DESCRIPTION OF VICTORIA REGIA BY SIR W. J. HOOKER.

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Plate I.

Bird, del. et lith. Reeve imp.

Victoria regia Lindl.

DESCRIPTION

OF

VICTORIA REGIA,

OR

GREAT WATER-LILY

OF

SOUTH AMERICA.

folio
QK495
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1847

DESCRIPTION

OF

VICTORIA REGIA,

OR

GREAT WATER-LILY

OF

SOUTH AMERICA,

(WITH FOUR PLATES),

BY

SIR W. J. HOOKER, K.H., D.C.L., F.R.A. AND L.S., ETC.

VICE-PRESIDENT OF THE LINNÆAN SOCIETY,

AND

Director of the Royal Gardens of Kew.

"Aspiring to the rank of Queen,
The LILY and the ROSE."—COWPER.

MISSOURI
BOTANICAL
GARDEN.

LONDON:
REEVE, BROTHERS, KING WILLIAM STREET, STRAND.
1847.

VICTORIA REGIA.

VICTORIA WATER-LILY.

Nat. Ord. Nymphæaceæ. § Euryaleæ.—Polyandria Polygynia.

Gen. Char. Victoria, *Lindl.* *Calycis tubus* subglobosus, ovario adhærens, ad oram in torum expansus, limbo 4-partito deciduo colorato. *Petala* numerosa, fauci seu toro calycis inserta; exteriora patentissima, calycem superantia, interiora sensim angustiora acuminata rigida staminiformia; omnia basi in annulum v. torum connata. *Stamina* plurima, subduplici serie inserta, fertilia; *filamenta* subulata petaloidea, sed rigida firma basi monadelpha, demum erecta: *antheræ* introrsæ, infra apicem insertæ, lineari-elongatæ, adnatæ. *Filamenta* interiora subbiserialia sterilia, basi monadelpha. *Ovarium* inferum globosum, vertice concavo-campanulatum radiatum centro rostratum, multiloculare, loculis uniseriatim regulariter in circulum dispositis, pluriovulatis, *ovulis* parietalibus, funiculis reticulatis affixis: *stylis* nullis (in campanulam sulcatam tubum calycis vestientem connatis, *Lindl.*); *stigmatibus* maximis tot quot loculis, ad marginem verticis campanulati quasi articulatim insertis, lato-lanceolatis compressis carnosis erectis, medium versus ad angulum inflexis deciduis dorso stigmatosis. *Fructus* baccatus globoso-campanulatus v. cyathiformis, truncatus, supra campanulatus, intus rostratus, plurilocularis, loculis polyspermis. *Semina* ovali-globosa, nucamentacea.

Herba *ingens, aquatica, fluvios placidos Cisandinos Americæ australis habitans.* Radix *perennis*? foliis *giganteis, natantibus, orbiculatis, peltatis, planis, margine ubique elevatis, radiatim atque reticulatim nervosis, nervis subtus valde elevatis;* floribus *maximis speciosis albo-roseis, pedunculis longe extantibus;* petiolis, pedunculis, ovariis, nervisque *subtus insigniter aculeatis.*

Victoria *regia.* (Tab. nostr. 1–4.)

Victoria regia, *Lindl. Monogr. Vict.* 1837. *ined. cum ic. Bot. Reg. Misc.* 1838. *p.* 9. *D'Orbigny, in Ann. des Sc. Nat. v.* 13. *p.* 57. *Walp. Repert.* 1. *p.* 106. *Schomburgk, in Views in the interior of Guiana, p.* 2. *frontispiece. Hook. Bot. Mag., Third Series, v.* 3. *t.* 4275–4278.

Victoria Regina, *Gray, in Mag. of Zool. and Bot. v.* 2. 1838. *p.* 440.

Nymphæa Victoria, *Schomburgk, in litt.*

Euryale Amazonica, *Poepp. in Froriep, Notizen,* 35. *p.* 9. *Reise, v.* 2. *p.* 432.

Victoria Cruziana, *D'Orbigny, l. c. p.* 57 ("foliis utrinque concoloribus, petalis cunctis concoloribus roseis.")

AMONGST the numerous eminently rare and beautiful, and, if we may be allowed the expression, *royal* plants, which the discoveries of modern naturalists have brought within the sphere of the known Vegetable Kingdom, it may truly be said that there is none which can be regarded as superior to that represented in the accompanying plates. To be allowed, therefore, to exhibit such a flower, not only in its ample dimensions, but accompanied with the details requisite for the full developement of its structure, is indeed a privilege; and doubly is that privilege enhanced by the liberty of bringing it forward with the name of the illustrious Individual who at once sways the sceptre of her happily United Kingdom, and pre-eminently so that of the element which this plant inhabits. If it could be said, in reference to the royal ancestor of Queen Victoria, the Consort of His Majesty George III., that the *Strelitzia* was peculiarly appropriated to Her, because of the patronage which she gave to Botany, by improving and embellishing the Royal Gardens of Kew, much more does the name of Victoria claim to be handed down to posterity on similar grounds; seeing that Her present Majesty has been graciously pleased to make these Gardens available to the public enjoyment, and even to endow them with a liberal provision for that especial purpose.

It is true that the *Victoria* has not yet produced its blossoms in England; but we have growing plants in the Royal Gardens of Kew, which germinated from seeds brought from Bolivia by Mr. Bridges. These have hitherto made satisfactory progress; although we have our fears that the plant being possibly annual and the season late (December), they may not survive the winter; or, at any rate, may not produce perfect flowers. Many are the disappointments and delays of Science! It was not till after Tea had been used as a beverage for upwards

of a century in England, that the shrub which produces it was brought alive to this country. More than one botanist had embarked for the voyage to China,—till lately a protracted and formidable undertaking,—mainly in the hope of introducing a growing Tea-tree to our Greenhouses. No passage across the Desert, no Waghorn-facilities, no steam-ship, assisted the traveller in those days. The distance to and from China, with the necessary time spent in that country, generally consumed nearly three years! Once had the Tea-tree been procured by Osbeck, a pupil of Linnæus, in spite of the jealous care with which the Chinese forbade its exportation; and, when near the coast of England, a storm ensued, which destroyed the precious shrubs. Then, the plan of obtaining berries was adopted, and frustrated by the heat of the tropics, which spoiled the oily seeds and prevented their germination, The Captain of a Swedish vessel hit upon a good scheme: having secured fresh berries, he sowed these on board ship, and often stinted himself of his daily allowance of water, for the sake of the young plants; but just as the ship entered the English Channel, an unlucky rat attacked his cherished charge and devoured them all! We have, however, no reason to despair of being able to raise the *Victoria regia* and of seeing it bloom in this country. The time is not long, since we first heard of this gorgeous Water-Lily; and the facilities of communicating with foreign countries are very different now from what they were in the days of Linnæus and of the first importation of the Tea-Shrub!

