



TEMPERATE RHODODENDRONS

Julian Taylor-Whall

- Volume One -
Overview, Identification, Expeditions

Temperate Rhododendrons:

- the species and hybrids established outdoors in the leading woodland gardens of England, Scotland and Wales;
- the species curated in accordance with scientific advances and field study evidence published in the three decades since the 1996 Edinburgh revision of the classification;
- the hybrids selected and assessed with the benefit of hindsight rather than hype, disposition and floral beauty the key determinants for inclusion, not their commercial availability.

The texts are illustrated with over 3000 photographs taken by the author.

Volume One reviews and amends the classification of Genus *Rhododendron* to conform with the molecular phylogeny studies of 2005 and 2010, as well as taking account of recent work on polyploidy. A visual guide to help identify the various species follows this updating, along with a glossary of the scientific terminology and a listing of the various seed collecting expeditions.

Volume Two considers Subgenus *Therorhodion* and the species placed within Subgenus *Azaleastrum*.

Volumes Three and Four document the taxa assigned to Subgenus *Hymenanthus*.

Volume Five examines the rhododendrons within the three sections of Subgenus *Lepidorrhodium*.

Volume Six evaluates the Natural Hybrids, plants that have arisen in the wild from undirected pollination and established stabilised populations, as well as the host of seed pan rogues germinated in cultivation.

Volumes Seven and Eight survey the Azaleodendrons, Deciduous and Evergreen Azaleas, Lepidote and Elepidote Hybrids created through directed pollination.

A close-up photograph of several rhododendron leaves in autumn. The leaves are elongated and pointed, showing a mix of vibrant red, orange, and yellow colors. The veins on the leaves are clearly visible. The background is dark and out of focus, with some blue sky visible in the upper right corner. The lighting is bright, creating strong highlights and shadows on the leaves.

TEMPERATE RHODODENDRONS

Julian Taylor-Whall

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- Front Cover -
R. mallotum

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R. luteum

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R. nuttallii (AC 486)

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R. sinogrande

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R. subansiriense (C&H 418)

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Genus *Rhododendron* Global Distribution

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Overview

Origins, Biogeography, Flawed Classifications:

Thirteen billion years after the convulsion of the 'Big Bang' - give or take - and slightly less than four-point-five billion years after the formation of the Earth, in fact towards the end of the Cretaceous Period barely eighty million years ago, fossil evidence reports the existence of magnolia trees on the surface of the planet. Bees had yet to evolve, so the flowers were exclusively pollinated by beetles, hence their thick sepals, but over the course of the next fifteen million years, airborne insects and the Angiosperm flowering plants developed concurrently, with rhododendrons first blooming around sixty-five million years ago and taking just ten million more years to establish themselves around the mountainous edge of the northern hemisphere supercontinent that the forces of plate tectonics had constructed, this named Laurasia in 1937 by the South African geologist Alexander du Toit.

Encompassing the landmasses we know today as North America, Eurasia and Asia, these were linked by the Bering Land Bridge - Beringia - in the north, and in the south, by the North Atlantic Land Bridge. Scientific opinion is divided on the latter's longevity, but while it existed, the land bridge connected North America with Europe via Greenland, Scandinavia and Scotland.

The rhododendrons were part of a near continuous circular belt of temperate forest established around this vast expanse, growing on moist but well-drained slopes, in much the same habitat that they frequent today. Overall there were comparatively few taxa, not the plethora that exist currently, but in addition to the *R. camtschaticum* precursor species, the ranks of our evolving genus included at least a pair of Subsection *Pontica* members, some deciduous azaleas from what would latterly be designated Section *Pentanthera*, a few lepidote - scaly - rhododendrons from the Subsections *Leda* and *Maddenia*, plus a couple of representatives from Subsection *Menziesia*.

Fifty-five million years ago would find the Earth's climate considerably warmer than it is today in the higher latitudes of the northern hemisphere, so much so that there was no sea ice at the pole whatsoever. That situation was mirrored in the southern hemisphere where Africa, Antarctica, Australia, India and South America were separate islands, the vast continent of Gondwana having broken up during the Jurassic Period some one-hundred-and-twenty-five million years earlier. Of equal importance, the Himalayas, the centre of rhododendron diversity today, simply did not exist, and the mountainous backbone of the island chain between Asia and Australia that is the current home of the tropical *Vireya* rhododendrons, had not yet risen above the waves.

Regrettably, there are very few rhododendron fossils that can be reliably dated to a time earlier than the late Pleistocene, the geological epoch beginning 2.6 million years ago that runs almost to the present day. That period covers an era when repeated glaciations of the northern hemisphere took place, the last of which ended just 16,000 years ago, while the lack of fossils is down to where the plants grew - on well-drained upland slopes - so the chances of any remains dropping into the sediment at the bottom of a lake were somewhat slim. As a consequence, the evidence for much of what follows relies heavily on a genetic analysis of the current species population, yet some rhododendron fossils do exist that are 50 to 55 million years old: seeds, dated to the Upper Palaeocene Period, were discovered in southern England in the late 1970s (Collinson and Crane, *Botanical Journal of the Linnean Society*, 1978); and leaf imprints in rocks found in western Alaska have been identified as *R. crassum* (Hollick and Smith, *The Tertiary Floras of Alaska*, United States Department of the Interior, 1936). In addition, pollen grains, viscin threads and impressions of leaves from a few other rhododendron species have been found that in the main, are 20 to 25 million years old, but museum display cabinets are not overburdened with such.

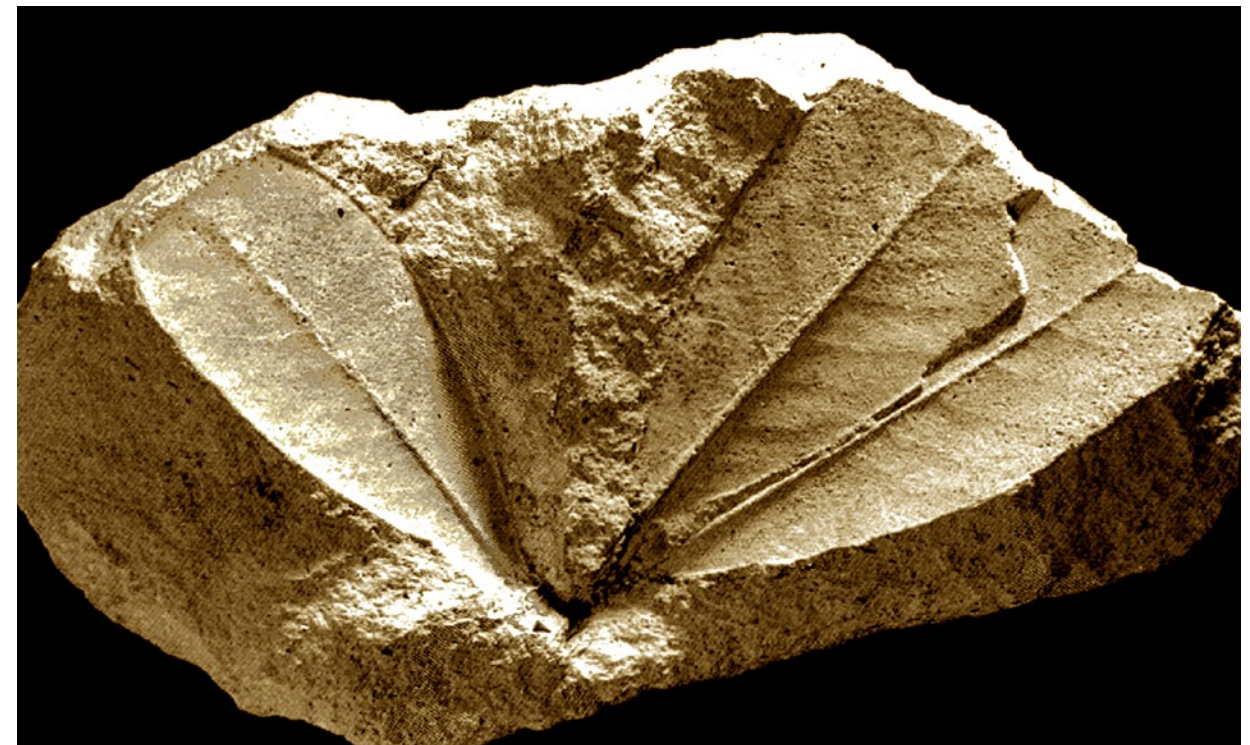
As the continents shifted position and the Atlantic Ocean began to widen and open-up, the southern land bridge sunk beneath the waves, most likely sometime between 20

and 40 million years ago. Beringia however provided a continuous link between Siberia and Alaska until around five million years ago. Only then did it submerge to become the Bering Strait, with the land intermittently rising back above the waves in concert with ice age glaciations, for the sea's depth across that short, eighty-kilometre watery gap separating old Cold War enemies is no more than thirty to fifty metres. Until quite recently then, in geological timeframe terms, plants and animals have been able to move freely between the continent's almost divided halves.

Today there is a 40°C mean surface temperature difference between the North Pole and the equator, however, if you scroll backwards 55 million years, the climate was far more equable and the northern hemisphere much warmer. Indeed, over a period from 100 down to 40 million years ago, that MSTD figure was held at between 10 and 15°C, and climatologists believe no ice at all existed at sea level anywhere on the Earth. Because nowhere did the mean surface temperature reach 0°C - freezing point - unlike today, where above latitude 55°, the MST is below freezing.

This cooling of the climate transpired over a long period, a slow decline taking place until a point approximately three million years ago when the Quaternary glaciation began.

During a glacial period ice sheets would cover much of the northern hemisphere and at their maxima, these could be between three and four kilometres thick and lock-up so much H₂O that sea levels worldwide dropped by as much as 120 metres. We currently live in an interglacial period - the Holocene - with the next ice age due in around 50,000 years unless an interstadial phase - a warmer period - kicks-in due to changes in the planet's orbital parameters. In which case, our central heating systems will be good for another 100,000 years, but note, our climate today is exceptional, not the norm.



R. ponticum leaves preserved in the way they were attached to a twig. The fossil dates to the late Pleistocene Period and was found in interglacial sediments near Hötting, Innsbruck, Austria, c. 1890.

That progressive temperature drop meant the Earth's vegetation zones changed, with all the established floras - mixed northern hardwood, broad-leaved evergreen, paratropical rainforest - being driven southwards, even disappearing entirely from some areas. Then the glaciers arrived to cause yet more disruption, wiping-out huge swathes of the temperate forest belt that was home to the rhododendrons, as well as causing the extinction of many individual species. Those plants that did survive in place, clung to life in refuges, where microclimates protected them from the worst of the cold.

Concurrently, at the exact same time as the climate was deteriorating worldwide, the location of each landmass around the globe - their latitude and longitude - continued to shift, which had an even more direct effect on the climate each experienced. And it was through the agency of continental drift that India became responsible for creating the current distribution hotspot of Genus *Rhododendron* in Southeast Asia.

The tectonic plate on which India rests is believed to be over two billion years old and is cooler, denser and stronger than the one upon which Asia sits, at least at the point where the two landmasses impacted around twenty million years ago. This meant that the Indian plate did not break up on contact with the Eurasian plate, but travelled on beneath it. A direct consequence of this was the rapid uplifting of the Himalayan Mountains, the formation of the Tibetan Plateau, and the creation of a series of very deep sheer faults along which the major rivers of the region now flow. The Himalayas rising beneath their roots effectively broke up the plant populations into isolated segments, each of which could evolve independently to meet the new climatic and environmental challenges they faced, separated by deep valleys and tall peaks they could not cross, which were subject to heavy monsoon rainfall between June and September. By complete chance, a vast region became a locale where rhododendrons could not only thrive, but undergo rapid diversification and speciate at an unprecedented rate.

The Malay Archipelago, stretching between mainland Indochina and the northernmost tip of Australia, only began to rise from the sea fairly recently, the result of volcanic activity and tectonic uplift that commenced around four million years ago. That high-island chain is today, home to the tropical Vireyas, the Section *Schistanthe* rhododendrons, which likely originated in the Himalaya, progressed down the Malay Peninsula, and then crossed over onto the emerging chain of islands via wind-carried seed. Rapid diversification - on the 4,800 metre-high Central Cordillera of New Guinea, for instance - quickly followed that initial establishment, resulting in the 300-plus individual species known today.

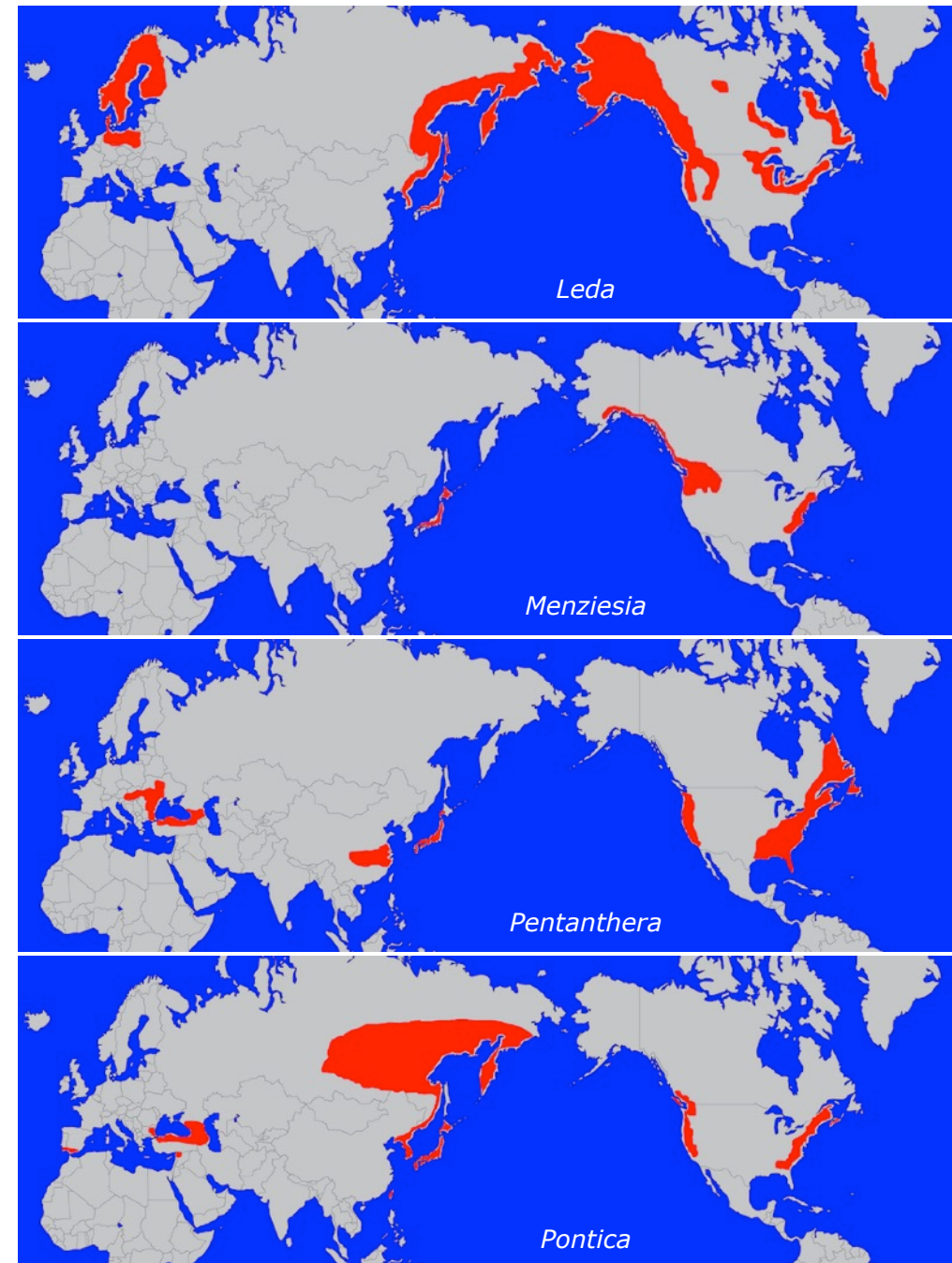
Elsewhere across the globe, remnant populations of the *Pontica*, *Pentanthera*, *Leda* and *Menziesia* rhododendrons were also reacting to their changed circumstances, the environmental realities of these new habitats inducing each cluster to evolve differently. Yet despite now having widely disjunct distributions, which were sometimes half a world apart, these species - in their individual subsections - clearly shared the same basic morphology. This dichotomy would perplex botanists until the early 1960s - when the German geologist Alfred Wegener's 1912-published theories on continental drift finally moved into the mainstream after being widely ridiculed.

The paradigm shift that led to the worldwide adoption of his hypothesis - that the Earth's vast landmasses were slowly being propelled around the globe - began at a 1964 Royal Society symposium and ultimately led to the theory of plate tectonics. Shortly after this acceptance, the phrase 'tertiary relict distribution' entered the scientific vocabulary.

The Tertiary Period - spanning the time from the Cretaceous-Paleogene extinction event at the start of the Cenozoic Era (when the non-avian dinosaurs were wiped-out) to the start of the Quaternary glaciations - has since been divided-up into the Paleogene and Neogene Periods, so is no longer considered a formal unit by the International Commission

on Stratigraphy, but nonetheless, the term is still widely used in botanical circles. It codifies the situation where the closest relation of one species, may be another on the other side of the planet, and that the two did not arise through the auspices of convergent evolution, but are the result of their shared precursor's population being divided when a single continental landmass or several temporarily joined plates, broke apart.

- Tertiary Relict Distributions -



As indicated, genetics was one of the non-geological keys that provided proof positive of the snail-pace mobility of the Earth's continents, and Doctor Richard Milne, currently Senior Lecturer in Evolutionary Biology at the University of Edinburgh, one of the scientists who have written papers adding to that body of evidence, his *Phylogeny and Biogeography of Rhododendron Subsection Pontica, a Group with a Tertiary Relict Distribution*, published in 2004, being one such example. The modus operandi is to take a DNA sample from each member of the disjunctly-distributed plant group being examined and sequence specific parts of the code that can then be used to determine the inheritance patterns and thus the historical relationships that exist between the different species. With regard to Subsection *Pontica*, phylogenetic analysis showed that *R. catawbiense* and *R. macrophyllum* - two of the three subsection members native to North America - were each other's closest relatives, yet the third species, *R. maximum*, was not closely related to either. In fact it was most closely related to the Turkish form of *R. ponticum*. Even more surprisingly, two other natives of the Black Sea region - *R. smirnowii* and *R. caucasicum* - proved to be most closely related not to *R. ponticum*, but for the former, to *R. degronianum* of Japan, and the latter, to two species distributed across Northeast Asia, *R. aureum* and *R. brachycarpum*.

On the other side of a considerably widened 'pond', Professor Thomas Ranney, of the Mountain Horticultural Crops Research and Extension Centre, Department of Horticultural Science, North Carolina State University, has conducted similar research into the deciduous azaleas of Section *Pentanthera* and found a mirrored set of relationships. Specifically: that *R. luteum*, of Asia Minor and Europe, is genetically the closest living relative to four species domiciled in the southeast of North America, namely *R. atlanticum*, *R. austrinum*, *R. calendulaceum* and *R. colemanii* (as reported in the paper *Rhododendron colemanii: A New Species of Deciduous Azalea from the Coastal Plain of Alabama and Georgia*, Journal American Rhododendron Society, Spring, 2008).

Similar Tertiary relict distributions have been evidenced amongst species of *Aesculus*, *Castanea*, *Hamamelis* and *Platanus*, to mention but four other plant genera.

Planet Earth's predominant mammalian species first began to seriously classify the world's flora in 1753, the year *Species Plantarum* was published. Rather appropriately, in a tongue-in-cheek wordplay, the tome was authored by a Swede, Carl Linnaeus.

Born in the rural province of Småland at the end of May 1707, Linnaeus was educated at Uppsala University, began lecturing on botany there during the 1730s, and then became the first scientist to really take a stab at imposing order and coherence on Nature's grand design. *Species Plantarum* classifies nearly 10,000 plants - all those known to Western horticulturalists at the time - but more importantly, it introduces the concept of a binomial system of plant nomenclature: genus; species.

Within two newly created genera - *Rhododendron* and *Azalea* (the fallout from which is still reverberating around the gardening world) - Linnaeus placed the nine actual species then known. Four of these - *dauricum*, *ferrugineum*, *hirsutum* and *maximum*, plus *chamaecistus* (today's *Rhododendron chamaecistus*) - went into Genus *Rhododendron*, while Genus *Azalea* warmly accepted the remaining five - *indicum*, *lapponicum*, *luteum*, *ponticum* and *viscosum*, plus *procumbens* (which is now *Kalmia procumbens*). If you think these surprising choices, even without the benefit of molecular systematics, the groupings Linnaeus made throughout *Species Plantarum* were based on observations of the number of stamens and ovary units in the flower. Unfortunately, at least with the rhododendron species, the observations he was working from, were somewhat in error.

Nine years later, when the second edition of *Species Plantarum* rolled off the press, its readership were informed that the newly introduced *R. canadense* had been placed in a third genus - *Rhodora* - Linnaeus citing the two-lipped flowers as the prime motivator

behind this decision.

Jumping to 1826, we find Carl Ludwig Blume in the midst of creating Genus *Vireya* for a collection of plants discovered growing on Java, one of the volcanic Indonesian Greater Sunda Islands, and conjuring-up Genus *Hymenanthus* for *R. degronianum* of Japanese origin, although it was then known as *R. metternichii*, its 'nom. illegit' nomenclature tag well over a century from being applied.

In 1831, George Tate constituted a section he named *Brachycalyx* to contain the recently discovered *R. farrerae*. Believing this Chinese species to be a link between rhododendrons and azaleas, and following the lead of Richard Salisbury some twenty years earlier (who also believed that the two genera should be reunited as one), Tate created Section *Tsutsusi* specifically to hold the azaleas.

Then came George Don's *General History of the Dichlamydious Plants*.

This four-volume work - which was also titled 'A General System of Gardening and Botany' - appeared between 1832 and 1838, and within its pages Don laid out the first structural arrangement for rhododendron classification. He, like Salisbury and Tate, accepted that rhododendrons and azaleas were one and the same thing, and part of the same genus. Which he split into eight sections: *Rhodora* of Linnaeus, and *Tsutsusi* of Tate; and *Booram*, *Chamaecistus*, *Lepipherum*, *Pentanthera*, *Pogonanthum* and *Ponticum* of his own design. Yet Blume's *Hymenanthus* and *Vireya* were excluded, Don's choice being to maintain these as separate genera. Inevitably, of course, there were errors within this new pigeonholing. Section *Pentanthera* for instance, held the North American deciduous azaleas but not *R. canadense*, which remained in *Rhodora* as its sole occupant. *Lepipherum* hinted at the now accepted lepidote-elepidote divide, but several scaly-leaved rhododendrons ended up in *Ponticum*. And *Tsutsusi* was home to species from at least three modern-day sections, while *Chamaecistus* housed its namesake along with *R. camtschaticum*. Those errata apart, it was still a major step forward in rhododendron taxonomy.

Unfortunately, Don's work was partially undermined in 1839 when the highly regarded Swiss botanist Augustin De Candolle, author of the seven-volume *Prodromus Systematis Naturalis Regni Vegetabilis*, visited Britain to meet with Charles Darwin (who twenty years later would author *On The Origin of Species*). De Candolle - actually the first proponent of evolutionary theory with his concept of 'Nature's War', where one species of plant battled another for living space - was somewhat less astute when it came to the classification of rhododendron as his taxonomic choices saw: *Azalea* returned to genus status; *Ponticum* merged with both *Lepipherum* and *Vireya*, and their contents moved into *Eurhododendron*; a new genus - *Osmothamnus* - created for species that should have gone into Don's Section *Pogonanthum*; while the status of *Booram*, *Chamaecistus*, *Hymenanthus*, *Pogonanthum* and *Rhodora* was left unchanged.

Hindsight shows that each of these early attempts at a taxonomy were stymied from a lack of representative plant material.

All were based on just a scattering of species from the outlying areas of the main distribution, far distant from the as yet undiscovered heart of the genus in southwest China, with some taxa growing in what could almost be termed niche environments. And the morphological characteristics of these rhododendrons were mostly far removed from the norm, which complicated matters even further. Equally, across the eighty-year gap between the publication of *Species Plantarum* and the arrival of *Dichlamydious Plants*, just a handful of more representative species had been discovered and introduced - plants such as *R. arboreum* and *R. campanulatum* from India, or *R. catawbiense* from North America - which meant that setting out an accurate classification was simply impossible for the botanists of the time.

That situation changed for the better in 1848, when Joseph Dalton Hooker set off on a three-year exploration of Himalayan Sikkim, and Thomas Booth ventured into nearby Bhutan and Indian Assam. Both would return a treasure trove of new species.

Yet during the 1850s, botanists such as Thomas Nuttall, Jules Emile Planchon and Johann Klotzsch really only tinkered with the classification, Section *Azaleastrum*, conceived by Planchon, the only addition of that time to survive and the result of his contention that clear morphological groupings exist within the azalea species, an obvious truism. It fell to Karl Ivanovich Maximovich therefore, curator of the herbarium at the botanic garden in St. Petersburg, Russia, to make the next taxonomic leap forward:

Thirty-four rhododendrons were described and then distributed across seven sections in his *Rhododendreae Asiae Orientalis*, published in 1870, but again, not everything was where it should be. This was almost certainly due to the preponderance of species he personally collected in Siberia, Manchuria and Japan, but Maximovich was the first botanist to use the position of the flower buds - terminal or lateral - as well as the nature of the leaf buds - separate and below, or enclosed within the same outer scales as the inflorescence - to influence his groupings. The creation of Section *Therorhodon* stemmed from this insight, his new pigeonhole containing *R. camtschaticum* and *R. redowskianum*.

Hooker's own classification of the genus appeared in *Genera Plantarum* - co-authored with George Bentham and published in 1876 - and then, with a few further refinements, in Volume 3 of *The Flora of British India*, published in 1880. Building on the work of Maximovich, Sir Joseph incorporated knowledge from his own explorations to correct the *Pogonanthum-Osmothamnus* misconception of De Candolle, group most of the remaining lepidotes within a new section, *Graveolentes*, and further divide the lepidotes and elepidotes into subsections based on the form of the calyx and the number of chambers within the ovary. Charles Clarke, another Kew alumnus, took this further in 1882, formalising the division between lepidote and elepidote on the presence or absence of scales, which for the first time correctly grouped the *Maddenia* species with their scaly relatives. He also subdivided Section *Vireya*, creating *Pseudovireya* for those species that were without twisting capsules.

And then forward progress stopped.

Updated descriptions of species in cultivation appeared in works by the German botanists Leopold Dippel, Karl Dalla Torre and Hermann Harms, Bernhard Koehne, and Hermann Zabel, but there was no movement away from the taxonomy of Maximowicz that Hooker and Clarke had improved. At least, not until the discovery of a literal, non-fictional rhododendron fairyland, this followed by an unprecedented influx of new species, which of necessity, reignited the fires of revision.

Before a storm, a period of calm usually ensues, and it was during such a lull that a number of French Jesuit missionary priests were permitted into China: Armand David, Jean-Marie Delavay, Paul Guillaume Farges and Jean-Andre Soulié, to mention but four. With the required ministrations and devotions to their will-o'-the-wisp demiurge quickly out of the way, they were able to spend much, if not the majority, of their time gathering plant material from the previously unexplored provinces of south-western China, most especially from along the four major river valleys that cut through the eastern flank of the Himalayan mountains. And they stumbled upon a rhododendron Shangri-La.

Their collections were sent to the Muséum National d'Histoire Naturelle and the Jardin des Plantes in Paris, where in the main, the dried specimens were examined and described by Adrien Franchet, whose lasting contribution to rhododendron taxonomy was the creation of Section *Choniastrium*. His botanical texts detailing the discoveries made by the Jesuit missionaries appeared in a series of works published throughout the late 1880s and early

1890s, which alerted the doyens of British and American horticultural to the probable botanic bonanza that awaited their own explorers. Thus, over the course of the next thirty years, Reginald Farrer, George Forrest, Frank Kingdon-Ward, Frank Ludlow and George Sherriff, Joseph Rock and Ernest Wilson were sent on more than 40 major expeditions to the south-eastern provinces of China, to adjacent Upper Myanmar, and to then independent Tibet. At the same time, other plant collectors, such as George Cave and Roland Cooper, were exploring Bhutan and the Indian states of Kashmir, Sikkim and Bengal.

Much of this wealth of new material - George Forrest alone made over 2000 individual collections of rhododendron seed plus matching herbarium specimens - travelled north to Edinburgh and the Royal Botanic Garden. And was examined by the expert eyes of that institution's Regius Keeper, Sir Isaac Bayley Balfour.

Balfour took up the post of Regius Keeper at Edinburgh in 1888. A former Professor of Botany at Glasgow University and Sherardian Professor of Botany and Keeper of the Botanic Garden at Oxford, he returned to Edinburgh just thirty-five years after his birth in the then Regius Keeper's residence at 27 Inverleith Row, for his father had been holder of that job title from 1845 to 1880. During the thirty-four years his son spent in post, Sir Issac first secured the long-term financial future of the garden by gaining it the same administrative footing as Kew - under the Commissioners of Her Majesty's Works and Public Buildings - then opened it to the public, turned it into the leading UK teaching institution for botany, founded its scientific journal *Notes from the Royal Botanic Garden, Edinburgh* - now retitled *The Edinburgh Journal of Botany* - completely rebuilt the glasshouses and totally transformed the layout of the gardens. He was also the driving force behind George Forrest's elevation from assistant in the Herbarium to plant collector extraordinaire. And between 1910 and 1920, wrote the botanical descriptions for almost 320 new species of rhododendron, often jointly with Forrest, Kingdon-Ward or William Wright Smith, another taxonomist from the Herbarium team and the man who in 1922, would succeed Balfour and become the 10th Regius Keeper.

Concurrent with describing those rhododendrons new to science, Bayley Balfour was also working on a system to classify the new discoveries. He decided to group species with similar characteristics into a Series, with a rhododendron that was already well-known, clearly described and long established in cultivation at the core. As respective examples, around *R. arboreum*, *R. campanulatum*, *R. lapponicum* and *R. thomsonii* would be created the Arboreum Series, the Campanulatum Series, the Lapponicum Series and the Thomsonii Series. Where appropriate, these would be further divided into a set of Subseries, each containing plants that were clearly similar to the core species, but which also had a sub-set of matching characteristics. The Campanulatum Series, for instance, would contain both a Campanulatum Subseries and a Lanatum Subseries.

Bayley Balfour had always intended the Series/Subseries approach to be a stop-gap arrangement. It had been conceived simply to cope with the huge flood of new species arriving from southeast Asia and designed to provide botanists, horticulturalists, hybridisers and gardeners with a quick, down-and-dirty classification. So when time allowed, it would be completely revised to incorporate the botanic strictures laid out by George Don, Karl Maximovich, Joseph Dalton Hooker and Charles Clarke.

Unfortunately for Balfour, that time never came, new material continued to pour in almost without pause and the revision he envisioned was never begun.

He died shortly after retiring in 1922.

- overleaf left and right -

Who's Who No. 1: a potpourri of people associated with the first golden age of gathering.



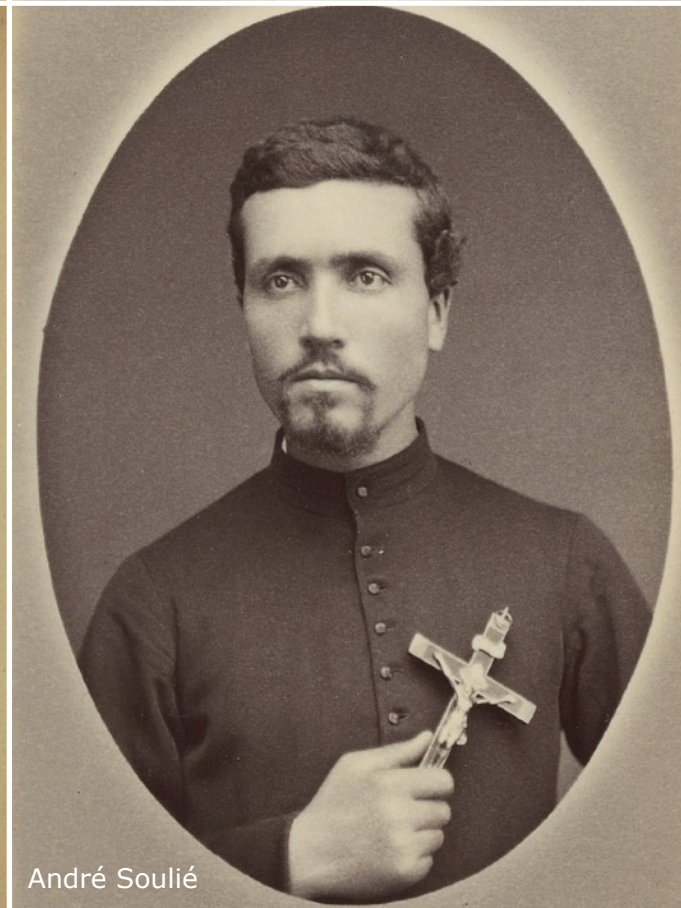
Armand David



Jean-Marie Delavay



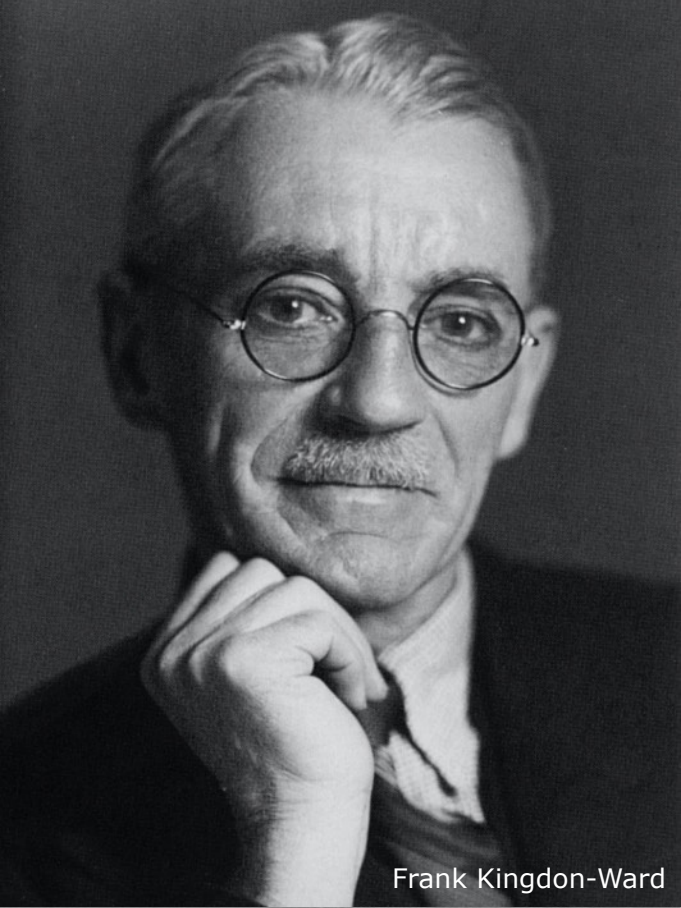
Paul Farges



André Soulié



Sir Isaac Bayley Balfour



Frank Kingdon-Ward



Joseph Rock



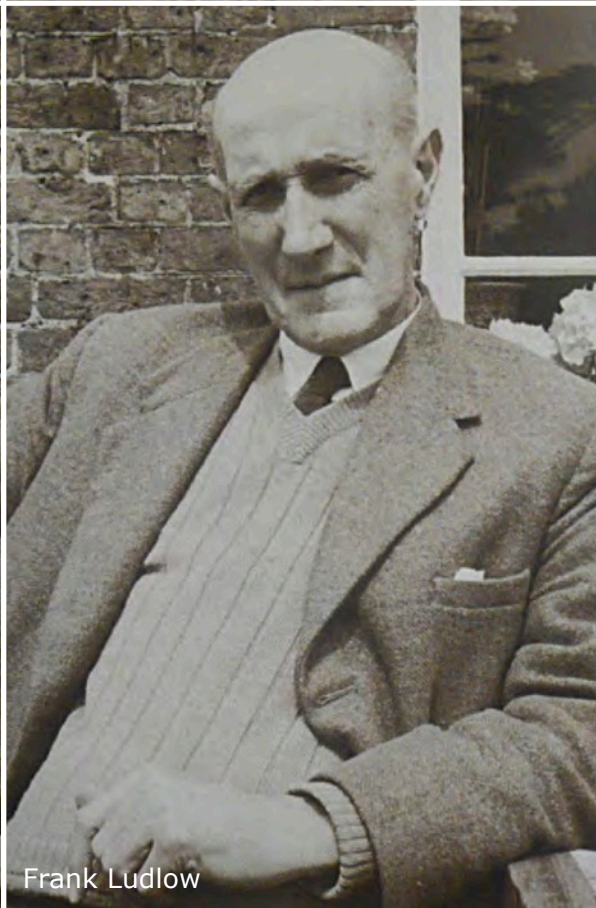
George Forrest



Ernest Wilson



George Sherriff



Frank Ludlow



Roland Cooper



Reginald Farrer

The Balfourian classification system, as of course it became known, was taken-up wholeheartedly by the Rhododendron Society, an elite group of gardeners and hybridisers whose membership, amongst others, included John Barr Stevenson of Tower Court, J. C. Williams of Caerhays, Lionel de Rothschild of Exbury, and Henry McLaren of Bodnant. From 1917 until 1931, an annual journal, *The Rhododendron Society Notes*, was published, and the 1924 edition contained a listing of species in their Series compiled by Edinburgh. This was amended and extended in subsequent years leading up to the publication by the Society in 1930 of *The Species of Rhododendron*.

Edited by Stevenson, the book included individual descriptions and keys for all the known temperate rhododendrons (the subtropical Vireyas were excluded, only being listed by name). Harry Tagg, a taxonomist at Edinburgh, detailed the elepidote rhododendrons, John Hutchinson from the Royal Botanic Garden, Kew, dealt with the lepidote species, and Alfred Rehder from the Arnold Arboretum in Boston, Massachusetts, provided text for the azaleas (Rehder had previously co-authored a monograph on the azalea species with Ernest Wilson in 1921). The species were listed alphabetically within each Series and Subseries, which were also similarly arranged, and the book was produced so that any new discovery could be added-in in the correct place.

The Species of Rhododendron swiftly became the bible for rhododendron enthusiasts and the standard work on the subject referred to by botanist and horticulturalist alike, with its second edition describing 625 species over 42 Series. As a direct consequence of the book's publication, the classification gained widespread acceptance in the UK and the USA, and the Balfourian system became the de facto taxonomy for rhododendrons, remaining so for close-on sixty years.

New herbarium specimens and seed continued to arrive in quantity: from southeast Asia, until China closed its doors to Western plant collectors in 1949; from Tibet, until that nation was bullied, invaded and annexed by Mao's communists; from Myanmar (Burma), until the drug lords and generals became ascendant; and from Bhutan and the Indian states bordering China, until circumstance forced access to be severely restricted.

Thus ended the first golden age of rhododendron plant collecting.

Yet much of this new material still required identification, description and placement in the classification, and earlier species descriptions needed to be updated to include new forms the explorers had discovered in the interim. This work was carried out at Edinburgh, in the main by two taxonomists, John MacQueen Cowan and Hagop Haroutune Davidian, the revisions and new species descriptions being published in the Royal Horticultural Society's *Rhododendron Yearbook* (and successor titles) and the quarterly *Journal of the American Rhododendron Society*. When, in the mid-1950s, Cowan retired to take on the role of curator at Inverewe Gardens, maintenance of Balfour's legacy fell solely to Davidian. With the goal of revising one long or two short Series each year, H. H. Davidian worked on until his official retirement from the Royal Botanic Garden, and then, beginning in 1982, he published the monumental four-volume work, *The Rhododendron Species*.

Based on a lifetime's firsthand examination of the herbarium specimens at Edinburgh and living plants in garden collections across Great Britain and North America, each species entry contained the most accurate and detailed botanic description of that plant yet published, along with a concise précis of their initial discovery, introduction into cultivation, geographic distribution and habitat, differences that distinguished them from their closest relatives, and cultural information for gardeners. There were detailed keys to the Subseries and all the individual species within such and at last, full keys to the Series themselves, something every aficionado of the genus had been crying out for since 1930 and a major bone of contention with botanists for almost as long.



H. H. Davidian (1907-2003).

The United Kingdom's foremost expert on Genus *Rhododendron*.

Volume One covered the lepidote species; Volumes Two and Three, the elepidotes, plus the aberrant Albiflorum, Camtschaticum, Ovatum, Semibarbatum and Stamina Series; and Volume Four, the azaleas. Yet despite Davidian's sumptuous opus being the Balfourian classification's most spectacular flowering, a supercharged Indian summer if you will, it was also its swansong. For having reached apogee, new scientific techniques and on the ground fieldwork would underpin the ageing taxonomy's successor and finally challenge the relevance of the Series/Subseries approach.

But not before diverting excursions to examine the hairs, scales, seeds and seedlings, waxes and pigments, had had their day in court.

After the convulsions of the Second World War had been endured, botanists switched their attention away from the mundane - enhancing agricultural production in order to keep their embattled countrymen fed - and returned their focus to the more esoteric: the realms of classification and taxonomy. In Germany, Hermann Sleumer was painstakingly reconstructing his manuscript *Ein System der Gattung Rhododendron*, lost in 1943 when the Berlin Botanic Museum became a collateral casualty of the Allied bombing campaign. His paper would eventually be published in 1949, with an emended version, translated into English, appearing a decade later in the second edition of Clement Bowers' *Rhododendrons and Azaleas* (1960). It would later become the bedrock on which the structural reforms of the Edinburgh Revision were built.

However, elsewhere in the world, other bees were buzzing:

At Edinburgh Botanic itself, John MacQueen Cowan, Assistant Keeper of the Gardens, was investigating the hairs and scales that are found on a rhododendron's leaves, flowers and branches. He was tasked with revising aspects of the classification set out in *The Species of Rhododendron* twenty years before and believed that these 'trichomes' could provide a new set of easily observable criteria to make identification of the various groups easier, at both series and subseries ranking, this keying possibly extending to differentiate individual rhododendrons. Doctor Cowan published his researches and conclusions in a book, *The Rhododendron Leaf: A Study of the Epidermal Appendages* (Oliver and Boyd, 1950), identifying in total twenty-five hair and scale types.

Regarding the hairs: just two types were each restricted to a single Series - flagellate and funnel (cup)-shaped; five types were only found within two Series - capitellate, fasciculate, folioliferous, radiate and setose-glandular; two types were confined to three Series - setose and stellate; another two types to five Series - loriform and strigose; and a further two types to six Series - long-rayed and ramiform. Simple glands could be found across seven Series. Rosulate hairs grew on rhododendrons within eight Series. Unicellular hairs - acicular or filiform - on plants from nine Series. Dendroid hairs on the species of ten Series.

Of the scale types: lacerate, crenulate and undulate were restricted to two Series each; vesicular to four Series; and entire scales - the standard type adorning lepidote rhododendrons - found on seventeen different Series. Papillae, which are 'mere projections of the outer walls of epidermal cells' to quote Doctor Cowan, occur on rhododendrons across twenty-two Series.

The conclusions reached from the investigations were threefold:

First, the major division between the lepidote and elepidote species was confirmed, the complete lack of any type of scale on a rhododendron leaf providing a 'ready means of dividing the genus into two large sections approximately equal in size'. That this also corresponded almost exactly with the observed leaf ptyxis was an added bonus - convolute folding of the leaf within the bud a characteristic of the lepidote rhododendrons; revolute folding, an elepidote trait - and of course the inability of a lepidote species to successfully pair with an elepidote one - sans outside assistance - was already widely known. So the forty-three alphabetically-listed Series in *The Species of Rhododendron* could be split into twenty non-scaly groupings - Albiflorum, Arboreum, Auriculatum, Azalea, Barbatum, Campanulatum, Camtschaticum, Falconeri, Fortunei, Fulvum, Grande, Irroratum, Lacteam, Neriiflorum, Ovatum, Ponticum, Semibarbatum, Stamineum, Taliense and Thomsonii - and twenty-three scaly assemblages - Anthopogon, Boothii, Camelliaeflorum, Campylogynum, Carolinianum, Cephalanthum, Cinnabarinum, Dauricum, Edgeworthii, Ferrugineum, Glaucum, Heliolepis, Lapponicum, Lepidotum, Maddenii, Micranthum, Moupinense, Saluenense, Scabrifolium, Trichocladum, Triflorum, Vaccinioides and Virgatum.

Second, the presence of certain hair or scale types could be used to distinguish one or a number of Series from the bulk. Strigose hairs, for instance, were only found on plants within the Albiflorum, Azalea, Camtschaticum, Ovatum or Semibarbatum Series, and even better, cup-shaped funnel hairs grew only on species gathered together in the Falconeri Series (*R. lanigerum*, devoid of such, would soon be transferred into the Arboreum Series). Abaxial leaf surface scales hidden by a thick, overlying cloak of indumentum immediately assigned a species to the Edgeworthii Series, while the presence of lacerate scales would determine placement within the Anthopogon or Cephalanthum Series. Vesicular scales indicated the Campylogynum or Trichocladum Series; crenulate scales, the Saluenense Series.

Thirdly, the trichome type could, albeit in fewer instances than was initially hoped,

also determine the species: large fasciculate hairs scattered along the veins in clusters on the underside of an otherwise glabrous leaf were indicative only of *R. hookeri*; setose hairs plus vesicular hairs on the nerves, *R. vesiculiferum*; radiate hairs with pyriform arms determinant of *R. aberrans* and *R. traillianum* (the two both held specific rank at that time, though now, the former has been made synonymous under the latter).

Beyond these determinations, precision is lost, as Doctor Cowan himself states. So the presence or absence of other hair or scale types might indicate a certain placement, but it would only be suggestive of such.

The presence of setose-glandular hairs could, for instance, imply membership of the Barbatum Series, while a plastered indumentum of rosulate hairs prompt consideration of the Arboreum or Grande Series, or perhaps even the Sanguineum Subseries. On the other hand, capitellate hairs might be indicative of the Campanulatum or Fulvum Series, and rhododendrons with radiate hairs be destined to join either the Lacteam or Taliense Series, though the latter was also home to species with ramiform and rosulate hairs, these trichomes also characteristic of the Ponticum Series. Dendroid hairs offered an even wider choice of pigeonhole, with the Arboreum, Fulvum or Grande Series, plus the Haematodes Subseries, their prime lodgements, but these by no means their only possible place of residence.

Turning to the scales, the fact that these might touch, overlap or be distant from one another by various multiples of their own diameter was a factor that might determine Series placement or even distinction between individual species.

So with one or two notable exceptions, as far as hairs and scales were involved in the identification process, 'might' was as close to a positive individual or group determinant as you could get. Yet all this potential categorisation, it should stressed, was innovatory reporting back in the early 1950s and a direct consequence of finally getting on top of the massive influx of new material that had arrived at Edinburgh Botanic for assessment.

John Cowan clearly took a conservative approach to the results his investigations had revealed, loath to constitute a rule that might subsequently prove invalid, which given the sheer number of species at that time wrongly assigned to a particular Series, was the right approach to follow. For like *R. lanigerum*, over the next twenty years these oddballs would be weeded-out and transferred to their proper home, which in consequence would tighten-up the trichome-to-Series relationships that Cowan then regarded as fuzzy.

On the other side of the North Sea however, a far more radical approach was being conceived.

The German botanist Almut Seithe (née von Hoff), based at the Botanical Institute of Hamburg University and with access to the living collections at the Bremen Rhododendron Park, was also investigating the hairs and scales, microscopically examining 265 different rhododendron species between 1948 and 1951. In a string of papers published over the course of a decade, she identified forty-three different types of vestiture (trichome), of which only eight mirrored those described by Cowan. She then set down six topographical rules relating to where a hair or scale was located on a plant and when exactly it began to develop: a nerve rule; a margin rule; a surface rule; a floral region rule; a zone rule; and a developmental set rule. These determined that only two of the four major hair classes were ever present on the same plant.

Those four hair classes were: virgate - basically straight, wand-like hairs; flock - branched hairs; glands; and scales.

The development of flock hairs and scales was found to be contrary, the former turning their cell axes outward and becoming branched, the latter turning their cell axes inwards to become compressed glands, while the virgate hairs and glands in contrast, could

switch between these two practices.

Doctor Seithe also determined that of all the possible combinations of the major hair classes, only three actually occurred on any known rhododendron: scales and virgate hairs; glands and virgate hairs; glands and flock hairs. Moreover, she discovered that only one of these three pairings was to be found on the plants of each subgenus (a ranking level set out in Hermann Sleumer's 1949 revision, which of course European botanists had adopted wholeheartedly). Taxonomic division using the hair class variants therefore, would not split apart any of Sleumer's existing taxa, but gather them together in three new groups.

Consulting with the relevant botanic nomenclature authorities in order to avoid the wholesale knock-on changes that subsuming the existing subgenera would cause - all the previous subgenera would have to drop-down to become sections, which in turn would become subsections, and so on and so forth - a new ranking between genus and subgenus was conceived, a 'chori subgenerum'.

Three were needed: chorus subgenerum *Rhododendron* combined all the lepidote subgenera; chorus subgenerum *Nomazalea* received all the 'azaleas', along with those species filed under *Azaleastrum*; and lastly, chorus subgenerum *Hymenanthus*, accepted all the elepidote rhododendrons.

Subsequently, in a paper presented at the International Rhododendron Conference held at the New York Botanical Garden in May, 1978 - later reprinted in the 1980-published summation of those events, *Contributions Toward a Classification of Rhododendron* (New York Botanical Garden) - Hermann Sleumer wrote:

'It is understandable that Seithe, as an author who investigated the indument types of about one-third of the species known in the genus, and who made so great a contribution elucidating the variation of these indument types, was therefore inclined to give them the highest priority in subdividing the genus. Personally, however, I cannot subscribe to Seithe's argument for the taxonomic significance of these combinations of indument types. In each of the three chori subgenerum there exist species which, in fact, do not display any of the above mentioned combinations. There are, for example, lepidote species without hairs, and species with hairs or bristles without a trace of glands, as indeed were admitted by the author herself.'

Sleumer went on to point out that 'variation in indument patterns is generally of less taxonomic significance, and should be used only to distinguish among the lower categories, as has been the practice of most authors in the past'. This statement was based on his own investigations, which had shown that 'hairs, glandular hairs and bristles often are suitable only for the discrimination of species, varieties or forms'.

The botanists responsible for the subsequent Edinburgh Revision of the genus were also sceptical, Doctor David Chamberlain, one of its principal authors, writing that although Seithe's more comprehensive classification was considered, 'the greater subdivision of hair types did not help in the classification of the species within the genus' (*Notes from the Royal Botanic Garden, Edinburgh*, Volume 39, Number 2, 1982), and so consequently 'in this revision the fairly conservative classification of the hair types proposed by Cowan (1950) has been used'.

In September, 1935, Frank Kingdon-Ward, writing in Volume 73 of the *Journal of Botany*, reported that across the whole of Genus *Rhododendron*, all the seeds belonged to one of three well-marked types. These he described as an Alpine Type, where the seed was wingless and either rounded or angular; a Forest Type, where the seed was flattened, winged all round, and about twice as long as it was broad; and an Epiphytic Type, where the seed was spindle-shaped, with a tail at each end between 4 and 6 times as long as it

was broad. Kingdon-Ward's choice of epithet for each type indicated the locale where the majority of species producing that kind of seed grew. Thirty years later, a Danish botanist, Johannes Hedegaard, reasoned that a more detailed study of the seeds under a microscope might assist with identifying individual species and contribute to a better classification of the genus. As would a closer look at the seedlings.

Again, quoting from *Contributions*, he writes:

'After spending a relatively short period of time studying these aspects, I decided to undertake an extensive survey of the fruit and its hair covering together with the morphology of seeds and seedlings, and in this way to establish, or at least try to establish, a sound foundation for a more accurate description of species. The morphology of these plant parts is constant for a particular species and often gives the clearest indication of hybridisation. Leaves and fruit are present on rhododendron plants for most of the year, while flower characters, the main criteria in contemporary classification, can only be observed for a short time. The material in these investigations was partly collected in nature and partly obtained from original collections in botanical gardens. Only seed, collected either in nature or produced by controlled pollination was used in the study of seed and seedlings. In very few cases have less than 50 specimens per species been used in the seedling studies. In those rather occasional cases where larger variation in cotyledon shape or number of marginal hairs was found, the most typical cotyledon was selected after a comparison of all available plants.'

From 1968 onwards therefore, he began making illustrations and descriptions of the species, some 300 in total, these eventually being published over two volumes and 749 pages in 1980, the book titled *Morphological Studies in the Genus Rhododendron; dealing with fruits, seeds and seedlings, and their associated hairs*.

It would be fair to say that the results of the Hedegaard study did not shake the rhododendron world to its core and the two principal authors of the soon-to-be-published Edinburgh Revision, took seemingly opposing views:

Doctor James Cullen wrote that seeds 'provide characters of considerable taxonomic importance in the genus as a whole' and included outline illustrations of such for fifty-seven individual rhododendrons in his paper on the lepidote species (*Notes*, Volume 39, Number 1, 1980, from which the quote is taken).

While Doctor David Chamberlain, in his elepidote paper (*Notes*, Volume 39, Number 2, 1982), expressed the view that although 'there is much variation in the development of the wings, which may be irregular and are sometimes broken up into finger-like projections at the ends of the seeds, this variation is not however of much taxonomic value'. Not within Subgenus *Hymenanthus* at least, where the seeds were found to be universally fusiform in shape and almost always winged.

The only tangible change resulting from Johannes Hedegaard's work therefore was the abandonment of Kingdon-Ward's terminology and an increase in seed types from three to four, the additional designee split from its fellows in the Epiphytic grouping.

Leaf waxes and corolla pigments are an eye-wateringly complex set of chemicals with brain-numbing formulae. The former total some 63 different compounds even when long-chain alcohols are excluded (because though present on many species their occurrence is variable) and include substances such as hydrocarbons, aldehydes, terpenoids, triterpenes and some novel amalgams such as triterpene diol monoacetate. The latter colouring agents involve flavonoids such as the anthocyanins, dihydroflavonols, flavonol glycosides, flavanones, proanthocyanidins and condensed tannins, plus yet another class of compounds

known as the carotenoids, which include betacarotene, phaeophytin and various chlorophyll derivatives.

