

An Early History of *Vireya* The People, Places & Plants of the Nineteenth Century

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The distribution of *Rhododendron* subgenus *Vireya* is centred on the botanical region known as *Malesia* – an area of south-east Asia encompassing the Malay Archipelago, the Philippines, Borneo, Indonesia and New Guinea and surrounding island groups. It is for this reason that vireyas have sometimes in the past been referred to as ‘Malesian Rhododendrons’, although nowadays this is not considered a strictly accurate term as a small number of the 318 species in subgenus *Vireya* grow outside this region and, similarly, a few species from other subgenera of *Rhododendron* are also to be found within its boundaries. Broadly speaking, the *Vireya* group extends from Taiwan in the north to Queensland, Australia in the south, and from India in the west to the Solomon Islands in the east.

Much of the early recorded history of the plants of *Rhododendron* subgenus *Vireya* came about as a result of the activities of European nations, particularly Britain and Holland, pursuing their colonial ambitions across the Malay Archipelago and, later, east to New Guinea. As their Empires expanded into these previously unexplored territories, settlements were established and expeditions mounted to survey the natural wealth and geography of the land. Many of these early explorers had scientific backgrounds, although not always in botany, and collected all manner of exotic flora and fauna found in these unfamiliar surroundings, to ship back to their homelands.

The *Vireya* story starts in June 1821 when the Scotsman, William Jack, one of “a party of gentlemen”ⁱ, set out from Bencoolen (now Bengkulu), a settlement on the south-west coast of Sumatra, to reach the summit of Gunong Benko (Bungkuk), the so-called Sugar Loaf Mountain, “not estimated to exceed 3,000 feet in height”. It was here that Jack found what was to be the first *Vireya* species to be described - *Rhododendron malayanum*.

Jack was the son of the Principal of Aberdeen University in Scotland and, in 1813, took up employment with the East India Company in Calcutta, India, as a surgeon. It was five years later, whilst recuperating from a bout of tuberculosis in the company of

Nathaniel Wallich, Superintendent of the Calcutta Botanic Garden, that by chance Jack met Sir Thomas Stanley Bingley Raffles, then Lieutenant Governor of Bencoolen. Raffles engaged Jack in the role of naturalist-come-physician and had him accompany his party to Penang, on the Malay Peninsula, then on down to Singapore and eventually across to Sumatra. Jack was able to spend much of this time botanizing, enabling him to amass a substantial collection of dried specimens.

In 1822, Jack published his account of the expedition to Gunong Benko the previous year, here making only brief reference to his discovery of a *Rhododendron* - "The character of the vegetation was decidedly alpine, the rocks and trunks of the trees being covered with dense moss, and many of the shrubs belonging to genera of higher latitudes such as *Vaccinium*, *Rhododendron*, etc". Accompanying this tale of his ascent of the mountain, Jack also published detailed botanical descriptions of 132 plants of varied genera, and it is here that his full account of *Rhododendron malayanum*ⁱⁱ can be found. That Jack was able to correctly determine this modest shrub with small, crimson tubular flowers to be a rhododendron at all is quite remarkable as, at that time, the only known Asiatic rhododendron was the tree-like *Rhododendron arboreum* from India with blood-red flowers.

Within months of publishing his work, however, Jack died at the age of only 27 – a victim of the pulmonary tuberculosis he had suffered with for several years combined, according to Raffles, with an acute attack of malaria. Two years later, on February 2nd 1824, as if to compound the tragedy, most of Jack's manuscripts and plant specimens were aboard the S.S. *Fame*, which had barely set out on its return voyage to Europe, when it caught fire and sank off the coast of Bencoolen with the loss of all its precious cargo.

In 1818, Carl Ludwig Blume, a 22 year old medical doctor born in Germany but who spent much of his life in Holland, arrived on the island of Java, which at that time was a Dutch colony. Blume had come to the country wanting to find out about native medicines used on the island and so took up the study of botany. He was soon appointed to the position of Assistant Director at the Botanic Garden at Buitenzorg (now the Bogor Botanic Garden) and four years later he succeeded Caspar Reinwardt as its Director. It was Reinwardt who had overseen the conversion of a large portion of

the grounds of the adjoining presidential palace into a botanic garden, which opened in 1817, for the purpose of cultivating and assessing plants collected from across the Indonesian Archipelago.

Blume was a prolific collector and writer, publishing his findings in *Bijdragen Tot De Flora Van Nederlandsch Indie* (Contributions to the Flora of the Netherlands Indies). It was in Volume 15 of this work that, in 1826, he proposed a new genus *Vireya*, in honour of his friend, the pharmacist Julien-Joseph Virey, at the same time publishing descriptions of five species – *Vireya javanica* (now *Rhododendron javanicum*), *V. alba* (*R. album*), *V. tubiflora* (*R. malayanum*), *V. celebica* (*R. celebicum*) and *V. retusa* (*R. retusum*)ⁱⁱⁱ. Shortly after this Blume returned to Holland, when his position at the gardens was dispensed with due to financial constraints, a few years later becoming Director of the National Herbarium (Rijksherbarium) at Leiden. The concept of a genus *Vireya* was never widely accepted amongst Blume's peers although, as shall be seen later, it was to be some years before it was definitively rejected.

In 1844, Justus Karl Hasskarl, Assistant Curator at Buitenzorg under Johannes Teijsmann, described *Rhododendron citrinum* (Cat. Hort. Bog. 1844. 161). Hasskarl travelled extensively around Java from 1841-3 and found *R. citrinum* on Mt Gedeh in the far west of the island.

The successful collection of even dried botanical specimens was fraught with difficulties for the nineteenth century explorer in south-east Asia. The strenuous physical demands of travelling through hot and humid tropical jungle to reach remote, often mountainous, collecting grounds, not to mention the oft reported truculence of the indigenous populations encountered along the way, who were required to act as guides and porters, must have tested the mettle of even the most adventurous. Once specimens had been collected, there was still the additional hazard of the long sea voyage back to the botanical institutions of Europe where the material was to be examined. All the more remarkable then, that around 1845, Thomas Lobb, working for the famous dynasty of English nurserymen, Messrs James Veitch & Son of Exeter, should introduce the first living *Vireya* material into cultivation.

Thomas Lobb had been employed at the nursery for 13 years when, aged 26, he was selected by James Veitch to go to south-east Asia, an area recommended to Veitch by Sir William Hooker of Kew as likely to yield plants of horticultural interest. Lobb's elder brother, William, had already been working for the Veitch nursery for three years as a plant collector in South America, with great success, however Thomas had never strayed far from his home in the West Country of England and spoke no foreign languages. Undeterred, Lobb signed the following contract dated January 11th 1843^{iv}: "Thomas Lobb agrees to proceed to the British Settlement of Singapore, in the employ of James Veitch & Son as botanical collector, to make collections of living plants, seeds, and dried specimens of plants, and to collect for the said James Veitch & Son and for no other person. The understanding of this agreement is that the said Thomas Lobb's principal destination is to be China, should that country be open to admit a botanical collector, and in the absence of any definite instructions from James Veitch & Son, Thomas Lobb is to use his own discretion and be guided by existing circumstances as to what parts of China he proceeds to, and if on arrival at Singapore he finds circumstances are not favourable for his proceeding to China, he shall be at liberty to proceed to such of the oriental islands as may appear to him most desirable; but next to China the island of Java appearing to offer the greatest advantages to a botanical collector (if facilities offer for exploring the same with safety), he is directed to proceed thither, but it is left to his own discretion."