Of the *Victoria* we have the good fortune to possess flowering specimens, gathered by Sir Robert Schomburgk; and blossoms, both preserved in spirits and dried, collected by Mr. Bridges. These, with coloured drawings executed on the spot by Sir Robert, enable us to present, in the accompanying figures, all the more important analyses necessary to illustrate the genus and species of the plant.

Although to our own country belongs the honour of first fully detailing, in 1837, the particulars relative to this extraordinary Water-Lily, and clearly defining its generic distinctions, yet the earliest mention of it in print, so far as we can find, was in 1832,* in a work to which we have not at this moment access, 'Froriep's Notizen', vol. xxxv. p. 9. It is there described as a new species of *Euryale*, under the name *E. Amazonica*; so called by Dr. Poeppig, from the circumstance of that distinguished botanist and traveller having found it in the Amazon River of South America. Afterwards (in 1836) he alludes to it, in the 2nd vol. of his 'Reise in Chile, Peru, &c.' p. 432; but only says, "In the Igaripés, which are branches of the Amazon River, bearing no peculiar appellation, yet worthy to rank, from their size, with rivers of the second magnitude in Europe, grow some aquatic plants, whose almost fabulous dimensions may vie with the celebrated *Rafflesia* of India; while they excel that wonderful production in beauty of inflorescence." Then, in a note, he specifies the *Euryale Amazonica*, as belonging to the family of *Nymphæaceæ*, "whose wonderfully large leaves are deeply channelled below and traversed with veins beset with prickles, their width equalling six feet, while the flower is lovely snow-white externally, and crimson within, and measures from ten to eleven English inches across." "This," he says, "is the most magnificent plant of its tribe, though far from common; I only saw it in one Igaripé, near the confluence of the Teffle river with the Amazons. The flowers appear in December and January. It is called Mururá."

Previously, however, to this period,† M. D'Orbigny, in 1828, sent specimens of this gigantic Water-Lily to the Museum of Natural History in Paris. He had gathered them in the Province of Corrientes, in a river tributary to the Rio de la Plata. The evident analogy between the foliage of this plant and that of *Euryale*, induced the French botanists also to rank it as a species of that genus. The dried flowers and fruit, which M. D'Orbigny had transmitted, were unfortunately neglected, and nothing remained of his specimens but a single leaf, of immense dimensions and somewhat injured, which had been folded for insertion in the Herbarium.

In 1835, the following notice of what M. D'Orbigny is disposed to consider a species of the genus distinct from our plant, appeared in that author's 'Voyage dans l'Amérique Méridionale.' "I resumed my descent of the Paranà on the 3rd of March, and arriving at the junction of a small river called the San Josè, which spreads into a wide marsh before falling into the Paranà, I found one of the most beautiful flowers that America can produce. The plant seems to belong to the family *Nymphæaceæ*, and is certainly much allied to the *Nuphar*, but its dimensions are gigantic. The people of Guiana call it Irupé, deriving this name from the shape of its leaves, which resemble the broad dishes used in the country, or the lids of their large round baskets. A space, more than a mile broad and nearly a mile long, is covered with the large floating leaves, each of which has a raised edge two inches high. The foliage is smooth above and furrowed below with numberless regular compartments, formed by the projecting, thick, hollow nerves, the air in which keeps the leaf upon the surface of the water. Leaf-stalks,

* Guillemin, in 'Ann. des Sciences Naturelles,' v. xiii. p. 51.

† Guillemin, *l. c.*

flower-stalks, and ribs of the leaves, are alike cellular and covered with long prickles. Amid this expanse of foliage rise the broad flowers, upwards of a foot across, and either white, pink, or purple; always double, and diffusing a delicious odour. The fruit, which succeeds these flowers, is spherical, and half the size, when ripe, of the human head, full of roundish farinaceous seeds, which give to the plant the name of Water-Maize (Maïs del Agua), for the Spaniards collect the seeds, roast and eat them. I was never weary of admiring this Colossus of the Vegetable Kingdom, and reluctantly pursued my way the same evening to Corrientes, after collecting specimens of the flowers, fruits, and seeds."

Thus much for the earlier discoverers and first notices of this magnificent aquatic: we shall have occasion to return to M. D'Orbigny; but in the meanwhile it is only justice to mention in this place, that Sir Robert Schomburgk detected the plant in British Guiana, when travelling on account of the Royal Geographical Society of London, aided by Her Majesty's Government; his object being to examine the natural productions of that portion of the British Dominions. The following account of this discovery was given in a letter addressed to the Geographical Society.*

"It was on the 1st of January, 1837, while contending with the difficulties that nature interposed in different forms, to stem our progress up the River Berbice (lat. 4° 30′ N., long. 52° W.), that we arrived at a part where the river expanded and formed a currentless basin. Some object on the southern extremity of this basin attracted my attention, and I was unable to form an idea what it could be; but, animating the crew to increase the rate of their paddling, we soon came opposite the object which had raised my curiosity, and, behold, a vegetable wonder! All calamities were forgotten; I was a botanist, and felt myself rewarded! There were gigantic leaves, five to six feet across, flat, with a broad rim, lighter green above and vivid crimson below, floating upon the water; while, in character with the wonderful foliage, I saw luxuriant flowers, each consisting of numerous petals, passing, in alternate tints, from pure white to rose and pink. The smooth water was covered with the blossoms, and as I rowed from one to the other, I always found something new to admire. The flower-stalk is an inch thick near the calyx and studded with elastic prickles, about three quarters of an inch long. When expanded, the four-leaved calyx measures a foot in diameter, but is concealed by the expansion of the hundred-petaled corolla. This beautiful flower, when it first unfolds, is white with a pink centre; the colour spreads as the bloom increases in age; and, at a day old, the whole is rose-coloured. As if to add to the charm of this noble Water-Lily, it diffuses a sweet scent. As in the case of others in the same tribe, the petals and stamens pass gradually into each other, and many petaloid leaves may be observed bearing vestiges of an anther. The seeds are numerous and imbedded in a spongy substance.