When the decision was taken at Edinburgh Botanic to commence a wholesale revision of the genus, the possibility that chemical characteristics might help in identifying related groups below the strata of subgenus, down even to an individual species, had to be investigated. Doctor Brian Knights, at Glasgow University's Department of Botany, accepted the task of seeking out those botanic fingerprints and with his team, chose to examine the leaf waxes, as these were an easily obtainable group of compounds that could be straightforwardly analysed using gas-liquid chromatography (GLC), while Jeffrey Harborne, at the Plant Sciences Laboratory of Reading University, had already begun investigating the flavonoid pigments. Both presented papers on their investigations at the 1978 International Rhododendron Conference:

On the leaf waxes, despite the *Pogonanthum* and *Taliense* species proving novel exceptions - the latter would prompt further investigation in a paper Knights co-authored twenty-five years later - the conclusion reached was that 'while no individual or group of compounds can be said to typify either lepidote or elepidote *Rhododendron* species, certain compounds are clearly restricted in their occurrence'.

On the corolla pigments, Harborne was able to state that 'it is apparent from the results at hand that none of these characters is of diagnostic value for distinguishing subgenera, sections or subsections. A study of the most readily accessible flavonoid markers indicates no sharp discontinuity in the genus'.

However, the German botanist Wolfgang Spethmann, also one of the speakers at the conference, reached an entirely different conclusion to Harborne after completing his own research, though on the leaf flavonoids he agreed that 'none of the components has diagnostic value for the classification of subsections or subgenera'.

Over the course of three years, Doctor Spethmann had chemically analysed the flowers of 532 rhododendrons - 256 plants of 193 species and 276 plants of 181 hybrids - his samples mostly obtained from the Bremen Rhododendron Park. The various pigments were separated-out using a number of techniques, with the flavonoids ending up on two-dimensional chromatograms, the carotenoids on one-dimensional thin-layer silica gel foils. On the two-dimensional chromatograms 113 different compounds were found, but just 13 were present - across 24 bands - on the one-dimensional foils.

The research showed that the spots and blotches on a rhododendron flower are caused by a sub-epidermal accumulation of coloured cells, anthocyanins being responsible for red to black-red spots, chromoplasts for yellow to orange spots, and chloroplasts for green spots. Moreover, in the same cell, anthocyanins could mask the colour induced by chloroplasts or chromoplasts. Only rarely however, were the epidermal cells immediately above a blotch or spot coloured, and in subsections where the carotenoids did not participate in generating the principal corolla colour or colours, they were present in the cells forming the spots and blotches.

An examination of rhododendron cotyledons had already been started in 1968 by Johannes Hedegaard as part of his investigations into seeds and seedlings, however, working independently, at the same time, but on the other side of the world, a botanist from New Zealand was also exploring their taxonomic relevance.

Technically, cotyledons - the seed leaves - are the first bits of a rhododendron to emerge above ground during its development, but they are not 'true' leaves, even though they are functionally similar and can photosynthesise. They appear during embryogenesis, at the same time as the root and shoot are forming from undifferentiated meristematic cells, so are present in the seed before it germinates (unlike the 'true' leaves, which are

formed after germination has occurred and from the shoot apical meristem, which supplies the building material for everything else above ground that will develop throughout the rest of the plant's life). Rhododendron cotyledons may be glabrous, bear hairs, or if a lepidote species, display a few scales on their margins or lamina. They may have a midrib, a midrib and simple lateral veins, or a midrib with a reticulation of veins.

The rhododendron-savvy doyen who carried out the parallel investigation was Melva Philipson, who with her husband William would, but a few months later, be tasked to revise the entire Lapponicum Series.

The results of her cotyledon study were published in *Notes from the Royal Botanic Garden, Edinburgh*, Volume 30, 1970, and in the paper the various types of hairs and venation patterns were described and illustrated. How these were distributed amongst the species was also tabulated. In all cases, they were found to perfectly conform with the major divisions of the genus, this effectively confirming Sir Isaac Bayley Balfour's dismissal of cotyledons as a taxonomic aid in his own paper - *Observations on Rhododendron Seedlings* - published some fifty years earlier in *Transactions of the Botanical Society of Edinburgh*, Volume 27, 1919.

The two principal botanists working away on the Edinburgh Revision, Doctors Cullen and Chamberlain, whose days throughout much of the late 1970s were doubtless spent pouring over thousands of dried herbarium sheets and reading countless technical papers on potential aids to their taxonomic marathon - while fending off irate Balfourians and those epithet honourees about to be synonymised - both attended the 1978 International Rhododendron Conference as speakers. Yet despite the earbashing they must surely have endured from the other participants, guests and rhodo-savvy luminaries, in the end, virtually all the presented papers were journeys not taken. For in the two major texts published in the early 1980s, cotyledons, pigments and waxes are simply not mentioned, and as indicated above, it was to John MacQueen Cowan that both men turned for their categorisation of the trichomes.

The classification of Genus *Rhododendron* most widely used today can actually trace its origins back to George Don's hierarchical structure for botanic classification presented in 1834; as well as to the Karl Maximovich revision of 1870; and equally, to the proposals of Alfred Rehder, dendrologist at the Arnold Arboretum who, when writing with Ernest Wilson in 1913 - *Plantae Wilsonianae*, Volume 1, pages 503-549 - had updated and expanded that earlier pigeonholing to accommodate many of the new discoveries being introduced from China. Rehder emended and extended the scope of his design in Volume 5 of Liberty Hyde Bailey's six-part *The Standard Cyclopaedia of Horticulture*, published in 1916, contributing the entire Genus *Rhododendron* text (pages 2930 through 2948). So prior to developing their Series-Subseries concept, British botanists, along with the entire membership of the Rhododendron Society, could hardly claim ignorance of these developments, especially as an account penned by Ernest Wilson titled *The Rhododendrons of North-Eastern Asia*, which used Rehder's classification, was published in Volume 2, Number 3, of *The Rhododendron Society Notes* in 1922, and reprinted - under the title *The Rhododendrons of Northeastern Asia exclusive of those belonging to the Subgenus Anthodendron* - in Volume 4, Number 1, of the far wider-circulated *Journal of the Arnold Arboretum*, which appeared in January 1923. Yet even so, the successors to Isaac Bayley Balfour, chose to go their own way.

Now fast-forward to the late 1940s, when the detailed revision of all the Series and Subseries was commenced by Cowan and Davidian at Edinburgh Botanic, two decades after

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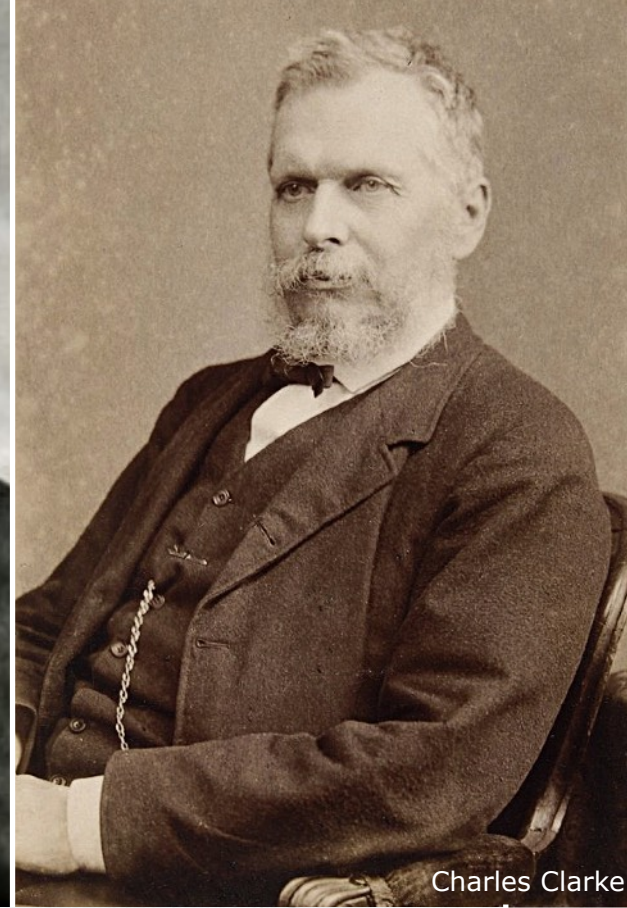
Who's Who No. 2: a cornucopia of 19th and 20th Century botanists linked with Genus *Rhododendron*.



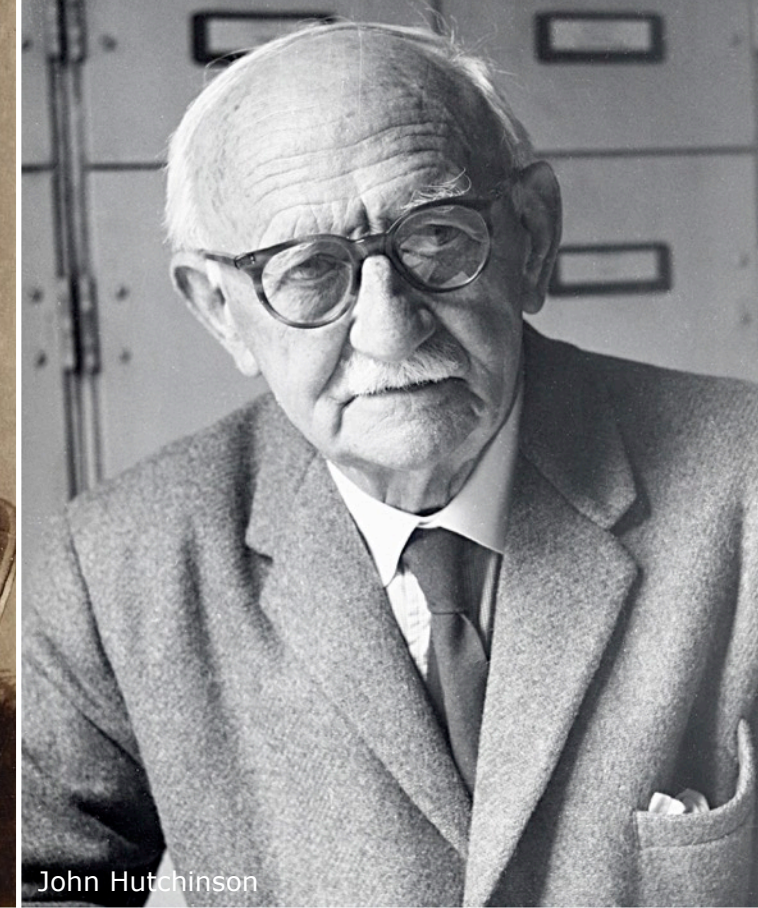
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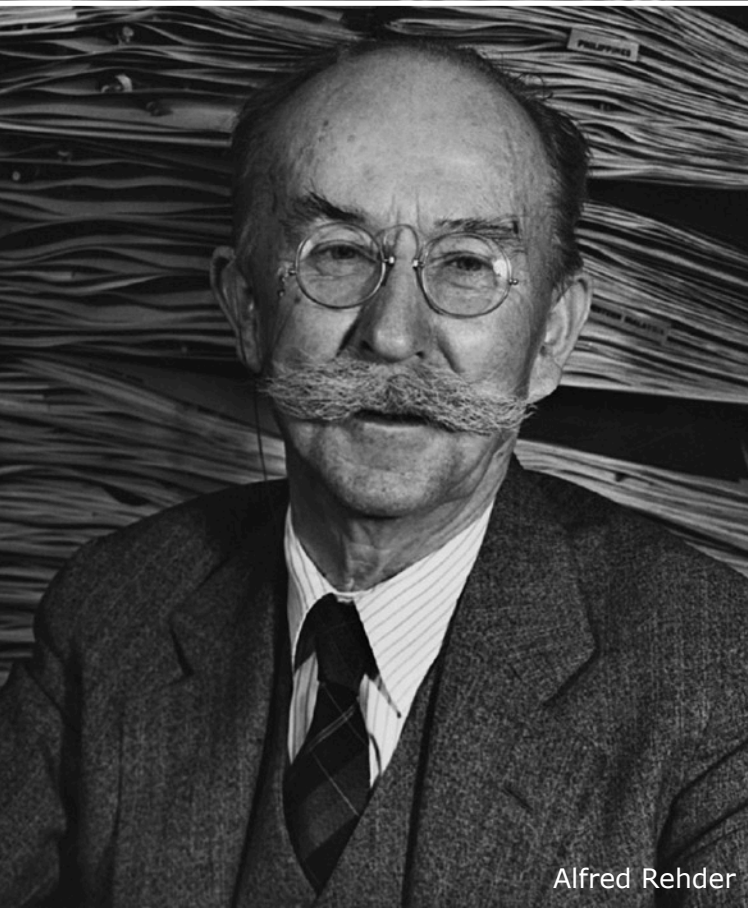
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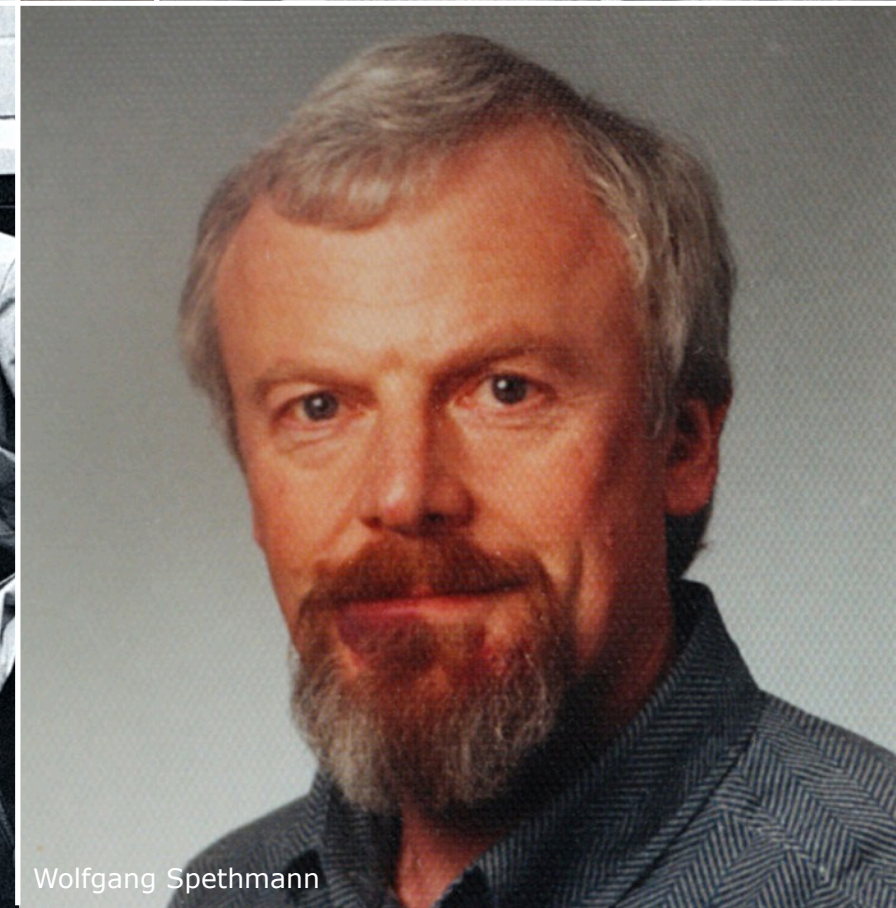
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Alfred Rehder



Jeffrey Harborne & Brian Knights



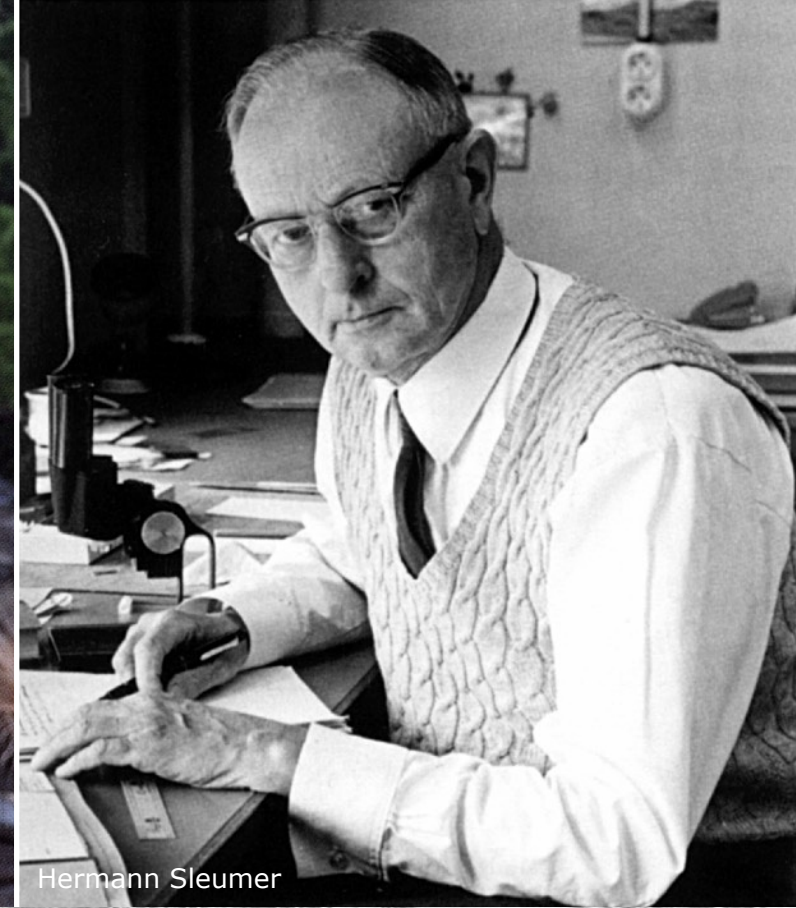
Wolfgang Spethmann



David Chamberlain



James Cullen



Hermann Sleumer



John MacQueen Cowan



Johannes Hedegaard & Almut Seithe



Melva & William Philipson

publication of *The Species of Rhododendron*. Herman Sleumer's masterpiece, *Ein System der Gattung Rhododendron*, could have influenced or been incorporated into their work, but it too was given the cold shoulder.

Sleumer, a Berlin-trained Dutch taxonomist who became an *éminence grise* on the family *Ericaceae*, spent much of his working life producing an account of the subtropical *Vireya* species (published in *Flora Malesiana*, Volume 6, Part 4, 1966). He knew that the Balfourian system of Series and Subseries did not comply with the rules of classification for flowering plants as set out in the *International Code of Botanical Nomenclature*, so his 1949 paper set out to correct this. It moved the Series and Subseries into the standard taxonomic convention of Subgenus, Section and Subsection, which more accurately reflected the evolution of the genus, as well as the relationships between the different subgenera and those between individual species. Despite a number of flaws, Sleumer's classification was eagerly accepted by botanists across the World, but ignored by those in Britain and America whose horticulturalists and gardeners remained committed to a status quo that was familiar, simple and served all their needs.

That view lasted until 1972, when a new generation of taxonomists employed at Edinburgh Botanic, specifically David Chamberlain and James Cullen, began a complete overhaul of the entire genus, the results of which are colloquially known today as the 'Edinburgh Revision'.

Their task was to incorporate both the work of their predecessors and Sleumer's 1949 framework, with up-to-date anatomical, chemical, morphological, physiological and structural information to group the many hundreds of individual species into a coherent framework where plants with similar characteristics are correctly placed together in a hierarchical system of genus, subgenus, section and subsection that complies fully with the rules of the ICBN. This was a fundamental shift and meant that no longer would a taxonomy be based solely on dried herbarium specimens. Nor would it pander to the needs of horticulturalists and gardeners. And so, over the course of the next twenty years, the botanists and scientists at Edinburgh produced a set of papers that quite literally shook the rhododendron world to its roots.

Preliminary proposals were published in 1978 and 1979, these followed by individual monographs concentrating on each of the subgenera:

James Cullen's 1980 paper on Subgenus *Rhododendron* incorporated Sleumer's 1966 classification of Section *Vireya*, as well as the revision of Subsection *Lapponica* written at Edinburgh independently by Bill and Melva Philipson in 1975.

David Chamberlain's Subgenus *Hymenanthus* review arrived in 1982, while those for *Azaleastrum*, *Candidastrum*, *Mumeazalea* and *Therorhodon*, written by the Philipsons, were all published in 1986.

The Subgenus *Tsutsusi* monograph, jointly composed by Doctor Chamberlain and Sally Rae, a leading member of the in-house herbarium team, appeared in 1990; that for Subgenus *Pentanthera*, written by the acknowledged azalea expert Professor Kathleen Kron of Wake Forest University, North Carolina, in 1993.

Updates for Sections *Rhodora*, *Sciadorhodia* and *Viscidula*, these the joint work of Doctor Kron and Professor Walter Judd, of the University of Florida's Biology Department, were presented in 1995.

After which, a summation document, *The Genus Rhododendron: its classification and synonymy*, listing all the published and accepted names used within the genus, compiled from the monographs, arrived to complete the revision in 1996.

Yet over the course of that twenty-plus-year marathon, as each of the papers was presented, gardeners and horticulturalists saw many of their long-in-use and much loved

plant names changed or lost entirely; familiar groupings were abandoned, split apart or merged into other clusters, seemingly without logical reason; and countless species ended up lumped together under one name, their individuality and distinction in cultivation lost. To say that this caused widespread controversy would be an understatement, even if the reasons behind the changes were clear and botanically sound:

Where an earlier description of a species existed, under a different epithet, ICBN rules gave that first name precedence. Thus *R. vellereum*, described in 1930, was replaced in the Chamberlain *Hymenanthus* paper - technically, made synonymous - by *R. principis*, which had been described in 1891. In the Philipson-penned *Lapponica* revision, *R. scintillans* of 1916 vintage, was subsumed by *R. polycladum*, a veteran of 1886, while in the Cullen tome, *R. bullatum* of 1887 was absorbed by *R. edgeworthii* of 1856.

Where a given name was being used illegitimately - *R. metternichii* is the absolutely classic example - it had to be discarded, in this case, for *R. degonianum*.

Where advances in science or recent, on-the-ground observation of plant populations had found distinctions previously considered important to be merely extreme examples of the variable features of a single species, synonymy was the end result.

And where long-supposed species were naturally occurring hybrids. *R. agastum*, for instance, proved to be a cross between *R. delavayi* and *R. decorum*; *R. candelabrum*, a mating between *R. thomsonii* and *R. campylocarpum*; and *R. wongii*, the result of a wandering insect pollinator journeying between *R. ambiguum* and *R. flavidum*. Specific status was therefore rescinded and replaced with a leading 'x'. That same fate was extended to the rogue seedlings germinating in tray after tray of otherwise true munchkins being raised from the seed collections of the plant hunters. Especially as these oddballs were unknown in the wild. Classic examples are *R. peregrinum*, odd man out in a tray of *R. glactinum* seedlings, and *R. inopinum*, which sprang up amidst a batch of *R. wasonii*.

Doctor Cullen, writing in the General Introduction section of his paper *Revision of Subgenus Rhododendron sections Rhododendron & Pogonanthum (Notes from the Royal Botanic Garden, Edinburgh, Volume 39, Number 1, 1980)* explains how the structure of species, subspecies and variety was applied to Genus *Rhododendron*:

"Species should differ from each other in at least two independent but correlatedly varying characters, and have geographical or ecological distributions different from those of their closest allies; if two or more taxa appear to intergrade, then the resulting treatment depends on the proportion of intermediate specimens. If these are few in number, two (or more) species are recognised, which are considered to hybridise to a small extent. If the proportion of intermediate specimens is larger (up to c. 25% of the total) but the units are geographically discriminable with morphological intermediates in a geographically intermediate area, then one species is recognised with two (or more) subspecies within it. Alternatively, if the various units are geographically indiscriminate, then one species is recognised, either undivided, or, if morphological variation is appropriate, divided into two (or more) varieties."

Complying with the *International Code of Botanical Nomenclature* was always going to cause friction between the botanists on one hand, and dyed-in-the-wool rhodo-obsessed gardeners and horticulturalists on the other. But just how much disquiet those changes generated came as something of a surprise to the doyens at the RBGE, especially when the Royal Horticultural Society openly declared for the 'remain' camp, as was made abundantly obvious in *The Rhododendron Handbook 1980*, if ever so politely.

To illustrate the scope of those alterations and adjustments, the old Balfourian system

would have presented the rhododendrons of the Arboreum Series as follows:

R. arboreum,
R. arboreum forma *album*,
R. arboreum forma *roseum*,
R. campbelliae,
R. cinnamomeum,
R. delavayi,
R. delavayi var. *albotomentosum*,
R. delavayi var. *album*,
R. lanigerum,
R. lanigerum var. *silvaticum*,
R. nilagiricum,
R. niveum,
R. peramoenum,
R. zeylanicum.

The downside of such an approach was that each species was effectively accorded specific status, no proper account was taken of the geographic distribution, morphological characteristics were often ignored, and most importantly, no hierarchy was established to show the relationships between the species. The new classification, following the structure Dr Cullen outlines, places Subsection *Arborea* within Section *Ponticum* of Subgenus *Hymenanthus* of the Genus *Rhododendron*, listing the members of that subsection as:

R. arboreum,
R. arboreum subsp. *albotomentosum*,
R. arboreum subsp. *arboreum*,
R. arboreum subsp. *cinnamomeum*,
R. arboreum subsp. *cinnamomeum* var. *cinnamomeum*,
R. arboreum subsp. *cinnamomeum* var. *roseum*,
R. arboreum subsp. *delavayi*,
R. arboreum subsp. *delavayi* var. *delavayi*,
R. arboreum subsp. *delavayi* var. *peramoenum*,
R. arboreum subsp. *nilagiricum*,
R. arboreum subsp. *zeylanicum*,
R. lanigerum,
R. niveum.

There are now only three species within the subsection given specific status: *R. arboreum*, with its wide distribution over large areas of the Indian sub-continent and the Sino-Himalayas; *R. lanigerum*, from southern Tibet and eastern Arunachal Pradesh; and the rare *R. niveum*, from Sikkim and Bhutan. These three species are clearly related but have significant identifiable differences from each other. Moreover the relationship between the different plants is clearly delineated.

R. arboreum is one of the most wide-spread and variable of rhododendron species. It has six subspecies that can be geographically separated: ssp. *zeylanicum* is unique to Sri Lanka; ssp. *albotomentosum* is confined to a single mountain in northern Myanmar; ssp. *nilagiricum* grows on hills in southwestern India; ssp. *delavayi* is distributed in the eastern part of *R. arboreum*'s range; ssp. *cinnamomeum* grows in eastern Nepal, extending through southern Tibet to Bhutan and Arunachal Pradesh, at altitudes above 2,700m; whereas ssp. *arboreum*, which is common across the Indo-Himalayas, grows at the

relatively low elevations of 1,850-2,550m and usually has blood-red flowers.

The six subspecies intermediates also show morphological differences from each other, such as deeply fissured bark, different colours and forms of indumentum on the leaf underside, the poise of the leaves at different seasons, as well as their shape and size.

Both subspecies *cinnamomeum* and subspecies *delavayi* also have forms that are not geographically distinct, yet display morphological differences that require classification as varieties. For subspecies *delavayi*, var. *peramoenum* has much narrower leaves than var. *delavayi* - 1 to 3cm wide compared with 1 to 5cm wide; for subspecies *cinnamomeum*, var. *cinnamomeum* and var. *roseum* differ from each other in the type and colour of the lower leaf surface indumentum.

As can also be seen, some entries were discarded or sunk:

R. campbelliae was made synonymous with *R. arboreum* ssp. *cinnamomeum* var. *cinnamomeum* as the revision's botanists considered the morphological differences between the two to be insignificant. Moreover, any distinctiveness shown in cultivation was, it was claimed, not found in the wild populations.

White-flowered forms of *R. arboreum* from the highest elevations, particularly in Nepal, were included within ssp. *cinnamomeum* var. *roseum* due to the composition of their lower leaf surface indumentum, the obvious ridiculousness of such bracketing apparently not registering. Horticulturally, they may be referred to as Album Group.

The concept of a horticulturally based addendum to the classification was proposed by the Royal Horticultural Society in 1980 to retain those widely used and important names for taxa made synonymous by the revision. Botanists gave the proposition the middle finger, but the Group system is at least recognised by the *International Code for the Nomenclature of Cultivated Plants and the Cultivated Plant Code* (1995), although it continues to have no botanical status.

Of the other missing taxa:

R. delavayi var. *album* was described in 1912 from a single specimen in the Temperate House at Kew. As the plant is not known in the wild, it is now regarded as a rogue seedling, grown from a collection made by Abbé Jean-Marie Delavay around 1892. As indicated, countless natural hybrids arise regularly in wild seed collections, but the old Balfourian classification system did not allow for this possibility and required each to be gifted specific status.

The crimson-flowered *R. lanigerum* var. *silvaticum* from Pemako in southeastern Tibet only differed from *R. lanigerum* in its flower colour, so became synonymous, though as with the white forms of *R. arboreum*, horticulturally, plants can be distinguished as *R. lanigerum* Silvaticum Group.

Over time, and despite the initial furore when the subgenus papers first appeared, the Edinburgh Revision gradually became accepted as the most satisfactory and comprehensive classification of Genus *Rhododendron* ever published, even by gardeners and horticulturalists who were once opposed to its introduction.

On that front, history repeating itself helped in no small measure:

As happened with the taxonomy it supplanted, a privately published book went a long way towards establishing the validity of the new classification amongst the rhododendron-savvy communities in the UK and the US, who were then still enthralled by H. H. Davidian's four volume opus. Available initially only through pre-subscription, *The Encyclopedia of Rhododendron Species* was authored by two of the gardening world's acknowledged rhododendron experts: RHS Victoria Medal of Honour recipient Peter Cox; and his son, Kenneth; joint owners of the renown Scottish specialist rhododendron nursery, Glendoick Gardens. Moreover, in 1997, it was the first lavishly illustrated guide to describe each of the

temperate rhododendron species then in cultivation.

The text of the encyclopaedia followed the strictures and naming conventions of the new classification, but clarified the more heavily populated subsections with semi-unofficial alliances where appropriate, while also significantly expanding the number of groups.

The botanic descriptions, along with accompanying cultural information, were concise and written for gardeners, containing detail gained not only from the herbarium, but from hands-on experience as professional nurserymen, from visiting other rhododendron gardens across the World and, at that time, from completing over a dozen field trips to the rhododendron-rich areas of Southeast Asia and China. So mirroring the fate of *The Species of Rhododendron* sixty years before, the Cox *Encyclopedia* effectively became each and every rhodophile's *New English Bible*.

Yet inconsistencies were dotted throughout the new classification it followed: with regard to the placement of many individual species; as well as to the validity of some of its subgenera and sections; and to what had not been included, namely those plants gathered under Genus *Menziesia*. Equally, reopened Chinese hillsides were repeatedly showing that one rhododendron species merged into another as altitude was gained, which the authors of the Edinburgh Revision knew would mean more consolidation and synonymy, which in turn meant that their new classification could not remain frozen, as had effectively been the case with many of its forebears.

Oh, and Hermann Sleumer was on the warpath.

Writing in *Contributions Toward a Classification of Rhododendron*, which included a full English translation of his *Ein System der Gattung Rhododendron*, the botanist had again set out the case for removing from the genus the three plants presently pigeonholed inside Subgenus *Therorhodon* - *R. camtschaticum* ssp. *camtschaticum*, *R. camtschaticum* ssp. *glandulosum*, and *R. redowskianum*. For they could not interbreed with any other member of the genus bar themselves. So should be placed outside its realm. As John Kunkel Small, John Hutchinson and Herbert Faulkner Copeland had previously argued - respectively, in: *North American Flora*, Volume 29, published in 1914; the *Kew Bulletin* of 1921; and lastly, *A Study, Anatomical and Taxonomic, of the Genera of Rhododendroideae*, of 1943 vintage.

A millennium would draw to a close before science finally provided the answers to this and all those other worrisome conundrums.

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- opposite -

Who's Who No. 3: hunter-gatherers of the second, all-access seed-fest.



Keith Rushforth



Peter Hutchison & Peter Cox



Tony Schilling



Edward Needham



Mark Flanagan & Tony Kirkham



Alan Clark



Jens Nielsen



Bent Ernebjerg

The Pollination Process:



Superficially, all appears simple: a bee, moth, or some other visiting insect enters a corolla to pilfer its stock of nectar and in doing so, brushes against the stamens and style. Unbeknownst to the plunderer, transference takes place and pollen is either deposited or picked up. If the former, and the stigma at the end of the style is in receptive mode, the plant will be fertilised as a result. If the latter, the progenitor will likely fly off to seek another hit of sugar from the flower next door, or one a metre or two away, or one on a bush several hundred metres distant spotted during the return journey to the hive. In each case, though again dependent on the state of the stigma, the result will be the same - fecundation.

The intricacies of that process - pre and post the pollen drop - were, until relatively recently, not fully understood by both horticulturalists and botanists alike. One dollop of pollen, for instance, did not mean that all the potential seeds in the ovary below would be fructified, which is why, for a rather embarrassing number of decades, whenever a rogue natural hybrid sprouted in a pan of otherwise near identical seedlings, it was treated as a brand new species and gifted specific status, this despite the fact that such a plant might be unknown in the wild. It was also why John Guille Millais could state that:

Some years before Mr Smith raised 'Cornubia', Mr J. C. Williams raised a similar cross at Caerhays. He crossed *R. arboreum* (blood-red) with *R. thomsonii*, and it is supposed that, before the muslin bag was placed over the pollenized flower, a bee came along and kindly put in some *R. barbatum* pollen. The result, as seen in the large plants now at Caerhays, is a hybrid somewhat similar to *R. Cornubia*, but superior in constitution.

Rhododendrons and the Various Hybrids, 1917.

Today, such a statement would have knowledgeable readers rolling about in fits of uncontrollable laughter as the parental make-up of Samuel Smith's 'Cornubia' cross - he was Head Gardener at Penjerrick, near Falmouth in Cornwall, and made the pairing in the spring of 1901 - is *arboreum* x 'Shilsonii'. In longhand, that equation would be written as *arboreum* x (*thomsonii* x *barbatum*), thus in execution, one very atypical member of Genus *Bombus* would have been needed to pull off such a feat. Unless of course, a flowering specimen of Richard Gill's 'Shilsonii' hybrid - birthed between 1890 and 1892 at the nearby Tremough estate in Penryn - happened to have been growing in the vicinity of JCW's *R. arboreum* specimen, then all things suddenly become possible, as evidenced by the need for a muslin bag to prevent any subsequent deposits of pollen, these grains able to pair with any still unfertilised ovule in the ovary. This fact was widely known by the hybridising community, but botanists, clearly, were a little slow on the uptake, the penny only really beginning its drop for them in the years immediately after World War II, an apparent lack of 'substantive' evidence being the hangup.

John Guille Millais again:

So great an authority as the late Professor Sir I. Bayley Balfour has named as 'species' several plants which came as 'rogues' amongst collectors' seed, and which I, for one, think are merely natural hybrids. It seems strange to me, since natural hybrids do occur in nearly all forms of plant and animal life, in a wild state as well as in cultivation and confinement, that so great a botanist should not have accepted them. He says that these plants, which he calls 'species' may be hybrids, but he must have further proof by the experiment of artificial crossing. With proof of this fact I furnished him, but he still reserved his opinion.

Rhododendrons and the Various Hybrids, Second Edition, 1924.

The set of SEM micrographs that follow would certainly have provided all the proof-positive substantiation needed to convince even the most sceptical botanist, confirming what Millais and his fellow hybridisers knew to be true by showing Mother Nature's complex and wondrous procedure to bring sperm and egg together in exquisite detail. The images were captured by Barbara Palser, past President of the American Botanical Society, while she was a Visiting Research Fellow at the Plant Cell Biology Research Centre, School of Botany, University of Melbourne, in the mid-1980s, and first presented in a lecture to, and an article for, the Australian Rhododendron Society (Volume 24, Number 4, of the group's Journal, dated June 1985).

The nectary is considered first, then the anther to ovule progression:

- opposite left -

The male and female reproductive organs in a *R. calophytum* corolla.

Surrounded by a circle of eighteen male stamens, all with pollen about to be discharged from the pair of pores at their tips - the brown anthers - the female gynoecium has a straight, white and stout style linking the ovary at its base - green and glabrous - with the large and yellow, discoid stigma at its apex.

- opposite right & below -

Transference by outside agency.



Bee

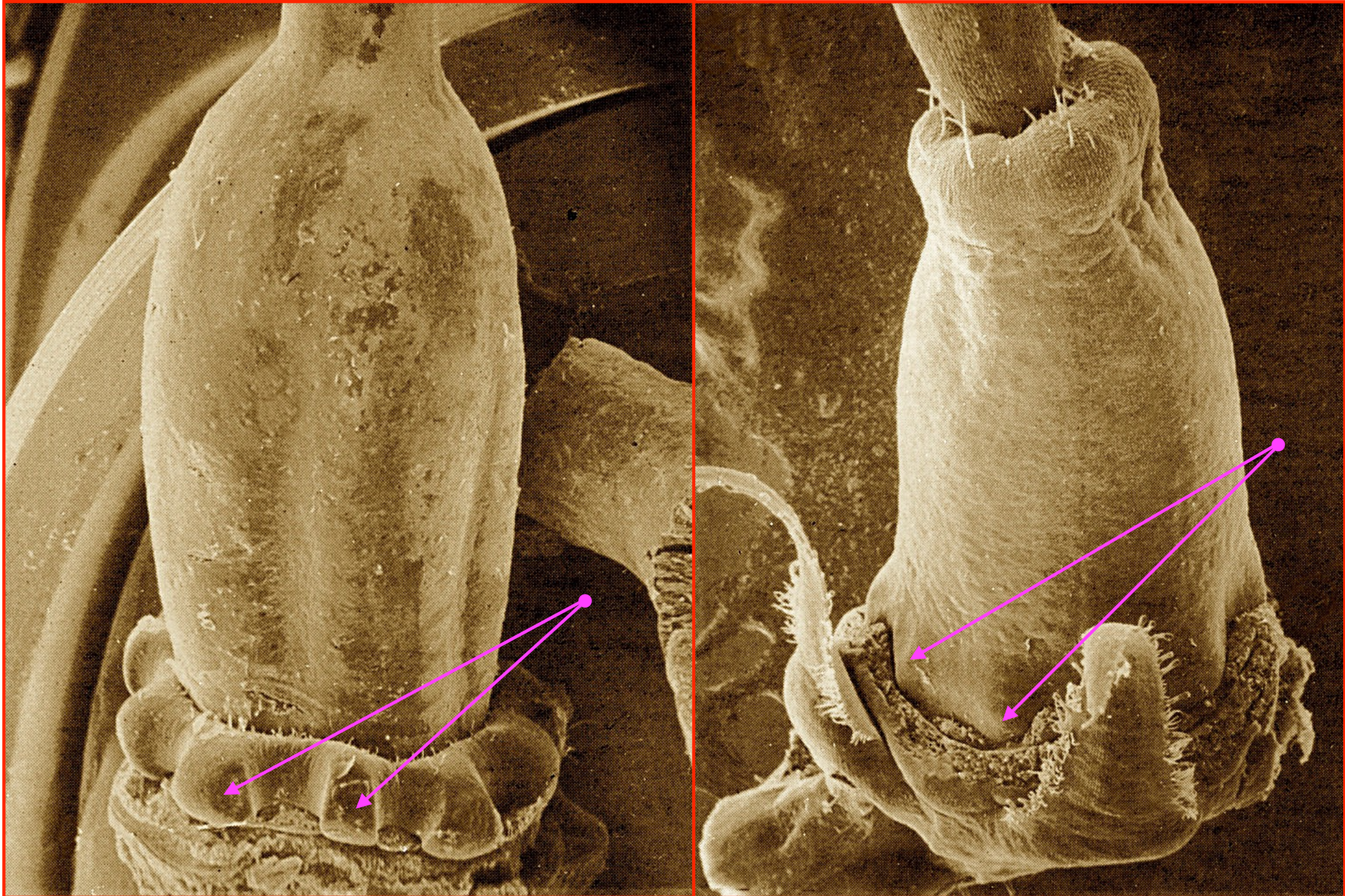


Butterfly



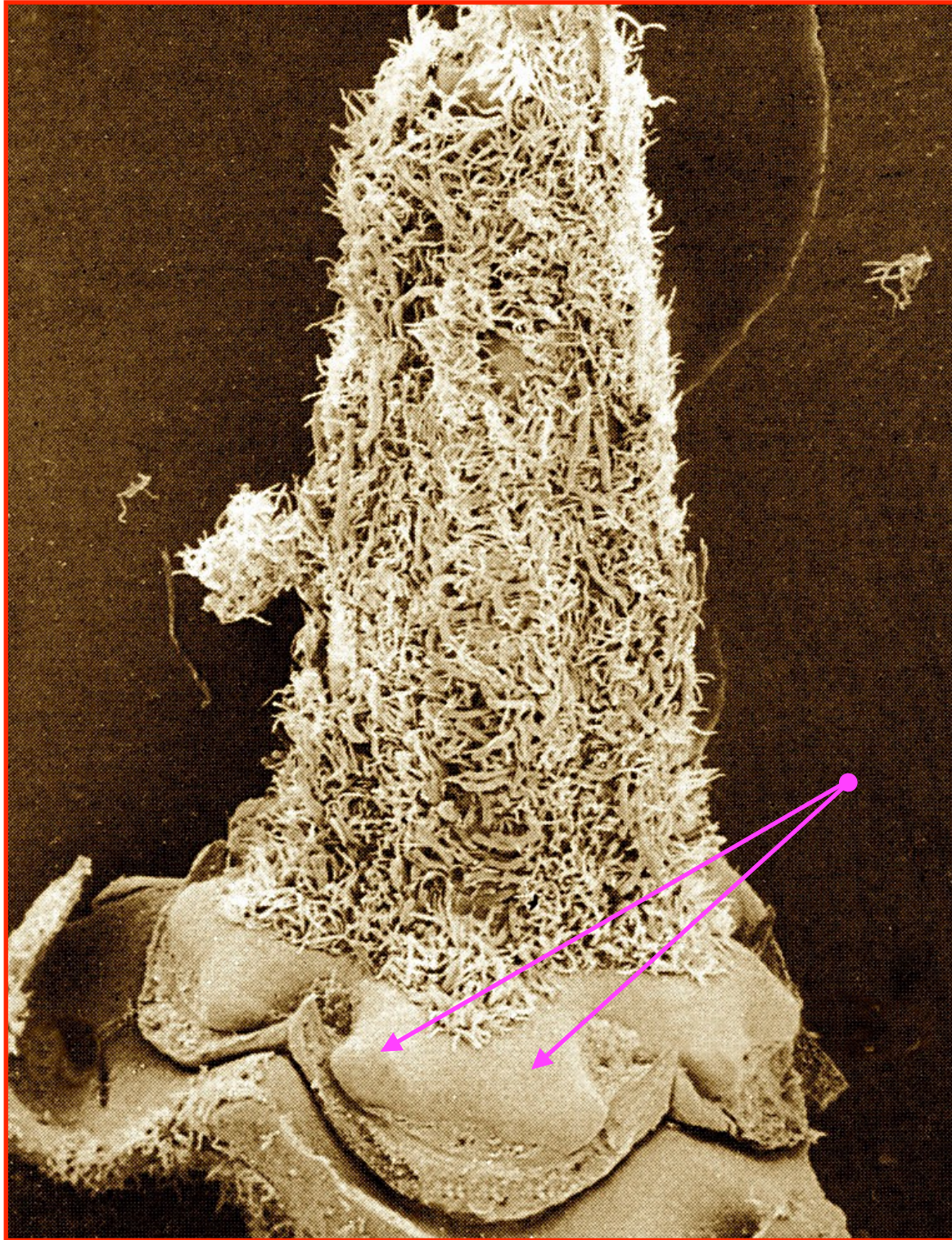
Beetle

- Nectary Structures -

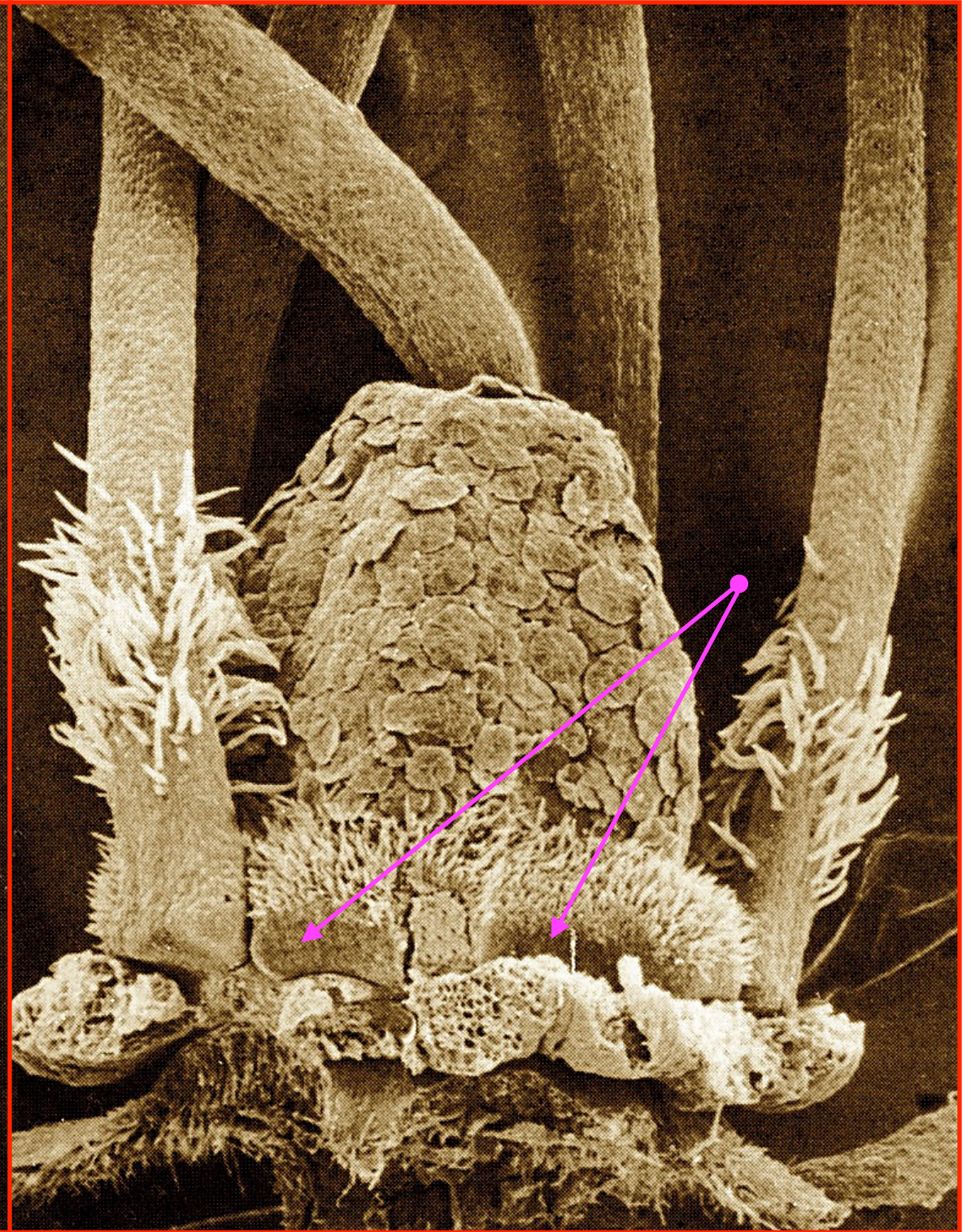


A distinctly lobed ring at the ovary base.

Slight swellings at the ovary base.



Paired lobes, widely spreading from the ovary base.



A distinct bulge at the ovary base that is hairy above.



Anther with pollen emerging from the pores.

Attached to the stamen filament on its outer side, the anther is usually oblong-shaped and has two distinct longitudinal halves, each containing a pair of pollen sacs. At maturity, a pore opens at the base of each half, through which pollen from the sacs is discharged. The juvenile anther starts off with these bases pointing down at the ovary, but the whole structure flips over as the stamen filament grows, realigning the bases to point outwards by the time the pores open.

The pollen grains contained within the anther sacs enclose the male sperm, each of which has undergone a special type of cell division known as 'meiosis'. This is where the nuclear components - the chromosomes - have been halved from a double set of 26 - two identical sets of thirteen; think AA, BB, CC, all the way along the alphabet to MM - and pulled apart into two separate, single sets of 13 - so, A, B, C, to M. This same process occurs in the embryo sac that produces the egg cell, which means that when the two ultimately join - male sperm with female egg - each provides half of the hereditary material needed to form a new plant.



Pollen grain tetrads.

The pollen that emerges from the anther pores is actually a quartet of grains, with four individual units adhering tightly together in a 'tetrad' or 'compound' structure. This is an unusual practice, not followed by the majority of flowering plants, but common throughout the various genera that comprise *Ericaceae*. Each of those four individual grains has a lens-shaped opening in its outer wall - an 'aperture' - which is shared with the three adjacent grains.

Liberally strung between the grain tetrads are long, narrow threads of a sticky substance known as 'viscin', each string having one of its ends attached to a pollen wall. These strands are unique to Genus *Rhododendron*, plus one or two of its closest relatives within the *Ericaceae* family, though the viscin compound itself can be found thinly coating the pollen grains of plants such as orchids, mistletoes, willowherbs and sundrops. In Genus *Rhododendron* however, these threads not only help bind the individual grains into their tetrad platoon, but fuse together most of the pollen in an anther sac into a loose irregular mass.

Rhododendron flowers have evolved to attract pollinators - usually bees, moths, butterflies, or some other insect, though a number are reliant on birds - with two rewards offered to prospective visitors: the pollen itself, which is rich in proteins, lipids (fatty substances) and starch; and that sugary concoction known as 'nectar', an energy-rich liquid nutrient containing sucrose, glucose and fructose. Bees will harvest both gratuities to feed to the larvae back at their hive.

Pollen is usually produced in quantity, with a mass of grains linked together by sticky viscin strings exuding from each anther pore.

The nectar yield is more restrained, with some species offering only a scant few drops within each corolla, others providing more, and a few, almost copious amounts. Containing a 10-70% concentration of sugar compounds, the sticky fluid is a prime food source for the birds and insects that can access it. But as history documents, in some cases - specifically *R. luteum* - in quantity, it can be poisonous to humans.

Secreted from a ring of cells that encircle the base of the ovary - the 'nectary' - these structures push out between the feet of the stamen filaments. However, by the time a flower is fully open, nectar production will usually have ceased.

Corolla shape, flower colour and scent have evolved separately in each rhododendron species to attract the specific type of individual required for the pollen grain transfer to take

place. Wider-opening corollas give bees a landing platform, while horizontally orientated flowers are perfect for hovering moths and humming birds. Bees have short tongues, so the corolla tube will be reduced in length where these insects are the prime pollinators, or adapted to be wide enough to allow unfettered crawling access. Those rhododendron species visited by moths or birds will have long, narrow corolla tubes, matching the tongue length of their pollinators.

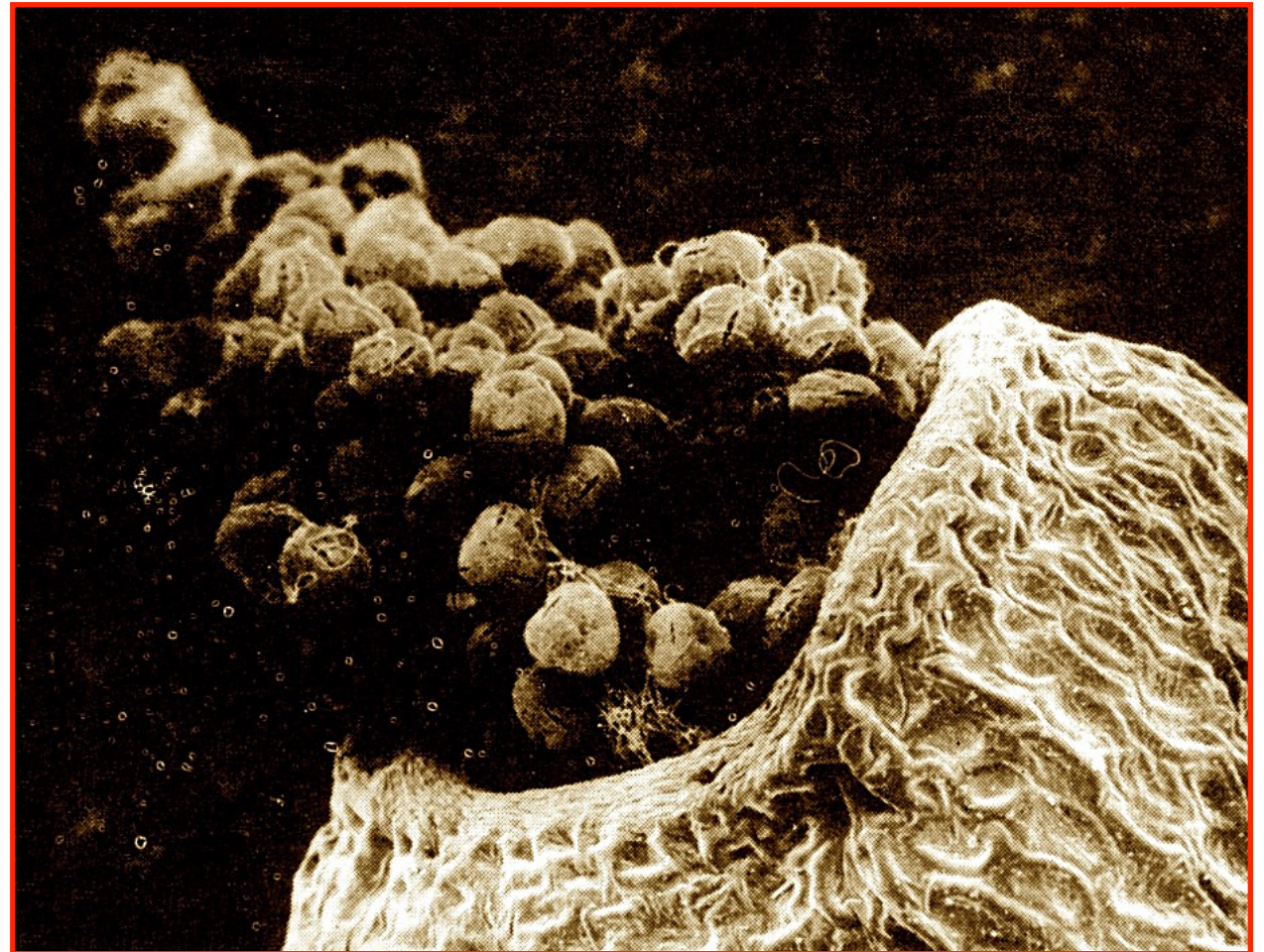
Colour and scent will help a pollinator move from the flowers on one plant to those on another of the same species, while the patterns of flecks and spots on the corolla lobes are in fact a precision guidance system used to direct visitors straight to the nectar store via a close encounter with the stamens and style.