Upon arrival, Lobb "did not find China ready to receive a botanical collector" and so, his entry refused, set out for Java, only to discover that the paperwork required by the Dutch authorities on the island had not arrived. Using the discretion granted him by Veitch, Lobb sailed to Singapore and immediately set about exploring and collecting in the Malay Peninsula, only some time later returning to Java where he was able to carry on his collecting activities most successfully.

Lobb travelled widely, not only during the period of this contract but also for a second extended term, setting out from England on Christmas Day 1848, arriving in Calcutta the following March. After spending some time in north-east India, Lobb moved on to Moulemein in Lower Burma before returning to his earlier hunting grounds of the Malay Peninsula, North Borneo and the Philippines. In all, Lobb was active in the region from 1843 to 1859 at which

time he was forced to return to England following an accident that resulted in the loss of a leg, thereby ending his career as a plant collector.

Lobb was later to receive glowing praise from James H. Veitch, writing in *Hortus Veitchii* (1906) "... his discrimination equalled his energy, and he sent home but few plants that proved unworthy of cultivation. It is not saying too much to assert that during the long period Lobb collected in the East, British gardens were enriched with more beautiful plants of Indo-Malayan origin than by any single collector of his own or any other time." Adding, "In manner Lobb was modest and retiring, of few words, and it was difficult to get him to describe a plant, but if he ventured on calling it "very pretty", it was quite sufficient to induce extra care."

Amongst the many hundreds of plants Lobb shipped back to his employers were five vireya species – the first of which to be introduced, according to Veitch, was *Rhododendron jasminiflorum*, as seed collected in Malacca in the Malay Peninsula and received at the nursery by 1845. This flowered for the first time in September 1849 and, such was its novelty, was promptly sent for figuring in the *Botanical Magazine* (t.4524, 1850), its editor remarking, "At the first, and truly splendid, exhibition of flowers at the Chiswick Gardens of the present year (1850), few plants excited greater attention among the visitors most distinguished for taste and judgement, than the one here figured, from the nursery of Messrs Veitch of Exeter. Many excelled it in splendour, but the delicacy of form and the colour of the flowers (white with a deep pink eye), and probably their resemblance to the favourite Jessamine (some compared them to the equally favourite *Stephanotis*), attracted general notice. So unlike indeed are they to the ordinary form of *Rhododendron* blossoms that the *Gardeners' Chronicle*, in recounting the prizes of the day, seemed to imply that it was probably no *Rhododendron* at all!"

Next to arrive was *Rhododendron javanicum*, sent by Lobb in 1845, this time from Java. Upon revealing its bright orange flowers for the first time, it, too, was sent for figuring in the *Botanical Magazine* (t.4336, 1847), James Veitch at the time remarking "it is certainly one of the finest things ever introduced to our gardens". The *Gardeners' Chronicle*, with, as shall be seen later, an element of prescience, commented that the plant "promises to be a great

acquisition as well on account of its own intrinsic merit as for the purposes of hybridization.”

Rhododendron brookeanum (now considered a subspecies of *R. javanicum*) followed, collected by Lobb in Sarawak. This flowered for the first time in 1855 and was exhibited in July of that year where it “attracted great attention”. Lobb’s next introduction was *Rhododendron malayanum*, the species originally found by William Jack, collected on Mount Ophir in 1854. The last remaining introduction, from Sarawak in 1861, was named in his honour, *Rhododendron lobbii*, however this name has since been reduced to synonymy under *R. longiflorum*.

These five Lobb introductions were supplemented by a further two *Vireya* species collected by Charles Curtis, who followed in Lobb’s footsteps as Veitch’s collector in the East Indies between 1878 and 1884. *Rhododendron teysmannii* (now another subspecies of *R. javanicum*) was sent from Sumatra and exhibited in March 1885. *Rhododendron multicolor*, also from Sumatra, flowered for the first time at the Veitch nursery on November 2nd 1883. Both the pale creamy-yellow flowered form of this species and the red form, (at that time given the species name *curtisii* in honour of its collector, but since reduced to synonymy), were introduced, although the latter no longer appears to be grown in cultivation today. It was the red form however that was the more widely used in the Veitch’s hybridizing work.

From this group of species, the Veitch nursery produced “by hybridizing and cross-breeding in a variety of ways, several hundred new forms, many, from a horticultural standpoint, exceed the original species in brilliant and varied colours, large size of truss and individual blooms, compact habit of growth, and the ease with which they can be cultivated”. Indeed, no time was lost in attempting to breed from the new arrivals - the first two species received from Lobb were crossed as early as 1850, the beginning of a whole range of so-called ‘javanico-jasminiflorum’ hybrids. Veitch states, “The first hybrid raised was named Princess Royal, the product of a cross between *R. jasminiflorum* (white) and *R. javanicum* (yellow), and the result is remarkable. The flowers of Princess Royal show no trace of yellow, but are of a delicate pink or rose colour. Another hybrid produced later from the same cross, named Jasminiflorum Carminatum, resembles Princess Royal in all but colour, which approaches crimson.”

The man behind many of these cultivars was George Taylor, the nursery's principal hybridist, for whom *Rhododendron* 'Taylori' is named. When Taylor retired, his position was filled by John Heal. According to Veitch, "Heal's great success was achieved when varieties appeared with double flowers, which now constitute what is known as the *Rhododendron balsamaeflorum* hybrids. This section originated by impregnating the stigma of a flower which had one of the filaments slightly petaloid, the others being normal, with the pollen from its own anthers:- self-fertilization. From the seed capsule which resulted, about twenty plants were raised, and when these flowered they were found to produce double or semi-double blooms. The section received the name of *balsamaeflorum* from the resemblance the flowers bore to those of the double flowered Balsams."

Possibly it was the unpredictable outcome of the crosses, made using a relatively restricted gene pool, that stimulated such a large breeding programme. Whatever the reason, it attracted the interest of the Reverend Professor George Henslow, the Royal Horticultural Society's Professor of Botany, who studied the Veitch vireyas and their parentage records, presenting his results in a paper read to members of the Society on 12th May 1891^v. Henslow's genetic study was remarkable for the time, pre-dating the rediscovery and eventual acceptance of Mendel's earlier, disregarded work on peas that later became the basis for the Mendelian Laws of Inheritance.

Despite the large number of hybrids raised by the Veitch nursery, the majority have been lost over the years since the nursery closed its doors in the early 1900s. Of the handful of cultivars still grown today, most, including R. 'Pink Delight', R. 'Ne Plus Ultra' and R. 'Taylori', are considered first-rate plants that compare very favourably with their more recent counterparts – welcome reminders of a pioneering nursery, whose introduction of two of the most outstanding *Vireya* species into cultivation in 1845, did so much to promote this group of plants.

