that these plants will be received by them with perfect satisfaction;—even should the further collections of this traveller be lost, which, however, we have no reason to fear.

Although a considerable part of the first consignment had suffered much from the attack of insects and of damp, both in Abyssinia, and on the way thence, so that of several species, the whole number of specimens was rendered useless, yet the greatest part arrived in good condition, as those now received will abundantly testify.

The tickets which accompany the plants give the exact localities of all the species with their determinations; these latter have been worked at by ourselves, with the exception of the Composite, which are named on the authority of Dr Schultes of Zweibrucken (Bipont.)

It appears, according to the before mentioned determinations, that there are found in the entire collection, not only twenty new genera, but also more than two hundred hitherto undescribed species, besides very many others highly interesting on account of their rarity; illustrating in part the work of Forskahl, published some time ago; partly the species recently made known by Fresenius in the Museum Senkenbergianum, or in the well known work of the English traveller, Bruce: in the whole there are four hundred and twenty numbers, and all those subscribers who have paid at least one hundred and twenty florins, will receive four hundred species or numbers by this means: the whole collection will be distributed among the several claimants in as fair a proportion as

possible, according to the sums they had advanced; in the like proportion, subscribers of ninety, sixty, and thirty florins, will receive three hundred, two hundred, and one hundred species respectively; but all the subscribers will still retain a further claim upon the continuation of the Schimperian collection, when (as we hope,) they shall have safely arrived. Under favourable circumstances, we flatter ourselves therefore with the prospect that the subscriptions already realized will enable us to distribute, in the long run, these valuable and highly interesting plants at a cost to the subscribers not exceeding fifteen florins per hundred. Still the accomplishment of this hope will depend in a great measure on the manner in which the expenses attending the expedition of Kotschy are met;—those latter (*viz.*, Kotschy's) plants, which are of great interest, collected in Genaar, Chartum and Cordofan, are already on the way : intelligence of the departure thereof from Alexandria by an Austrian ship to Trieste, lately received, announces to us that the consignment includes no fewer than thirty thousand specimens, and consists of five hundred species, from which collections may be made up of five hundred, four hundred, and three hundred species each. By our contract with Kotschy, we find ourselves enabled to supply these collections at the low price of fifteen florins per century; therefore we now offer the same, and beg for early orders from our honoured members and all other friends of Botany, for collections respectively at seventy-five, sixty, and forty-five florins, post free, and, as usual, the payment in advance: we earnestly hope for kind and liberal support in this undertaking also, especially as it stands in so close connexion with the before-mentioned Abyssinian expedition, and indeed, to a certain extent, with it, forms one entire set of plants. We venture to look for the favour of new subscriptions for Kotschy's plants, as the very great expenses incurred by Schimper's journey are not yet defrayed.

Though pleasing and highly promising as it certainly is for science, that the courageous Schimper remains so long in Abyssinia, yet this prolonged sojourn did not enter

into the original idea, plan, wishes or instructions, of the directors, whose resources are consequently much straitened by the continued stay of the traveller; and the longer he stays the more embarrassed will their circumstances become.

The last direct intelligence received from Wilhelm Schimper, is dated Adoa, 6th Sept., 1839, to which place he had returned from Massova in order to make a further excursion into the Samon Alps, where, though through indirect intelligence, we learn that he was last summer met with, busily engaged in gathering together his collections, in tolerable health, though suffering in some degree from his eyes.

There still remains for us to present to the honourable Members of the Unio Itineraria, some news relating to the undertaking of Dr Fried. Welwitsch to the Azore and Cape Verd Islands. Dr F. W. had found himself, on several accounts, induced to limit his researches and collections, hitherto, to the neighbourhood of Lisbon, with occasional excursions further into Portugal, principally because having met with so many novelties and rarities, it appeared to him wrong altogether to pass them by; at the same time he hoped through his lengthened stay in Lisbon, to have the opportunity of making himself known there, and thereby ensure a greater degree of protection, from the Portuguese government, for travelling through the Azore Islands with greater success,—a hope which is now about to be fulfilled. Two cases of his Portuguese plants are now on their way from Hamburg, as advice has already reached us to that effect, and we are now ready still to receive subscriptions, as we before announced, of forty-eight florins, and twenty-four florins, for proportionate collections.

Of the Georgio-Caucasian plants collected by Hohenacker, the last portion (viz. the sixth), is now ready for distribution, and will forthwith be forwarded to such of the subscribers as have not yet received it; a few sets of this portion, consisting of eighty species, are still disposable for twelve florins; besides these are also sets of the fifth delivery of two hundred species for twenty-five florins, and a few of the entire collections of four hundred species for forty-ei<sup>ht</sup>

florins, are still to be had; and lastly, a few centuries of North American plants from the Ohio district, at twelve florins each.

PROFESSOR HOCHSTETTER.

DR ERN. STEUDEL.

ESSLINGEN, 30/A Nov. 1840.

Immediately after our Report of the 30th November was printed, we received from the mercantile house in Alexandria, through which our intercourse with M. Schimper is carried on, the very pleasing intelligence that the second consignment of his Abyssinian Botanical Treasures, consisting of twenty-four cases, had safely arrived in Cairo. Through the same channel we are now also in possession of letters from the traveller himself, dated Adoa, July 8th, 1840, from which we learn that he is still full of zeal to devote himself further in the cause of science. By this it will be seen that the hopes expressed in our Report of 30th ultimo, will soon be realized; for we have little fear that the collections, having safely reached Cairo, will now be lost.

With steady perseverance our traveller will now follow his object, and to a much further extent than we originally anticipated; he will now travel up the Nile to its source, and there continue his collections. One reason which has induced him to continue his researches through the higher and alpine district is, a wish to avoid a prolonged stay in the lower country bordering the Red Sea, where he would be much more exposed to the plague and other epidemic diseases so prevalent there.

He most urgently appeals to us for further supplies, in order still to prosecute his researches. We however find it utterly impossible to send him any more money, unless our honoured Members speedily enable us to do so, by further advances. We therefore once more earnestly beg on his behalf for additional supplies, as thereon depend the life and health of this traveller, who has rendered so great and valuable services, not only to botany and geography, but now thinks to crown the whole of his arduous exertions by tracing

the Nile up to its source. Such a purpose appears to call for assistance and support, not only from friends of science, but from all who would benefit mankind in general. We believe that from our long Directorship of the Unio Itineraria concerns, we have in some degree gained the privilege of making such an appeal; and we also think it our duty earnestly to plead for our traveller, from feeling assured that his courage, his objects, and his past services, will meet with the sympathy of every Naturalist.

A MS. of twenty large sheets, containing one portion of the journal of his Abyssinian enterprise, now lies at Alexandria, and will very shortly reach us.

At the same time, we can also, in accordance with a notice received, announce that the consignment of Kotschy's Plants has not only reached Trieste safely, and passed quarantine, but has also been thence despatched to us on the 4th instant, and insured.

PROF. HOCHSTETTER.

DR STEUDEL.

ESSLINGEN, 9th Dec. 1840.

XXII.—*New or Mare* ORCHIDÆ.

TAB. VII.—XII.

(Continued from page 275 of Vol. I.)

EPIDENDRUM.

1. *E. porphyreum* (Lindl. ;) foliis distichis oblongis acutissimis, squamis spathaceis dense imbricatis acuminatis pedunculo longioribus, panicula acuta simplici multiflora, floribus corymbosis, sepalis oblongis acutis lateralibus fulcatis, petalis lineari-spathulatis, labelli trilobi laciniis lateralibus rotundatis intermedia quadrata bidentata, disci axi elevata basi et apicem versus bicallosa. (TAB. VII. VIII.)—Lindl. *Journ. of Bot.* vol. iii. p. 86.

HAB. Woods on the Western side of Pichihcha, Andes of Columbia.—Prof. W. Jameson.

Fig. 1. Flower, f, 3. column and lip; *magnified*.

## PLEUROTHALLIS.

*J. P. peduncularis*; caule erecto gracili vaginato apice unifoliato, folio oblongo coriaceo, flore solitario infra apicem pedunculi erumpente, sepalis oblongis coriaceis inferioribus duplo angustioribus intus maculatis, petalis ovatis erectis maculis apice pubescentibus sepalis duplo minoribus, labio erecto ovato petalis duplo minore subrecurvo intus maculato basin versus canaliculato, columna brevi apice bidentata, anthera hemisphaerica pubescente. (TAB. IX.)

HAB. Guatemala. *Mr Skinner*. Cult, in Hort. Woburn.

Of this group of *Pleurothallis*, with a solitary leafy and sessile, or nearly sessile flower arising from just below that leaf, there are several very remarkable species on the Pacific side of tropical America. The present does not correspond with any one described by Dr Lindley or Dr Poeppig.

Fig. 1: Flower; f. petals and labellum; f. 3. column and labellum; f. 4. the same; f. 5. anther-case; f. 6. pollen-masses; *magnified*.

## EPIDENDRUM.

1- *E. leiobolbon*; pseudobulbis ovatis laevissimis superne in caulem brevem diphyllum attenuatis, squamis membranaceis duobus vaginatis, foliis alternis lineari-oblongis acutis submembranaceis obscure striatis, pedunculo terminali bifloro, sepalis petalisque conformibus spathulatis, (labelli triquetri) columna triquetra apice obtuse tridentata dente superiore longiore, labelli ungue lineari fere ad basin libero, lamella inflexa triloba lobis lateralibus parvis angustis intermedio magno transverso bilobo ad basin tuberculo subtriangulati, anthera immersa. (TAB. X.)

HAB. Mexico. *Galeotti*. Cult, in Hort. Woburn.

A very distinct species from any with which I am acquainted. The sepals and petals are spread horizontally and are of an uniform chocolate brown, inclining to green. Column projecting, triangular, yellow-green, except the apex which is nesh-coloured with red dots, and where it is cut into three

teeth, the upper one longer than the rest; and it is within these that the anther-case is, as it were sunk. Claw of the pale yellow lip free almost to the very base, but close pressed to the under face of the column; the lamina deflexed, broad, with a tooth or small lobe on each side, transversely obcordate. The colour is deep yellow where the base of the lamina is applied to the stigma, and there is a projecting crest or tubercle, of nearly a triangular form.

Fig. 1. Column lip; f. 2. lip; f. 3. column; f. 4. anther-case; f. 5. pollen-masses, *magnified*.

2. E. *Vincentinum* (Lindl.); caule ancipiti, foliis distichis anguste lanceolatis acutissimis panicula pauciflora laxa filiformi brevioribus, sepalis lineari-lanceolatis, petalis filiformibus, labello subrotundo crispo. (TAB. XL)—Lindl. in Hook. *Journ. of Bot.* vol. iii. p. 88.

HAB. St Vincents. *Rev. L. Guilding*.

A small delicate species, not more than four inches high, with minute membranous flowers, disposed, in a short loose panicle; pedicels filiform.—*Lindl.*

Fig. 1. Flower; *magnified*.

#### SPIRANTHES.

1. S. *diuretica* (Lindl.); foliis ensiformibus omnibus radicalibus, scapo glabriusculo vaginis brevibus distantibus acutis, spica densa elongata conica tomentosa, bracteis ovatis acuminatis riorum longitudine, sepalis acuminatis apice glabris, labello pubescente oblongo basi cucullato apice subrotundo dilatatopapillosoundulato.—Lindl. *Gen. et Sp. Orchid.* p. 468.

*Spiranthes* Nuil, Rich. *Orch. Annot.* p. 39.

*Neottia diuretica*, Willd. iv. p. 73.

*Epipactis floribus* uno versu dispositis, vulgo Nuil. *Feuill. Peruv.* ii. p. 26. t. IT.

HAB. Chili. *Feuillee. Macrae, Bridges*, (n. 607.)

Flowers pale green in conical spikes from 2-4 inches long. Stems to  $\frac{1}{4}$  foot long—*Lindl.*

Fig. 1. Flower; f. 2. front view of do.; f. 3. labellum; f. 4. Stigma and Anther; *magnified*.



XXIII—CONTRIBUTIONS *towards a* FLORA *of* SOUTH AMERICA, *and the Islands of the* PACIFIC. By SIR W. J. HOOKER, K.H., LL.D., and G. A. WALKER ARNOTT, ESQ., LL.D.

I. EXTRA-TROPICAL SOUTH AMERICA.

(Continued frontpaged, of the present Volume.)

TRIB. VIII. SENECTIONIDEÆ, Less\*

1121. (1.) *Xanthium macrocarpum*, DC. *Fl. Fr. et Prodr.* v. p. 523.—*X orientate*, Linn, *fil.*—Buenos Ayres; *Tweedie*. Quillota, Chili; *Bridges*, (n. 514). Mendoza; *Dr Gillies*.

1122. (2.) *X. spinosum*, L.—DC. *Prodr.* x.p. 523—*X. catharticum*, H.B.K. *Nov. Gen. Am.* iv. p. 274. DC. *Prodr.* p. 523.—Desaguadero, Province of San Luis, and Mendoza; *Dr Gillies*. Chili; *Bridges*, (n. 511.) *Cuming*, (n. 90.) Buenos Ayres; *Tweedie*.—We scarcely think Humboldt's plant can be distinct from ours. Cathartic powers are stated by Humboldt to be attributed to it. *Tweedie* remarks that it has the property of rendering meat that has been almost putrid, sweet.

1123. (3.) *X. ambrosioides* (Hook, et Arn.); *spinosum tomentosum-incanum*, caule procumbente, foliis bipinnatifidis, segmentis oblongis obtusis margine revolutis, capituli feminei solitarii aculeis tenuibus setiformibus patentibus apice uncinatis, spina terminali valida recta.—(3. capituli foem. spina valida nulla.—Los Caldanes, Province of Cordova; *Dr Gillies*. Buenos Ayres; *Tweedie*—This very distinct species has the finely cut foliage of *Ambrosia*, and the fruit of *Xanthium*. The terminal spine of the female capitulum is frequently wanting.

1124. (1.) *Ambrosia tenuifolia*, Spr.—DC. *Prodr.* v.p. 527,—Saladillo to El Morro, province of San Luis; *Dr Gillies*, Buenos Ayres and Maldonado; *Tweedie*, (n. 1055.)

\* It will be borne in mind that our general arrangement of the *Compositae* is that of Lessing; our mst. having been prepared, and much of it printed before the publication of the 5th and 6th volumes of De Candolle's *Prodromus*.

1125. (2.) *A. Chilensis* (H. et A.) ; caule incano, foliis pinnatifidis supra pubescentibus subtus canescentibus laciniis oblongis inferioribus ssepe inciso-pinnatifidis superioribus inciso-serratis, segmentis ultimis serraturisque acutis, racemis solitariis.—Valparaiso; *Cuming*, (n. 784). Coquimbo; *Macrae*.

1126. (3.) *A. scabra* (H. et A.); caule scabro, foliis pinnatis supra calloso-scabris subtus hirsuto-pubescentibus, laciniis lineari-lanceolatis acutis inferioribus inciso-pinnatifidis, racemis solitariis in paniculam foliosam quandoque dispositis.—*A. fruticosa*, 15. *DC. Prodr.* v. p. 526 ?—*a. tenuior*; foliorum segmento terminali lineari-acuminato.—*13. robusta*; foliorum laciniis latioribus, segmento terminali lanceolato.—Buenos Ayres and Entra Rios, in pasture-fields; *Tweedie*.—*13. robusta*; Buenos Ayres; *Tweedie*.—Probably this is the *A. fruticosa* *13. intermedia*, of De Cand.; but we nevertheless think it a distinct species.

1127. (4.) *Blennosperma Chilense*, *Less. Syn.p.* 276.—*DC. Prodr*, *vñ.Mant.p.* 288.—*Apalusanthemifolius*, *DC. Prodr.* v. p. 508.—"*Unxiaanthemifolia*, *Bert. Herb."* *Colla Mem. Acad. Taur.* 38. 17. 37. n. 77. t 32\_\_*Soliva radiata*, *Poep. FL Exsicc.* n. 210.—Valparaiso and Quepay, Chili; *Mathews*, (n. 251.) *Bridges*, (n. 447 and 448,) *Cuming*, (n. 694.)—Lessing places this genus among the *Artemisieae*; De Candolle near *Unxia*. We have followed the latter author, on account of the conspicuous ligulate florets of the ray.

1128. (1.) *Parthenium Hysterophorus*, *L.*—*DC Prodr.* v. p. 532.—*Argyrochsete bipinnatifida*, *Cav.*—Province of San Luis and Mendoza; *Dr Gillies*. Buenos Ayres, Parama, Uruguay and N. Patagonia; *Tweedie*, (n. 1054.)

Subtrib. II. HELIANTHEJE. *Less.*

**H29.** (1.) *Zinnia pauciflora*, *L.*—*DC. Prodr.* v. p. 535—Province of San Luis; *Dr Gillies*.

1130. (1.) *Jaegeria hirta*, *Less.*—*DC. Prodr.* v. p. 544.—*Acmella hirta*, *Lag*—Moist woods of the Bande jOrientale; *Tweedie*.

1131. (1.) *Pascaliala glauca*, *Orb. Dec.* iv. p. 39. t. 4\_\_*DC.*

*Prodr.* v. p. 549—Mendoza and La Aguadita, province of San Luis; *Dr Gillies*. Buenos Ayres and Monte Video; *Tweedie*, (w.372.)—Pappi palesepaucae, breves, 1—2 longiores ut in *Heliantho*, sect. *Harpalio*, at omnes in pappum coroniformem coalitae, haud, ut in *Heliantho*^ liberae.—All authors indicate Chili as the native country of this plant; probably Mendoza is meant in those cases; for we have not seen any specimens from the Chilian side of the Andes.

SCALESIA.\* *Am.*

*Capitulum* horn ogam urn. *Involucrum* subbiseriale. *Receptaculum* paleaceum. *Paleae* lineares. *Antherae* nigricantes, exsertae, ecaudatae, alis cordato-oblongis. *Stylus* Tagetis (i. e. alte bifidus, ramis sursum latioribus, cono acuto superatis, pube e cono basi sursum adscendente deorsumque descendente.) *Achcenium* compressum, obcordatum, omnino calvum, conforme, glabrum, disco epigyno inconspicuo.—Frutex ex insulis Gallipagensibus. Folia lineari-lanceolata, intrinseque attenuata, alterna, supra scabriuscula, subtus pubescentia, integerrima. Capitula basi • subintrusa, axillaria, breviter pedunculata.

1132. (1.) *Scalesia atractyloides*. *Am.* in *Lindl. Nat Syst* p. 443. *DC. Prod.* vii. p. 308.—*Hook. ic. ined.*—Gallipagos; *Quming*, (n. 106.).—A very distinct genus unlike any with which we are acquainted. Leaves 4—6 inches long, much attenuated at both extremities, sessile, penninerved, scabrous above, downy and paler beneath. Capitula nearly an inch broad. Involucre campanulate, slightly downy. Corollas all tubular, pale, apparently white. Anther-tube exserted, black, tipped with white. *Paleae* nearly as long as the florets, linear, rigid.

1133. (1.) *Encelia oblongifolia*, *DC.* v. p. 567.—Chili; *Hcenke. Gaudichaud. Macrae*. Coquimbo; *Cuming*, (n. 909.)—Intermediate, as it were, between *E. parvifolia*, and *E. canescens*.

1134. (I.) *Leptocarpha rivularis*, *DC. Prodr.* v. p. 495.

\* This ought, strictly speaking, to be excluded from the Flora we are now describing.

*Helianthus rivularis*, *Poep. PL Exsicc. n. 716.*—*Tetrachaete Chilensis*, (*H. et A.*) *mst.*—Banks of the River Valdivia, Chili; *Bridges, (n. 764.)*—The leaves are slightly scabrous on the upper side; the ovaries in our specimens are young, but appear to have a pappus of four equal bristles, so very caducous, that we have seldom been able to detect the whole number, although the marks where the others have existed are visible. De Candolle describes the mature achenium with only two bristles. The branches of the style of the disk are tipped with a very short fleshy cone, on which account we have placed the genus with the *Senccionidece*, while De Candolle places it in *Asteroidece*, near *Siegesbeckia*.

LEIGHIA. *Cms.*

\* *Foliis alternis.*

1135. (1.) *Leighia anchusafolia* (*DC. Prodr. v.p. 580*); herbacea strigoso-pubescentis, foliis alternis sessilibus callosostrigosis lineari-oblongis subintegerrimis triplinerviis, nervis lateralibus prope margines, pedunculis corymbosis elongatis parve-foliatis, involucri 3—4-serialis strigosi disco brevioris foliolis oblongo-lanceolatis ext. minoribus apice recurvis, achenio parce sericeo.—Top of the hill of Monte Video; *Tweedie, (n. 865.)*

1136. (2.) *L. stenophylla* (*H. & A.*); herbacea strigoso-hispida, foliis alternis subsessilibus linearibus integerrimis trinerviis, nervis lateralibus marginalibus subobsoletis, pedunculo solitario paullo ante apicem aphylo, involucri disco brevioris canescentis pluriserialis foliolis lanceolatis acuminatis ext. apice recurvis, achenio parce sericeo.—Buenos Ayres and Monte Video; *Titieedie, (n. 870 and 875.)*—Perhaps our plant is the same as *L. immarginala*, *DC. Prodr. p. 581.*; but the stem is scabrous, and the marginal nerves of the leaves can always be traced.

1137. (3.) *L. Gilliesii* (*H. & A.*); suffruticosa? scabra, foliis alternis brevi-petiolatis anguste lanceolatis attenuatis basi in petiolum acuminatis integerrimis trinerviis, nervis lateralibus prope marginem, pedunculo solitario valde elon-

gato longe ante apicem aphylo, involucri discum subaequantis setis copiosis scabri pluriserialis foliolis omnibus acuminatis exterioribus recurvis, achenio parce sericeo, paleis receptaculi apice hirsutis mucronatis—*Helianthus heteropappus*, *Gill mst.*—San Pedro, Mendoza; *Dr Gillies*.

»

1138. (4.) *L. Tucumanensis*, (H. et A.); ramis fruticosis glabris sulcato-angulatis, foliis alternis lineari-elongatis utrinque attenuatis itteggerrimis sessilibus uninerviis supra scabris subtus laeviusculis, pedunculis elongatis bracteatis glabris ex axillis prope apicem ramorum folium subaequantibus, involucri discum subsequantis foliolis ovato-acuminatis profunde striatis inferne glabriusculis erecto-imbricatis versus apicem herbaceis pubescenti-ciliatis subrecurvis, acheniis glabris marginibus obscure sericeis.—Near Tucuman; *Tweedie*, (w. 1203.)—Leaves frequently 6-7 inches long. Involucral scales deeply furrowed, and almost wholly glabrous. Pappus of 4-5 unequal acuminate paleae.

\*\* *Foliis oppositis*.