As a bee brushes against the stamens, pollen from the open anther pores sticks to the hairs on its body. Then, as the creature moves off, so more pollen is pulled out courtesy of the viscin threads.

Within the corolla, stamens and style mature at different times to increase the chances of cross- rather than self-pollination. A stigma is ready to accept pollen grains when it is seen to glisten and shine, the consequence of a sticky liquid coating exuded onto the lobes. If compared with the highly adhesive viscin produced by the anthers, the glaze secreted onto the stigma is the rhododendron-world equivalent of super glue, capturing the



An individual tetrad pollen grain.



Pollen grains emerging from an anther pore.

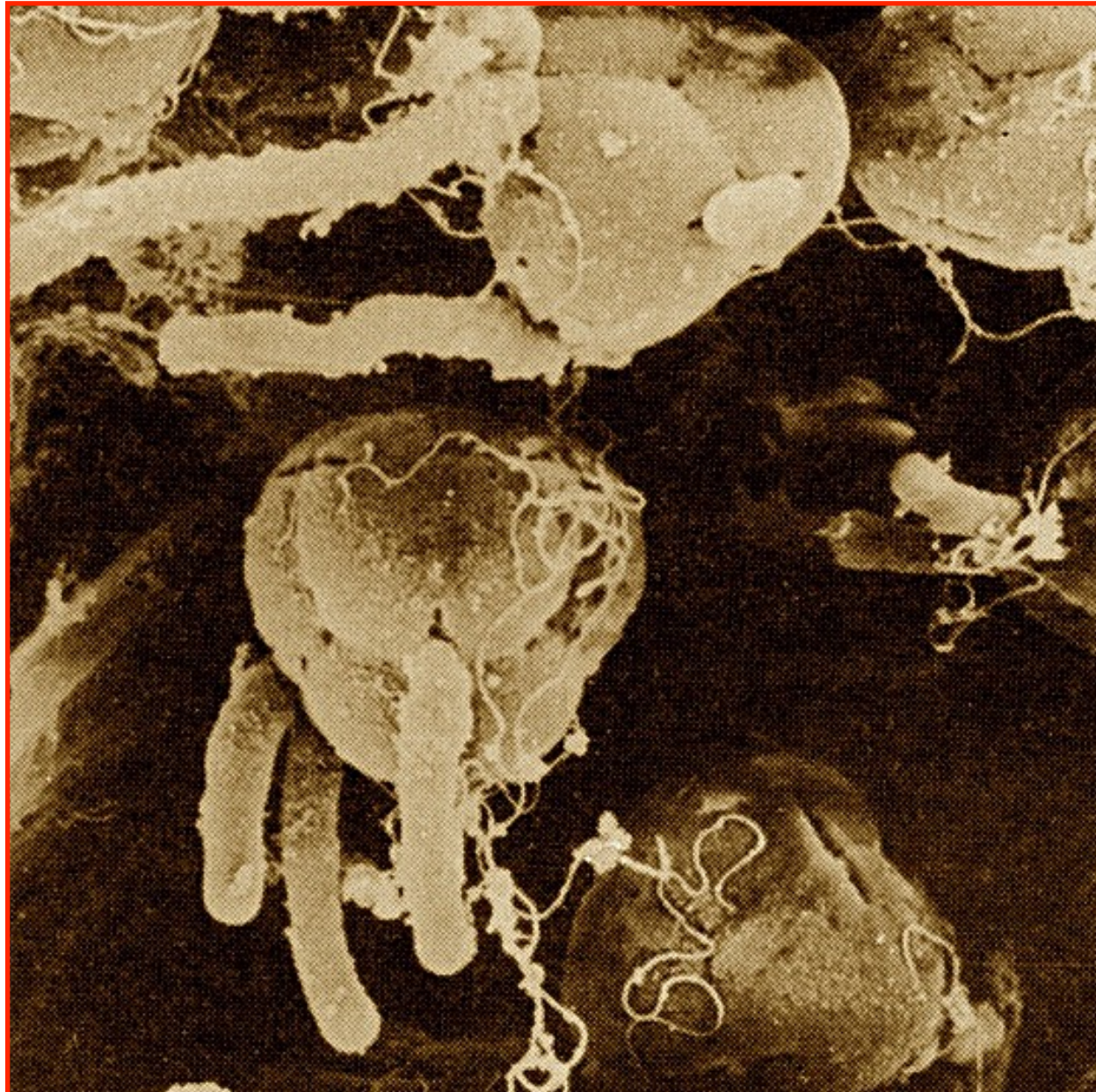
pollen grains or strings stuck to or trailing from a visiting bee, moth or bird and holding them fast in the exudate, the strength of adhesion enough to detach the grains from their host. And rarely will a caller, on the way in or out of the flower, fail to knock against the style and initiate such transference if a stigma is receptive.

A groove will usually be found running all the way around the outer edge of each stigma, and five or more similar furrows radiate out from the centre to the periphery, dividing the whole into a number of lobes, these mirroring the tally of chambers in the ovary below.



From the moment they are deposited onto the stigma, the clock is running. Within twenty-four hours, the tetrad of grains will have 'germinated' and sent out one or more 'pollen tubes' through the apertures in the outer cell wall, this reflective of a fully developed and viable seed sending its radicle root down into the soil. Although all four grains of the tetrad granule are each capable of developing a pollen tube, it is apparently rare for them all to do so.

Growing from the tip, the pollen tube dives straight into the nearest groove on the surface of the stigma, possibly due to some kind of chemical attraction, more likely because that is where the contours of the sloping stigma lobes lead it.



Initial germination.



Entering the stigmatic groove.



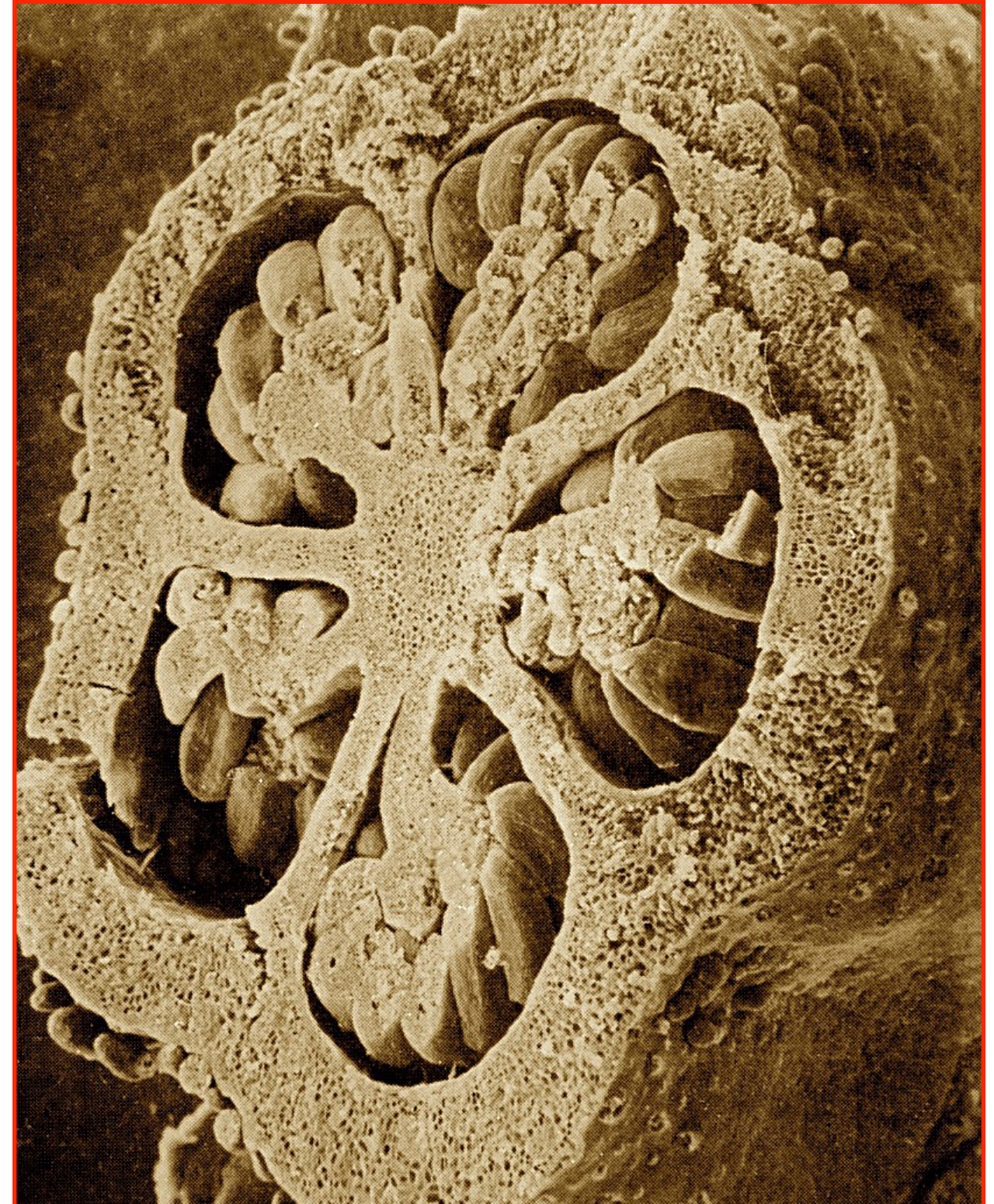
Obliquely viewed cross section of the style.

The style is of course, not solid, but has a narrow, star-shaped cavity at its centre called the 'stylar canal'. The stigma grooves guide the pollen tubes towards and into this channel, which extends all the way down the length of the style, continuing on to enter the upper, open areas of the ovary.

Each pollen tube takes roughly a week to make this journey.

The ovary itself is divided into a number of chambers - 'locules' - set around a central core. Five is the norm, occasionally four, with some species boasting ten, twelve or even twenty (Subsections *Falconera* and *Grandia* being the obvious examples). Projecting into the middle of each chamber from the central core is a mass of tissue known as the 'placenta'. This broadens out in the chamber, away from the core, and is covered by hundreds of small multicellular oval structures known as ovules. Each of these contains an egg cell and is a potential seed.

The placenta itself is partially divided into two halves by a narrow cleft running through it: from the top, where the ovary locule joins the style; down almost to the base. It is this channel that is directly continuous with the stylar canal, allowing the pollen tubes to continue-on into the ovary locule and ultimately reach an individual ovule.



Transverse cross section across a five-chambered ovary.



Longitudinal cross section cut, showing the placental cleft and the ovules, like bunches of grapes, held on either side.

Each pollen tube pushes into the top of a placental cleft. It then either turns onto the outer surface of the placenta to weave a haphazard course through the ovules, or continues further down the cleft before emerging, a choice dependant on how many pollen tubes have previously entered the opening, so restricting access.

Each ovule, close to the point where it is attached to the placenta, has a very narrow passageway leading in towards its heart. This is known as the 'micropyle', and it is along this channel that one, or sometimes several pollen tubes, will progress.



Ovules at the upper end of a placenta.

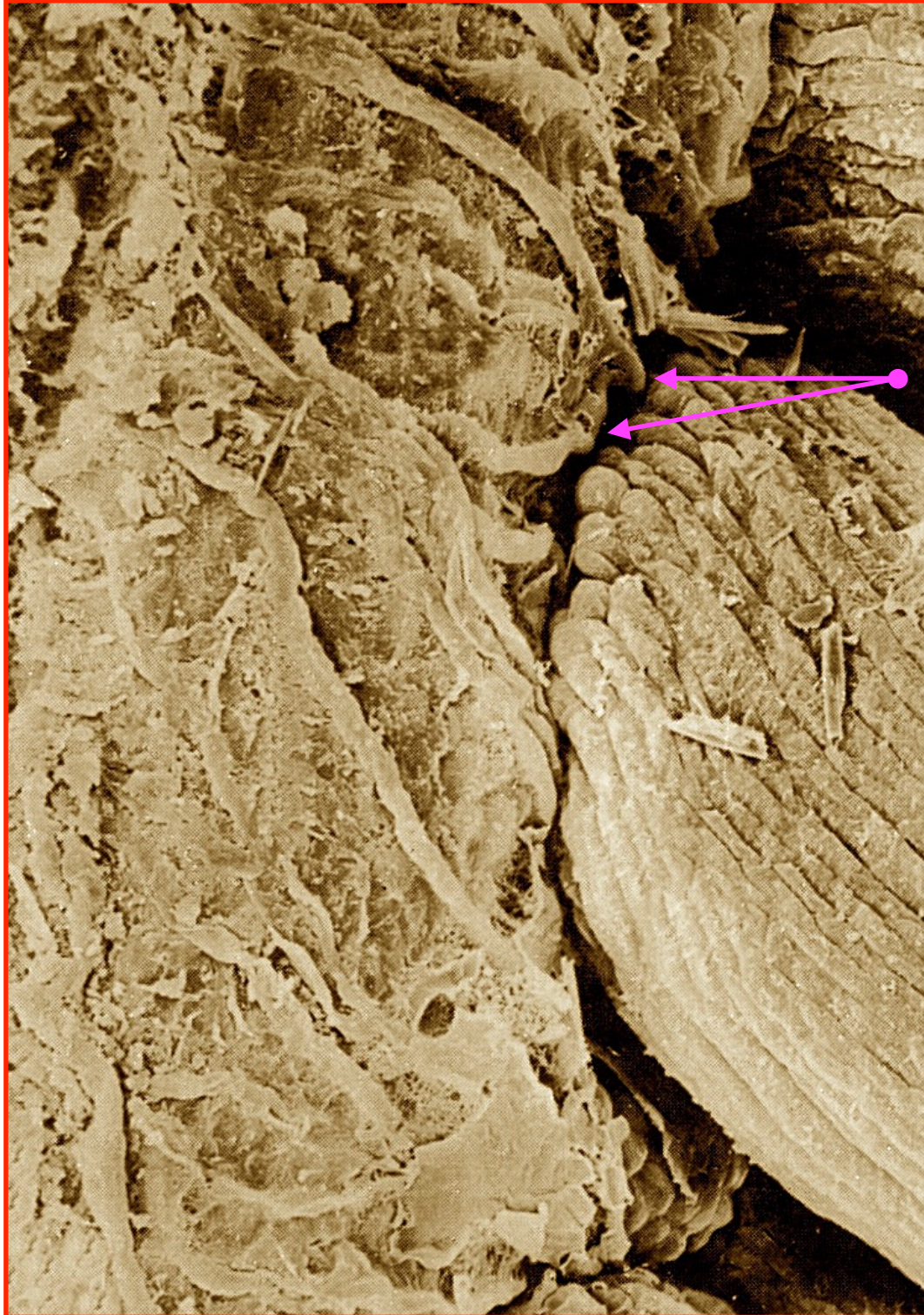
- Pollen tubes within a locule chamber -



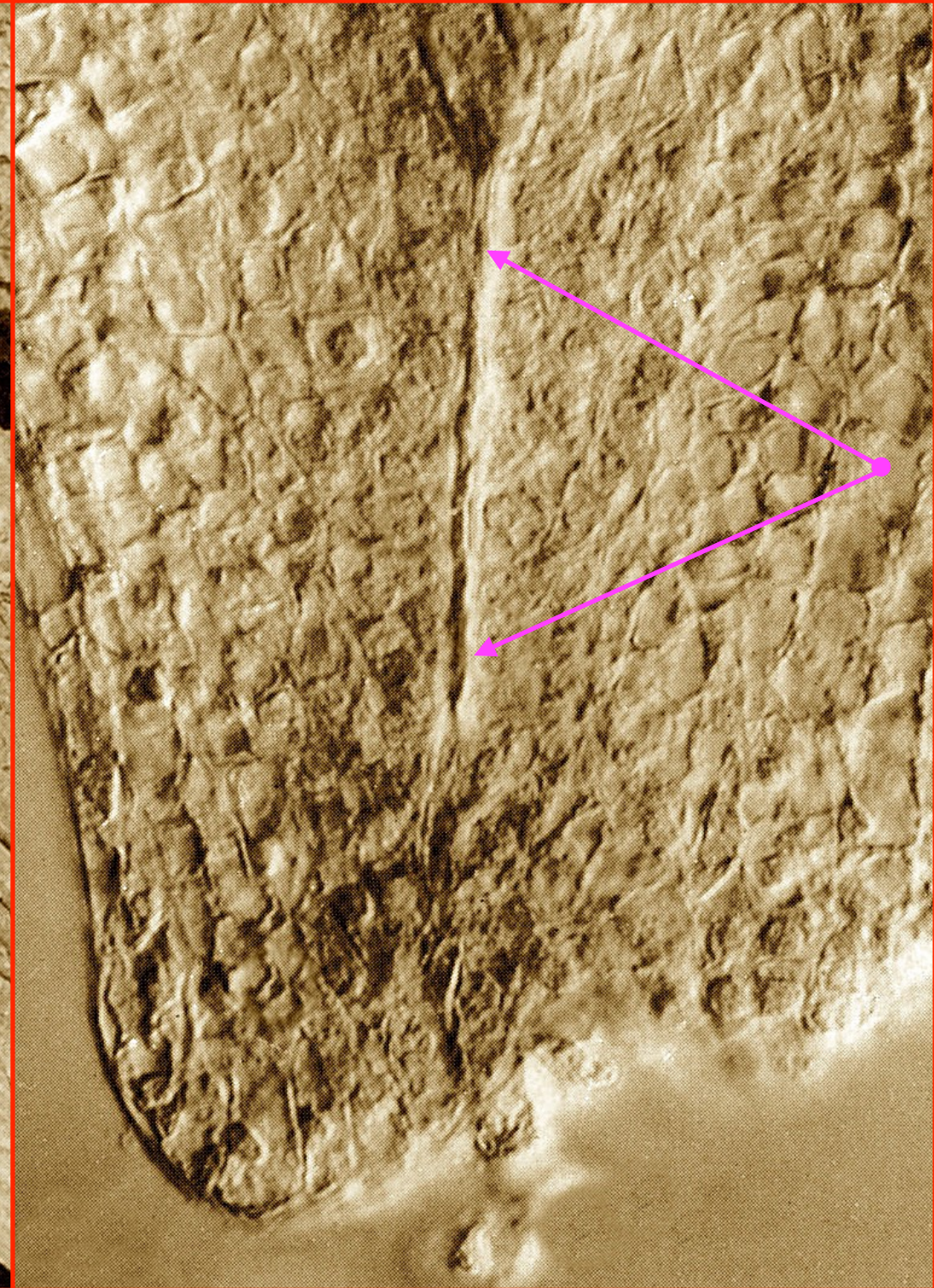
Seven days after pollination.

Ten days after pollination.

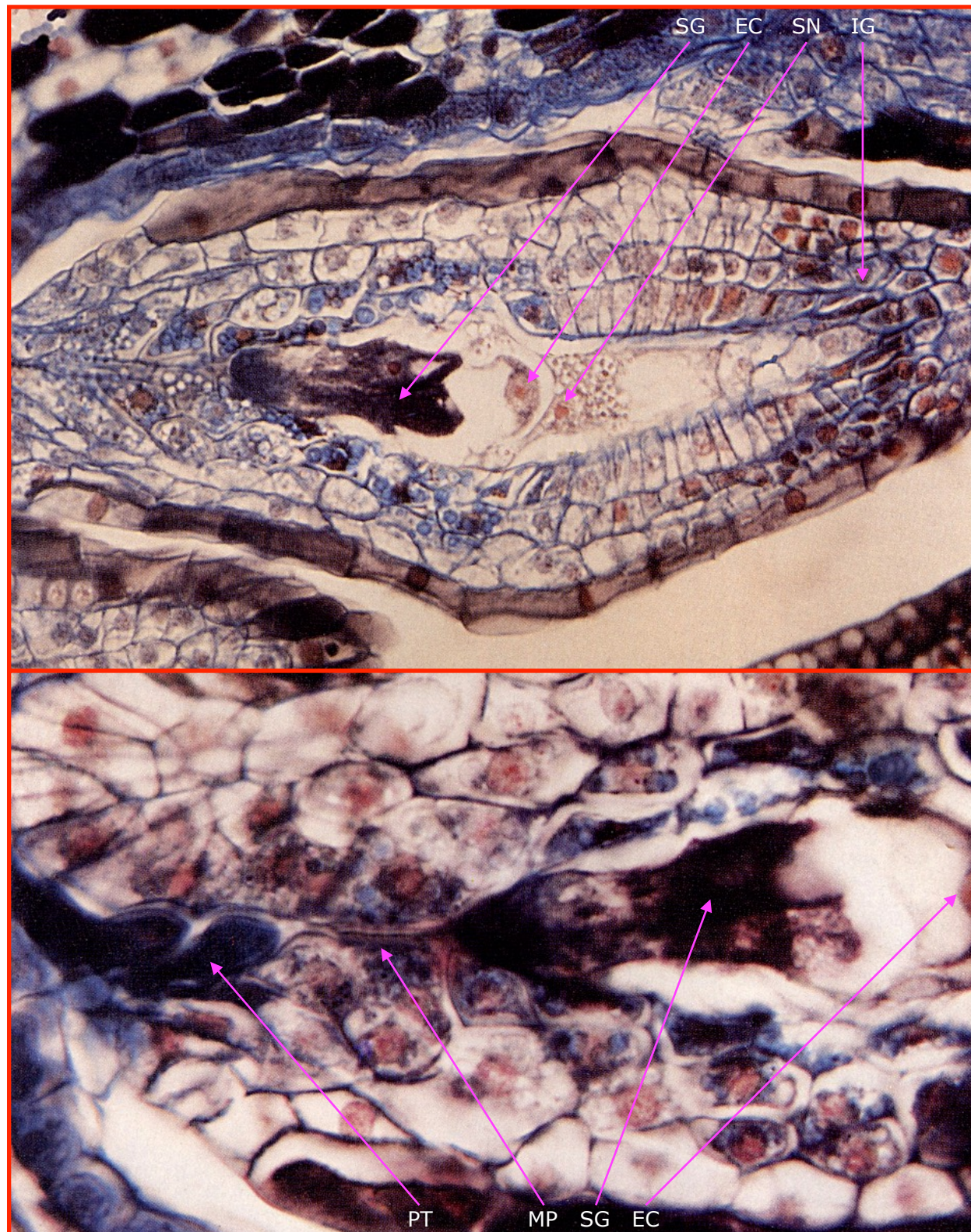
- Pollen tubes entering an ovule -



Seeking the micropyle entrance.



Inside the micropyle channel.



Fertilisation is now imminent, for the male sperm cells have arrived. These were carried as nuclei inside the pollen tube, with one migrating to the head as it first began to extend. Carried down into the stylar canal, this 'generative' nucleus - there is a second cell that actually precedes it slightly known as the 'tube' nucleus - divides into two sperm cells midway through the journey (between 48 and 96 hours after pollination took place).

With the pollen tube now fully extended along the micropylar channel and butted up against its central internal structure - the 'embryonic sac' - the head grows through the sac wall and bursts open, releasing the sperm cells. One fuses with the egg, while the other joins with a secondary nucleus inside the sac to complete the double fertilisation process common to all plants. The sperm and egg amalgamation - now called a 'zygote' - develops into an embryo within the ovule's walls - these cells known as the 'integument' or 'seed coat' - while the sperm and secondary nucleus pairing begin to form nutrient tissue known as 'endosperm', which feeds both the embryo's growth and when it is fully mature, that seed's germination.

A zygote takes several months to develop fully, the actual time span differing between the various species groups and influenced heavily by the environmental conditions each faces - the alpine rhododendrons of the high Himalaya, for instance, being the most fleet. Throughout this period and right up until the moment the capsule opens, the ovule, with its maturing embryo enveloped in endosperm and enclosed by the integument, remains attached to the placenta. Often it changes shape outwardly, growing tails or 'appendages' at one or both ends, a fairly widespread practice throughout the genus, but not a universal trait as in some taxa the mature ovule silhouette remains a mirror of the juvenile geometry. Where appendages have formed, the seed's periphery will often have flattened to form a narrow or broad 'wing', aiding wind-borne distribution.

The ovary is of course swelling in size as the seeds develop within it. The stamens and corolla have long since been shed, and the style too often withers or in some species is discarded altogether. Once fully enlarged, the 'fruit' becomes hard and woody, as well as frequently changing colour from green to brown.

At maturity, the capsule starts to split open, from the top down and along the lines that originally separated the individual locules (these technically known as the septum walls). This action continues, with the sections spreading even further apart, and now the seeds begin to break off the placenta, either falling to the ground or being blown out and carried off by the wind. The majority will either fail to germinate after they land or be lost to pest or tempest while still juveniles. Only the lucky few, having settled by chance in favourable spots, will reach flowering size and go on to continue the cycle as pollinators are drawn to their own corollas.

- opposite left -
Stained longitudinal cross sections through an ovule,
(the placenta is out-of-frame on the lefthand side of each photomicrograph).

The upper image shows the ovule before a pollen tube has entered, with the egg cell (EC) set ahead of the synergid (SG), which is directly in front of the micropyle opening and tasked to 'guide' the pollen tube to the egg and the secondary - polar - nucleus (SN).

The three-cell thick enclosing surround - partially stained blue - is the integument (IG).

The lower image shows the ovule just after two pollen tubes (PT) have entered, with only the last section of the micropyle channel (MP) to negotiate before they encounter the synergid (SG) and the egg cell (EC).

- opposite right -
An itinerant opportunist at work.



Chromosomes, Organelles, Cell Division:

The intricacies of the pollination process have shown how the hundreds of viable seeds within a mature capsule, when still unfertilised ovules, are each, exclusively visited by an individual pollen tube to obtain a complete set of chromosomes, allowing egg and sperm to embrace and develop into the embryo for a new plant. The consequence of having such a reproductive system means wild-collected seed from a single capsule can all come true, or all be crosses; can have a percentage of natural hybrids amongst the bona fide stock or show just one rogue in a pan of otherwise mirror-image seedlings. For a specific quantity of pollen must be set on the stigma in order to fertilise the ovary's entire hoard of ovules: this mass built-up piecemeal by pollinators over a random succession of visits; who arrive at the stigma from any number of other corollas, not all of which were necessarily of the same species. But from the moment the male and female haploid gametes come together inside the egg, growth begins, kicking-off the process of replication and division, one cell becoming two, becoming four, and so on, separating and duplicating their contents every time - the cache of chromosomes and organelles that each contains.

The vast majority of species rhododendrons do not stray from convention in that they are diploids with twenty-six chromosomes. Each of the cells that make up the plant has within it a defined nucleus enshrouded in a membrane, so is described as being eukaryotic. Inside that nucleus is where all the genetic information is held. Normally this is scattered about within the confines of the membrane allowing easy access to the individual DNA strands, but when the cell needs to divide - for either maintenance reasons or to allow the plant to grow - all those double-helices are gathered-up and each is repeatedly folded and coiled and squeezed into a smaller and yet smaller space. At the end of this process, each DNA stand resembles a long thick spring - a shadowy, maggot-like shape when viewed through a microscope with a 40x objective lens. Twenty-six will be present within each cell. Thirteen of these unique; the other thirteen, duplicates. An original and its doppelgänger. Making up two sets in total.

Present within the same cell, though unseen at that magnification, a treasure trove of organelles will be darting about, these subunits comparable to worker bees, each tasked to carry out a specific function. They are thought to have evolved from once-autonomous, mutualistic, microscopic organisms that were incorporated into the cell over time through a process termed endosymbiosis, which is first believed to have occurred around 1.5 billion years ago. In plants, there are two main types - plastids, and mitochondria:

The plastids are membrane-bound organelles that possess a double-stranded DNA molecule that is circular in form. Examples include: amyloplasts, for the storage of starch and for detecting gravity; chloroplasts, for photosynthesis; chromoplasts, for the synthesis and storage of pigments; elaioplasts, for storing fat; gerontoplasts, for assisting plant senescence; leucoplasts, for the synthesis of monoterpene; proteinoplasts, for storing and modifying protein; and tannosomes, for synthesising tannins and polyphenols.

The mitochondria are double-membrane-bound organelles with an inner and outer lipid layer, the two pellicles separated by an intermembrane space. These organelles also contain their own genome stored within a circular DNA molecule. Present in all plant cells, the mitochondria synthesise a complex organic chemical known as adenosine triphosphate (ATP). This is used by their host cell as its primary source of chemical energy in a process botanists have designated 'cellular respiration', the mitochondria often being described as the cell's powerhouse.

Significantly, chromosomes and organelles have different inheritance mechanisms.

Chromosomes follow the biparental strictures of Mendelian inheritance where - in Genus *Rhododendron* - one set of thirteen are gifted by the male parent - via the pollen grain's sperm - another thirteen by the female parent - contained in the ovule's egg - the

newly created individual being a bog-standard diploid. This matched bequeathal concept was first proposed by Gregor Mendel, a Moravian monk, in the mid 1860s, after he had cultivated, hybridised and tested around 5,000 pea plants in the garden of his monastery. Not unexpectedly, his work was dismissed by the biologists of the day, but his *Principals of Heredity* were rediscovered in the early 1900s by three European scientists - Hugo de Vries, Carl Correns and Erich von Tschermak - and scientifically confirmed in 1915 by the American evolutionary biologist and geneticist Thomas Hunt Morgan.

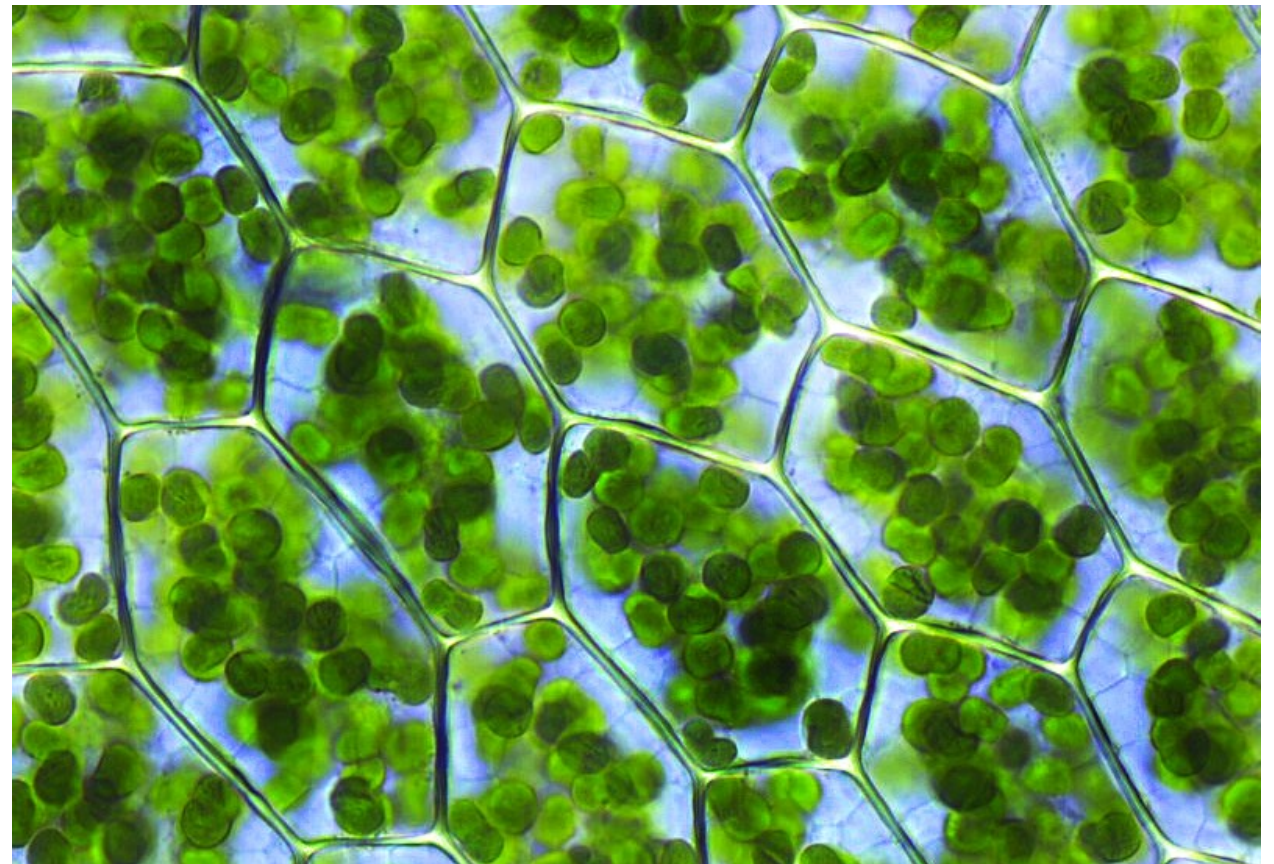
Organelles, on the other hand, are inherited from only one parent. This bestowal, in the *Angiospermae* clade - aka, the flowering plants - is made by the female gamete, so the donation is described as being uniparental. Organelles are present in the male gamete, but as they enter the egg via the sperm, each is marked with a regulatory protein known as ubiquitin, which subsequently allows the developing embryo to select and then destroy them. The discovery of this non-Mendelian heredity was made by two German plant geneticists, working independently of each other, in 1909: Carl Correns, whose work this time focused on *Mirabilis jalapa*, commonly known as the four o'clock plant; and Erwin Baur, who examined species from Genus *Pelargonium*. In the 1930s, a third German botanist, Otto Renner, who favoured *Oenothera*, the evening primrose or sundrop, proved conclusively that uniparental genetic transference took place.

- opposite & overleaf left -

Who's Who No. 4: the proponents of biparental and uniparental inheritance.

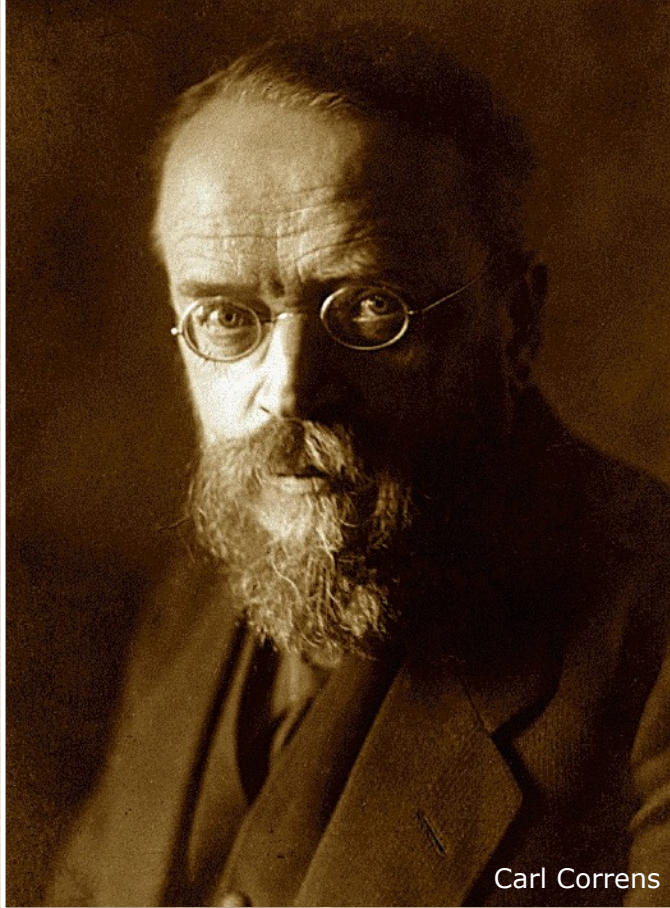
- below -

Chloroplasts in the leaf cells of *Plagiomnium affine*, the many-fruited thyme moss.





Gregor Mendel



Carl Correns



Thomas Hunt Morgan



Erich von Tschermak



Hugo de Vries



The relevance of these two mechanisms to the classification of Genus *Rhododendron*, is that their subjects can now be intimately assessed taxon by taxon - 'tracked', as it were - which means that an individual species can be correctly associated with its closest relatives even though morphologically, its characteristics may appear to be distant from those taxa.

Returning to the subject of cell division, in the overwhelmingly vast majority of cases, such partitioning proceeds without incident. But on occasion, as with all things in Mother Nature's world, errors occur.

When the process goes wrong during the mitosis, cytokinesis or interphase cycle of non-reproductive cell division - in a developing bud, for instance - a sport is produced. The malfunction might be down to a simple random event or it may sometimes be triggered by environmental factors such as very cold or very hot temperatures, wide temperature fluctuations over a short timeframe, water stress, solar radiation or even insect damage. Botanically it is described as a somatic mutation.

The new shoot that arises may sometimes be so similar as to go unremarked, or be seen as a disfiguration and excised, or be highly prized if the foliage adopts a more pleasing shape. In the flowers, a change of shape or hue might occur, or a different pigment be expressed as a streak of colour overlaying the base tone. Somatic mutation, especially of the latter form, occurs most frequently on evergreen azalea hybrids, but is far less often observed on their Subsection *Tsutsusia* parents. It is equally rarely seen on elepidote rhododendron hybrids - 'Mother of Pearl' and 'Vulcan Tetraploid' are the most well-known commercial offerings of such happenstance, the original shoot mutations found on specimens of 'Pink Pearl' and 'Vulcan' - and it is an even less likely phenomenon on

elepidote or lepidote rhododendron species.

If the cell division process goes wrong during meiosis however, the results are likely to be much more consequential.

'Meiosis' is the name given to the process that creates a male sperm or a female egg: a pollen grain or an ovule. If the associated functions that take place in the stamen anthers and ovary locules are put to one side - respective examples being the creation of the viscin threads that tie the pollen grains together or the formation of the integument that forms the seed coat - then the principal task of these structures is to produce haploid cells with exactly half the standard complement of DNA.

Thirteen chromosomes instead of twenty-six. One set instead of two.

So when sperm and egg later merge at the moment of fertilisation, the new embryo has the required aggregate for a $2n = 26$ diploid plant.

The actual mechanical procedure is virtually identical to the mitosis-cytokinesis-interphase cycle, but instead of entering full interphase, after the cell has divided and both halves have duplicated their DNA strands, they immediately split apart again, with four cells created in total, each holding thirteen chromosomes. At this point, further cell division stops. Nor do the four daughter cells - a quartet of haploid gametes - begin the process of duplicating their own DNA. But when things go wrong, the sperm or the egg can often end up with twenty-six chromosomes, double the number each should have, and in this state, they are catchily known as unreduced gametes.

When such an unreduced gamete pairs with a haploid gamete in the ovule, the sperm and the egg will create a zygote with thirty-nine chromosomes - a triploid.

Should two unreduced gametes combine, a tetraploid zygote with a total of fifty-two chromosomes will result.

Alternatively, if a mistake in cell division occurs shortly after the fusion of two haploid gametes has taken place, post duplication of the DNA strands, a tetraploid zygote will be produced if the cell then fails to divide and instead, begins replicating its complement of chromosomes before resuming the normal cell division cycle. Botanically, this is known as somatic genome doubling in a zygote.

The first research study into chromosome numbers within Genus *Rhododendron* was carried out by the American botanist and geneticist Karl Sax during 1930. Sixteen species were examined and all found to be $2n = 26$ diploids apart from *R. calendulaceum* and *R. canadense*, which were natural tetraploids, where $2n = 52$. A Japanese investigation undertaken the following year by M. Nakamura looked at either 9 or 15 species - accounts vary as to the number examined - with all apparently proving to be diploids.

The Royal Horticultural Society is responsible for carrying out the most extensive scrutinisation to date, the results of 550 counts across 360 wild-origin species published in *The Rhododendron Year Book 1950*. The Indian botanist E. K. Janaki Ammal, D.Sc., an expert on cytogenetics and phytogeography, led the team, which found all the non-lepidote species tested to be diploids ($2n = 26$), with but three exceptions: *R. calendulaceum* and *R. canadense* reconfirmed their tetraploid credentials; *R. diaprepes* var. *gargantua*, as it was then known, proved to be a triploid. This plant was established in the then renowned rhododendron collection at Tower Court, Ascot, but it had not been raised from George Forrest's 1913 type introduction of that species as most doyens of the time and to this day believed, but was a rogue in a pan of hand-pollinated selfed seedlings that had come from the garden's dying and highly stressed sole specimen of that F 11958 gathering - as Roza Stevenson herself confirmed in a contribution to *The Rhododendron and Camellia Year Book 1960*. Moreover, a less flamboyant specimen of *R. diaprepes*, which had also been sourced from Tower Court, proved to be a deadly-dull diploid.

But if the elepidotes proved to be nudniks, their more evolutionary advanced, scaly relatives generated a real stir.

Because of the 220 lepidote counts made, forty proved to be tetraploids ($2n = 52$), thirty-four were hexaploids ($2n = 78$), there was a single triploid ($2n = 39$), an octoploid ($2n = 104$), and a pair of dodecaploids ($2n = 156$), though these last two were separate wild collections of the same species.

Yet the leading botanical experts on the genus, along with those who succeeded them over the next half a century, to the Millennium and a little beyond, immaterial of their series/subseries-section/subsection persuasion, simply chose to ignore the published data, the findings dismissed as irrelevant to the classifications they were devising, both warring factions imposing wholesale synonymy, the prescient warnings of incompatibility voiced by a number of leading horticulturalists notwithstanding.

R. yunnanense is a typical example. As designated in the current Edinburgh Revision classification, its wild population comprises plants that are diploid, tetraploid and hexaploid, respectively, the two once specific species, *R. suberosum* and *R. aechmophyllum*, and *R. yunnanense* itself. All subsumed under that single epithet.

In his 1980-published *Revision of Rhododendron 1* preamble, which deals specifically with taxonomic characteristics (*Notes from the Royal Botanic Garden, Edinburgh*, Volume 39, page 22), Doctor James Cullen writes that:

'The cytology of these rhododendrons is little known. A large-scale survey was published in the early 'fifties by Janaki-Amal, Enoch & Bridgwater (*Rhodo. Yearbook* 1950: 78-91), and individual counts have been published sporadically by other workers. The survey by Janaki-Amal et al. is unfortunately somewhat unreliable, as no voucher specimens of the material were retained, and it is impossible to be certain of the identity of most of the species involved. Cytological work on the genus at Edinburgh so far carried out has not been particularly successful.'

That last line speaks volumes, of course, and although the specimens at RHS Wisley were not saved for botanical posterity, in and of itself, that does not mean they were misidentified. The material that E. K. Janaki Ammal and her team used to make the chromosome counts came from the Battleston Hill living collection on site, from the Royal Botanic Garden, Kew, from Edinburgh Botanic, and from the gardens of Bodnant and Tower Court, so the labelling would have been spot on. Moreover, fast-forward twenty-five years to when Doctor Cullen's *Hardy Rhododendron Species* tome was published in 2005 and his position on polyploidy is demonstrably shown not to have changed by as much as an iota: the *R. yunnanense* synonymy remains exactly the same, with no attempt made to unpick the mistakes of the past despite having to hand a wealth of newly published, peer-reviewed genetic evidence.

Unsurprisingly, it was plant hunter supreme Frank Kingdon-Ward who believed E. K. Janaki Ammal's research to be 'of great significance', writing in *The Rhododendron and Camellia Year Book* 1956 that it should 'cause some geographical botanists to revise their theories'. But unfortunately, not those responsible for the Edinburgh Revision classification, nor the author of *The Rhododendron Species*, H. H. Davidian. But as we shall see, by the early years of the 21st Century, the geneticists were conclusively proving the hybridisers to have been right yet again, and those traditionalist botanical gurus, wrong.



E. K. Janaki Ammal

Contentions Resolved, Associations Revised:

At the same time as the Edinburgh Revision was being researched and written, and in the decade after its publication, amazing scientific advances were being made in the field of genetics, as well as in our ability to intimately analyse the strands of Deoxyribonucleic acid that control the development and function of all living organisms and which, in the form of chromosomes, are present within the cells of each and every member of the Earth's fauna and flora. Peter and Kenneth Cox correctly forecast - in the introduction of their book, *The Encyclopedia of Rhododendron Species* - that in the future, DNA analysis would become the decisive tool used to resolve the flaws in the Edinburgh Revision, and equally, deal with any new classification issues, should such arise.

Back in 1996, *The Genus Rhododendron: its Classification & Synonymy* was the most scientifically-based and accurate study of those 1000+ individuals ever published, yet despite this, it was unable to resolve the taxonomic inconsistencies of species grouped together inside two subgenera - *Azaleastrum* and *Pentanthera* - nor integrate those set apart from their relatives within three monotypic subgenera, namely *Candidastrum*, *Mumeazalea* and *Therorhodion*. Equally, it did not fully settle the status of two related genera, *Ledum* and *Menziesia*, choosing to include species from the former, but exclude those of the latter. And as stated earlier in the text, there was a heated disagreement between Hermann Sleumer and the Edinburgh team over the status of a certain *R. camtschaticum*. The reason these deficiencies remained in contention was simple: scientific techniques able to provide conclusive and incontestable evidence delineating the true relationships between individual rhododendron species were unavailable to the 1996 classification's authors.

That changed in 2005.

When Loretta Goetsch, Andrew Eckert and the highly-respected Professor Emeritus of Genome Sciences and Biology at the University of Washington in Seattle, rhododendron enthusiast Benjamin Hall, wrote and published *The Molecular Systematics of Rhododendron (Ericaceae): A Phylogeny Based Upon RPB2 Gene Sequences*.

The first goal of their investigation had been to check that the morphology-based sections and subgenera of Genus *Rhododendron* were truly monophyletic - composed only of species evolved from a single common ancestor and containing all its descendants. This would also answer the inclusion question: were Subsection *Ledum*, Genus *Menziesia* and *R. camtschaticum* rhododendrons or not? The three scientists would then go on to establish the true relationships between all the sections.

This required them to take DNA samples from a selection of known, wild-origin plants encompassing each subgenus and section, the comprehensive criteria stipulating which was picked taking account of characteristics such as terminal or lateral flower buds, whether leaf scales were present or not, whether the young growth came from the axils of buds from the previous year's growth or from the axils of the lowest scaly-leaves, and was the foliage was evergreen or deciduous.

Two other scientific studies looking at the molecular-level linkage between members of the genus had preceded the analytic scrutiny of the Goetsch-Eckert-Hall investigation: *Sectional Relationships in the Genus Rhododendron (Ericaceae) - Evidence from matK and trnK Intron Sequences* (Yuji Kurashige et al., 2001); and, *Infrageneric and Sectional Relationships in the Genus Rhododendron (Ericaceae) Inferred from ITS Sequence Data* (Lian Ming Gao et al., 2002).

The 2001 Japanese study used sequences from the chloroplast matK and trnK genes, while the 2002 Chinese study (carried out at the Kunming Institute of Botany) concentrated on the ITS regions of nuclear ribosomal DNA. The 2005 Seattle study evidence came from the RPB2-I gene, which codes for part of an enzyme whose function is to synthesise

proteins.

All three investigations used DNA gene sequencing techniques and equipment, which was now commonplace in the World's laboratories, to determine the placement of the four nucleotide bases - adenine (A), cytosine (C), guanine (G), and thymine (T) - found along a section of a rhododendron's DNA strands. For illustrative purposes only, a piece of code for a small part of a region along such a chain could be represented as shown below, with the letters identifying each of the four bases:

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. . . AATCGTTAATCAAAGCGTTGAATCAAAAAGGAATAAAAGCTTTGGCTGATATAGTGATTA  
ACCACAGAACAGCTGAGAGGAAAGACGATAAATGTGGATA . . .
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When DNA sequences of the same gene from a number of species are aligned, the similarities and differences in the code can be compared and used to show how closely related one plant is to another, as well as the order in which the species evolved. This is because the genetic code alters over time, as the species reacts to changes in the environment or from random mutation. Fewer alterations indicate a closer relationship, major changes a more distant one. And the position of those modifications along an aligned sequence is also crucial, as the nearer the change is to the alignment point at the start of the chain, the earlier in time the evolutionary division took place.

Choosing which gene to study is also critical, for some are so vital to the function of a plant - those responsible for the photosynthesis process, for instance - that any mutation would likely be disadvantageous and therefore quickly lost to natural selection in the wild, while others - under far weaker constraints - can vary widely, accumulating many changes along their sequence chain, hence the choice made.

If that précis sounds simplistic, the real science is anything but, with the process of DNA extraction, amplification and then sequencing alone requiring programmable thermal controllers, specialised plant-DNA extraction kits, purification apparatus, cloning techniques and kit, automated dye-terminator sequencers and a long list of chemical compounds and gels. Once generated, those sequences then need to be aligned and run through phylogenetic analysis, with parsimony, maximum likelihood, bootstrap values and Bayesian analysis thrown in for good measure.

For the Goetsch-Eckert-Hall study, six regions from the RPB2-I gene - the same areas of DNA code for each and every one of the rhododendrons sampled - were compared. Those regions included sequences of large introns (segments of the DNA chain that do not include code for proteins and which interrupt the sequence of the gene) and contiguous strands of code that did contain introns and exons (segments of the DNA chain which do include the codes for proteins and/or peptides). In total the six segments of code amounted to 43% of the entire DNA chain for the specific gene studied.

The results of all three studies offered a mirrored set of relationships, which when taken together showed that:

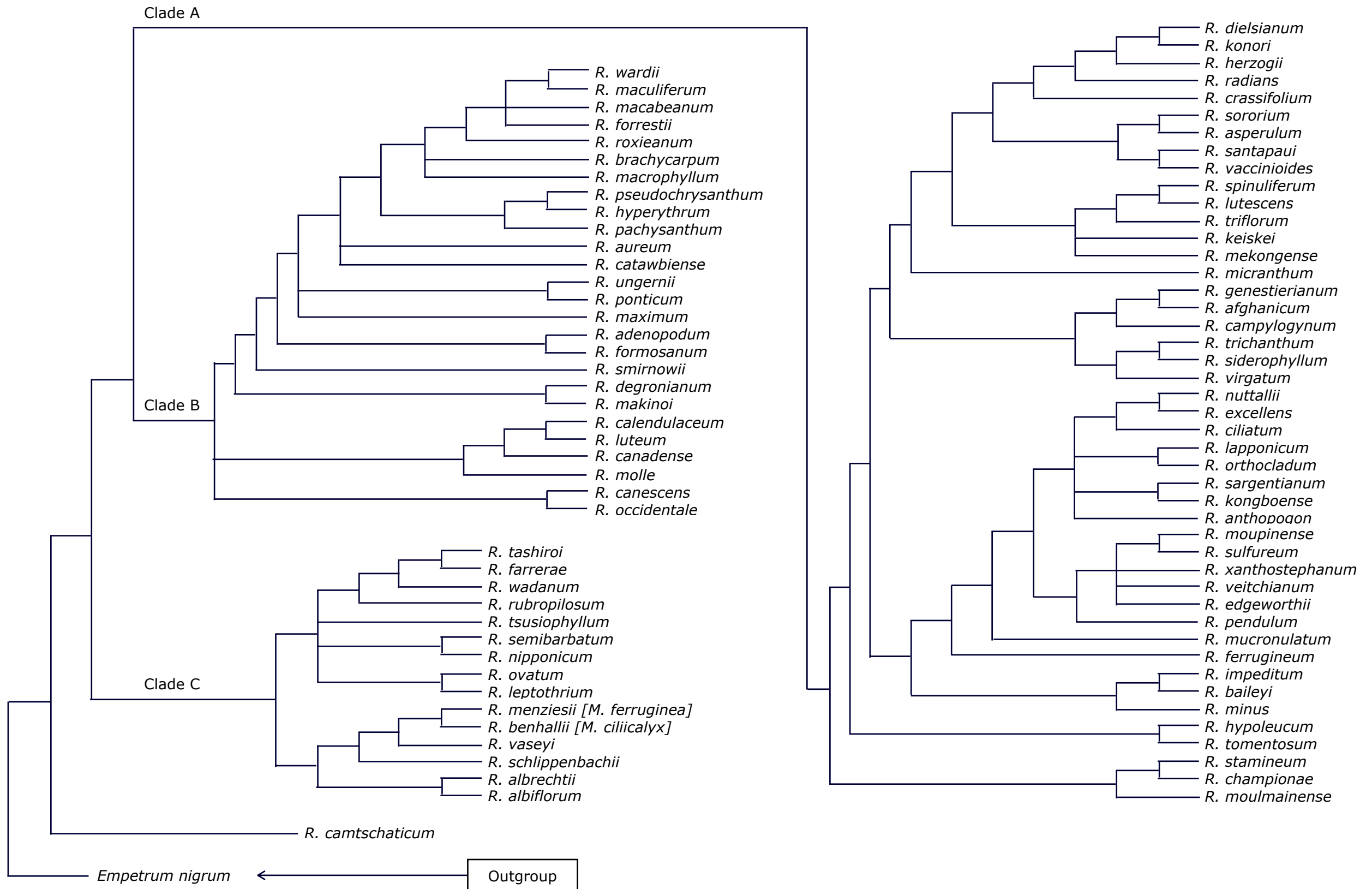
1 - *R. camtschaticum* was basal to the entire genus, sister to all other rhododendrons despite not being able to interbreed with any of them.

2 - All rhododendrons, apart from *R. camtschaticum*, were contained within three large clades, named A, B and C in the study.

3 - Clade A held all the species from the three sections of Subgenus *Rhododendron*, namely *Pogonanthum*, *Rhododendron* - including those of Subsection *Ledum* - and *Vireya*, plus those plants pigeonholed in Section *Choniastrum* of Subgenus *Azaleastrum*.

- opposite -

The Goetsch-Eckert-Hall molecular phylogeny relationships diagrammed.



4 - Clade B provided a home for all the species from Subgenus *Hymenanthes* Section *Ponticum*, along with those from Subgenus *Pentanthera* Section *Pentanthera*, plus *R. canadense* from Section *Rhodora*.

5 - Clade C was the destination of choice for the species of Subgenera *Candidastrum*, *Mumeazalea* and *Tsutsusi*, along with the Section *Azaleastrum* and *Sciadorhodon* plants, the lone, remaining occupant of Section *Rhodora*, *R. vaseyi*, and the sole resident of Section *Viscidula*, *R. nipponicum*. It also housed the membership of Genus *Menziesia*.

Goetsch-Eckert-Hall were able to use those results to outline proposals for substantial changes to the classification of Genus *Rhododendron*, extrapolations that Lian Ming Gao and Yuji Kurashige had been unable to make from their own, at the time, uncorroborated, individual studies. These were that:

Four subgenera - *Candidastrum*, *Mumeazalea*, *Pentanthera* and *Tsutsusi* - would be discarded. A similar fate would be handed to Sections *Azaleastrum*, *Brachycalyx*, *Rhodora* and *Viscidula*, and applied to Subsections *Pentanthera* and *Sinensia*.