It was in 1848 that Blume's genus *Vireya* was finally, and firmly, rejected. John Lindley, then Vice-Secretary of the Horticultural Society of London, writing in the Society's Journal of 1848^{vi}, states "The four species now described belong to a supposed genus called *Vireya* by Blume, and distinguished from

Rhododendron by the seeds being extended at each end into a slender tail-like process. But this circumstance, the only one that is at all peculiar to the Malay *Rhododendrons*, disappears in *Vireya retusa*, whose seeds are shown by Dr. Horsfield's figure of that plant to be in no respect different from those of *Rhododendron arboreum*. ... Hence we are led to infer that such circumstances are of no generic value, and therefore botanists have universally rejected the genus *Vireya*."

Interestingly, the so-called "tailed seeds" described by Blume are still considered one of the principal defining characteristics of the *Vireya* group (Argent 2006).

Following this dismissal of the idea of a separate genus, the name *Vireya* continued to be used within *Rhododendron*, although its taxonomic rank has see-sawed over the years, starting with Clarke, in the Flora of British India (1882)^{vii}, who first proposed a subgenus *Vireya*. More recently, Sleumer's classification of *Rhododendron* included section *Vireya* (1949, 1960, 1966) however in the latest revision of *Vireya* by Dr George Argent of the Royal Botanic Garden Edinburgh, the taxonomic rank of the group has once again been raised to subgenus (2006).

The four new species Lindley was referring to whilst rejecting Blume's genus *Vireya*, had been brought to him by Hugh Low (later Sir Hugh) in 1847 as dried material collected in Sarawak, Borneo; namely *Rhododendron brookeanum*, *R. gracile*, *R. verticillatum* and *R. longiflorum* (the first two now both considered to be subspecies of *R. javanicum*).

Low had originally been sent to Singapore by his father, Hugh Low Sr., from where he was expected to mount expeditions to the various islands in the surrounding area, particularly Borneo, to collect plants and seed to be sent back to the family nursery business in Clapton, on the outskirts of east London. However, after just a few weeks botanizing in Singapore in late 1844, Low was invited to visit Kuching, Sarawak where he was introduced to Rajah James Brooke. The two men got on well and, over the next two years, Brooke took Low on many of his expeditions into the interior of Sarawak, presenting him with the ideal opportunity to study and collect the local flora. Brooke had gained his title from the Sultan of Brunei several years earlier as reward for helping to suppress a revolt and when the Sultan ceded Labuan (an island 5

miles (8km) off the north-west coast) to the British in 1847, Brooke was appointed Governor of Labuan and Consul General for Borneo. Brooke promptly offered Low the administrative position of Colonial Secretary of Labuan – an offer Low accepted despite the restrictions this would place on his botanical activities. After a short visit home to Britain, Low returned via Singapore (getting married to the Lieutenant-Governor of Singapore's daughter en route following a whirlwind romance) to take up his new role in Labuan. Low remained in Borneo, with only a few short breaks, for the next 28 years before being transferred to the Malay Peninsula to become the British Resident in Perak.

Low was fascinated with the rhododendrons he found, writing in his account of his early years in Sarawak^{viii} that “Perhaps the most gorgeous of the native plants are the various species of the genus *Rhododendron*, which here assume a peculiar form, being found epiphytal upon the trunks of trees, as in the genera of the tribe *Orchidaceae*. This habit, induced probably by the excessive moisture of the climate, is not, however, confined to the Ericaceous plants, but also prevails with the genera *Fagrea*, *Combretum*, and many others, usually terrestrial; the roots of the Rhododendrons, instead of being, as with the species, inhabitants of cold climates, small and fibrous, become large and fleshy, winding around the trunks of the forest trees, the most beautiful one is that which I have named in compliment to Mr. Brooke. Its large heads of flowers are produced in the greatest abundance throughout the year: they much exceed in size that of any known species, frequently being formed of eighteen flowers, which are of all shades, from pale and rich yellow to a rich reddish salmon colour; in the sun, the flowers sparkle with a brilliancy resembling that of gold dust.”

Lindley was equally enthusiastic in his paper about these new rhododendrons, quoting liberally from Low's descriptions and offering many insights of his own. He writes, “It has been suggested to me that these fine plants will not prove cultivable, because they are epiphytes. I cannot concur in this opinion. The mode of managing epiphytes is now so well understood, in respect to Orchids and Bromelworts, that even if it should be necessary to treat the Malay Rhododendrons in the same manner, no serious difficulty can be apprehended. Blume tells us that the Java species are mostly “parasitical on trees”, that is to say epiphytes; and yet

the *Rhododendron javanicum* is as manageable as *Rhododendron arboreum*.

“The probability however is, that they do not require to be treated as epiphytes, and that, like orchids, they will grow better if committed judiciously to the earth. ... It is quite conceivable that they may have taken refuge in Borneo in the branches of trees, because of the impossibility of establishing themselves in the marshy soil of a country frequently under water for long periods at a time: and there is nothing in the nature of things to render it improbable that the saturated air may yield them all the food they require in a country visited by incessant thunderstorms, which deposit large stores of nitrogen upon every branch and every leaf.

“In this view of their nature, it may be conjectured that the Malay Rhododendrons will grow under the usual treatment of a damp stove, provided the soil in which they are potted is chiefly composed of loose decayed vegetable materials, such as half and wholly rotten leaves and sticks. It will also be important to consider whether in resting them, it will be requisite to do more than slightly lower their temperature, and diminish, without withholding, the moisture which they appear to require. From the statements of Mr Low, it would appear that *Rhododendron gracile* is perpetually in bloom, a circumstance that leads to the inference that a season of rest must be almost unknown to it.”

Much of what Lindley wrote all those years ago still holds true today - his suggestion of an open, free-draining but moisture retentive growing medium, containing a high proportion of organic matter, has been found to be perhaps the most important requirement for growing vireyas successfully. Lindley was also correct in predicting that vireyas will grow equally well in the ground or in a pot (given the correct growing medium), as they will when growing as epiphytes on the branches of trees. As for the requirement of a “damp stove” ... suffice to say the majority of vireyas will be happy growing in a temperature range of 7 to 24 degrees C (45 to 75 degrees F), although a few degrees either side for a short period should not present a problem.

Low’s diplomatic role as Colonial Secretary required him to travel widely across the country which, fortunately, allowed him to still pursue his botanical interests to some extent. It was not long before Low conceived the idea of climbing Mount Kinabalu –

perhaps lured by its distant presence, tantalisingly visible from the shores of Labuan. At 4,095 metres (13,435 feet), Kinabalu is one of the highest peaks in south east Asia, surpassed by few, most notably Puncak Jaya (formerly known as the Carstensz Pyramid) in the Indonesian Province of Papua (previously Irian Jaya) at 4,884 metres (16,023 feet). To put Low's venture into perspective it should be noted that at the time of his expedition, there were only four mountains across the globe of greater height than Kinabalu, whose conquest had been documented.