"Ascending the river, we found this plant frequently, and the higher we advanced, the more gigantic did the specimens become; one leaf we measured was six feet five inches in diameter, the rim five inches and a half high, and the flowers a foot and a quarter across. A beetle (*Trichius* sp.?) infests the flowers to their great injury, often completely destroying the inner part of the disc; we counted sometimes from twenty to thirty of these insects in one flower."

This highly interesting Narrative was made the groundwork of a more full history of the plant, accompanied by a splendid figure, in a separate memoir of Atlas-folio size, by Dr. Lindley. Only twenty-five copies were printed for private distribution, in 1837, and shortly after, this gentleman published the same account, with important additions, in the Miscellaneous Notices of the 'Botanical Register', whence copious extracts appeared in numerous Papers and Journals. Nevertheless, that able botanist had to acknowledge, that the specimens in the possession of the Geographical Society, from which his generic and specific character (aided by Schomburgk's coloured drawings) had been drawn up, were in a very decayed condition, owing to the manner in which they had been packed. They were, however, he says, botanically examinable; and such he has proved them to be by the accuracy of his descriptive character, and by the correct result at which he arrived, viz., that the *Victoria* is truly and generically distinct from *Euryale*, which in its similar habit, inferior germen, and the prickly nature of the foliage, petioles, peduncles, and ovaries, it so completely resembles, that, as has been previously observed, both Poeppig and Guillemin unhesitatingly referred it to that genus.

Still it is obvious that, as far as the public was concerned, with the exception of individuals versed in scientific Botany, hardly any one could be gratified with the sight of a figure, and still fewer with that of a specimen of

* Another, and similar but more brief, account, contained in a letter addressed to us, was published, with further remarks, in the 'Annals of Natural History for 1838,' p. 65.

this wonderful production. The former was only known in the portfolio of the 'London Botanical Society', where we believe the original drawing, made by Sir R. Schomburgk, is deposited, along with a letter* addressed to that body, and published by Mr. Gray in the 22nd vol. of the 'Magazine of Zoology and Botany (Edinburgh, 1838, p. 440.)'; also by the twenty-five copies of the beautiful, but unpublished plates of Dr. Lindley, above mentioned; to which we must add a splendid private delineation of the plant, of the natural size, placed in the alcove of a green-house at Chiswick, which has more than once been thrown open to public view by the noble proprietor, on the days of the Horticultural Society's fêtes; while, with regard to specimens, actually none existed, save the imperfect ones already alluded to, which have been presented by the Geographical Society of London to Dr. Lindley.

But before proceeding to speak of the fortunate circumstances which gave us possession of specimens, and with them the power of representing this noble plant, it is only right to mention what the French botanists have written upon the subject. Dr. Lindley's excellent description was the means of directing their attention to those specimens especially which had been sent to Paris by M. D'Orbigny from Corrientes. In the 13th volume of the Annales des Sciences Naturelles (1840), M. Guillemin has published his 'Observations sur les Genres *Euryale* et *Victoria*,' but he throws no new light whatever upon the subject; nor could it be expected, from the condition of the specimens in the Museum of Paris. Nor would he probably have criticised the view taken of the genus by Dr. Lindley as he has done, had he been acquainted with the article on *Victoria regia*, above quoted, in the miscellaneous matter of the Botanical Register, vol. 24. p. 9. This notice by M. Guillemin is, however, followed in the same volume by a more interesting but popular account of *Victoria*, by M. A. D'Orbigny, who claims to himself the priority of discovery; while, strangely enough, he alludes at the same time to Haenke (who travelled about 1801), and then to Bonpland, as the first persons to meet with this splendid aquatic. Our readers will be glad to peruse his own words, which we here give, translated from the 'Annales', only omitting a little expression of vexation that a botanist belonging to another country should have the privilege of first laying a scientific description of this gorgeous plant before the world.

"If there exist in the Animal Kingdom creatures, whose size, compared with our own, commands admiration by their enormous stature; if we also gaze with wonder on the giants of the Vegetable Kingdom, we may well take especial pleasure in surveying any peculiarly wonderful species of those genera of plants which are already known to us only in more moderate dimensions. I shall endeavour to express not only my own feelings, but those of M.M. Bonpland and Haenke, for we were all alike struck with profound emotion, on beholding the two species of *Victoria* which form the subject of this note.

"For eight months I had been investigating, in all directions, the province of Corrientes, when, early in 1827, descending the river Paranà, in a frail Pirogue, I arrived at a part of this majestic stream, where, though more than 900 miles distant from its junction with the Rio Plata, its breadth yet nearly attained a league. The surrounding scenery was in keeping with this splendid river; all was on a grand and imposing scale, and being myself only accompanied by two Guaranï Indians, I silently contemplated the wild and lovely view around me; and I must confess that, amid all this watery waste, I longed for some vegetation on which my eye might rest; and longed in vain!

"Ere long, reaching a place called the Arroyo de San Josè, I observed that the marshes on either side the river were bordered with a green and floating surface; and the Guaranïs told me that they called the plant in question "Yrupé", literally water-platter: from *y*, water, and *rupé*, a dish. Its general aspect reminded me of our *Nénuphar*, belonging to the family *Nymphæaceæ*. Nearly a mile of water was overspread with huge round margined leaves, among which shone, sprinkled here and there, the magnificent flowers, white and pink, scenting the air with their delicious fragrance. I hastened to load my Pirogue with leaves, flowers and fruits: each leaf, itself as heavy as a man could carry, floats on the water by means of the air-cells contained in its thick projecting innumerable nerves, and is beset, like the flower-stalks and fruit, with long spines. The ripe fruit is full of roundish-black seeds, white and mealy within.