Subgenus *Azaleastrum* would be constituted with two new Sections: transferred-in from the discontinued Subgenus *Pentanthera*, *Sciadorhodon* would be entirely deciduous and also contain *R. albiflorum*, *R. vaseyi*, plus all the species from Genus *Menziesia*; while the largely evergreen *Tsutsusi* would contain plants from the old sections *Azaleastrum*, *Brachycalyx* and *Tsutsusi*, and offer a home to *R. nipponicum* and *R. semibarbatum*.

Subgenus *Hymenanthes* would also now have two sections: *Pentanthera* - entirely deciduous - would transfer-in from its discontinued subgenus namesake, and also be home to *R. canadense*; while *Ponticum* - entirely evergreen - would remain unchanged.

Subgenus *Rhododendron* would hold on to its three existing Sections - *Pogonanthum*, *Rhododendron* and *Vireya* - and Subgenus *Therorhodon* too would remain unchanged.

Which only leaves *Choniastrum*.

Goetsch-Eckert-Hall decided to give Section *Choniastrum* an uplift to subgenus status even though the evidence from their research placed these species firmly in Clade A. This decision was principally made because the *Choniastrum* rhododendrons did not have lepidote scales on their leaves, though some did have bristles - setose hairs - which could be regarded as homologous. It was taken despite the scientific data showing a clear genetic sister relationship with the species of Subgenus *Rhododendron*, and even though the removal of the *Choniastrum* species would result in that subgenus becoming paraphyletic (descended from a common ancestor, but not including all the descendent groups).

It was the wrong decision, especially as it subsequently gave sanction for an even more blatant trashing of scientific fact when Doctor George Argent, then Senior Tropical Botanist with the Royal Botanic Garden, Edinburgh, and one of its most highly respected doyens - a Scottish Hermann Sleumer, if you will, even though the good doctor was born in Hertfordshire - chose to up the status of Section *Vireya* to subgenus.

This change was made solely in response to the fact that under the nomenclature precedence rules, the Section *Vireya* epithet would need to be replaced at this ranking by the earlier-conceived-moniker of Section *Schistanthe*. Various worked-up and supposedly credible reasons for such an uplift were set out in Doctor Argent's otherwise excellent *Rhododendrons of Subgenus Vireya*, published in 2006, but they all seemed to miss the essential point that each and every one of these species had scales on their foliage and so required pigeonholing under Subgenus *Rhododendron*. What is even more galling, is that if any gathering of rhododendron enthusiasts were asked via a show of hands whether they referred to the tropical species as 'the *Schistanthes*', or as 'the *Vireyas*', not a single arm would have been raised for the former, just as would have been the case if asked how they referred en masse to non-scaly evergreen species such as *R. sinogrande*, *R. thomsonii*, *R.*

arboreum or *R. williamsianum* - as 'the *Hymenanthes*', or as 'the *Elepidotes*'. And once again, the answer would have been both predictable and unanimous.

It will come as no surprise therefore that in the taxonomy set out shortly, both Section *Choniastrum* and Section *Schistanthe* reside alongside and on a level with their other scaly-leaved friends, though as members of the latter section require overwintering in a heated greenhouse, individually, they are outside the scope of this survey.

Five years after the Goetsch-Eckert-Hall earthquake hit, another scientific paper was published that also contained implications relating to how the genus was classified: *A Phylogeny of Rhododendron Subgenus Hymenanthes Based On Chloroplast DNA Markers: Between-Lineage Hybridisation During Adaptive Radiation?*

This study was another of Richard Milne's genetic forays into the genus; had Doctor David Chamberlain's name listed among its authors; and the results confirmed the findings of earlier, briefly reported research: that a disjunct existed within Subsection *Pontica*.

The new scientific evidence showed that two of those species - *R. degonianum* and *R. smirnowii* - along with *R. adenopodum* from Subsection *Argyrophylla*, were sister to a clade of sixty Southeast Asian evergreen elepidote rhododendron species. This was denominated Clade H. A second residence - Clade P - contained the remaining eight Subsection *Pontica* species, along with three surprises: *R. calophytum* and *R. praeevernum*, previously of Subsection *Fortunea*, and *R. insigne*, from Subsection *Argyrophylla*.

As previously stated, chloroplasts, like mitochondria, are organelles. The evolutionary process has determined that within Genus *Rhododendron* they are the exclusive gift of the female parent and although present within the male sperm, their potency is substantially degraded before that grain of pollen is ready to be despatched. The egg cell moreover has a gatekeeper mechanism that marks for future destruction any organelles brought through its membrane by the pollen tube.

Back in the mists of time therefore, for those three species to have acquired *Pontica* chloroplasts, hybridisation with one of the eight species in Clade P - or one of their forebears - must have occurred. The offspring that resulted from those pairings coped better with the environmental challenges of the area where they grew - to the north of the main rhododendron species distribution in Southeast China - and over time speciated into the forms found today - *R. calophytum*, *R. insigne* and *R. praeevernum*.

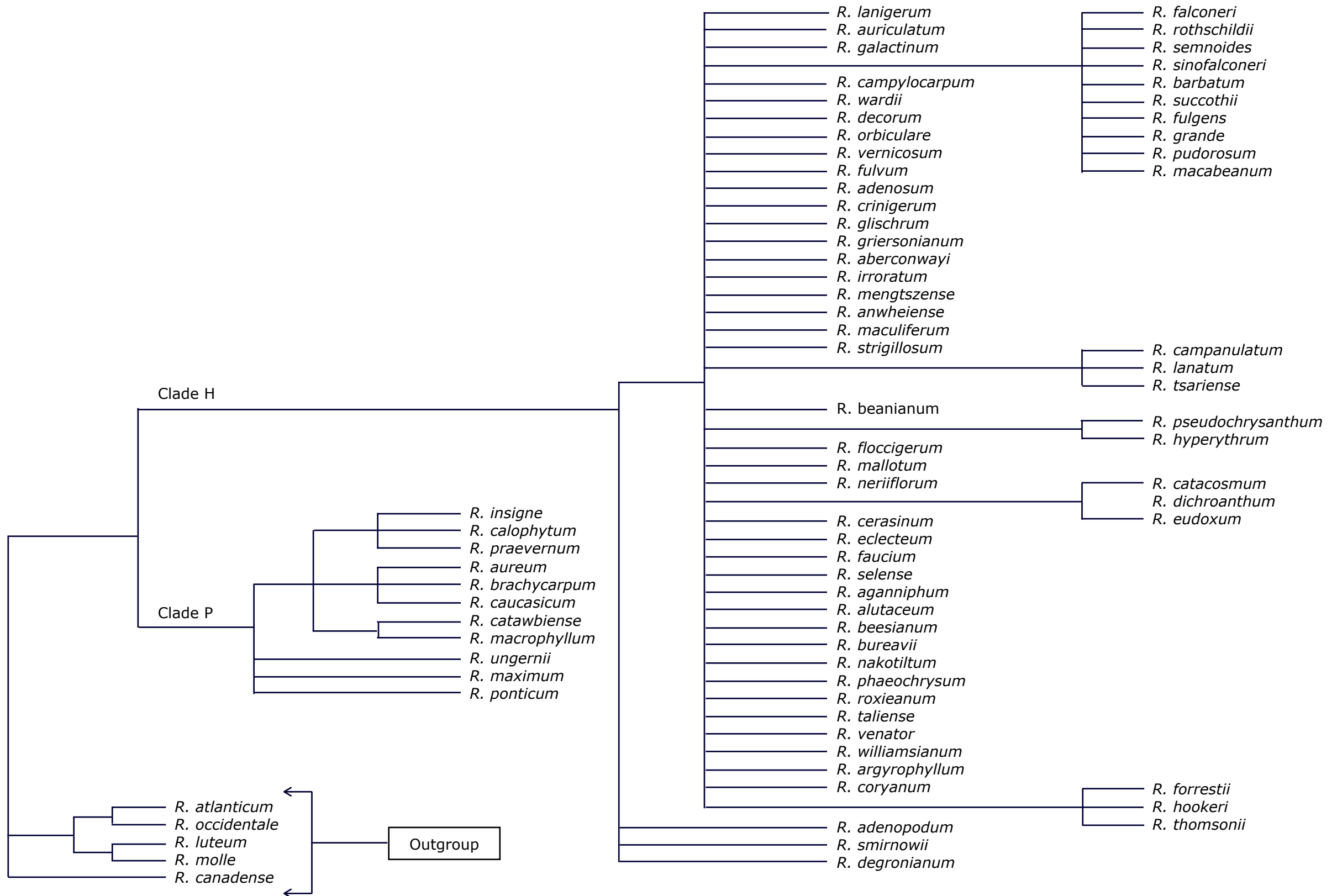
The female Clade P *Pontica* species parent regrettably no longer resides in the area, this likely due to the changing environmental factors resulting from successive glacial and interglacial periods, or the more dramatic rise of the Himalaya further to the south.

An alternative theory put forward for the female parent's disappearance is that of chloroplast capture linked with simultaneous genetic swamping. This evolutionary process has been documented in Genus *Quercus* - *Hybridisation as a Mechanism of Invasion in Oaks* is the peer-reviewed paper - though not yet in Genus *Rhododendron*. Convergent evolution was also theorised as a mechanism to explain the presence of the matching chloroplasts, but even though it cannot be completely ruled out, such appears unlikely.

R. sutchuenese, also a member of Subsection *Fortunea*, was not included in the group of species tested, but given its wild distribution, structural, leaf and floral similarities to *R. calophytum*, and more especially, to *R. praeevernum* - with which it has conceived and given birth to the near indistinguishable natural hybrid *R. x geraldii* - testing will almost certainly show it to be a product of the same hybridisation-speciation process. So despite the formal lack of specific evidence confirming the presence of *Pontica* chloroplasts, it too will be given

- opposite -

The Milne-Chamberlain chloroplast phylogeny relationships diagrammed.



refuge in Clade P. As will another *R. calophytum*-lookalike from the subsection, the 1995-introduced-into-cultivation, *R. asterochnoum*.

An argument could be made that because *R. calophytum*, *R. insigne*, *R. praeevernum*, *R. sutchuenense* and *R. asterochnoum* display no morphological linkage to the eight *Pontica* species they share chloroplast DNA with - indeed they exhibit the red to black corolla colour flecking of all the Southeast Asian elepidote species, not the green through yellow to orange hues of their new compatriots - taxonomic placement should respectively remain within either Subsection *Fortunea* or Subsection *Argyrophylla*. However, all these morphological features are simply a legacy of the hybridisation-speciation process, so fail to trump the primacy of the cpDNA molecular evidence.

Knowledgeable observers will likely have spotted an interesting pairing in the Milne-Chamberlain relationships diagram overleaf and having done so, no longer be pondering on the fate of *R. hyperythrum*, the only other member of Subsection *Pontica* to feature in Clade H. Unlike *R. degonianum* and *R. smirnowii* however, it was not found to be a sister to the other sixty tested species, but one of them, and a clear cladistic relationship with *R. pseudochrysanthum* was evidenced, this matching the results of the Goetsch-Eckert-Hall research, where it was also associated with *R. pachysanthum*. The common denominator is, of course, Taiwan, all three rhododendrons being natives of that island, and additional DNA support confirming this ancestral affinity is provided in a 2003-published study written by seven Taiwanese scientists, titled: *Genetic Relationships of Rhododendron (Ericaceae) in Taiwan based on the Sequence of the Internal Transcribed Spacer of Ribosomal DNA*. This data showed *R. hyperythrum* to be most closely related to *R. pseudochrysanthum* and *R. morii*, so it will come as no surprise to find the ex-*Pontica* species now resident in the pigeonhole labelled Subsection *Maculifera*.

More importantly, the Milne-Chamberlain study requires that Subgenus *Hymenanthus* encompass three sections rather than two: Section *Ponticum*, for the Clade P species; Section *Pentanthera*, populated by the Goetsch-Eckert-Hall proposals; and a reconstituted Section *Leiorrhodium*, for the Clade H rhododendrons. The *Leiorrhodium* epithet was conceived by Doctor Alfred Rehder in 1916, published in *The Standard Cyclopedia of Horticulture*, Volume 5, page 2937, and thus has precedence within the subgenus at sectional ranking.

Further nomenclature consequences also stem from this research:

R. degonianum and *R. smirnowii* - the two *Pontica* species found to be within the membership of Clade H - plus *R. adenopodum*, require an epithet for their sister grouping inside Section *Leiorrhodium*. *R. degonianum* was described by the French botanist Élie Abel Carrière in Volume 40 of *Revue Horticole*, published in Paris during 1869; *R. smirnowii* was outlined by Ernst Rudolf von Trautvetter in Volume 34 of *Gartenflora*, printed in 1885; and *R. adenopodum* was sketched by Adrien Franchet in Volume 9 of the *Journal de Botanique*, which appeared in 1895. Notwithstanding the botanical provenance, the choice of Subsection *Smirnowia* would denote the likely cpDNA biogeographic lineage, and so is adopted herein. Note too that the three *R. degonianum* subspecies - *R. heptamerum*, *R. makinoi* and *R. yakushimanum* - must also be housed within this box.

By goose-gander extension, *R. maximum*, *R. ponticum* and *R. unguernii* are clearly shown to be a sister group to the other Clade P species. *R. maximum* was first described by Carl Linnaeus in Volume 1 of *Species Plantarum*, published during May 1753; *R. ponticum*, by the same author, in the 1762 second edition update of the work; and *R. unguernii*, by Ernst Rudolf von Trautvetter, again in the 1885 edition of *Gartenflora*. Those dates dictate that their new pigeonhole should be designated Subsection *Maxima* to comply with the botanical provenance. The three other associations also require new epithets at subsection

ranking: *R. catawbiense* and *R. macrophyllum*; *R. aureum*, *R. brachycarpum*, plus of course its subspecies *R. fauriei*, and *R. caucasicum*; and lastly, *R. asterochnoum*, *R. calophytum*, along with its two varieties, *R. insigne*, *R. praeevernum* and *R. sutchuenense*. Respectively, and with full regard to their botanic provenance, these are herein designated Subsection *Catawbiensia*, Subsection *Auria*, and Subsection *Calophyta*.

All of which neatly leads on to a long overdue examination of the Edinburgh Revision's own chosen nomenclature.

Or to be less ambiguous, the doppelgängers that populate it.

The rules regarding the naming of individual members of a genus clearly state that no epithet duplication should occur: at specific species ranking - *R. lanigerum* or *R. niveum*; in a subspecies combination - *R. arboreum* ssp. *arboreum*, or *R. arboreum* ssp. *zeylanicum*; or if curated as a variety - *R. arboreum* ssp. *delavayi* var. *delavayi*, or *R. arboreum* ssp. *delavayi* var. *peramoenum*.

Any possible confusion is eliminated entirely because the coda that ends each botanical ranking is only used once in that capacity throughout the entire genus. The terminator, if you will, is unequivocally unique within the filing system.

Unfortunately, within Genus *Rhododendron*, this is not always the case, as is clearly demonstrated by *R. glaucophyllum* var. *album*, *R. kesangiae* var. *album* or *R. anthopogon* var. *album*. When speaking of *R. delavayi* or *R. peramoenum*, there would be no confusion as to the taxon under discussion because the concluding epithet is the one and only use of it in this position. For both plants. However, if *R. album* were to enter the conversation, would the reference be to *R. glaucophyllum*, *R. kesangiae* or to *R. anthopogon*?

In fact, it should solely identify a Section *Schistanthe* species native to Indonesia that Carl Ludwig Blume named almost two-hundred-years ago - in 1823 to split hairs - which has epithet precedence. And that fact means all those other instances should have been declared illegitimate and replaced with new, sui generis appellations several eons ago.

As happened to a certain *R. villosum* of 1910 vintage.

Ernest Wilson discovered this species in western Sichuan during 1904, then named and described it in a text jointly written with William Botting Hemsley, which appeared in the *Bulletin of Miscellaneous Information, Royal Gardens, Kew*, published in 1910. When it was later discovered that Albrecht Roth had used the exact same epithet to describe another species rhododendron over a century earlier, to avoid even a modicum of uncertainty, in 1945, Alfred Rehder changed the name of Ernest Wilson's plant to *R. trichanthum*, his revision appearing in Volume 26 of the *Journal of the Arnold Arboretum*. Fast-forward to 1963 and another equally renowned botanist - namely, H. H. Davidian - stated in *The Rhododendron And Camellia Yearbook* that although 'the change in nomenclature was regrettable, it was strictly in accordance with the *International Code of Botanical Nomenclature*'. Davidian repeats this statement verbatim in the *R. trichanthum* entry found in Volume 1 of *The Rhododendron Species*, published in 1982.

Equally illegal therefore are *R. anthopogon* var. *album*, *R. glaucophyllum* var. *album*, and *R. kesangiae* var. *album*, along with *R. lepidotum* var. *album*, or indeed, *R. spiciferum* var. *album*, all of which were active epithets in 1996, along with Blume's original *R. album*, as evidenced from their entries in the *Taxonomic List of all Accepted Names* that was published in *The Genus Rhododendron: its Classification & Synonymy*.

There are a further eleven 'album' entries in the *Alphabetical List of all Published Names* that precedes the *Taxonomic List*, though mercifully these are - now - merely synonyms. Oh, and should one choose to move on down the colour spectrum from the nomenclature disaster zone that is 'album', a similar tale of woe and replication emerges when, for instance, 'roseum' is encountered.

The nomenclature's anti-epithet-duplication rules were strictly followed in 2011 when the Genus *Menziesia* species were formerly rehoused with the publication of *Diplarche and Menziesia transferred to Rhododendron (Ericaceae)*. The paper's author, Lyn Craven, one of the leading botanists at the Australian National Herbarium in Canberra, had to conceive new names for three of those species - *M. ciliicalyx*, *M. purpurea* and *M. ferruginea* - due to what is known as the 'pre-empted' directive. This is invoked whenever one genus transfers into another, as here with *Menziesia*, or as happened previously when *Azalea* and *Ledum* joined the rhododendron fold. If one of the incoming species has the same epithet as a plant in the receiving genus, the latter takes precedence even though it may have been published at a later date. Doctor Craven therefore rechristened our trio *R. benhallii*, *R. kroniae* and *R. menziesii* respectively, because their original epithets were already being used within Genus *Rhododendron*.

Given the nomenclature's unambiguous aversion to duplication therefore, whenever a missed faux pas is encountered in the subsection portraits that follow - in particular, all those offending 'albums' - a replacement will be formulated and used instead.

Parenthetically, placement of the two *Diplarche* species is not clear-cut. Phylogenetic studies have shown *Diplarche*, *Menziesia* and *Rhododendron* to fall within the same clade, and a tentative relationship with *R. stamineum* has also been evidenced, but not definitively so. The two plants are native to the northeastern Indian state of Sikkim, to southeast Tibet, to the Chinese provinces of Sichuan and Yunnan, and to adjoining areas of Upper Myanmar, but as a Google image search will confirm, their leafy stems look nothing like a typical rhododendron, even a dwarf one, although the flowers are similar in appearance to the Subsection *Scabrifolia* species. A paper published in 2010, written by Emily Gillespie and Kathleen Kron - *Molecular Phylogenetic Relationships and a Revised Classification of the Subfamily Ericoideae (Ericaceae)* - placed the *Diplarche* within Genus *Empetrum*, so the transfer into Genus *Rhododendron* proposed by Doctor Craven might be a mite premature, which is the assumption followed here.

Returning to doppelgängers in the taxonomy, three exist within the hierarchy of the genus: Subgenus *Rhododendron*, Section *Rhododendron* and Subsection *Rhododendron*. They are used in the 1996 Edinburgh classification to signpost the route down to the first rhododendrons known to Western science - *R. ferrugineum* and *R. hirsutum* - which might be considered something of a conceit given that Chinese and Japanese texts detailing many of their own species were in print long before Carl Linnaeus first put pen to paper. The two species are also nonentities, and as Doctor Cullen made clear on page 110 of *Notes from the Royal Botanic Garden, Edinburgh, Volume 39, A Revision of Rhododendron 1*, their 'isolation from the rest of the subgenus is remarkable, and raises interesting problems of dispersal and evolution'. Yet he was also the progenitor of those three epithet ranking changes. Because Hermann Sleumer had stuck with the Emil Koehne, George Don and John Hutchinson appellations for his *Ein System der Gattung Rhododendron* text - respectively: Subgenus *Lepidorrhodium* (*Deutsche Dendrologie*, page 449, published in 1893); Section *Lepipherum* (*A General History of the Dichlamydious Plants*, Volume 3, page 845, published in 1834); and Subsection *Ferrugineum* (from *The Species of Rhododendron*, page 252, published in 1930), although he modified this to *Ferruginea*.

All three historical epithets actually have precedence, as 'Rhododendron' has never been used at these ranking levels before. Nor would Professor Sleumer have made such a faux pas had they been. Equally, the good doctor, like H. H. Davidian, almost certainly shared the view that the two species 'bore no affinity with any other rhododendron' (*The Rhododendron Species*, Volume 1, page 131, paraphrased). More importantly however, as the authors of *Concerning the Origin and Distribution of Rhododendrons* (*Journal American*

Rhododendron Society, Volume 47, Number 3, 1993), Edward Irving and Richard Hebda point out, it 'invites confusion to have the word rhododendron denote in one context a genus, in another a subgenus, and in yet another to have it meant in a loose gardening sense'. They are not alone in that view, but are much too polite to mention three other 'contexts' - section, subsection and species - although their drift is crystal clear.

And actioned herein:

As a diagrammed taxonomy will shortly illustrate.

Sticking with nomenclature issues, a number of authors have used terms such as 'Aggregate', 'Alliance' or 'Group' to gather together similar species in the more populous subsections such as *Maddenia*, *Neriiflora*, *Taliensia* and *Triflora*. The exact membership of these assemblages - or clades - has yet to be confirmed by DNA analysis, but associating like with like is both logical and practical. However, all three descriptors are botanically invalid, the latter peripherally so as well, as it mirrors terminology adopted by the Royal Horticultural Society for sunk but horticulturally distinctive forms of a species, such as *R. forrestii* Repens Group. Yet under the nomenclature rules, extra strata already exist between subsection and species to accommodate and accomplish this pigeonholing, they are just unused within Genus *Rhododendron*: series and subseries. So while a 'Forrestii Group' or 'Yunnanense Alliance' or 'Johnstoneanum Aggregate' would not comply with the *International Code of Nomenclature for Algae, Fungi and Plants* - the new name for the *International Code of Botanical Nomenclature* following an International Botanical Congress held in Melbourne during July, 2011 - a Subsection *Maddenia* Series *Dalhousiae* designation would. So too Subsection *Neriiflora* Series *Forrestia*. Or for that matter Subsection *Taliensia* Series *Bureavia*. Clearly, within Genus *Rhododendron*, use of such terminology might be considered a touch 'Balfourian', but no resurrection of Sir Isaac's now long out-dated circumscriptions is implied or intended.

Having ticked the nomenclature disputations boxes, examination of the Edinburgh Revision classification's molecular underpinnings can be resumed:

Section *Tsutsui* has been the subject of two recent scientific papers, while research on diploids, tetraploids, hexaploids and all those other multiple-chromosome combinations has resulted in a fundamental shift with regard to the treatment of polyploids.

The azalea species first:

The Molecular Systematics of Rhododendron Subgenus Tsutsusi, written by Kathleen Kron and Elizabeth Powell, and published in the *Edinburgh Journal of Botany* early in 2009, compared sequences from five regions of the genetic code - three chloroplast areas (matK, ndhF and trnS-trnG); and two nuclear sites (nrITS, and the third intron of RPB2). Using the data generated, the two scientists were able to answer the debate regarding the placement and nature of *R. tashiroi* and *R. tsusiophyllum*.

With characteristics mirroring species in both Subsections *Brachycalyx* and *Tsutsusia*, the placement of *R. tashiroi* has long been an issue of contention. It is able to breed with both the deciduous *Brachycalyx* and evergreen *Tsutsusia* species, and was thought so weird at one stage that Hermann Sleumer even created a monotypic section for it within the old Subgenus *Sciadorhodion*, namely Section *Tsusiopsis*. The new Kron-Powell genetic evidence shows that *R. tashiroi* falls within the Subsection *Brachycalyx* clade.

Equally baffling was *R. tsusiophyllum*, which for many years was maintained not as a rhododendron, but as *Tsusiophyllum tanakae*, the sole member of a totally separate genus. However, those Kron-Powell sequencing results now have it placed unambiguously within Subsection *Tsutsusia*, their work identifying it as being most closely related to *R. indicum*, *R. serpyllifolium* and *R. tschonoskii*. Indeed, those four species were shown to occupy a separate clade within the *Tsutsusia* family.

A *Taxonomic Revision of Rhododendron Subgenus Tsutsusi Section Brachycalyx* (Ericaceae), written by Jin Xiao-Feng, Ding Bing-Yang, Zhang Yue-Jiao and Hong De-Yuan, was published by the Missouri Botanical Garden in July 2010 (*Annals*, Volume 97, Issue 2). Following a detailed examination of all the herbarium material available in the botanic institutions of China, Japan and Taiwan - some 10,000 specimens - and after completing extensive field studies of the wild plant populations, the four Chinese botanists reported that *R. sanctum* was indistinguishable from *R. amagianum*, so was made synonymous; the specific status of *R. chilanshanense* was confirmed, even though no new material was examined; *R. mariesii* was found to be indistinguishable from *R. farrerae* and so was also declared synonymous; and lastly, that a pollen analysis had independently confirmed the validity of moving *R. tashiroi* into Subsection *Brachycalyx*.

However, three other proposals in the paper were more controversial.

The four authors re-ranked *R. decandrum* as a subspecies of *R. dilatatum*; moved *R. quinquefolium* from *Sciadorhodia* into *Brachycalyx* because its flowers and leaves emerged from within the same bud scales; and made *R. reticulatum* and its allies - *R. hidakanum*, *R. kiyosumense*, *R. lagopus*, *R. mayebarae*, *R. nudipes* and *R. visciatulum* - synonymous under *R. farrerae*.

Japanese botanists had already reduced *R. decandrum* to a variety of *R. dilatatum* in their own native flora accounts, although Western botanists continued to consider the species most closely related to *R. reticulatum*, noting that the only substantive difference between the two was in the nature of the hairs on the petiole and ovary, these being glandular rather than eglandular. Yet when *R. decandrum* and *R. dilatatum* are examined, a significant difference is immediately apparent: stamen number. Because *R. decandrum* has 7 through 10 stamens, while *R. dilatatum* displays a consistent 5, and this characteristic is clear and unequivocal. The Edinburgh Revision specific status ranking for *R. decandrum* is therefore maintained herein.

As is the specific status of *R. reticulatum*.

This is due to the clear geographic separation of the two populations, their significant difference in hardiness, and quite frankly, a not immodest gulf in their horticultural value. However, synonymy will indeed be applied to *R. reticulatum*'s regional relatives, though not with *R. farrerae*.

H. H. Davidian, writing in *The Rhododendron Species*, Volume 4, merges all these similar species under one taxon, *R. reticulatum*, and in their *Encyclopedia of Rhododendron Species*, Peter and Kenneth Cox indicate approval for this approach. *R. decandrum*, *R. dilatatum* and *R. wadanum* are also included within Davidian's synonymic merger, but in line with the Edinburgh Revision, they retain their specific status here - at least, until DNA-based evidence is available to tip the balance one way or the other.

On the *R. quinquefolium* move, judgement too should wait until cladistic analysis can decide for or against. Clearly, the bud observation is correctly made, but it should be noted that *R. quinquefolium*'s 5-subverticillate leaves are not reflective of any other *Brachycalyx* species, all of which will be found to have 3-verticillate leaves. Equally, the foliage and inflorescence of *R. schlippenbachii* emerge from beneath the scales of the same terminal bud, as do those of *R. pentaphyllum*, which is probably *R. quinquefolium*'s closest relative, yet no similar proposal is made for either of these species to change subsection. A transfer of *R. quinquefolium* into Subsection *Brachycalyx* would, at this stage, be precipitate, create confusion and likely require future revision.

And so to polyploidy:

The British Isles do not generally appear on maps featuring the natural distribution of Genus *Mimulus*, but since these plants were introduced in the 1800s, any number of

garden escapees have naturalized, forming widespread populations in Wales, Northern England and Scotland. Three species - *M. guttatus*, *M. luteus* and *M. moschatus* - are involved, along with a plethora of complex interspecific hybrids, these often quite invasive. On the banks of Shortcleuch Waters, Leadhills, in South Lanarkshire, Scotland, a large colony of *M. x robertsii* may be found. This plant is a triploid ($2n = 3x = 44-45$), a cross between *M. guttatus* and *M. luteus*, which is highly pollen- and seed-sterile. Yet dotted about throughout this population are around fifty mature individuals that have high pollen and seed fertility. These are hexaploids ($2n = 6x = 92$), the result of genome doubling in *M. x robertsii*, and they have been described as a new species, *Mimulus peregrinus*.

The above information comes from a paper published in April 2012 - *Mimulus peregrinus* (Phrymaceae): A New British Allopolyploid Species - that was written by Doctor Mario Vallejo-Marín, an Associate Professor at the Biological and Environmental Sciences Department of the University of Stirling, Scotland. A quote from the paper, which of itself has no less than seven specific individual attribution references, states that:

'Polyploidization plays a particularly important role in species formation, as chromosome doubling results in immediate and strong reproductive isolation between the derivative and parental species. It is therefore not surprising that polyploidization is often thought to be fundamental to angiosperm diversification'.

Angiosperms, as indicated previously, are flowering plants. There are 416 families of such, which encompass upwards of 13,000 different genera, and Genus *Rhododendron* is one of these. Using a different genus within the Angiosperms to illustrate that a polyploid must be treated as a new species stems from the fact that within Genus *Rhododendron* this has not been the practice followed to date.

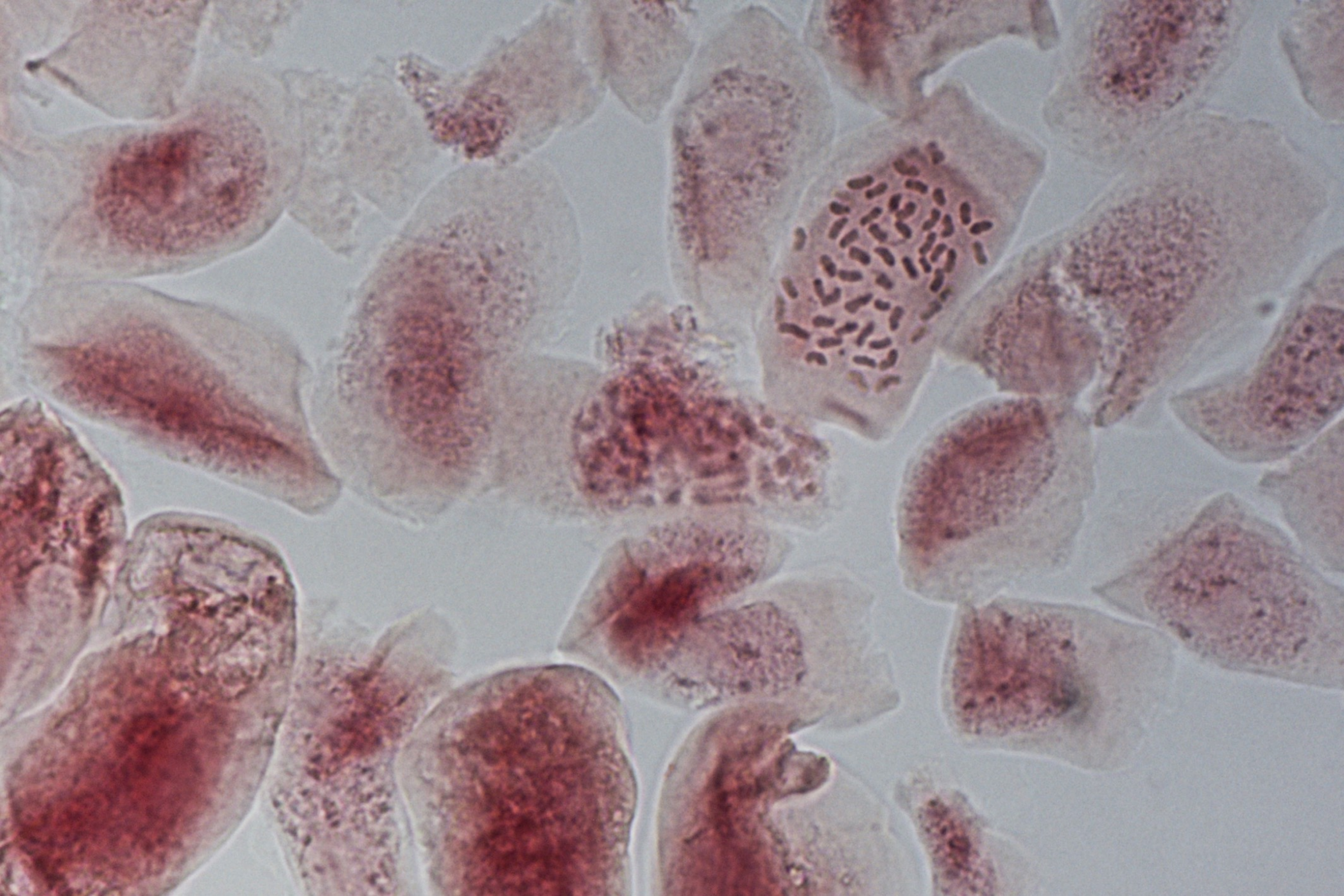
- opposite -

Root tip cells of *R. austrinum* showing the chromosomes during prophase ($2n = 52$).

- below -

Mimulus peregrinus, from the Edinburgh Botanic herbarium sheet (E00570050).





Thankfully, there is at least one highly respected scientist working within Genus *Rhododendron* and the wider *Ericaceae* family who is very much on the ball with regard to pollination and polyploidy: the J. C. Raulston Distinguished Professor of Horticultural Science at the Mountain Horticultural Crops Research and Extension Centre, North Carolina State University - Thomas G. Ranney. As the double-figure list of his publications on the subject eruditely confirms. The North American East Coast Section *Pentanthera* species are his prime focus and he was a key member of the research team that discovered their tertiary relic distribution, this data also confirming the specific status ranking of both *R. colemanii* and *R. eastmanii*. Another of his papers, published in the Winter 2008 edition of *The Azalean* and titled *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas*, contains two particularly pertinent paragraphs:

'In contrast to the gradual evolutionary process whereby new species evolve from isolated populations, new species of plants can also arise abruptly. The most common mechanism for abrupt speciation is through the formation of natural polyploids.'

And even more germanely:

'Once a tetraploid arises in a population, it can generally hybridise with other tetraploids. However, these tetraploids are reproductively isolated from their parental species. Tetraploids that cross with diploids of the parental species will result in triploids that are typically sterile. This phenomenon provides a "reproductive barrier" between the polyploids and the parental species - a driving force for speciation'.

Professor Ranney's conclusions mirror those set out in Doctor Vallejo-Marin's *Mimulus peregrinus* paper: polyploids are new species that cannot successfully breed with their parent plants.

The first indication that this blitz of new scientific research was starting to osmose out through the wider botanical community was evidenced some years earlier when the team responsible for updating the print and online versions of *The Flora of China* amended one of the entries.

On February 11th 2005, in fact.

This was the date on which they published the specific-ranked epithet *R. riparioides*, and in doing so, they set a precedent within the genus - for until then, this species had been determined to be nothing more than a subspecies of *R. calostrotum*.

That combination - *R. calostrotum* ssp. *riparioides* - was first detailed in *A Preliminary Synopsis Of The Genus Rhododendron*, published in *Notes from the Royal Botanic Garden, Edinburgh*, Volume 36, Number 1, page 123, 1978. This was the precursor paper to James Cullen's full Subgenus *Rhododendron* revision and before it gifted *R. riparioides* subspecies ranking, the plant had simply been known as *R. calostrotum* 'Rock's Form', a 1923 seed collection sourced from a population of plants growing near Weixi in northwestern Yunnan, which is now known to be the only location where *R. riparioides* is established in the wild.

Of course, the specific status upgrade is not in and of itself unique. However, the acceptance that a different ploidal value required such an enhancement is a botanical game changer that drives a coach and horses through the 1996 Edinburgh Revision classification.

Janet Cubey, author of the PhD thesis *A cytological and morphological taxonomic study of Rhododendron L. subsection Saluenensia*, is credited for the rethink. Now a member of the science team at RHS Wisley and Editor-in-Chief of the *RHS Plant Finder*, her thesis research at the University of Liverpool and the paper's publication in 2003, confirmed that three of the four *R. calostrotum* subspecies - *calostrotum*, *keleticum* and *riparium* - were all diploids with the normal compliment of 26 chromosomes per cell, while *R.*

calostrotum ssp. *riparioides* was not, Doctor Cubey's data showing it to be a tetraploid with 52 chromosomes and as such, genetically isolated from the other three, with which it cannot successfully breed.

Returning to the mixed synonymic population of *R. yunnanense* detailed on page 43, if the diploid species *R. suberosum* cannot successfully breed with the tetraploid *R. aechmophyllum*, which in turn cannot breed with the hexaploid taxon *R. yunnanense*, then neither of these plants can be sunk under or regarded as subspecies or varietal forms of *R. yunnanense*. Their specific status must be reinstated.

The implications of this quantum shift are fully documented throughout the Section *Lepipherum* pages, where any synonymic errors of the previous classifications - Balfourian or Slumerian - are rescinded and where practicable, the field numbers of wild seed collections are lifted from the morass and epithetically re-associated with their true taxon, though for most gatherings made after synonymy was imposed, this has proved impossible given the adulterated listings available in print.

An updated taxonomy is diagrammed opposite, this showing the procession from genus to subgenus all the way down to the eight reconstituted series. The species of each individual section and subsection introduced and established in UK cultivation will be surveyed in the four volumes that follow, with natural hybrids considered in volume six and a selection of those fabricated by the hand of Man featuring in volume seven. Aficionados unfamiliar with the descriptive gamut of botanical jargon that of necessity is used to distinguish one taxon from another, will delight in the illustrated morphology primer that follows next, but likely find the glossary of terminology a less migraine-free elucidation of the vernacular. A listing of the many seed collections made in the wild over the last twelve decades concludes this premier opus.

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- overleaf left & right -
Who's Who No. 5: a sampling of phylogeneticists.

Genus *Rhododendron*





Thomas Ranney



Kathleen Kron



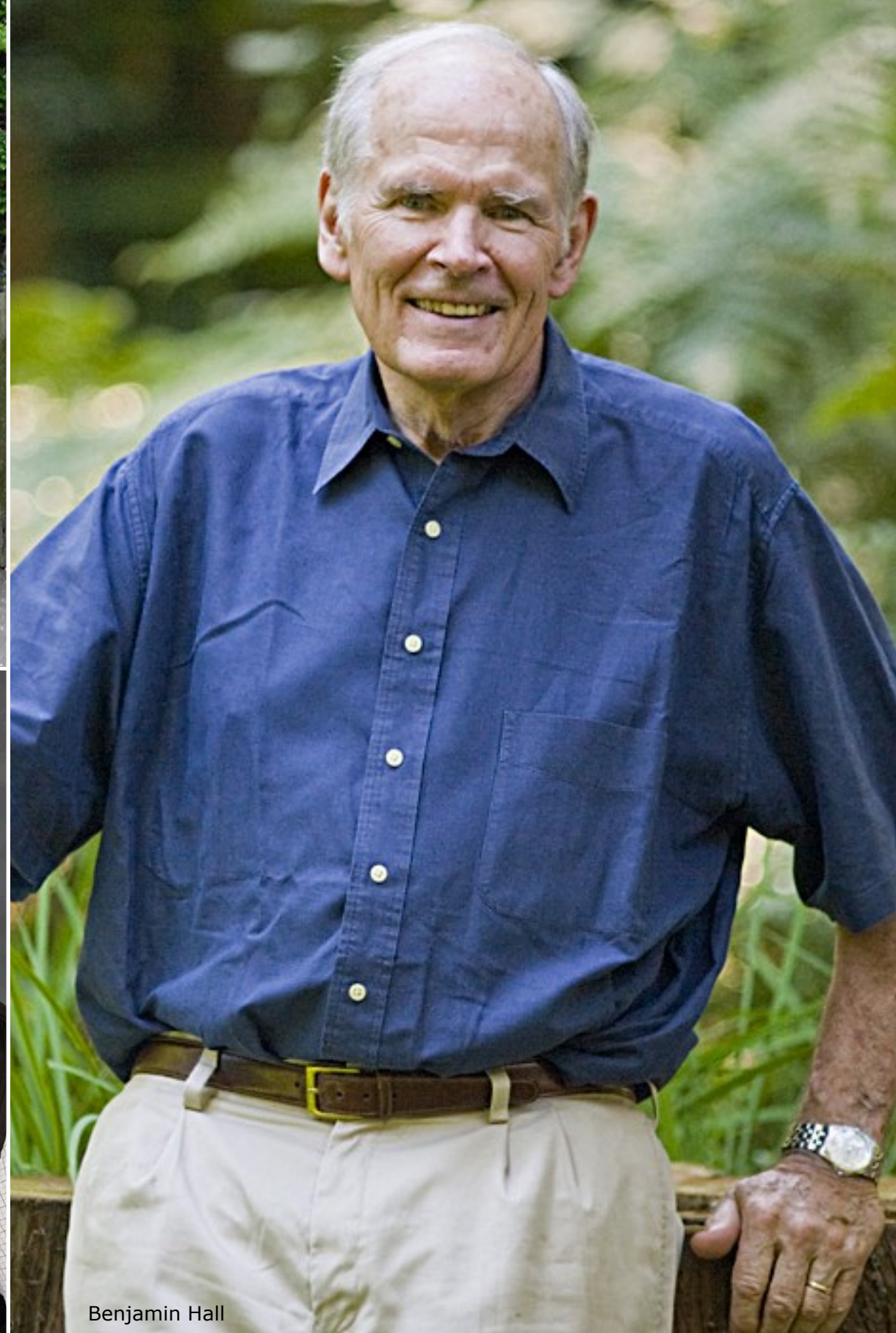
Mario Vallejo-Marín



Richard Milne



Loretta Goetsch



Benjamin Hall



Lyn Craven



Andrew Eckert



Identification

Habit, Branchlets & Bark:

Rhododendrons are members of the woody plant family, basically perennials with a genetic adaptation that produces a layer of cellulose and lignin around the stems, branches and roots, contiguous to and enclosing the vascular tissue system. This wood not only provides great structural strength, but with a thickened outermost layer of protective bark, it allows the above ground stems to survive year on year and to develop into large bushes or trees. Genus *Rhododendron* encompasses the full gamut of such forms: prostrate creepers and tiny mounds; medium or large, spreading or rounded shrubs; giant 30m tall trees. All follow a pattern of spirally arranged branches and leaves, though that is sometimes difficult to see on some mature specimens where natural branch suppression has produced a form with long bare stems, topped by a knot of smaller branches, each with a whorl of leaves that overall, results in a gaunt and dishevelled appearance. Height achieved depends on environmental considerations such as soil quality, the amount of rainfall, and whether a plant is growing in full sun or shade, so the stature of a mature specimen, even within the same species population, can vary considerably.

Some rhododendrons are stoloniferous, extending over a large area via underground root runners to form a vast genet colony. Others are epiphytic, with the seed germinating on patches of moss formed in the branch junctions of taller trees and shrubs. And a few are chasmophytic, growing in soil pockets built-up amongst rockfalls or on cliff faces.

The majority of rhododendrons have been gifted a rough, grey-brown bark that is marked with fine longitudinal lines in a paler colour that does not flake or break into chunks and is termed 'striate'. However, some subsections - notably *Barbata*, *Falconera*, *Glauca*, *Maddenia* and *Thomsonia* - have trunks and branches with smooth, reddish-plum coloured bark, which does flake or peel, in sheets or long ropes, to reveal a greenish, coppery underbark beneath. A few species have trunks with deeply fissured bark.

Following the design of all woody plants, the trunk of a rhododendron has an outer to inner set of strata arranged in five distinct bands.

The dark, exterior layer of bark, technically known as the rhytidome and made up of dead cells, is familiar to everyone, but only when the carnage of a major storm brings the chainsaws out will the other four rings be examinable.

Immediately behind the heavy duty weather and impact protection of the outer bark, are the phloem cells. These form a thin, living inner ring, whose job is to facilitate the passage up and down the bole of sugars photosynthesised in the leaves. As the outermost cells of this layer lignify and die, they are added to the rhytidome, while deeper inside the trunk, new cells are being formed within the vascular cambium. This is an even thinner layer, a ring composed of undifferentiated cells that become new phloem when they divide on the outer side of the stratum, or when division occurs along the inner side, xylem cells, and it is these cells that form the bulk of a trunk, building-up over time into two contrasting rings:

The outermost - the 'sapwood' - is contiguous with the cambium layer, and added-to each growing season. This is living wood whose thick cells, in effect, become a piping system, allowing nutrients and water sucked-in by the roots to travel up the trunk to the leaves. But over time, as they become ever more distant from the cambium ring, they age and die, forming the heartwood, a core that gives the trunk, as well as the larger branches, their structural strength.

Heartwood is usually much darker in colour than the sapwood, this clearly evidenced in the photograph opposite, and is due to the build-up of minerals, oils and resins in the walls of the individual cells.

Annual growth across the genus usually begins immediately after flowering, with the vegetative buds expanding and a new shoot quickly extending. Unfavourable environmental



Cross-section - *R. arizelum*

or climactic conditions may delay the onset of bud-break or determine the speed and length of a stem's development. These new branchlets can be thick or thin, short or long, and variously coloured. They may be glabrous, or covered with hairs or bristles that may also be glandular. Colour, tomentum and setae - sticky or not - are features that can persist into maturity, change or be lost over time.

Amongst the deciduous azalea species, new growth sometimes occurs before or as the flower buds expand, rather than afterwards, which is an important character trait for keying the species apart.

- Habit -



Columnar



Prostrate



Mounding



Spreading



Rounded



Upright

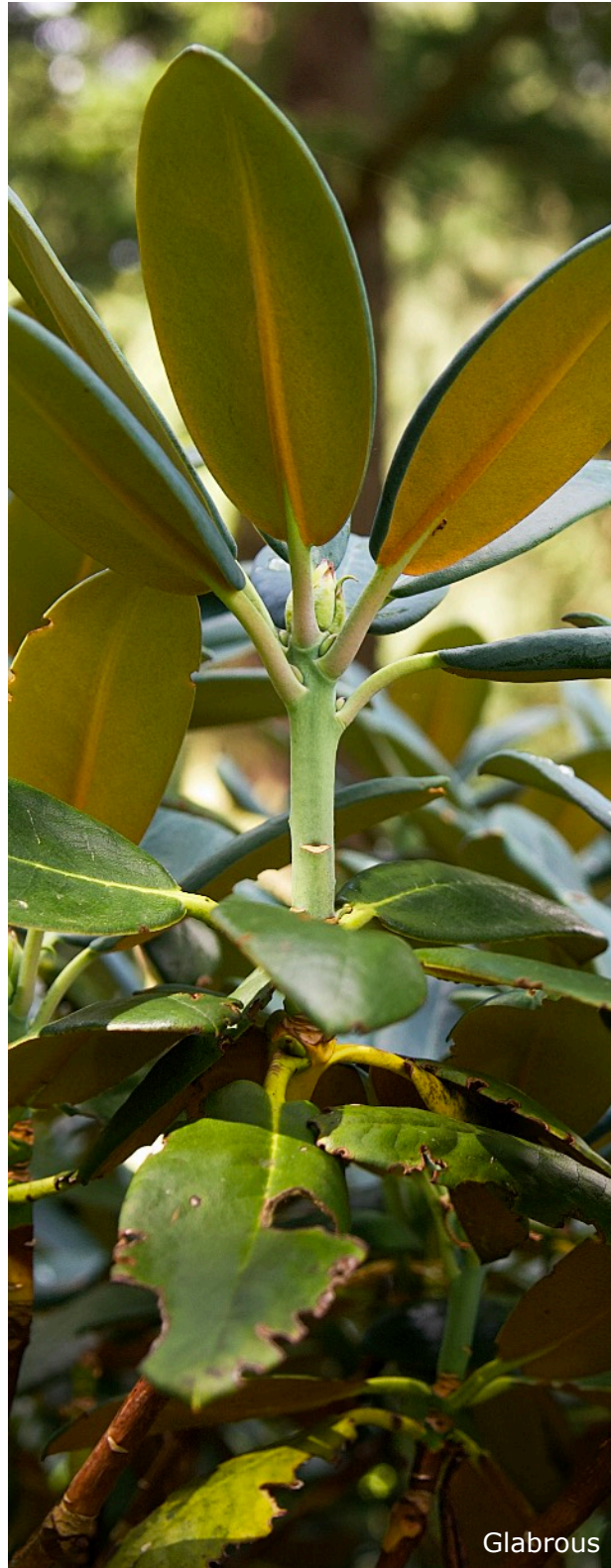


Domed



Umbrella

- Branchlets -



Glabrous



Setose



Setulose



Setulose-glandular

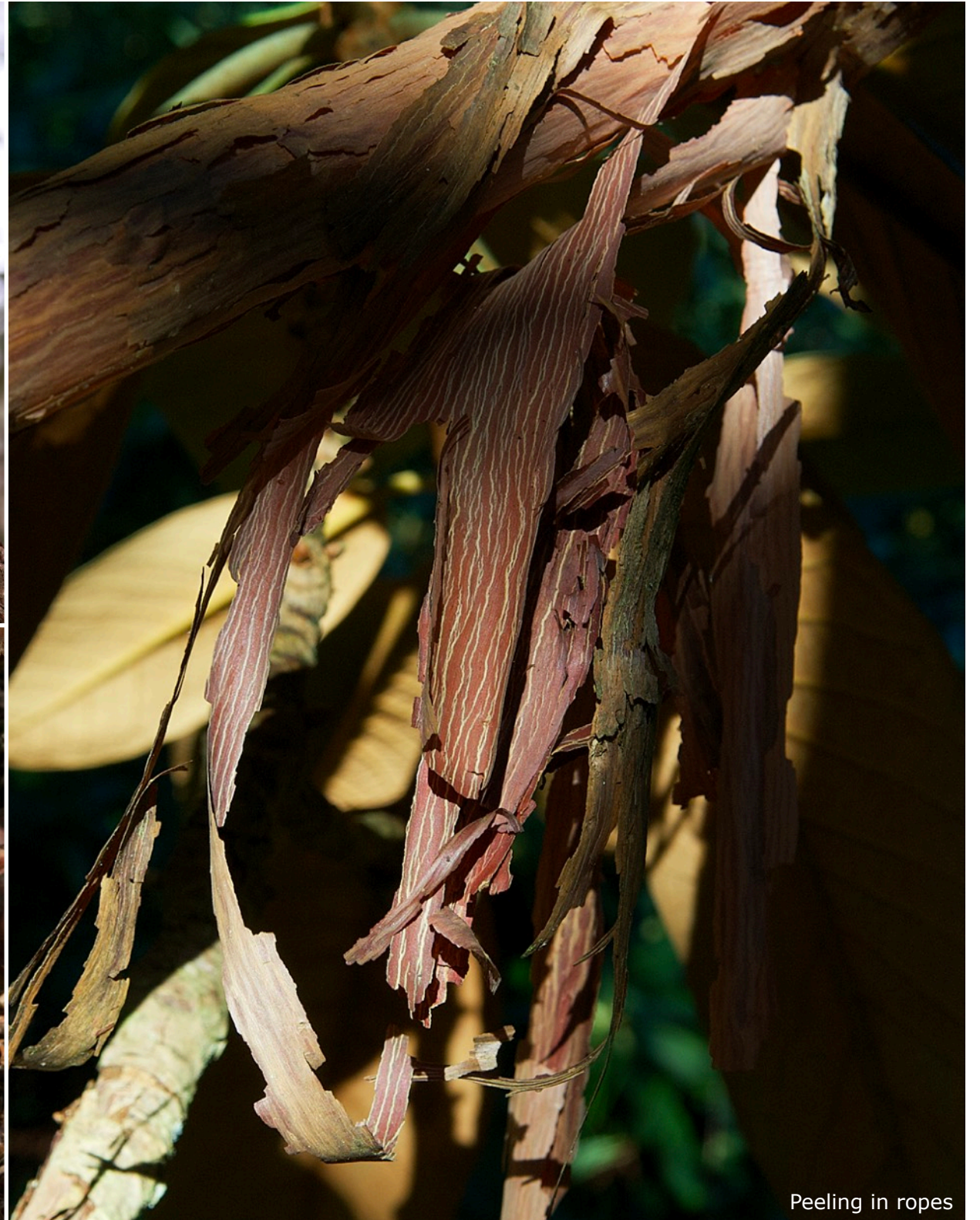


Persistent

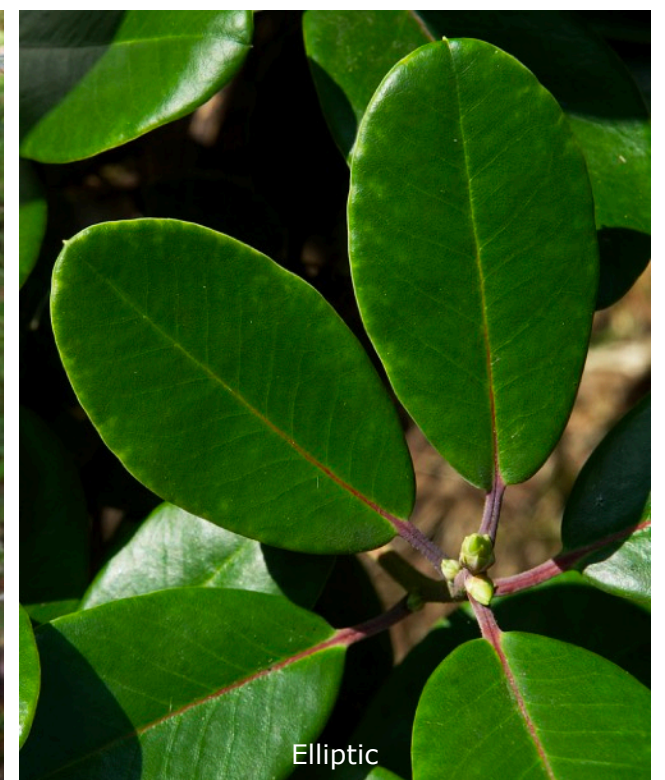
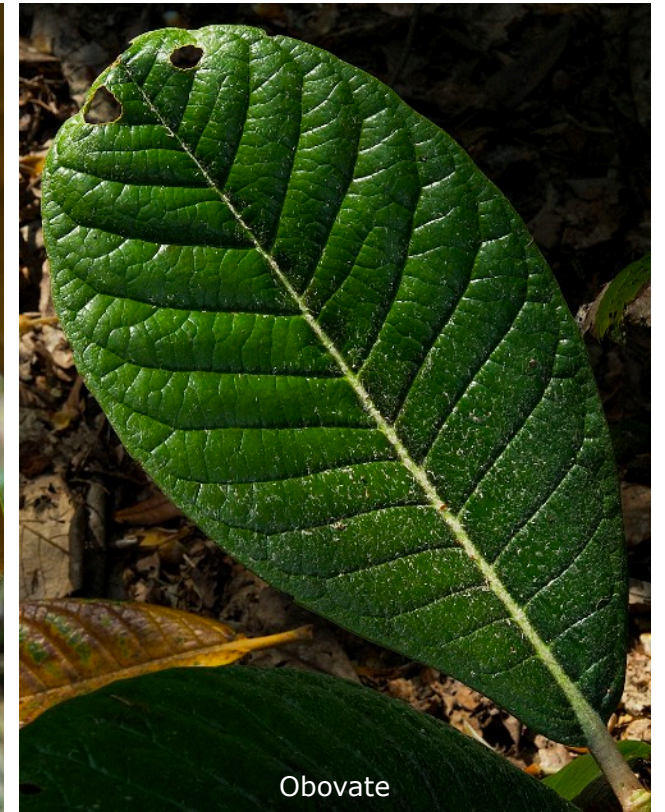
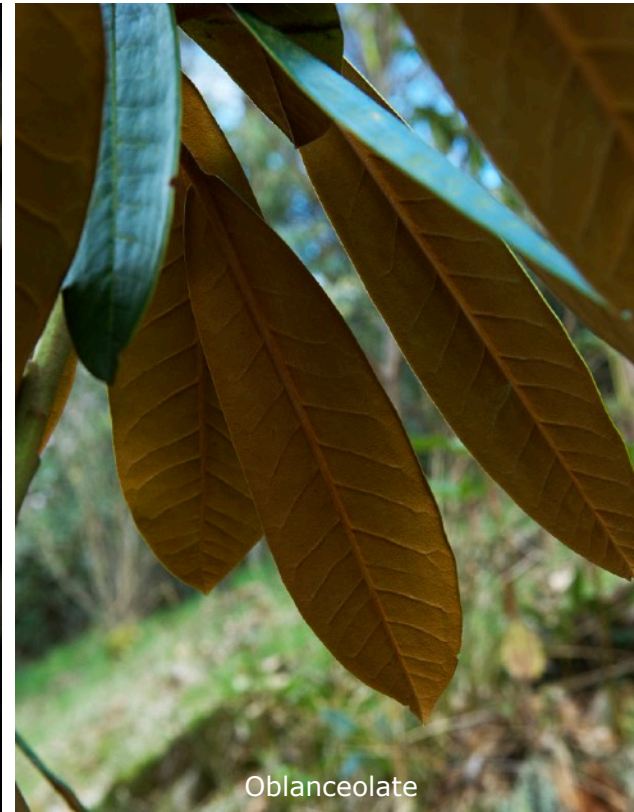


Tomentose

- Bark -



Leaf Shapes:

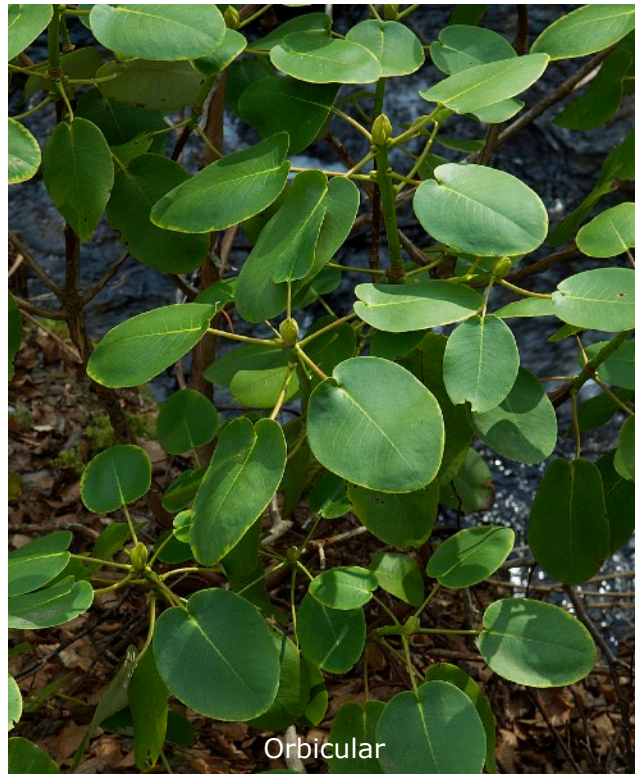




Oblong



Lanceolate



Orbicular



Linear



Ovate

Hairs & Bristles:

From the branchlets to the seed capsules, virtually every part of a rhododendron can be graced with a hair of one sort or another, and over the whole plant many different types may be present. John MacQueen Cowan identified nineteen different types of hair or bristle in his research work at Edinburgh Botanic, carried out in the late 1940s and published as a book - *The Rhododendron Leaf: A Study of the Epidermal Appendages* - in 1950. These, designations and descriptions, plus another six for the leaf scales, were later used by the Edinburgh Revision botanists in their updated classification: because the presence or not of hairs and bristles, and indeed scales, on an individual segment of a rhododendron, in varied combination across two, three or more features, or as a partial or continuous covering across the lower leaf surface, is an integral and crucial aid to identification and used to the key individual species or taxon groups apart, as are the types of hair, or scale, found to be present.