According to Low's account of the expedition^{ix}, he set out with his party in a native prahu from the shores of Labuan on February 21st 1851 and, upon reaching the mainland, travelled up the Kimanis and Tuaran rivers until they reached Bawang on March 3rd. From there they continued overland towards the mountain, on the 6th, Low commenting "We had several fine views of Kina Balow to the east of us today. It appears of an intense blue colour, and through the spy glass its indented top is perfectly bare of vegetation, appearing to be inaccessible buttresses with very narrow ridges running up the mountain ...", adding, the following morning "... notwithstanding the great fatigue of the preceding day determined to push on towards the great mountain, which now appeared only 2 or 3 miles distant."

It is on March 8th, by then on the lower slopes of the mountain, that Low first mentions a vireya – "I picked up also ... a flower of a very fine Epiphytal *Rhododendron*. It had fallen from some plant above and was of amazing size, the limb being salmon coloured and the tube and centre yellow – a long search for the parent plant was not crowned with success." From the description and relatively low altitude, it is probable this was *R. javanicum* ssp. *kinabaluense*.

Several other species of *Rhododendron* are recorded during the ascent, including *R. lowii*, *R. buxifolium* and *R. ericoides* on March 10th – "As rest was necessary for my men, and as it was impossible to proceed until our route should be first explored, I determined to devote this day to the collection of such seeds as might be in perfection, and examining the plants in the surrounding ravine. One of the most conspicuous was a large *Rhododendron*, with a trunk 9 inches in diameter, and with fine majestic foliage, crowned with tresses of flowers of a yellow or orange or salmon colour, for they varied. Another grew immediately behind my hut, on the edge of a basin into which a cascade rushed. This species

had verticillate box shaped leaves, about 1 ½ inch long, was of rather slender habit, but covered with the most gorgeous flowers of a deep crimson colour. The comparatively large flowers of this species and its neat foliage render it the most brilliant I know of the genus. A less pretending, but not less interesting relative of this last, was one with linear leaves and red tubular flowers about an inch long, in all respects so precisely resembling some of the African Ericas, that I had some difficulty in persuading myself that it was not one; it formed a bush about 4 to 6 feet high.”

Low set out the following morning for the final push to the summit, his journal for March 11th recording, “Finally, after innumerable rests we reached the base of the one of the jagged peaks of the hill. The base of another, which appeared about two hundred feet higher and was situated about 500 yards to our left, seemed inaccessible, but the rising mists from the valleys forced me to make for the nearest, which we attained about noon. Instead of something like a table land which I had expected to find, on the summit of this part of the mountain was a sharp ridge not 6 inches broad. On placing my breast against it and looking over the ridge, I gazed into a circular amphitheatre about 80 yards broad, the bottom of which, from its great depth and my position overhanging it, was undiscernable, though I imagine I could see down two thousand feet. All its sides were overhanging precipices, except that opposite my position, where I could see a sea line of clouds through a rent or opening in the rocks looking northwards. I found the jagged summits of the hill to consist of thin fragments of syenitic granite, with sharp water worn edges of most fantastic shapes, my position was between the bases of two of them – they were about 150 feet above my head. I could not long remain admiring the majestic scene around me, for the frightfully dangerous position we had passed in the ascent, made me quite alive to the rapid lifting of the clouds from the valleys which I knew would conceal everything from our view, and caused me, immediately after having finished a bottle of excellent Madeira to Her Majesty’s health and that of my far distant friends, and deposited the bottle turned upside down with a paper in it in a conspicuous place, to read off the barometer and hastily begin my descent.”

Low made two later attempts to climb Kinabalu, in April and July 1858, both with Spenser St. John, a kindred spirit and at that time the British Consul-General in Brunei (also appointed by James

Brooke). Their first attempt ended in failure for Low who had to be carried down the mountain suffering from severe blisters on his feet, however, St. John continued to the summit area where he found Low's empty Madeira bottle from seven years earlier^x. Both men returned just three months later and together once again reached the summit area – St John climbing the smaller of the two peaks at the very summit. Neither man climbed the other, slightly higher peak a short distance away but nevertheless it seems most apt that the two peaks at the summit of Mount Kinabalu are today still known as Low's Peak and, four metres (13 feet) shorter at 4,091m (13,423 feet), St. John's Peak.

In between the two successful ascents of Kinabalu by Low, an attempt to climb the mountain was made by Thomas Lobb in 1856, under instruction from James Veitch. Veitch was keen to obtain specimens for his nursery of some of the many orchid and pitcher plant species, particularly the magnificent *Nepenthes rajah*, of which he had heard reports. The introduction of exotic new plants from these far flung lands was a highly competitive business, success doing much to enhance the reputation of a nursery (less so, the collector); bringing also a substantial financial benefit from the sale of these rarities, many exchanging hands for large sums. Lobb's plans, however, were thwarted by the local tribes-people, James H. Veitch, later writing in *Hortus Veitchii* that "Thomas Lobb, the most successful of all Eastern plant-hunters, also endeavoured to find the habitat of these plants (*Nepenthes rajah*) in 1856, and had actually reached the foot of the mountain on which they grew, but was prevented by the hostility and extortion of the natives from completing the ascent."

Low's attempt of April 1858 encountered similar difficulties when the inhabitants of Kiau, the village at the foot of Kinabalu from where the expeditions set out, refused his party access to the mountain, claiming his earlier presence on the summit had angered their deities, resulting in poor harvests. The normally benevolent Low, despite being heavily outnumbered, on this occasion felt it necessary to threaten the native chief with the use of force before being allowed to proceed peacefully.

According to Beaman (in Chin 2004), during the course of his 1851 and 1858 Kinabalu expeditions, Low collected specimens of 79 species across 61 genera. This included nine species of *Rhododendron* – in increasing altitudinal order, *R. javanicum* ssp.

brookeanum, *R. crassifolium*, *R. fallacinum*, *R. stenophyllum*, *R. rugosum*, *R. lowii*, *R. acuminatum*, *R. buxifolium* and *R. ericoides* - a greater number than any other plant group, seemingly confirming his attraction to this genus.

Whilst Low undoubtedly had a consuming interest in plants, at no point did he attempt to write up any of the material he collected, preferring to leave that to the leading botanists of the day. Low's specimens were studied by Sir William Jackson Hooker, then Director of the Royal Botanical Gardens, Kew, who published descriptions of five species collected on Low's first expedition to Kinabalu in *Icones Plantarum*^{xi} (*R. lowii*, *R. rugosum*, *R. acuminatum*, *R. ericoides* and *R. buxifolium*). The remaining collections were later included in Otto Stapf's classic work, *On the Flora of Mount Kinabalu in North Borneo*^{xii}. Many of Low's original dried specimens are still to be found today in the herbarium of the Royal Botanic Gardens, Kew.

While Low had been in Sarawak, Joseph Dalton Hooker, son of Sir William Hooker, had been botanizing across the Himalayan region. In 1848 Hooker found *Rhododendron vaccinioides*, at Lachen, in the Sikkim-Himalaya^{xiii} – one of the few outlying species of *Vireya* found outside *Malesia*.