"When I reached Corrientes, I hastened to make a drawing of this lovely Water-Lily, and to show my prize to the inhabitants; and they informed me that the seed is a valuable article of food, which, being eaten roasted like maize, has caused the plant to be called Water-Maize ('Maïs del Agua'). I afterwards heard from an intimate friend of M. Bonpland, the companion and fellow-labourer of the famous Humboldt, that having visited accidentally,

* Under the title of "Dr. Robt. H. Schomburgk's description of *Victoria Regina*, Gray": but unaccompanied by any botanical definition. Dr. Lindley's specific name is "*regia*," and this appears to have been published in a very early number of the "Botanical Register for 1838"; while Mr. Gray's name "*Regina*" is given in a later number of the 'Magazine of Natural History' for the same year.

eight years previously to my visit, a place near the little river called Riochuèlo, he had seen from a distance this superb plant, and had well nigh precipitated himself off the raft into the river in his desire to secure specimens; and that M. Bonpland had been able to speak of little else for a whole month. I was so fortunate as to get dried leaves, flowers and fruits, and also to put other specimens in spirits; and about the end of 1827, I had the delight of sending them, with my other Botanical and Zoological collections, to the Museum of Natural History at Paris.

"Five years afterwards, when travelling in Central America, in the country of the wild Guarayos, a tribe of Guaranïs or Caribs, I made acquaintance with Father La Cueva, a Spanish Missionary, a good and well-informed man, beloved for his patriarchal virtues, and one who earnestly devoted himself to the conversion of the natives. The traveller, after spending a year among Indians, may easily appreciate the privilege of meeting with a human being who can understand and exchange sentiments with him; and I eagerly embraced the opportunity of conversing with this venerable old man, who had passed thirty years of his life among savages. In one of our interviews he happened to mention the famous botanist Haenke, who had been sent by the Spanish government to investigate the vegetable productions of Peru, and the fruit of whose labours has been unfortunately lost to science. Father La Cueva and Haenke were together in a Pirogue upon the Rio Mamoré, one of the great tributaries of the Amazon river, when they discovered in the marshes by the side of the stream, a plant which was so surpassingly beautiful and extraordinary, that Haenke, in a transport of admiration, fell on his knees and expressed aloud his sense of the power and magnificence of the Creator in His works. They halted, and even encamped purposely near the spot, and quitted it with much reluctance.

"It was some months after this interview with Father La Cueva that I was investigating the province of Moxos, the only means of travelling from one part of which to another is by water, and while I was going up the Rio de Madeiras towards the source of the Mamoré, and often thinking over in my mind the anecdote which the good old man had related to me, I beheld in an immense lake of stagnant water, which had a communication with the river, a plant of such extraordinary aspect, that I instantly concluded it must be the same as Haenke had seen. I also perceived that it was allied to the Water-Maize, already mentioned as found at Corrientes. Great was my delight to observe that this gigantic vegetable, though of the same genus, still differed specifically from that which I had seen before. The underside of the foliage and the crimson sepals were quite peculiar. Like Haenke, I made a perfect harvest of leaves and flowers; but subsequent illness, caused by alternate exposure to the blazing sun and drenching rains of these flooded plains, brought on such langour and exhaustion that I lost my specimens of this second species, and was thus deprived of the satisfaction of carrying the plant to Europe.

"The honour of naming the original and first-found plant has been forestalled by Dr. Lindley, who calls it *Victoria regia*; but to the one subsequently detected at Corrientes, I propose giving the name of *Victoria Cruziana*, in testimony of my obligations to General Cruz, whose kindness mainly contributed to the successful issue of my journey to Bolivia."

At the conclusion of M. D'Orbigny's interesting narrative, he goes on to define this so-called second species of *Victoria*; but as the sole difference pointed out by him lies in the colour of the underside of the leaves and of the flowers (*V. regia*, "foliis subtus purpureis, petalis exterioribus virgineis, interioribus roseis," contrasted with "foliis utrinque concoloribus, petalis cunctis concoloribus roseis v. albis," of *V. Cruziana*) we may, I think, without doing violence to nature, or showing any disrespect to M. D'Orbigny, consider *V. Cruziana* as a mere variety, if it even deserve such a distinction, of *V. regia*. No one can have examined the aquatic plants, either of our own or of foreign countries, without remarking that those parts which come in contact with the fluid are apt to turn purple, without any apparent cause for such change.

It now only remains, before completing the historical narrative of this plant, to say that the specimens from which the accompanying analyses are made, are exclusively derived from Mr. Bridges. On his return from his journey through Bolivia, of which some particulars are given at p. 571. of vol. 4. of our 'London Journal of Botany', Mr. Bridges detected the *Victoria regia* in considerable abundance, and brought home, in 1846, seeds in wet clay and well-dried foliage; also flowers, preserved in spirits. It is to be regretted there were no ripe capsules (ours is drawn from the figure of Sir R. Schomburgk), and of the seeds the majority were decayed; so that out of twenty-two which we purchased, only two have germinated, the rest being in a state equally unfit for examination and description.

We lament extremely that Mr. Bridges' severe illness puts it totally out of his power to give any information

respecting his collecting this plant, or indeed of its exact locality.* We have always understood the latter to be in some part of the Republic of Bolivia; perhaps the very spot where it was first found by Haenke, and afterwards

* Happily the improved state of Mr. Bridges' health has enabled him to communicate to us the following information; but which has only come, as it were, at the twelfth hour, after our whole description had been corrected and made ready for press. We are therefore compelled to give it in the form of a note.