By increasing order of complexity, the hairs and bristles are:

Unicellular.

A very short hair composed of just one cell. Rare throughout the genus, they basically jut out from each cell of the abaxial epidermis, giving the leaf a greenish-white hue.

They are better known as papillae.

Multicellular.

These are composed of multiple cells in a single chain, one cell on top of the next.

They can be short, needle-shaped and hard (acicular); thin, silky and thread-like (filiform); or long and twisted (loriform). Some are swiftly deciduous, others remain persistent.

Setose and Setulose.

Follow the multicellular design but have multiple chains, making them stiff bristles. Tapering from a wide base to a pointed tip, with more chains lower down and fewer at the top, setose and setulose bristles only vary in length, the former being longer.

Strigose.

When flattened (lying along the surface of the leaf), setose or setulose hairs are described as strigose.

Glandular.

Are setose or setulose hairs with a globular, sticky, multicellular head that shimmers when wet and is yellowish or reddish-brown at first. Sometimes the heads can appear to rest on the leaf surface, but actually have an extremely short stalk.

Radiate.

Are a grouping of similarly shaped cells in a radial rosette. They may be spherical or resemble bottles and the cluster may or may not be supported by a short stalk.

Rosulate.

Mirror radiate hairs, but the cluster is composed of much longer, narrowly-cylindric cells. The stalk too is often longer.

Vesicular.

These hairs are only found on one species of rhododendron throughout the entire genus, *R. vesiculiferum*. They will be seen as a cluster of multicellular, bladder-

shaped extrusions borne atop a multicellular stalk.

Stellate.

Have fairly long, multicellular stalks, that are topped with a cluster of stiff, inflexible branches. These spread out in all directions.

Folioliferous.

Are hairs that again have a long stalk topped with a cluster of spreading tentacles. However, the cells here are comparatively broad and tapering, the overall leaf-like appearance suggesting the epithet.

Fasciculate.

Bear a much wider stalk than any of the previous hair types, which is composed of numerous small cells. The head is again a cluster of narrowly-cylindric spreading arms, but each is fabricated from a handful of cells butted end to end.

Capitellate.

Mirror the design of fasciculate hairs, but have a far shorter stalk.

Flagellate.

Come with a long multicellular stalk, but here the cells run in parallel lines. The head remains a cluster of tentacles, but the angle of spread is upward, with few if any arms striking directly sideways.

Ramiform.

Have a relatively short stalk, but come with a multi-branched head cluster of long tentacles that spread in all directions.

Cup-shaped.

Are hairs only found on the rhododendrons of Subsection *Falconera*. They have short multicellular stalks that widen out into a bowl, cup or cone shape formed of numerous individual cells joined together. A few similarly fused arms may extend above the rim.

As with leaf shape, so too with hair structure - indeed virtually all things in Nature - for a bevy of intermediates will be found spanning the gulf between polarities and merging to such a degree that one type of hair is often indistinguishable from another.

The term 'dendroid' is an overarching coverall, grouping those hair types that have a stalk and resemble trees - folioliferous, fasciculate, capitellate, flagellate, ramiform and cup-shaped - under one banner. Confusingly, some authors use the label to describe all the trunked hairs, while others exclude the most common type (ramiform with long filamentous branches) and then contrast the two, describing a rhododendron's indumentum as having both ramiform and dendroid hairs.

When catalogued as being 'long-rayed', hair ends will be found split into a number of stretched-out threads, 'short-rayed' being the converse.



- **Unicellular Hairs** -
As found on *R. zaleucum*.



- **Multicellular Acicular Hairs** -
As found on *R. spiciferum*.



- **Multicellular Filiform Hairs** -
As found on *R. scabrifolium*.



- **Multicellular Loriform Hairs** -
As found on *R. edgeworthii*.



- **Setose Hairs** -
As found on *R. barbatum*.



- **Setulose Hairs** -
As found on *R. erosum*.



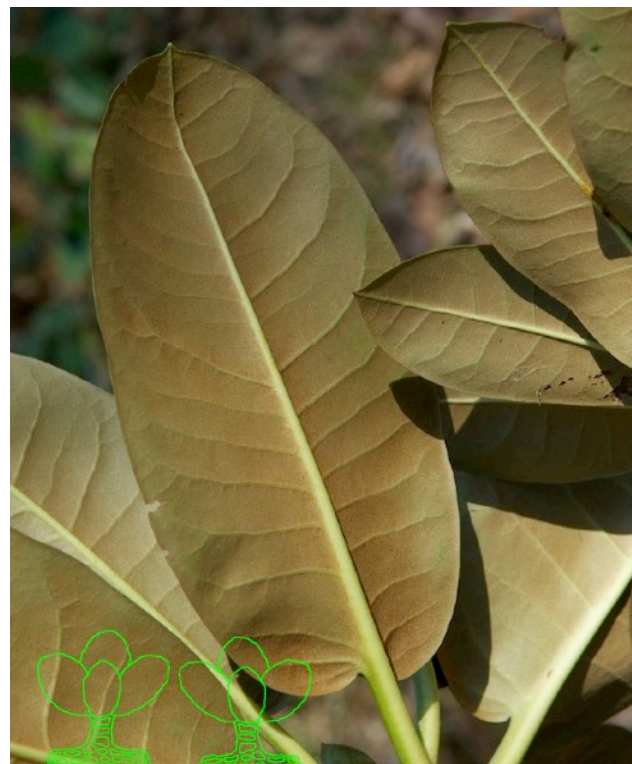
- **Strigose Hairs** -
As found on *R. kanehirae*.



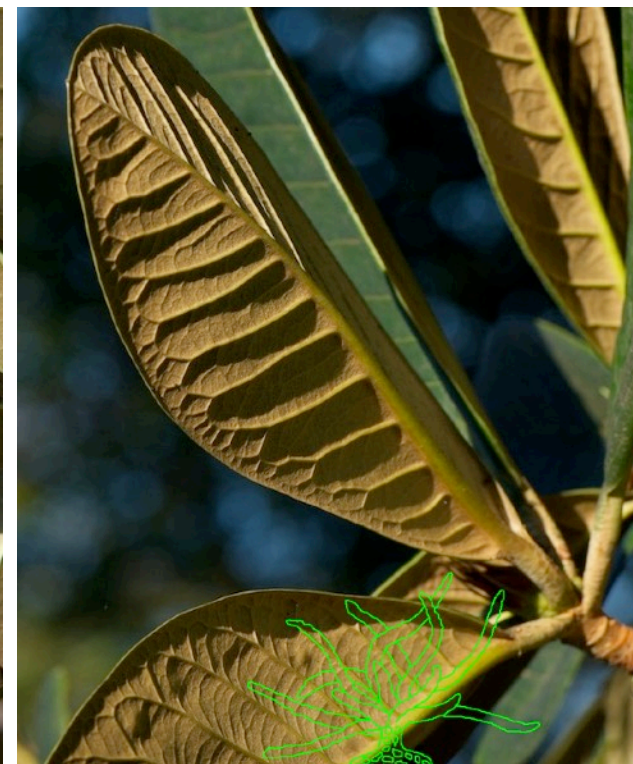
- **Setose-glandular Hairs** -
As found on *R. crinigerum*.



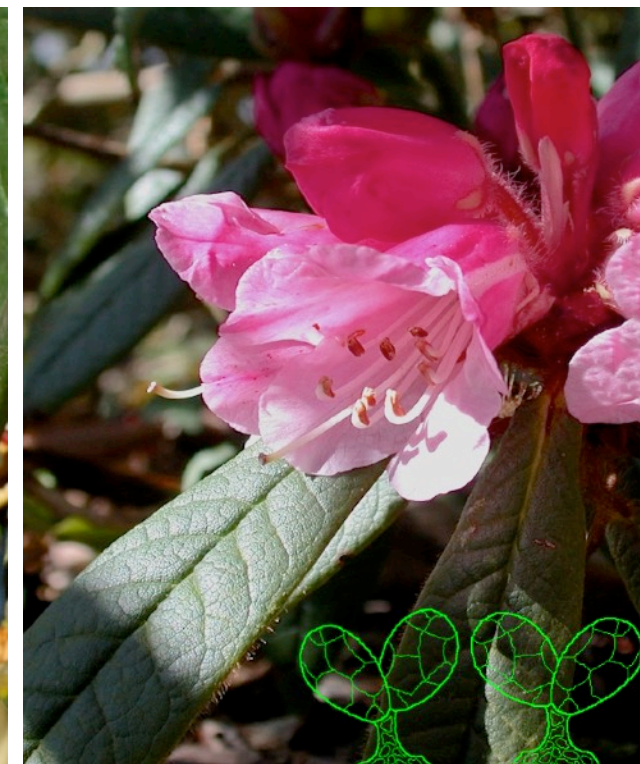
- **Setulose-glandular Hairs** -
As found on *R. semibarbatum*.



- **Radiate Hairs** -
As found on *R. lacteum*.



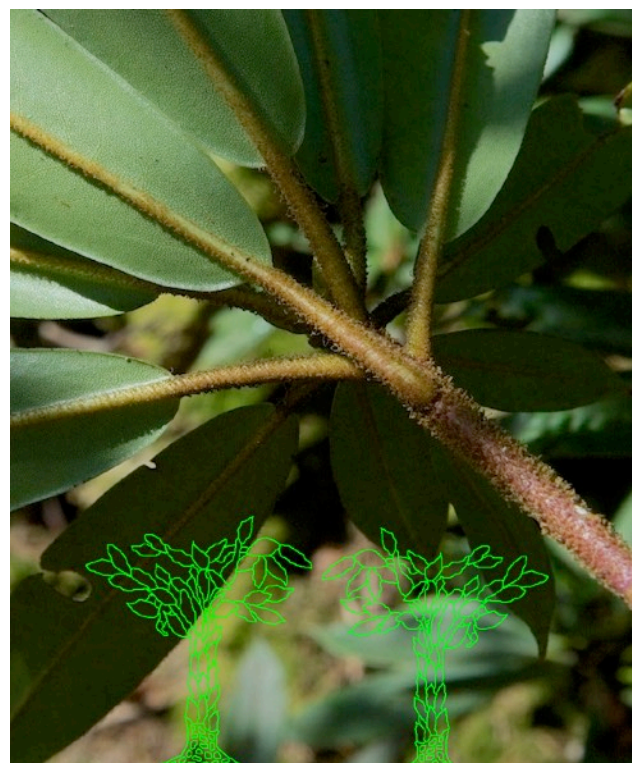
- **Rosulate Hairs** -
As found on *R. sinogrande*.



- **Vesicular Hairs** -
As found on *R. vesiculiferum*.



- **Stellate Hairs** -
As found on *R. coeloneuron*.



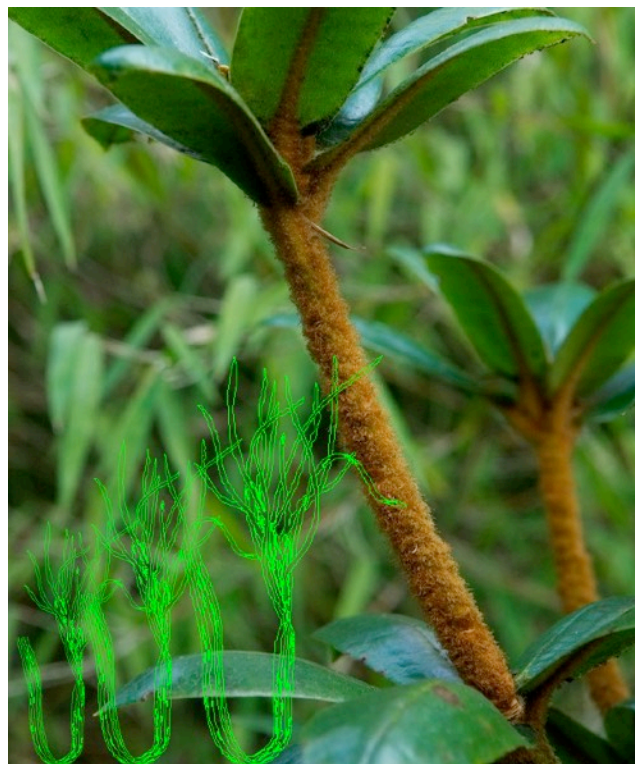
- **Folioliferous Hairs** -
As found on *R. pachytrichum*.



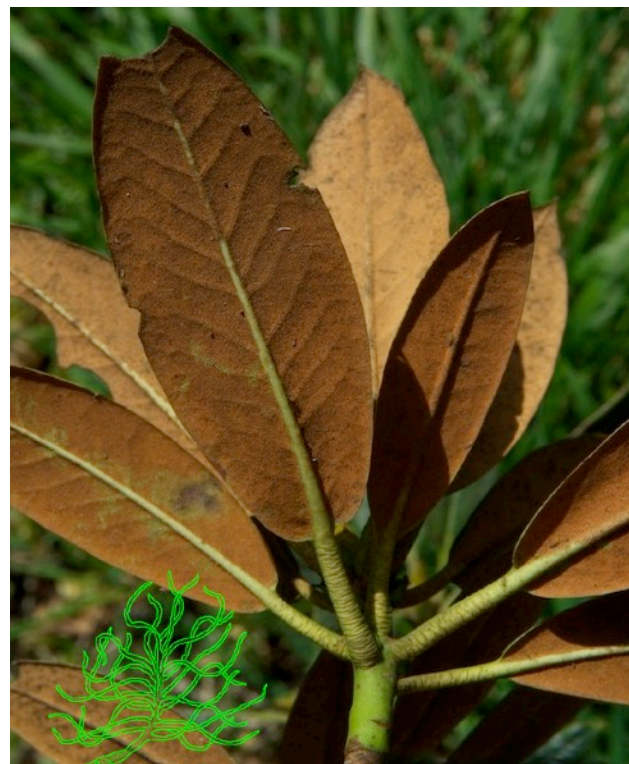
- **Fasciculate Hairs** -
As found on *R. wiltonii*.



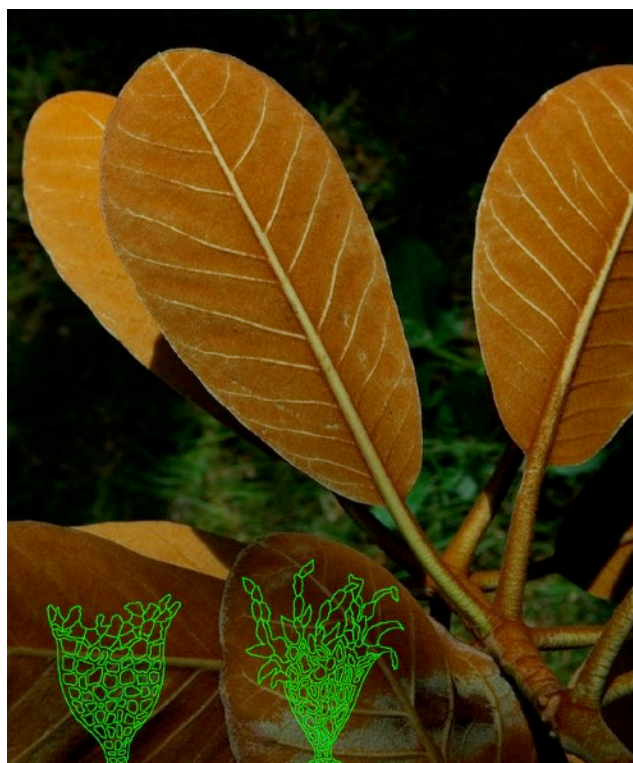
- **Capitellate Hairs** -
As found on *R. fulvum*.



- Flagellate Hairs -
As found on *R. longesquamatum*.



- Ramiform Hairs -
As found on *R. rufum*.



- Cup-shaped Hairs -
As found on *R. falconeri*.

Leaf Indumentum:

The presence of indumentum on the abaxial leaf surface immediately increases the aggregate of characteristics available for distinguishing one rhododendron species from another, even if a magnifying lens is not to hand. For although the actual hair type - or types - is certainly important, there are many other features observable without recourse to a microscope that can identify an individual from its distant or close relations.

The indumentum might cover the whole lower leaf surface, completely obscuring the midrib and veins, or its presence might be reduced to just a few vestigial patches or tufts of hair. Location and extent should be examined first therefore.

The high level of diversity within the genus dictates that every option between those two extremes will be found on one rhododendron or another, so in combination, a matrix of pointers becomes available for species verification. Equally important is the permutation of hairs on the epidermis, the veins and the midrib, especially as that physical presence on one, two or all three structures is easily seen. The density of the covering is another aspect that is immediately apparent, this varying from a sparse scattering of hairs to an impenetrable fleece and again, potentially differing across the various bits of the leaf anatomy. Persistence is also a factor, with the covering of hairs possibly thinning-out over time, retreating to just around the leaf base or in some cases, vanishing completely. Continuity also, as the indumentum can remain continuous and unbroken across the whole surface, or split up into a patchwork of segments.

With the placement and coverage boxes ticked, one's attention can turn to the other physical attributes:

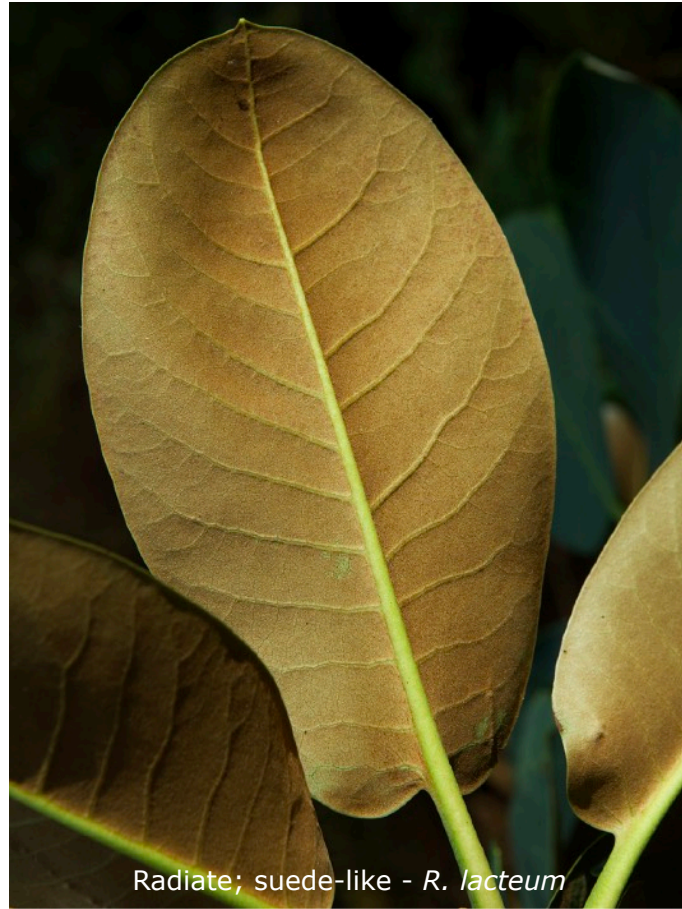
Colour is an obvious trait, with the indumentum hairs predominantly light brown (fawn) through rusty-red (rufous), but their hue can also be ash-white, silvery-grey, or even yellowish and that tone will vary with age, usually turning darker over time, though the reverse also occurs. The covering can be thick or thin, with the hairs densely woolly and matted (felted); a tangled and interweaving mass; spongy or suede-like; even granular, with the particles fine or coarse. The hairs can be glued together, as if painted onto the leaf surface (agglutinated); flattened, as if pressed onto the surface (compacted or plastered); or sometimes embedded in a surface film, which if lustrous and skin-like is termed a pellicle. And when the hairs are dense and woolly, but loose, falling away in discontinuous tufts, they are described as being floccose.

A final distinction - the hairs may be arranged in one or two layers (unistrate or bistrate), often with one type of hair in the upper strata, and a different type in the one below. That top layer is usually thick and woolly, may sometimes be loose, or more rarely be partially or completely lost. At which point the thin lower layer of usually compacted and plastered hairs is revealed. A change of colour between the layers is often a feature.

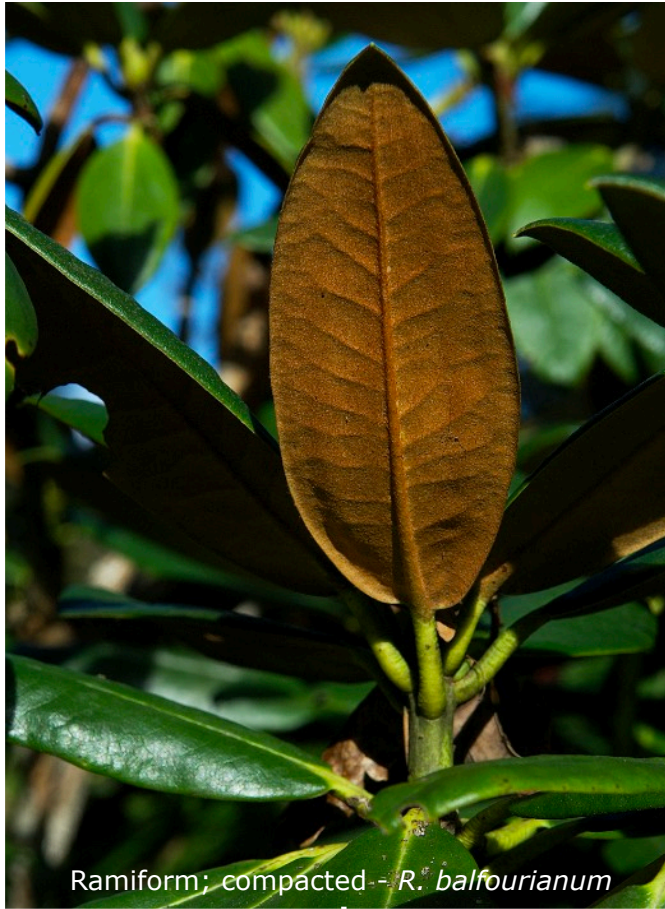
In practice, terms such as agglutinated, compacted and plastered have overlapping definitions and their use varies widely from author to author, botanist to botanist, horticulturalist to horticulturalist, with consistency sometimes lacking from page to page.

Examples of the various indumentum types that might be encountered on species in UK cultivation follow overleaf:

- Unistrate -



Radiate; suede-like - *R. lacteum*



Ramiform; compacted - *R. balfourianum*



Ramiform; spongy - *R. adenogynum*

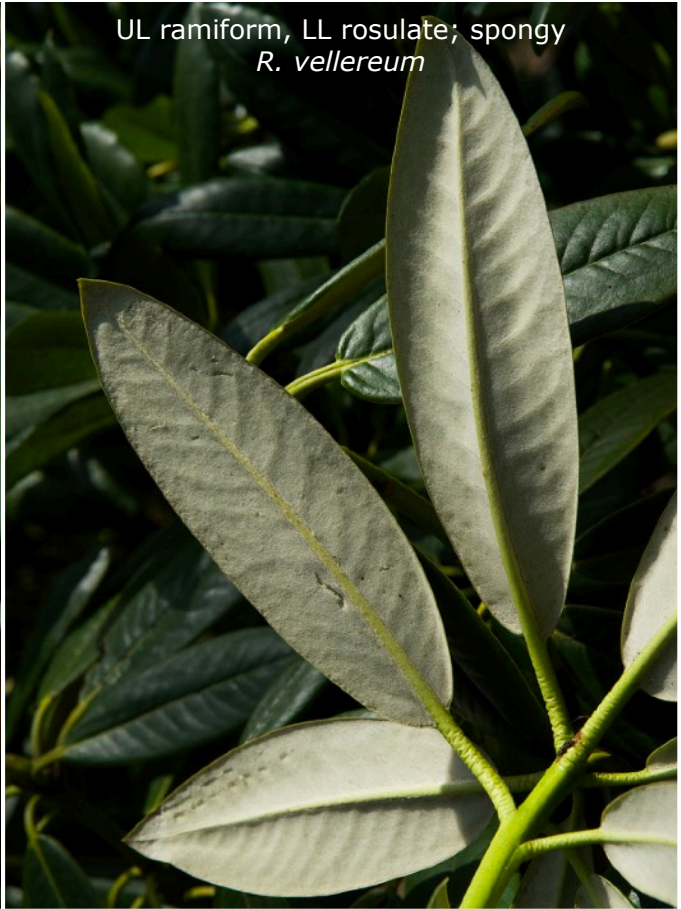


Capitellate and ramiform; lanate - *R. campanulatum*



Ramiform; thick - *R. recurvoides*

- Bistrate -



- Plastered; Surface Film Pellicle; Persistence -



Rosulate; plastered - *R. praestans*



Upper layer ramiform, lower layer rosulate; pellicle - *R. clementinae*



Ramiform; compacted and patchy - *R. x flavorufum*



Fasciculate; sporadic tufts along the veins - *R. hookeri*

Leaf Scales:

Within Genus *Rhododendron*, the presence of scales on the underside of a leaf is significant for classification and identification.

All rhododendron species have scales protecting their growth and flower buds, but only those of Sections *Lepipherum* and *Pogonanthum* (and the tropical Vireyas of Section *Schistanthe*) have a different form of scale - in fact, a modified hair - on the upper or lower surfaces of their leaves. This difference is so categoric that natural inter-breeding can only occur between two rhododendron species that have leaf scales, or two species without such. It cannot take place between a scaly (lepidote) and a non-scaly (elepidote) species. Of course - to misquote Michael Crichton - hybridisers will always find a way, and indeed some have made lepidote-elepidote crosses, but in the main and certainly in the wild, the two are incompatible.

As with the indumentum hairs, rhododendron leaf scales come in a variety of shapes and sizes.

The basic model resembles a mushroom and can be broken down into three parts: a stalk, a cap and a rim. The stalk is usually quite short, multicellular and may extend upward from a pit on the leaf surface, giving the false impression that the scale rests flush on the epidermis. Overall, the circular cap is flattened, but usually comes with a domed multicellular centre from which the larger, elongated cells of the rim stretch out. This is the most common type, technically known as an 'Entire Scale' due to the unbroken rim circumference (without any indentations or other divisions) and the description allows for comparative variance in size between the hub and the spoke cells, and a differing stalk length. The rim can also be angled upwards, giving a cone shape when viewed side-on.

Disparities in the uniformity of the rim give rise to the other scale types (as defined by Doctor John MacQueen Cowan) that were used for the Edinburgh Revision classification: lacerate, with jagged teeth; stellate, with pointed arms; undulate, with crinkly margins; crenulate, with scalloped peripheries; and vesicular, where the boundary between the cells of the dome and those of the rim is obscure.

Scale populations on the same leaf surface may be of one type, or several types, and even when similar, could have different stalk lengths, might be arranged in tiers, or the caps could vary in width. Or they could all be uniform. They might be held close together, be touching or overlapping, or be scattered. Or set some distant from each other by a multiple of up to ten times the diameter of the scale (or occasionally more).

- Crenulate Scales -
As found on *R. saluenense*.



- Entire Scales -
As found on *R. heliolepis*.



- Lacerate Scales -
As found on *R. cephalanthum*.



- Stellate Scales -
As found on *R. kongboense*.



- Undulate Scales -
As found on *R. fastigiatum*.



- Vesicular Scales -
As found on *R. mekongense*.

Scale colour is most often a yellowy-brown, but may sometimes be golden, or less often black, dark red, pink or milky-white. That pigmentation can also vary across the colony. Moreover, it varies with age, golden tones transitioning to brown as the leaf matures.

On average, each scale is around three times as broad as a human hair, but *R. rupicola* var. *chryseum* manages to pack over 4000 of them across each square centimetre of its leaf surface.

In the battle to reduce leaf water loss, lepidote scales are an evolutionary advance on indumentum hairs, a step up, because they also contain what are known as essential oils. These are compounds that swiftly evaporate when exuded, often when the leaves are rubbed, generating the foliage aromas associated with the Section *Pogonanthum* species or those from Subsection *Heliolépida*.

Studies carried out by the United States Department of Agricultural in the 1980s showed that these oils also significantly reduced the incidence of insect attack.



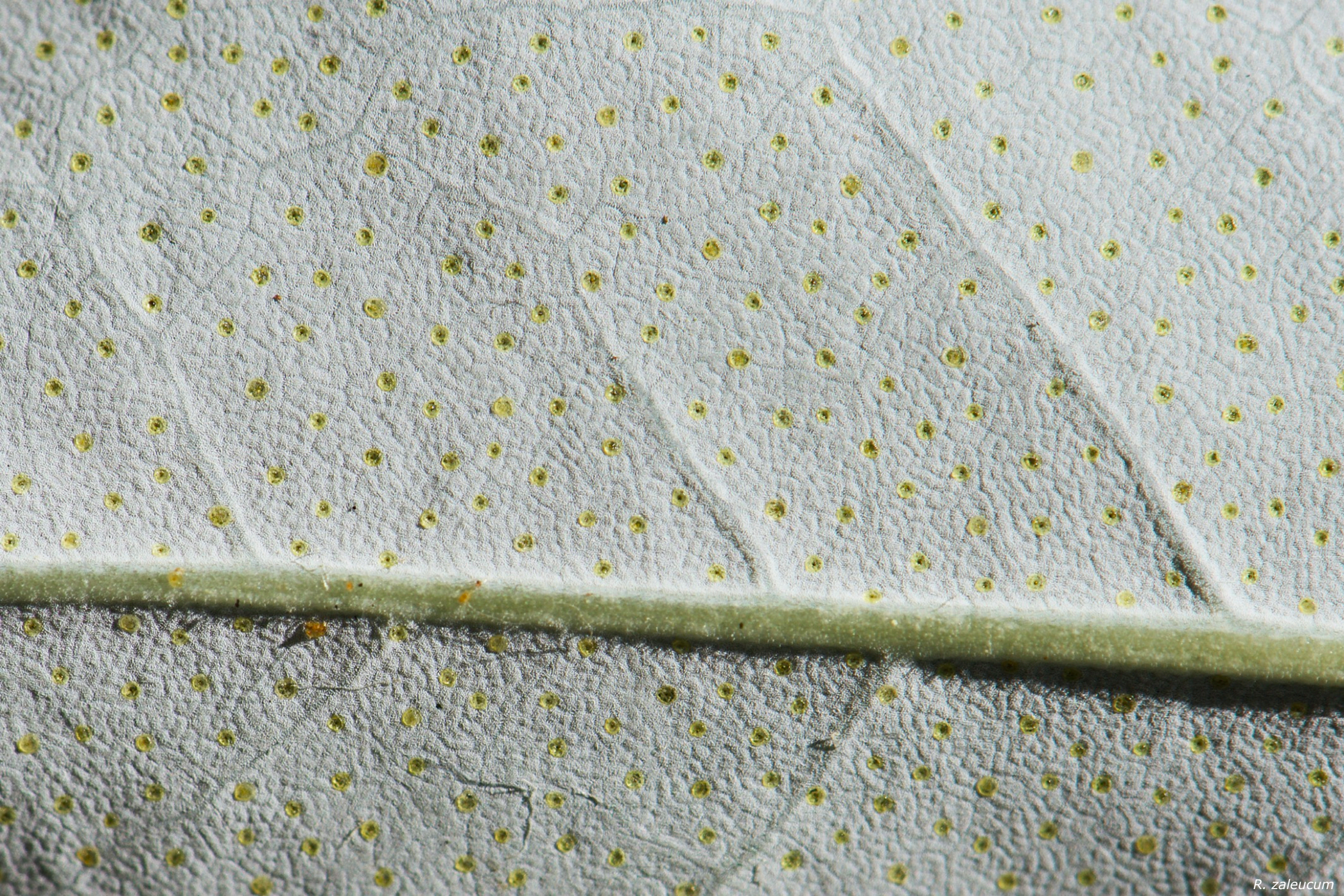
R. pemakoense



R. camelliiflorum - juvenile leaf



R. camelliiflorum - mature leaf



Petioles:

Rhododendron leaf stalks vary in length, thickness, colour and shape. They may be covered in lepidote scales, bedecked with hairs and bristles - in quantity or sparingly - which can also be glandular, or they might be completely glabrous. The usually circular cross-section can be notched with a groove or the whole top flattened. Or the sides could be found to be augmented with two parallel ridges or 'wings' when a tapering leaf base extends along the petiole towards the stem. And if described as 'terete', the petiole is one whose diameter narrows on its journey from stem to leaf base, while application of the terms 'sessile' or 'subsessile' indicate a leaf effectively without, or with a very short, stalk.



Grooved - *R. oligocarpum*



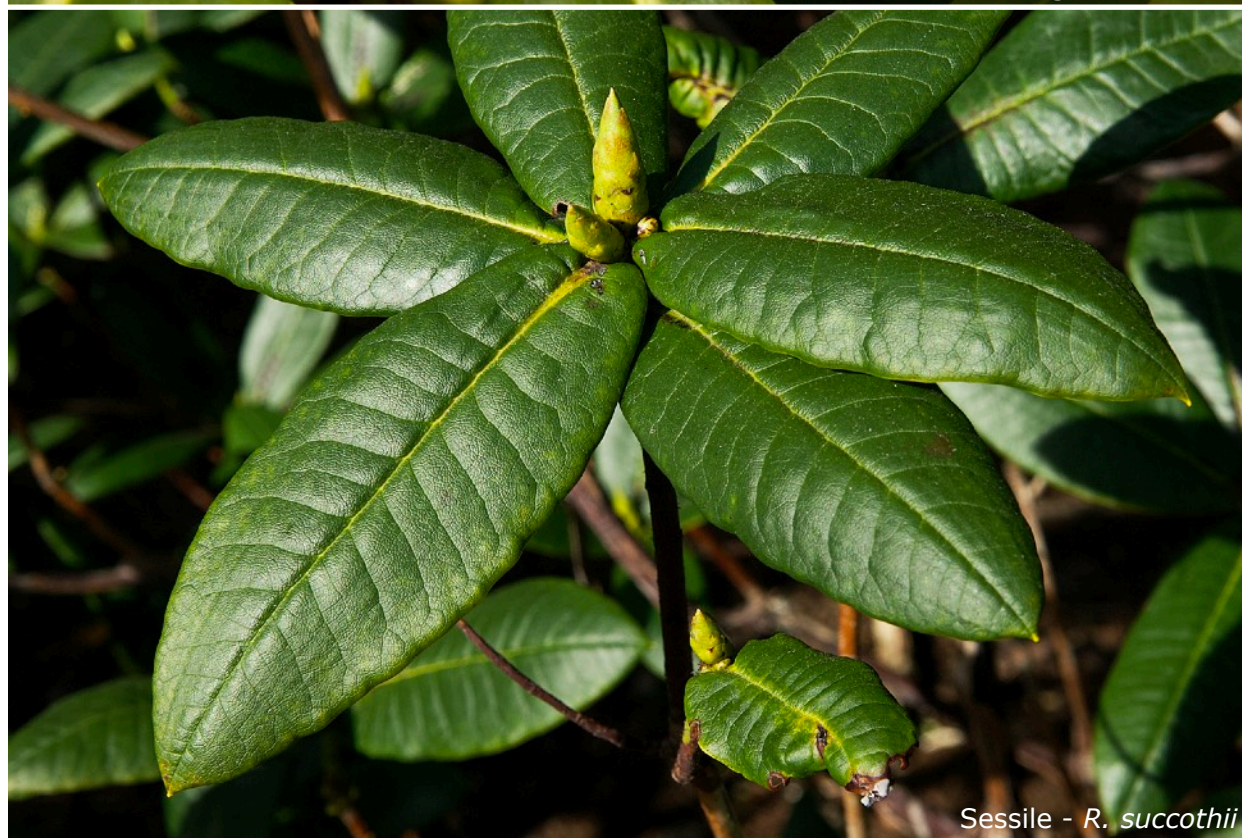
Coloured - *R. fortunei*



Flattened - *R. yuefengense*



Terete - *R. glanduliferum*



Sessile - *R. succothii*



Winged - *R. praestans*

Floral Structures:

A flower bud can be set when the width of the branchlet that supports it reaches the minimum required thickness for that particular species, this calibre varying from one taxon to another within each subsection and across the genus as a whole, but it is always greater than the width of the stem beneath a solitary vegetative bud.

Most rhododendrons will send out new shoots from the branch tip immediately below the flower bud as or just after the corollas fall, though a few begin this process slightly before or as the flower buds swell, which can mar the floral display. Most species develop their new stems sufficiently enough across a single growing season to allow a flower bud to form by early autumn; others opt for a growth bud, waiting for the following season's extension to attain the diameter required for a flower bud to be set. However, many of the large-leaved species take even longer, delaying vegetative bud break on a stem that has flowered until the next growing season, especially if resources are being channelled into swelling seed capsules (hence the advice to deadhead). Two more years at minimum are then needed post that delayed kickstart before the requisite stem breadth is reached. It is this three-season cyclical process that gives rise to the boom-bust of an almost over-abundance of bloom one year, followed by a couple of lean years when even a tree-sized rhododendron may only open a handful of flowers.

Like the foliage buds, the flower buds too are enclosed within a protective outer layer of scales or bracts to get them safely through the trials of winter. These can be glabrous, hairy or sticky (resinous), and variously coloured - green or brown is the norm, but reddish, off-white or yellowish is also possible. They can be notched, have long or short acuminate tails, or have margins fringed with hairs, a determinate trait for the Section *Pogonanthum* rhododendrons as their hairs are branched. Moreover, the bud scales can also be scaly (as in lepidote).

Where the scale plates overlap, hairs and lepidote scales are generally absent.

Though only really evident close to maturity, rhododendron flower buds come in three basic shapes: near cylindrical; ovoid; or spherical. They are usually formed at the branch tips, hence the applicable descriptor 'terminal', except in a few species, where in addition, they are set laterally, along the sides of the stem at the leaf axils, the terminology then changing to 'axillary'.

Inside the bud, inner bracts will be found, each having a latent corolla snug at its axil. All are discarded - outer scales, inner and exterior bracts - in the vast majority of species once their protectee begins to swell and open.

Rhododendron corollas, unless solitary, are arranged in a truss, this disposition more properly referred to as an inflorescence. Such groupings may take the form of an umbellate raceme, with all the flower stalks spreading out from a common locus much like the spokes of an umbrella or a bicycle wheel. Or they might adopt a near pyramidal arrangement, where the pedicels extend out from a central stem - known as a rhachis - producing an elongated raceme. Esoterically, a raceme is also an inflorescence where the corollas are uniformly arrayed along an unbranched rhachis, the leaf stalks are the same length and the uppermost flowers open last. But this type of structure is far more often referred to as being 'racemose'. A candelabroid inflorescence describes a disposition made up of either upright pedicels, or a long upright rhachis, or both in combination. And an inflorescence may also be described as tightly packed or dense, loose or lax, pendulous or upright.

Not all rhododendrons incorporate a rhachis into their flower truss, but when present this central stem, off of which the flower stalks extend, might be long or short, glabrous, hairy, sticky, bristly or scaly, and post pollination, as the capsules develop, could elongate still further, increasing the top-to-bottom pyramidal effect. This is particularly noticeable when a Section *Ponticum* species is in fruit.

Rhododendron flower stalks - pedicels - can also be long or short, glabrous, hairy, sticky, bristly or scaly, with the concluding quintet of features mirroring such characteristics present on the rhachis (if extant) or the calyx, or differing from them both. Equally, they might also be coloured. Irrespective of whether they extend from the bud base or a central stem, pedicels strike upward, though their individual angle of attack will differ to accommodate a tiered truss. At the pedicel tip, the corolla is usually held at a downward angle to the line of ascent, the flower nodding. However, in a minority of species, the axis is continued, with pedicel, ovary and style forming a straight line. And as you would expect of Mother Nature, a few deviates will also be encountered holding their corollas upright.

While still latent in the bud, each pedicel is winter-protected with a wrapping provided by two stringy 'bracteoles'. These quickly fall away with the other bracts and scales as the buds swell and open, except in the Subgenus *Therorhodium* rhododendrons. Here, they are retained, developing into leaf-like structures by the time the corollas have fully expanded and their presence on the flower stalk, until as recently as the late 1980s, caused contention and confusion in botanic ranks. For in combination, pedicel and bracteole were wrongly considered to be a leafy shoot that bore flowers. This, along with the fact that *R. camtschaticum* and its allies cannot successfully breed with any other rhododendron, led to their classification as a separate genus - first as *Rhodothamnus*, then *Therorhodium* - a position maintained by no-less an authority on *Ericaceae* than the late Hermann Sleumer. DNA evidence, once it became available, incontestably proved the case for inclusion within Genus *Rhododendron*, as, on a more prosaic note, did a better scientific understanding of dormant flower buds and polyploidy.

For most other plant species, the calyx is an essential component of a flower bud's winter protection system, but within Genus *Rhododendron* that role has been subsumed by the outer and inner scales or bracts, and the bracteoles, leaving the calyx with little more than a supportive role in the floral display. Because of this, in many species, it has shrunk to become nothing more than an insignificant rim-like ridge just below the corolla insertion point. But not in the majority. Where it still remains relatively large and petal-like and can be highly decorative. Its form, therefore, provides yet another matrix of features useful for identification.

In the main, once flowering is over, and unlike the corollas, which fall, the calyx lobes persist. They become vestigial in all but a handful of species, these few seeing those sepals elongate to partially or almost fully enclose the seed capsules, which gives an extra layer of protection from insect attack or extreme weather.

A calyx may be small or large, cup-shaped with an entire or wavy periphery, or variously lobed, sometimes deeply so, these with a rounded, triangular, oblong, lingulate or strap-like profile. Five, six or seven green-coloured lobes are the norm, but their hue will sometimes match that of the corolla or contrast with it. Hairs, bristles, glands and lepidote scales may replicate or be in variance with the complement present on the rhachis or the pedicel, and in addition, the morphology of the calyx outer surface, lobed or entire, may differ from that exhibited on its margins. These could be fringed with another type of hair or bristle, have none at all, or be hirsute when the plate below is glabrous. The density of this coverage - sparse through moderate to crowded - can often be an important keying tool. Finally, in some species, the lobe tips of the calyx will be found to be angled out from the corolla or even rolled completely over so they are pointing backwards.

- opposite -

A *Deroceras reticulatum* pre-prepared *R. sinogrande* corolla, showing all its constituent parts.