The Dutchman, Johannes Elias Teijsmann became Curator of the Botanic Garden at Buitenzorg in 1831, having come to Java the previous year as gardener to Johannes van den Bosch, the newly appointed Governor-General of the island. Teijsmann held the position of Curator until his retirement in 1869 during which time he made numerous botanical excursions, exploring not only Java, extensively, but also spending time on practically all of the other island groups in the region. It is said that such was his enthusiasm for his work, that the restriction he should never be away on tour for more than six months at a time had to be placed upon him.

It was during his 1857-8 tour of the Lampong District of western Sumatra that Teijsmann found three new species of *Rhododendron* that were later published by the Dutch botanist Friedrich Anton Wilhelm Miquel of the Amsterdam botanic gardens (Fl. Ind. Bat. 1860 Suppl.1). *Rhododendron lampongum* was found on Mt Radja Bassa, while *Rhododendron multicolor* and *Rhododendron teysmannii* were collected on Mt Singalang, the latter named for its collector but now considered a subspecies of

R. javanicum. (The spelling 'Teysmann' is often seen in the literature, although he always used the traditional 'ij' rather than 'y' when spelling his name).

In 1865, one of the great naturalists of the era, Odoardo Beccari, set out to explore Sarawak. Born in Florence, Italy, in 1843, Beccari was orphaned at the age of six and taken into the care of his maternal uncle. At the age of ten he was sent to school in the nearby town of Lucca where his education was overseen by Abbé Ignazio Mezzetti, a keen natural historian and, later, by Professor Cesare Bicchi, Director of the Lucca Botanic Garden, whose teachings were to have a lifelong influence on their pupil. Beccari started collecting plants aged only 13, and at 17 wrote his first professional paper – an account of a botanical excursion published in a local newspaper. It was during one such trip that Beccari discovered a new species of Tulip growing in the hills of Tuscany – published by his Professor in 1860, as *Tulipa beccariana*, in recognition of his outstanding student. Beccari went on to study botany at the University of Pisa, where he excelled to such an extent that he was appointed assistant to his Professor while still an undergraduate, before moving on to the University of Bologna to complete his degree in Natural Sciences in July 1864.

After graduating, Beccari decided he wanted to explore Sarawak but first elected to travel to London to visit the Royal Botanic Gardens at Kew and the British Museum, to examine their collections in preparation for the expedition. While in London, he met William Jackson Hooker and his son Joseph Dalton Hooker, also Charles Darwin and, by good fortune, the Rajah of Sarawak, James Brooke, who, upon hearing of Beccari's plans, offered his assistance.

Beccari sailed from Southampton, England in April 1865, bound for Kuching, Sarawak, joined en route by his friend and fellow naturalist the Marquis Giacomo Doria, whom he had met whilst studying at Bologna. While his companion stayed only a matter of months in Sarawak before ill health forced his early departure, Beccari stayed for three years, amassing a comprehensive collection of seemingly all living things he encountered, from insects, to birds, to orang-utans and, naturally, a vast array of plants – over 4,000 botanical specimens. In January 1868, Beccari was himself forced to return to Italy following a severe attack of fever.

Back in Florence, Beccari focused on curating and studying the material he had collected, publishing his findings in several botanic journals. The following year he established the *Nuovo Giornale Botanico Italiano* (New Italian Botanical Journal), which, as editor, he subsequently used to publish both his own and other botanists work.

In 1870, Beccari spent a few months in Ethiopia before again setting out for the East Indies in November 1871, this time in the company of another famous Italian explorer, Luigi Maria D'Albertis. Within a year, however, Beccari was again on his own as D'Albertis was obliged to leave for Sydney, Australia, to recuperate following illness. Beccari spent nearly five years travelling extensively in the region, exploring many of the island groups of Indonesia – including Java, where he spent time at Buitenzorg, Celebes, Flores, Timor and the Moluccas. He also made two pioneering excursions into New Guinea, one of the first Westerners to set foot in the country, preceded most notably by Alfred Russell Wallace who had set up camp at Dorey, on the north-west coast of the island, for three months in 1858. On the first of these occasions, in 1872, Beccari was accompanied by D'Albertis, who recorded the expedition, together with his own later epic journey following the Fly River a distance of 580 miles into the interior, in his book *New Guinea: What I Did and What I Saw*^{xiv}.

After a much-feted return to Florence in 1876, Beccari made one final voyage the following year, visiting India, Malaysia, Australia and New Zealand, before returning briefly to Kuching from where he moved on to Sumatra, here again making extensive collections.

Beccari eventually settled in Florence and resumed publication of his botanical collections, this time in *Malesia*^{xv}, a three volume compendium he produced in parts between 1877 and 1890. Later, with the encouragement of the Ranee Margaret of Sarawak, wife of Charles Brooke the second Rajah of Sarawak (son of Sir James Brooke), Beccari was persuaded to write a more general account of his time in Borneo - *Nelle Foreste di Borneo, viaggi e ricerche di un naturalista* (*In the Forests of Borneo, the voyages and research of a naturalist*) (Firenze, 1902) – a translated edition in English following soon after.^{xvi}

It is in the first volume of *Malesia* that Beccari's collections of *Rhododendron* are recorded. Here he lists a total of 15 species collected during his time in south-east Asia, with descriptions of nine new species of *Vireya* including five from Borneo – *Rhododendron durionifolium*, *R. salicifolium*, *R. subcordatum* (now a subspecies of *R. longiflorum*), *R. velutinum* (now a synonym of *R. verticillatum*) and *R. variolosum* (now considered to be of hybrid origin). The remaining four new species were found in the Arfak Mountains of New Guinea – the first to be described from this island – *Rhododendron konori*, *R. papuanum*, *R. arfakianum* and *R. hatamense*.

Beccari's account also includes a useful summary of all the *Vireya* species known at the time of publication in 1878 – a total of 27 species of which 21 are still valid today, 4 are now considered to be subspecies or varieties, one has been sunk in synonymy and one a hybrid (Argent 2006). Several of these species had by this time been found in more than one location, Beccari recording five species from Java, seven from Sumatra, fifteen from Borneo, four from New Guinea and one each from the Celebes and Malacca.

The known distribution of the *Vireya* group was extended soon after with the discovery, in February 1882, of *Rhododendron apoanum* and *R. kochii* on Mt Apo on the island of Mindanao in the Philippines. Found by the German ethnologist Dr Alexander Schadenberg, who made both botanical and entomological collections in the course of several visits to the Philippines, on this occasion accompanied by his nephew Otto Koch, the two species were later described by Stein in *Gartenflora* (1885).

The following year, the Spanish botanist, Sebastian Vidal y Soler, published a list of six species of *Rhododendron* found in the Philippines^{xvii} – *R. apoanum* and *R. kochii*, already mentioned, plus *R. javanicum*, *R. quadrasianum*, *R. rosmarinifolium* (now a variety of *R. quadrasianum*) and *R. verticillatum*. The last mentioned species was soon after renamed *R. vidalii* by R.A. Rolfe (*J. Bot.* 24 (1886)) when it was recognized that the original name was already in use for the Bornean species found by Low on Mt. Penrissen and described by Lindley in 1848.