"During my stay at the Indian town of Santa Anna, in the province of Moxos, Republic of Bolivia, during the months of June and July, 1845, I made daily shooting excursions in the vicinity. In one of these I had the good fortune (whilst riding along the woody banks of the river Yacuma, one of the tributary rivers of the Mamoré) to come suddenly on a beautiful pond, or rather small lake, embosomed in the forest, where, to my delight and astonishment, I discovered, for the first time, "the Queen of Aquatics," the *Victoria regia*! there were at least fifty flowers in view, and Belzoni could not have felt more rapture at his Egyptian discoveries than I did in beholding the beautiful and novel sight before me, such as it has fallen to the lot of few Englishmen to witness. Fain would I have plunged into the lake to procure specimens of the magnificent flowers and leaves; but knowing that these waters abounded in Alligators, I was deterred from doing so by the advice of my guide, and my own experience of similar places. I now turned over in my thoughts how and in what way flowers and leaves might be obtained, and I clearly saw that a canoe was necessary, and therefore promptly returned to the town and communicated my discovery and wants to the Correjidor or Governor, Don José Maria Zarate, who with much kindness immediately ordered the Cacique to send Indians with a yoke of oxen for the purpose of drawing a canoe from the river Yacuma to the lake. Being apprised that the canoe was in readiness, I returned in the afternoon, with several Indians to assist in carrying home the expected prize of leaves and flowers. The canoe being very small, only three persons could embark; myself in the middle, and an Indian in the bows and stern. In this tottering little bark we rowed amongst magnificent leaves and flowers, crushing unavoidably some, and selecting only such as pleased me. The leaves being so enormous I could find room in the canoe for but two, one before me and the other behind; owing to their being very fragile, even in the green state, care was necessary to transport them; and thus we had to make several trips in the canoe before I obtained the number required. Having loaded myself with leaves, flowers, and ripe seed-vessels, I next mused how they were to be conveyed in safety; and determined at length upon suspending them on long poles with small cord, tied to the stalks of the leaves and flowers. Two Indians, each taking on his shoulder an end of the pole, carried them into the town; the poor creatures wondering all the while what could induce me to be at so much trouble to get at flowers, and for what purpose I destined them now they were in my possession.

"This splendid plant has, undoubtedly, a very extensive geographical range; the town of Santa Anna is situated between the 13th and 14th parallels of south latitude, which I consider about its most southern limit, because I sought in vain for it farther south, in the department of Santa Cruz de la Sierra. May we not justly suppose that it is also found as far north of the Equator? thus occupying about 28° of northern and southern latitude. Dr. Weddel, the botanist of the French expedition across the American Continent, informed me that he had found it about the same latitude in Brazil. It occupies, without doubt, many of those immense lakes lying between the rivers Mamoré, Beni and the Amazons; that central part of the Continent, yet but little known. The Indians are well acquainted with the plant; the Moimas or natives of Santa Anna call it in their language "Morinqua"; and the neighbouring nation, the Cayababas, natives of the town of Exaltacion, know it under the name of "Dachocho." The leaves are round, varying considerably in size, the largest about four feet in diameter. They float on the surface of the water; the colour is a very light green, in age inclining to yellow, some of them even when young possess a yellow hue. The margins of the leaf are turned upwards, giving the leaf a singular appearance, somewhat like a floating dish; this margin and the under surface of the leaf are of a dark brown colour, while the part under water often assumes a purple tinge. The costæ are of the same colour. The spines incline to the interior of the leaf and in some leaves are nearly white.

"The *Victoria* grows in 4–6 feet of water, producing leaves and flowers, which rapidly decay and give place to others. From each plant there are seldom more than four or five leaves on the surface, but even these in parts of the lake where the plants were numerous, almost covered the surface of the water, one leaf touching the other. I observed a beautiful aquatic bird, (*Parra* sp.?) walk with much ease from leaf to leaf, and many of the *Muscicapidæ* find food and a resting-place on them. The plant occupies almost exclusively the water, with the exception of a few floating aquatics of small dimensions, amongst which I saw a beautiful *Utricularia*.

"The blossoms rise six and eight inches above the surface, expanding first in the evening, when they are pure white; changing finally (and by exposure to the sun) to a most beautiful pink or rose colour, flowers may be seen, at the same time, partaking of every tinge between the two hues, the recently expanded being pure white and the adult rosy, almost sinking under water to ripen its seed and produce a new race of plants when required. The largest flowers I saw measured from ten inches to one foot in diameter.

"I had an opportunity of experiencing the fragrance of the flowers. Those I collected for preserving in spirits were unexpanded, but on the point of opening; on arriving at the Government House, in the town, I deposited them in my room, and returning after dark, I found to my surprise that all had blown and were exhaling a most delightful odour, which at first I compared to a rich Pine-apple, afterwards to a Melon, and then to the *Cherimoya*; but indeed it resembled none of these fruits, and I at length came to the decision that it was a most delicious scent, unlike every other, and peculiar to the noble flower that produced it.

"The calyx is green, darker than the leaves, as is the seed-vessel.

"With the assistance of the Indians we got out of the water two entire plants, and from their appearance I should say the *Victoria* is decidedly perennial. Each plant had from twenty to thirty foot-stalks of flowers and leaves, in all stages; some nearly decayed to the base, others half-way down the stem, whilst others had just lost the floating portion. The same was observed in the petioles; some bearing the seed-vessel perfect, with ripe seed; others the expanded flower; and near the crown or centre of the plant was just issuing the tender flower-bud. With a knife we cut or trimmed the foot-stalks, when the trunk (if I may use the comparison) somewhat resembled a *Zamia*, and in length was about eighteen inches or two feet. At the base and between each foot-stalk protrudes a mass or cluster of fleshy, hollow roots, about the size of a straw, or larger, and varying in colour from brown to white, or nearly so; a succession of these roots is formed, as the new leaves are thrown out from the centre of the plant; nature having made a beautiful and wise provision for this plant, as in all her other works. The base of the trunk, or rather stem, situated in the soft mud, appears to decompose in proportion as new leaves and flowers issue from the centre, keeping the plant from elevating itself above water, which but for such an arrangement, might be the case from the rapidity of its growth.

"From what I observed of the nature and habits of this most interesting plant, I conclude that it cannot and does not exist in any of the rivers, where the immense rise and fall, of twenty feet, would leave it dry, during many months of the year, especially in the season when there is no rain. The lagoons, being subject to little variation in the height of their waters, are the places where it grows in all its beauty and grandeur.

"The *Victoria* appears to delight in parts of the lake fully exposed to the sun, and I observed that it did not exist where the trees overshaded the margins.

"The vegetation surrounding the locality of the *Victoria* was not of that splendid character that I could have wished. It wanted those noble Palms, the *Mutacú* and *Palma real*, which so beautifully adorn the banks of the Mamoré, to have made a perfect and enchanting picture with the *Victoria* in the waters. The trees belonged to genera new to me and peculiar to this level part of the country. Amongst the shrubs I observed two species of *Bauhinia*, and a fine purple-flowered *Bignonia*, climbing even to the summit of the trees."