1139. (5.) *L. bupthalmiflora*, (De Cand. *Prodr.* 5. p. 583?) herbacea hispida, foliis oppositis plus minusve linearibus v. oblongis acutis v. acuminatis subinciso-serratis supra subtusque inter venas glabris, pedunculo elongato solitario, involucri discum\* subsequante biseriali, foliolis subaequilongis hispidis adpressis oblongis foliaceis, achenio subpiloso, pappo brevi, paleis receptaculi membranaceis acuminatis.—*L. bupthalmoides*. *Hook, et Am. mst*—13. foliis linearibus.—Banda Orientale, San Isidro, Rio Grande, and Buenos Ayres, and Uruguay; *Baird; Tweedie; M. Isabelle*.—j3, Maldonado; *Tweedie\**—Flowers large, showy. The leaves are certainly very variable both in the toothing and in breadth. Perhaps *L. calendulacea*, DC, may be a state of this very common plant of South Brazil and the Platte river.

1140. (6.) *L. Silphioides* (H. & A.); herbacea? hispida, foliis petiolatis oppositis in petiolum decurrentibus, caulibus sagittato-ovatis inciso-dentatis angulatisque, superioribus hastato-oblongis serratis, omnibus supra venisque subtus callosis-hispidis subtus inter venas velutinis vel dense pubescen-

tibus, pedunculis subternis, involucro discum. subsequente biseriali hispido, foliolis aequilongis lineari-oblongis acutis, achenio parce piloso.—Buenos Ayres; *Tweedie*; *Dr Gillies*.

1141. (1.) *Flourensia thurifera*, DC. *Prodr.* p. 592.—*Helianthus thurifer*, *Mol.*—*H. glutinosus*, *Hook\* et. Am. BoL Beech. Voy.* p. 32.—Conception; *Mr Caldcleugh*; *Mr Cruickshanks*. Valparaiso; *Bridges*, (n. 234.) *Cuming*, (n. 631.)

1142. (2.) *F. conjmbosa*, DC. *Prodr.* p. 592. ^*Helianthus corymbosus*, "*Poep. PL exsicc, [n. 791.]*"—*H. Cumingii*, *H. fy A.mst.*—Chili; *Poeppig*. Mauleprovince; *Cuming*, (w.849.)

1143. (1.) *Bidens glaberrina*, DC. *Prodr.* p. 601.—Buenos Ayres; *Tweedie*.

1144. (2.) *B. bipinnata*, L.—DC. *Prodr.* 5. p. 603.—Mendoza and Buenos Ayres; *Dr Gillies*; *Tweedie*. Valparaiso; *C. Darwin, Esq.*, (w. 882); *Bridges*, (n. 661); *Cuming*, (w. 646.)

1145. (3.) *B. Chilensis*, DC. *Prodr.* p. 683.—Chili; *Cruickshanks*.

1146. (4.) *B. helianthoides*, *Kunth.*—DC. *Prodr.* p. 596 ; Marshes, Quillota; *Bridges*, (n. 67.) Buenos Ayres; *Dr Gillies* ; *Tweedie*.

1147. (1.) *VerhesmūL glabratci* (H. & A.) ; ramis herbaceis, foliisalternis oblongo-lanceolatis acuminatis basi in petioliim longiuscule attenuatis pubescentibus demum glabris sinuato-serratis, serraturis calloso-apiculatis, corymbis multifloris, involucris glabri foliolis exterioribus obtusis interioribus acutiusculis, acheniis radii discique biaristatis.—St Catharine, Brazil ; *Tweedie*.—Leaves 4-5 inches long. Its place will be near *V. sordescens*, DC.

1148. (2.) *V. sordescens*, DC. *Prodr.* 5. p. 613.—Plentiful in the mountains of Rio Jacquet; *Tweedie*, (n. 878.)

1149. (3.) *V. auriculata* (H. & A.); herbacea, foliis (ramorum) alternis sessilibus oblongo-lanceolatis subpanduriformibus basi auriculatis versus apicem calloso-serratis supra pubescentibus subtus incano-subvelutinis, corymbis multifloris, involucris canescentis foliolis exterioribus obtusis interioribus acutis, acheniis radii discique bitristatis.—*V. subcordata*, DC. *Prodr.* p. 614 ?—Buenos Ayres; *Tweedie*.

1150. (4.) *V. helianthoides* (H. & A.); herhacea? foliis (ramoruni) oppositis hirsutis inferioribus oblongis superioribus lineari-lanceolatis dentatis, pedunculis solitariis versus apicem villosis, involucri laxi foliolis exterioribus villosis spathulatis acutis basi attenuatis internis glabriusculis acuminatis, radio discum superante, acheniis radii triaristatis disci biaristatis.—Dry pasture-fields in the interior of Entre Rios; *Tweedie*.

1151. (1.) *QWgogyne? Synedrelloides*, (H. & A.); herbaea parce strigilloso-pubescens, foliis oppositis petiolatis ovatis acutis serratis, pedunculis petiolum raris superantibus in dichotomia solitariis ad ramum apices ternis, involucrio subbiseriali, foliolis exterioribus majoribus elliptico-oblongis acutis, radio brevi, acheniis obcompressis radii brevissime disci longiuscule biaristatis.—Rio Grande; *Tweedie*.—This may possibly be the *O. Megapotamica*, DC. *Prodr.* 5. p. 629; but the involucre is not decidedly in a single row as he characterizes the genus. It has quite the **habit** of *Synedrella nodiflora*.

1152. (1.) *Ximenia microptera* DC. p. 627—*X. enceloides*, Don, in litt. (noil Pav.)—Cerro del Diamante, Mendoza; *Dr Gillies*. Buenos Ayres; *Tiveedie*.—Herba annua, canescens. Folia opposita et alterna, sublonge petiolata, integra, subangulato-ovata, inaequaliter serrata, subtus incanostrigillosa, basi in petiolum subdecurrentia. Petioli basi exauriculati. Pedunculi 1—3-ni, terminales—This differs from *X. enceloides* Cav., at first sight, by the petioles not expanding into foliaceous auricles at the base. The bristles at the apex of the ovary are very small, inconspicuous, and easily broken off, but we fear that character is not constant. Indeed Cavanilles himself has represented the original species in the same way, although in the cultivated specimens of it, in our Herbarium, we find always very decided awns. Kunth describes the ray as neuter in the new species he refers to this genus: Cavanilles makes it female, as does Lessing who, however, suspects the achenium to be unfertile\*, but we possess specimens having the achenia of the ray perfect. It is ovoid, much veined and wrinkled, without any wing\*\*. It

is therefore probable that the species with a neuter ray ought to be referred to *Coreopsis*, or that *Simsia* ought again, as Cassine and De Candolle suggest, to be restored for them.

1153. (1.) *Spilanthes* (*Salivaria*) *Macrcei* (H. & A.); stolonifera, foliis lineari-spathulatis obtusiusculis sessilibus utrinque glabris vel pilis brevibus raris adspersis versus basin ciliatis, pedunculo foliis vix duplo longiore pilis brevibus plus minusve adperso, involucri foliolis ovalibus interioribus apice erosis, radio nullo, disco hemispherico.—*S. leiocarpa*, DC. *Prodr.b.p.* 626?—Conception, Chili; *Macrae*.—& *leiocarpa*, DC. agrees tolerably well with this, and it is also a plant of *Macrae*; but, as stated by De Candolle, discovered "ad Sinum Chorillo in Peru," whereas ours is from Chili.

1154. (2.) *S.* (*Salivaria*) *pusilla*, (H. & A.); repens, foliis spathulato-linearibus obtusiusculis basi in petiolum attenuatis glaberrimis, pedunculo foliis duplo longiore versus apicem subpubescente, involucri foliolis late ovalibus margine scariosis minute finibriatis, radio nullo.—Road-sides about Buenos Ayres; *Dr Gillies*. Banda Orientale; *Tweedie*.

1155.(3.) *S.* (*Acmella*) *helenioides*, (H.&A.); erectaglabra, foliis oblongis lineari-lanceolatis linearibusve calloso-apiculatis basi attenuatis integerrimis vel utrinque sub-dentatis, pedunculis valde elongatis, radii flosculis patenti-recurvis apice trifidis disco subcylindrico longioribus.—Mendoza and Buenos Ayres; *Dr Gillies*. Uruguiay and Rio Grande; *Tweedie*, (n. 864, 858, and 867.)

1156. (4.) *S.* (*Acmella*) *affinis*, (H. & A.); decumbens, caule glabro, foliis linearibus utrinque attenuatis calloso-apiculatis hinc inde calloso-denticulatis, pedunculis elongatis versus apicem dense pubescentibus, flosculis radii discum conicum subaequantibus obtuse tridentatis.—Los Loamos in N. Patagonia; *Tweedie* (*in Herb. Am.*)—Very nearly allied to *S. stenophylla*, and to *S. helcnioides*, but the florets of the ray are only toothed, not trifid.

1157. (5.) *S.* (*Acmella*) *stenophylla*, (H. & A.); decumbens glabra, foliis angustissime linearibus calloso-apiculatis hinc



inde minutim denticulatis, pedunculis subelongatis, flosculis radii patentibus apice minute tridentatis discum conicum subaequantibus.—Buenos Ay res; *Tweedie*.—Leaves very narrow, crowded.

1158. (6.) *S. wedelioides*, (H. & A.); decumbens, caule pedunculis petiolisque strigoso-pubescentibus, foliis obovato-oblongis trinerviis basi in petiolum breviusculum paulum attenuatis glabris margine scabridis integerrimis, pedunculo gracili, capitulo basi subtruncato, flosculis radii (pallidis) oblongis involucri haud superante, rachidis bracteolis subulatis corollas disci superantibus, ovarii marginibus inferne glabriusculis apice villosiusculis, setis perbrevis mucroniformibus!, styli ramis subtruncatis pube descendente obsessis!—Within the tide of La Plata. *Tweedie*, (*in Herb. Am.*)—The style has no appendage or cone; but its pubescence is not manifestly longer than the apex, as in the true species of the genus. The external appearance of the style is thus more of the *Asieroidece* than of the *Senecionidece*; but the stigmatic lines reach to about the apex, and therefore much beyond the commencement of the pubescence.

ADENOSPEUXMUM. *H. fy A.*

*Adenocarpus*. *Don, mst. (iion DC.)*

GJGN. CHAR. *Capitulum* heterogamum. *Involucri* duplici ordine 10-phyllum, aequale, foliolis oblongis obtusis margine membranaceis. *Styli rami radii* laevissimi breves exappendiculati, *disci* appendiculis linearibus longissimis superati. *Achenium* verrucosum erostre, *radii* cylindricum exalatum culvum, *disci* obcompressum bialatum, alis apice in mucrones tuberculiformes brevissimos ac isevissimos excurrentibus. *Rachis* bracteolata,

1159. (1.) *A. tuberculatum*, (H. & A.)—*Adinocarpum* tuberculatum, *Don, mst*—Province of Cordova; *Dr Gillies*. Cordova; *Tweedie*, (*n. 1109*)—A small, procumbent, herbaceous plant, with the habit of *Heterospermum pinnatum*. Leaves alternate, on long petioles, tripinnatifid, strongly nerved and reticulated, pellucid in the areolae; segments linear-lan-

ceolate, very acute or mucronate. Capitula small, hemispherical, on axillary and terminal peduncles. The genus is very closely allied in character to *Isostigma* of Lessing, and indeed only to be distinguished by the achenia and styles: but in habit the two genera are totally dissimilar.

1160. (1.) *Thesperma scabiosoides*, Less.—*DC. Prodr.* v. p. 634.—*Bidens paradoxa*, Don, *msL*—*B. megapotamia*, Spr.—Uruguay and N. Patagonia; *Baird*; *Tweedie*. Province of Cordova; *Dr Gillies*.

1161. (1.) *Isostigma peucedanifolium*, Less.—*Tragoceras peucedanifolium*, Spr.—Dry hills of the Jacquet, Rio Grande and Portalegre; *Tweedie*.—Lessing remarks that the corolla of the ray is more or less 3-toothed; in one specimen before us it is trifid, and in another almost tripartite.

#### Subtrib. III. FLAVERIE^:

1162. (1.) *Flaveria Contrayerba*, Pers. *Sims. Bot. Mag.* t. 2400.—*DC. Prodr.* v. p. 635—*F. Bonariensis?* *DC. Prodr.*—Chili; *Menzies*; *Cuming*, (*n.* 778); *Bridges*, (*n.* 491); Mendoza; *Dr Gillies*, (who observes that the plant is commonly used immersed in a solution of alum for dyeing yellow or green.) Buenos Ayres; *Tweedie*.

#### Subtrib. IV. TAGETINE^: Less.

1163. (1.) *Tagetes glandulifera*, *DC Prodr.* v. p. 644. *T. minuta*, L.—Mendoza; *Dr Gillies*. Valparaiso; *Cuming*, (*n.* 777.); *Bridges*. Buenos Ayres; *Tweedie*. Valparaiso; *Menzies*; *Bridges*.

1164. (2.) *T. pauciloba*, *DC. Prodr.* v. p. 644—Cerro del Diamante, Mendoza; *Dr Gillies*. South Chili? *C. Darwin, Esq.*, (*n.* 280.)

1165. (3.) *T. micrantha*, Cav—*DC. Prodr.* v. p. 646—Mendoza; *Dr Gillies*.

1166. (1.) *Lasthenia Kunthii*—*Hymenatherum Kunthii*, Less. *Comp.* p. 237. *DC. Prodr.* v. p. 642.—Rancagua *Bridgesii*, *Poepp. et Endl. Nov. Gen. t.* 25—*Lasthenia obtu-*

sifolia;  $\sphericalangle$  Bridgesii, DC. *Prodr.* v. p. 665.—Valparaiso and Quepay; *Bridges*, (n. 449.); *Cuming*, (n. 724.)—Our plant is certainly the *Hymenatherum Kunthii* of Lessing, and we prefer his specific name as he is the first describer of it. It is certainly the *Eancagua Bridgesii* of Endlicher and Poeppig, although our plant is not glabrous, and the paleae of the pappus are narrow linear-subulate, and very obscurely and simply serrated. The *R. Feuillei*, Endl. and Poepp., (*Lasthenia oblusifolia*, a. of DC.) has a different structure of the paleae of the pappus, which are much shorter than the corolla, though the two plants are in other respects very similar.

1167. (1.) *Hymenatherum Candolleanum* (H. & A.) ; perennis pubescens, ramis simpliciusculis, foliis oppositis sessilibus ad basin subpahnatis pinnato-partitislobis sub 5 spinosofiliformibus rigidis integerrimis inferioribus minoribus terminali elongato, pedunculis elongatis 1-cephalis nudis, involucro biseriali 14—20-dentato, pappi uniserialis squamellis 10 omnibus basi membranaceis apice trifidis, lobo medio setiformi scabro, lateralibus brevibus membranaceis.—H. Belenidium, DC. *Prodr.* viL p. 292,—Belenidium Candolleanum, Arn. in DC. I. c—Pectis acicularis, Don, *mst*—Mendoza; *Dr Gillies*—Summit of high dry rocks of Los Loamos, N. Patagonia ; *Tweedie*—We almost incline to think that this may be the same as Cassini's *H. tenuifolium*, (from "Chili,") and the same as what De Candolle had from Née, (probably from Mendoza,) both of which De Candolle is inclined to refer to his *H. tenuilobum*, a Mexican plant. Lessing's genus *Hymenatherum*, it will be observed, is very different from this of Cassini, and is Cassini's *Lasthenia*.

Subtrib. V, HELENIL<sup>A</sup>JE. *Less.*

1168. (1.) *Bahia atnbrosioides*. Less—DC. *Prodr.* v. p. 657.—Valparaiso; *Cuming*, (n. 769.) *Bridges*, {n. 60.) *Mathews*, {n. 168.)—Fruticulus dense pubescens. Folia oppositabternatim secta; segmentis cuneato-oblongis, acutis. Capitula corymbosa, heterogama, radio 5—9-flavo. Involucrum sub-

biseriale, sub-9-phyllum foliolis cuneato-rotundatis. Styli disci rami cono brevi carnosio glabriusculo apiculato superati. Achenium tetragonum, basi longe attenuatum, glabriusculum. Pappi palese 8—10, cuneato-obovatae, sequilongae, latitudine inaequales, apice obtusaa, vel truncatae et eroso-dentatae, corneo-membranaceae.—Perhaps the genus *Bahia* ought to be restricted to this plant. *B. mtemisicefolia*, and probably all the other species from California and Mexico have truncated styles, as Lessing indeed defines *Bahia*<sup>^</sup> and belong to *Eriophyllum*, Lag., from which *Trichophyllum*, Nutt., is not distinct. *Erioph. trolliifolium*, having a pappus of 4 acute palese, seems to belong to *Hymenoxys*.

AMBLYOPAPPUS. *H\* et A.*

*Capitulum* homogamum. *Receptaculum* epaleaceum. /«-*volucris squama* 5, uniserialis, cuneato-obovatae, obtusissimae. *Corolla* brevis, 5-dentata. *Styli* rami cono brevi hirsuto superati. *Achenia* breviter turbinata, tetragona, glabriuscula. *Pappi* palese 8—10, cuneato-obovatae, aequilongae, latitudine paullo inaequales, obtusae, muticae, corolla paullo breviores, corneo-membranaceae, pinnatifido-striatae, eroso-denticulatae. —Herba annua pusilla glabra apice corymbosa ramosa. Folia inferiora opposita, superiora alterna, subpedatim secta, segmentis angustissime linearibus obtusis. Capitula solitaria breviter pedunculata

1169. (1.) *A. pusillus*, (H. et A.)—Coquimbo, *Cuming*, (n. 885.)—This genus differs from *Achyropappus*, in the form of the style, the want of a ray, and habit; from *Florestina* by the absence of the subulate hairy appendages to the style; and from *Hymenopappus* by the involucre, the style, and the achenia. In character it is most allied to the original *Bakia*, but there is no ray, and the habit is totally dissimilar.

1170. (1.) *Schkuhria Bonariensis*, (H. et A.); puberula, foliis alternis 1—2-pinnatim sectis segmentis filiformibus, capitulis longe pedunculatis, involucre biseriali sub-7-phylo, foliolis duobus exterioribus minoribus, flore femineo unico, corollis disci 5-dentatis, achenio basi hirsuto, pappi paleis 8

scariosis basi crassinerviis, 4 aristulatis, 4 obtusis paullo brevioribus.—*S. abrotanoides*, *Don*, (*non auct.*)—Pampas of Buenos Ayres; *Dr Gillies*. Buenos Ayres; *Tweedie*.—In this and the next species, the branches of the style are tipped with a short cone, and the achenia are remarkably hirsute at the very base, and sprinkled upwards with a few stiff hairs.

1171. (2.) *S. multiflora*, (H. et A.); strigoso-pubescentis, foliis inferioribus oppositis superioribus alternis subtripinnatifidis, segmentis anguste linearibus obtusis, capitulis sublonge pedunculatis multifloris homogamis? involucri subtrisenarii 12-18-phyllo foliolis subaequalibus, corollis 5-dentatis, achenio basi hirsuto, pappi paleis 8 subaequalibus scariosis basi crassinerviis, 4 obtusis v. acutiusculis, 4 setigeris.—*Achyropappus schkuhrioides*, *Don*, (*non Link.*)—Mendoza; *Dr Gillies*.—We do not find any ligulate floret in this species; but the ligules may have fallen off, as our specimens are considerably advanced.

(<sup>7</sup> <sup>^</sup> <sup>^</sup> <sup>^</sup>) *Jaumea linearifolia*, *Pers.*—*DC. Prodr.* v. p. 663.—*Kleinia linearifolia*, *Juss. in Ann. Mm.* ii. p. 424. tab. 61. (*non Lipn.*)—In salt marshes of St Lucia and Monte Video, also at Bahla Blanca, N. Patagonia; *Tweedie*.—*De Candolle*, who does not appear to have seen the plant, describes the pappus of 8—10 squamellae; but Jussieu correctly figures and describes the squamella as numerous.

1173. (1.) *Cercostylis scabiosoides*, (Arn.); foliis oblongo-lanceolatis acutis vel semel bisve pinnatifidis,—*Am. in DC. Prodr.* vii. p. 293,—*Cephalophora scabiosoides*, *Don*, *mst.* (*ex parte.*)—El Morro, Province of San Luis, and at Saladillo, province of Cordova; *Dr Gillies*. Los Loamos of Buhio blanca, N. Patagonia, *Tweedie*.

1174\* (1.) *Hymenoxys anthe?oides*, (Cass. ?); herbacea gl. br. humilis divaricato-ramosa, foliis alternis sublonge pedunculatis trifidis segmentis filiformibus, involucri fructus connivente, squamis ovalibus obtusis serie interiore exteriorem superante, capitulis discoideis, pappi paleis ovalibus subaequalibus.—*Tweedie*, *Dr Gillies*, *Dr Cassin*.—We have little doubt of this being *Cassin's* 661-Buenos Ayres; *Tweedie*, *Dr Gillies*, *Dr Cassin*.

plant, and the *Hymenopappus anthemoides* of Juss., although the remarkable tendency of the involucre to become connivent by age, has not been observed by any of these botanists. If it be really a distinct species, it may be named *H. connivens*. The branches and peduncles are deeply striated as in *H. Hcenkeana*^ from which it is distinguished by its more compound leaves.

1175. (2.) *H. Tweedei* (H. et A.) ; herbacea glabra subelongata decumbens, foliis anguste linearibus obtusis vel ad medium 2—3-fidis, capitulis radiatis, involucreo campanulato squamisoblongo-ovalibus obtusis serie interiore subsequilongo; pappi paleis 5—6 oblongis sensim acuminatis.—Rio Grande, and dry pastures, road sides of Los Loamos, N. Patagonia; *Tweedie*, (n. 859.)-\*-In this and the last species the inner leaflets of the involucre are coriaceous and flat, the outer ones slightly carinate at the base.

1176. (1.) *Cephalophora glauca*, Cav.—DC\* *Prodr.* v. p. 662.—Valparaiso and Conception; *Cuming*, (n. 126, and 553.) *Bridges*, (n. 220.) Valdivia; *Bridges*, (n. 651.)—Casa Bianca, Chili; £>r *Gillies*.

1177. (2.) *C. aromatica*, DC. *Prodr.* v. p. 662.—*Graemia aromatica*, Hook.— Valparaiso; *Bridges*, (n. 219,) Buenos Ayres (cultivated;) *Tweedie*.— Although in deference to De Candolle, we i\*etain these two species as distinct, we believe they are mere varieties, and that his *C. plantaginea* is another form. The difference pointed out in the shape of the leaves is certainly not permanent, and the only one we know lies in the annual or biennial duration of the root, and the size of the capitula; but this last is likewise variable. Both vary from glabrous to canescent; the lower leaves are toothed, the upper entire; those at the base of the ramifications, particularly in our specimens from Tweedie, are slightly decurrent.

1178. (3.) *C. heterophylla*, (Less \_\_\_DC. *Prodr.* v. p. 662) ; suffruticosa ramosa canescens, foliis linearibus vel dentatopinnatifidis, involucri squamis adpressis, corollis radii 3-lobatis pallidis, disco purpurascente, pappi paleis circiter 10 elongatis, achenio argenteo-sericeo.—Buenos Ayres; *Tiveedie*,

(n. 889.)—De Candolle has inadvertently made it a part of the generic character that the leaves of the involucre are always reflexed; whereas the greater part of his section *Actinella*, to which this and the next species belong, has them adpressed.