In 1887, the range of the *Vireya* group was further extended with the discovery of the Australian endemic species, *Rhododendron lochae* (now *R. lochiaae*), collected on the summit of Mt Bellenden-

Ker (1,593m / 5,226 ft) in Queensland, by the naturalist W.A. Sayer and his friend A. Davidson. In his account of the ascent^{xviii}, Sayer comments, “The top of the range is razor-backed, and on travelling along the range beyond the spur by which we ascended, I could not see the sides, they being, if anything, hanging over. We tumbled rocks over, but could not hear them fall. It was here that I observed the *Rhododendron Lochae* growing, and asked the Kanaka to get it; but he remarked, “S’pose I fall, I no see daylight any more; I go bung altogether;” so I had to get it myself.”

For many years *Rhododendron lochiaie* was considered to be the sole species of *Rhododendron* in Australia until, in 1992, a plant with curved, rather than straight, corolla tubes was found in cultivation. Examination of the original herbarium material, described by Baron Ferdinand von Mueller (Vict. Nat. 1887. 3:157), revealed it was of the curved corolla form, whilst it was the straight corolla form that was widely grown in cultivation and had been used extensively in hybridizing. An application was made under the provisions of the International Code for Botanical Nomenclature to conserve the name *R. lochiaie* for the straight corolla form (Craven in Taxon 45: 135-6. 1996), although this was unfortunately later rejected. In anticipation of the application being accepted, however, a “new” species name, *Rhododendron notiale*, had been published for the original curved corolla form, first described by von Mueller (Edin. J. Bot. 1996. 53(1): 33). When this did not come to pass, *R. notiale* was sunk under subordinate synonymy into *R. lochiaie*. As such, the curved corolla form remained as *R. lochiaie* while the more widely grown straight corolla form was given the name *Rhododendron viriosum* (Edinb. J. Bot. 2002. 59(3): 448). It should therefore be noted that all references to *R. lochiaie* in the literature before 2002 will almost certainly be referable to *R. viriosum*, including the many cultivars with this species in their parentage, rather than the plant described by von Mueller.

Later in 1887, Baron von Mueller described another new species – *Rhododendron carringtoniae* – found on Mount Obree in the Central Province of what was then British New Guinea. This species was also collected by Sayer, this time with Walter R. Cuthbertson, leader of the expedition (and after whom the exquisite *Dendrobium cuthbertsonii* is named), organised by the Victorian Branch of the Royal Geographical Society of Australasia.

In the years since Beccari and D'Albertis spent time in New Guinea in the 1870s, a number of other explorers had been drawn to the island, although very few had ventured far inland. As the potential wealth of the country became apparent, the interest of the colonial powers which were already established in the East Indies was roused, eventually leading to this vast island being split between the Dutch, German and British empires.

Indeed, it was Germany's desire to cement its presence in the country that brought about the Finisterre Expedition to New Guinea in 1888, led by the journalist and explorer Hugo Zöller, accompanied by Franz Carl Hellwig, Botanist of the German New Guinea Company. Zöller's position as Chief Foreign Correspondent for the *Kölonische Zeitung* newspaper, combined with his proven track record as an explorer, having already travelled in South America and reported from the fledgling German Protectorates of Togo and Cameroon in west Africa, ensured his selection for the proposed expedition to the Finisterre Mountains in the north-east of the island – Kaiserwilhelmsland – where a number of German settlements had been established on the coast.

The party set out in early October 1888 and successfully scaled the Finisterre Range (4,125 m / 13,533 ft) from where they were able to observe an even higher range of mountains further inland. This they named the Bismark Range, after the German Chancellor, and its four principal peaks for Kaiser Wilhelm's four children – Ottoberg, Herbertberg, Mariaberg and Wilhelmberg, the latter being the highest mountain in what is now Papua New Guinea (the eastern half of the island) at 4,509 m (14,793 ft) and second only in the region to Puncak Jaya in Indonesian Papua.

The plant collections made during the ascent of the Finisterre Range were studied by the respected botanist Otto Warburg and included five new species of *Rhododendron* – *R. yelliottii*, *R. hansemannii* (now *R. macgregoriae*), *R. herzogii*, *R. hellwigii* and *R. zoelleri* – their descriptions published in 1892 (Bot. Jahrb. 16). The first two were named for members of the expedition, Herr Yelliott and Herr Hansemann, the third after Th. Herzog, a missionary in the area, and the remaining two after the botanist and the leader of the expedition, respectively.

Upon his return to Germany, Zöllner published an illustrated book about his time in New Guinea, including an account of the ascent of the Finisterre Range^{xix}.

In the same year as the Finisterre Expedition, the Scot, William MacGregor (later Sir William), was appointed Administrator of the British Crown Colony of New Guinea. MacGregor was a doctor by profession and had spent the previous fifteen years in the Seychelles, Mauritius and Fiji, working his way up from assistant medical officer to acting Governor. In 1875 he was called upon to deal with an outbreak of measles amongst the native Fijian population that claimed 50,000 lives. It was Macgregor's experience with the people of these islands that led to his appointment in New Guinea in June 1888. For the next decade Macgregor travelled widely across his domain, for the purpose of both exploration and in an effort to establish peace between the numerous warring tribes with their penchant for head-hunting – with remarkable success on both counts.

One such expedition, in April 1889, set out from Port Moresby, the capital town of British New Guinea situated on the south-east coast of the territory. MacGregor hoped to find a suitable route by river that would take his party towards the great Owen Stanley Range in the distant interior, some 75 km (46 miles) to the north-west. The existence of the mountains had been recorded by Captain Owen Stanley forty years earlier, while surveying the southern coast, but they had not been scaled due to the hostility of the local population. Not only was the party successful in charting a route over 60km (40 miles) up the Vanapa River towards their goal but MacGregor decided they would continue on to the mountains.

Supplies refreshed, the party set out, MacGregor commenting: “all told, forty-two persons: four Europeans including myself, George Belford (a Samoan half-caste, a man of excellent character and well acquainted with this country, who proved of the greatest use to me), five Polynesians, and thirty-two Papuans.”^{xx} Over the next three weeks they spent time on eight mountains in the range, including Mt Belford (to its summit), Mt Musgrave (to over 2,400m / 8,000ft) and Mt Knutsford (to its summit, 3,383m / 11,100ft) before finally conquering Mt Victoria, the highest mountain in the range at 4,072 m (13,360ft). Until that time the mountain had been referred to simply as the ‘Great Mountain’ but MacGregor used the

opportunity to formally name it in honour of Queen Victoria, the British monarch at the time.

MacGregor regularly collected the flora and fauna of the areas he explored, sending many of his botanical specimens to Melbourne, Australia for the attention of Baron Ferdinand von Mueller, the respected German born botanist, who had emigrated to Australia many years earlier. In a paper published soon after the expedition^{xxi}, von Mueller describes six new species of *Vireya*, of which five are still valid – *Rhododendron gracilentum* and *R. phaeochitum*, collected on Mt Musgrave, *R. spondylophyllum* from Mt Knutsford, *R. culminicolum* (now *R. culminicola*) from Mt Victoria and *R. leptanthum* (location within Owen Stanley Range unspecified).