Prospect Place, Bristol. December, 16th. 1846. THOMAS BRIDGES.

by D'Orbigny. Seeing, indeed, that *V. regia* has been detected in Bolivia (Rio Mamoré), in the Amazons; in Berbice and in Corrientes (Paranà) rivers; the first and last being separated (at their embouchures) by thirty-five degrees of longitude, we must conclude that this magnificent Water-Lily is, like the generality of Aquatics, a plant of wide distribution, and probably a not uncommon inhabitant of the still waters of all those great rivers which intersect the immense plains eastward of the Andes.

The following are the recorded stations for *V. regia*: Bolivia, at Rio Mamoré, upper tributary of the Amazons, found there by Haenke, about 1801, and some time afterwards seen by Bonpland; Igaripé, a branch of the Amazons, Poeppig (1832); Paranà and Riochuèlo rivers, province of Corrientes, on the frontier of Paraguay, D'Orbigny (1827); Rio Madeiras, near the sources of the Mamoré, between the confluence of the rivers Aperé and Tijamuche, province of Moxos, Bolivia, D'Orbigny (1832); Berbice river, British Guiana, Sir R. Schomburgk (1837): and also in the Rupununi, a tributary of the Essequibo * (1842); Bolivia, Rio Yacuma, tributary of the Rio Mamoré, Bridges (1844). The Mamoré is a tributary of the Amazons, as the Paranà is of the Rio Plata, and both consequently empty themselves into the Atlantic Ocean. It does not appear that the *Victoria regia* has been found in any water flowing into the Pacific; probably because of the rapid movement of those streams.

Of the difference between the genera *Euryale* and *Victoria* our more perfect specimens enable us to add some particulars beyond those already indicated by Dr. Lindley; and the subjoined tabular view of their discrepancies will put the matter in the clearest light.

EURYALE.	VICTORIA.
Sepals persistent.	*Sepals* deciduous.
Petals 20–30, apparently in 3–4 series, smaller than the calyx, diminished in size towards the interior, but all free, uniform in shape, in no way changed in form or in texture.	*Petals* very numerous, in several series, longer than the calyx, the inner gradually narrower, acuminated, and indurated, passing into the stamens (as in *Nymphæa*) and united with them into an elevated ring, forming a prolongation of the torus.
Stamens numerous, uniform and all fertile and free; the inner ones generally smaller. *Filaments* filiform, delicate, short. *Anthers* terminal, oval, obtuse, free, not apparently adnate with the filaments. (*Roxb. fig.*)	*Stamens* united at the base in several series, the free portions subulate, fleshy, firm, bearing the elongated *anther-cells* below the acuminated point, and adnate with the *filaments*. Innermost stamens united into a monadelphous body and sterile.
Ovary oval, "6–8-celled? cells irregularly (?) placed and each containing 6–10 seeds, attached to the partitions and to the exterior angles of the cells," *Roxb.*; concave at the top, the edge alone slightly and very obscurely lobed, and this concavity representing the stigma, destitute of central projecting column. No style nor evident stigmas.	*Ovary* turbinate, with a deep cavity at the top and a central projecting column. Around the cavity, and placed with great regularity, are from 27–30 cells, immersed in a pulpy substance and partly below the hollow, the parietes of which have reticulated funiculi, bearing 10–12 ovules;—upon the edge of this cavity, in a circle within the stamens, are situated as many very large *stigmas*.
Fruit a nearly round berry, swelling out in various places, by the growth of the seeds within, and crowned with the connivent persistent sepals.	*Fruit* a turbinate truncated berry, with a deep hollow disc and persistent central column even and regular on the outside.

We do not attempt to contrast the structure of the seeds; but the above distinctive characters are surely abundantly sufficient to prove the correctness of Dr. Lindley's views, in establishing the genus *Victoria*.

Descr. Aquatic? *Root* perennial? "large and tuberous, provided with numerous filiform, or cylindrical fibres, which abound along their whole length with air-tubes. The *tuber* resembles the thick rhizoma of some *Aspidium*, and is of a brown colour externally, white within, but when cut through the internal substance soon changes to purple," (Schomburgk in litt.). *Stem* none. *Petioles* long, terete, radical, clothed with copious prickles; "they assume a diagonal direction when the water is low, and rise with the water so as to be perpendicular, and during the floods, the leaf, as well as the petiole, is entirely submerged. *Leaves* (usually) floating, of prodigious size, four to six and a half feet in diameter (twelve to nineteen feet in circumference), at first oval with a deep narrow cleft or sinus at one end, in age almost exactly orbicular, peltate, plane but with a considerable depth of margin, which is two to four or five inches broad, and turned up so as to form an elevated rim, like that of a tea-tray; the upper side of this vast leaf is a full green, marked with numerous reticulations which form somewhat quadrangular areolæ; the underside deep purple, sometimes green, according to D'Orbigny, clothed with a short spongy pubescence, furnished with copious very prominent flat veins, radiating from the point of insertion of the petiole and extending to, and through the raised margin, but there becoming less elevated, till they disappear at the very edge; these are united by other deep flattened nerves, and they again by cross ones of less elevation, and

* In the same year Sir R. H. Schomburgk had the gratification of showing this plant in its native waters to the officers of the 1st West India Regiment, when proceeding up that river to take military possession of Pirara, at which time it was in full flower. The Rev. Thomas Youde, Sir Robert informs us, made several attempts to bring plants from the interior to the coast, but they never survived many weeks.

all are more or less beset with prickles, varying in length, sharp and horny, subulate, that is, swollen at the base, very much like the sting of a nettle in shape.