1179. (4.) *C. Doniana*, (H. et A.); canescens suffruticosa<sup>^</sup> foliis linearibus integris acutiusculis, involucri squamis adpressis, corollis radii tFilobatis discoque concoloribus, pappi paleis 6—8 breviusculis, achenio fulvo-sericeo.—*C. suffruticosa*, *Don, mst.*—*C. elongata*, *Don, mst. (ex parte.)*—San Isidro, Mendoza, and Saladillo, province of Cordova; *Dr Gillies*, (?i. 64, and 62, partly.)—Our specimens from Dr Gillies of what he informed us Mr Don has called *C. elongata*, belong partly to this species, and partly to *Cercostylis scabiosoides*. Several other species are suffrutescent, whence we have rejected the unpublished name given by Mr Don.

1180. (1.) *Calea pinnatifida*, *Br.*—*Less, in Linn, v. p. 158, (cum synon.); DC. Prodr. v. p. 674.*—St Catharines; *Tweedie*, (n. 102\*2.)—Some of our specimens from St Catharines, have the upper leaves quite entire, and agree with the description of (*7. glabra*, DC, found there by Gaudichaud; but our plant has the leaves always more or less scabrous on the upper side.

1181. (2.) *C. cymosa*. *Less. l. c. DC. Prodr. v. p. 674.*—S. Brazil; *Tweedie*, (n. 1066, 1069.)—Our specimens accord with De Candolle's specific character, except that the upper leaves are occasionally slightly obtuse, and that the scales of the involucre are either obtuse or acute in the same corymb:—the leaves are scabrous on both sides.

1182. (3.) *C. uniflora*, *Less. l. c. p. 159*—*DC. Prodr. v. p. 674.*—Banda Orientale; *Tweedie*, (n. 865.)

1183. (4.) *C. pedunculosa*, *DC. Prodr. v. 673.*—*C. uniflora*> forma discoidea, (*Less. l. c. p. 158.*)—Banda Orientale; *Tweedie*, along with the last species.—Lessing is probably correct, when he unites these two species) the only difference lies in the presence or absence of a ray. The following description applies to both,—Folia sessilia, ovata vel ovato<sup>^</sup>

lanceolata, grosse dentata, utrinque scabra vel hirsuta, triplinervia: involucris foliola vittis longitudinalibus 5—7 purpureis oleo farctis lineolata: pappi paleae utrinque attenuatae, saepissime secus strias pinnatifido-lacerse; receptaculi bracteolae subsetaceae, cornese.

1184. (1.) *Galinsogea parviflora*, Cav—DC. *Prodr.* v. p. 677—*Wiborgia Acmella*, Both.—Valparaiso; *Cuming*, (w. 629.) *Bridges*, (n. 203.) Coquimbo; *Beechetj.* Mendoza; *Dr Gillies.* Buenos Ayres; *Tweedie*, (n. 1092.)

Subtrib. VI. CHUYSANTHEMEJ.; *Less.*

1185. (1.) *Anthemis nobilis*, L.—DC. *Prodr.* vi. p. 6—Buenos Ayres; *Tweedie.*—No doubt this and the two following were introduced from Europe.

1186. (1.) *Maruta f&tida*, Cass. DC. *Prodr.*—*Anthemis cotula*, L.—Mendoza; *Dr Gillies.* Buenos Ayres; *Tweedie.*

1187. (1.) *Pyrethrum Parthenium*, L.—DC. *Prodr.*—Mendoza; *Dr Gillies.*

1188. (1.) *Cotula Montevidensis*, Spr.—DC. *Prodr.* vi. p. 78.—Banda Orientale, within tidemark, opposite Monte Video; *Tweedie*, (n. 860.)

1189. (1.) *Artemisia Absinthium*, L.—DC. *Prodr.* vi. p. 125\*—jS. foliisubcarnosis—A. andicola, *Don.mst.*—In a hedge at St Pedros of Rio Grande; *Tweedie*, (n. 1051.)—(3. San Isidro, Andes of Mendoza, and frequent in the Quebradas above Mendoza, " where it is in common used as a medicine instead of wormwood;" *Dr Gillies.*—We cannot see that the *A. andicola* of Don's mst. is really different from the *A. Absinthium*, and the plant is probably an introduced one in the above stations. There is a South Brazilian species called *A. Montevidense* by Sprengel, very imperfectly described, and we doubt if any *Artemisia* has been found in a perfectly wild state in the southern hemisphere.

1190. (1.) *Myriogyne elatinoides*. *Less*, in *Linn.* vi./? . 219. DC. *Prodr.* 6. p. 139.—Moist places near Osormo, Prov. of Valdivia; *Bridges*, (n. 788.)

U91. (1.) *Leptinella? accenoides* (H. & A.); stolonifera



subvillosa, foliis spathulatis pinnatifidis segmentis ovalibus hinc vel utrinque margine inciso-dentatis inferioribus minoribus discretis superioribus majoribus arete approximatis, involucri foliolis 5 uniserialibus margine scariosis.—Cape Horn, Staten Land; *Dr Eights*. Cape Tres Montes; *C. Darwin, Esq.*—/3. *major*; minus villosa, foliis glabriusculis segmentis magis discretis, capitulis majoribus.—Fields at Chumpulla, near Valdivia; *Bridges, (n. 756.)*—In our specimens from Mr Bridges, there are no traces of ligulate or marginal female florets, but those of the disk are male in as far\*as the styles are simple, as in *Blennospermum*. Ovaries of the male flowers, obovate, compressed, glabrous, and apparently bialate.

1192. (1.) *Soliva sessilis, R. P—DC. Prodr. vi. p. 143.*—Valparaiso; *Cuming, (n. 475.)*; *Bridges, (n. 539.)* Buenos Ayres; *Dr Gillies, Tweedie.*—The wing of the achenium has, as it were, a piece cut out on each side near the base; and we are of opinion, that the *Soliva pterosperma, Less.*, and DC, (*Gymnostylis, Juss.*) and the *Gymnostylis Chilensis* and *alata* of Sprengel, all belong to this species.

1193. (2.) *S. araulis (H. & A.)*; Acaulis, foliis longe petiolatis pilosiusculis bipinnatisectis, segmentis anguste oblongo-linearibus, acutis, capitulis sessilibus radicalibus congestis, acheniis anguste oblongis alis crassiusculis transversim rugulosis apice villosis in cornua brevissima patentia exciirrentibus.—Buenos Ayres; *Tweedie*. This seems to be very closely allied to *S. Lusitanica, Less. (Hippia stolonifera, Brot.)* Is it not possible that this, the only species accounted European, may have been introduced by the Portuguese from Buenos Ayres? We have not seen any plant agreeing with *S. nasturtiifolia, (Juss.)* said to be from Buenos Ayres.

Subtrib. **VIII.** GNAPHALIE^E, Less.

**1194.** (!•) *Helichrysum (Sect. I. Less.)*; *Chilense H. & A.* araneoso-lanata, caule simplici vel ad apicem solufhmodo corymboso polyphyllo, foliis inferioribus spathulatis obtusis superioribus sensim minoribus acutiusculis, capitulis glomera-

tis, glomerulis solitariis vel corymbosis, involucris turbinatis basin attenuati squamis subaequalibus erectis imbricatis obtusis undulatis opacis sordide albis exterioribus ovatis lanatis, interioribus oblongis glabris—About Valparaiso; *Bridges*, (who finds it on cliffs near the sea.) *Cuming*, (n. 63.)—The root is woody, fusiform, branching above. *Stems* ten inches to a foot long; capitula crowded, dirty yellow, or cream-coloured; not glossy, but rather opaque; each about four inches long, broad above, and tapering into the short pedicel.

GNAPHALIUM, *Don.* DC.

## Sect. 1. EUGNAPHALIUM. § 1. Xantluna.

\* *Foliis decurrentibus.*

1195. (1.) *G. cheiranthifolium*, *Lam.*—DC. *Prodr.* vi. p. 223.—Monte Video and N. Patagonia; *Tweedie*, (n. 1031.) Valle del Rio Tinguirica, Chili, and in the Andes of Chili; *Dr Gillies*. Valparaiso, (and probably throughout all Chili;) *Cuming*, (n. 446.) *Bridges*, (n. 279.) Juan Fernandez; *Bertero*, (n. 1462.) *Dr Scouler*.—6. foliis supra viridibus subtus albidis.—*G. citrinum*, *Hook, et Am. in Bot. of Beech. Voy.*, l?. 31. DC. *Prodr.* vi. p. 223—Uruguay and N. Patagonia; *Tweedie*. El Aguadita, and El Mono, Prov. of San Luis; *Dr Gillies*.—May not *G. paniculatum* Colla and DC. be a var. of this species?

1196. (2.) *G. cymatoides*, *Kunze in Poepp. Coll. Chil.* n. 21.—*T.G. idophyllum* *H. & A. Bot. of Beech. Voy.*, p. 31.—Valparaiso; *Bridges*, (n. 229.) Chronos Archipelago; *C. Darwin, Esq.* (n. 332.)—We adopt the name of Kunze, which, according to De Candolle, was given in Poeppig's collection of dried specimens the year before our description appeared in the Botany of Beechey's Voyage. We believe that a very limited number of that dried collection was on sale, if they were on sale at all; and we have long endeavoured to obtain access to a set, but in vain. De Candolle gives *GC Piravira* of Lessing as the same as this, and he places it, though we think incorrectly, in his § AXANTHINA.

## § II. AXANTHINA, DC.

*Capitulis corymboso-congestis.*

1197. (1.) *G. pubendum*, DC. *Prodr.* vi. p. 224.—Chili; Bertero, (n. 299.)—We are unacquainted with this species.

1198. (2.) *G. Vira-vira*, Mol. *Chil.*—DC. *Prodr.* vi. p. 324. Less, in Linn. 1821. p. 227, (excl. var.).—Elichrysum, *Feuill. obs.* 3. p. 18. t. 13. l. 2—Playa aucta, Valparaiso; Bridges, (n. 232.) Cuming, (n. 690.)

\*\* *Capitulis in spicam racemosam dispositis.*

f 199. (3.) *G. spicatum*, Lam. DC. *Prodr.* vi. p. 233.—*G. coarctatum*; Hook, et Am. *Bot. of Beech. Voy.*, p. 31.—Buenos Ayres; Tweedie. Uspallata, Andes of Mendoza, to the Pampas of Buenos Ayres; Dr Gillies. Concepcion, Chili; Cuming, (n. 128.) Valdivia, (n. 643, 644.) and Valparaiso; Bridges. Chronos Archipelago; C. Darwin, *Esq.*, (n. 333.)—A very variable species assuredly: we possess specimens from six inches to a foot and a half full, and leaves from one to six inches long. We fear that *Gn. Americanum* is not distinct from this, and we believe it will be found very general on the North and South American continents. We have specimens from Peru, Columbia and Mexico, West Indies, &c, and they have a striking similarity with the *G. sylvaticum* and its varieties of Europe.

2000. (4.) *G. falcatum*, Lam. *De Cand. Prodr.* vi. p. 233.—*G. Chilense*; Hook, et Am. in *Bot. of Beech. Voy.*, p. 31.—*G. Berteroanum*, DC. ? (who quotes our *G. Chilense* under this, as well as under *G. falcatum*.)—Concepcion; Beechey, Cuming, (n. 129.) Valparaiso; Bridges, (n. 231.) Mathews, (ra.278.) Cuming, (n. 364.) Mas Afuera; Cuming, (n. 1353.) Andes of Mendoza; Dr Gillies. Maldonado; Dr Gillies. Buenos Ayres; Tweedie. Port George, Patagonia; King's Voyage.—This again is sometimes difficult to be distinguished from the preceding. The glomerules of capitula are less compactly spiked; but it seems to pass into *G. spicatum*, and it is hardly possible accurately to define any of the species of D<sup>c</sup> Candolle's group, "*Capitulis in spicam racemosam dispo-*

*sitis.*" Probably some of our varieties of that and the preceding species may be found to answer to the *G. stachydifolium*. Lam. and DC, and *G. Chamissonis*, DC; the first a native of Monte Video; the second of Chili.

2001. (5.) *G. alienum*, (H. et A.); ramis sterilibus densis brevibus cespitosis floralibus elongatis gracilibus simplicibus folisque albo-lanatis, foliis lineari-spathulatis superioribus linearibus, capitulis in spicas terminales interruptas dispositis basi densissime lanosis, involucri cylindranei basi attenuati pulcherrime rosei squamis oblongis acutis erectis imbricatis.—Chili. *Cuming*, (n. 64.)—This has altogether a very peculiar aspect, something like that of our European *Xeranthemum*, and quite unlike that of any American *Gnaphalium*. Perhaps it should form a second species of *Helichrysum* of that country. The female florets are in several series in the circumference; the hermaphrodite, about six, in the centre; the receptacle is small, naked? The root is small, woody, fusiform; from its top spring many dense, short, leafy branches, 1—2 inches long, and from among them, 4—6 flowering branches, 5—6 inches high, slender, and like the whole plant, except the involucre, clothed with short, white, compact wool; at the base of the involucre the wool is loose and very copious, forming a dense white tomentose cup from which the glossy deep rose-coloured scales of the involucre arise.

2002. (1.) *Filago Gallica*, L—DC. *Prodr.* vi. p. 248—*Oglifa Gallica*, Less.—*Logfia subulata*, Cass.—*Gnaphalium Gallicum*, L.—Valparaiso; *Cuming*, (n. 576); *Bridges*, (n. 228.)

Subtrib IX. SENEZIONEJE. Less.

2003. (1.) *Balbisia Berterii*, DC. *Prodr.* vi. p. 447. *Deless. ic. sel.* iv. t. 62.—*De Caisne in Ann. Sc. Nat. N. S. I* p. 29.—*Ingenhouzia thurifera*, Bert. *Mst*—Juan Fernandez; *Bertero*, (n. 1467); *Cuming*, (w. 1392. *mas.*)—The male plant has not been seen by Bertero. In it we find as follows:—Corolla ut in planta feminea, at pappo longior. Antherae lineares, coalitae, inclusae. Stylus inclusus, ramis erectis bre-

vissimis sursum dilatatis exappendiculatis obtusis parte tilitata papillois. Ovaria inania, albida, pilosa.

2004. (1.) *Robinsonia thurifera*, *De Caisne in Ann. Sc. Nat. N. S. i. p. 28.*—*DC. Prodr. vi. p. 448.* *Deless. ic. sel. iv. t. 63.*—*Senecio thurifer*; *Bertero*, (n. 1511.)—Juan Fernandez; *Bertero*; *Douglas.*—Nom. Vern. *Resino macho.*

2005. (2.) *R. Gayana*, *De Caisne, I. c. DC. I. c. Deless. I. c. t. 64.*—*Senecio thurifer, var.?* *Bert.* (n. 1511.)—Juan Fernandez; *Bertero.* Nom. Vern. *Resino hembra.*

2006. (3.) *R. gracilis*, *De Caisne, I. c.*—*DC. I. c.*—*Senecio s<sup>h</sup>ophyllus*; *Bertero*, (n. 1510.)—Juan Fernandez; *Bertero.*—Nom. Vern. *Resinillo.*

#### SENECIO.

##### § 1. Fruticosi velsuffruticosi. Sect. 1. RADIATI.

\* *Folia subintegerrima, nunc rarius divisa.*

2007. (1.) *S. subulatus*, (*Don. mst.*) ; fruticosus ramosissimus glaber foliis lineari-subulatis mucronato-aristatis integris vel pinnatifidis, capitulis subcorymbosis, involucri latocylindranei foliolis acutis costatis vix sphacelatis basi bracteolis parvis subulatis, ligulis sub 14 linearibus disci (multiflori) diametrum vix superantibus.—*a. prostratus*; ramis numerosissimis brevibus multifloris, foliis plurimis pinnatifidis lobis paucis elongatis—Frequent near Capiz, province of Mendoza. Nom Vern. "*Romerillo:*" *Dr Gillies.*—*f3. elatior*; ramis elongatis foliis plurimis pinnatifidis lobis paucis brevibus, involucre angustiori.—El Posito, Prov. San Juan ; *Dr Gillies.*—*y. erecta*; ramis elongatis erectis, foliis plerisque indivisis siccitate nigrescentibus.—Port-Belgrave, entrance to Bahia Blanca, N. Patagonia; *Tweedie.*—*d. macrantha*; ramis elongatis erectis, foliis longioribus siccitate nigrescentibus omnibus indivisis, capitulis majoribus—Bahia Blanca, coast of Patagonia; *C. Darwin, Esq., (n. 351.)*—A very variable plant assuredly ; and we think we are correct in bringing the above several varieties under this species. Leaves 2—3 inches long, tipped with a soft mucro, fleshy, and as it were compressed, when recent.

2008. (2.) *S. vaginaius*, (H. et A.); caule erecto fruticoso? glabro subsimplici, foliis carnosis lineari-subulatis acutis erecto-patentibus glabris supra canaliculatis subtus teretibus basi dilatato-vaginatibus in axillis (supremis prsecipue) lanatis, capitulis paucis subcorymbosis, involucri lato-campanulati subpubescentis foliolis acutis non sphacelatis basi bracteolis paucis parvis subulatis, ligulis 14—15 oblongo-linearibus discum multiflorum subaequantibus.—Berkeley Sound, Falkland Island; *C Darwin, Esq.*, (n. 362. and 376.)—A very singular species. The leaves are one and a half to two inches long, rigid, and almost black in the dry state. Involute short in proportion to its breadth. Flowers rather large.

2009. (3.) *S. farinifer*, (H. et A.); fruticosus pubescenti-tomentosus, ramis elongatis erectis gracilibus subangulatis, superne subaphyllis, foliis lineari-subulatis mucronatis planis integerrimis uninerviis, capitulis solitariis v. corymbosis; involucri campanulati farinoso-glanduliferi foliolis acuminatis non sphacelatis basi pauci-bracteolatis, ligulis 10—12 lato-linearibus discum aequantibus.—Near Vina de la Mar, Chili; *Bridges*, (n. 223). Valparaiso; *Cuming*, (n. 583.)—This is a very peculiar plant, of which we find no description among the numerous Chilian species of *Senecio*, described by De Candolle. The branches are from six inches to a foot long. The flowers moderately large; in the older specimens more than an inch across.

2010. (4.) *S. Chilensis*, *Less.*—*DC. Prodr.* vi. p. 415—*Cineraria Montevidensis*, *Spr.* {*fide Lehm. in Herb. Nostr.*}—*S. cuspidatus*, *DC. Prodr.* vi. p. 419.—Monte Video; *Tweedie*.—Maule Province; *Cuming*, (n. 337.)—We can perceive no difference between the specimens found on the Pacific and the Atlantic side of America.

2011. (5.) *S. phagnalodes*, *DC. Prodr.* vi. p. 415.—*S. gummifer*; *H. et A. msL*—Conception; (*UUrville*); *Cuming*, (n. 825.)—This has smaller and much more crowded leaves than *S. Chilensis*, and the flowering branches are more elongated and almost leafless. There is too in our specimens, a

viscid substance, which causes particles of fine black sand to adhere to the branches and leaves.

2012. (6.) *S. ceratophyllus*, (*Don, msL*); suffruticosus lana arachnoidea decidua vestitus, ramis angulatis superne subaphyllis monocephalis, foliis linear i-spathulatis mucronatis planis apice tridentatis supremis nunc integerrimis, involucri campanulati foliolis subulatis basi pauci-bracteolatis nonsphacelatis sub-Hlato-linearibus.—*a. major*; ramis foliisque elongatis, foliis superioribus integerrimis—Bahia Blanca, N. Patagonia; *Tweedie*, (*n. 40.*) *C. Darwin, Esq.*, (*n. 368.*)—*£. ncma*; ramis brevissimis dense foliatis, foliis omnibus tridentatis carnosis. S. Chili; *Captain Reynolds*.—The capitula are alike in both these varieties; our /3 may, perhaps, form a distinct species. Our *a.* is closely allied to *S. Chilensis*, and may possibly be a state of it with trifid leaves.

2013. (7.) *S. Donianus*, (*H. et A.*); suffruticosus? dense albo-lanatus lanademum decidua, foliis remotiusculis subcarnosis lato-lanceolatis basi attenuatès grosse dentato-pinnatifidis, corymbis oligocephalis, involucri campanulati foliolis acuminatis, ligulis....?—*S. lanuginosus*, *Don, (non Spr.)*—Summit of the Cumbre, and Paramillo delas Cuevas, Andes of Mendoza; *Dr Gillies*.—Our specimens of this plant are very imperfect; we are even doubtful if the capitula be not discoid rather than radiate, and if the stems be not herbaceous; but the leaves are very peculiar, and about an inch long.

2014. (8.) *S. Eightsii*, (*H. et A.*); humilis fruticosusvalde ramosus, ramis brevibus erectis glabris inferne nudis cicatricatis superne dense foliosis, foliis spathulatis apice aequaliter profunde trifidis subtus deciduo-tomentosis marginibus sub-revolutis laciniis linearibus obtusis, capitulis solitariis terminalibus sessilibus, involucri campanulati foliolis acutis apice nigro-sphacelatis glabris basi paucibracteolatis tomentosis; ligulis sub-12.—Staten Land, Cape Horn; *Dr Eights*, (*n. 39.*)—A small, well marked species, 4—6 inches high, with copious, alternate, erect branches; very leafy above, bare beneath, and marked with the scars of fallen leaves. Flowers

about three-fourths of an inch across. Scales of the involucre tipped with deep black.—It cannot be the *S. trifurcatus*, DC. (*Cineraria*, Spr.), from the Straits of Magellan; for that has an herbaceous and scapiform stem.

2015. (9.) *S. Danvinii*, (EL et A.); humilis fruticosus dense albo-arachnoideo-lanatus, ramis apice subaphyllo monocephalo, foliis patentibus obovato-spathulatis coriaceis apice trifidis, involucri late campanulati foliolis acuminatis demum glabris basi pauci-bracteolatis, ligulis 12—14 lato-linearibus distincte 3-nerviis disco brevioribus.—South part of Terra del Fuego; *C. Darwin, Esq.*, (?i. 359.)—/•?. *laxtts*; foliis remotis basi sublonge attenuatis.—Same locality; *C. Darwin, Esq.*

2016. (10.) *S. heterotrichus*, DC. *Prodr.* vi. p. 419.—Puerto Bravo, S. Brazil; *Tweedie*, (n. 1353.)—This is well named and well described by De Candolle. In some specimens the tothing of the leaves is very distinct, and the teeth terminated by a black gland.