Two years later, von Mueller received one further specimen of *Rhododendron* from MacGregor, which he named in his honour – *Rhododendron macgregoriae* (J. Bot. 1891. 29:177) - collected on the summit of Mt Yule (3,276m / 10,750ft) by George Belford, who for over twenty years accompanied numerous expeditions across New Guinea, including many undertaken by MacGregor.

In 1894, Otto Stapf published his monumental work *On the Flora of Mount Kinabalu in North Borneo* – the first flora of the mountain to be compiled. Born in Upper Austria in 1857, Stapf received his botanical training at the University of Vienna where, after graduation, he became assistant to the Professor of Botany (1882-1889). In 1890, Sir William Thiselton-Dyer, Director of the Royal Botanic Garden at Kew, offered Stapf a position in the herbarium there as Assistant for India, which he accepted, later going on to become keeper of the Kew Herbarium (1909-1922).

One of Stapf's earlier tasks in the herbarium at Kew was to identify a large consignment of plants collected on Mt Kinabalu in 1892 by Dr. George Darby Haviland, a medical officer of the Sarawak government and keen naturalist. In a little over two years, Stapf worked up the material, numbering over 400 taxa, made a phytogeographical analysis of the flora, dividing the mountain into four zones of altitude based on the type of vegetation to be found, and published his findings, *On the Flora of Mount Kinabalu in North Borneo*, in the Transactions of the Linnean Society of London (1894).

Stapf's paper lists twelve species of *Rhododendron* found on the mountain, including those of Hugh Low from 1851 and 1858 with formal descriptions of Low's collections of *Rhododendron crassifolium* and *R. stenophyllum*, together with a further two new species, *R. cuneifolium* and *R. lacteum*, collected by Haviland. Unfortunately, the name *R. lacteum* had already been used by Franchet in 1886 to describe a plant from Yunnan, China, resulting in the Haviland specimen later being published under the name *R. stapfianum* (Bot. Mag. 1911, t.8372).

In 1895 the botanist Frederic Manson Bailey published *Rhododendron armitii* (Bot. Bull. Queensl. Dep. Agr. 1895. 10: 39), from material collected on the summit of Mt Dayman (2,710m / 8,890ft) in Milne Bay Province the previous year. The species was found by William Edington de Margrat Armit, a Belgian by birth, who had emigrated to Australia over twenty years earlier and was at that time private secretary to William MacGregor. Armit had led the failed *Argus Expedition* of 1883 (sponsored by the Melbourne *Argus* newspaper) that had attempted to cross from Port Moresby to Dyke Acland Bay, thereby traversing the south-eastern peninsula of the island, but his party was forced by illness to turn back.

Also in 1895, the English ornithologist and botanical collector John Whitehead set out for Luzon in the Philippines. Prior to this Whitehead had scaled Mt Kinabalu in Borneo – the first person to successfully reach the summit area since Hugh Low and Spenser St John thirty years earlier - climbing the true summit, Low's Peak, on February 11, 1888. Whitehead's Philippine specimens were sent to the British Museum in London, from where the botanist Alfred Barton Rendle published *Rhododendron whiteheadii*, collected on Mt Polis (J. Bot. 1896. 34: 356).

The final species of *Rhododendron* subgenus *Vireya* to be published before the turn of the century was *Rhododendron comptum*, described by C.H. Wright, assistant keeper at the Kew Herbarium, in 1899, from material collected by the Italian, Amadeo Giulianetti three years earlier. Giulianetti first came to New Guinea in 1889 in the company of the explorer ethnologist, Lamberto Loria, and returned once more in 1896 when he joined an expedition with Sir William MacGregor who subsequently appointed him Travelling Government Agent responsible for collecting items of natural history. In 1901, while Government

Agent for Mekeo district, Giulianetti was shot in the course of his duties.

As the nineteenth century drew to a close the popularity of the *Vireya* group started to wane, for many growers their place in the glasshouse becoming second to that of the new orchid introductions. Their fall from favour was hastened by the influx of new hardy species of *Rhododendron* from western China and the Himalayan region. Even the Veitch nursery refocused its attention on this new frontier, in 1905 sending E.H. 'Chinese' Wilson to investigate, who within two years had collected over forty new species – the majority having the added attraction of not requiring a heated glasshouse.

In the early decades of the twentieth century, and not without a degree of irony, it was as a result of the increased activity of plant collectors in south-east Asia responding to the new found popularity of the orchid, that an increasing number of new species of *Vireya* were found. Many of these were described by botanists Friedrich Schlechter and Johannes Jacobus Smith whose work was generally more associated with Orchidaceae. While work on *Vireya* by botanists and taxonomists continued, only modest numbers of plants were being growing in cultivation.

In 1949, Professor Hermann Sleumer, published a new classification of *Rhododendron*, 'Ein System der Gattung *Rhododendron* L.' (Bot. Jahrb.74: 511-533), a few years later starting work on a revision of the genus for *Flora Malesiana*. After examination of all the material that had been received either side of World War II, but which had yet to be described, Sleumer published 122 new species of *Vireya* (Reinwardtia 5: 1-230, 1960). This was followed in 1966 by his classic account of the genus in *Flora Malesiana*,^{xxii} published as an extract soon after under the title *An Account of Rhododendron in Malesia* (Noordhof, 1966). This detailed 288 species of *Rhododendron* within the Malesian region, the vast majority belonging to section *Vireya*, and was to become the unsurpassed reference work of the next forty years.

Sleumer's work stimulated a new wave of interest in the *Vireya* group which has steadily increased over the last fifty years, as enthusiasts have found many species amenable to cultivation in their greenhouse or garden. As access to the Malesian region has become easier, so the number of species grown in cultivation has

risen; currently around 180 species, of which over a hundred are commercially available – enough to satisfy even the most enthusiastic grower. Around thirty new species have been described by botanists since Sleumer and many hundreds of new cultivars have been raised, mostly by enthusiasts. Overall, the future of the *Vireya* in the 21st Century looks set to continue blooming.

From the time *Rhododendron malayanum* was published in 1822 until the end of the nineteenth century, a total of 46 species of *Vireya*, plus subspecies and varieties, in the modern concept, were described.