Peduncle or *scape* radical, longer than the petiole and rising above the surface of the water when in flower, terete, prickly, varying in size, in the recent plant sometimes an inch thick, single-flowered. *Flower* of the same gigantic dimensions in proportion with the leaf in; *bud* pear-shaped (Tab. 3. f. 1); when expanded our specimen here figured (Tab. 2) measured rather more than a foot in diameter, (giving a circumference of thirty nine inches); but specimens in their native rivers, have been ascertained to be fifteen inches in diameter (forty-five in circumference), fragrant. The *calyx* is deeply quadrifid; the tube turbinate, tawny-coloured, very prickly, adnate with the ovary; the segments or *sepals* large, oval, purple-brown, concave, deciduous, a little prickly on the outside towards the base, rather shorter than the petals. From within, the mouth of the tube of the calyx (at the very base of the segments) extends itself into an annular *torus*, which bears the petals and stamens. *Petals* very numerous, the outer ones spreading and longer than the calyx, oblong, concave, obtuse, white, the inner ones gradually becoming narrower, much acuminated and insensibly passing into the filaments and becoming deeply coloured with purple or full rose. *Stamens* (perfect ones) in about two series, large, subulate, fleshy, gracefully incurved below, the rest erect; *anther-cells* double, linear, introrse, occupying the inner face of the filament, below the apex. Within these fertile stamens is another annular circle bearing a double series of *abortive filaments* only; these, with their lower portion, form an arch over the *stigmas*, the upper half being erect.

Ovary adnate with the whole length of the prickly tube of the calyx, and therefore turbinate like it, with a deep radiated depression or cavity at the top, and in the centre an elevated umbo or short pyramidal column: it may be therefore termed cup-shaped, with a thick fleshy base, having air-cells or cavities extending downwards into the peduncle; in the upper part of this substance, forming, as it were, the rim of the cup, there stand in a circle, placed with the greatest regularity, about twenty-six to thirty compressed *cells*, their parietes bearing several *ovules* attached to reticulated *funiculi*. From the inner edge of the cavity, just beneath the inner crown of sterile stamens, and articulated, as it were, at their base (or the base of the torus) rises a circle of *stigmas*, as many as there are cells in the ovary, large, fleshy, ovate, acuminated, laterally compressed, but geniculated, so to speak, in the middle; that is, the lower half of them is erect, and the upper half bent at an angle so as to lie horizontally over the cavity at the top of the ovary, and parallel or on the same plane with the base of the sterile stamens: the back of these stigmas is slightly grooved and is the stigmatic surface.

I much regret I can say nothing of the *fruit* from my own observation; but judging from the figure given of it by Sir Robert Schomburgk (see our Tab. 4. f. 6), it is a large cyathiform, truncate, fleshy, green, prickly *berry*, the margin even; bearing many oval, dark brown, almost black *seeds*.

Tab. 1.

An exceedingly reduced representation of the plant, *in situ*, chiefly done from Sir R. H. Schomburgk's scene in his 'Views in British Guiana'; showing the flower, unexpanded bud, and fully formed leaves and fruit.

Tab. 2.

This plate exhibits a flower of the *natural size*, delineated from a very perfect specimen in spirits, in the author's possession, brought by Mr. Bridges from Bolivia. A portion of the leaf is given, supposed to be a transverse section taken near the petiole, but so much fore-shortened (to allow of its being introduced at all) as to convey little idea of the magnificence of the entire foliage; drawn from a fine dried specimen in the author's possession, obtained from Bolivia.

Tab. 3.

Fig 1. Exhibits an unexpanded flower (from Bolivia) :—*natural size*. Fig. 2. A portion of the underside of the leaf (*natural size*) showing more particularly the remarkable venation. Fig. 3. A vertical section of the inferior ovary, with the stamens (sterile and fertile), and exhibiting the mode of union of the bases of the petals and stamens on the elevated rim (or torus), at the mouth of the calycine tubes. This section is through two of the many cells of the ovary, in which are seen the parietal reticulated funiculi, with the attached ovules. The lower part of the ovary contains air cavities. The upper part shows the radiated cavity of the top of the germen, with the central column or umbo, and the curious stigmas at the edge of said cavity :—*natural size*.

Tab. 4.

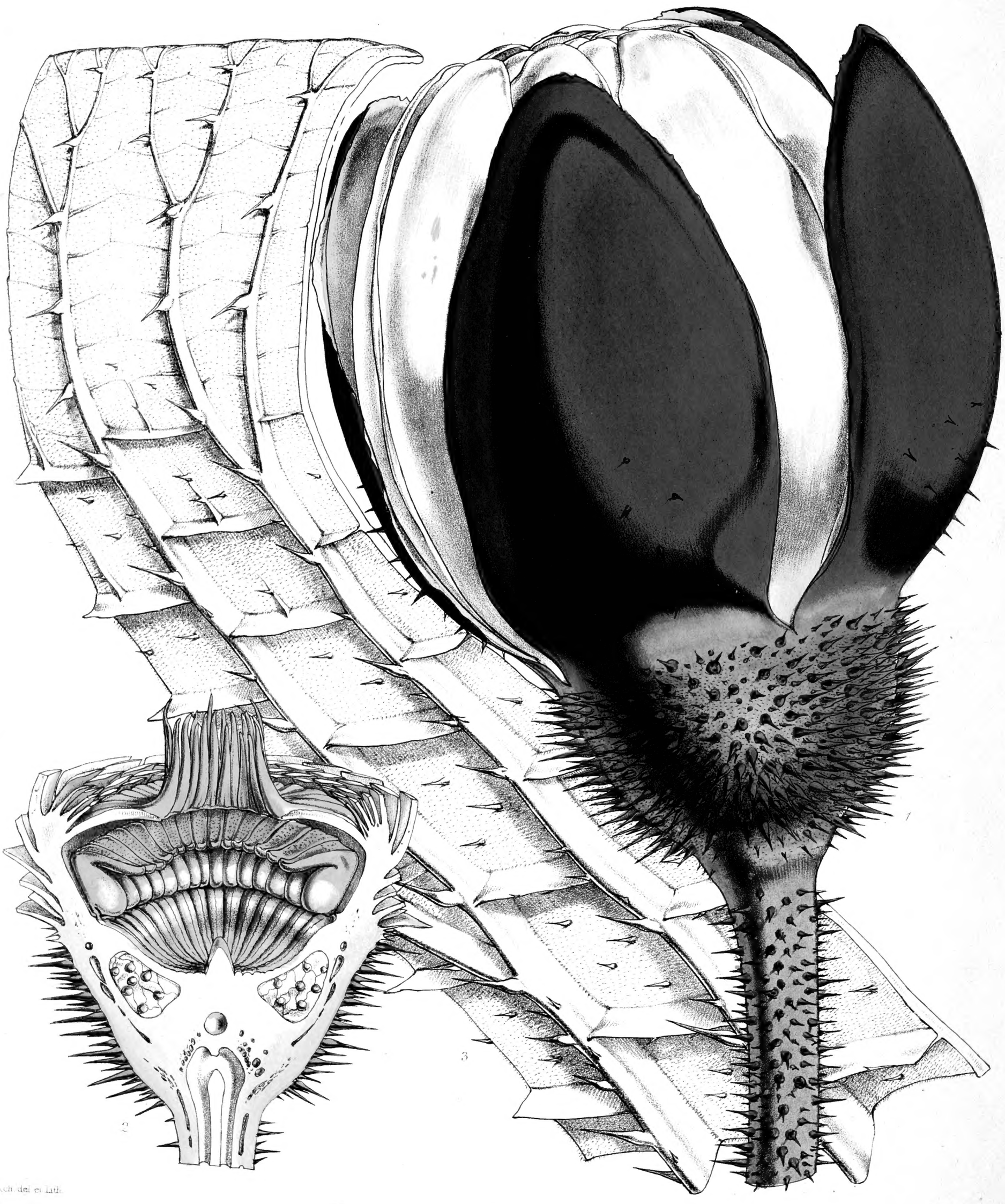
Fig. 1. Vertical section (*natural size*) of a portion of the torus, or elevated rim, at the inside of the tube of the calyx and which bears a portion of a calycine segment, and petals which gradually pass into stamens; within, is an inner circle or crown of sterile stamens, united at their base into an arched ring over the stigmas. Fig. 2. Stamen :—*slightly magnified*. Fig. 3. Transverse section of an ovary through the centre of the cells: showing the position of those cells with relation to the cavity, in which latter is seen the central umbo or column. Fig. 4. Two ovules attached to the funiculus :—*much magnified*. Fig. 5. Stigma (*natural size*) showing its stigmatic surface on the back. Fig. 6. Outline sketch of a fruit (*natural size*), copied from Schomburgk.