\*\* *Foliis pinnatifidis, lobis magis minusve profundis.*

2017. (11.) *S. limbardioides*, (H. et A.); fruticosus glaber, ramis elongatis striatis copiose foliatis, foliis lanceolatis basi attenuatis subcoriaceis enerviis pinnato-lobatis lobis brevibus integerrimis acutis, corymbis terminalibus pedunculis pedicellisque gracilibus, involucri campanulati basi calyculiti foliolis acutis vix sphacelatis, ligulis lato-oblongis discum multiflorum superantibus nervosis.—Sandy hills about Quintero; *Bridges*, (n. 393.)—/3. foliis angustioribus lobis paucioribus mine integerrimis.—Valparaiso; *Cuming*, (n. 614.)—This must, we should think, be described in De Candolle, yet we do not find that the character of any of his species corresponds with it. The leaves are two inches long, half an inch broad, narrower in /?., and less pinnatifid; indeed this latter is as much entitled to rank in the preceding as in the present group.

2018. (12.) *S. Berterianus*, Colla.—DC. *Prodr.* vi. p. 417.—Coquimbo; *Cuming*, (910.)—Habit of the last; but with a



glandular pubescence, longer and narrower leaves, the lobes more numerous, short, but frequently toothed, as well as the rachis, giving a ragged appearance to the margin of the leaves. Our *S. bipinnatifidus*, *Bot. of Beech. Voy. p. 32*, is probably not different from this.

2019. (13.) *S. alcicornis*, (H. & A.); fruticosus glaber, ramis elongatis strictis striatis superne subaphyllis, foliis lanceolatis acuminatis irregulariter laciniato-pinnatifidis laciniis elongatis lineari-acuminatis foliorum supremorum angustissimis, corymbis terminalibus 4-8-cephalis, involucri lato-campanulati foliolis acutis non sphacelatis basi bracteolis tenuibus, ligulis sub-10 latiusculis nervosis disco brevioribus.—Coquimbo; *Ciiming*, (n. 859.)—The very ragged appearance of the leaves, from the irregular manner in which they are divided, is quite peculiar, as far as we know, to this species: the segments are much acuminate. The texture is thin, and there is an indistinct reticulated venation. Yet there is a good deal of similarity of habit in this and the two preceding species.

2020; (H.) *S. barbans*, (Don. mst.); humilis fruticosus dichotome ramosus, ramis pedunculis foliis axillisque praecepue laxa densissima laxa demum decidua vestitis, foliis brevibus coriaceo-carnosis acutis bipinnato-lobatis subtus canaliculatis, lobis brevibus acutis rachibusque lato-linearibus, capitulo solitario terminali, involucri campanulati foliolis paucis (sub-10) acutis margine diaphanis basi calyculatis lanatis non sphacelatis, ligulis 10 brevibus ovali-oblongis.—Ascent of El Alto de los Manantiales, Andes of Mendoza; *Dr Gillies*.—A very singular looking, tortuous, little, shrubby plant; so woolly, especially in the axils of the leaves, that the branches look like those of some of the South American woolly *Talina*. Leaves short, scarcely half-an-inch long, rigid, pungent. Leaflets of the involucre singularly pale, and diaphanous at the margins.

2021. (15.) *S. glandulosus*, (Don. mst.); fruticosus pubescenti-glandulosus, foliis remotiusculis lineari-lanceolatis acutis pinnato-lobatis marginibus reflexis, lobis paucis brevibus acutis, capitulis terminalibus solitariis vel 2-4 subcorymbosis,

involucri campanulati foliolis acutis glandulosis basi calyculatis, ligulis . . . ?—Andes of Mendoza; *Dr Gillies*—Base of the plant quite woody; the flowering branches, except at the base, herbaceous and pubescenti-glandular. Our specimens are not very perfect; but we know of nothing which will accord with it.

2022. (16.) *S. Bridgesii*, H. §• A. in *Bot. of Beech. Voy.*, p. 57. *DC. Prodr.* vi. p. 416.—Valparaiso, to the Andes of Chili; *Bridges*; *Cuming*, (n. 65); *Dr Gillies*—Readily distinguished from all in this section, by its comparatively small, narrow, cylindrical involucre, its very compound corymbs of copious capitula, and from the following of the section; moreover, by the plane (not thick or fleshy) and one-nerved leaves.

2023. (17.) *S. Uspallatensis*; (H. & A.); fruticosus glaber, ramis numerosis brevibus usque ad apicem foliosis, foliis coriaceo-carnosis canaliculatis bipinnatifidis rachide lobisque linearibus acutis brevibus simplicibus vel divisis, corymbis in ramis brevibus terminalibus oligocephalis, involucris glabri cylindracei foliolis acutis non sphacelatis, ligulis sub-10 brevissimis.—Uspallata, Andes of Mendoza; *Mr Cruikshanks*.—/3. *tenuior*; foliis ramisque tenuioribus.—Andes of Mendoza; *Dr Gillies*.—*y. retroflexus*; foliis bipinnatifidis lobis recurvatis.—Frequent on Paramillo, Andes of Mendoza, where it is called *PachochomO*) and where an infusion is drunk by the miners instead of Mate; *Dr Gillies*.—This is a very woody-looking plant, even nearly to the extremity of the smaller branches; but the capitula have a great resemblance to those of the following, and the leaves are so variable on others of this genus, that we know not where to draw the limits of the species.

2024. (18.) *S. pinnatus*, *Pair*—*DC. Prodr.* vi. p. 419.—*S. Megapotamicus*, *Spr.* ?—Pampas of Buenos Ayres, and lower margin]of the Jarillal above Mendoza; *Dr Gillies*. Banda Orientale; *Tweedie*. St Julian and Bahia Blanca, N. Patagonia; *C. Darwin, Esq.*, (n. 392. and n. 396.) N. Patagonia; *Tweedie*.—We have copious specimens of this plant from various localities on the Atlantic side of extratropical South

America, and from the Andes of Mendoza; but we hardly see how it is to be distinguished from the *S. hahecefolius* on the Pacific side. In our specimen, the lobes of the leaf are more usually entire than in the following species.

2025. (19.) *S. Hahecefolius*, Bert. Herb.—DC. Prodr. vi. v. 416.—Valparaiso; Bridges, (w. 387); Cuming, (n. 695.)—*β. viscidus*; caule superne viscoso, foliorum laciniis compositis. —*S. glaber*, Less, in Linnæa, 1831. p. 248. DC. Prodr. vi. p. 416.—*S. viscosissimus*, Colla? DC. Prodr. vi. p. 416.—Valparaiso; Cuming, (n. 360.) Quintero and Collina, Chili; Bridges, (n. 390.)—*γ. adenophyllus*; foliis ramisque junioribus glanduloso-viscosis.—Sierra Bella vista Aconcagua; Bridges, (n. 389); Cordillera of Chili; Cuming, (n. 281.)—The *S. Hahecefolius*, to which De Candolle attributes quite entire lobes to the leaves, in our specimens, passes gradually in to those states with variously compound leaves; indeed entire leaves, and pinnatifid, and bipinnatifid, may often be seen on one and the same plant: we doubt if the viscid character of the branches (by no means constant,) can be considered a distinctive character or even the glands in our var. *γ*.

2026. (20.) *S. bahioides*, (H. & A.) ; fruticosus ramis crassiusculis teretibus striatis, foliis sessilibus pinnatifidis lato-linearibus laciniis longiusculis dentato-pinnatifidis, corymbis compositis, capitulis majusculis, involucri lato-campanulati foliolis acutis non sphacelatis basi calyculatis, ligulis sub-10 latis ovalibus nervosis discolorioribus.—*α. lanosus*; caule foliisque magis minusve lanatis, foliorum laciniis acutis.—Valparaiso; Cuming, (n. 616.)—*β. glaber*; foliorum laciniis obtusiusculis—Renam et Quintero, Chili; Bridges, (w. 388.)—This is a stouter plant than most of the preceding, with much larger flowers, an inch and a-half across, and peculiarly large ray in proportion to the disk, which, nevertheless, is, like the involucre, broad also.

2027. (21.) *S. glabratus*, H. & A. Bot. of Beech. Voy. p. 32—DC. Prodr. vi. p. 417.—*S. auriculatus*; Poepp. —*S. Valparaisaicus*; Colla, (fide DC.)—Valparaiso; Bridges, (n. 385); Cuming, (n. 598.)

## Sect. II. HERBACEI.

2028. (22.) *S. pulcher*, (H. & A.); simplex vel ramosus arachnoideo-tomentosus lana decidua, foliis oblongo-lanceolatis crenato-dentatis radicalibus aequilongae petiolatis caulinis remotis sessilibus superioribus semiamplexicaulibus paululumque decurrentibus, capitulis magnis corymbosis involucri latissime campanulati subhemisphaerici foliolis calyculatis non sphacelatis pubescenti-lanatis obtusis, ligulis sub-20 latis (purpureis) disco longioribus.—Moist places at the foot of the Sugar-loaf mountain, near Maldonado, and at Aldoa, west of Portalegre, S. Brazil; *Tweedie*, (n. 1071, 1072.) This is a splendid plant, from one to three or four feet high, with flowers two inches and more in diameter, the ray purple.

2029. (23.) *S. Brunonianus*, (H. & A.); annuus albo-pubescenti-tomentosus ramosus, ramis striatis, foliis inferioribus lanceolato-spathulatis integris reliquis lineari-lanceolatis obtusis pinnatifidis lobis brevibus inaequalibus, corymbis foliosis, involucri campanulati glabri bracteolis minutis calyculati foliolis acuminatis sphacelatis, ligulis lato-linearibus sub-12 disco longioribus.—Coquimbo; *Owning*, (n. 898.)—This has a small annual tap-root, throwing up three or four stems, which are a span to a foot high, and dichotomously branched every where, as well as the leaves hoary with whitish tomentum, more lax and arachnoid on the branches, and terminated by many yellow flowers, an inch and a half in diameter.

2030. (24.) *S. adenotrichius*, (DC. *Prod.* \p. 416?); elatus tomentosus hirsuto-vel pubescenti-glandulosus, caule striato, foliis sessilibus pinnatifidis ac inciso-lobatis segmentis acutis, corymbis amplis polycephalis foliosis, capitulis magnis, involucri calyculati late campanulati foliolis acutis exterioribus subulatis laxis interiora subaequantibus, ligulis numerosis angustis vix discum sequantibus.—Chili, near Quillota; *Bridges*, (w.391.) Andes of Chili; *Cumirig*, (n. 168.)—A very tall growing plant, with thick, herbaceous, striated, or almost angular stems, and numerous copiously leafy branches. Leaves three\*

four, or five inches long. Flowers yellow, an inch and a-half in diameter. Our specimens have no great resemblance to the figure of De Candolle's plant, given in the *Dot. Reg. t. 1190*, under the name of *Adenotrichia amplexicaulis*; but as that represents it in a state of cultivation, they may prove the same.

2031. (25.) *S. sinualilobus*, DC. *Prodr.* vi. p. 417. — *S. mollis*; *Poepp.* {*non Willd.*}—**Valparaiso; Cuming, (n. 610.)** Concon and Colmo; *Bridges*, (n. 392.)—This plant so entirely agrees with the description of *S. sinuatifidus*, that we hardly doubt it being the same, though our specimens are certainly herbaceous.

2032. (26.) *S. Cumingii*, (H. & A.); elatus, caule hirsuto-glanduloso, ramis sparse pubescenti-glandulosis, foliis (amplis) late ovatis obtusis pinnatifidis sinuato-lobatisque, inferioribus petiolatis petiolis lato-alatis basi auriculato-amplexicaulibus, intermediis sessilibus lato-auriculatis, supremis acuminatis dentatis, corymbis terminalibus subaphyllis, pedicellis elongatis superne incrassatis, involucre lato-campanulato non sphacelato hirto-glanduloso, ligulis latis discum subaequantibus. Valparaiso; *Cuming*, (n. 329.)—Leaves large, two and three inches broad. Flowers large, with broad ligules. Involucre and pedicels very glandular, the latter with several subulate bracteas.

2033. (27.) *S. Saltensis*, (H. & A.); totus pubescenti-glandulosus, caule dichotomo, ramis patentibus, foliis linearilanceolatis acuminatis dentato-pinnatifidis basi auriculatis semiamplexicaulibus summis integris, corymbo patente, involucri campanulati calyculati foliolis sub-20, ligulis sub-10 latiusculis discum sequantibus.—Salto, near Tucuman; *Tweedie*.—Flowers about an inch across. The ray seems to be reflexed, and even when dry, of a bright deep lemon-colour. Flowers about an inch across.

2034. (28.) *S. daroniciflora*, (H. & A.); totus hirsuto-glandulosus gummifer, ramis flexuosis angulatis, foliis inferioribus . . . ? superioribus linear-oblongis acutis inaequaliter grosse serrato-dentatis basi latioribus semiamplectantibus,

corymbis oligocephalis parce foliosis, capitulis maximis, involucri lato-campanulati calyculati foliolis sub-20 acuminatis, ligulis sub-20 latiusculis discum aequantibus.—Banda Orientale; *Tweedie*.—Mr Tweedie notes upon this, that it is a strongly scented gummy biennial. Our specimen is evidently only an upper branch. This is every-where, as well as the involucre, thickly clothed with viscid, patent, glandular hairs. The flowers are very large, nearly three inches in diameter; the ligules deep yellow.

2035. (29.) *S. nigrescēiis*, H. & A. *BoU of Beech. Voy. p.* 32. *DC. Prodr. vi. p.* 415.—*S. chamsedryfolius*; *Less.*—Nilgue; *Feuill. Chil. 2. t.* 44.—South Chili; Conception; *Beechey*; *Macrae*; *Cuming, (n. 799.)*—StMary, South Pacific Ocean; *Dr Eights, (w. 81.)*

2036. (30.) *S. dentiadatus*, *DC. Prodr. vi. p.* 416.—*Cineraria denticulata*, H. § A. *Bot. of Beech. Voy. p.* 29.—*Cineraria Americana*; *Linn. Supply (fide DC.)*—*Danaa Yegua*; *Colla. Art. Turin. 38. p.* 29. *t.* 28.—Conception; *Beechey*; *Macrae*. Valparaiso; *Cuming, (n. 336.)* Banks of the river of Valdivia and in woods; *Bridges, {n. 596.}* South Chili; *Capt. Reynolds, (n. 39, 107.)*—Six to twelve feet high, with copious corymbs or panicles of flowers; but the flowers are small in proportion to the size of the plant: leaves of the involucre few, (6-7) and the ligules only three or four, very small. We had thought this a shrubby plant, but on a more careful inspection, our specimens appear to be truly herbaceous, like the following, which is a nearly allied, though totally distinct species.

2037. (31.) *S. otites*, *Kunze in Poepp. Coll. PL Chil. iii. p.* 190.—*DC. Prodr. vi. p.* 416—*S. hastsefolius*, H. § A. *mst.*—Andes of Antuco; *Poeppig*. Banks of the driver, and in the woods of Valdivia; *Bridges, (595.)* Chiloe; *Cuming, (n. 59.)* Araucania; *Capt. Reynolds, (n. 37.)*—Six to eight feet high, according to Mr Bridges. The leaves vary much in breadth; from one to four inches in some specimens.

2038. (32.) *S. Tweediei*, (H. & A.); *elatus glaberrimus*, *caule striato*; *foliis radfcalibus longe petiolatis elliptico-obo-*

vatis integerrimis caulinis lineari-oblongissimilibus acutis vel acuminatis longe remote dentatis, corymbi pedicellis elongatis parce bracteatis, capitulis magnis, involucri late cylindraceuto-campanulati calyculati foliolis 18-20 acuminatis non sphacelatis, ligulis latiusculis discum superantibus.—Ditch-sides of Buenos Ayres; *Tweedie*.—Flowers large. Involucre perfectly glabrous.

2039. (33.) *S. Hualtata*, Bert, in *DC Prodr.* vi. p. 417. — *Cineraria gualtata*; *Gill mst.S. fistulosus*; *Poepp. DC. Prodr.* vi. 48, (anetiam *S. Do?nbeyanns, DC.?*)—Rancagua and Quintero; *Poeppig*. Frequent among standing water in the Cienegas of Totoraland Capis, Mendoza; *Dr Gillies*. Marshes, Quillota; *Bridges*, (n. 490.) Valparaiso; *Cuming*, (w. 348.)

2040. (34.) *S. ochroleucus*, (H. & A.); *elatus arachnoideus* demum glaber, caule erecto striato, foliis radicalibus oblongo-ellipticis crenato-dentatis longissime petiolatis, caulinis remotis lanceolatis longe inaequaliter dentatis superioribus sensim minoribus sessilibus acuminatis, corymbo composito polycephalo, involucri campanulati calyculati foliolis subdecem acuminatis striatis, ligulis latis discum superantibus.—Marshy places, province of Valdivia; *Bridges*, (n. 587.)—£• corymbo simplici—Buenos Ayres; *Tweedie*.—A very fine new species, two to four feet high. Radical leaves a span long, and thin petioles still longer. Corymbs large or long, almost naked stalks, which are again divided. Involucre with rather broad acuminate leaflets, nearly black when dry. We do not find any specific difference between the plant of *Tweedie* from Buenos Ayres, and that from Valdivia.

2041. (35.) *S. Bonariensis*, (H. & A.); *erectus glaberri-mus simplex*, caule striato fistuloso parce folioso, foliis oblongo-lanceolatis\* obtusiusculis subdentatis, radicalibus longe petiolatis petiolo basi dilatato, caulinis sessilibus basi latis subsagittatis, corymbo denso, pedicellis bracteatis, involucri calyculati foliolis. sub-14 acutis lanceolatis subsphacelatis, ligulis sub-12 latis disco brevioribus subnerviis—Buenos Ayres; *Tweedie*—Scarcely a foot high. Leaves three, four, and five inches long, the radical ones on stalks equal to the

blade in length, upper ones gradually smaller, bracteiform. Flowers scarcely an inch across, pale yellow, almost cream-coloured, opaque, so that the nerves are scarcely visible.

2042. (36.) *S. canabincpfolius*, (H. & A.); glaberrimus, ramis flexuosis striatis, foliis profunde bi-tripinnatifidis vel rarius pinnatim sectis laciniis paucis lineari-lanceolatis, acuminatis serratis, corymbis compositis aphyllis parce bracteatis, involucri ovato-cylindranei calyculati foliolissub-20 acutis non sphacelatis, ligulis 8-10 latiusculis disco brevioribus.—Marshes of La Plata, near Buenos Ayres; *Tweedie*.—(5. foliorum laciniis 4-6 angustioribus subtus intermarginem et costam tomentosiss.—Banda Orientale; *Tweedie*.—The leaves of this plant are very peculiar, generally of about three inches long, unequal, narrow acuminate lacinate. Our *var.* (3. may prove a distinct species, but evidently allied to this.

2043. (37.) *S. crassiflorus*, *DC. Prodr.* vi. p. 412.—*Cineraria crassiflora*; *Lam. III. L* 675. / 4.—*C. vestita*; *Spreng.*—On the sandy shores of the Uruguay, ("creeping among the sand to a great width," and on a quicksand on the Arroy de Los Vagues, Banda Orientale; *Tweedie*, (n. 887, and 888.)—This is a very handsome species, every part densely hoary with white tomentum, except the large bright yellow corollas. Flowers solitary, or two together.

2044. (38.) *S. arnicoides*, *H. & A. Bot. of Beech. Voy.* p. 32. —*S. plantagineus*; *Bert, in Colla, Mem. Acad. Turin*, xx<sup>viii</sup> p. 32.—*Aster plantagineus*, "*Poepp. PL exsicc.* (n. 265.)"—Chili; *Bridges*. Conception; *Beechey*. Valparaiso; *Mattews*, (n. 243.) *Cuming*, (n. 516.)

2045. (39.) *S. trifurcatus* *Less.*—*DC. Prodr.* vi. /?. 435.—*Cineraria trifurcata*: *Spr.*—Woolleston Island, Cape Horn; *C. Darwin, Esq.*, (n. 381.)—A small plant, five inches to a span high, with a perennial root of long thick descending fibres. Stem scapiform, but leafy, with a solitary capitulum. Radical leaves several, spatulate, somewhat fleshy, 3-5 lobed at the apex, lobes ovate obtuse, with a somewhat callous point; the base is dilated, and sheathing. Cauline leaves linear-subulate, with a membranous\* almost sheathing base. This seems



to answer to the *Cineraria trifurcata*, Spr., as far as the lower leaves are concerned, and it is from pretty near the same locality. We may observe, however, that the structure of the stem-leaves is very similar to that of our *S. vaginatus*. The flower is about an inch across. Involucre campanulate, scarcely calculate, not sphacelate, of about 10-12 sharp glabrous leaflets, and with about as many yellow ligules.

2046. (40.) *S. zosterifolius*, glaberrimus parvus annuus, radice fibrosa, caule scapiformi simplici folioso gracili monocephalo, foliis radicalibus linearibus obtusissimis enervibus basi dilatatis diaphanis subvaginantibus, caulinis sensim brevioribus subulatis, involucre lato-campanulati ecalyculati foliolis sub-14 acutis non sphacelatis, ligulis totidem brevibus obtusis estriatis integerrimis.—Margins of the Laguna de Ranco, near Valdivia; *Bridges*, (w. 632.)—This is a very remarkable looking plant, and has all the appearance of being an aquatic; the texture of the leaves is very similar to that of *Zostera*. Flower about three-fourths of an inch across, probably yellow where recent, but greenish where dry.

### Sect. III. DISCOIDEI.

#### \* *Tomentosi*.

2047. (41.) *S. depressus*, (H. et A.); nanus cespitosus subacaulis totus dense cano-tomentosus, foliis imbricatis oblongis acutis integris vel apice tridentatis, capitulo terminali solitario, involucri lanati ecalyculati? foliolis numerosis (sub-24) subulatis apice sphacelatis, corollis pappo immersis, —Culcitium depressum, *Don, mst* \_\_\_ Summit of Planchon and Valle de los Ciegos, Andes of Mendoza; *Dr Gillies*.—Our plants are scarcely three inches high. Leaves three-fourths of an inch long, dense, and imbricated; some entire, others 3-toothed at the apex.

2048. (42.) *S. Poeppigii*, (H. et A.); humilis cespitosus multiceps ubique dense cano-tomentosus, caulibus basi foliosis apice pedunculiformibus monocephalis, foliis oblongis subspathulatis obtusis puncto nigro terminatis laxè imbricatis integerrimis margine subrevolutis, pedunculo bracteato, invo-

Jucri campanulati basi acuti calyculati foliolis 16 dense tomentosis subulatis apicibus nudis nigro-sphacelatis.—Cinaria; *Poepp.*—Senecio micropifolius, f3. monocephalus, Z>C. *Prodr.* vi. p. 413\_\_Culcitium candidum, *Don, mst.*—Cerro de la Polcura; Andes of Mendoza ; *J)r Gillies*\_\_Root somewhat fusiform, woody. Stems severed from the summit of the root, 4—6 inches high, clothed in the lower half with leaves an inch long, above, naked and pedunculiform, bearing a solitary capitulum and a few linear bracteas. Corollas numerous, about as long as the involucre and the pappus. It seems to be the *S. micropifolius*, f3. *monocephalus* of De Candolle.