Stamen Filament

Stamen Anther Pore

Stamen Anther

Style

Pollen Grain String

Stigma

Corolla Tube

Corolla Lobe

Dorsal Blotch

Ovary

Nectary

Pedicel

Calyx

Nectar Pouch Bulge

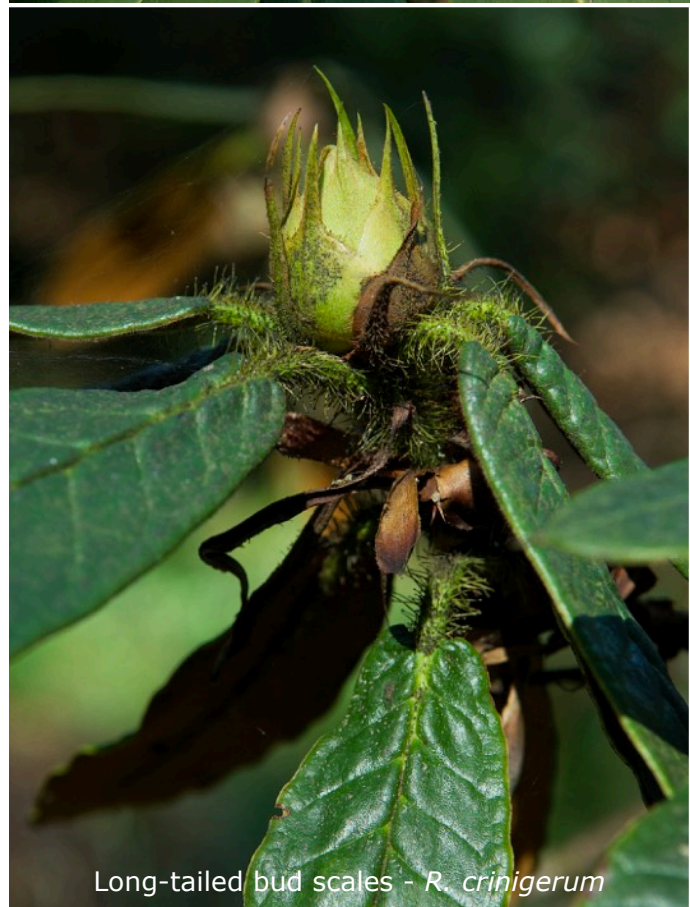
- Buds -



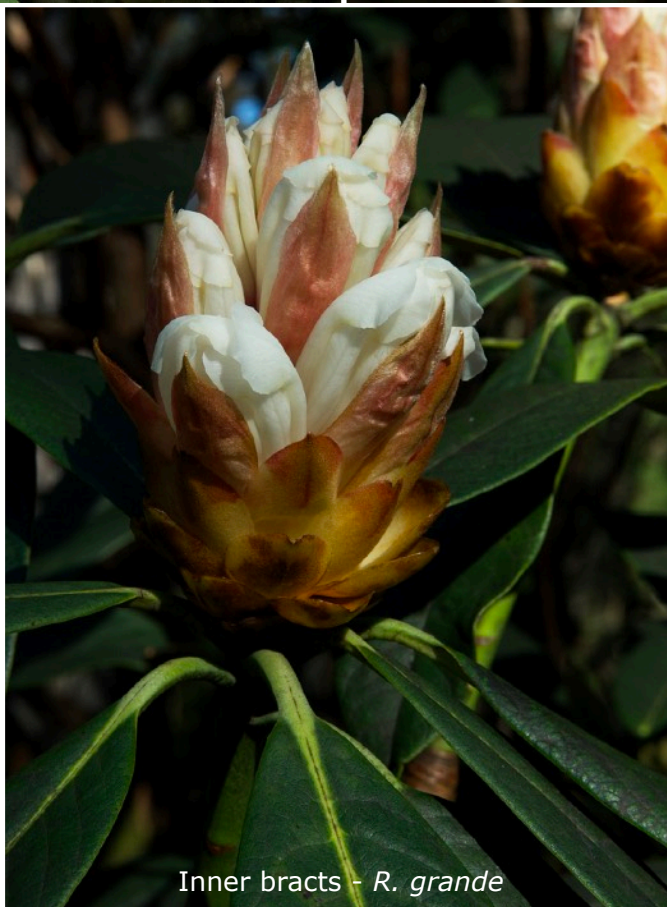
Notched flower bud scales - *R. Gargantua*



Short-tailed bud scales - *R. protistum*



Long-tailed bud scales - *R. crinigerum*



Inner bracts - *R. grande*



Axillary flower buds - *R. racemosum*

- Rhachis -



R. maximum



R. genestierianum

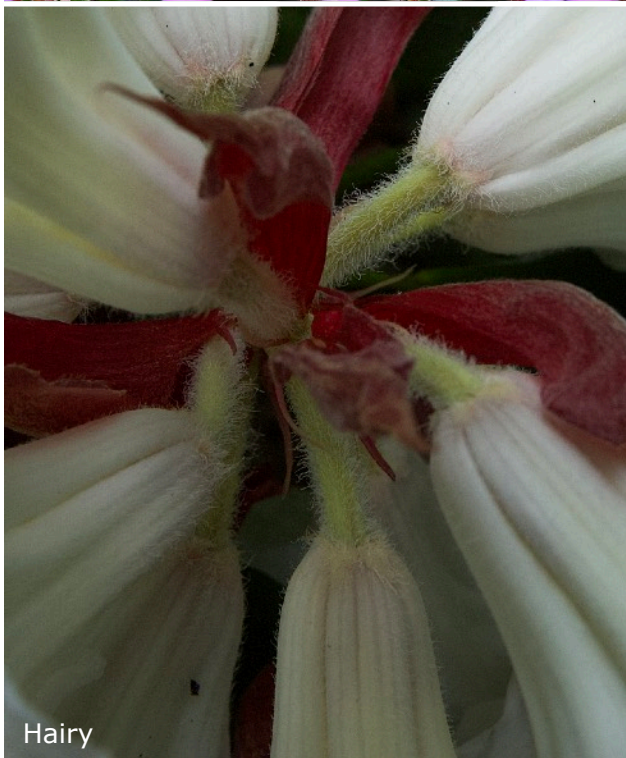
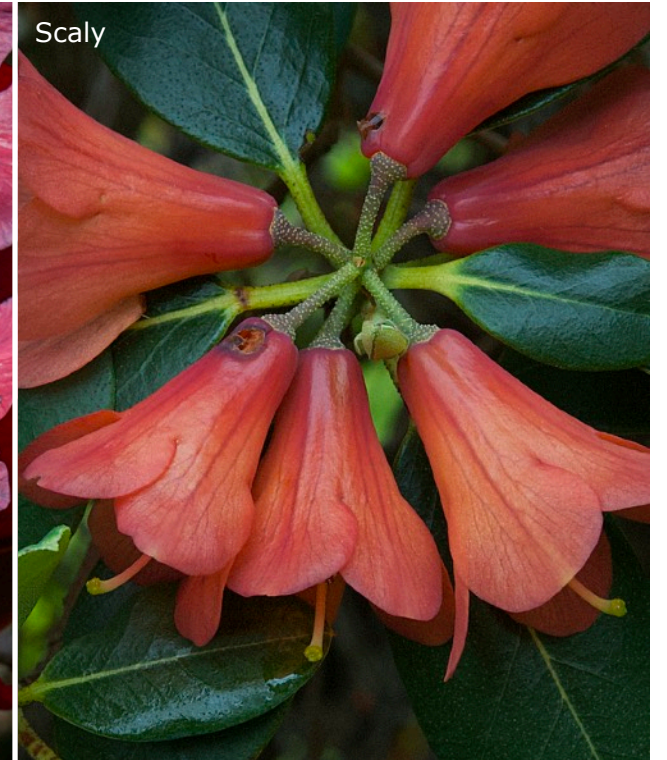


R. huanum



R. orbiculare

- Pedicels -



- Calyx Lobes -



- Flower Truss -



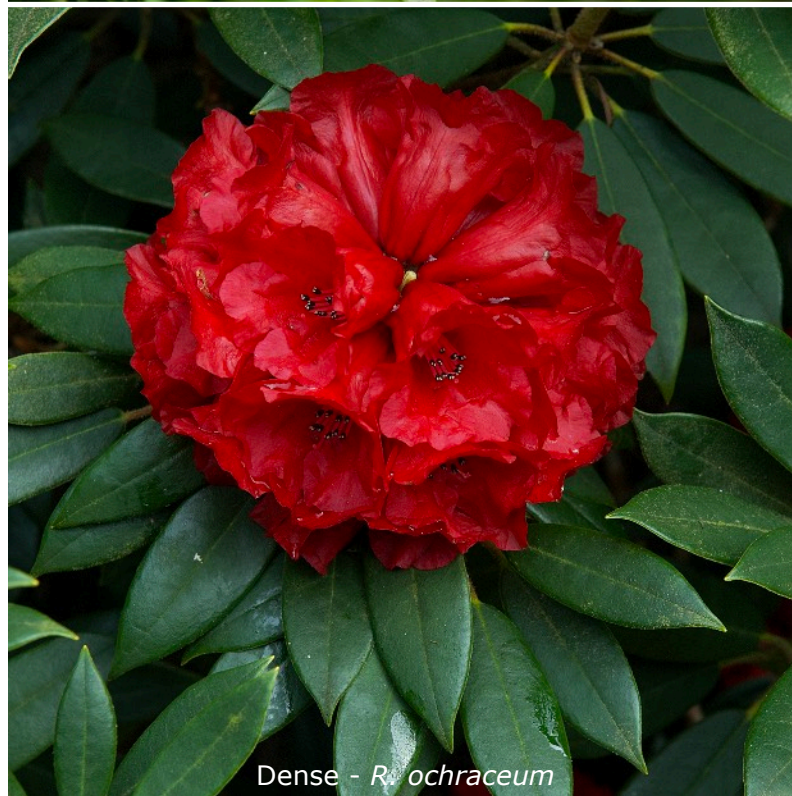
Umbellate - *R. griersonianum*



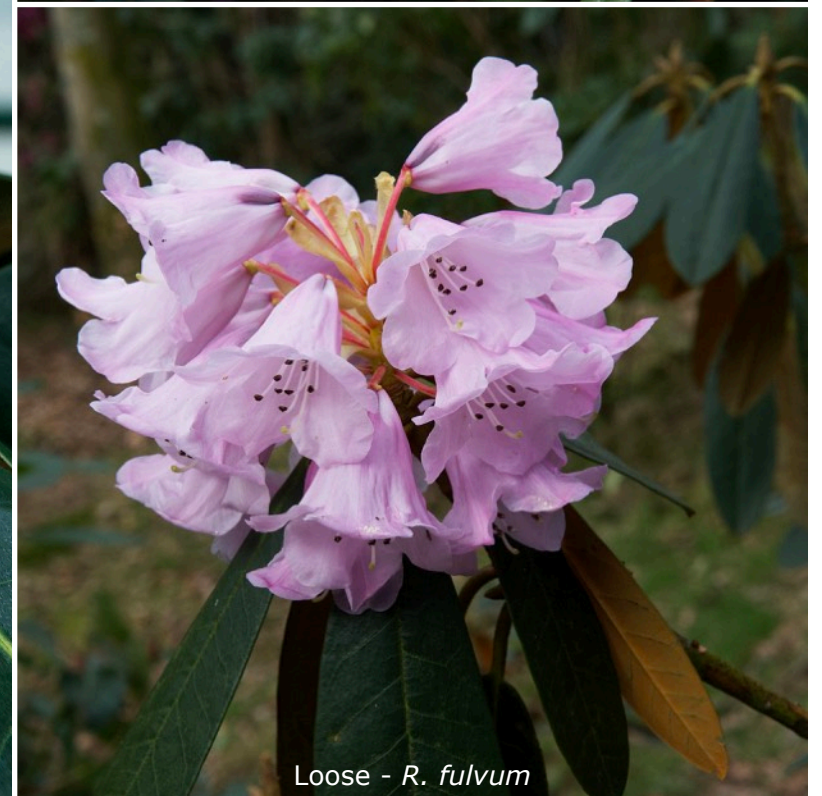
Pyramidal - *R. hodgsonii*



Racemose - *R. racemosum*



Dense - *R. ochraceum*



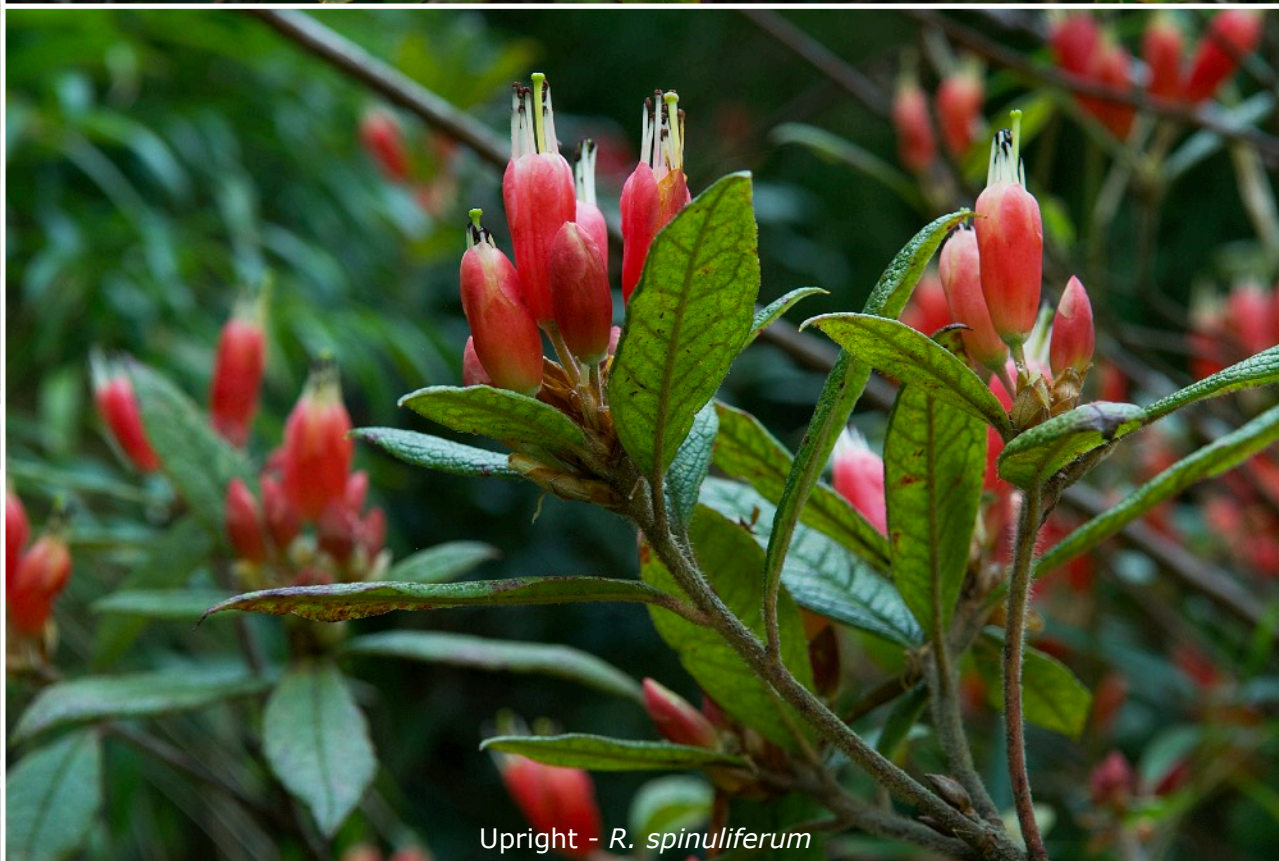
Loose - *R. fulvum*



Candelabroid - *R. hyperythrum*



Pendulous - *R. cinnabarinum*



Upright - *R. spinuliferum*

The simple fact that flower colour is an often-unreliable characteristic for keying one rhododendron from another comes as a surprise to many rhodophiles, but field studies of the wild plants have shown this feature can be inconsistent even within a single population. Luckily, as already made clear, there are a bevy of other more stable attributes to hand, the foremost of which is shape.

Each corolla is basically a tube that flares out into a number of lobes at the open end. Its design is a direct consequence of needing to accommodate whichever pollinator - bee, moth, beetle or bird - is being enticed to visit the flower. Profile and dimensions, therefore, vary widely across the genus, in terms of overall size, silhouette and proportion, though thankfully these combine into a similar set of ratios frequently enough to allow for the establishment of a group of named geometric forms. Unfortunately, the number of such varies by assessor - irrespective, for once, of their botanical or horticultural background - with many of the profiles allotted differing names, which of course further adds to the confusion. However: if appraised face-on, a corolla might be weakly to strongly, bilaterally symmetric (zygomorphic); and then, when examined side-on, campanulate, funnel-shaped, tubular, occasionally almost flat (rotate), or more rarely with an extended parallel-sided tube. If the lobes of the latter flare at near right angles to the tube, the corolla can be described as 'hypercrateriform'. And of course, each defined shape comes with a whole host of intermediates.

The absorption of Genus *Menziesia* into the rhododendron fold also required the term 'urceolate' to be added to that listing of contours.

Corollas with five lobes predominate, but any whole number up to ten will also be encountered, while *R. tschonoskii* is unique in sometimes only bearing four. The lobes can be shorter, equal in length or longer than the tube, which itself can be long or short. At their base, the lobes are always fused together, even when apparently deeply bifurcated, and they may vary in shape, have frilled or wavy margins, or come with an emarginate (notched) apex.

The largest corolla found in Genus *Rhododendron* is a little over 8cm long when the side-on profile is aligned with a ruler and correspondingly, some 15cm wide across the mouth, with a base-to-lobe-tip measurement equal to around 20cm; the smallest, has dimensions of just a few millimetres - *R. griffithianum* and *R. groenlandicum* respectively. The default state is glabrous, but some species have corollas with pubescence on the outer or inner surface of their tube or lobes. Others boast glandular hairs. Some, within Section *Lepipherum*, lepidote scales. On occasion, these adornments can be quite densely packed, but only on *R. lutescens* will the hairs be found to point backwards.

As indicated, corolla colour can differ substantially within a single species population producing a wide clinal gradation often exacerbated by geography. That palette varies even more across the whole genus, with hues from all parts of the visible spectrum featuring, except for a true blue. Some of the lepidote species edge closest to that wavelength, but hints of violet, mauve or magenta are always found in their pigmentation. Green is present mainly as an undertone.

Darker or contrasting blotches or spots will often be displayed inside the corolla, specifically on the roof of the tube, at the base of the lobes, or spread across the upper lobes. These genetic enhancements evolved to help guide insects onto the correct flight path for the nectar store - Mother Nature's very own visual glide slope system - their presence and placement, discrete or in combination, providing additional recognition keys for human observers.

In cross-section, the corolla tubes of nearly all rhododendrons will be found to be circular. For a minority, the alternative is a fluted tube, this exemplified by several of the

larger-flowering species from Subsection *Maddenia*. Each lobe will have a corresponding plane along the tube, so a five-lobed corolla would conform to a pentagon when sliced through; another with six lobes, a hexagon; and seven, a heptagon.

Inside the corolla, around the base of the ovary, a narrow, cog-like ring of glandular cells will be found, poking out or bulging between the bases of the stamen filaments. This is the nectary, the production centre for the sugar-laden liquid plants use to draw in insect pollinators. For most rhododendrons, very little nectar is exuded, no more than a sticky smear, but a minority have opted for the opposite approach, churning out relatively large volumes of a much more watery concoction. *R. spinuliferum* is one member of this group, its upright corollas often full to the brim (upend and squeeze to confirm the yield).

As the amount of nectar builds-up, some species channel the liquid so it collects into a number of large drops spaced around the corolla base - the Subsection *Cinnabarina* membership, for instance. Others have developed specialised storage areas known as nectar pouches. These sacs are small contoured indentations at the base of each corolla lobe, often coloured darker than the rest of the flower, and they are a magnet for birds and insects. If you have ever wondered why so many of the Subgenus *Hymenantes* lepidote rhododendrons always bear tiny blackened holes at the base of their blooms, here is the answer: unable to gain entry to the sweet shop through the front door, beaks and teeth are committing B&E at the back. To prevent this, it has been suggested that the well-developed calyxes sported by some members of the genus - those of the Subsection *Neriiflora* species come to mind - might be an attempt to stop this primarily avian, smash and grab.

Fragrance or scent is an evolutionary adaptation of the corolla to aid insect pollination (entomophily). In rhododendrons, it was developed primarily by those species that in the wild are pollinated by moths - the Subsection *Fortunea* and Subsection *Maddenia* species - so it is no coincidence that aroma levels peak in the early evening, just when these non-butterfly members of the *Lepidoptera* order are becoming most active. Classed as volatile organic compounds - terpenoids and phenylpropanoids, to get technical - they are emitted from the tissue of the corolla - the petals (lobes), for instance - so are completely divorced from the production of nectar.

Stamens are a plant's male reproductive organs. In Genus *Rhododendron*, they are composed of a slender filament topped by a two-lobed anther. Ten are usually present in each corolla, though this count is often reduced to between five and nine, more rarely to just four, or increased well into double figures, the maximum tally being a crowded twenty-seven. That aggregate is a useful tool for differentiating between the subsections, less so for the individual species populating such a group. Fabricating pollen - sperm cells - which various third parties so obligingly transfer to the stigma, thus completing the reproductive process, is their sole task.

The complement of stamens within the corolla can be of equal or varying length. If they extend out beyond the boundaries of the lobes they are described as being 'exserted'. When they remain inside the surrounding corolla bowl, 'inserted'. Arranged radially around the ovary, sometimes symmetrically, in a few cases this sets those with shorter stalks above others that have longer ones. Stamens can point straight out, but in the main, they are declinate, bending downwards initially only to then curve back up. Usually the filaments are glabrous and coloured white, but a few species display red or purple stalks, with more sporting hairs over a portion of the stem, most often along the lower quarter or third, but always just proud of the base, so clear of the nectary.

At the terminus of each filament is an anther with two pores, one set in each lobe. These exude the pollen. Initially, as they are located on the base of the anther, the pores point downwards, looking back at the ovary, but then, as is customary across the *Ericaceae*

family of plants, they flip over as the stamen grows. This is only possible because evolution has attached the filament to the outer side of the anther.

Anthers can be coloured white, bluish-grey, yellow, brown through near black, red or purple. Their size and shape also varies across the genus.

Present within each anther are four pollen-producing sacs, two for each pore. These push out the individual pollen grains, which are daubed with threads of a complex alkaloid known as 'viscin'. This compound is not unique to rhododendrons as it can be found coating the pollen grains of orchids, mistletoes, willowherbs, sundrops and many other plants, its adhesive properties sticking the grains onto the stream of visiting insects. What is unique in Genus *Rhododendron* however, is that the viscin chains not only bind the grains together, but also allow them to form into long sticky strings. So when production is at its height, a thread of pollen will be seen dangling down from each anther pore, the quantity output so great that a tangled mass often forms between the stamens. Pity the poor bees then that have to force their way through this inelegant spider's web to reach the nectar they want to take back to the hive, stuck-on tendrils of pollen often blowing behind in their slipstream as they depart.

Technically, each granular particle of rhododendron pollen that emerges from a pore is actually a quartet of bound-together grains known as a 'tetrad'.

The stigma, style and ovary are all interconnected parts of the same biological structure: the pistil (gynoecium). This is the female reproductive organ found in all flowering plants. For identification purposes, it is usual to consider the ovary (the swollen basal portion of the pistil) separately from the stigma and style, as the outer features of these components - specifically their colour and the presence or not of hairs or scales on their surfaces - are often in variance.

Normally a circular cylinder around 5-7mm long when first revealed at the base of the corolla, the ovary may also taper into a cone or be squatly rounded. For some species in the *Falconera*, *Grandia* or *Maddenia* subsections, it can be larger, between 8 and 15mm long. Its apex is surmounted by the style. Ovary pigmentation is usually green, even when the style is coloured differently, and will rarely be any other hue, although it can appear to be white, brown, pink, purple or red when sporting a dense tomentum of hairs on the outer surface. This pubescence can be composed of any of the hair types found on the foliage, and scales and glands may also be present, or a mix of such might occur. Rarely will the structure be completely glabrous.

Internally, the ovary is divided into a number of chambers known as 'locules', these arranged around a central core. Five is the norm, occasionally four, with the elepidote species tending to have more, the maximum number being twelve. Jutting into each chamber from the core is a placenta holding hundreds of tiny ovules - the undeveloped and unfertilised seeds - that side-on, look like a densely packed, elongated bunch of grapes.

The style may be straight, declinate, or sharply bent down from the top of the ovary. Sometimes it continues the line of the flower stalk but more often is set at an angle to it. When declinate, it usually matches the curves adopted by the stamens, but on occasion it can contrast with them. Only when the stamens of some lepidote species point straight out, will the style be found to immediately duck down at right angles to their axis on departing the ovary, bending back up to face forward just before the apex is reached. These styles, termed 'deflexed', are usually quite thick.

The length of the style relative to the stamens, whether it protrudes from or is contained within the corolla (exserted or inserted), its colour, plus the presence or absence, position and spread, of hairs, glands and scales, are all factors used in identifying individual species from each other. Another, is the juncture with the ovary:

When the style appears to have been pushed down into the top of the ovary, its stem jutting out of a circular, shouldered depression, it is described as being 'impressed'.

When it simply extends smoothly in an unbroken flow from the ovary's narrowing apex, it is classed as 'tapering'.

On the surface, this characteristic may appear insignificant, but it is an evolutionary change of sufficient magnitude that it split *R. ciliatum* from *R. excellens* and *R. nuttallii* in the 2005 Goetsch-Eckert-Hall molecular systematics phylogeny. All three are members of Subsection *Maddenia*, but the former (style impressed), occupied a separate, although closely associated clade, to the latter two (styles tapered).

At its terminus, the style flares-out into the stigma. This can be capitate in form - a dense swollen knob of cells - is often large, as well as being distinctly coloured. It has a groove circling the periphery and is divided into as many lobes as there are chambers in the ovary.

Post pollination, the ovary begins to lengthen and widen, swelling to accommodate the hundreds of fertilised ovules - now known as 'zygotes' - growing within its chambers. The corolla and stamens will have fallen away, but while the style withers over time, it usually stays attached, though wind and rain may reduce it to no more than a stubby point at the capsule apex. Remaining green until it is fully developed, then turning brown as the wood matures, the ovary ends up as a straight or somewhat curved, cylindrical or sometimes conical capsule, which is no more than 5mm long in some species. That minima is surpassed by most members of the genus, *R. sinogrande* claiming the capsule maxima of 7cm long by 2cm wide.

The hair types, glands and scales that cloaked the immature ovary often remain a significant presence on the developing or ripened fruit, aiding identification.

When the seeds are ready to be released, the capsule opens by a process known as loculicidal dehiscence. Splits appear at the apex, these then travelling down built-in lines of weakness - the walls that separate the internal chambers from one another - and then each locule begins to peel away from the central core, the segments spreading out more widely, allowing the fully developed seeds to break off of the placenta and either fall to the ground or be carried away by the wind, and hundreds will depart each capsule.

Botanists recognise four main seed-shape groups, but of course, any number of intermediates occur, with over 300 slightly different configurations - round; elongate; with wings; without wings; with small appendages at either end; or large appendages; or no appendages; or long, tail-like appendages (you get the drift) - illustrated in a two volume treatise written by Johannes Hedegaard and titled *Morphological Studies in the Genus Rhododendron: Dealing with Fruits, Seeds and Seedlings and their Associated Hairs*. And riveting though its subject matter was, the tome failed to knock *The Bourne Identity* from the top of the 1980 bestseller lists, perhaps because the different profiles, while clearly important at subgenus or sectional level, are near useless when distinguishing between the various subsections or individual species, even after resort to a magnifying lens.

- Corolla Shapes -



Bowl-shaped - *R. wardii* (LS&T 5679)



Campanulate - *R. callimorphum*



Funnel-shaped - *R. kaempferi* (W&H 757)



Narrowly tubular-funnel-shaped - *R. viscosum*



Rotate - *R. lepidotum* (Schilling 2264)



Rotate-campanulate - *R. albrechtii*



Rotate-funnel-shaped - *R. schlippenbachii*



Saucer-shaped - *R. charitopes*



Tubular - *R. keysii*



Tubular-campanulate - *R. anthosphaerum* (CNW 364)



Tubular-funnel-shaped - *R. crassum*



Urceolate - *R. menziesii*



Ventricose-campanulate - *R. sinogrande*



Ventricose-funnel-shaped - *R. veitchianum* Cubittii 'Ashcombe'



Widely-campanulate - *R. davidii* (EN 3255)



Widely-funnel-shaped - *R. poukhanense*



Zygomorphic & Hypercrateriform - *R. sargentianum*

- Nectar -



Droplets - *R. xanthocodon*



Five pouches - *R. ririei*



Eight pouches - *R. magnificum*

- Stamens -



10, inserted, unequal, declinate, glabrous - *R. nuttallii*



5, exserted, unequal, dimorphic, the upper pair shorter, straight and pilose, the lower three longer, declinate and glabrous - *R. semibarbatum*



15, radially arranged, unequal, coloured, pubescent at the base - *R. camelliiflorum*



5, exserted, equal, declinate, coloured, pubescent along the lower third - *R. arborescens*

- Ovary -



Conoid, glabrous,
10-12-celled - *R. praeevernum*



Conoid, long-stalked-glandular,
6-8-celled - *R. barbatum*



Ovoid, tapering, glabrous, scaly,
10-11-celled - *R. crassum*



Conoid, densely tomentose, grooved,
5-7-celled - *R. malloatum*

- Style & Stigma -



Style impressed, straight, glabrous, inserted;
Stigma capitate, discoid - *R. calophytum*



Style short, stout, deflexed - *R. charitopes*



Style impressed, declinate, glabrous, exserted;
Stigma small, discoid - *R. albrechtii*



Style tapering, long, curved, scaly along lower third - *R. nuttallii*

- Capsules -









Glossary

Botanic, Horticultural & Phylogenic Terminology:

Abaxial.

1. Pointing away from the axis.
2. The lower surface of a leaf.

Aberrant.

Characteristics different from type.

Accrescent.

Increasing in length or width with age or after fertilisation.

Acicular.

Needle shaped.

Actinomorphic.

Having radial symmetry, as a flower.

Acuminate.

Gradually tapering into a point.

Acute.

Pointed (this contained within two lines set at 90°).

Adaxial.

1. Pointing towards the axis.
2. The upper surface of a leaf.

Adpressed.

Lying flat.

Affinity [aff.].

Affiliated, closely matching; used when a plant does not quite fit the published species description but is clearly related to it.

Agglutinate.

Indumentum glued or joined together.

Alignment.

1. The technique of editing a matrix of molecular sequences to ensure that homologous bases are compared with one another.
2. The resulting aligned matrix.

Allele (Allelomorph).

A variant form of a given gene.

Allopolyploid.

A polyploid produced from a hybrid between two or more different species, possessing therefore, two or more dissimilar sets of chromosomes.

Alternate.

Of leaves, arising singly, one at each node.

Alveola.

Cavity.

Anaphase.

The stage of mitosis after metaphase in which the chromosomes are at their most condensed and coiled state.

Anemone-centred.

A double flower with many petaloid segments in the centre.

Anther.

The part of the stamen containing the pollen grains.

Apex.

Tip or distal end.

Apiculate.

A short, sharp, but not stiff, point to the leaf apex, formed from the vein or midrib.

Apomict.

A plant produced without fertilisation.

Apomixis.

Replacement of normal sexual reproduction by asexual reproduction, without fertilisation.

Arachnoid (arachnose).

Of hairs - giving a cobwebby appearance.

Arboreal.

Tree-like.

Aristate.

Awned; tipped by a bristle; elongated apex.

Attenuate.

Narrowing gradually.

Auricle.

An ear-like appendage.

Auriculate.

An ear or lobe at the base of the leaf.

Autopolyploid.

A polyploid in which the chromosome sets are all derived from a single species.

Auxin.

A growth-promoting substance occurring in minute quantities for the production of roots.

Axil.

The junction of the leaf and stem.

Axillary.

Arising in the angle formed by the junction of the leaf and stem (below terminal bud).

Axis.

The main line of growth in a plant from which the other parts grow.

Bark split.

The sap in the stem is frozen while the plant is in growth, causing the bark to split. Can be fatal if severe.

Base.

1. The lower end of the leaf where it joins the petiole.
2. One of the four chemicals that make up a DNA sequence chain: adenine (A), cytosine (C), guanine (G) and thymine (T).

Bayesian Analysis.

A procedure used to produce an approximate posterior probability distribution of phylogenetic trees based on a matrix.

Bi-generic.

A hybrid between two genera, for instance a rhododendron and a kalmia.

Biological systematics.

The study of the diversification of life on planet Earth, both past and present, and the relationships among living things through time.

Bistrate.

With two layers or strata.

Bloom.

A waxy covering, often appearing powdery.

Blotch.

An area of contrasting colour on the corolla which could be solid or spotted, or a combination of both.

Bootstrap Value.

The percentage of replicate analyses where a specific monophyletic group occurs (the replicates produced by random sampling with replacement from an original matrix).

Botryosphaeria.

A fungal infection that leads to branch dieback, more prevalent in warmer climes. Initial symptoms are leaf curl and dullness, with the foliage turning brown as the disease takes hold, though the leaves stay fixed to the stems.

Bract.

A modified leaf or scale, usually quite small, with the corolla at it's axil.

Bracteole.

A small bract.

Bristly.

Having stiff strong hairs or bristles.

Bud Blast.

A fungus that affects mostly ponticum and caucasicum hybrids, causing flower buds to turn black with hair-like fruiting bodies.

Bullate.

Puckered or blistered.

Caducous.

Falling away very quickly.

Calcareous.

Limy or chalky.

Calcicole.

A plant tolerant of lime or chalky soil.

Callus.

Healing growth over a wound or cut.

Calyx.

The sepals of a flower, typically forming a whorl that encloses the petals and forms a protective layer around a flower in the bud. In many rhododendrons, reduced to a disc-like rim.

Cambium.

The layer of actively divided cells between the wood and the bark of stems or roots.

Campanulate.

Bell-shaped:

Candelabroid.

An upright inflorescence formed by a long rhachis and/or upright pedicels.

Capitate.

Collected in a dense knob-like head or cluster.

Capitellate.

1. Having a small head.
2. Of hairs - like fasciculate hairs but with a much shorter stalk.

Capsule.

Container for the seed.

Cartilaginous.

Hard and tough, though still able to bend.

Caudate.

Having a slender, tail-like appendage.

Centriole.

A cylindrical structure found in eukaryotic cells made up of microtubules involved in the completion of cytokinesis during cell division.

Character.

1. A trait displayed by a particular species.
2. In genetics, a specific base position in a nucleotide sequence.

Character States.

In genetics, the feature range displayed when a base position in the sequence changes - C replaced with G, for instance - possibly resulting in pink rather than white corollas.

Chartaceous.

A thin papery or parchment-like texture.

Chasmophytic.

Growing on cliffs or rocky ledges.

Chimera (Chimaera).

A plant containing a mixture of genetically different tissues formed through the fusion of two early stage embryos, from mutation, or from grafting.

Chlorophyll.

The green colouring matter of plants.

Chlorosis.

Leaves partly or wholly pale green or yellow.

Chromatid.

One copy of a newly copied chromosome.

Chromatin.

A complex of macromolecules found in cells, consisting of DNA, protein and RNA, involved in gene expression and DNA replication.

Chromosome.

Rod-like portion of the cell-nucleus, which determines hereditary characteristics. Present in multiples of thirteen in rhododendrons.

Ciliate.

Fringed with fine hairs.

Ciliolate.

Minutely ciliate.

Clade.

A group, consisting of a single organism and all of its descendants.

Cladistics.

A form of biological systematics which classifies living organisms on the basis of shared ancestry through phylogenetic analysis, monophyletic groups being selected using the principles of parsimony.

Clavate.

Club-shaped; gradually thickening from a slender base.

Cline.

Plants that merge with every gradation between them.

Clone.

The vegetatively (asexually) produced progeny of a single individual.

Compacted.

Of indumentum, having the appearance of being flattened.

Concave.

Curving inward.

Connate.

United or joined; as in connate petals or lobes.

Conoid.

Shaped like a cone.

Contiguous.

Touching; neighbouring parts in contact.

Convergent evolution.

The acquisition of the same biological trait in unrelated lineages.

Convex.

Curving outward.

Convolute.

Rolled up longitudinally.

Cordate.

With two round lobes at the base forming a deep recess.

Coriaceous.

Leathery.

Corolla.

The petals of a flower, typically forming a whorl within the sepals and enclosing the reproductive organs. In rhododendrons these are usually fused to form a tube at the base, with free, spreading lobes at the apex.

Cotyledon.

Seed leaf.

Crenate.

Toothed.

Crenulate.

1. Margin notched, with rounded teeth, scalloped.

2. Of scales - these differ from normal lepidote scales in that the rim margin is slightly scalloped. They tend to form layers like lacerate scales.

Crisped.

Of a hair - strongly curved so that the tip lies near the point of attachment.

Cucullate.

Shaped like a cowl or a hood.

Cultivar.

Cultivated variety as distinct from other varieties.

Cuneate.

Wedge-shaped; with straight sides converging at the base.

Cup-shaped.

Of hairs - a short, multicellular stalk is topped either by a wide or a narrow cup-shape form composed of many single cells joined together. This type of hair has only been found on rhododendrons from Subsection *Falconera*.

Cupular.

Cup-shaped.

Cuspidate.

Tipped with a sharp, rigid point.

Cuticle.

The waterproof layer of the epidermis.

Cyme.

Of an inflorescence - broad and flattish, with the central or terminal flowers opening first.

Cymose.

Cyme-like; bearing cymes.

Cytokinesis.

A phase of cell division where a single eukaryotic cell divides into two daughter cells.

Cytokinin.

A growth-promoting substance favouring shoot formation.

Deciduous.

Of leaves - falling at the end of one season's growth.

Declinate.

Curving downwards.

Decumbent.

More or less horizontal or prostrate for most of its length but erect or semi-erect near the tip.

Decurrent.

Extended below the point of insertion.

Deflexed.

Bent downwards.

Dehiscence.

Of a capsule - breaking open at maturity to discharge seeds.

Dendroid.

Of hairs - tree-like in form.

Dentate.

Toothed.

Denticulate.

Minutely toothed.

Detersile.

Indumentum that is completely shed

Dichotomous.

Divided in pairs.

Dimorphic.

Occurring in two forms.

Diploid.

Two similar complements of chromosomes, for Genus *Rhododendron* ($n = 13$), so a diploid would have two sets of the same 13 chromosomes, ($2n = 26$).

Discoid.

Having the form of a disc.

Discontiguous.

Of scales - not touching.

DNA.

Deoxyribonucleic acid. A nucleic acid that contains the genetic instructions used in the development and functioning of all known living organisms and some viruses.

DNA sequencing.

Techniques for determining the order of the nucleotide bases - adenine, cytosine, guanine, and thymine - in a molecule or strand of DNA.

Dodecaploid.

A plant having 12 sets of chromosomes; in *Rhododendrons* ($n = 13$), so a dodecaploid would be ($12n = 156$).

Dorsal.

Of a *rhododendron* flower - the top or upper lobe(s).

Double.

A flower having many more than the usual number of petals, arranged in extra rows within the corolla, developing from and often completely replacing the stamens and pistil.

Double helix.

The structure formed by double-stranded molecules of nucleic acids such as DNA.

Eciliate.

Without fine hairs.

Eglandular.

Not glandular; destitute of glands.

Elepidote.

Not scaly. A generalisation for *rhododendrons* whose leaves do not have scales on the lower or upper surface.

Elliptic.

The sides of the leaf are curved tapering equally to the tip and the base, widest at the middle; the length of the leaf is twice the breadth.

Emarginate.

With a notch at the end.

Endemic.

Native of a specified country or area only.

Entire.

Margin undivided.

Enzyme.

Macromolecular biological catalysts.

Epapillate.

Without papillae.

Epidermis.

The outer layer of cells of a leaf, stem, roots, etc.

Epiphyte.

A plant growing on another plant without being parasitic.

Epiphytic.

Growing on another plant without being parasitic.

Erose.

Irregularly toothed.

Eukaryote (Eukaryotic Cell).

Any organism whose cells have a nucleus and other organelles enclosed within membranes.

Evanescence.

Soon disappearing, persisting only a short time.

Exhaustive Search.

A method used to produce phylogenetic trees. The analysis compares all possible arrangements of taxa, so giving optimal results.

Exserted.

Projecting beyond (for instance, the stamens from the corolla).

Eye.

An area of contrasting colour similar to a blotch, but usually restricted to the base of the corolla.

F1, F2, etc.

First, second and subsequent generations of hybrids between two rhododendrons. Often, an F2 cross will produce greater variation.

Falcate.

Sickle-shaped.

Farinose.

Powdery.

Fasciculate.

Of hairs - clustered from one point: a broad stalk, composed from lots of small cells, is topped by many cylindrical, spreading arms whose cells are joined end-to-end.

Fastigiate.

With erect branches.

Felted.

Of indumentum - matted with intertwined hairs.

Ferrugineous.

Rust coloured.

Filament.

The stalk-like part of the stamen bearing an anther at its apex.

Filiform.

Thread-shaped, long, slender, and terete.

Fimbriate.

Of hairs - fringed with slender appendages.

Flagellate.

Of hairs - the long stalk is composed of chains of cells aligned in parallel with each other. The arms are also long, but not far spreading.

Flare.

An area of contrasting colour on the corolla shaped like a flame; similar to a blotch or an eye.

Flavonoid.

Certain natural colouring compounds in a plant.

Fleshy.

Soft and thick.

Flexuous (flexuose).

Wavy, sinuous, bending from side to side.

Floccose.

With dense, soft woolly hairs, which fall away in tufts.

Floret.

A grouping of small flowers, as in family *Compositae*, but never used to describe a rhododendron flower.

Flower.

The seed-bearing part of a plant, consisting of reproductive organs that are typically surrounded by a brightly coloured corolla and a green calyx.

Folioliferous.

1. Bearing leaves.
2. Of hairs - spreading arms formed by broad, tapering cells, top a long stalk.

Foveolate (foveate).

Honeycombed or pitted.

Fulvous.

Tawny; reddish-yellow.

Funnel-campanulate.

A flower form midway between funnel-shaped and campanulate.

Fusiform.

Spindle-shaped - swollen in the middle and narrowing towards each end.

Gamete.

A cell that fuses with another gamete during fertilisation in organisms that sexually reproduce.

Gamopetalous.

With petals united or sympetalous.

Gene.

The inheritance of a given unit character.

Genet.

A genetically identical group of plants originating vegetatively from a single ancestor, usually stoloniferously in rhododendrons. Above ground each appears a distinct individual, below ground the roots are interconnected.

Genus.

Group of closely related species indicated by the first botanical name of a plant.

Gibbous.

Protuberant or swollen on one side.

Glabrescent.

Becoming nearly glabrous with age.

Glabrous.

Without hairs.

Gland.

A protuberance on leaves and other parts, often secreting and viscid.

Glandular.

1. With glands.
2. Of hairs - topped by a multicellular head that is sticky and glistens with a reddish brown or yellow cast when young. Some forms have very short stalks with the glands on the surface of the leaf.

Glandular-pubescent.

With glands and hairs intermixed or hairs terminated by pin-head-like glands.

Glaucouscent.

Slightly glaucous; becoming bluish-green.

Glaucous.

Covered with greyish waxy bloom; bluish-green.

Globose.

Spherical.

Grex.

All the seedlings of one cross in hybridising.

Gynoecium.

The female reproductive organs. In Genus *Rhododendron*, the term is used to describe the ovary and the style as a single entity.

Hairs.

Eighteen specific types of hair as defined by Doctor John MacQueen Cowan can be found on the stem, leaf, petiole, calyx, corolla and ovary of a rhododendron. They can be tiny and pubescent, through to long and bristly. Each species will have two or more different types of hairs, or both scales and hairs of two different kinds.

Haploid.

A eukaryotic cell containing a single set of chromosomes, 13 in the case of a rhododendron.

Hard Pan.

Impervious layer in soil structure.

Hardiness Ratings.

Following two exceptionally cold winters - 2009/10 and 2010/11 - the Royal Horticultural Society revised and updated the UK plant hardiness rating system to reflect the actual climatic conditions gardens across the country experienced, with the temperature ranges now given as the absolute minimums a plant will tolerate rather than long-term average minimums. The new bands are not directly comparable with the old ones and several come with exceptional conditions provisos:

H1a - heated tropical greenhouse.

Indicates that plants requires stove conditions under glass all year round, with a minimum maintained temperate of 15°C. The equivalent United States Department of Agriculture rating is Zone 13.

H1b - heated subtropical greenhouse.

Denotes plants that may be grown outdoors during the summer in hotter, sunnier and sheltered areas, such as city centres, but which perform best under glass with minimum temperatures maintained between 10-15°C. USDA rating is Zone 12.

H1c - heated warm-temperate greenhouse.

Identifies plants that can be grown outdoors during the summer months across much of the UK when daytime temperatures are high enough to promote growth. Minimum temperatures tolerated will be between 5-10°C. USDA rating equals Zone 11

H2 - frost-free site or greenhouse.

Environments such as an inner-city area or the most favoured coastal promontory if plants are to be grown outdoors all year round, with the requirement for heated glasshouse protection during the winter months elsewhere. Minimum temperature

requirements of 1-5°C, equivalent to a USDA rating of Zone 10b.

H3 - mild winter.

Signifies plants hardy outdoors throughout the year in sheltered gardens near the coast or other mild areas, severe winters and sudden, out-of-the-blue frosts excepted. Grown against a wall or where a good microclimate prevails, cultivation elsewhere in the UK is possible, but if pot-grown or without a covering of snow during cold spells, plants will be damaged or die unless temporary additional protection is available. Winter minimums between -5 and 1°C, which mirrors USDA Zones 9b-10a.

H4 - average winter.

Covers plants hardy outdoors at most low elevations in the British Isles provided that there is some shelter, but not when grown in inland valleys, at altitude or in most central or northern parts of the UK. Even so, damage and dieback is likely in harsh winters in cold gardens, or during long wet winters on heavy soils or where the drainage is poor. Pot-grown subjects, especially evergreens, are substantially more at risk. Minimum temperatures of -10 through -5°C; USDA Zones 8b-9a.

H5 - cold winter.

Encompasses plants able to survive even severe winters throughout the UK, but not when grown at open or exposed sites or in most central or northern areas. Many evergreens will experience some foliage damage, with plants in containers at higher risk. Winter minimum temperatures of -15 to -10°C; USDA Zones 7b-8a.

H6 - very cold winter.

Details a plant hardy throughout the British Isles and most of north-western Europe, except when pot-grown. Extra protection will be needed to avoid damage to containerised specimens. Winter minimum temperatures run from -20 to -15°C, the equivalent of USDA Zones 6b-7a.

H7 - severest winter.

Singles out plants hardy enough to grow on exposed upland sites in the UK and throughout continental Europe that will survive even the most exceptional winter conditions, shrugging off minimum temperatures below -20°C, a USDA rating of Zones 6a-1.

Heterosis (Hybrid Vigour).

The improved or increased function of any biological quality in a hybrid offspring.

Heterozygous.

A diploid organism is heterozygous at a gene locus when its cells contain two different alleles of a gene.

Heuristic Search.

A method used to produce phylogenetic trees. The analysis compares some but not all possible arrangements of taxa and so the results may not be optimal.

Hexaploid.

A plant with six sets of chromosomes. In normal rhododendrons ($n = 13$), so a hexaploid is ($6n = 78$).

Hirsute.

Covered with stiff long erect hairs.

Hispid.

With rigid, but not bristly hairs.

Hispidulous.

Minutely hispid.

Homologous Chromosome.

Chromosomes with the same sequence of genes/alleles.

Homologous States.

In genetics, characters shared due to common ancestry.

Homoplastic States.

In genetics, characters shared due to convergent or parallel evolution.

Homoplasy.

A similarity in species of different ancestry which is the result of convergent evolution.

Homozygous Chromosome.

Chromosomes with different sequences of genes/alleles.

Hormone.

Growth-promoting substance.

Hose-in-hose.

One corolla superimposed inside another, or two circles of petals, the calyx may or may not be present.

Hyaline.

Transparent or translucent. Jointed, with nodes on the stem (thickened areas between the cells) when referring to unicellular hairs.

Hybrid swarm.

A large group of natural hybrids in the wild showing much variation.

Hypercrateriform.

A tubal flower flaring out into a flat top.

Imbricate.

Overlapping each other at the margins.

Impressed.

Describes the way the style joins the ovary: the ovary widens abruptly at the base of the narrow style instead of tapering gradually into it.

Indumentum.

A hairy covering, particularly of the lower surface of the leaves, made up of one or two layers - unistrate or bistrate - and of varying hair types and colours. Can be plastered, woolly, split or continuous, and may take many years to develop fully.

Inflorescence.

The flowers arising from one bud.

Infundibular.

Shaped like a funnel.

In-group.

The subjects to be studied in a phylogenetic analysis. These would all be thought closely related taxa.

Internal transcribed spacer (ITS).

A non-functional section of DNA located within a set of ribosomal genes.

Internode.

The length of stem between two nodes.

Interphase.

The metabolic stage of a cell cycle in which a typical cell spends most of its life and during which it copies its DNA in readiness for mitosis.

Interspecific.

Between species, referring to hybrids between species.

Intraspecific.

Within one species, referring to hybrids between different forms of the same species.

Irregular flower.

Having some parts different from other parts and incapable of being divided into two equal halves.

Kinetochores.

A protein structure on a chromatid where the spindle fibres attach during cell division to pull sister chromatids apart.

Lacerate.

1. Torn or mangled.
2. Of scales - these differ from normal lepidote scales in having a jagged rim. They also have varying stalk lengths and form multiple layers on the surface of the leaf.

Lacinate.

Slashed; divided into narrow pointed lobes.

Lacunose.

Pitted with small depressions.

Lamina.

The blade of a leaf.

Lanate.

Of a leaf - clothed with woolly and inter-grown hairs.

Lanceolate.

Of a leaf - lance-shaped, widest below the middle, the length about three times the breadth.

Lateral.

On or at the side. Not on the tip.

Lax.

Of an inflorescence - where the flowers hang downwards, often between the foliage.

Lepidote.

Scaly. A generalisation for rhododendrons whose leaves have scales on the lower or upper surface.

Ligulate.

Strap-like.

Linear.

Narrow, with parallel opposite sides, the ends tapering, at least 10-12 times as long as broad.

Lingulate.

Tongue-like.

Lobe.

Of the corolla or calyx - the rounded divisions of a single structure.

Locular.

Of seed capsules - having cavities.

Locus.

The position (location) of a gene/allele on a chromosome.

Long-rayed.

Of hairs - the ends are divided into several long strands.

Loriform.

Strap-like.

Mammillate.

Nipple-like projections on the outer walls of leaf surface cells, more well-developed than papillae (pimples).

Matrix.

In genetics, a rectangular table that presents character state data, with traits usually assigned to the columns, taxa to the rows.

Matt.

Having a dull, non-glossy surface.

Maximum Likelihood.

The technique used in phylogenetic analysis to select the phylogenetic tree that maximises the likelihood of the observed data under a specific model of evolution.

Micropropagation.

Propagation by cell division.

Meiosis.

A form of cell division where the chromosome number in a cell is reduced by half, creating four haploid cells in the process, which become the pollen (grain) or the ovule (egg).

Metaphase.

The stage of mitosis in a eukaryotic cell in which the chromosomes are at their penultimate packed and coiled state (they are most condensed in anaphase).

Midrib.

The main rib of a leaf.

Miotic Spindle.

In eukaryotic cells, structures that form during cell division to pull the sister chromatids apart.

Mitosis.

The process of cell division required for normal growth or cell maintenance.

Model.

In genetics, the set of rules that define how evolution may have transpired. This framework, for instance, will take into account the relative rates of change between different bases in a DNA sequence.

Monomorphic.

Of a leaf- in one form or shape only.

Monophyletic Group.

A group consisting only of organisms descended from a particular organism, the common ancestor of each, and containing all such descendants.

Monotypic.

Of a genus, subgenus, section, subsection or series - containing only one member.

Morphology (Morphological).

A study of the form, structure and configuration of an organism based on its outward and inner appearance.

Mucro.

A hard sharp point.

Mucronate.

Terminated by a hard sharp point (the point formed from the limb, the vein or the midrib).

Mucronulate.

Minutely mucronate.

Multicellular.

Of hairs - a string of single cells, one above the other, form the hair or bristle.

Mycorrhiza.

Symbiotic relationship between plant root and fungus.

Nectary (nectaries, nectar sacs or pouches).

A gland through which a solution of sugar is secreted.

Nodal (Node).

The part of a stem where a leaf or a whorl of leaves is attached.

Nucleus.

A membrane-enclosed organelle found in eukaryotic cells containing an organism's DNA.

Ob lanceolate.

Base tapering, apex broad, widest above the middle, the length of the leaf about three times the breadth.

Oblique.

With unequal sides; usually referring to the base of a leaf where the two margins reach the petiole in slightly different places (asymmetrically).

Oblong.

The sides more or less parallel, the ends obtuse or somewhat rounded, the length of the leaf is twice the breadth.

Obovate.

The sides are curved, apex rounded, base narrower, widest above the middle, length is about twice the breadth.

Obsolete.

Scarcely apparent.

Obtuse.

Blunt or rounded, where the end would not be contained within two lines set at 90°.

Ochraceous.

Of or pertaining to ochre; containing or resembling ochre.

Octoploid.

A plant with eight sets of chromosomes. Standard rhododendrons ($n = 13$), so an octoploid will be ($8n = 104$).

Opposite.

Two leaves growing from the same node on a stem, but on opposite sides.

Optimality.

In genetics, criteria for choosing between phylogenetic trees. Parsimony is one such, maximum likelihood another.

Orbicular.

Circular.

Out-group.

In genetics, the taxon or taxa chosen to compare with the in-group, which although closely related to the test subjects are distant from them (lepidote rhododendrons, for instance, when elepidote species are being examined; an *Empetrum* or *Kalmia* when the entire Genus *Rhododendron* is to be investigated).

Oval.

The sides are curved, rounded at both ends, widest at the middle, longer than broad.

Ovary.

The hollow base of the carpel of a flower, containing one or more ovules, which matures to form the seed capsule.

Ovate.

The sides are curved, widest at the base, the tip narrowed; the length is greater than the breadth.

Ovule.

The part of the ovary of seed plants that contains the female germ cell that after fertilisation becomes the seed.

Pannose.

Of a leaf - having the appearance or texture of woollen cloth.

Papillae.

Pimple-like projections of the outer walls of leaf surface cells.

Papillate.

Pimpled; covered with minute pimples, soft superficial glands or protuberances.

Papillose.

Covered in papillae.

Paraphyletic Group.

A subgroup of a monophyletic group, which consists of some but not all the descendants of

a single ancestor.

Parsimony.

In genetics, an optimality criterion that selects phylogenetic trees by minimising the number of implied character state changes. Effectively, the fewer impromptu assumptions made, the more likely they are to be true.

Pectinate.

Toothed.

Pedicel.

Flower-stalk.

Pellicle.

Of leaf indumentum - a skin-like, lustrous covering.

Pellucid.

Of a gland - transparent.

Peltate.

Of scales - circular, with a stalk in the middle.

Perianth.

The floral envelope consisting of calyx and corolla (when present).

Persistent.

Remaining attached.

Perulae.

Leaf-bud scales.

Petal.

Each of the segments of the corolla of a flower.

Petaloid.

Petal-like.

Petiole.

Leaf-stalk.

PH [pH].

The measurement of soil acidity and alkalinity.

Phenetics.

A phylogenetic analysis technique where the taxa are grouped together on the basis of an overall similarity or difference.

Phenotype.

The composite of an organism's observable characteristics or traits, its morphology.

Phylogenetic Analysis.

Specifically, the process used to originate a phylogenetic tree.

Phylogenetics.

The study of evolutionary relatedness among various groups of species. This is discovered through molecular sequencing data and morphological data matrices.

Phylogenetic Tree.

A branching diagram that displays the hierarchical relationships between taxa.

Phytophthora.

A fungus disease that causes root rot, especially under hot, damp conditions.

Pilose.

Covered with soft long hairs.

Pistil.

The female organs of a flower, comprising the stigma, style, and ovary.

Plastered.

Of indumentum - skin-like or stuck down, appearing to form an apparently continuous sheet (described as agglutinate), often with a smooth polished surface.

Ploidal

Relating to ploidy.

Ploidy.

The number of chromosome sets in a cell.

Polypetalous.

A corolla of separate petals; as contrasted with gamopetalous.

Polyphyletic Group.

A group consisting of organisms from two different monophyletic groups that do not share a recent common ancestor.

Polyploid (polyploidal).

A plant with more than the diploid ($2n$) number of chromosomes.

Posterior Probability Distribution.

The distribution of phylogenetic trees sampled from a Bayesian analysis that emerge from prior probability distribution, the observed matrix data and a given model of evolution.

Posterior Probability Value.

A support value that indicates how many phylogenetic trees have been found in a Bayesian posterior probability distribution where a specific monophyletic group occurs.

Powdery mildew.

A fungus disease. It attacks leaves, causing brown patches to develop, especially on the underside, and sometimes areas of white dust. Severe attacks can cause complete defoliation and may kill the plant.

Precocious.

Flowers produced before the leaves appear.

Prior Probability Distribution.

The distribution of phylogenetic trees sampled from a Bayesian analysis that emerge from prior knowledge when observational data is not included.

Prometaphase.

In eukaryotic cell division (mitosis), the phase where the nuclear membrane breaks apart and the chromosomes form structures called kinetochores.

Prophase.

A stage in mitosis (cell division) where the chromatin condenses into chromosomes.

Protandry (Protandrous).

The male function (producing pollen grains from the stamen pores) precedes the female

function (the stigma becoming receptive to deposited pollen).

Pruinose.

Having a bloom or waxy powdery secretion on the surface.

Pseudowhorl.

A circle of leaves which looks like a whorl.

Ptyxis.

The way an individual leaf is folded within the bud.

Puberulent.

Covered with very fine soft hair.

Puberulous.

Minutely pubescent; slightly covered with short soft hairs.

Pubescent.

Hairy with short soft hairs.

Punctate.

With translucent or coloured dots or depressions.

Punctulate.

Minutely dotted.

Punctulation.

Minutely punctate.

Pustule.

A blister or pimple slightly larger than a papilla.

Pyriform.

Pear-shaped.

Raceme.

Inflorescence with flowers evenly spaced on the rachis, with pedicels of equal length and the terminal flowers opening last.

Racemose.

Flowers borne on an unbranched main stalk whose growing point continues to add to the inflorescence. This has a lengthened axis and lacks a terminal flower.

Radiate.

1. Spreading from a common centre.
2. Of hairs - spreading from a common centre. They are short stalked or even stalkless rosettes of cells, which can be spherical or bottle-like in shape.

Ramiform.

Of hairs - a short stalk is topped with a multi-branched, spreading head.

Recurved.

Curved backwards or downwards.

Reflexed.

Bent abruptly backwards or downwards.

Reticulate (reticulum).

Netted, like a network.

Retorse.

Bent backwards or downwards.

Retuse.

A leaf with a shallow, blunt notch at the apex.

Revolute.

Rolled backwards (downwards); a margin rolled towards the lower side.

Rhachis.

The axis or central stalk of the inflorescence from which the flower-bearing pedicels radiate.

Rhizomatous.

A prostrate or underground stem, which can either root or send out shoots from its nodes. See also 'Stoloniferous'.

Rhombic.

Diamond-shaped.

Root.

In genetics:

1. The most basal node of a phylogenetic tree. Usually that between the in-group and the out-group.
2. The action of polarising a phylogenetic tree so that it has a root.

Rosulate.

Of hairs - like radiate hairs, but with cells that are much longer than they are broad. Stalks can be short or long.

Rotate.

A very short tube with spreading, almost flat petals.

Rufescent.

Turning reddish.

Rufous.

Dull red or rust-coloured.

Rugose.

Wrinkled or rough.

Rugulose.

Somewhat wrinkled or rough.

Rust.

A fungus disease. It causes powdery orange patches to develop on the leaf underside.

Salver-shaped (salverform).

With a long slender tube, and flat spreading petals.

Saprophyte.

A plant that secures its food from organic matter.

Scabrid.

Rough to the touch.

Scale.

Minute disc-like object found on branchlets, leaves and flowers.

Scion.

The shoot or bud grafted onto a stock.

Sclereid.

The variably shaped cell of a higher plant, with walls that are both thicker and hardened.

Section.

A grouping of related *Rhododendron* subsections or species.

Self.

A corolla of only one colour.

Selfed.

Pollinated from its own pollen.

Self-sterile.

Unable to develop seed from its own pollen.

Semi-double.

A corolla having more than the usual number of petals but with at least some pollen-producing stamens.

Sericious.

Clothed with small, soft, straight hairs giving a silky effect.

Series.

A grouping of related *Rhododendron* species.

Serrate.

Of leaf margins - saw-toothed, with forward pointing notches.

Serrulate.

Minutely saw-toothed.

Sessile.

Without a stalk.

Seta (setae).

A bristle.