(The colouring of the above is done in part from Sir Robert Schomburgk's figures, and in part from description.)

Fitch, del et lith.

Victoria regia Lindl.

Reeve imp.

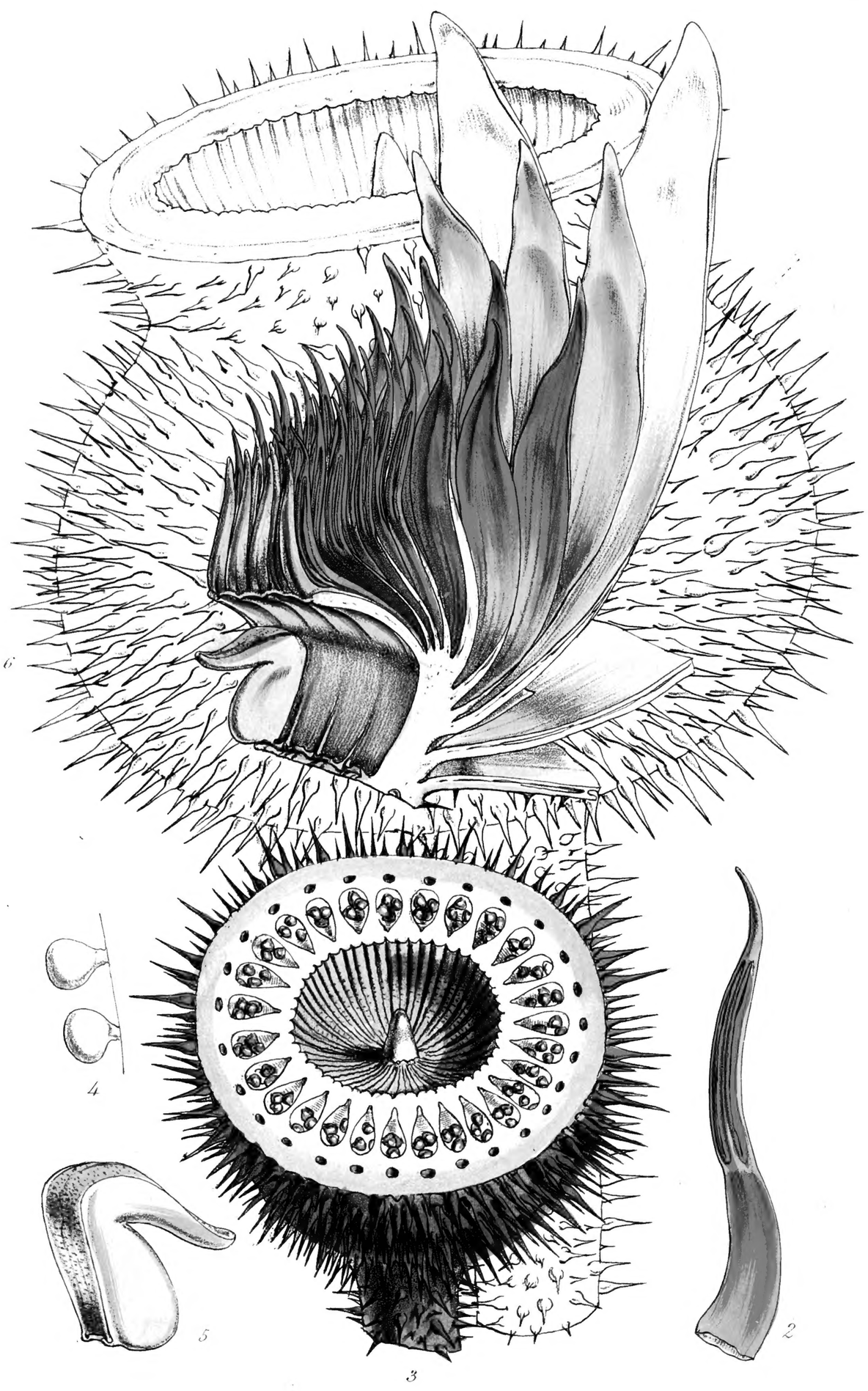


Fitch del et lith.

Victoria regia Lindl.

Reeve, imp.

Plate IV.



Fitch del et lith

Reeve imp

Victoria regia Lindl