2049.(43.) *S. Magellanicus*, (H. et A.); herbaceus sericeo-tomentosus, caule erecto scapiformi monocephalo foliis radicalibus lineari-lanceolatis acuminatis inferne attenuatis basi longissime lateque membranaceo-vaginantibus, caulinis remotis linearibus, involucri lato-campanulati calyculati foliolis sub-20 dense sericeo-tomentosis lineari-lanceolatis apicibus sphacelatis.—Cape Negro, Straits of Magellan ; *C. Darwin*, *Esq.*, (n. 367). Port Famine, Patagonia; *Copt. King's Voyage*—This, and the two preceding, have a good deal the appearance of *Culcitia*. The present one is about a foot high, with long narrow radical leaves which have singularly long sheathing bases, and a scapiform stem. Capitulum about an inch in diameter.

2050. (44.) *S. Gilliesii*, (H. et A.); canescens arachnoideo-lanatus lana demum decidua canle paucifolio scapiformi mono-dicephalo, foliis radicalibus ovali-oblongis crassocarnosis dentatis in petiolum longum attenuatis caulinis sessilibus superioribus linearibus; capitulis magnis, involucri lato-campanulati calyculati foliolis sub-30 lineari-acuminatis vix sphacelatis.—Culcitium dentatum, *Don, mst*\_\_Valle del Rio Atuel and Cerro de la Polcura ; *Dr Gillies*\_\_A fine and very distinct species, with a fusiform root and rather stout, herbaceous and apparently succulent scapiform stem, ten inches high. Leaves thick and fleshy; radical ones numerous, including the flattened petiole, cauline ones small, distant. Capitula an inch and a half across. The whole plant appears

in a young state to have been covered with a cobwebby wool, and on its falling away, the plant has the peculiar hoary tint which is seen on many species of *Atriplex*, and other marine plants, yet there is no appearance of tomentum or of scales or any mealy covering.

2051. (45.) *S. fasciculatus*, (H. et A.); fruticosus subdichotome ramosus albo-tomentosus, foliis remotiusculis hnearibus obtusis carnosis marginibus revolutis, axillis fascicules foliorum vel ramos breves folios gerentibus, capitulo terminah solitario, involucri ecalyculati foliolis sub-18 subulatis apice subsphacelatis, acheniis elongatis glaberrimis pappi longitudine.—Valparaiso; *Cuming*, (without No.)—A solitary specimen of this was in Mr Cuming's Herbarium from Valparaiso, and in an imperfect state. It seems, however, a very distinct and well-marked Species.

2052. (46.) *S. albicaidis*, (EL et A.); fruticosus incano-tomentosus demum nudiusculus, ramis albidis lsevissimis, foliis lineanibus obtusis subcarnosis marginibus subcarnosis integerrimis vel rarius pinnatifidis, corymbis compositis, involucri cyndraceo-campanulati corollis brevioris foliolis sub-14 linearibus acutis apice subsphacelatis.—a. *Gilliesii*; foliis integerrimis incanis.—Mountains of Villaviciencia, above Mendoza; ^ odour of honey," *Dr Gillies*.—*fi. subglaber*; foliis integerrimis nudiusculis—East coast of Patagonia; *Dr Eights*, (n. 50.)—*y. lobulatus*; foliis subpinnatifidis, lobis 1—2-brevibus—Santa Cruz (Patagonia?) and Port Desire; *C. Darwin, Esq.*, (n. 380 and 398.)—<5. *pinnatifidus*; foliis pinnatifidis laciniis linearibus elongatis—With a. *Dr Gillies*. Los Loamos, N. Patagonia; *Tweedie*.—Like many other of the kenecios, this is very variable in the form of the leaves, pinnatifid or entire, though usually the latter. Capitula elongated, twice as long as broad. Involucre taperino\* at the base, always shorter than the corollas.

2053. (47.) *S. Patagonicus*, (H. et A.); fruticosus arachnoid, eo-tomentosus lan a mag, S \* ninusve dec, dua, foliis lineariblongis acutiusculis marginibus revolutis integerrimis supra canaliculatis, corymbis oligocephalis, involucri lato-campanu-

ati calyculati foliolis oblongis acuminatis (atro-fuscis) corollis brevioribus.—Port Famine, Patagonia; *Captain King's Voyage*.—Leaves 1—3 inches long. Branches and under-side of the leaves and peduncles, white with dense wool; involucre and upper side of the leaves frequently almost naked. Involucre broader than long.

2054. (48.) *S. caricifolius*, (H. et A.); fruticosus junior (ut videtur) albo-tomentosus demum glaber, ramis fascicularis elongatis, foliis lineari-subulatis acutis integerrimis margine revolutis, corymbis compactis capitatis, involucri cylindracei fusci calyculati foliolis 10—12 anguste linearibus latis exphacelatis.—Bahia Blanca, coast of Patagonia'; *C. Darwin, Esq.*, (n. 366).—Leaves crowded, less so towards the flowers. Involucres about the size of those of *Senecio vulgaris*.

2055. (49.) *S. Candolleanum*, (H. et A.); fruticosus totus albo-tomentosus velutinus, foliis petiolatis (petiolo piano) circumscriptione latissime ovatis profunde pinnatifidis laciniis 6—7 lato-linearibus patentibus acutiusculis tenui-costatis, corymbis dense oligocephalis subcapitatis, involucri densissime lanati late campanulati calyculati foliolis sub-18 obtusis corollis brevioribus.—Coast of Patagonia; *C. Darwin, Esq.*; *Tweedie*.—A very distinct species, with leaves like some coarse *Artemisia*, and flowers three-fourths of an inch across, and with a short bell-shaped densely woolly involucre.

#### \*# *Glaberrimis*

2056. (50.) *S. leptophyllus*, (H. et A.); herbaceus, ramis erectis angulato-striatis glaberrimis, foliis linearibus profunde pinnatifidis laciniis elongatis anguste lineari-subulatis planis flexuosis, corymbis laxis, pedicellis elongatis nudis, involucri laxi ecalyculati foliolis lineari-lanceolatis margine scariosis corollis brevioribus.—Valparaiso; *Cuming*, (n. 582.)—Stems about a foot high, the lower part of the stem appears almost woody; the upper part of the branches and flower-stalks are peculiarly slender. The capitula broader than long, almost three-fourths of an inch across.

2057. (51.) *S. linearilobus*, (FL et A.); herbaceus, ramis angulato-striatis, foliis linearibus profunde pinnatifidis laciniis remotis lineari-elongatis acutis flexuosis, corymbis polycephalis, in vol ucri hemisphaerico-campanulati ecaly culati foliolis lanceolatis acutis striatis apice sphacelatis corollis brevioribus.—Buenos Ayres; *Tweedie*.—f3. foliis capitulisque majoribus, Chili; *Mr Cruikshanks*.—Leaves 2—3 inches long, the lacinae 1<sup>^</sup> inch long. Leaves and involucre a good deal resembling those of the preceding *C. leptophyllus*; but the lobes of the former are not at all subulate, and the scales of the latter are much broader. In our var. (3. the leaves and capitules are larger.

2058. (52.) *S. chrysocomoides*, (H. et A.); fruticosus glaberrimus, ramis fasciculatis, foliis linearibus rectis profunde pinnatifidis laciniis anguste linearibus paucis (2—4) brevibus rectis, corymbis oligocephalis (capitulis 2—5) bracteatis (bracteis acerosis), involucri ovati basi acuti longe calyculati foliis subdecem laxis subulatis corollis brevioribus.—East coast of Patagonia; *Dr Eights*, (n. 54.)—Apparently a small and very distinct plant. Branches fascicled, a span high. Capitula, broadest upward, about one-fourth of an inch in diameter.

2059. (53.) *S. vulgaris*, L.—*Gaudin. in Ann. Sc. Nat. v.p.* 104.—Berkeley Sound; Falkland islands; *C. Darwin, Esq.*, («. 364.)—Probably introduced by means of European vessels.

2060. (54.) *S. trifidus*, (H. et A.); fruticosus nanus glaberrimus, ramis brevibus crassis tortuosis, foliis carnosis linearibus apice trifidis supra canaliculatis segmentis obtusis, capitulo terminali solitario subsessili, involucro . . . ?—Summits of the Andes of Mendoza; *Dr Gillies*—A small woody species with thick wool, and short crooked branches scarcely rising above the surface of the soil and densely covered with fleshy leaves half an inch long, and about half a line wide. The capitula are too imperfect for description, but we believe the plant is certainly of this genus.

2061. (55.) *S. tricuspидatus*, (H. et A.); fruticosus glaber-

rimus ramis striatis foliosis, foliis linearibus planis costatis superne latoribus trifidis marginibus revolutis laciniis cuspidato-acuminatis, pedunculis bracteatis terminalibus simplicibus monocephalis vel divisis dicephalis, involucri ovati calyculati foliolis sub-18 angustis acutis apice sphacelatis corollis brevioribus.—Santa Cruz (Patagonia?) *C. Darwin, Esq.*, (n. 386.)—Leaves rather crowded, especially towards the upper part of the branches where the flower-stalks arise.

2062. (56.) *S. crithmoides*, (H. et A.); glaberrimus humilis, ramis brevibus fasciculatis basi suffruticosis superne pedunculiformibus bracteatis monocephalis, foliis carnosisspathulatis seu obovatis petiolatis integris dentatis 3—5-fidisve laciniis acutis, involucri lato-campanulati calyculati foliis lineari-oblongis acuminatis laxis vix sphacelatis corollis parum brevioribus.—Andes of Mendoza; *Dr Gillies*.—Extremely variable in the leaves, yet there is a peculiar habit by which it may be recognised. Leaves, an inch or more long, some linear-spathulate and entire, some ovato-spathulate and more or less toothed or 3—5-fid. Capitula, an inch in diameter.

2063. (57.) *S. limbardioides*, (H. et A.) ; glaber fruticosus, ramis strictis striatis subdense foliosis, foliis lato-linearibus subspathulatisve acutis planis subtus costa distincta integerrimis, corymbo polycephalo, pedicellis bracteatis (bracteis subulatis) ; involucri lato-campanulati calyculati foliolis sub-16 lineari-subulatis non sphacelatis corollis brevioribus.—Port-Gregory, Patagonia; *King's Voyage*.—*fi. major*; foliis capitulisque paullo majoribus pedicellis bracteis numerosis.—Port-Famine, Patagonia; *C. Darwin, Esq.*, (n. 388.)—Leaves, 1<sup>^</sup>—2 inches long, three lines wide. Capitula, three-fourths of an inch across.

2064. (58.) *S. bracteolatus*, (H. et A.) ; fruticosus glaber, foliis linearibus acutis planis integerrimis, corymbis densis polycephalis, pedicellis multibracteolatis bracteolis parvis subulatis apice glandula albida, involucri ovati basi attenuati calyculati foliolis sub-10 lanceolatis acutis subsphacelatis corollis brevioribus.—Buenos Ayres ; *Dr Gillies*.—Leaves

about an inch long. Capitula, longer than broad, numerous, crowded, each about half an inch across. The most striking feature of this species is in the numerous bracteolse of the pedicels, each tipped with a minute white callous point or gland.

2065. (1.) *Werneria pygmaa*, (Gill, mst.); radice prsejtnorsa, caule subnullo, foliis linearibus opacis obtusis basi dilatatis in axillis dense tomentosis, capitulo sessili, involucris glabri foliolis sub-H lanceolatis acutiusculis.—Valle de los Ciegos, Andes of Mendoza; *Dr Gillies*.—*This* has quite the habit of *W. pumila*, H. B, K.; but in that the leaves are rigid and glossy, and there is no wool in the axils.

2066. (1.) *Erechthites hieracifolia*, Raf. in DC. Prodr. vi. p. 294.—*E. praealta*, Less—*Senecio hieracifolius*, £.—*Sonchus agrestis*, Sw.—South Brazil; *Tweedie*.

2067. (2.) *E. valerianafolia*, DC. Prodr. vi. p. 295—*Senecio valeriansefolius*, Wulf.—*Reichenb. Ic. Exot. i. p. 59. L 85.*—*Crassocephalum valerianaefolium*, Less.—"Senecio," *Salzman, Herb. Bahice. ^rShores of the Parama; Tweedie, (n. 1095.)*—Pappus, of a beautiful purple colour. Leaves resembling those of *Valeriana officinalis*.

(To be continued.)

## XXIV.—BOTANICAL INFORMATION.

### *Latest Intelligence from Mr Gardner.*

Rio DE JANEIRO, NOV. 8th, 1840.

MY DEAR SIR,—It gives me much pleasure to be able to inform you of my safe arrival at this place, with all the collections which I have been making since July of 1839. I remained in Minas Geraes till the beginning of October, and I arrived here on the first of this month. My headquarters in Minas, was Morro Velho, and from it I made several excursions, one of which was to the top of the Serra de Puda-do, which is the highest in Minas, and notwithstanding that my journey was made at the very worst season, I found some

fine plants. On the way down, I also added largely to my stock of dried specimens : among them I may mention an *Equisetum* in fructification, *fifteen feet high*. You cannot imagine how satisfied I feel in having accomplished the long, hazardous, and fatiguing, but very interesting journey, which from fortunate circumstances, I was obliged to undertake\* By a rough calculation from my journal, I find that I have gone over upwards of four thousand miles; and during the whole time I have been engaged in doing so, I may say that I have not had a single day's illness, which surprises every one as well as myself, seeing that I have passed through the most unhealthy tracts in Brazil. Much of my good health I ascribe to my rigid temperance both in eating and drinking. Since my arrival here, I have experienced much kindness from my former Rio friends, particularly from those in Harrison's house; in fact I lived with them till I procured my present quarters, which I took possession of only a few days ago. Knowing from experience that a boarding-house is very expensive to live in, and besides is not well suited for carrying on my operations, I determined to hire a small house for myself; and, in the immediate vicinity of the city, I have found one every way suited to my purpose. I have furnished it economically, and my black servant, who has now been with me a long time, being a handy fellow, I find that we will get on very well. It was only yesterday that I could begin to unpack some of my collections. The Piauhys ones I have of course opened first; and notwithstanding the several partial duckings which they have had, and the knocking about they unavoidably received on such a long journey, and in hide-boxes too, they are in a much better state of preservation than I could have anticipated. I am just now turning them all carefully over, putting them into other paper, and arranging them into their natural orders. I expect by the end of next week to be able to despatch a box to Pamplin, containing those from Piauhys and the district of the Rio Plata, perhaps about five hundred species. The labour of getting my collections put into order to send home, will



not be light, as there is scarcely a bundle among them which at one period or another has not been damaged. I fully expect, however, to be able to have them all on their way home by the end of January. The few living plants which I have brought along with me, I am just packing to be sent by the first ship for London. They will be sent to the care of Mr Pamplin. The seeds, of which I have a splendid collection, I intend to enclose in the box of dried specimens. This is a bad season to send them, but some of them are now more than a year old. I have not yet drawn upon you for money, but Harrison's people are supplying me with what I want. In the course of a month or so I shall do so for £200. From the Messrs Harrison, I have already received that amount, the greater part of which has been expended in defraying the expenses of the latter part of my journey. The death of my horses has been a great drawback to me. By the loss of them more than £100 has been added to the expenses of the journey, as mule hire in Minas is very high. Notwithstanding this, the expenses of the journey, considering its magnitude, have been made for much less than could have been anticipated. Indeed, but for what I gained and saved by my medical practice, I should have been starved out more than a year ago. The fine collections I have made, if they reach England in safety, will, I trust, more than cover the outlay. I have been anxiously expecting to hear from you ever since I arrived here, as I have received no letters from any of my Glasgow friends, since I wrote you from Morro Velho in Minas Geraës. A vessel from Liverpool is expected every day, and by her I fully expect letters. I hope they will bring me better accounts of the health of your family, than your last did. I am anxious to hear how the Glasgow meeting went off. Be so kind as to let my relations know that I am well, and with kindest regards to all my friends, believe me always to be,

My Dear Sir,

Your most obedt. Servant,

GEORGE GARDNER.

*Further Notes on the BANYAN TREE.*

AT the time the account given at p. 288 of this Journal was printing, we had not access to Cordiner's *Description of Ceylon*; in the first volume, however, of that work, at p. 363, we find so many remarks confirmatory of the confusion that has existed between the *Ficus Indica* and *religiosa* that we do not hesitate to present the following extracts :—

" The Banyan, Indian Fig, *Allamarum*<sup>^</sup> or *Ficus Indica*, is a tree which attracts particular notice on account of one distinguishing and remarkable property, Its horizontal branches naturally extend to a great distance from the parent-stem, and being unable to support their own ponderous weight as they shoot forward, fibrous roots dip perpendicularly from them, and after touching the ground, swell to the size of massy pillars, and bear up the loaded boughs with the utmost firmness. These stems are smooth columns, covered with bark of a silver colour, and put forth no shoots. When they first leave the tree, they are of a brownish hue, as flexible as hemp, and wave in the air like ropes. After entering the earth, they become stationary, and are to be found about the same tree of various sizes, some measuring less than three inches, others upwards of eleven feet in circumference. As they at first draw their nourishment from the tree, it is probable that they afterwards return the favour by supplying it with new juices from the bountiful earth.

" The leaves are plain, entire, smooth-edged, neither heart-shaped,\* nor ending in a pointed extremity. A full-grown leaf is five inches long, three and a half broad, and has a footstalk upwards of one inch in length. They grow alternately on each side of the branches, but not opposite to one another. The fruit is of the size of a small cherry, of a deep scarlet colour, and has a bright yellow circular spot round that part of it which touches the tree. The flower, like

\* The leaves are retuse at the base, or slightly heart-shaped, but very different indeed from those of *F. religiosa*.—ED.

that of all other figs, is contained within the fruit, the substance of which consists of a great number of seeds of a diminutive size. These figs grow without any stalks, adhering closely in alternate positions, all round the smaller branches. They afford food for monkeys, and a variety of the feathered race, but are not sweet to the taste, and are scarcely ever eaten by man. The seeds are of such a nature, that they pass through birds unhurt, perhaps become more fit for vegetation than before, and by these means the trees are scattered over all India and the Eastern islands, and often placed in curious situations\*

" Some writers, in describing this tree, have confounded its qualities with those of the *Ficus religiosa*, attributing to it the property of dropping roots from the one, and clothing it with the heart-shaped leaves of the other. An error still more palpable has been committed, in asserting that it bears no fruit."

At p. 366, we further read as follows :—

" The *Ficus religiosa* is held in great veneration both in Ceylon, and on the continent of India. In the Cingalese language it is called *bogdha*^ or the tree of Buddha, and in Malabar, *Arimrum*. It drops no fibrous roots from its spreading boughs, but far surpasses the Banyan in elegance and grace\*fulness of form, grows to a very large size, has a smooth bark, and is perhaps the most completely beautiful of all the trees which adorn the wide garden of nature. The leaves are particularly handsome, being exactly of the form of a heart, and having a long pointed extremity, and a long foot-stalk. When full grown, they measure upwards of six inches in breadth at the broadest part, and eight in length, including the tapering point, which measures two inches. The fruit grows without stalks, in the same manner as that of the *F. Indica*, adhering to the smaller branches; but it is rather less in size, and does not attain, when ripe, so bright a red. This *religious Jig* is accounted the most sacred of trees in India, and it is held in such high estimation in the country of Candy, that the form of its leaves is only allowed

to be painted on furniture employed exclusively for the gratification of the king. Specimens of both these fig-trees have been planted in the East India Company's garden in the island of St Helena, where, although young, they appear (1807), in a flourishing condition/'

The above corroborates what we have already mentioned, viz., that the Banyan is quite a different tree from the *F. religiosa*, to which, however, it has been referred by most botanists in this country, as well as on the continent of Europe.

---

*Notices of European Herbaria, particularly those most interesting to the North American Botanist*

[IN the present volume, p. 293, while giving an account of the excellent North American Flora, by Torrey and Gray, we mentioned that both authors had, in order to ensure greater correctness in the synonymy, visited most of the large herbaria in Europe. The following paper connected with that subject, has been lately communicated by Dr Gray to the *American Journal of Science*, {Vol. xl. No. 1.) and cannot but be interesting to the readers of this journal, who may not have an opportunity of seeing the original.]

" The vegetable productions of North America, in common with those of most other parts of the world, have generally been first described by European botanists, either from the collections of travellers, or from specimens communicated by residents of the country, who, induced by an enlightened curiosity, the love of flowers, or in some instances, by no in-considerable scientific acquirements, have thus sought to contribute, according to their opportunities, to the promotion of botanical knowledge. From the great increase in the number of known plants, it very frequently happens that the brief descriptions, and even the figures of older authors, are found quite insufficient for the satisfactory determination of the particular species they had in view; and hence it

becomes necessary to refer to the herbaria where the original specimens are preserved. In this respect, the collections of the early authors possess an importance far exceeding their intrinsic value, since they are seldom large, and the specimens often imperfect.

With the introduction of the Linnsean nomenclature, a rule absolutely essential to the perpetuation of its advantages was also established, viz., that the name under which a genus or species is first published shall be retained, except in certain cases of obvious and paramount necessity. An accurate determination of the Linnsean species is therefore of the first importance; and this, in numerous instances, is only to be attained with certainty by the inspection of the herbaria of Linnaeus and those authors upon whose descriptive phrases or figures he established many of his species. Our brief notices will therefore naturally commence with the herbarium of the immortal Linnaeus, the father of that system of nomenclature, to which botany, no less than natural history in general, is so greatly indebted.