Setose.

1. Bristly; covered with stiff hairs.
2. Of hairs - composed of many cells, forming a stiff bristle. The apex may be pointed, have a sticky glandular head, or it may be flattened.

Setulose.

Covered with small bristles.

Short-rayed.

Of hairs - the ends divided into several short strands.

Shrub.

A woody plant with several stems or branches growing from near the base, of smaller stature than a tree.

Single.

Of a flower:

1. Without additional petals within the corolla.
2. A plant having only one flower per stem.

Sinuate.

The indented or wavy margin of a leaf or petal.

Sinus.

The depression between two lobes of the corolla.

Sister Group.

1. One of two taxa branching from a single node on a phylogenetic tree.
2. The closest relative.

Spathulate.

With a broadly rounded apex gradually tapering into the stalk; paddle-shaped.

Spatulate.

Spoon-shaped.

Species [sp.].

A fundamental category of taxonomic classification that ranks below a genus and above subspecies, whose individuals have the potential to freely breed with one another and that is discontinuous in variation from other populations.

Splitting indumentum.

Indumentum dividing into patches.

Sport.

A naturally occurring genetic mutation on one branch of a plant that results in a new character or trait. If desirable, the branch may be vegetatively propagated and the new entity described as a sport of the original species or hybrid.

Spreading limb.

Outward expanding petal lobes of a tubular flower.

Stamen.

The male fertilising organ of a flower, typically consisting of a stalk-like filament bearing a pollen-containing anther at its apex.

Stellate.

1. Star-shaped.
2. Of hairs - a long, multicellular stalk is topped with rigid, spreading branches.
3. Of scales - like lacerate scales, but with the cap split into sections.

Stigma.

A small pollen-receptive surface at the tip of the style.

Stipitate.

Having a stalk; borne on a short-stalk.

Stock.

1. The under part of a grafted union.
2. A plant from which cuttings are taken.

Stoloniferous.

Bearing runners from near the base of the stem, often below the surface of the soil.

Striate.

Marked with fine longitudinal lines or ridges.

Strigillose.

Hairs smaller in size than strigose.

Strigose.

With stiff sharp-pointed appressed hairs.

Stipitate.

Of glands - elevated on a stalk.

Style.

The stalk-like part of a gynoecium (pistil) between the ovary and stigma.

Subacute.

Not as pointed as acute.

Subagglutinate.

Somewhat agglutinate.

Subsection.

A lower division - pigeonhole - into which rhododendrons are now classified (this largely replacing series).

Subsessile.

Almost sessile, on a very short petiole.

Subspecies [ssp.].

A lower grouping of species.

Subumbellate.

A shortly racemose inflorescence.

Suckering.

Producing shoots from near or below ground level, often from rootstocks below the graft union.

Swarm.

A large group of natural hybrids between two or more species.

Synapomorphy.

A character or character state that is shared by a common ancestor and all its descendants that defines a monophyletic group.

Synonym.

A superseded plant name.

Systematics.

See Biological systematics.

Tapered.

Lengthening, gradually decreasing in breadth.

Taxon (taxa).

Unit of classification; general name for a taxonomic group of any rank (genus, species, subspecies, variety). An entity with a distinct set of shared characteristics.

Taxonomic.

Classification.

Taxonomy.

The science of identification, nomenclature and classification of plants.

Telophase.

The final stage in both mitosis and meiosis, just before cytokinesis begins and the cells divide. Telophase sees daughter nuclei form in each hemisphere enclosing the chromosomes.

Terete.

Cylindrical or slightly tapering, and without substantial furrows or ridges.

Terminal.

At the end of a shoot.

Tesselate.

To arrange in a mosaic pattern.

Testa.

The hard outer seed coating.

Tetraploid.

A plant with four sets of chromosomes. Normal rhododendrons are diploids ($2n = 26$), so tetraploids are ($4n = 52$).

Tomentose.

Densely woolly or pubescent; the covering of hairs short and matted.

Tomentum.

Dense woolly hair covering.

Trichome.

A hair-like growth.

Transgressive segregation.

The formation of phenotypes in segregated hybrid populations that are extreme or novel relative to their parents.

Triploid.

A plant with three sets of chromosomes. Normal rhododendrons are diploids ($2n = 26$), so a triploid will be ($3n = 39$).

Truncate.

Straight across; terminating abruptly, as if cut.

Truss.

A single inflorescence.

Tube.

The part of the corolla, usually narrow and tubular, which adjoins the pedicel.

Type [Type Specimen].

The original dried herbarium material of a new-to-science species.

Umbellate (umbel).

An inflorescence where all the pedicels grow from the top or from the same point, of the stem.

Undulate.

1. Having a wavy margin.

2. Of scales - like normal lepidote scales except the rim is wavy and the shape irregular.

Unicellular.

Of hairs - very short hairs composed of single cells. When found projecting from each cell on a rhododendron leaf's lower epidermis they are called papillae and bring a greenish-white colour tinge to the under-surface.

Union.

Where the stock and scion meet.

Unistrate.

With one layer or stratum.

Unreduced Gamete.

A pollen grain (sperm) or ovule (egg) usually holds one set of chromosomes, so a haploid rhododendron gamete would have a total of 13. An unreduced gamete would have the full compliment of 26 (if a diploid where $2n = 26$, or 39 if a triploid, 52 if a tetraploid, and 78 if a hexaploid).

Urceolate.

Contracted at or below the mouth, like an urn.

Urculate.

Broadly bell-shaped, as in a corolla.

Variety [var.].

A differing but related form of a species.

Vegetative.

Reproduction other than by seed.

Velutinous.

Velvety; a coating of fine hairs.

Venation.

The arrangement of the veins.

Ventral.

The bottom or lower lobe(s) of a corolla.

Ventricose.

Swollen or inflated on one side.

Verrucose.

Having a wart-like or nodular surface.

Vesicle.

A small bladder containing fluid.

Vesicular.

1. Of hairs - these have short multicellular stalks with bladder-like clumps of cells on top. Within the genus they are currently known to occur only on *R. vesiculiferum*.

2. Of scales - these have barely developed rims, vary in size and can be well-separated.

Vestige.

The remaining trace of an organ.

Villose.

Bearing long weak hairs.

Villous.

Shaggy.

Villous-tomentose.

Clad with long weak hairs.

Viscid.

Sticky from a secretion or coating.

Viscous.

Sticky.

Water sprouts.

Long, vigorous, sappy shoots.

Weevils.

Insect pest. Adult beetles eat notches out of the foliage, the larvae feast on the roots and the base of the stem. Especially problematic for pot-grown plants.

Whorl.

Three or more leaves or branches at a node.

Widely funnel-shaped.

Butterfly-shaped.

Winged.

Of a petiole - broad and flattened, often tapering into the leaf base.

Zygomorphic.

Flower of irregular shape which can be divided into equal halves along one vertical line or plane of symmetry only.

Zygote.

A fertilised eukaryotic cell, formed when two gametes fuse. The zygote's genome is a combination of DNA from each gamete, containing all the information a plant needs to form a new individual.



Expeditions

- Temperate Rhododendron Distribution
- Tropical Rhododendron Distribution

Abbreviations, Team Members, Dates, Locales:

AC	Alan Clark. 1990 - Bhutan & Vietnam (p. 183); 1992 - Hong Kong & Vietnam (p. 183); 1993 - Yunnan (p. 183); 1995 - Yunnan (p. 184); 1996 - Yunnan (p. 185); 1997 - Tibet (p. 187); 1998 - Sichuan (p. 189); 1999 - Guizhou & Yunnan (p. 189); 2000 - Tibet (p. 189); 2000 - Nepal (p. 190); 2001 - Sichuan (p. 190); 2002 - Sichuan (p. 190); 2004 - Arunachal Pradesh (p. 191).
ACH	John Apold, Peter Cox and Peter Hutchison. 1962 - Turkey (p. 176).
AGS	Alpine Garden Society. 1983 - Sikkim (p. 176); 1988 - Japan (p. 176); 1994 - China (p. 176).
APA	Arunachal Pradesh-Abroka Expedition. Kenneth Cox, Steve Hootman, Tom Hudson, Hartwig Schepker and Ken Storm. 2005 - NE India (p. 177).
Bailey	Frederick Marshman Bailey. 1913 - Nyamjang Chu, Assam-Bhutan border (p. 179).
Bartholomew	Bruce Bartholomew. 1976 - Bhutan & West Bengal (p. 179).
BASE	British-American Salween Expedition. David Chamberlain, Peter Cox, Steve Hootman, Peter Hutchison, Garratt Richardson and Robert Zimmermann. 2000 - Yunnan (p. 181).
BE	Bent Ernebjerg. 2005 - Sikkim (p. 206); 2009 - Myanmar (p. 206); 2012 - Myanmar (p. 207); 2013 - Yunnan (p. 207); 2015 - Yunnan (p. 207).
BEC	Ian Beyer, Charles Erskine and Jill Cowley. 1982 - Korea (p. 180).
Beer	Len Beer. 1975 - Nepal (p. 179).
BH	Brian Halliwell. 1970 - Nepal (p. xxx); 1979 - Japan (p. 209).
BLM	Len Beer, Roy Lancaster and David Morris. 1971 - Nepal (p. 179).
BMW	David Binns, M. Mason and A. Wright. 1978 - Nepal (p. 180).
Bowes-Lyon	Simon Bowes-Lyon. 1962 - Nepal (p. 180); 1964 - Nepal (p. 180); 1966 - Bhutan & Sikkim (p. 180); 1967 - Bhutan (p. 180); 1969 - Bhutan (p. 180); 1970 - Bhutan (p. 180); 1987/1989 - Bhutan (p. 180); 1994 - Bhutan (p. 180).
C&G	Alan Clark and Vaughan Gallavan. 2006 - Vietnam (p. 192).
C&H	Peter Cox and Peter Hutchison. 1965 - Arunachal Pradesh, Meghalaya & Bengal, India (p. 202); 1995 - Sichuan & Yunnan (p. 202).
C&N	Alan Clark and Shelagh Newman. 2007 - Sichuan & Yunnan (p. 193).

C&S	Alan Clark and Ian Sinclair. 1990 - Bhutan (p. 194).
C&W	Alan Clark and Hannah Wilson. 2014 - Guangxi (p. 194).
Cave	George Cave. 1914 - Sikkim & Bengal (p. 181).
CC	Peter Cox and Kenneth Cox. 1996 - Tibet (p. 201).
CCH	David Chamberlain, Peter Cox and Peter Hutchison. 1989 - Sichuan (p. 182).
CCHH	David Chamberlain, Peter Cox, Steve Hootman and Peter Hutchison. 1997 - Yunnan (p. 181).
CDHM	Peter Cox, Kelly Dodson, Steve Hootman and Sue Milliken. 2010 - Sichuan (p. 203).
CEE	Chengdu Edinburgh Expedition. 1991 - Sichuan (p. 182).
CER	Kenneth Cox, Philip Evans and Garratt Richardson. 1999 - Tibet (p. 203).
Chamberlain	David Chamberlain. 1975 - Meghalaya, NE India (p. 181).
CH&M	Peter Cox, Peter Hutchison and Donald Maxwell-McDonald. 1985 - Nepal (p. 203); 1968 - Sichuan & Yunnan (p. 203); 1988 - Bhutan (p. 203).
CHC	Peter Cox, Steve Hootman and Kenneth Cox. 1998 - Tibet (p. 203).
CLD	Chungdien-Lijiang-Dali Expedition. Chris Brickell, Jillian Crowley, Alan Leslie, David Long, Ron McBeath and David Paterson. 1990 - Yunnan (p. 183).
CNC	Kenneth Cox, Bradley Newton and William Campbell. 2012 - Sichuan (p. 204).
CNW	Alan Clark, Jens Nielsen and Murray Wilson. 1994 - Yunnan (p. 195).
Cooper	Roland Cooper. 1914 - Bhutan (p. 199); 1915 - Bhutan (p. 200); 1916 - NE Myanmar & Punjab, India (p. 200).
Cox	Peter Cox. 1990 - Sichuan (p. 200); 1992 - Sichuan & Yunnan (p. 201); 1994 - Yunnan (p. 201); 2014 - Sichuan (p. 201).
CP	Christopher Page. 1975 - Honshu, Japan, & Taiwan (p. 219).
CV	Kenneth Cox and Scott Vergara. 1995 - SE Tibet (p. 203).

CWT	Alan Clark, Hannah Wilson and Jamie Taggart. 2011 - Vietnam (p. 199).
DF	Derek Fox. 1986 - Nepal (p. 208).
DGEY	Dulong Jiang/Gaoligong Shan Expedition to Yunnan. Steve Hootman, Jens Nielsen and Peter Wharton. 2001 - Yunnan (p. 205).
Dingle	H. R. Dingle. 1984 - Nepal (p. 204).
Doleshy	Frank Doleshy. 1965 - Honshu, Kyushu & Yakushima Island, Japan (p. 205); 1967 - Honshu, Kyushu, Oki Island & Shikoku (p. 205); 1970 - Kyushu & Yakushima Island (p. 205); 1971 - Honshu (p. 205); 1982 - South Korea (p. 205); 1983 - Hokkaido & Honshu (p. 205).
DSE	Danish Sikkim Expedition. Hans Eiberg, Steffen Munck-Hansen and Gert Forum Petersen. 1994 - Sikkim (p. 204).
EFH&M	Charles Erskine, Hans Fliegner, Charles Howick and William McNamara. 1995 - Sichuan & Tibet (p. 207).
EGM	Edward Gray 'Ted' Millais. 1988 - Bhutan (p. 215); 1990 - Sichuan (p. 215); 1993 - Yunnan (p. 215); 1995 - Sichuan & Yunnan (p. 215).
EHOK	Expedition to Hokkaido. Giles Coode-Adams, Charles Howick, Tony Kirkham and William McNamara. 1997 - Hokkaido, Japan (p. 207).
EJE	Edinburgh Japan Expedition. 2003 - Amori, Ishikawa & Iwate Prefectures, Honshu (p. 206).
EMAK	Edinburgh-Makalu Nepal Expedition. 1991 - Nepal (p. 206).
EN	Edward Needham. Pre 1982 - Bhutan (p. 216); 1984 - Nepal (p. 216); Post 1985 - Sichuan & Yunnan (p. 216).
ESIK	Edinburgh Sikkim Expedition. 1992 - Sikkim (p. 206).
ESUS	Expedition to Eastern Russia. Mark Flanagan and Tony Kirkham. 1994 - Khabarovsk Krai, Primorsky Krai & Sakhalin Oblast (p. 207).
ETE	Edinburgh Taiwan Expedition. 1993 - Taiwan (p. 206).
ETOT	Expedition to Taiwan. Mark Flanagan and Tony Kirkham. 1992 - Taiwan (p. 208).

F	George Forrest. 1904/1906 - E Tibet & Yunnan (p. 127); 1910 - Myanmar & Yunnan (p. 128); 1912/1914 - Myanmar & Yunnan (p. 128); 1917/1919 - NE Myanmar, Tibet, Sichuan & Yunnan (p. 130); 1921/1922 - Yunnan (p. 134); 1924/1925 - NE Myanmar, SE Tibet & Yunnan (p. 139); 1930/1931 - Sichuan & Yunnan (p. 145).
Farrer	Reginald Farrer. 1914 - Gansu & Guizhou (p. 208); 1919 - Upper Myanmar (p. 208).
FB	Finn Bertelsen. 2018 - Sichuan & Yunnan (p. 179).
FED	Forestry Commission and the Royal Botanic Garden, Edinburgh. 1995 - Yunnan (p. 208).
Fox	Stephen Fox. 1990 - Bhutan (p. 209); 1995 - Nepal (p. 209).
G&L	Andrew Grierson and David Long. 1982 - Bhutan (p. 209).
GLGS	Gongligong Shan Expedition. Bruce Bartholomew, Peter Fritsch and P. Thomas. 2000 - Yunnan (p. 209).
GMNW	Maria Galletti, Philip MacDougall, Jens Nielsen and John Weagle. 2004 - Newfoundland, Canada (p. 209).
Gosainkund	Gosainkund Nepal Expedition. 1995 - Nepal (p. 209).
Gould	Basil Gould. 1937 - Sikkim (p. 209).
GR	Garratt Richardson (additional collections to the NAPE gatherings). 2003 - Arunachal Pradesh & Nagaland, India (p. 221).
GSE	Gaoligong Shan Expedition. Bruce Bartholomew, Michael Gilbert and Mark Watson. 1996 - Yunnan (p. 209).
GUIZ	Guizhou Expedition. Hans Fliegner, James Russell and John Simmons. 1985 - Guizhou (p. 209).
H&M	Charles Howick and William McNamara. 1990 - NE USA, Sichuan & Yunnan (p. 210); 1993 - Himachal Pradesh, N India (p. 211).
H&S	Mona Holmberg and Ulf Stringberg. 1992 - South Korea (p. 210).
H&W	Ian Hedge and Per Wendelbo. 1969 - Afghanistan (p. 210).
HC	Heronswood-Cobblewood Expedition to Korea. 1997 - South Korea (p. 210).
Heasman	Matt Heasman. 1992 - Bhutan (p. 210).

HECC	Peter Hutchison, Philip Evans, Peter Cox and Kenneth Cox. 2002 - Arunachal Pradesh (p. 211).
Hedegaard	Johannes B. Hedegaard. 1983 - Bhutan (p. 210).
Henriksen	Bent Henriksen. 1997 - NW Yunnan (p. 210).
Hruby	T. Hruby. 1975 - Nepal (p. 211).
JN	Jens Nielsen. 1996 - Yunnan (p. 216); 1999 - Yunnan (p. 216); 2011 - Chongqing, Henan, Shaanxi & Yunnan (p. 217); 2012 - Hunan, Jiangxi, Sichuan & Yunnan (p. 217).
KC	Kenneth Cox. 1990 - Thailand (p. 200); 2001 - Arunachal Pradesh (p. 200).
KCSH	Kenneth Cox and Steve Hootman. 2003 - Arunachal Pradesh (p. 202).
KEKE	Kew-Edinburgh Kanchenjunga Expedition. 1989 - Nepal (p. 211).
KEG	Kunming-Edinburgh-Gothenberg Expedition. Bjorn Alden, Crinan Alexander, Guan Kaiyun, David Long, Ron McBeath, Henry Noltie and Mark Watson. 1993 - Yunnan (p. 212).
KEY	Kunming-Edinburgh Yulong Shan Expedition. 1985 - Yunnan (p. 212).
KFB	Tony Kirkham, Mark Flanagan and Peter Boyce. 1989 - South Korea (p. 212).
KGB	Kunming Gothenburg Expedition. Bjorn Alden, Magnus Liden, Lu Ren Fu, Su Zhe Yun and Herik Zetterlund. 1993 - Yunnan (p. 212).
Kinmouth	F. Kinmouth. 1990 - Bhutan (p. 212); 1991 - Vietnam (p. 212).
KQ	Kew-Quarryhill Expedition. 1989 - Japan (p. 211).
KR	Keith Rushforth. 1980 - Sichuan (p. 221); 1985 - Bhutan (p. 221); 1987 - Bhutan (p. 221); 1990 - Bhutan (p. 222); 1991 - Vietnam (p. 222); 1992 - Vietnam (p. 222); 1993 - Yunnan (p. 222); 1994 - Vietnam (p. 223); 1995 - Tibet (p. 223); 1996 - Yunnan (p. 223); 1997 - Vietnam (p. 224); 1998 - Tibet (p. 224); 1999 - Tibet (p. 224); 2001 - Vietnam (p. 224); 2002 - Yunnan (p. 224); 2003 - Vietnam (p. 224); 2004 - Yunnan (p. 224); 2005 - Arunachal Pradesh (p. 224); 2006 - Arunachal Pradesh (p. 225); 2007 - Vietnam (p. 225); 2008 - Arunachal Pradesh (p. 225); 2010 - Arunachal Pradesh (p. 226); 2012 - Arunachal Pradesh (p. 226).
Kumar	Virendra U. Kumar. 1975 - Himachal Pradesh, N India (p. 212).

Kurashige	Yuji Kurashige. 1987 - Japan (p. 213).
KW	Frank Kingdon-Ward. 1913 - N Yunnan & Tibet (p. 146); 1919 - NE Upper Myanmar (p. 146); 1921 - Sichuan & NE Yunnan (p. 146); 1922 - NE Myanmar, Sichuan, Tibet & Yunnan (p. 147); 1924/1925 - Bhutan & Tibet (p. 147); 1926 - Myanmar & Assam, India (p. 148); 1927/1928 - Arunachal Pradesh & Assam, India (p. 149); 1931 - Upper Myanmar & Tibet (p. 149); 1933 - Upper Myanmar & Assam (p. 150); 1935 - Assam & Tibet (p. 150); 1937 - NE Upper Myanmar & Tibet (p. 150); 1938/1939 - N Myanmar (p. 151); 1946 - Meghalaya, India (p. 151); 1948 - E Manipur, India (p. 151); 1949 - Assam (p. 151); 1950 - Arunachal Pradesh, Assam & Tibet (p. 152); 1953 - Myanmar (p. 152); 1956 - WC Myanmar (p. 152).
L&S	Frank Ludlow and George Sherriff. 1933 - Bhutan (p. 166); 1934 - Bhutan & S Tibet (p. 136); 1936 - Bhutan & S Tibet (p. 166); 1937 - Bhutan (p. 168); 1939 - Kashmir (p. 171); 1940 - Kashmir (p. 171); 1942 - Tibet (p. 171); 1943 - Tibet (p. 171); 1944 - Tibet (p. 171); 1948 - Sikkim (p. 173).
Lowndes	Donald George Lowndes. 1950 - Nepal (p. 213).
LPE	Lijiang Project Expedition. 2003 - Yunnan (p. 213).
LS&E	Frank Ludlow, George Sherriff and Henry Elliott. 1946/1947 - Tibet (p. 171).
LS&H	Frank Ludlow, George Sherriff and John Hicks. 1949 - Bhutan (p. 173).
LS&T	Frank Ludlow, George Sherriff and George Taylor. 1938 - Tibet (p. 169).
McBeath	Ron McBeath. 1981 - Nepal (p. 214); 1983 - Nepal (p. 214); 1990 - Nepal (p. 214).
McLaren	Henry McLaren (employing George Forrest's trained native collectors). 1932/1939 - Sichuan & Yunnan (p. 214).
MFM	Maurice Foster. 2003 - Mongolia (p. 208).
MH	Matti Huotari. 2018 - Yunnan (p. 211).
MW	Michael Wickenden. 1997 - Primorsky Krai, E Russia (p. 234).
NAPE	Nagaland & Arunachal Pradesh Expedition. Kelly Dodson, Steve Hootman, Sue Milliken and Garratt Richardson. 2003 - Arunachal Pradesh & Nagaland, India (p. 216).
NN	Jens Nielsen and Remi Nielsen. 2009 - Guizhou, Sichuan & Yunnan (p. 219).

P&C	David S. Paterson and Sidney Clarke. 1991 - W USA (p. 219).
P&L	Udai Pradhan and Sonam Lachungpa. 1986 - Sikkim (p. 220).
P&M	David S. Paterson and John D. Main. 1994 - Yunnan (p. 219).
Pes	T. Pes. 1994 - Nepal (p. 220).
PMDT	Philip MacDougall. 2006 - Taiwan (p. 220).
Polunin	Oleg Polunin. 1949 - Nepal (p. 220).
PS&W	Oleg Polunin, William Sykes and John Williams. 1952 - Nepal (p. 220).
PW	Peter Wharton. 1994 - Guizhou (p. 234).
R	Joseph Rock. 1923/1924 - SE Tibet & NW Yunnan (p. 153); 1925/1926 - NW Gansu (p. 158); 1929 - NW Yunnan (p. 158); 1932 - NW Yunnan (p. 159); 1948/1949 - Tibet & Yunnan (p. 164).
R&N	Baard Ranheim and Remi Nielsen. 2008 - Yunnan (p. 221).
Russell	James Russell. 1987 - Japan (p. 227).
RV	Rhododendron Venture. John Patrick and Chien Chang Hsu. 1968 - Taiwan (p. 219); 1969 - Taiwan (p. 219); 1970 - Taiwan (p. 219); 1972 - Taiwan (p. 219); 1973 - Taiwan (p. 220); 1974 - Taiwan (p. 220).
S&E	John Simmons and J. Elsley. 1981 - E USA (p. 228).
S&L	Ian Sinclair and David Long. 1984 - Bhutan (p. 229).
SABE	Sino-America Botanical Expedition. Bruce Bartholomew, David Boufford, Theodore Dudley, James Luteyn and Stephen Spongberg. 1981 - Hubei & Sichuan (p. 229).
S&M	Brit Smith and Frank Mossman. 1965/1975 - California & Oregon (p. 231).
SBEC	Sino-British Expedition to the Cangshan. David Chamberlain, Peter Cox, Peter Hutchison and Roy Lancaster. 1981 - Yunnan (p. 229).
SBLE	Sino-British Lijiang Expedition. David Chamberlain, Chris Grey-Wilson, Ron McBeath and Tony Schilling. 1987 - Yunnan (p. 230).

SCH	Anthony David 'Tony' Schilling. 1966 - Nepal (p. 227); 1975 - Nepal (p. 227); 1976 - Nepal (p. 227); 1977 - Nepal (p. 227); 1978 - Nepal (p. 227); 1980 - Nepal (p. 227); 1983 - Nepal (p. 227); 1988 - Bhutan (p. 227).
SI	Danish Sichuan Expedition. Jesper Holck Andersen, Hans Eiberg, Bent Ernebjerg, Bent Henriksen and Torben Stein. 2004 - Sichuan (p. 204).
SICH	Sichuan Expedition. Charles Erskine, Charles Howick, William McNamara and John Simmons (1988/1994), Mark Flanagan, Tony Kirkham and William McNamara (1999/2001). 1988 - Sichuan (p. 227); 1991 - Sichuan (p. 227); 1992 - Sichuan (p. 228); 1994 - Sichuan (p. 228); 1999 - Sichuan (p. 228); 2001 - Sichuan (p. 228).
Sinclair	Ian Sinclair. 1993 - Bhutan (p. 229); 1994 - E USA (p. 229).
SJH	Jes Hansen. 2006 - France & Switzerland (p. 209).
Smith	Karl August Harald 'Harry' Smith. 1934 - Gansu (p. 231).
Smitinand	Tem Smitinand. 1962 - Thailand (p. 232); 1974 - Thailand (p. 232).
SOJA	Southern Japan Expedition. Maunder, William McNamara and S. Tuskie. 1989 - Japan (p. 232).
SSNY	Sino-Scottish Expedition to Northwestern Yunnan. David Chamberlain, Kenneth Cox, Peter Cox, Peter Hutchison and Ian Sinclair. 1992 - Yunnan (p. 231).
SSW	J. D. Adam Stainton, William Sykes and John Williams. 1954 - Nepal (p. 233).
Stainton	John David Adam Stainton. 1956 - Nepal (p. 232).
TARRVS	Tomasz Anisko, Ronald Rabideau and Scott Vergara. 2002 - Tibet (p. 176).
TDA	Timothy D. Atkinson. 2011 - Sikkim (p. 177); 2012 - Sikkim (p. 177); 2013 - Sikkim & West Bengal (p. 177); 2014 - Arunachal Pradesh (p. 178); 2016 - Sikkim (p. 178).
Tran	Tran Van On. 1993 - Vietnam (p. 233).
TSS	Tom Spring-Smythe. 1961/1962 - Nepa (p. 232) I; 1970 - Nepal (p. 232).
TURX	Expedition to Turkey. Mark Flanagan and Mark Pitman. 1990 - N, W & S Turkey (p. 208).

Valder	Peter Valder. 1972 - Cameron Highlands, Pahang, Malaysia (p. 233); 1974/1975 - Hong Kong (p. 233); 1994/1995 - Malaysia & Thailand (p. 233).
W	Ernest Wilson. 1899/1902 - Hubei (p. 123); 1903/1905 - Sichuan (p. 123); 1906/1909 - Hubei & Sichuan (p. 124); 1910/1911 - Sichuan (p. 124); 1914/1915 - Japan (p. 125); 1917/1919 - Japan, Korea & Taiwan (p. 125).
W&H	Roger Warner and Charles Howick. 1985 - E USA (p. 233); 1986 - British Columbia, California & Washington (p. 233); 1987 - Japan (p. 233); 1989 - Pyrenees (p. 234).
Yu	Te-Tsun Yu. 1932/1939 - Sichuan & Yunnan (p. 234).
ZH-G	Zha Hong-Guang. 2006 - Yunnan (p. 236).

Ernest Wilson:



1899/1902 - Hubei			
W 17	praeevernum	W 886	latoucheae
W 17	x geraldii (NH)	W 887	stamineum
W 311	hypoglaucum	W 887b	fortunei
W 317	latoucheae	W 920	auriculatum
W 505	adenopodum	W 938	ovatum
W 517	x geraldii (NH)	W 944	maculiferum
W 570	discolor	W 1077a	fortunei
W 598	augustinii	W 1161	adenopodum
W 609	discolor Houlstonii	W 1181	discolor Houlstonii
W 648	discolor Houlstonii	W 1218	micranthum
W 683	farrerae	W 1232	sutchuenense
W 752	hypoglaucum	W 1250	fargesii
W 885	discolor Houlstonii		
1903/1905 - Sichuan			
W 1433	concinnum	W 1769	bureavii
W 1435	pachytrichum	W 1773	flavidum
W 1519	orbiculare	W 1777	vernicosum
W 1520	longesquamatum	W 1779	davidsonianum
W 1521	argyrophyllum	W 1782	decorum
W 1522	x monosematum (NH)	W 1800	wasonii
W 1523	calophytum	W 1804	wiltonii
W 1524	concinnum	W 1808	ririei
W 1525	pachytrichum	W 1809	stamineum
W 1526	argyrophyllum	W 1810	orbiculare
W 1527	faberi	W 1857	polylepis
W 1531	oreodoxa	W 1862	trichanthum
W 1535	davidsonianum	W 1863	sphaeroblastum
W 1538	bureavioides	W 1864	x praeteritum (NH)
W 1539	x magorianum (NH)	W 1865	pachytrichum
W 1540	souliei	W 1866	wasonii
W 1541	oreodoxa	W 1866	x inopinum (NH)
W 1543	intricatum	W 1867	concinnum
W 1547	prattii	W 1867a	faberi
W 1764	wasonii	W 1869	concinnum
W 1766	concinnum	W 1870	strigillosum

W 1871	wiltonii	W 1882	x planetum (NH)
W 1872	watsonii	W 1885	hypoglaucum
W 1873	davidii	W 1887	wongii
W 1875	lutescens	W 1888	sargentianum
W 1876	wasonii 'Rhododactylum'	W 3942a	polylepis
W 1878	concinnum	W 3958a	prattii
W 1879	ambiguum	W 3978	davidii
W 1880	ambiguum	W 5137	hypoglaucum
W 1881	ambiguum	W 5139	ririei
1906/1909 - Hubei & Sichuan			
W 509	praeevernum	W 1208	sargentianum
W 509	sutchuenense	W 1209	decorum
W 509	x geraldii (NH)	W 1209a	openshawianum
W 567	stamineum	W 1210	argyrophyllum
W 569	simsii	W 1211	oreodoxa
W 586	discolor	W 1220	trichanthum
W 608	augustinii	W 1221	polylepis
W 660	micranthum	W 1222	souliei
W 800	molle	W 1224	calophytum
W 879	moupinense	W 1225	websterianum
W 882	hanceanum	W 1237	augustinii
W 1195	lutescens	W 1256	vernicosum
W 1196	amesiae	W 1274	davidsonianum
W 1196a	concinnum	W 1275	davidsonianum
W 1197a	lutescens	W 1276	davidsonianum
W 1198	hunnewellianum	W 1278	longesquamatum
W 1199	lutescens	W 1319	x edgarianum (NH)
W 1200	micranthum	W 1320	micranthum
W 1201	concinnum	W 1324	ambiguum
W 1202	flavidum	W 1325	unidentified species
W 1203	pachytrichum	W 1326	pachytrichum
W 1204	longistylum	W 1328	trichostomum
W 1205	polylepis	W 1328a	websterianum
W 1206	watsonii	W 1330	ambiguum
W 1207	augustinii	W 1339	insigne
W 1207a	polylepis	W 1341	strigillosum

W 1342	trichanthum	W 3416	fargesii
W 1343	searsiae	W 3418	orbiculare
W 1345	lutescens	W 3425	ochraceum
W 1349	pachytrichum	W 3427	auriculatum
W 1350	williamsianum	W 3428	racemosum
W 1352	davidsonianum	W 3440	pachytrichum
W 1353	wiltonii	W 3443	hypoglaucum
W 1353	x paradoxum (NH)	W 3445	trichanthum
W 1361	longesquamatum	W 3448	concinnum
W 1367	calophytum	W 3454	sargentianum
W 1369	calophytum	W 3465	ramosissimum
W 1391	ovatum	W 3467	ramosissimum
W 1686	fortunei	W 3468	ramosissimum
W 1690	ovatum	W 3469	ramosissimum
W 3412	maculiferum	W 3473	simsii
W 3414	openshawianum	W 3474	simsii
W 3415	davidii		
1910/1911 - Sichuan			
W 4041	concinnum	W 4247	oreodoxa
W 4231	przewalskii	W 4248	hunnewellianum
W 4232	przewalskii	W 4249	wasonii
W 4233	amesiae	W 4250	rufum
W 4233a	concinnum	W 4250	rufum x ? (NH)
W 4234	faberi	W 4251	wasonii
W 4235	rufum	W 4252	ambiguum
W 4236	concinnum	W 4253	bracteatum
W 4237	sargentianum	W 4254	galactinum
W 4238	augustinii	W 4254	x peregrinum (NH)
W 4239	davidsonianum	W 4255	hanceanum
W 4240	ambiguum	W 4256	moupinense
W 4241	concinnum	W 4257	decorum
W 4242	trichanthum	W 4258	strigillosum
W 4243	przewalskii	W 4259	watsonii
W 4244	watsonii	W 4260	oreodoxa
W 4245	oreodoxa	W 4261	davidii
W 4246	pachytrichum	W 4262	micranthum

W 4263	longesquamatum	W 4273	thayerianum
W 4264	wiltonii	W 4274	souliei
W 4265	ambiguum	W 4275	argyrophyllum
W 4266	floribundum	W 4276	argyrophyllum
W 4267	strigillosum	W 4277	lutescens
W 4268	stamineum	W 4278	polylepis
W 4269	ramosissimum	W 4279	calophytum
W 4270	pachytrichum	W 4280	davidsonianum
W 4271	oreodoxa	W 4726	longistylum
W 4272	faberi		
1914/1915 - Japan			
W 7191	nipponicum	W 7694	reticulatum
W 7192	japonicum	W 7709	indicum
W 7638	albrechtii	W 7709a	kaempferi
W 7657	tschonoskyi	W 7733	semibarbatum
W 7670	japonicum	W 7794	stenopetalum 'Linearifolium'
W 7676	quinquefolium	W 7801	tosaense
W 7683	pentaphyllum	W 7813	weyrichii
W 7683a	quinquefolium		
1917/1919 - Japan, Korea & Taiwan			
W 9251	dauricum	W 11250	kusianum
W 9411	weyrichii	W 11255	kusianum
W 9592	schlippenbachii	W 10928	pseudochrysanthum
W 9595	tschonoskyi	W 10939	rubropilosum
W 10956	obtusum	W 10955	morii
W 11248	kusianum	W 11175	oldhamii

- opposite above -
In western China during the 1906/1909 expedition.

- opposite below -
On the mountains of Taiwan, with Japanese officials and indigenous assistants, spring 1918.





The 1904/1906 Expedition Dichotomy.

The listings opposite are compiled from the full catalogue of herbarium sheets gathered on the 1904-1906 expedition as set out by Dr. Ludwig Diels in Volume 7 of *Notes from the Royal Botanic Garden, Edinburgh*, published in 1912. A. K. Bulley, the owner of Bees Limited and chief sponsor of the trip, received all the seed George Forrest collected, while the pressed specimens went to Edinburgh.

Principally tasked with collecting alpine and herbaceous material, Forrest also gathered 95 rhododendron species during the trip, yet very few of those listed by Diels are believed to have been officially introduced at the same time, with F 4135 one of the few exceptions. It is hard to imagine that viable capsules were simply ignored by the Scotsman in the field, or if gathered, not despatched back to Bulley. But if the Cheshire-based Bees Ltd did indeed distribute them - as either packets of seed or juvenile plants - then they exited the doors of the nursery without a Forrest field number reference attached.

Regrettably, another explanation has now also come to light:

A transcript of the Presidential Address given to the Royal Institute of Cornwall by F. J. Williams in November 1998 - *J. C. Williams: An Enthusiast* (available on the Caerhays Castle website) - cites Bulley as 'not having the resources to deal with so much new material'. Equally, first-hand observations made on a visit to the nursery premises by J. C. Williams himself are quoted in the text.

One states that Williams was: 'quite sad to see stuff so knocked about'.

Another adds that: 'thousands of things are dead through sheer ignorance of how to handle them'.

Respected cotton merchant, founder of Ness Botanic Gardens, supporter of women's suffrage - Arthur Kilpin Bulley was all these things. Yet what he was not, despite developing an all-consuming lifelong passion for plants, was a hands-on experienced nurseryman.

The full text of *Plantae Chinenses Forrestiannae: plants discovered and collected by George Forrest during his first exploration of Yunnan and Eastern Tibet in the years 1904, 1905, 1906*, can be read online and downloaded from the Biodiversity Heritage Library or the Internet Archive.

The 1921/1922 and 1924/1925 Expedition Listings.

The table entries for these two expeditions contain field numbers that separately refer to flower and seed collections, in effect, doubling the number of items. For instance, Forrest only made a total of 24 gatherings of *R. aperantum*, but 45 are listed. The three collections made during the 1930/1931 expedition are not duplicated, but the 21 made across the 1924/1925 trip are, thereby giving 42 entries, and an aggregate of 45.

The reason for this was given in the 1980 edition of the *Rhododendron Handbook*: in horticulture, the numbers had become confused, with both being used in gardens to identify plants raised from seed. Sticking with *R. aperantum*, F 26925 equals F 27597, while F 26926 equals F 27587, and F 26930 equals F 27651, which illustrates the complete lack of any straightforward linkage between the pairings. Accepting the fait accompli - that a plant germinated from the F 26925 gathering might also be labelled F 27597 - was the easiest solution, the RHS 1998 *Handbook* maintaining such, as it is herein.

1904/1906 - E Tibet & Yunnan			
F 475	campylogynum	F 2253	decorum
F 501	fictolacteam	F 2282	indicum
F 502	delavayi	F 2323	beesianum
F 503	sanguineum	F 2395	adenogynum
F 504	campylogynum	F 2408	taliense
F 505	floccigerum	F 2409	taliense
F 506	bureavii	F 2505	lepidotum
F 507	siderophyllum	F 2770	lepidotum
F 508	edgeworthii	F 4093	delavayi
F 509	spinuliferum	F 4130	haematodes
F 510	racemosum	F 4131	balfourianum
F 511	saluenense	F 4132	virgatum
F 512	spiciferum	F 4133	virgatum
F 513	chasmanthum	F 4134	racemosum
F 689	siderophyllum	F 4135	xanthostephanum
F 692	hypolepidotum	F 4136	taliense
F 694	brevistylum	F 4137	cyanocarpum
F 698	mekongense	F 4138	dichroanthum
F 699	forrestii	F 4139	crassum
F 951	sulfureum	F 4140	neriiflorum
F 2009	racemosum	F 4141	edgeworthii
F 2030	hormophorum	F 4142	dichroanthum
F 2042	anthosphaerum	F 4143	sulfureum
F 2043	irroratum	F 4144	neriiflorum
F 2050	rubiginosum	F 4145	trichocladum
F 2058	irroratum	F 4146	irroratum
F 2062	racemosum	F 4147	neriiflorum
F 2097	rubiginosum	F 4148	souliei
F 2119	decorum	F 4149	fastigiatum
F 2159	lacteam	F 4150	souliei
F 2181	unidentified species	F 4151	campylogynum
F 2182	cephalanthum	F 4152	campylogynum
F 2190	vernicosum	F 4153	brachyanthum
F 2207	racemosum	F 4154	souliei
F 2222	vernicosum	F 4155	platyphyllum

F 4156	rubiginosum	F 4169	virgatum
F 4157	dichroanthum	F 4170	virgatum
F 4158	dichroanthum	F 4172	microphyton
F 4159	ciliicalyx	F 4173	indicum
F 4160	taliense	F 4173a	indicum
F 4161	haematodes	F 5063	yunnanense
F 4162	brevistylum	F 5068	selense
F 4163	yunnanense	F 5069	stewartianum
F 4164	neriiflorum	F 5070	trichostomum
F 4165	dichroanthum	F 5071	lukiangense
F 4166	balfourianum	F 5072	uvariifolium
F 4167	taliense	F 5073	x haemaleum (NH)
F 4168	decorum		



George Forrest’s native collectors, photographed in northwestern Yunnan during the early 1900s. Lao Chao, his head man, is on the left.

1910 - Myanmar & Yunnan			
F 5843	fictolacteum	F 5872	traillianum
F 5847	fastigiatum	F 5873	oreotrephe
F 5848	anthosphaerum	F 5874	hormophorum
F 5851	irroratum	F 5876	impeditum
F 5862	prostratum	F 5877	rubiginosum
F 5863	fastigiatum	F 5879	telmateium
F 5864	lepidotum	F 5880	vernicosum
F 5865	rupicola	F 5881	vernicosum
F 5866	primuliflorum	F 5882	racemosum
F 5868	adenogynum	F 5889	yunnanense
F 5868	x detonsum (NH)	F 6755	trichocladum
F 5869	decorum	F 6756	cephalanthum
F 5870	traillianum	F 6757	fastigiatum
F 5871	adenogynum	F 6761	dichroanthum
F 5871	x detonsum (NH)	F 6762	pholidotum
F 6767	xanthostephanum	F 6775	cyanocarpum
F 6768	microphyton	F 6776	decorum
F 6769	delavayi	F 6777	sulfureum
F 6770	virgatum	F 6778	lacteum
F 6771	rigidum	F 6779	cyanocarpum
F 6772	taliense	F 6780	neriiflorum
F 6773	haematodes	F 6781	dichroanthum
F 6774	balfourianum		
1912/1914 - Myanmar & Yunnan			
F 7463	delavayi	F 8987	apodectum
F 7504	microphyton	F 8989	fulvum
F 7505	microphyton	F 8990	basilicum x ? (NH)
F 7516	ciliicalyx	F 9021	sinogrande
F 7673	moulmainense	F 9048	habrotrichum
F 7832	simsii Mesembrinum	F 9054	apodectum
F 8172	edgeworthii	F 9055	callimorphum aff.
F 8905	trichocladum	F 9341	leptothrium
F 8923	zaleucum	F 9342	virgatum
F 8938	heliolepis	F 9431	crassum
F 8939	neriiflorum	F 9901	leptothrium

F 9919	ciliicalyx	F 10477	beesianum
F 10014	scintillans	F 10481	orthocladum
F 10035	yungningense & impeditum	F 10540	roxieanum
F 10055	fastigiatum	F 10546	beesianum
F 10056	impeditum	F 10547	phaeochrysum
F 10057	rubiginosum	F 10616	puralbum
F 10071	cuneatum	F 10639	uvariifolium
F 10073	rubiginosum	F 10651	anthosphaerum
F 10074	rubiginosum	F 10680	wardii
F 10075	vernicosum	F 10857	clementinae
F 10086	racemosum	F 10974	fictolacteum
F 10113	adenogynum	F 10991	roxieanum
F 10114a	vernicosum	F 11031	scabrifolium
F 10156	traillianum	F 11072	scabrifolium
F 10195	beesianum	F 11073	delavayi
F 10204	traillianum	F 11074	irroratum
F 10210	oreotrephe	F 11246	trichostomum
F 10213	oreotrephe	F 11299	tatsienense
F 10278	trichostomum	F 11312	dasycladum
F 10284	fastigiatum	F 11313	beesianum
F 10285	prostratum	F 11317	wardii
F 10292	uvariifolium	F 11321	phaeochrysum
F 10297	oreotrephe	F 11421	uvariifolium
F 10311	impeditum	F 11450	orthocladum
F 10312	primuliflorum	F 11466	wardii
F 10314	rupicola	F 11486	clementinae
F 10333	hippophaeoides	F 11487	hippophaeoides
F 10347	mollicomum	F 11503	anthosphaerum
F 10367	rupicola	F 11547	ciliicalyx
F 10423	ravum	F 11575	lacteum
F 10428	wardii	F 11579	taliense
F 10429	adenogynum	F 11583	taliense
F 10434	drumonium	F 11597	dichroanthum
F 10435	ravum	F 11601	callimorphum aff.
F 10438	brevistylum	F 11626	fastigiatum
F 10460	beesianum	F 11629	cyanocarpum

F 11630	trichocladum	F 12948	fictolacteum
F 11736	ravum	F 12950	dasycladum
F 11875	sinogrande	F 12968	chameunum
F 11896	apodectum	F 12969	wardii
F 11910	sulfureum	F 12982	dasycladum
F 11958	diaprepes	F 13005	roxieanum Oreonastes
F 12054	habrotrichum	F 13023	praestans
F 12078	basilicum	F 13032	beesianum
F 12084	microphyton	F 13143	beesianum
F 12085	microphyton	F 13244	crinigerum
F 12094	apodectum	F 13258	chameunum
F 12095	habrotrichum	F 13259	forrestii
F 12096	neriiflorum	F 13299	floccigerum
F 12100	virgatum	F 13301	martinianum
F 12109	basilicum	F 13302	hypolepidotum
F 12113	delavayi	F 13303	campylogynum
F 12461	hippophaeoides	F 13304	sanguineum
F 12505	trichostomum	F 13315	wardii
F 12568	telmateium	F 13348	proteoides
F 12607	clementinae	F 13380	lukiangense
F 12609	roxieanum	F 13383	chameunum
F 12623	telmateium	F 13387	anthosphaerum
F 12731	wardii	F 13438	anthosphaerum
F 12845	leptothrium	F 13439	martinianum
F 12889	anthosphaerum	F 13440	floccigerum
F 12893	floccigerum	F 13508	facetum
F 12899	lukiangense	F 13512	sulfureum
F 12901	glischrum	F 13518	campylogynum
F 12934	saluenense	F 13526	platyphyllum
F 12942	megeratum	F 13550	hypolepidotum
F 12944	crinigerum	F 13568	beesianum
F 12947	roxieanum Oreonastes		

- opposite -
Forrest with one of the French missionary priests.