Species Name	Date Published
<i>R. malayanum</i> Jack	1822
<i>R. album</i> Blume	1823
<i>R. celebicum</i> (Blume) DC.	1826
<i>R. javanicum</i> (Blume) Benn.	1838
<i>R. retusum</i> (Blume) Benn.	1838
<i>R. citrinum</i> (Hassk.) Hassk.	1844
<i>R. javanicum</i> ssp. <i>brookeanum</i> (Low ex Lindl.) Argent, A.Lamb & phillipps	1848
<i>R. javanicum</i> ssp. <i>gracile</i> (Lindl.) Argent, A.Lamb & Phillipps	1848
<i>R. longiflorum</i> Lindl.	1848
<i>R. verticillatum</i> Low ex Lindl.	1848
<i>R. jasminiflorum</i> Hook.	1850
<i>R. vaccinioides</i> Hook.f.	1851
<i>R. acuminatum</i> Hook.f.	1852
<i>R. buxifolium</i> Low ex Hook.f.	1852
<i>R. ericoides</i> Low ex Hook.f.	1852
<i>R. lowii</i> Hook.f.	1852
<i>R. rugosum</i> Low ex Hook.f.	1852
<i>R. javanicum</i> ssp. <i>teysmannii</i> (Miq.) Argent	1860
<i>R. lampongum</i> Miq.	1860
<i>R. multicolor</i> Miq.	1860
<i>R. durionifolium</i> Becc.	1878
<i>R. longiflorum</i> Lindl. var. <i>subcordatum</i> (Becc.) Argent	1878
<i>R. salicifolium</i> Becc.	1878
<i>R. arfakianum</i> Becc.	1878
<i>R. hatamense</i> Becc.	1878
<i>R. konori</i> Becc.	1878
<i>R. papuanum</i> Becc.	1878
<i>R. apoanum</i> Stein	1885
<i>R. kochii</i> Stein	1885
<i>R. quadrasianum</i> S.Vidal	1886

<i>R. quadrasianum</i> var. <i>rosmarinifolium</i> (S.Vidal) H.F.Copel.	1886
<i>R. vidalii</i> Rolfe	1886
<i>R. lochiae</i> F.Muell.	1887
<i>R. carringtoniae</i> F.Muell.	1887
<i>R. culminicola</i> F.Muell.	1889
<i>R. gracilentum</i> F.Muell.	1889
<i>R. leptanthum</i> F.Muell.	1889
<i>R. phaeochitum</i> F.Muell.	1889
<i>R. spondylophyllum</i> F.Muell.	1889
<i>R. macgregoriae</i> F.Muell.	1891
<i>R. hellwigii</i> Warb.	1892
<i>R. herzogii</i> Warb.	1892
<i>R. yelliotii</i> Warb.	1892
<i>R. zoelleri</i> Warb.	1892
<i>R. crassifolium</i> Stapf	1894
<i>R. stenophyllum</i> Hook.f. ex Stapf	1894
<i>R. lacteum</i> Stapf (now <i>R. stapfianum</i> Hemsl. ex Prain)	1894
<i>R. cuneifolium</i> Stapf	1894
<i>R. armitii</i> F.M.Bailey	1895
<i>R. whiteheadii</i> Rendle	1896
<i>R. comptum</i> C.H.Wright	1899

ⁱ Jack, William. *Memorandum of a Journey to the Summit of Gunong Benko, or the Sugar Loaf Mountain, in the Interior of Bencoolen: 1821*. In *Malayan Miscellanies Vol.II* Bencoolen: Sumatran Mission Press 1822.

ⁱⁱ Jack, William. *Descriptions of Malayan Plants*. In *Malayan Miscellanies Vol.II* Bencoolen: Sumatran Mission Press 1822.

ⁱⁱⁱ Blume, Carl Ludwig *Bijdragen Tot De Flora Van Nederlandsch Indie* Vol.15: 854-856. Batavia: Lands Drukkerij 1826.

^{iv} Veitch, James H. *Hortus Veitchii – a history of the rise and progress of the nurseries of Messrs James Veitch and Sons, together with an account of the botanical collectors and hybridists employed by them and a list of the most remarkable of their introductions*. James Veitch & Sons, London 1906.

^v Henslow, George. *Hybrid Rhododendrons*. Journal of the Royal Horticultural Society 1891 Vol. 3: 240-283.

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- ^{vii} Clark, C.B. in Hooker, J.D. *Flora of British India* 3: 462 London: L. Reeve & Co. 1882
- ^{viii} Low, Hugh. *Sarawak: Its Inhabitants and Productions: Being Notes During a Residence in that Country with His Excellency Mr. Brooke*. London: Bentley 1848
- ^{ix} Low, Hugh. *Notes of an Ascent of the Mountain Kina-Balow*. Journal of the Indian Archipelago and Eastern Asia. Vol. 6: 1-17, 1852
- ^x St. John, Spenser. *Life in the Forests of the Far East: Or, Travels in Northern Borneo*. London: Smith, Elder & Co. 1862 (2 vols)
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- ^{xii} Stapf, Otto. *On the Flora of Mount Kinabalu*. Transactions of the Linnean Society of London, 2nd Ser. Bot. Vol. IV, 69-263, 1894
- ^{xiii} Hooker, Joseph Dalton. *The Rhododendrons of Sikkim-Himalaya, being an Account, Botanical and Geographical of the Rhododendrons recently discovered in the Mountains of Eastern Himalaya, from Drawings and Descriptions made on the Spot, during a Government Botanical Mission to that Country*. London: Reeve, Benham & Reeve. 1849-51 (3 vols)
- ^{xiv} D'Albertis, Luigi Maria. *New Guinea: What I Did and What I Saw*. London: Sampson Low, Marston, Searle & Rivington. 1880 (2 vols)
- ^{xv} Beccari, Odoardo. *Malesia; raccolta di osservazioni botaniche intorno alle piante dell'arcipelago Indo-Malese e Papuano*. (3 vols) Genova, Roma, Firenze. 1877-1890
- ^{xvi} Beccari, Odoardo. *Wanderings in the Great Forests of Borneo*. London: Archibald Constable & Co. 1904
- ^{xvii} Vidal y Soler, Sebastian. *Revision de Plantas Vasculares Filipino*. Manilla, 1886

^{xviii} Sayer, W.A. *First Ascent of Mount Bellenden-Ker*. The Victorian Naturalist 4: 37-44, 1888

^{xix} Zoller, Hugo. *Deutsch-Neuguinea und Meine Ersteigung Des Finisterre-Gebirges*. Stuttgart: Union Deutsche Verlagsgesellschaft. 1891

^{xx} MacGregor, William. *Journey to the Summit of the Owen Stanley Range, New Guinea*. In Proceedings of the Royal Geographical Society and Monthly Record of Geography. New Monthly Series, Vol.12, No.4. 1890, pp.193-223.

^{xxi} Mueller, Ferdinand Baron von. *Records of Observations on Sir William MacGregor's Highland Plants from New Guinea*. In Transactions of the Royal Society of Victoria 1(2) 1889

^{xxii} Sleumer, Hermann. *Flora Malesiana Ser.I, vol. 6, part 4*. 1966

An Early History of Vireya – Photographs & Illustration

All photos by Chris Callard unless otherwise noted.



Rhododendron armitii



Rhododendron apoanum



Rhododendron verticillatum
(Richard Currie)



Rhododendron konori
(Richard Currie)



Rhododendron macgregoriae



Rhododendron crassifolium
On Mt. Alab, Crocker Range, Sabah, Borneo
(Eric Annal)



Rhododendron jasminiflorum



Rhododendron javanicum ssp. *kinabaluense*
In the Peat House at the RBG, Edinburgh



Rhododendron zoelleri 'Decimus'
(P. & J. Adams, White Cloud Nursery)



Rhododendron lochiai



Rhododendron celebicum
(Richard Currie)



Rhododendron malayanum

From Curtis's Botanical Magazine ser.3 vol.29, 1873, tab.6045.

Illustration by Walter Hood Fitch.