This collection, it is well known, after the death of the younger Linnaeus, found its way to England, from whence it is not probable that it will ever be removed. The late Sir James Edward Smith, then a young medical student, and a botanist of much promise, was one morning informed by Sir Joseph Banks, that the heirs of the younger Linnaeus had just offered him the herbarium with the other collections and library of the father, for the sum of 1000 guineas. Sir Joseph Banks not being disposed to make the purchase, recommended it to Mr Smith; the latter, it appears, immediately decided to risk the expectation of a moderate independence, and to secure, if possible, these treasures for himself and his country; and before the day closed had actually written to Upsal, desiring a full catalogue of the collection, and offering to become the purchaser at the price fixed, in case it answered his expectations.\* His success, as soon

\* The next day Mr Smith wrote as follows to his father, informing him of the step he had taken, and entreating his assistance:—

appeared, was entirely owing to his promptitude; for other and very pressing applications were almost immediately made for the collection, but the upright Dr Acrel having given Mr Smith the refusal, declined to entertain any other proposals while this negotiation was pending. The purchase was finally made for 900 guineas, excluding the separate herbarium of the younger Linnaeus, collected before his father's death, and said to contain nothing that did not also exist in the original herbarium; this was assigned to Baron Alströmer, in satisfaction of a small debt. The ship which con-

" *Honoured Sir*,—You may have heard that the young Linnaeus is lately dead; his father's collections and library, and his own, are now to be sold; the whole consists of an immense hortus siccus, with duplicates, insects, shells, corals, materia medica, fossils, a very fine library, all the unpublished manuscripts; in short, every thing they were possessed of relating to natural history and physic: the whole has just been offered to Sir Joseph Banks for 1000 guineas, and he has declined buying it. The offer was made to him by my friend Dr Engelhart, at the desire of a Dr Acrel of Upsal, who has charge of the collection. Now, I am so ambitious as to wish to possess this treasure, with a view to settle as a physician in London, and read lectures on natural history. Sir Joseph Banks, and all my friends to whom I have intrusted my intention, approve of it highly. I have written to Dr Acrel, to whom Dr Engelhart has recommended me, for particulars and the *refusal*, telling him if it was what I expected, I would give him a very good price for it. I hope, my dear sir, you and my good mother will look on this scheme in as favourable a light as my friends here do. There is no time to be lost, for the affair is now talked of in all companies, and a number of people wish to be purchasers. The Empress of Russia is said to have thoughts of it. The manuscripts, letters, &c, must be invaluable, and there is, no doubt, a complete collection of all the inaugural dissertations which have been published at Upsal, a small part of which has been republished under the title of *Amoenitates Academicæ*; a very celebrated and scarce work. All these dissertations were written by Linnaeus, and must be of prodigious value. In short, the more I think of this affair, the more sanguine I am, and earnestly hope for your concurrence. I wish I could have one half-hour's conversation with you, but that is impossible."—*Correspondence of Sir James Edward Smith, edited by Lady Smith, Vol. i. p. 93.*

The appeal to his father was not in vain; and, did our limits allow, we should be glad to copy, from the work above cited, the entire correspondence upon this subject.

veyed these treasures to London had scarcely sailed, when the king of Sweden, who had been absent in France, returned home, and despatched, it is said, an armed vessel in pursuit. This story, though mentioned in the Memoir and Correspondence of Sir J. E. Smith, and generally received, has, we believe, been recently controverted. However this may be, no doubt the king and the men of science in Sweden were greatly offended, as indeed they had reason to be, at the conduct of the executors, in allowing these collections to leave the country; but the disgrace should perhaps more justly fall upon the Swedish government itself, and the University of Upsal, which derived its reputation almost entirely from the name of Linnaeus. It was, however, fortunate for science that they were transferred from such a remote situation to the commercial metropolis of the world, where they are certainly more generally accessible. The late Professor Schultes, in a very amusing journal of a botanical visit to England in the year 1824, laments indeed that they have **fallen to the lot of the "loto disjunctos orbe Britannos;"** yet a journey even from Landshut to London, may perhaps be more readily performed than to Upsal.

After the death of Sir James Edward Smith, the herbarium and other collections, and library of Linnaeus, as well as his own, were purchased by the Linnsean Society. The herbarium still occupies the cases which contained it at Upsal, and is scrupulously preserved in its original state, except that, for more effectual protection from the black and penetrating dust of London, it is divided into parcels of convenient size, which are closely wrapped in covers of strong paper lined with muslin. The genera and covers are numbered to correspond with a complete manuscript catalogue, and the collection, which is by no means large, in comparison with modern herbaria, may be consulted with great facility.

In the negotiation with Smith, Dr Acrel stated the number of species at 8000, which probably is not too low an estimate. The specimens, which are mostly small, but in excellent preservation, are attached to half-sheets of very

ordinary paper, of the foolscap size,\* (which is now considered too small,) and those of each genus covered by a double sheet, in the ordinary manner. The names are usually written upon the sheet itself, with a mark or abbreviation to indicate the source from which the specimen was derived. Thus, those from the Upsal garden are marked *H.* [/., those given by Kalm, *K.*, those received from Gronovius, *Gron.*, &c. The labels are all in the handwriting of Linnaeus himself, except a few later ones by the son, and occasional notes by Smith, which are readily distinguished, and indeed are usually designated by his initials. By far the greater part of the North American plants which are found in the Linnaean herbarium were received from Kalm, or raised from seeds collected by him. Under the patronage of the Swedish government, this enterprising pupil of Linnaeus remained three years in this country, travelling throughout New York, New Jersey, Pennsylvania and Lower Canada: hence his plants are almost exclusively those of the Northern States.<sup>f</sup>

Governor Colden, to whom Kalm brought letters of introduction from Linnaeus, was then well known as a botanist, by his correspondence with Peter Collinson and Gronovius, and also by his account of the plants growing around Coldenham, New York, which was sent to the latter, who transmitted it to Linnaeus for publication in the *Ada Upsalensia*. At an early period he attempted a direct correspondence with Linnaeus, but the ship by which his specimens and notes were

\* Upon this subject, Dr Acre), giving an account of the Linnsean collections, thus writes to Smith: " Ut vero vir illustrissimus, dum vixit, nihil ad ostentationem habuit, omnia vero sua in usum accommodata: ita etiam in hoc herbario, quod per XL. annos sedulo collegit, frustra quesi-  
veris papyri' insignia ornamenta, margines inauratas, et cet. quae ostentationis gratia in omnibus fere herbariis nunc vulgaria sunt."

<sup>f</sup> Ex his Kalmium, naturae eximium scrutatorem, itinere suo per Pennsylvaniam, Novum Eboracum, et Canadam, regiones America? ad septentrionem vergentes, trium annorum decursu dextre confecto, in patriam inde nuper reducem laeti recipimus: ingentem enim ab istis terris reportavit thesaurum non concnyliorum solum, insectorum, et amphibiorum, sed licrbarurn etiam diversi generis ac us us, quas, tam siccas quam vivas, allatis



sent was plundered by pirates;\* and in a letter sent by Kalm, on the return of the latter to Sweden, he informs Linnaeus that this traveller had been such an industrious collector, as to leave him little hopes of being himself farther useful. It is not probable therefore, that Linnaeus received any plants from Colden, nor does his herbarium afford any such indication.<sup>f</sup> From Gronovius, Linnaeus had received a very small number of Clayton's plants, previous to the publication of the *Species Plantarum*; but most of the species of the *Flora Virginica* were adopted or referred to other plants on the authority of the descriptions alone.

Linnaeus had another American correspondent in Dr John

etiata seminibus eorum recentibus et incorruptis, adduxit.—*Linn. Am<zn. Acad.*, Vol. iñ. p. 4.

\* Vid. Letter of Linnaeus to Haller, Sept. 24, 1746.

**f** The *Holosteum succulentum* of Linnaeus (*Alsine foliis ellipticis carnosis* of Colden, is however marked in Linnaeus's own copy of the *Species Plantarum*, with the sign employed to designate the species he at that time possessed; but no corresponding specimen is to be found in his herbarium. This plant has long been a puzzle to American botanists; but it is clear from Colden's description, that Dr Torrey has correctly referred it in his *Flora of the Northern and Middle States*, (1824), to *Stellaria media*, the common Chickweed. Governor Colden's daughter seems fully to have deserved the praise which Collinson, Ellis, and others, have bestowed upon her. The latter, in a letter to Linnaeus, (April, 1758,) says: "Mr Colden of New York has sent Dr Fothergill a new plant, described by his daughter. It is called *Fibraurea*, gold-thread. - It is a small creeping plant, growing on bogs; the roots are used in a decoction by the country people for sore mouths and sore throats. The root and leaves are very bitter, &c. I shall send you the characters as near as I can translate them." Then follows Miss Colden's detailed generic character, prepared in a manner which would not be discreditable to a botanist of the present day. It is a pity that Linnaeus did not adopt the genus, with Miss Colden's name, which is better than Salisbury's *Coptis*. "This young lady merits your esteem, and does honour to your system. She has drawn and described 400 plants in your method: she uses only English terms. Her father has a plant called after him *Coldenia*; suppose you should call this [alluding to a new genus of which he added the characters] *Coldenella*, or any other name that might distinguish her among your genera."—*Ziff's, letter to Linnæus, l. c.*

Mitchell,\* who lived several years in Virginia, where he collected extensively; but the ship in which he returned to England having been taken by pirates, his own collections, as well as those of Governor Colden, were mostly destroyed. Linnaeus however had previously received a few specimens, as, for instance, those on which *Proserpinaca*, *Polypremun*, *Galax*, and some other genera, were founded.

There were two other American botanists of this period, from whom Linnaeus derived, either directly or indirectly, much information respecting the plants of this country, viz., John Bartram and Dr Alexander Garden of Charleston, South Carolina. The former collected seeds and living plants for Peter Collinson during more than twenty years, and, even at that early day extended his laborious researches from the frontiers of Canada, to Southern Florida, and to the Mississippi. All his collections were sent to his patron Collinson,f

\* To him the pretty *Mitchella repens* was dedicated. Dr Mitchell had sent to Collinson, perhaps as early as in the year 1740, a paper in which thirty new genera of Virginian plants were proposed. This Collinson sent to Trew at Nuremberg, who published it in the *Ephemerides Acad\* Natures Curiosorum* for 1748; but in the mean time, most of the genera had been already published, with other names, by Linnaeus or Gronovius. Among Mitchell's new genera was one which he called *Chamcedaphne*: this Linnaeus referred to *Lonicera*, but the elder (Bernard) Jussieif, in a letter dated Feb. 19, 1751\* having shown him that it was very distinct both from *Lonicera* and *Linncea*, and in fact belonged to a different natural order, he afterwards named it *Mitchella*.

f Mr Collinson kept up a correspondence with all the lovers of plants in this country, among whom were Governor Colden, Bartram, Mitchell, Clayton, and Dr Garden, by whose means he procured the introduction of great numbers of North American plants into the English gardens. "Your system," he writes Linnaeus, "I can tell you obtains much in America. Mr Clayton and Dr Colden at Albany, on Hudson's River, in New York, are complete professors, as is Dr Mitchell at Urbana, on Rapahanock River, in Virginia. It is he that has made many and great discoveries in the vegetable world."—"I am glad you have the correspondence of Dr Colden and Mr Bartram. They are both very indefatigable, ingenious men. Your system is much admired in North America." Again, "I have but lately heard from Mr Colden. He is well, but, what is marvellous, his daughter is perhaps the first lady that has so perfectly studied your system.

until the death of that amiable and simple-hearted man, in 1768 ; and by him many seeds, living plants, and interesting observations, were communicated to Linnaeus, but few if any dried specimens. Dr Garden, who was a native of Scotland, resided at Charleston, South Carolina, from about 1745 to the commencement of the American Revolution, devoting all the time he could redeem from an extensive medical practice to the zealous pursuit of botany and zoology. His chief correspondent was Ellis at London, but through Ellis he comes to us. "She deserves to be celebrated."—" In the second volume of Edinburgh Essays is published a Latin botanic dissertation by Miss Colden; perhaps the only lady that makes profession of the Linnaean system, of which you may be proud.\* From all this, botany appears to have flourished in the North American colonies. But Dr Garden, about this time, writes thus to his friend Ellis: <sup>ie</sup> Ever since I have been in Carolina, I have never been able to set my eye upon one who had barely a regard for botany. Indeed I have often wondered how there should be one place abounding with so many marks of the divine wisdom and power, and not one rational eye to contemplate them; or that there should be a country abounding with almost every sort of plant, and almost every species of the animal kind, and yet that it should not have pleased God to raise up one botanist. Strange indeed that this creature should be so rare!" But to return to Collinson, the most amusing portion of whose correspondence consists of his letters to Linnaeus, shortly after the publication of the *Species Plantarum*, in which, (with all kindness and sincerity) he reproves the great Swedish naturalist for his innovation\*, employing the same arguments which a strenuous *Linncean* might be supposed to advance against a botanist of these latter days. <sup>if</sup> "I have had the pleasure," Collinson writes, "of reading your *Species Plantarum*, a very useful and laborious work. But, my dear friend, we that admire you are much concerned that you should perplex the delightful science of botany with changing names that have been well received, and adding new names quite unknown to us. Thus botany, which was a pleasant study, and attainable by most men, is now become, by alterations and new names, the study of a man's life, and none now but real professors can pretend to attain it. As I love you, I tell you our sentiments."—*Letter of April 20, 1754.* « You have begun by your *Species Plantarum*; but if you will be for ever making new names, and altering old and good ones, for such hard names that convey no idea of the plant, it will be impossible to attain to a perfect knowledge in the science of botany."—*Letter of April 10th, 1755; from Smith's Selection of the Correspondence of Linnceus, Sfc.*

renanced a correspondence with Linnaeus; and to both he sent manuscript descriptions of new plants and animals, with many excellent critical observations. None of his specimens addressed to the latter reached their destination, the ships by which they were sent having been intercepted by French cruisers; and Linnseus complained that he was often unable to make out many of Dr Garden's genera for want of the plants themselves. Ellis was sometimes more fortunate; **but** as he seems usually to have contented himself with the transmission of descriptions alone, we find no authentic specimens from Garden in the Linnaean herbarium.

We have now probably mentioned all the North American correspondents of Linnseus; for Dr Kuhn, who appears only to have brought him living specimens of the plant which bears his name, and Catesby, who shortly before his death sent a few living plants which his friend Lawson had collected in Carolina, can scarcely be reckoned among the number.\*

The Linnaean Society also possesses the proper herbarium of its founder and first president, Sir James E. Smith, which is a beautiful collection, and in excellent preservation. The specimens are attached to fine and strong paper, after the method now common in England. In North American botany, the chief contributors are Menzies, for the plants of California and the North-West Coast; and Muhlenberg\* Bigelow, Torrey, and Boott, for those of the United States\* Here also we find the cryptogamic collections of Acharius, containing the authentic specimens described in his works on the Lichens, and the magnificent East Indian herbarium of

\* In a letter to Haller, dated Leyden, Jan. 23, 1738, Linnaeus writes t " You would scarcely believe how many of the vegetable productions of Virginia are the same as out European ones. There are Alps in the country of New\* York; for the snow remains all summer long on the mountains there. I am now giving instructions to a medical student here, who is a native of that country, and will return thither in the course of a year, that he may visit those mountains, and let me know whether the same Alpine plants are found there as in Europe." Who can this American stu\* dent have been? Kuhn did not visit Linnseus until more than fifteen years after the date of this letter.

Wallich, presented some years since by the East Indian Company.

The collections preserved at the British Museum, are scarcely inferior in importance to the Linnaean herbarium itself, in aiding the determination of the species of Linnaeus and other early authors. Here we meet with the authentic herbarium of the *Hortus Cuffortianus*, one of the earliest works of Linnaeus, which comprises some plants that are not to be found in his own proper herbarium. Here also is the herbarium of Plukenet, which consists of a great number of small specimens, crowded, without apparent order, upon the pages of a dozen large folio volumes. With due attention, the originals of many figures in the *Almagestum* and *Amaltheum Botanicum* may be recognised, and many Linnaean species thereby authenticated. The herbarium of Sloane, also, is not without interest to the North American botanist, since many plants described in the *Voyage to Jamaica*, §\*c, and the *Catalogue of the Plants of Jamaica*, were united by Linnaeus, in almost every instance incorrectly, with species peculiar to the United States and Canada. But still more important is the herbarium of Clayton, from whose notes and specimens Gronovius edited the *Flora Virginica*. Many Linnsean species are founded on the plants here described, for which this herbarium is alone authentic; for Linnaeus, as we have already remarked, possessed very few of Clayton's plants. The collection is nearly complete; but the specimens were not well prepared, and are therefore not always in perfect preservation. A collection of Catesby's plants exists also in the British Museum; but probably the larger portion remains at Oxford. There is besides, among the separate collections, a small but very interesting parcel selected by the elcter Bartram, from his collections made in Georgia and Florida almost a century ago, and presented to

\* *Flora Virginica, exhibens plantas quas J. Clayton in Virginia collegit.* Lugd. Bat. 8vo. 1743.—Ed. 2. 4to. 1762. The first edition is cited in the *Species Plantarum* of Linnaeus; the second, again, quotes the specific phrases of Linnaeus.

Queen Charlotte, with a letter of touching simplicity. At the time this fasciculus was prepared, nearly all the plants it comprised were undescribed, and many were of entirely new genera; several, indeed, have only been published very recently, and a few are not yet recorded as natives of North America. Among the latter we may mention *Petiveria alliacea* and *Ximinea Americana*, which last has again recently been collected in the same region. This small parcel contains the *Elliottia*, Muhl., *Polypteris*, Nutt., *Baldwinia*, Nutt., *Macranthera*, Torr., *Glottidium*, *Mayaca*, *Chaptalia*, *Befaria*, *Eriogonum tomentosum*, *Polygonum polygamum*, Vent., *Gardoquia Hookeri*, Benth., *Satureia (Pycnothymus) rigida*, *Cliftonia*, *Hypericum aureum*, *Galactia Elliottii*, *Krameria lanceolata*, Torr., *Waldsteinia (Comaropsis) lobata*, Torr. & Gr., the *Dolichos? multiflorus*<sup>^</sup> Torr. & Gr., the *Chapmannia*, Torr. & Gr., *Psoralea Lupinellus*, and others of almost equal interest or rarity, which it is much to be regretted were not long ago made known from Bartram's discoveries.

The herbarium of Sir Joseph Banks, now in the British Museum, is probably the oldest one prepared in the manner commonly adopted in England, of which, therefore, it may serve as a specimen. The plants are glued fast to half-sheets of very thick and firm white paper of excellent quality, (similar to that employed for merchants' ledgers, &c.) all carefully cut to the same size, which is usually 16<sup>^</sup> inches by 10|, and the name of the species is written on the lower right-hand corner. All the species of a genus, if they be few in number, or any convenient subdivision of a larger genus, are enclosed in a whole sheet of the same quality, and labelled at the lower left-hand corner. These parcels, properly arranged, are preserved in cases or closets, with folding doors made to shut as closely as possible, being laid horizontally into compartments just wide enough to receive them, and of any convenient depth. In the Banksian herbarium, the shelves are also made to draw out like a case of drawers. This method is unrivalled for elegance, and the facility with which the specimens may be found and inspected, which to a working bo-

tanist with a large collection, is a matter of the greatest consequence. The only objection is the expense, which becomes very considerable, when paper worth at least ten dollars per ream is employed for the purpose, which is the case with the principal herbaria in England; but a cheaper paper, if it be only sufficiently thick and firm, would answer nearly as well. The Banksian herbarium contains authentic specimens of nearly all the plants of Aiton's *Hortus Kewensis*, in which many North American species were early established. It is hardly proper, indeed, that either the elder or younger Aiton should be quoted for these species, since the first edition was prepared by Solander, and the second revised by Dryander, as to vol. 1 and 2, and the remainder by Mr Brown. Many American plants from the Physic Garden at Chelsea, named by Miller, are here preserved, as also from the gardens of Collinson, Dr Fothergill, (who was Bartram's correspondent after Collinson's death,) Dr Pitcairn, &c. There are likewise many contributions of indigenous plants of the United States, from Bartram, Dr Mitchell, Dr Garden, Fraser, Marshall, and other early cultivators of botany in this country. The herbarium also comprises many plants from Labrador and Newfoundland, a portion of which were collected by Sir Joseph Banks himself; and in the plants of the northern and Arctic regions is enriched by the collections of Parry, Ross, and Dr Richardson. Two sets of the plants, collected by the venerable Menzies in Vancouver's voyage are preserved at the British Museum, the one incorporated with the Banksian herbarium, the other forming a separate collection. Those of this country are from the North-West Coast, the mouth of the Oregon river, and from California. Many of Pursh's species were described from specimens preserved in this herbarium, especially the Oregon plants of Menzies, and those of Bartram, and others from the more southern United States, which Pursh had never visited, although he often adds the mark  $\lambda$  v. (*vidi vivam*<sup>^</sup>) to species which are only to be met with south of Virginia.

**The herbarium of Walter still remains in the possession of**

the Fraser family, and in the same condition as when consulted by Pursh. It is a small collection, occupying a single large volume. The specimens, which are commonly mere fragments, often serve to identify the species of the *Flora Caroliniana*, although they are not always labelled in accordance with that work.

The collections of Pursh, which serve as the basis of his *Flora America Septentrionalis*, are in the possession of Mr Lambert, and form a part of his immense herbarium. These, with a few specimens brought by Lewis and Clark from Oregon and the Rocky Mountains, a set of Nuttall's collections on the Missouri, and also of Bradbury's, so far as they are extant, with a small number from Fraser, Lyon, &c, compose the most important portion of this herbarium, so far as North American botany is concerned. There is also a small Canadian collection made by Pursh, subsequently to the publication of his Flora, a considerable number of Menzies' plants, and other minor contributions. To the general botanist, probably the fine herbarium of Pallas, and the splendid collection of Ruiz and Pavon, (both acquired by Mr Lambert at a great expense,) are of the highest interest; and they are by no means unimportant in their relations to North American botany, since the former comprises several species from the North-West coast, and numerous allied Siberian forms; while our Californian plants require, in some instances, to be compared with the Chilian and Peruvian plants of the latter.

Besides the herbaria already mentioned, there are two others in London of more recent formation, which possess the highest interest as well to the general as to the American botanist, viz., that of Prof. Lindley, and of Mr Bentham. Both comprise very complete sets of the plants collected by Douglas in Oregon, California, and the Rocky Mountains, as well as those raised from seeds or bulbs, which he transmitted to England, of which a large portion have, from time to time, been published by these authors. Mr Bentham's herbarium is, probably, the richest and most authentic col-



lection in the world for *Labiatae*, and is perhaps nearly unrivalled for *Leguminosae*, *Scrophularineae*^ and the other tribes to which he has devoted especial attention: it is also particularly full and authentic in European plants. Prof. Lindley's herbarium, which is very complete in every department, is wholly unrivalled in Orchidaceous plants. The genus-covers are made of strong and smooth hardware paper, the names being written on a slip of white paper pasted on the lower corner. This is an excellent plan, as covers of white paper in the herbarium of an active botanist, are apt to be soiled by frequent use. The paper employed by Dr Lindley is 18^ inches in length, and 11^ inches wide, which, as he himself remarked, is rather larger than is necessary, and much too expensive for general use.

The herbarium of Sir Win. J. Hooker, at Glasgow, is not only the largest and most valuable collection in the world, in the possession of a private individual; but it also comprises the richest collection of North American plants in Europe. Here we find nearly complete sets of the plants collected in the Arctic voyages of discovery, the overland journeys of Franklin to the Polar Sea, the collections of Drummond and Douglas in the Rocky Mountains, Oregon, and California, as well as those of Prof. Scouler, Mr Tolmie, Dr Gardner, and numerous officers of the Hudson's Bay Company, from almost every part of the vast territory embraced in their operations, from one side of the continent to the other. By an active and prolonged correspondence with nearly all the botanists and lovers of plants in the United States and Canada, as well as by the collection of travellers, this herbarium is rendered unusually rich in the botany of this country; while Drummond's Texan collections, and many contributions from Mr Nuttall and others, very fully represent the Flora of our southern and western confines. That these valuable materials have not been buried, nor suffered to accumulate to no purpose or advantage to science, the pages of the *Flora Boreali-Americana*, the *Botanical Magazine*, the *Botanical Miscellany*', the *Journal of Botany*^ the *hones Plantarum*, and other works

of this industrious botanist abundantly testify; and no single herbarium will afford the student of North American botany such extensive aid as that of Sir Wm. Hooker.

The herbarium of Dr Arnott of Arlary, although more especially rich and authentic in East Indian plants, is also interesting to the North American botanist, as well for the plants of the *Botany of Captain Beechey's Voyage*, &c, published by Hooker and himself, as the collection of Drummond and others, all of which have been carefully studied by this sagacious botanist.

The most important botanical collection in Paris, and indeed perhaps the largest in the world, is that of the Royal Museum, at the *Jardin des Plantes* or *Jardin du Roi*. We cannot now devote even a passing notice to the garden and magnificent new conservatories of this noble institution, much less to the menagerie, the celebrated museum of zoology and anatomy, or the cabinet of mineralogy, geology, and fossil remains, which, newly arranged in a building recently erected for its reception, has just been thrown open to the public. The botanical collections occupy a portion of this new building. A large room on the first floor, handsomely fitted up with glass cases, contains the cabinet of fruits, seeds, sections of stems, and curious examples of vegetable structure from every part of the known world. Among them we find an interesting suite of specimens of the wood, and another comprising the fruits, or nuts, of nearly all the trees of this country, both collected and prepared by the younger Michaux. The herbaria now occupy a large room or hall, immediately over the former, perhaps 80 feet long, and 30 feet wide above the galleries, and very conveniently lighted from the roof. Beneath the galleries are four or five small rooms on each side, lighted from the exterior, used as cabinets for study and for separate herbaria, and above them the same number of smaller rooms or closets, occupied by duplicate and unarranged collections. The cases which contain the herbaria occupy the walls of the large hall and of the side-rooms. Their plan may serve as a specimen of that generally

adopted in France. The shelves are divided into compartments in the usual manner; but instead of doors, the cabinet is closed by a curtain of thick and coarse brown linen, kept extended by a heavy bar attached to the bottom, which is counterpoised by concealed weights, and the curtain is raised or dropped by a pulley. Paper of a very ordinary quality is generally used, and the specimens are attached, either to half-sheets or to double sheets, by slips of gummed paper, or by pins, or sometimes the specimen itself is glued to the paper. Genera or other divisions are separated by interposed sheets, having the name written on a projecting slip.

According to the excellent plan adopted in the arrangement of these collections, which is due to Desfontaines, three kinds of herbaria have been instituted, viz.: 1. The general herbarium. 2. The herbaria of particular works or celebrated authors, which are kept distinct, the duplicates alone being distributed in the general collection. 3. Separate herbaria of different countries, which are composed of the duplicates taken from the general herbarium. To these, new accessions from different countries are added, which from time to time are assorted and examined\* and those required for the general herbarium are removed to that collection. The ancient herbarium of Vaillant forms the basis of the general collection; the specimens, which are all labelled by his own hand, are in excellent preservation, and among them plants, derived from Cornuti or Dr Sarrasin, may occasionally be met with. This collection, augmented to many times its original extent, by the plants of Commerson, Dombey, Poiteau, Leschenault, &c, and by the duplicates from the special herbaria, probably contains at this time thirty or forty thousand species. Of the separate herbaria, the most interesting to us is that made in this country by the elder Michaux, from whose specimens and notes the learned **Richard prepared the *Flora Boreali-Americana*.**

**Michaux himself, though an excellent and industrious collector and observer, was by no means qualified for authorship; and it is to L. C. Richard, that the sagacious observa-**

lions, and the elegant, terse, and highly characteristic specific phrases of this work are entirely due. There is also the very complete Newfoundland collection of La Pylaie, comprising about 300 species, and a set of Berlandier's Texan and Mexican plants, as well as numerous herbaria less directly connected with North American botany, which we have not room to enumerate. Here, however, we do not find the herbaria of several authors, which we should have expected. That of Lamarck, for instance, is in the possession of Prof\* Keeper at Rostock, on the shores of the Baltic; that of Poiret belongs to Moquin-Tandon of Toulouse; that of Bosc, to Prof. Moretti of Pavia; and the proper herbarium of the late Desfontaines, which, however, still remains at Paris, now forms a part of the very large and valuable collections of Mr Webb. The herbarium of Mr Webb, although of recent establishment, is only second to that of Baron Delessert; the two being far the largest private collections in France, and comprising not only many older herbaria, but also, as far as possible, full sets of the plants of recent collectors. The former contains many of Michaux's plants, (derived from the herbarium of Desfontaines,) a North American collection, sent by Nuttall to the late Mr Mercier of Geneva, a full set of Drummond's collections in the United States and Texas, &c. The latter also comprises many plants of Michaux derived from Ventenat's herbarium, complete sets of Drummond's collections, &c. But a more important, because original and perhaps complete, set of the plants of Michaux is found in the herbarium of the late Richard, now in the possession of his son Prof. Achille Richard, which even contains a few species that do not exist in the herbarium at the Royal Museum. The herbarium of the celebrated Jussieu, a fine collection, which is scrupulously preserved in its original state, by his worthy son and successor, Prof. Adrien Jussieu, comprises many North American plants of the older collectors, of which several are authentic for species of Lamarck, Poiret, Cassini, &c.

The herbarium of De Candolle at Geneva, accumulated  
Vol. III.—No. 23. 3B

throughout the long and active career of this justly celebrated botanist, and enriched by a great number of correspondents, is surpassed by few others in size, and by none in importance. In order that it may remain as authentic as possible for his published works, especially the *Prodromus*, no subsequent accessions to families already published are admitted into the general herbarium, but these are arranged in a separate collection. The proper herbarium, therefore, accurately exhibits the materials employed in the preparation of the *Prodromus*, at least so far as these were in Prof. De Candolle's own possession. As almost twenty years have elapsed since the commencement of this herculean undertaking, the authentic herbarium is of course much less rich in the earlier than in the later orders. The *Composite*, to which seven years of unremitted labour have been devoted, form themselves an herbarium of no inconsiderable size. It is unnecessary to enumerate the contributors to this collection, (which indeed would form an extended list,) since the author, at least in the later volumes of the *Prodromus*, carefully indicates, as fully as the work permits, the sources whence his materials have been derived. The paper employed is of an ordinary kind, somewhat smaller than the English size, perhaps about fifteen inches by ten; and the specimens are attached to half-sheets by loops or slips of paper fastened by pins, so that they may readily be detached, if necessary, for particular examination. Several specimens from different sources or localities, or exhibiting the different varieties of a species, are retained when practicable; and each species has a separate cover, with a label affixed to the corner, containing the name and a reference to the volume and page of the *Prodromus* where it is described. The limits of genera, sections, tribes, &c, are marked by interposed sheets, with the name written on projecting slips. The parcels which occupy each compartment of the well-filled shelves, are protected by pieces of binder's board, and secured by a cord, which is the more necessary as the cases are not closed by doors or curtains.

The royal Bavarian herbarium at Munich, is chiefly valuable for its Brazilian plants, with which it has been enriched by the laborious and learned Martius. The North American botanist, will, however, be interested in the herbarium of Schreber, which is here preserved, and comprises the authentic specimens described or figured in his work on the grasses, the American specimens mostly communicated by Muhlenberg. The *Graminece* of this and the general herbarium, have been revised by Nees von Esenbeck, and still later, by Trinius. It was here that the latter, who for many years had devoted himself to the exclusive study of this tribe of plants, and had nearly finished the examination of the chief herbaria of the continent, preparatory to the publication of a new *Agrostographia*, was suddenly struck with a paralysis, which has probably brought his scientific labours to a close.

The Imperial herbarium of Vienna, under the superintendence of the accomplished Endlicher, assisted by Dr Fenzl, is rapidly becoming one of the most valuable and extensive collections in Europe. The various herbaria of which it is composed, have recently been incorporated into one, which is prepared nearly after the English method. It however possesses few North American plants, except a collection made by Enslin, (a collector sent to this country by Prince Lichtenstein, from whom Pursh obtained many specimens from the Southern States,) and some recent contributions by Hooker, &c. There is also an imperfect set of the plants collected by Haenke, (a portion of which are from Oregon and California,) so far as they are yet published in the *Reliquice Hcenkeana* of Presl, in whose custody, as curator of the Bohemian museum at Prague, the original collection remains.

The herbarium of the late Prof. Sprengel still remains in the possession of his son, Dr Anthony Sprengel, at Halle, but is offered for sale. It comprises many North American plants, communicated by Muhlenberg and Torrey. The herbarium of Schkuhr was bequeathed to the university of

Wittemberg, and at the union of this university with that of Halle, was transferred to the latter, where it remains under the care of Prof. Von Schlechtendal. It contains a large portion of the *Carices* described and figured in Schkuhr's work, and is therefore interesting to the lovers of that large and difficult genus. The American specimens were mostly derived from Willdenow, who obtained the greater portion from Muhlenberg.

The royal Prussian herbarium is deposited at Schbneberg, (a little village in the environs of Berlin,) opposite the royal botanic garden, and in the garden of the Horticultural Society. It occupies a very convenient building erected for its reception, and is under the superintendence of Dr Klotzsch, a very zealous and promising botanist. It comprises three separate herbaria, viz., the general herbarium, the herbarium of Willdenow, and the Brazilian herbarium of Sello. The principal contributions of the plants of this country to the general herbarium, garden-specimens excepted, consist of the collections of the late Mr Beyrich, who died in Western Arkansas while accompanying colonel Dodge's dragoon expedition, and a collection of the plants of Missouri and Arkansas, by Dr Engelmann, now of St Louis; to which a fine selection of North American plants, recently presented by Sir William Hooker, has been added. The botanical collections made by Chamisso, who accompanied Romanzoff in his voyage round the world, also enrich this herbarium; many are from the coast of Russian America and from California; and they have mostly been published conjointly by the late Von Chamisso and Prof. Schlechtendal in the *Linncea*, edited by the latter.

The late Professor Willdenow enjoyed for many years the correspondence of Muhlenberg, from whom he received the greater part of his North American specimens, a considerable portion of which are authentic for the North American plants of his edition of the *Species Plantarum*. In addition to these, we find in his herbarium many of Michaux's plants, communicated by Desfontaines, several from the German collector,

Kinn, and perhaps all the American species described by Willdenow from the Berlin garden. It also comprises a portion of the herbarium of Pallas, the Siberian plants of Stephen, and a tolerable set of Humboldt's plants. This herbarium is in good preservation, and is kept in perfect order and extreme neatness. As left by Willdenow, the specimens were loose in the covers, into which additional specimens had sometimes been thrown, and the labels often mixed, so that much caution is requisite to ascertain which are really authentic for the Willdenovian species. To prevent farther sources of error, and to secure the collection from injury, it was carefully revised by Prof. Schlechtendal, while under his management, and the specimens attached by slips of paper to single sheets, and all those that Willdenow had left under one cover, as the same species, are enclosed in a double sheet of neat blue paper. These covers are numbered continuously throughout the herbarium, and the individual sheets or specimens in each are also numbered, so that any plant may be referred to by quoting the number of the cover, and that of the sheet to which it is attached. The arrangement of the herbarium is unchanged, and it precisely accords with this author's edition of the *Species Plantarum*. Like the general herbarium, it is kept in neat portfolios, the back of which consists of three pieces of broad tape, which, passing through slits near each edge of the covers, are tied in front; by this arrangement their thickness may be varied at pleasure, which, though of no consequence in a stationary herbarium, is a great convenience in a growing collection. The portfolios are placed vertically on shelves protected by glass doors, and the contents of each are marked on a slip of paper fastened to the back. The herbaria occupy a suite of small rooms distinct from the working rooms, which are kept perfectly free from dust.

Another important herbarium at Berlin, is that of Prof. Kunth, which is scarcely inferior in extent to the royal collection at Schöneberg, but it is not rich or authentic in the plants of this country. It comprises the most extensive and



authentic set of Humboldt's plants, and a considerable number of Michaux's, which were received from the younger Richard. As the new *Enumeratio Plantarum* of this industrious botanist proceeds, this herbarium will become still more important.

For a detailed account of the Russian botanical collections and collectors, we may refer to an historical sketch of the progress of botany in Russia, &c, by Mr Bongard, the superintendent of the Imperial Academy's herbarium at St Petersburg, published in the *Recueil des Actes* of this institution for 1834. An English translation of this memoir is published in the first volume of Hooker's *Companion to the Botanical Magazine*.

A. G.

XXV.—NOTES and NOTICES in reference to BRITISH MUSCOLOGY. By W. WILSON, ESQ., of Warrington.

1. *Phascum crassinervium*, var. *stenophyllum*, Bruch and Schimper, *Bryol. Europ. Fasc. i. t. 2*.—Found several years ago in Cheshire, by the writer of this note. Perhaps the British Moss ought to be rather referred to the typical form of *P. crassinervium*, figured by Bruch and Schimper; this variety certainly exhibits little character, but both are quite distinct from *P. crassinervium* of Greville, *Fl. Crypt Scot.*

2. *P. alternifolium*.—There is no doubt that the British Moss so called, is identical with *Archidium phascoides*, *Schwaegr. Suppl. t. 205*, and of Bruch and Schimper, *Bryol. Europ. Fasc. i.* It is scarcely less certain, however, that *Phascum alternifolium*, *Schwaegr. Suppl. t. 10*, is the same moss, if the figure is to be depended on; yet neither Schwaegrichen, nor Bruch and Schimper take this view.—*P. alternifolium*, Bruch and S., is scarcely distinguished, except as a variety, from *P. subulatum*.

3. *P. Floerkeanum*, *Schwaegr. Suppl. t. 3*.—This very interesting addition to the list of British *Phasca*, has lately

been made by Mr R. B. Bowman of Newcastle, who finds it on the coast of Durham.

4. *P. pachycarpum*, *Schwaegr. Suppl. t. 2. Bruch and Schimper, Br. Eur. Fasc. i. t. 2.*—This has likewise been found by the same gentleman in the same neighbourhood. It is not an entirely new discovery, however; because *F. eras\* sinervium*, *Grev. FL Crypt. Scot.*, is unquestionably the same Moss incorrectly named, if the two authors above quoted are to be relied upon.

5. *Hedwigia Hornschuchiana*, *Hook. Muse, Exot. t. 103.*—This Moss, in a barren state, has been found near Killarney, in Ireland, by Dr Taylor.

6. *Gymnostomum Wilsoni*.—The station for this species near Forfar is inauthentic. Drummond's specimens probably belong to what was originally intended to be called *G. obtusum*, *EngL BoL*; but such is the confusion relating to that Moss, that no certain conclusion can be made concerning it.

7. *G. microstomum*.—At the time when the remarks published in Hooker's *Brit. FL* were written, genuine specimens of this Moss were unknown to the writer, who had under review, as it would seem, a state of *Weissia controversa*, with abortive peristome. An excellent account of the true species has been given by Mr Valentine in the *Muscologia Nottinghamiensis*. That acute observer has shown that the capsule or theca of Mosses is properly composed of three integuments, viz., the outer one termed the theca; an inner one called the thecal membrane which adheres to the outer covering or theca; the innermost is called the *sporular sac*. In this Moss, the *thecal membrane* nearly closes up the mouth of the capsule, and forms the thin annular border; the *sporular sac* is united at the top with the columella, so as to forbid egress to the seeds or sporules until long after the fall of the operculum, and probably until the theca itself falls from the seta or becomes broken by decay.

Notwithstanding these apparently satisfactory characters, it is not yet perfectly clear to the writer of this note, that

this Moss is essentially and permanently distinct from *Weissia controversa*.

8. *OEdipodium Griffithianum*.—The seta tapers gradually from the capsule down to the vaginula, and seems everywhere to be fistulous, having a loose medullary centre; it may therefore be considered as entirely consisting of an *apophysis*, and thus the capsule is properly sessile. \* The sporular sac in this Moss presents considerable affinity to *Hymenostomum*. It is in an early stage connected with the conical apex or prolongation of the columella, (termed the metula by Mr Valentine), but in the ripe capsule it forms a loose membranous border within the mouth of the capsule. The seeds are connected in fours.

9. *Anictangium imberbe*.—Some confusion has arisen respecting this Moss. The genuine species so called, was really detected in Ireland by the late Miss Hutchins. It differs from *A. ciliatum*, in its *conical* prominent operculum, coloured calyptra, and in the recurved margins of the leaves. In habit, this Moss has very considerable resemblance to *Grimmiaapocarpa*. It is found rather plentifully near Llanberis, and near Beddgelert in N. Wales.

10. *Diphyscum foliosum*.—The figure of the peristome in the admirable *Bryologia Europmi*<sup>^</sup> of Bruch and Schimper, is not quite accurate. No distinct loose outer teeth are visible, and the parts so represented are probably pulverulent-fragments of the margin of the operculum, (perhaps of an imperfectly formed annulus.) Traces of outer teeth do nevertheless exist at the angles of the plicate membrane forming the peristome, as may be most satisfactorily observed in an annular or transverse section of the part carefully made with a sharp instrument. It may not be amiss here to state, that careful dissection under the microscope, proves that the peristomes of Mosses usually termed single, do in many instances, (and perhaps might in all) show that they consist of two separable and differently coloured laminae; this obtains in the Cape Moss called *Wardia hygron*<sup>^</sup>*etrica*, in *Trematodon longicollis*, and in the most unlikely of all Mosses *Cinclidotus*

*fontinaloides*; in all the *Polytricha*, and in *Entosthodon Ternpletoni*.

11. *Splachnum*.—This genus of Mosses is very peculiarly distinguished from all others by the arrangement of its seeds or sporules. They are disposed in radiating lines containing from eight to fourteen or more sporules, and these lines seem to be also connected together in fours; the number varies in different species. This character appears to be constant, but is most observable in *Splachnum sphcericum*. No distinct tubular sporidia have been detected, but there seems to be in this respect considerable analogy between this tribe of Mosses and the Fungi.

12. *Encalypta affinis*, EngL Bot.—This is a perfectly distinct species, called by the authors of *Bryologia Europcea*, *E. commutata*, destitute of peristome, and the leaves gradually tapering to an acute point. It is common on the tops of the Breadalbane mountains.

13. *E. streptocarpa*.—In the year 1832, before the appearance of the *Bryologia Europcea*, the writer of this had detected a double peristome in this species, and in the exotic *E. procera*. It would indeed appear that the peristome is little to be depended upon as a generic character for *Encalypta*, and perhaps Bruch and Schimper have good reason to place *Gymnostomum viridissimum* in company with *Zygodon conoides*.

14. *Weissia tenuirostris*.—This Moss was discovered by Dr Taylor many years ago at Campsie, near Glasgow; but from the great rarity of fructification, and probably from some local causes affecting the development of the peristome, its true structure appears to have been long misunderstood, and the figure given in *Muscologia Britannica* is incorrect. Having in October last found the Moss in some plenty, and in a state of great luxuriance and perfection in the neighbourhood of Dolgelley, N. Wales, I am induced to offer the following remarks, which will not be thought unimportant, when the close resemblance of this plant to *Tortula tortuosa* is considered.

After having completely dissected a number of the finest specimens, I feel satisfied that this Moss ought to be removed to the genus *Didymodon*. It is only in starved specimens that I find sixteen simple teeth, and even some of these under a good doublet or triplet lens, exhibit sufficient traces of division into geminate processes. In those peristomes, which are perfect, there are sixteen decidedly geminate slender teeth, by no means horizontal, as represented in *Mitec. Brit.*, but nearly erect, at least twice as long as the diameter of the mouth of the capsule, and surrounding that conical prolongation of the columella (termed the *metula* by Mr Valentine, opercular membrane of Arnott,) which fills up the cavity of the operculum. In old specimens the peristome appears to be less erect, but the teeth can scarcely in any instance be regarded as horizontal, and their remarkably slender form is very unlike the figure referred to.

My remarks would terminate here if doubts concerning the identity of this Moss with *Tortula tortuosa* had not been frequently entertained, and if the Moss last named had not recently been by Dr Taylor himself placed in the genus *Didymodon*.

In *Weissia* (*Didymodon*) *tenuirostris*, I find the innovations or barren shoots very different from those of *Tortula tortuosa*, the leaves being much shorter, more linear in form, more obtuse at the extremity, and less crisped in a dry state; they are widely-spreading, recurved, and by no means crowded. The operculum presents no mark whatever of spiral arrangement of its cellular tissue; nor does the peristome exhibit any tendency to take a spiral, or even an inclined direction. I conclude therefore that the Moss is distinct from *Tortula tortuosa*, although circumstances having hitherto prevented me from rigorously comparing the two together, it may not be altogether safe to insist much upon their diversity.

In addition to what has already been said, I may state the following particulars:—*Weissia tenuirostris* has a very obscure *annulus* adherent to the margin of the operculum, and somewhat more deeply coloured.—Capsule narrowly lanceolate, tapering towards the base, often somewhat bent, and the

mouth a little contracted. Operculum subulate. Calyptra dimidiate, twisted. Setae frequently two or three together. Vaginula cylindrical. Perichsetial leaves very small. Leaves composed of a somewhat granular substance, fragile, minutely scabrous in the margin, which is nearly plane.

This species was observed in several stations in North Wales, viz., in the rocky dell above Dolgelley, and by the roadside leading westward under Cader Idris; also near Pont Aberglaslyn, one mile from Beddgelert. It has likewise been found in Ireland near Killarnéy, by Dr Taylor, but in a perfect state it appears to be one of the very rarest of our British Mosses.

15. *Weissia affinis*.—Before this Moss can be established as a good species, further investigation seems to be requisite. If any permanent mark of difference exist between it and *Gymnostomum conicum*, it will be found not in the peristome, which is extremely variable, but in the form of the capsule, which in *Weissia affinis* is elliptical, and somewhat contracted at the mouth. After having bestowed much pains in the examination of numerous specimens, I am compelled to leave the question undetermined.

16. *Fissidens osmundioides*.—An essential difference between this Moss and *Dicranum bryoides* of *Muse. Brit.*, has long ago been pointed out by Wahlenberg, and since verified by Meyrin and the writer of this note. The calyptra is mitri-form, with the margin strongly turned inward, and the leaves are destitute of the cartilaginous margin observable in *D. bryoides*, which has the calyptra truly dimidiate, and a shorter operculum.

17. *Dicranum Schreberianum*.—The genuine Moss figured in *Hedw. Sp. m. t.* 33, has been found in Lancashire, and more recently near Glasgow. The lid is shorter than in the Moss found in Glen Tilt, which is either a well marked variety, or more probably a distinct species, for which Bridel proposes the name *D. Grevilleanum*.

18. *D. polycarpum* has been recently found on Cader **Idris** by Mr RalfV

19. *D. Starkii*.—Probably it will be found that this is not specifically distinct from *D. falcatum*. On the Clova Mountains intermediate states are frequent; they differ in nothing but the shape of the capsule.

20. *D. flagellare*.—It now appears that no genuine examples of the Moss<sup>\*</sup> figured in *Hedw. Muse. Frond.*, vol. iii. t. 1. have been found in Ireland. The specimens so called in the *British Flora* of Hooker belong to *D. Scottianum*. The synonym *D. montaniun*, *Hedw. Sp. Muse. t. xxxv.*, seems to be misapplied; but there is remarkable confusion on this subject among continental muscologists, whose communications under this name are extremely contradictory, as may be seen on reference to the Hookerian herbarium. *D. flagellare* will be found to differ from the *Z*. *Scottianum* in the deeply bifid teeth, and in the capsule which is ribbed and less contracted at the mouth.

21. *D. undulatum*.—No satisfactory specimens exist in the Hookerian herbarium to prove that *Dicran. polysetum* of *Schwaegr. Suppl. t. xli.* has ever been found in Britain. The British Moss is perhaps only a var. of *D. scoparium*, with undulated leaves.

22. *Grimmia saxicola*.—This rare Moss I have found in Derbyshire, (1832) near Crich, and near Rowsley. It has since been found near Todmorden, Lancashire, by John Nowell.

23. *G. atrata*, has again been found on Snowden last year, but not plentifully. It was gathered on the precipice called Clogwyn dŷ. 'r arddu.

24. *Didymodon longirostris*? *Hook. Br. Fl.* is most probably *D. flexicaulis*. Near Matlock in Derbyshire it is not uncommon, but is always barren.

25\* *Trichostomum canescens*—The peristome has the teeth united at the summits, almost the same as in *Conostomum boreale*.

26. *T. aciculare* y. *gracile*. *Turn. Muse. Hib.*, p. 67.—May not this be *Racomitrium cataractarum* <sup>^</sup> *Bridel. Br. Un.*, vol. \p. 776? The writer of this has met with a Moss in

Nant Frangon, N. Wales, which could not be satisfactorily referred to any British described species, and it is probably the species or variety now under consideration.

27. *Glyphomitrium Daviesii*.—This has been found in some plenty near Llanberis, at the foot of Snowden, by Mr Valentine and Mr Ralf.

28. *Cinclidotus fontinaloides*.—The upper portion of the peristome is closely united to the columella, which, shrinking downward as it dries, always causes a fracture of the teeth in the mature capsule; hence the peristome appears shorter than it really is; the operculum exhibits a spiral arrangement of its cells, and the peristome partakes much of the nature of a *Tortula*. The fructification of this Moss can with difficulty be called terminal.

29. *Trichostomum patens*, *\$,piliferum*.—Some muscologists seem to have overlooked Dr Arnott's excellent remark in the addenda to Hooker and Taylor's *Muse. Brit.*, and to have regarded this Moss as *T. funale*, *Schwaegr. Suppl. L* 37. It may nevertheless be truly distinct from *T. patens*, which has a very remarkable structure of the nerve of the leaf, which has at the back two winged projections, not at all visible in the variety now under consideration. This latter Moss is indeed very closely allied to *Grimmia trichophyllia*.

30. *Funaria Muhlenbergii* L.—No one who has carefully observed the prominent operculum, its scarcely reddened margin, the smooth border of the mouth of the capsule, and the large rough seeds, thrice the diameter of those of *F. hygrometrica*, would even think of uniting these two species. The experiment of Mr James Drummond cannot by any means be considered satisfactory; because it is as difficult to ensure the absence of the seeds of so common a Moss as *Funaria hygrometrica*, as it is to cultivate *F. Muhlenbergii*, in any but a calcareous soil. *F. hygrometrica* may always be infallibly distinguished from *F. Muhlenbergii*, by a distinctly corrugated border surrounding the very oblique mouth of the peristome, by the deeply coloured margin of the flattened operculum^ and by the large and very distinct annulus.



31. *F. Hibernica*.—No good specimens of this Moss exist in the Hookerian herbarium, and it is most probably not distinct from *F. hygrometrica*, which, in reality, (as was first pointed out to me by Mr John Nowel,) has the lower leaves of the stem plane and minutely serrated.

32. *Polytrichum*.—The "membrane" which connects the teeth of the peristome is an hemispherical expansion of the columella, to which in most species it permanently adheres. It is in fact a modification of the opercular membrane, or *metula*. The propriety of the latter name is clearly exemplified in this genus, because the metula in this case does not rise higher than the apices of the teeth of the peristome. The substance which fills the operculum is, as Mr Valentine has justly pointed out, an expansion of a portion of the thecal membrane. The teeth of the peristome consist of two laminae, of which the innermost (as in every case where an inner peristome exists at all) is connected with the sporular sac.

33. *P. abides* and *P. nanum*.—These two Mosses have generally been considered scarcely distinguishable. It would appear, however, that they are truly distinct species. The first of these has a 4-winged columella; the other a cylindrical one, with large seeds. *P. nanum*, therefore, ought to be removed from the very doubtful genus *Pogonatum* of Bridel.

34. *Bryum squarrosum*.—No second locality in Britain for this Moss has yet been found; and there is reason to apprehend that the Moss no longer grows upon Knutsford moor; the ground having been drained and levelled.

35. *B. Tozeri*.—This rare species has been found on the banks of the Lee, near Cork, by Mr W. T. Alexander, and near Penzance, by Mr Ralfs.

36. *B. annotinum*, *Hedwig*,—Certainly distinct from *B. turbinatum*, with a much closer affinity to *B. nutans*. In a stone quarry, two miles north of Warrington, this usually barren Moss produces fruit in considerable plenty, and the barren gemmiferous shoots are there comparatively unfrequent. The capsule has a pale waxy hue.

37. *Cinclidium Stygium*.—Discovered in the year 1836, near Malhany in Yorkshire, by John Nowell of Todmorden. A second locality in the same neighbourhood was found afterwards by the writer of these notes. The capsules are ripe in June.

38. *Glyphocarpa? cernua*. MS.—A curious little Moss found on Connor Hill in Ireland in the year 1829, and subsequently at Curn Bychan, near Harlech, by the Rev. Mr Salwey. It is quite destitute of a proper peristome, with a drooping pyriform capsule. In other respects it closely resembles *Bartramia fontana* in miniature, and may perhaps be only a variety.

39. *Buxbaumia aphylla*.—New localities for this very rare Moss have recently been detected in the Bowling hills, near Glasgow, by Mr G. J. Lyon; and on the Sedlaw hills, Forfarshire, by Mr W. Gardner, Junr.

40. *Pterogonium filiforme*.—The British Moss, so called, having by some been regarded as only a state of *PL gracile*; it may be proper to observe, that, in addition to the papillose surface of the leaves of *Pt. jiliforme*, the margin is reflexed, and by that mark easily distinguished. In fructification *PL jiliforme* is exceedingly rare; the only station known to the writer is on Ben-Cruachan, near Killin, Perthshire.

41. *Anomodon curtispiculum*.—The genus *Anomodon* appears to be founded on insufficient characters: in the species before us the inner peristome is quite unattached to the outer, and is in every respect similar to that of *Neckera*.

42. *Daltonia* is another apparently spurious genus. A new species, *D. nervosa*, found in the southern United States by the late Mr Thomas Drummond, has a dimidiate calyptra, while in *Neckera pennata* the capsule is immersed, and the calyptra mitriform.

43. *Daltonia splachnoides* (now removed to the genus *Hookeria*,) has been recently found near the summit of Brandon Mountain, Ireland, by Mr D. Moore.

44. *Hypnum enellum*.—This Moss, according to Bridel, and in opposition to Schwsegrichen, ought to be called //.

*Algirianum*, by which name it has been long well known on the continent, while the older British muscologists supposed it to be peculiar to the British Islands. See *Bryol. Univ.* vol. ii. p. 593.

The "variety with serrulated foliage," mentioned in *Hooker's British Flora*, vol. ii. p. 77, is now ascertained to be a distinct Moss, having a scabrous fruit-stalk. \* It is probably ***H. Schleicheri*, Bridel. Br. Un., vol. ii. p. 403**, and has been also found at Bowling-Bay, near Glasgow, and at Nant y Fridd, near Wrexham.

**45. *H. demissum*, Wils. in Engl. Bot. Suppl. t. 2740.**—This is the same Moss as that described in Hooker's *Br. Fl.* v. ii. p. 79, under the name of *H. flavescens*, the name *demissum* having been substituted for one liable to produce confusion from its resemblance to the names of already described species.

46. *H. catenulatum*.—The operculum is more properly *rostrate* than "conico-acuminate," as it is described in the *British Flora*. Foliage frequently secund; the fruit ripens about December; but is extremely rare. Fertile specimens have been gathered by the writer near Dolgelly, and near Beddgelert, in N. Wales.

47. *H. incurvatum*.—This recent addition to our list of British Mosses, was found by the writer in Helk's wood near Ingleton, in 1837, and also near Kendal, on the road to Ambleside. The fruit ripens about midsummer.

**48. *H. circinnatum*, Bridel, Br. Un. v. ii. p. 447.**—A Moss, answering to this description, was found many years ago by the writer at Tyfry in Anglesea, and earlier still at Netley Abbey by Mr Borrer. I have the same Moss from Mr Arnott marked "*Pterogonium nervosum*, Montpellier." Bridel is probably in error in referring this Moss to *H. strigosum*, Hoffm. If it be not a distinct species (which I think it is) its affinity is rather with *H. alopecurum*. In every instance this Moss seems to have been found on calcareous rocks. At Tyfry it is found with abortive perichaetia; but the fructification is altogether unknown.

49. *H. flagellare*.—The scabrous seta is an important character which has been hitherto omitted by recent describers, though recorded in English Botany. It is difficult to suppose that this Moss is entirely confined to the British islands; yet it certainly does not occur in the collection of Mougeot and Nestler. *H. umbratum*, Ehrh. No\*329 of that work, is with much difficulty distinguishable from *H. brevirostrum*, Ehrh. No. 423, having like it, a smooth seta. *H. umbratum*, Sm. *FL Brit. p.* 1298, is probably the same Moss as No. 329, of Mougeot and Nestler; and if so, Sir J. E. Smith has improperly quoted it in *Engl. Bot.*

50. *H. laricinum*, Hook. *Br. FL v. ii. p.* 87, and *Suppl to Engl. Bot. t.* 2760.—This is unquestionably *H. Blandovii* > *Schwaegr. Suppl t.* 142. The locality at Tunbridge Wells is somewhat doubtful; but on Knutsford Moor, in Cheshire, it may still be found rather plentifully, bearing fruit freely in April and May.

51. *EL blandum*.—With equal certitude this Moss may be referred to *H. illecebrum*, Lin. (not *H. illecebrum*, Hedw. > which is *H. Boscii*, *Schwaegr. Suppl*)\*

52. *H. crassinervium*.—Since the discovery of this Moss in Ireland, it has been found by the writer near Matlock in Derbyshire, at Beaumaris in Anglesea, and near Ingleton in Yorkshire, always, or usually at least, growing upon calcareous rocks.

53. *H. ccBspitosum*. *Wils. MSS.*—This yet unpublished species, nearly allied to *H. blandum*, but with an erect capsule, and secund foliage, though rather abundant near Warrington, has not been elsewhere observed. The fruit ripens in November.

54. *H. fluviatile*, Swartz; *Hedw. Sp. Muse. t.* 81.—This Moss, not yet admitted into the published list, was found near Bangor by the writer in 1828, when it was confounded with

\* The following memorandum was made by Dr Arnott, thirteen years ago, on the editor's copy of the *Muscol Brit.* "*H. illecebrum*, Schw. is & *illecebrum*, *E. Bot. t.* 2189, has serrated leaves, and with it *If. blandum* is identical. It is figured by Vaillant in his *Fl. P. E. v.*

*H. atrovirens*. It has since been gathered near Warrington. Fruit ripe in April.

· 55. *H. ruguhsom*.—Fertile specimens gathered at Beaver Lake, are given in Drummond's *Musci Americani* No. 198, though not noticed in *Hook. Br. FL*. Capsule cylindrical, very much bent. Operculum conico-rostrate. Seta smooth. It is a true *Hypnum*.



**NOTES on the HEPATICJE in Hooker and Taylor's *Muse. Brit.***

1. *Sphserocarpus terrestris*.—Fine specimens of this plant gathered by the late Thomas Drummond in Louisiana, prove that the capsule is covered (as is usual) with a calyptra, which, however, from its extreme tenuity can only be detected in an early stage. The anthers are found in folliculose bodies covering the upper surface of the nerve on separate fronds.

2. *Riccia, Jluitans*.—Abundance of this plant, in a perfect state of fructification, was found by the writer, in September, 1834, on the dried shores of a lake called Mere in Cheshire. It is a true *Riccia*.

3. ***Jungermannia lanceolata, Lin.; Hook. Jung. L 18***—Until very lately, this species has been regarded as very doubtfully British. It has, however, been recently gathered very sparingly, on Harrison's Rocks (Tunbridge Wells?) by Mr E. Jenner, whose specimen agrees exactly with No. 527, of Mougeot and Nestler.

4. *J. sphcerocarpa*, and *J. hyalina*.—Satisfactory characters, by which these two estimated species may be distinguished, are much wanted.

5. *J. inflata*, and *J. turbinata*. Wils—At the time when the writer described *J. turbinata* in the *Suppl. to Engl. BoL* he had not access to the original work, and it now appears that *J. turbinata*, which is certainly distinct from *J. infiata* of *Hook. Brit. Jung. t. 38*, has been twice figured in *Engl. Bot.*, first at *t. 2512*, under the name of *J. inflata*, (which figure has been erroneously quoted in *Hook, and*

*Tayl. Muse. Brit* p. 230), and subsequently by the writer at t 2744, under its proper name. The two species are very distinct, though hitherto very frequently confounded.

6. *J. curvifolia*—The leaves of this species have a decided auricle at the base.

7. *J. nimbose*. *Taylor, MSS.*—Specimens, so called from Brandon Mountain in Ireland, are intermediate between *J. nemorosa*, and *J. planifolia*. It has been found only in a barren state.

8. *J. Dicksoni*.—This has been found in Wales by Mr Ralfs, on Brecon Beacon, and upon Cader Idris.

9. *J. scutata*.—The localities for this species given on the authority of the writer, in Hooker's *Brit FL* v. ii. p. 118, are incorrect. The plant there alluded to is *J. laxifolia*, a species possessed of stipules, but not described as such in *Hook. Brit Jung.*

10. *J. Hutchinsicc*.—Occurs near Dolgelley. It has also been found near Glasgow, by Mr Gourlie.

11. *J. pubescens*—Essentially distinct from *J. furcata*, in the alternate (not dichotomous) ramification of the frond.

12. *J. Lyellii* L.—This is most probably distinct from *J. Hibernica*. Specimens of *J. Lyellii*, gathered in the United States by Drummond, have a woolly midrib and a cylindrical capsule, very distinct from *J. Hibernica*, figured by the writer in *Suppl. to EngL Bot.* t 2750. Further investigation of the British *J. Lyellii* is therefore very desirable.

✓ **XXVI—Remarks on the FRUIT of the Natural Order CUCURBITACEE.** By ROBERT WIGHT, M.D., F.L.S., &c.

THE order *Cucurbitacee*, is perhaps one of the<sup>7</sup> most curious and inexplicable in the system of plants, and though at different times much studied by several eminent botanists, is still imperfectly understood, at least if we may judge from the fact, that no two writers on the distribution of plants according to their natural affinities, seem to agree as to what families

are its nearest allies. It is not now my intention to examine this question, for which, indeed, I have not at present leisure, even supposing I possessed the requisite materials, which I do not, but merely to offer a few observations on the general character of the family and fruit.

The *Cucurbitaceae* are a tribe of plants so very unlike the rest of the vegetable kingdom, that I think I may safely say, no one having the slightest knowledge of family likeness among plants, could ever mistake so far as to refer one of them to any other family. Though thus isolated from all around, and without a single near relation, with whom they can be justly compared or confounded, they yet stretch their more remote affinities on all sides; hence the difficulties which systematic writers find in decisively referring them to any one place, more than another, in the series of orders. Nearly all, however, now agree in placing them among orders having parietal placentae, that is among plants, the ovary of which is one-celled.

To any one who will take the trouble to look attentively at a slice of a young cucumber this must appear strange, but is yet, not the less true. In one of the latest and the best introductions to botany in the English language, Dr Lindley's, a *peponida*, the peculiar fruit of the order, is thus defined:

" One-celled, many-seeded, inferior, indehiscent, fleshy 5 the seeds attached to parietal pulpy placentae. This fruit has its cavity frequently filled at maturity with pulp, in which the seeds are imbedded; their point of attachment is, however, never lost. The cavity is also occasionally divided by projections of the placentae into spurious cells, which has given rise to the belief that in *Pepo macrocarpus* there is a central cell, which is not only untrue but impossible."

Dr Arnott in the article " Botany," *Encyclop. Brit. Ed. 7*, gives a different account of it; but still, it appears to me, far from a correct one, namely :—

" A *pepo* or *peponida*, is a fleshy inferior fruit, either indehiscent or bursting irregularly, and consisting of about

three carpels, each of which is divided into two cells by its placentiferous margin, being so introflexed as to reach the dorsal suture. The sides of the carpel, and even sometimes the introflexed portion, usually become extremely thick and fleshy, forming the great mass of the ripe fruit, so that by losing the general character of dissepiments, they might almost be said to disappear, and thus at first sight a *pepo* would be said to be, and has been so described, a 1-celled, fleshy, indehiscent fruit, with parietal placentae that send out sometimes false dissepiments towards the axis, as the cucumber and gourd."

This view, therefore, is essentially different from Dr Lindley's; for, according to Arnott, the placentas are virtually central, not parietal. The only difference between a pepo and an apple, being according to him, that the placentiferous margins of the carpellary leaf are introflexed, and extend outward nearly to the parietes of the fruit, in place of remaining in the axis. Lindley, on the other hand, views a pepo simply as a one-celled fruit with parietal placentas, the cavity being occasionally divided into spurious cells by projections of the placentae. Neither is altogether consonant with appearances, though that of Arnott appears the most so; but both, in common with all others that have yet been promulgated, are incorrect both as to theory and fact.

While our ideas of the structure of the most essential organ of the plant, with reference to natural affinities, are thus vague, can it be matter of surprise that we are unable to trace its relations, and determine its affinities in the system of plants?

What then is a peponida? I have said above that it is neither a one-celled fruit with parietal placentae, nor a three-celled one with introflexed central placentae. But before I can say what it is, and point out the difference between it and a fruit of the usual construction, it is necessary to state what the usual structure is. This I shall do by means of a short extract from Lindley's *Key to Structural Botany*.

354. « A CARPEL is formed by a folded leaf, the upper



surface of which is turned inward, the lower outward ; and the margins of which develop one or a greater number of buds, which are the ovules.

355. When the carpels are stalked, they are said to be seated upon a *thecaphore*, or *gynophore*; *Ex.* Cleome, Passiflora. Their stalk is analogous to the petiole of a leaf.

355. a. When the carpels are all distinct, or are separable with facility, they are *apocarpous*; when they all grow into a solid body, which cannot be separated into its constituent parts, they are *syncarpous*.

356. The ovary is the lamina of the leaf.

357. The style is an elongation of the midrib (174.)

358. The stigma is the denuded, secreting, humid apex of the midrib.

359. Where the margins of\* the folded leaf, out of which the carpel is formed, meet and unite, a copious development of cellular tissue takes place, forming what is called the *placenta*.

360. Every placenta is therefore composed of two parts, one of which belongs to one margin of the carpel and one to the other.

361. As the carpels are modified leaves, they necessarily obey the laws of arrangement of leaves, and are therefore developed round a common axis.

362. And as they are leaves folded inward, their margins are necessarily turned towards the axis. The placenta, therefore, being formed by the union of those margins, will be invariably next the axis."

From this we learn, in few words, that the carpellary leaf is always so folded that its midrib is towards the circumference, or forms the dorsum of the cell or carpel, while the placentiferous margins are placed in the axis; that the difference between a one-celled and many-celled fruit, merely consists in the placentiferous margins of the carpellary leaves of the former not extending inward to the axis, but stopping in the circumference and bearing their ovules attached to the walls of the cell—hence *parietal*. This position of the carpellary

leaf is so constant, that the possibility of an inversion of this order of things in a pepo seems never to have entered into the calculations of any one of the numerous botanists who hav<sup>^</sup> given their attention to the investigation of the structure of this curious fruit; and yet such is simply the case. In a pepo the normal position of the midrib of the carpellary leaf is reversed, that is, is placed in the axis, and the placenterous margins towards the circumference.\* That such is actually the case requires no argument to prove it; we have only to cut the ovary of any true Cucurbitaceous plant to be made sensible, with a glance, that it is so; though I confess that in none have I seen it so clearly made out as in *Coccinia Indica*, owing to the carpels of that species remaining distinct; merely held together, not as usual by cohesion between the respective carpels, but by the tube of the calyx in which they are enclosed. Did I wish to illustrate the theory by means of a diagram, I could not devise one more perfect than a simple section of the ovary of that plant, merely extending the natural divisions, by dividing the calyx, so as to allow each of the carpels to be slightly separated in the representation, to facilitate the demonstration. This, however, I think is even unnecessary, for with the clew to the true structure, which this species furnishes, there can no longer be any difficulty in understanding it from the examination of any genuine species of the order.

What effect this new exposition of the structure of the ovarium may have on the determination of the affinities of this order, I am, up to the present time, quite unprepared to say; but of this I feel certain, that in so far as structure is concerned, they are as far removed from all their now reputed allies, as their peculiar habit removes them from all the Parietose families, except *Passiflora*<sup>^</sup> among which Bartling, Endlicher and Lindley, have placed them. This very unusual structure, in short, marks them as a peculiar order, the affinities of which have still to be sought for.

# « This view is much the same as that advanced by Seringe sixteen years ago; but from which I still dissent."— ABNOTT.

I am equally unprepared to say to what extent this unlooked-for structure may influence our views in regard to other anomalous orders, especially those with solitary carpels, since, having established the fact that the usual structure may be inverted, it will naturally lead to new investigations, which may prove, that the solitary carpels of leguminosae are not as now supposed, necessarily the result of constant abortion of one of two carpella, but may be explained on some other theory more consonant with the, almost invariably observed, structure in that large and interesting order; which, like Cucurbitaceae, stands an isolated family in the system of plants, through this one remarkable peculiarity: a peculiarity so constant in this tribe, that it goes far to prove the existence of that botanical nonentity—a terminal leaf. But being unprepared to offer any matured opinions on these points, I forbear further speculation, trusting however, ere long, to be able to re-enter more at large on the consideration of this interesting inquiry.

MADRAS, *20th January, 1841.*

---

XXVII\_\_ENUMERATIO FILICUM PHILIPPINARUM; *or a Systematic Arrangement of the FERNS collected by H. CUMING, ESQ., F.L.S., in the Philippine Islands and the Peninsula of Malacca, between the years 1836 and 1840.*  
By J. SMITH, A.L.S.

HAVING obtained an early set of the splendid collection of Ferns brought from the Philippine Islands by Mr Cuming, I have examined and collated them with my general collection, and have drawn up a list of the species, noting their localities, and the number attached to each presumed species, as given out by Mr Cuming, thinking that such may be useful to those who have obtained similar sets.

In determining the species, I have carefully compared them with the descriptions and figures of authors, and also with specimens in my herbarium, which, besides containing many East Indian species,\* likewise contains a select-named collect



*Antoine Laurent Lavoisier*