1917/1919 - NE Myanmar, Tibet, Sichuan & Yunnan			
F 13768	telmateium	F 13951a	x erythrocalyx (NH)
F 13789	detonsum (NH)	F 13965	x edgarianum (NH)
F 13936	erythrocalyx (NH)	F 13990	uvariifolium
F 13938	erythrocalyx (NH)	F 13996	glischrum
F 13768	drumonium	F 14000	chryseum
F 13789	x detonsum (NH)	F 14004	campylogynum
F 13791	hippophaeoides	F 14005	chryseum
F 13792	hippophaeoides	F 14008	crinigerum
F 13793	hippophaeoides	F 14009	selense
F 13794	hippophaeoides	F 14011	forrestii
F 13798	racemosum	F 14012	sanguineum
F 13799	hippophaeoides	F 14021	aganniphum
F 13800	hippophaeoides	F 14024	dryophyllum
F 13803	racemosum	F 14038	vernicosum
F 13804	racemosum	F 14041	dryophyllum
F 13841	primuliflorum	F 14043	chameunum
F 13842	hippophaeoides	F 14050	aganniphum
F 13847	telmateium	F 14052	hypolepidotum
F 13852	anthosphaerum	F 14054	saluenense
F 13853	irroratum	F 14055	cephalanthum
F 13864	irroratum	F 14057	selense
F 13881	leptothrium	F 14059	megeratum
F 13896	lukiangense	F 14060	nakotiltum
F 13897	dasycladum	F 14061	roxieanum
F 13899	scintillans	F 14062	crinigerum
F 13900	mekongense	F 14063	fictolacteam
F 13904	chameunum	F 14066	setiferum
F 13905	dasypetalum	F 14068	nakotiltum
F 13905a	x compactum (NH)	F 14094	x schizopeplum (NH)
F 13915	russatum	F 14095	wardii
F 13931	oreotrepes	F 14102	x schizopeplum (NH)
F 13933	selense	F 14114	dryophyllum
F 13935	floccigerum	F 14115	dryophyllum
F 13947	chryseum	F 14116	beesianum
F 13949	martinianum	F 14119	x schizopeplum (NH)

F 14128	wardii	F 14368	x flavorufum (NH)
F 14134	aganniphum	F 14372	rubiginosum
F 14135	brevistylum	F 14373	erastum
F 14138	forrestii	F 14416	citriniflorum
F 14142	roxieanum	F 14421	x comisteum (NH)
F 14145	dryophyllum	F 14432	roxieanum
F 14160	mekongense	F 14450	beesianum
F 14166	x haemaleum (NH)	F 14452	rubiginosum
F 14181	lukiangense	F 14458	selense
F 14190	wardii	F 14461	beesianum
F 14195	albertsenianum	F 14464	duseimatum
F 14208	x tritifolium (NH)	F 14485	eclecteum
F 14209	praestans	F 14488	beesianum
F 14210	brevistylum	F 14492	x triplonaevium (NH)
F 14226	beesianum	F 14499	fulvoides
F 14231	fictolacteam	F 14508	x comisteum (NH)
F 14233	praestans	F 14509	proteoides
F 14242	microgynum	F 14519	dryophyllum
F 14243	x iodes (NH)	F 14605	beesianum
F 14245	x eudoxum (NH)	F 14685	proteoides
F 14268	x didymoides (NH)	F 14686	beesianum
F 14269	sanguineum	F 14718	x bathyphyllum (NH)
F 14270	x leucopetalum (NH)	F 14732	x flavorufum (NH)
F 14271	citriniflorum	F 14774	x eudoxum (NH)
F 14272	citriniflorum	F 14790	beesianum
F 14274	citriniflorum	F 14809	x dictyotum (NH)
F 14286	crinigerum	F 14810	x flavorufum (NH)
F 14291	brevistylum	F 14811	beesianum
F 14331	calvescens	F 14911	crinigerum
F 14334	primuliflorum	F 14987	chaetomallum
F 14344	cephalanthum	F 14988	fulvoides
F 14345	x flavorufum (NH)	F 15002	yunnanense
F 14352	beesianum	F 15004	chasmanthum
F 14356	citriniflorum	F 15018	selense
F 14364	temenium	F 15023	floccigerum
F 14365	temenium	F 15035	mekongense

F 15038	aganniphum	F 15165	vernicosum
F 15039	x iodes (NH)	F 15166	primuliflorum
F 15043	x tritifolium (NH)	F 15168	fictolacteum
F 15070	adenogynum	F 15169	primuliflorum
F 15071	brevistylum	F 15171	adenogynum
F 15072	adenogynum	F 15203	mollicomum
F 15076	impeditum	F 15204	tatsienense
F 15077	primuliflorum	F 15206	racemosum
F 15079	primuliflorum	F 15210	drumonium
F 15080	primuliflorum	F 15216	uvariifolium
F 15085	telmateium	F 15218	cuneatum
F 15086	primuliflorum	F 15219	rubiginosum
F 15087	trichostomum	F 15222	oreotrepthes
F 15088	primuliflorum	F 15243	adenogynum
F 15091	impeditum & fastigiatum	F 15245	primuliflorum
F 15092	primuliflorum	F 15248	unidentified species
F 15093	primuliflorum	F 15249	fastigiatum
F 15095	anthosphaerum	F 15251	hippophaeoides
F 15096	trichostomum	F 15257	unidentified species
F 15097	irroratum	F 15259	trichostomum
F 15102	delavayi	F 15262	trichostomum
F 15103	scabrifolium	F 15263	tatsienense
F 15120	telmateium	F 15264	hippophaeoides
F 15123	traillianum	F 15265	hippophaeoides
F 15124	beesianum	F 15266	racemosum
F 15126	primuliflorum	F 15267	complexum
F 15127	primuliflorum	F 15268	drumonium
F 15128	adenogynum	F 15269	complexum
F 15129	unidentified species	F 15270	rupicola
F 15130	vernicosum	F 15271	primuliflorum
F 15132	telmateium	F 15278	fulvoides
F 15137	trichostomum	F 15293	eclecteum
F 15154	telmateium	F 15305	traillianum
F 15155	primuliflorum	F 15354	x agglutinatum (NH)
F 15159	complexum	F 15356	tapetiforme
F 15164	adenogynum aff.	F 15367	rupicola

F 15370	drumonium	F 15575	dimitrium
F 15386	drumonium	F 15578	rigidum
F 15391	rupicola	F 15579	jucundum
F 15392	complexum	F 15581	rigidum
F 15399	primuliflorum	F 15582	unidentified species
F 15400	complexum	F 15588	cyanocarpum
F 15412	wardii	F 15589	rigidum & sulfureum
F 15414	dasycladum	F 15594	sulfureum
F 15415	x agglutinatum (NH)	F 15606	vernicosum
F 15417	puralbum	F 15609	bureavii
F 15418	oreotrepthes	F 15612	fastigiatum
F 15427	cuneatum	F 15613	fastigiatum
F 15444	uvariifolium	F 15614	fastigiatum
F 15446	tatsienense	F 15615	fastigiatum
F 15448	ravum	F 15645	telmateium
F 15449	trichostomum	F 15651	schistocalyx
F 15450	hippophaeoides	F 15658	trichocladum
F 15452	trichostomum	F 15659	sinogrande
F 15459	hippophaeoides	F 15660	fulvum
F 15462	racemosum	F 15663	neriiflorum
F 15464	cuneatum	F 15665	x diphrocalyx (NH)
F 15465	oreotrepthes	F 15667	ciliicalyx
F 15466	primuliflorum	F 15673	leptothrium
F 15467	drumonium	F 15688	zaleucum
F 15468	telmateium	F 15701	helirolepis
F 15487	brachyanthum	F 15706	araiophyllum
F 15497	balfourianum	F 15719	delavayi
F 15500	unidentified species	F 15732	araiophyllum
F 15504	scabrifolium	F 15733	leptothrium
F 15515	unidentified species	F 15734	annae
F 15519	unidentified species	F 15736	leptothrium
F 15520	cyanocarpum	F 15745	pennivenium
F 15521	haematodes	F 15756	moulmainense
F 15542	unidentified species	F 15761	rubiginosum
F 15545	unidentified species	F 15764	basilicum
F 15570	cyanocarpum	F 15766	tanastylum

F 15767	meddianum	F 16257	telmateium
F 15770	sulfureum	F 16277	impeditum
F 15774	megacalyx	F 16282	yungningense
F 15776	trichocladum	F 16284	impeditum
F 15777	fulvum	F 16287	orthocladum
F 15778	habrotrichum	F 16288	telmateium
F 15779	neriiflorum	F 16289	drumonium
F 15782	sulfureum	F 16291	oreotrepes
F 15791	diaprepes	F 16292	impeditum
F 15808	callimorphum	F 16295	primuliflorum
F 15815	griersonianum	F 16296	telmateium
F 15816	diaprepes	F 16299	unidentified species
F 15887	crassum	F 16300	telmateium
F 15898	arizelum	F 16301	x eudoxum (NH)
F 15899	valentinianum	F 16302	phaeochrysum
F 15908	campylogynum	F 16305	nigropunctatum
F 15917	facetum	F 16306	primuliflorum
F 15932	apodectum	F 16307	nigropunctatum
F 15933	heliolepis	F 16308	primuliflorum
F 15954	annae	F 16311	trichostomum
F 15967	praestans	F 16312	primuliflorum
F 15968	x flavorufum (NH)	F 16313	telmateium
F 15969	balfourianum	F 16314	roxieanum Cucullatum
F 15975	peramoeunum	F 16315	adenogynum
F 15976	peramoeunum	F 16316	balfourianum
F 15977	fictolacteum	F 16318	dasycladum
F 15998	moulmainense	F 16319	x agglutinatum (NH)
F 16000	araiophyllum	F 16320	mimetes aff.
F 16002	basilicum	F 16321	wardii
F 16006	habrotrichum	F 16351	protistum
F 16032	ciliicalyx	F 16352	leptopeplum
F 16084	moulmainense	F 16352	x agastum (NH)
F 16128	hippophaeoides	F 16353	lukiangense
F 16249	tatsienense	F 16354	anthosphaerum
F 16250	hemitrichotum	F 16355	leptothrium
F 16252	chryseum	F 16356	primuliflorum

F 16360	chasmanthum	F 16555	glischrum
F 16361	coriaceum	F 16576	brevistylum
F 16362	hormophorum	F 16577	tapetiforme
F 16363	cephalanthum	F 16579	rupicola
F 16364	coriaceum	F 16580	chryseum
F 16367	lukiangense	F 16581	esetulosum
F 16375	beesianum	F 16583	rupicola
F 16377	sphaeroblastum	F 16584	oreotrepes
F 16378	lukiangense	F 16591	anthosphaerum
F 16379	roxieanum Cucullatum	F 16595	primuliflorum
F 16380	dryophyllum	F 16597	rubiginosum
F 16428	roxieanum Globigerum	F 16598	tapetiforme aff.
F 16436	primuliflorum	F 16604	proteoides
F 16439	x agglutinatum (NH)	F 16606	roxieanum
F 16449	chameunum	F 16609	proteoides
F 16450	tapetiforme	F 16616	roxieanum Cucullatum
F 16451	aganniphum	F 16617	rupicola
F 16455	adenogynum	F 16631	irroratum
F 16459	x agglutinatum (NH)	F 16632	delavayi
F 16463	x chlorops (NH)	F 16637	roxieanum Oreonastes
F 16464	x agglutinatum (NH)	F 16643	adenogynum
F 16467	dryophyllum	F 16652	clementinae
F 16469	roxieanum Cucullatum	F 16655	rex
F 16472	aganniphum	F 16656	dryophyllum
F 16473	adenogynum	F 16667	roxieanum Globigerum
F 16474	beesianum	F 16668	x bathyphyllum (NH)
F 16477	roxieanum Cucullatum	F 16673	dryophyllum
F 16488	x schizopeplum (NH)	F 16677	aganniphum
F 16489	x agglutinatum (NH)	F 16679	selense
F 16493	wardii	F 16680	x flavorufum (NH)
F 16508	roxieanum Oreonastes	F 16681	chryseum
F 16509	proteoides	F 16683	beesianum
F 16511	wardii	F 16684	selense
F 16531	uvariifolium	F 16687	microgynum
F 16533	floccigerum	F 16688	anthosphaerum
F 16543	oreotrepes	F 16691	chaetomallum

F 16692	chasmanthum	F 16790	aechmophyllum
F 16693	beesianum	F 16806	balfourianum
F 16695	erastum	F 16811	balfourianum
F 16699	beesianum	F 16816	hormophorum
F 16702	temenium	F 16836	dryophyllum
F 16711	x eudoxum (NH)	F 17100	phaeochrysum
F 16713	anthosphaerum	F 17110	sphaeroblastum
F 16721	fulvoides	F 17165	trichostomum
F 16724	beesianum	F 17205	fictolacteam
F 16726	x schizopeplum (NH)	F 17220	unidentified species
F 16727	x himertum (NH)	F 17227	dendricola
F 16728	x himertum (NH)	F 17330	chaetomallum
F 16729	x iodes (NH)	F 17333	x alutaceum aff. (NH)
F 16734	x dictyotum	F 17357	x rusotinctum (NH)
F 16735	beesianum	F 17406	sinogrande
F 16736	x haemaleum (NH)	F 17407	beesianum
F 16739	saluense	F 17447	x iodes (NH)
F 16742	x iodes (NH)	F 17456	chasmanthum
F 16743	beesianum	F 17461	lukiangense
F 16745	x iodes (NH)	F 17463	lukiangense
F 16746	beesianum	F 17464	rubiginosum
F 16749	wardii	F 17466	x flavorufum (NH)
F 16750	selense	F 17473	dryophyllum
F 16751	x eudoxum (NH)	F 17476	chasmanthum
F 16752	x bathyphyllum (NH)	F 17483	rubiginosum
F 16753	x flavorufum (NH)	F 17495	anthosphaerum
F 16754	x agglutinatum (NH)	F 17501	trichocladum
F 16755	x dictyotum (NH)	F 17539	ciliicalyx
F 16760	x schizopeplum (NH)	F 17551	diaprepes
F 16764	x flavorufum (NH)	F 17559	ciliicalyx
F 16765	proteoides	F 17560	apodectum
F 16770	aganniphum	F 17572	crassum
F 16771	x flavorufum (NH)	F 17586	diaprepes
F 16778	x flavorufum (NH)	F 17588	virgatum
F 16779	x iodes (NH)	F 17596	valentinianum
F 16780	dryophyllum	F 17610	facetum

F 17616	facetum	F 17963	valentinianum
F 17622	heliopsis	F 17996	neriiflorum
F 17626	neriiflorum	F 18000	suberosum
F 17636	fulvum	F 18022	trichocladum
F 17637	schistocalyx	F 18028	arizelum
F 17650	basilicum	F 18030	campylogynum
F 17651	callimorphum	F 18036	meddianum
F 17665	pseudociliipes	F 18041	platyphyllum
F 17678	basilicum	F 18042	zaleucum
F 17681	fulvum	F 18044	callimorphum
F 17696	griersonianum	F 18045	arizelum
F 17703	meddianum	F 18049	griersonianum
F 17708	peramoeunum	F 18052	basilicum
F 17735	rubiginosum	F 18054	sidereum
F 17738	dendricola	F 18069	habrotrichum
F 17750	trichocladum	F 18108	basilicum
F 17819	moulmainense	F 18153	apodectum
F 17824	genestierianum	F 18167	apodectum
F 17827	anthosphaerum	F 18168	anthosphaerum
F 17829	tanastylum	F 18171	facetum
F 17832	moulmainense	F 18173	crassum
F 17835	tanastylum	F 18210	crassum
F 17836	araiohyllum	F 18273	facetum
F 17851	neriiflorum Agetum	F 18310	fulvum
F 17852	facetum	F 18329	genestierianum
F 17853	mallotum	F 18349	trichocladum
F 17854	fulvum	F 18355	pseudociliipes
F 17900	pseudociliipes	F 18393	protistum
F 17918	microphyton	F 18394	protistum
F 17920	rubiginosum	F 18395	kyawii
F 17927	basilicum	F 18458	protistum
F 17928	kyawii	F 18475	moulmainense
F 17930	peramoeunum	F 18548	protistum
F 17937	zaleucum	F 18686	sanguineum aff.
F 17943	anthosphaerum	F 18900	virgatum
F 17950	neriiflorum	F 18901	eclectum

F 18902	decorum	F 18938	citriniflorum
F 18903	chasmanthum	F 18943	eclecteum
F 18904	aechmophyllum	F 19006	proteoides
F 18905	saluenense	F 19007	vernicosum
F 18906	chasmanthum	F 19008	sanguineum
F 18907	brevistylum	F 19009	sanguineum
F 18908	moulmainense	F 19010	beesianum
F 18909	mekongense	F 19011	beesianum
F 18912	x iodes (NH)	F 19014	pholidotum
F 18914	praestans	F 19015	rubiginosum
F 18917	chaetomallum	F 19019	selense
F 18918	keleticum	F 19154	proteoides
F 18920	x flavorufum (NH)	F 19165	proteoides
F 18933	rubiginosum	F 19169	sanguineum
F 18934	x haemaleum (NH)	F 19193	vernicosum
F 18937	x eudoxum (NH)		



1921/1922 - Yunnan			
F 19335	protistum	F 19744	aganniphum
F 19355	protistum	F 19758	aganniphum
F 19404	racemosum	F 19769	floccigerum
F 19437	chameunum	F 19772	lukiangense
F 19440	russatum	F 19773	aganniphum
F 19450	scintillans	F 19781	lukiangense
F 19458	russatum	F 19783	phaeochrysum
F 19467	wardii	F 19793	dryophyllum
F 19468	anthosphaerum	F 19798	dryophyllum
F 19479	saluenense	F 19814	chasmanthum
F 19492	cephalanthum	F 19819	lukiangense
F 19512	wardii	F 19822	x agglutinatum (NH)
F 19515	forrestii	F 19825	chasmanthum
F 19540	martinianum	F 19827	x alutaceum
F 19541	hypolepidotum	F 19828	aganniphum
F 19544	oreotrepthes	F 19844	monanthum
F 19552	beesianum	F 19866	chryseum
F 19554	lukiangense	F 19869	moulmainense
F 19555	fictolacteum	F 19872	hypolepidotum
F 19562	x russotinctum (NH)	F 19911	chaetomallum
F 19567	x iodes (NH)	F 19911a	x hemigymnum (NH)
F 19569	x didymoides (NH)	F 19912	mekongense
F 19570	megeratum	F 19913	saluenense
F 19574	x triplonaevium (NH)	F 19915	keleticum
F 19597	nigropunctatum	F 19917	genestierianum
F 19607	chryseum	F 19919	keleticum
F 19674	tapetiforme	F 19930	mekongense
F 19695	rubiginosum	F 19952	eclecteum
F 19701	hormophorum	F 19954	setiferum
F 19704	x tritifolium (NH)	F 19955	chaetomallum
F 19713	aganniphum	F 19956	monanthum
F 19714	x agglutinatum (NH)	F 19958	x haemaleum (NH)
F 19716	aganniphum	F 19959	chaetomallum
F 19733	x agglutinatum (NH)	F 19960	dealbatum
F 19743	wardii	F 19977	pocophorum

F 19978	chaetomallum	F 20215	chaetomallum
F 19982	x didymoides (NH)	F 20218	hormaeum
F 19983	pocophorum	F 20220	didymum
F 19993	chryseum	F 20230	tephropeplum
F 19994	chameunum	F 20235	keleticum
F 20003	sperabiloides	F 20239	didymum
F 20005	heliolepis	F 20246	martinianum
F 20008	lukiangense	F 20253	x haemaleum (NH)
F 20015	chaetomallum	F 20255	keleticum
F 20019	pocophorum	F 20262	habrotrichum
F 20020	fulvodes	F 20286	x flavorufum
F 20021	xanthostephanum	F 20291	vernicosum
F 20023	caloxanthum	F 20297	bainbridgeanum
F 20025	chaetomallum	F 20299	chaetomallum
F 20026	chaetomallum	F 20302	stewartianum aff.
F 20027	forrestii	F 20305	floccigerum aff.
F 20028	x hemidartum (NH)	F 20306	arizelum
F 20062	cephalanthum	F 20318	dryophyllum
F 20063	chasmanthum	F 20321	floccigerum
F 20064	chasmanthum	F 20322	coryanum
F 20067	virgatum	F 20323	bainbridgeanum
F 20071	temenium	F 20330	dryophyllum
F 20075	fulvodes	F 20332	megetrum
F 20078	catacosmum	F 20333	chaetomallum
F 20085	anthosphaerum	F 20338	setiferum
F 20090	citriniflorum	F 20347	x agglutinatum (NH)
F 20094	megacalyx	F 20365	arizelum
F 20095	rubiginosum	F 20381	rex
F 20106	protistum	F 20387	sinogrande
F 20118	crassum	F 20388	nuttallii
F 20120	fictolactum	F 20415	adenogynum
F 20176	aechmophyllum	F 20416	sphaeroblastum
F 20185	aechmophyllum	F 20418	dryophyllum
F 20196	primuliflorum	F 20419	mimetes
F 20208	tapetiforme	F 20425	x russotinctum (NH)
F 20213	x agglutinatum (NH)	F 20426	x iodes aff. (NH)

F 20428	x sinosimulans (NH)	F 20492	impeditum
F 20429	primuliflorum	F 20493	orthocladum
F 20430	yunnanense	F 20498	rex
F 20432	chryseum	F 20525	mollicomum
F 20434	yunnanense	F 20625	rubiginosum
F 20440	sphaeroblastum	F 20629	oreotrepes
F 20442	dryophyllum	F 20648	tatsienense x ? (NH)
F 20444	adenogynum	F 20678	irroratum
F 20445	sphaeroblastum	F 20693	lepidotum
F 20446	sphaeroblastum	F 20708	rupicola
F 20447	sphaeroblastum	F 20783	oreotrepes
F 20450	intricatum	F 20793	yunnanense
F 20451	beesianum	F 20795	aechmophyllum
F 20452	primuliflorum	F 20801	puralbum
F 20454	impeditum	F 20814	anthosphaerum
F 20455	balfourianum	F 20816	fulvum
F 20456	balfourianum	F 20817	fictolactum
F 20457	telmateium	F 20819	sinogrande
F 20460	yungningense	F 20821	rex
F 20461	telmateium	F 20824	trichocladum
F 20462	nigropunctatum	F 20825	sperabiloides
F 20463	yungningense	F 20826	martinianum
F 20464	pseudorupicola	F 20832	coryanum
F 20465	primuliflorum	F 20834	wardii
F 20470	wardii	F 20835	hypolepidotum
F 20476	trichostomum	F 20840	oreotrepes
F 20477	telmateium	F 20845	genestierianum
F 20480	trichostomum	F 20861	keleticum
F 20481	oreotrepes	F 20863	protistum
F 20482	tatsienense	F 20864	keleticum
F 20484	racemosum	F 20865	anthosphaerum
F 20485	hormophorum	F 20877	floccigerum aff.
F 20486	tatsienense	F 20879	monanthum
F 20488	orthocladum	F 20880	xanthostephanum
F 20489	oreotrepes	F 20881	bainbridgeanum
F 20491	hemitrichotum	F 20884	tephropeplum

F 20885	floccigerum aff.	F 21020	x agglutinatum (NH)
F 20886	stewartianum x ? (NH)	F 21021	phaeochrysum
F 20887	unidentified species	F 21022	roxieanum
F 20888	didymum	F 21027	rubiginosum
F 20889	temenium	F 21030	cuneatum
F 20891	sanguineum	F 21031	intricatum
F 20893	sanguineum	F 21036	leptothrium
F 20895	catacosmum	F 21039	sphaeroblastum
F 20896	riparium	F 21040	sphaeroblastum
F 20897	megacalyx	F 21045	x agglutinatum (NH)
F 20899	nuttallii	F 21047	dryophyllum
F 20905	sanguineum	F 21048	dryophyllum
F 20906	megeratum	F 21049	roxieanum Cucullatum
F 20910	sanguineum	F 21051	sphaeroblastum
F 20911	sanguineum	F 21052	dryophyllum
F 20912	saluenense	F 21055	balfourianum
F 20917	crassum	F 21056	balfourianum
F 20923	aechmophyllum	F 21239	telmateium
F 20926	aechmophyllum	F 21241	orthocladum
F 20934	lukiangense	F 21248	intricatum
F 20950	russatum	F 21250	telmateium
F 20956	chryseum	F 21252	racemosum & tatsienense
F 20961	hylaeum	F 21253	trichostomum
F 20973	chasmanthum	F 21265	prostratum
F 20978	lukiangense	F 21270	tatsienense
F 20987	mekongense	F 21274	orthocladum x ? (NH)
F 21000	selense	F 21282	yungningense
F 21006	oreotrephes	F 21287	dryophyllum
F 21009	sphaeroblastum	F 21288	orthocladum
F 21010	sphaeroblastum	F 21289	orthocladum
F 21011	dryophyllum	F 21292	elegantulum
F 21012	dryophyllum	F 21297	glomerulatum
F 21013	eclecteum	F 21299	trichostomum
F 21017	wardii	F 21301	nigropunctatum Stictophyllum
F 21018	dryophyllum	F 21304	dasypetalum
F 21019	dryophyllum	F 21306	racemosum

F 21321	racemosum	F 21549	racemosum
F 21323	irroratum	F 21551	wardii
F 21339	hemitrichotum	F 21559	scintillans
F 21344	intricatum	F 21560	racemosum
F 21348	rubiginosum	F 21563	dasycladum
F 21351	racemosum	F 21564	edgeworthii
F 21358	yunnanense	F 21577	telmateium
F 21375	cuneatum	F 21581	fastigiatum
F 21377	telmateium	F 21582	crassum
F 21390	phaeochrysum	F 21586	beesianum
F 21400	phaeochrysum	F 21588	adenogynum
F 21405	sphaeroblastum	F 21680	nuttallii
F 21408	roxieanum Cucullatum	F 21681	floccigerum
F 21409	adenogynum	F 21682	lukiangense
F 21410	adenogynum	F 21683	lukiangense
F 21442	tatsienense	F 21685	lukiangense
F 21462	fimbriatum	F 21686	anthosphasrum
F 21463	xanthostephanum	F 21687	stewartianum aff.
F 21470	chasmanthum	F 21688	bainbridgeanum
F 21475	irroratum	F 21689	selense
F 21476	fimbriatum	F 21690	unidentified species
F 21478	lukiangense	F 21691	moulmainense
F 21483	scintillans	F 21692	genestierianum
F 21487	scintillans	F 21693	coryanum
F 21488	racemosum	F 21694	eurysiphon
F 21490	russatum & rupicola	F 21695	martinianum
F 21492	telmateium	F 21696	megacalyx
F 21506	russatum	F 21697	bainbridgeanum
F 21507	fastigiatum	F 21698	leptothrium
F 21528	scintillans	F 21699	mekongense
F 21529	russatum & rupicola	F 21700	anthosphaerum
F 21531	phaedropum	F 21701	megeratum
F 21533	fastigiatum & rigidum	F 21702	floccigerum
F 21539	fictolacteum	F 21703	floccigerum
F 21546	roxieanum	F 21704	floccigerum
F 21547	telmateium	F 21705	sinogrande

F 21706	tephropeplum	F 21748	x didymoides (NH)
F 21707	xanthostephanum	F 21750	didymum
F 21708	stewartianum	F 21751	citriniflorum
F 21709	x hemidartum (NH)	F 21752	citriniflorum
F 21710	unidentified species	F 21753	haematodes
F 21711	pocophorum	F 21754	x didymoides (NH)
F 21712	pocophorum	F 21755	caloxanthum
F 21713	pocophorum	F 21756	keleticum
F 21714	edgeworthii	F 21757	keleticum
F 21716	virgatum	F 21758	chaetomallum
F 21718	chamaethomsonii / forrestii	F 21759	haematodes
F 21720	pocophorum	F 21760	saluenense
F 21721	pocophorum	F 21761	bainbridgeanum
F 21723	chamaethomsonii	F 21762	bainbridgeanum
F 21724	forrestii aff.	F 21763	stewartianum
F 21725	x xanthanthum (NH)	F 21764	x eudoxum (NH)
F 21727	catacosmum	F 21765	x didymoides (NH)
F 21728	x hemigymnum (NH)	F 21766	bainbridgeanum
F 21729	x xanthanthum (NH)	F 21767	x eudoxum (NH)
F 21730	x xanthanthum aff. (NH)	F 21768	x chamaethauma (NH)
F 21731	x xanthanthum (NH)	F 21769	eclecteum
F 21732	x haemaleum (NH)	F 21770	x bellatulum (NH)
F 21733	temenium Gilvum	F 21771	fictolacteum
F 21734	temenium	F 21772	saluenense
F 21735	x haemaleum (NH)	F 21773	anthosphaerum
F 21736	x hillieri (NH)	F 21774	lukiangense
F 21737	x hillieri (NH)	F 21775	martinianum
F 21738	x eudoxum (NH)	F 21776	mekongense
F 21739	sanguineum	F 21777	floccigerum
F 21740	x haemaleum (NH)	F 21778	xanthostephanum
F 21741	x erythrocalyx (NH)	F 21779	floccigerum
F 21743	selense	F 21780	floccigerum
F 21744	dealbatum	F 21781	stewartianum
F 21745	chaetomallum aff.	F 21782	sanguineum
F 21746	x didymoides (NH)	F 21783	x didymoides (NH)
F 21747	x didymoides (NH)	F 21784	temenium Gilvum aff.

F 21785	chaetomallum aff.	F 21842	eclecteum
F 21786	forrestii	F 21843	coriaceum
F 21787	stewartianum	F 21844	temenium Gilvum
F 21809	temenium	F 21845	x eudoxum (NH)
F 21810	fulvum	F 21846	stewartianum x ? (NH)
F 21811	leptocarpum	F 21848	chaetomallum aff.
F 21812	glischrum	F 21849	chaetomallum aff.
F 21813	glischrum	F 21850	horaenum
F 21814	fulvoides	F 21851	horaenum
F 21815	fulvum	F 21852	horaenum
F 21816	uvariifolium	F 21853	haematodes
F 21817	uvariifolium	F 21854	horaenum
F 21818	coriaceum	F 21855	horaenum
F 21819	x haemaleum (NH)	F 21856	x didymoides (NH)
F 21821	bainbridgeanum	F 21857	chaetomallum
F 21822	oreotrepes	F 21858	x hillieri (NH)
F 21823	x haemaleum (NH)	F 21860	horaenum
F 21824	sperabiloides	F 21861	arizelum
F 21825	monanthum	F 21862	arizelum
F 21826	chaetomallum	F 21863	fictolacteum
F 21827	x eudoxum (NH)	F 21864	arizelum
F 21828	x bellatulum (NH)	F 21865	arizelum
F 21828	pocophorum	F 21866	arizelum
F 21829	bainbridgeanum	F 21867	fictolacteum
F 21830	pocophorum	F 21868	fictolacteum
F 21831	chaetomallum	F 21869	rex
F 21832	bainbridgeanum	F 21870	semnoides
F 21833	bainbridgeanum	F 21871	arizelum
F 21834	bainbridgeanum	F 21872	chaetomallum
F 21835	oreotrepes	F 21873	chaetomallum
F 21836	caloxanthum	F 21874	selense
F 21837	x hemigymnum (NH)	F 21875	caloxanthum
F 21838	eclecteum	F 21876	selense
F 21839	x bellatulum (NH)	F 21877	setiferum
F 21840	eclecteum	F 21878	selense
F 21841	stewartianum	F 21879	selense

F 21880	crinigerum	F 21919	stewartianum
F 21881	eclecteum	F 21923	cephalanthum
F 21882	eclecteum	F 21932	telmateium
F 21884	x hemigymnum (NH)	F 21934	traillianum
F 21885	stewartianum	F 21936	crassum
F 21886	x bellatulum (NH)	F 21944	roxieanum Cucullatum
F 21887	x bellatulum (NH)	F 21948	cuneatum
F 21888	stewartianum	F 21954	wardii
F 21889	stewartianum	F 21955	racemosum
F 21891	stewartianum	F 21959	racemosum
F 21892	selense	F 21965	racemosum
F 21893	bainbridgeanum	F 21969	delavayi
F 21894	bainbridgeanum	F 21972	telmateium
F 21895	bainbridgeanum	F 21974	telmateium
F 21896	fulvoides	F 21975	rupicola
F 21897	fulvoides	F 21977	lukiangense
F 21898	fulvoides	F 21981	anthosphaerum
F 21899	coriaceum	F 21987	russatum
F 21900	chamaethomsonii	F 21988	longistylum
F 21901	dealbatum	F 21990	russatum
F 21902	dealbatum	F 21995	russatum
F 21903	dealbatum	F 22014	roxieanum Cucullatum
F 21904	dealbatum	F 22019	dasycladum
F 21905	temenium Gilvum aff.	F 22020	fictolacteum
F 21906	x hillieri (NH)	F 22092	hemitrichotum
F 21907	x haemaleum (NH)	F 22108	scintillans
F 21908	x hillieri (NH)	F 22187	roxieanum Cucullatum
F 21909	x eudoxum (NH)	F 22197	fimbriatum
F 21910	stewartianum x ? (NH)	F 22202	clementinae
F 21911	x hillieri (NH)	F 22203	cuneatum
F 21912	x hillieri (NH)	F 22295	russatum & rupicola
F 21914	temenium Gilvum	F 22299	scintillans
F 21915	x haemaleum (NH)	F 22300	campylogynum
F 21916	x chamaethauma (NH)	F 22320	primuliflorum
F 21917	selense	F 22610	stewartianum
F 21918	stewartianum	F 22611	stewartianum

F 22612	stewartianum	F 22690	horeaeum
F 22613	stewartianum	F 22694	horeaeum
F 22614	stewartianum	F 22695	dealbatum
F 22615	stewartianum	F 22697	temenium Gilvum
F 22617	stewartianum	F 22698	dealbatum
F 22618	stewartianum	F 22699	temenium Gilvum
F 22619	stewartianum	F 22700	x eudoxum (NH)
F 22620	stewartianum	F 22702	stewartianum
F 22621	stewartianum	F 22703	fictolacteum
F 22647	eclecteum	F 22705	sanguineum
F 22648	eclecteum	F 22706	x chamaethauma (NH)
F 22649	chaetomallum aff.	F 22708	x bellatulum (NH)
F 22652	xanthostephanum	F 22709	temenium Gilvum aff.
F 22653	xanthostephanum	F 22710	eclecteum
F 22654	monanthum	F 22711	selense
F 22656	x xanthanthum (NH)	F 22713	bainbridgeanum
F 22657	chaetomallum	F 22714	bainbridgeanum
F 22658	chaetomallum	F 22715	bainbridgeanum
F 22659	keleticum	F 22716	bainbridgeanum
F 22665	xanthanthum (NH)	F 22717	bainbridgeanum
F 22666	saluenense	F 22718	bainbridgeanum
F 22667	x didymoides (NH)	F 22719	bainbridgeanum
F 22668	horeaeum	F 22720	bainbridgeanum
F 22670	haematodes	F 22721	bainbridgeanum
F 22671	haematodes	F 22722	bainbridgeanum
F 22674	chamaethomsonii	F 22723	hypolepidotum
F 22675	horeaeum	F 22724	x haemaleum (NH)
F 22676	sanguineum	F 22725	sanguineum
F 22677	x haemaleum (NH)	F 22726	x haemaleum (NH)
F 22679	citriniflorum	F 22728	eclecteum
F 22680	citriniflorum aff.	F 22729	bainbridgeanum
F 22682	x haemaleum (NH)	F 22730	temenium Gilvum
F 22683	citriniflorum	F 22733	lukiangense
F 22685	x didymoides (NH)	F 22735	lukiangense
F 22687	x haemaleum (NH)	F 22739	selense
F 22688	chaetomallum	F 22751	nuttallii

F 22758	selense	F 22863	chaetomallum aff.
F 22761	sinogrande	F 22883	chaetomallum
F 22767	setiferum	F 22884	anthosphaerum
F 22768	fulvoides	F 22885	anthosphaerum
F 22770	rex	F 22886	x hemidartum (NH)
F 22771	arizelum	F 22890	fictolacteum
F 22772	rex	F 22891	eclecteum
F 22784	rex	F 22892	eclecteum
F 22785	fictolacteum	F 22893	eclecteum
F 22786	arizelum	F 22894	pocophorum
F 22787	arizelum	F 22895	setiferum
F 22788	rex	F 22897	caloxanthum
F 22800	selense	F 22898	selense
F 22802	chamaethomsonii	F 22899	selense
F 22803	floccigerum	F 22900	sperabiloides
F 22804	floccigerum	F 22901	bainbridgeanum
F 22805	floccigerum	F 22902	fulvoides
F 22806	floccigerum	F 22903	fulvoides
F 22807	floccigerum	F 22905	selense
F 22808	floccigerum aff.	F 22906	selense
F 22809	floccigerum	F 22909	pocophorum
F 22810	floccigerum	F 22910	catacosmum
F 22822	megacalyx	F 22911	pocophorum
F 22831	edgeworthii	F 22912	pocophorum
F 22833	virgatum	F 22913	pocophorum
F 22842	didymum	F 22915	catacosmum
F 22846	bainbridgeanum	F 22916	pocophorum
F 22847	x xanthanthum (NH)	F 22918	fulvoides
F 22850	eclecteum	F 22922	forrestii
F 22853	eclecteum	F 22923	forrestii x ? (NH)
F 22856	leptocarpum	F 22924	forrestii
F 22857	chaetomallum	F 22938	eurysiphon
F 22858	chaetomallum aff.	F 22939	martinianum
F 22859	chaetomallum aff.	F 22940	martinianum
F 22860	chaetomallum aff.	F 22941	x hemidartum (NH)
F 22862	horaenum		

1924/1925 - NE Myanmar, SE Tibet & Yunnan			
F 24009	delavayi	F 24315	habrotrichum
F 24022	leptothrium	F 24321	campylogynum
F 24060	tanastylum	F 24331	apodectum
F 24070	tanastylum	F 24347	valentinianum
F 24071	leptothrium	F 24350	callimorphum
F 24088	unidentified species	F 24496	crassum
F 24091	neriiflorum	F 24528	stewartianum
F 24101	zaleucum	F 24529	trichocladum
F 24104	meddianum	F 24530	stewartianum
F 24107	x diphrocalyx (NH)	F 24532	scyphocalyx
F 24110	fulvum	F 24535	rubiginosum
F 24113	apodectum	F 24542	kyawii
F 24116	griersonianum	F 24544	unidentified species
F 24117	annae	F 24546	scyphocalyx
F 24131	sulfureum	F 24562	zaleucum
F 24138	valentinianum	F 24563	sidereum
F 24139	basilicum	F 24570	campylogynum
F 24140	sinogrande	F 24571	cephalanthum
F 24149	pennivenium	F 24572	calostrotum
F 24154	shweliense	F 24574	rupicola
F 24160	trichocladum	F 24575	trichocladum
F 24193	arizelum	F 24577	heliolepis
F 24201	facetum	F 24587	campylogynum Myrtilloides
F 24219	meddianum	F 24592	facetum
F 24220	neriiflorum	F 24598	stewartianum
F 24225	basilicum	F 24600	anthosphaerum
F 24228	virgatum	F 24603	scyphocalyx
F 24229	sulfureum	F 24616	herpesticum
F 24235	sulfureum	F 24618	suberosum
F 24283	pseudociliipes	F 24620	herpesticum
F 24284	leptothrium	F 24633	lepidostylum
F 24305	apodectum	F 24660	hylaeum
F 24308	pseudociliipes	F 24680	kyawii
F 24312	tanastylum	F 24683	scyphocalyx
F 24314	fulvoides	F 24688	megacalyx

F 24712	apodectum	F 25506	riparioides
F 24728	apodectum	F 25507	x didymoides (NH)
F 24729	megacalyx	F 25508	chameunum
F 24730	crassum	F 25509	mekongense
F 24739	facetum	F 25512	fictolacteam
F 24740	arizelum	F 25513	beesianum
F 24742	sidereum	F 25514	roxieanum
F 24747	crassum	F 25515	roxieanum Oreonastes
F 24748	facetum	F 25516	beesianum
F 24774	dendricola	F 25518	sanguineum
F 24775	protistum	F 25520	aganniphum
F 24831	genestierianum	F 25521	sanguineum
F 25011	calostrotum	F 25524	chamaethomsonii / forrestii
F 25020	fulvum	F 25526	yungningense
F 25064	preptum	F 25529	rupicola
F 25065	scyphocalyx	F 25532	rupicola
F 25067	mallotum	F 25534	wardii
F 25076	fulvum	F 25535	dasycladum
F 25090	sidereum	F 25542	riparioides
F 25100	basilicum	F 25543	sanguineum
F 25340	sulfureum	F 25553	russatum
F 25446	yungchangense	F 25555	scintillans
F 25447	weihsiense	F 25560	chameunum
F 25448	leptothrium	F 25563	aperantum x ? (NH)
F 25449	rubiginosum	F 25564	x chionanthum (NH)
F 25458	leptothrium	F 25565	chaetomallum aff.
F 25474	sperabile	F 25569	weihsiense
F 25477	molle	F 25570	charitopes
F 25481	weihsiense	F 25572	tephropeplum
F 25483	fulvum	F 25574	unidentified species
F 25494	wardii	F 25575	hypolepidotum
F 25496	fastigiatum	F 25576	zaleucum
F 25498	scintillans	F 25577	septentrionale
F 25500	russatum	F 25578	dumicola
F 25503	riparioides	F 25579	herpesticum
F 25505	roxieanum Cucullatum	F 25580	dumicola

F 25581	charitopes	F 25634	euadenium
F 25583	lacteam	F 25636	calvescens
F 25584	kyawii	F 25638	unidentified species
F 25585	crinigerum	F 25639	semnoides
F 25586	crassum	F 25640	floccigerum aff.
F 25588	leptocarpum	F 25641	crinigerum
F 25589	lacteam	F 25642	stewartianum
F 25593	x erythrocalyx (NH)	F 25643	cilicalyx
F 25597	chaetomallum	F 25644	tephropeplum
F 25601	chaetomallum	F 25645	rude
F 25602	chaetomallum	F 25646	stewartianum
F 25603	eclecteam	F 25647	coelicum
F 25604	eclecteam	F 25679	sinogrande
F 25605	x hemigymnum (NH)	F 25683	riparioides
F 25606	zaleucum	F 25684	protistum
F 25607	chaetomallum	F 25697	x flavorufum (NH)
F 25608	arizelum	F 25701	proteoides
F 25609	zaleucum	F 25705	clementinae
F 25610	glischrum	F 25707	telmateium
F 25611	zaleucum	F 25714	tephropeplum
F 25612	leptocarpum	F 25716	praestans
F 25614	martinianum	F 25717	rothschildii
F 25615	stewartianum	F 25718	roxieanum Oreonastes
F 25616	glischrum	F 25719	fictolacteam
F 25617	monanthum	F 25725	glischrum
F 25618	stewartianum	F 25737	dasycladum
F 25619	euadenium	F 25738	roxieanum Cucullatum aff.
F 25620	stewartianum	F 25739	x bathyphyllum (NH)
F 25622	coriaceum	F 25740	traillianum
F 25624	nuttallii	F 25742	clementinae
F 25625	coelicum	F 25744	fulvoides
F 25627	arizelum	F 25749	roxieanum
F 25629	crassum	F 25765	zaleucum
F 25630	coriaceum	F 25766	tephropeplum
F 25631	sulfureum	F 25767	crassum
F 25633	euadenium	F 25775	tephropeplum

F 25777	rude	F 25856	coelicum
F 25782	arizelum	F 25857	crassum
F 25784	coriaceum	F 25858	monanthum
F 25785	glischrum	F 25859	stewartianum
F 25786	pocophorum aff.	F 25862	chaetomallum
F 25787	septentrionale	F 25864	stewartianum / taggianum
F 25789	charitopes	F 25865	taggianum
F 25794	euadenium	F 25869	stewartianum
F 25796	zaleucum	F 25870	coelicum
F 25799	zaleucum	F 25872	coriaceum
F 25800	floccigerum aff.	F 25873	stewartianum
F 25803	crinigerum	F 25875	sinogrande
F 25806	calvescens	F 25877	haematodes
F 25808	charitopes	F 25878	aperantum x ? (NH)
F 25811	martinianum	F 25880	dasycladum
F 25814	stewartianum	F 25883	roxieanum Cucullatum
F 25817	riparium	F 25891	roxieanum Cucullatum
F 25818	euadenium	F 25896	fictolacteam
F 25820	tephropeplum	F 25899	dasycladum
F 25821	eclectum x ? (NH)	F 25901	horeaum aff.
F 25822	coriaceum	F 25902	x flavorufum (NH)
F 25825	protistum	F 25904	scintillans
F 25830	semnoides	F 25906	sanguineum
F 25831	floccigerum aff.	F 25907	rupicola
F 25834	coelicum	F 25913	horeaum aff.
F 25835	chameunum	F 25914	rubrum
F 25840	x xanthanthum (NH)	F 25915	x triplonaevium (NH)
F 25841	arizelum	F 25916	clementinae
F 25843	hypolepidotum	F 25917	clementinae
F 25845	x hemigymnum (NH)	F 25918	traillianum
F 25849	unidentified species	F 25919	weihsiense
F 25850	euadenium	F 25920	sperabile
F 25852	sulfureum	F 25921	riparioides
F 25853	nuttallii	F 25922	riparioides
F 25854	crassum	F 25923 (?)	chameunum
F 25855	herpesticum	F 25923	weihsiense

F 25926	roxieanum Oreonastes	F 26043	basilicum
F 25927	glischrum	F 26044	unidentified species
F 25928	x russotinctum (NH)	F 26045	facetum
F 25929	roxieanum Oreonastes	F 26046	neriiflorum
F 25935	weihsiense	F 26047	moulmainense
F 25936	fulvoides	F 26048	griersonianum
F 25938	rubiginosum	F 26065	virgatum
F 25941	rupicola	F 26066	peramoeunum
F 25942	sanguineum	F 26068	crassum
F 25943	x didymoides (NH)	F 26071	facetum
F 25944	fulvum ssp. fulvoides	F 26078	pennivenium
F 25945	roxieanum	F 26081	basilicum
F 25947	rothschildii	F 26091	megacalyx
F 25957	x didymoides (NH)	F 26092	sinogrande
F 25958	fulvoides	F 26093	unidentified species
F 25959	rex	F 26109	crassum
F 25960	aganniphum	F 26110	ciliicalyx
F 25961	chamaethomsonii / forrestii	F 26112	valentinianum
F 25978	wardii	F 26113	sulfureum
F 25979	wardii	F 26120	crassum
F 25981	fastigiatum	F 26122	unidentified species
F 25982	fastigiatum	F 26145	ciliicalyx
F 25983	beesianum	F 26157	delavayi
F 25984	irroratum	F 26240	leptothrium
F 25984a	anthosphaerum	F 26316	protistum
F 25987	roxieanum	F 26347	tanastylum
F 25988	mekongense	F 26418	moulmainense
F 25992	praestans	F 26419	genestierianum
F 25993	dasycladum	F 26421	araiophyllum
F 25999	megacalyx	F 26422	sulfureum
F 26022	unidentified species	F 26423	edgeworthii
F 26023	tanastylum	F 26424	tanastylum
F 26024	simsii	F 26425	glischroides
F 26025	unidentified species	F 26426	glischroides
F 26027	simsii	F 26427	tanastylum
F 26040	tanastylum	F 26428	glischroides

F 26429	protistum	F 26466	delavayi
F 26430	anthosphaerum	F 26472	pseudociliipes
F 26431	tephropeplum	F 26473	hypolepidotum
F 26432	anthosphaerum	F 26474	oreotrepes x ? (NH)
F 26433	anthosphaerum	F 26475	delavayi
F 26434	sperabile	F 26476	atrokermesinum
F 26435	sperabile	F 26477	pennivenium
F 26436	anthosphaerum	F 26478	weihsiense
F 26437	tanastylum	F 26480	anthosphaerum
F 26438	araiophyllum	F 26481	araiophyllum
F 26439	tephropeplum	F 26482	rubiginosum
F 26440	taggianum	F 26483	araiophyllum
F 26441	dendricola	F 26484	tanastylum
F 26442	sperabile	F 26486	suberosum
F 26443	anthosphaerum	F 26487	neriiflorum
F 26444	pseudociliipes	F 26488	rubiginosum
F 26445	araiophyllum	F 26489	tanastylum
F 26446	sperabile	F 26490	araiophyllum
F 26447	sulfureum	F 26491	araiophyllum
F 26448	glischroides	F 26492	araiophyllum
F 26449	atrokermesinum	F 26494	araiophyllum
F 26449	neriiflorum	F 26495	atrokermesinum
F 26450	unidentified species	F 26499	atrokermesinum
F 26452	anthosphaerum	F 26507	leptothrium
F 26453	weihsiense	F 26528	araiophyllum
F 26454	anthosphaerum	F 26596	suberosum
F 26455	glischroides	F 26597	leptothrium
F 26456	sinogrande	F 26615	pseudociliipes
F 26457	tephropeplum	F 26618	edgeworthii
F 26458	sidereum	F 26629	habrotrichum
F 26459	dendricola	F 26632	habrotrichum
F 26461	pseudociliipes	F 26633	sidereum
F 26462	dendricola	F 26634	sidereum
F 26463	suberosum	F 26636	leptocarpum
F 26464	pseudociliipes	F 26791	sidereum
F 26465	sperabile	F 26792	araiophyllum

F 26797	araiophyllum	F 26991	campylogynum
F 26798	caesium	F 26992	stewartianum
F 26921	stewartianum	F 26993	stewartianum
F 26922	basilicum	F 27002	aperantum
F 26923	crassum	F 27003	herpesticum
F 26924	scyphocalyx	F 27011	scyphocalyx
F 26925	aperantum	F 27012	herpesticum
F 26926	aperantum	F 27013	stewartianum
F 26927	scyphocalyx	F 27018	scyphocalyx
F 26928	brevistylum	F 27019	scyphocalyx
F 26929	stewartianum	F 27020	aperantum
F 26930	aperantum	F 27022	aperantum
F 26931	aperantum	F 27025	aperantum
F 26932	stewartianum	F 27050	herpesticum
F 26933	aperantum	F 27051	herpesticum
F 26934	aperantum	F 27052	herpesticum
F 26935	arizelum	F 27054	scyphocalyx
F 26936	aperantum	F 27057	scyphocalyx
F 26937	aperantum	F 27059	scyphocalyx
F 26938	aperantum	F 27061	herpesticum
F 26961	helirolepis	F 27063	herpesticum
F 26962	stewartianum	F 27065	calostrotum
F 26963	herpesticum	F 27067	arizelum
F 26964	aperantum	F 27069	facetum
F 26965	herpesticum	F 27071	herpesticum
F 26966	herpesticum	F 27073	aperantum
F 26974	herpesticum	F 27075	aperantum
F 26977	herpesticum	F 27077	aperantum
F 26978	scyphocalyx	F 27079	aperantum
F 26980	stewartianum	F 27081	aperantum
F 26981	stewartianum	F 27083	aperantum
F 26984	stewartianum	F 27085	glischrum
F 26985	caloxanthum	F 27089	herpesticum
F 26986	stewartianum	F 27093	herpesticum
F 26987	rupicola	F 27095	herpesticum
F 26988	campylogynum	F 27097	herpesticum

F 27099	herpesticum	F 27357	campylogynum
F 27101	megacalyx	F 27358	neriiflorum
F 27103	zaleucum	F 27359	apodectum
F 27105	facetum	F 27367	araiophyllum
F 27108	arizelum	F 27368	araiophyllum
F 27109	pseudociliipes	F 27370	delavayi
F 27110	crassum	F 27372	tanastylum
F 27111	aperantum	F 27374	araiophyllum
F 27113	herpesticum	F 27376	araiophyllum
F 27115	scyphocalyx	F 27377	pennivenium
F 27116	herpesticum	F 27378	genestierianum
F 27117	trichocladum	F 27389	callimorphum
F 27118	campylogynum	F 27399	habrotrichum
F 27119	rupicola	F 27400	habrotrichum
F 27121	calostrotum	F 27404	suberosum
F 27122	cephalanthum	F 27405	suberosum
F 27123	caloxanthum	F 27413	basilicum
F 27125	caloxanthum	F 27415	annae
F 27126	kyawii	F 27416	annae
F 27128	kyawii	F 27426	araiophyllum
F 27129	stewartianum	F 27427	araiophyllum
F 27131	stewartianum	F 27455	tephropeplum
F 27132	scyphocalyx	F 27456	anthosphaerum
F 27133	stewartianum	F 27457	tanastylum
F 27134	scyphocalyx	F 27458	sulfureum
F 27135	stewartianum	F 27459	basilicum
F 27136	stewartianum	F 27460	araiophyllum
F 27137	scyphocalyx	F 27461	scyphocalyx
F 27138	stewartianum	F 27462	glischrum
F 27140	scyphocalyx	F 27463	glischroides
F 27142	myiagrum	F 27464	anthosphaerum
F 27143	stewartianum	F 27465	atrokermesinum
F 27144	stewartianum	F 27466	neriiflorum
F 27250	kyawii	F 27467	aperantum
F 27343	habrotrichum	F 27468	facetum
F 27355	protistum	F 27469	sperabile

F 27470	glischroides	F 27573	scyphocalyx
F 27471	herpesticum	F 27574	caloxanthum
F 27473	rubiginosum	F 27575	scyphocalyx
F 27474	aperantum	F 27576	aperantum
F 27475	stewartianum	F 27577	stewartianum
F 27477	scyphocalyx	F 27578	kyawii
F 27478	anthosphaerum	F 27579	aperantum
F 27479	stewartianum	F 27580	herpesticum
F 27480	scyphocalyx	F 27581	sperabile
F 27482	stewartianum	F 27582	stewartianum
F 27483	aperantum	F 27583	scyphocalyx
F 27484	stewartianum	F 27584	aperantum
F 27485	scyphocalyx	F 27585	scyphocalyx
F 27486	aperantum	F 27586	stewartianum
F 27487	scyphocalyx	F 27587	aperantum
F 27488	myiagrum	F 27588	stewartianum
F 27489	brevistylum	F 27589	scyphocalyx
F 27490	scyphocalyx	F 27590	aperantum
F 27491	aperantum	F 27591	rupicola
F 27492	stewartianum	F 27592	stewartianum
F 27493	aperantum	F 27593	crassum
F 27494	herpesticum	F 27594	scyphocalyx
F 27495	caloxanthum	F 27595	sperabile
F 27496	herpesticum	F 27596	stewartianum
F 27497	calostrotum	F 27597	aperantum
F 27498	delavayi	F 27598	oreotrephes
F 27499	herpesticum	F 27599	herpesticum
F 27500	stewartianum	F 27600	glischroides
F 27501	cephalanthum	F 27601	sperabile
F 27502	scyphocalyx	F 27603	zaleucum
F 27503	campylogynum	F 27604	aperantum
F 27568	herpesticum	F 27605	weihsiense
F 27569	campylogynum	F 27606	atrokermesinum
F 27570	herpesticum	F 27607	anthosphaerum
F 27571	rupicola	F 27608	anthosphaerum
F 27572	aperantum	F 27609	glischroides

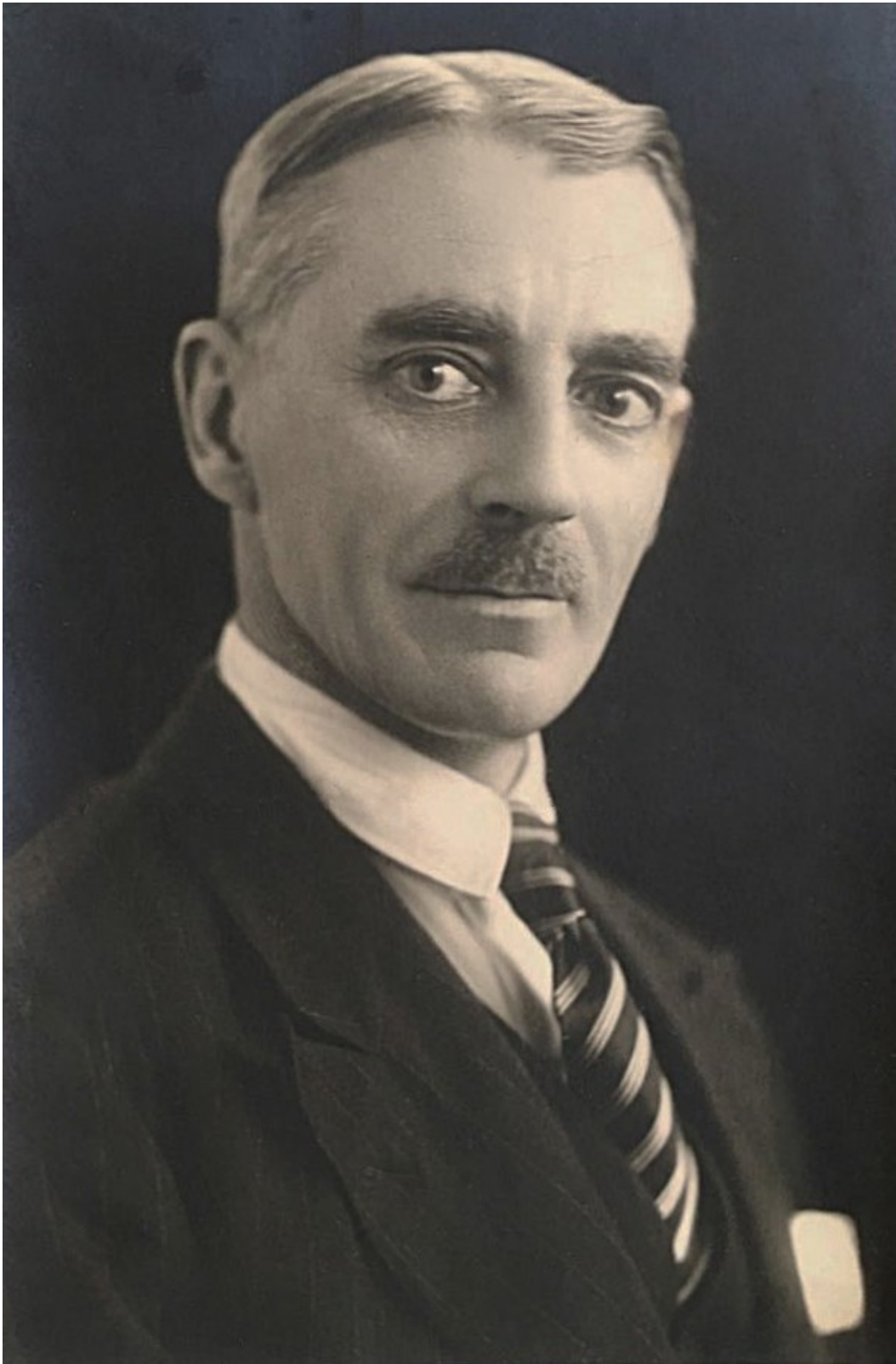
F 27610	araiophyllum	F 27650	herpesticum
F 27611	tephropeplum	F 27651	aperantum
F 27612	anthosphaerum	F 27652	stewartianum
F 27613	herpesticum	F 27653	anthosphaerum
F 27614	protistum	F 27654	herpesticum
F 27615	crassum	F 27655	pseudociliipes
F 27616	arizelum	F 27656	campylogynum
F 27617	edgeworthii	F 27657	scyphocalyx
F 27620	araiophyllum	F 27658	calostrotum
F 27622	sulfureum	F 27659	stewartianum
F 27623	atrokermesinum	F 27660	trichocladum
F 27624	arizelum	F 27661	pseudociliipes
F 27625	glischroides	F 27662	herpesticum
F 27626	herpesticum	F 27663	herpesticum
F 27627	tanastylum	F 27664	caloxanthum
F 27628	pseudociliipes	F 27665	scyphocalyx
F 27629	stewartianum	F 27666	aperantum
F 27630	aperantum	F 27667	stewartianum
F 27631	rubiginosum	F 27669	pseudociliipes
F 27632	tanastylum	F 27670	tephropeplum
F 27633	scyphocalyx	F 27671	anthosphaerum
F 27635	sperabile	F 27672	herpesticum
F 27636	aperantum	F 27673	sidereum
F 27637	neriiflorum	F 27677	sidereum
F 27638	taggianum	F 27678	kyawii
F 27639	sperabile	F 27679	sidereum
F 27640	aperantum	F 27685	dendricola
F 27641	herpesticum	F 27686	leptocarpum
F 27642	brevistylum	F 27687	dendricola
F 27643	stewartianum	F 27688	pseudociliipes
F 27644	herpesticum	F 27689	dendricola
F 27645	aperantum	F 27690	dendricola
F 27646	herpesticum	F 27697	delavayi
F 27647	stewartianum	F 27698	araiophyllum
F 27648	aperantum	F 27700	araiophyllum
F 27649	stewartianum	F 27701	peramoeunum

F 27702	araiophyllum	F 27739	caesium
F 27703	annae	F 27744	araiophyllum
F 27705	annae	F 27745	yunnanense
F 27706	annae	F 27746	araiophyllum
F 27713	annae	F 27757	tanastylum
F 27714	tanastylum	F 27758	genestierianum
F 27715	valentinianum	F 27759	pseudociliipes
F 27717	delavayi	F 27761	sidereum
F 27718	delavayi	F 27766	araiophyllum
F 27722	dendricola	F 27768	delavayi
F 27724	crassum	F 27769	edgeworthii
F 27725	pseudociliipes	F 27771	araiophyllum
F 27727	diaprepes	F 27775	araiophyllum
F 27730	protistum	F 27776	crassum
F 27731	dendricola	F 27792	arizelum
F 27737	dendricola	F 27794	arizelum
F 27738	dendricola		



1930/1931 - Sichuan & Yunnan			
F 28236	rubiginosum	F 29242	wardii
F 28237	taliense	F 29243	dryophyllum
F 28241	platyphyllum	F 29244	balfourianum
F 28248	lacteum	F 29245	sphaeroblastum
F 28250	trichocladum	F 29246	sphaeroblastum
F 28253	taliense	F 29247	beesianum
F 28254	campylogynum	F 29248	beesianum
F 28254a	russatum	F 29248	hemitrichotum
F 28266	brachyanthum	F 29249	chryseum
F 28283	dichroanthum	F 29250	trichostomum
F 28290	dichroanthum	F 29251	nigropunctatum
F 28295	racemosum	F 29252	taliense aff.
F 28297	rigidum	F 29253	dryophyllum
F 28301	neriiflorum	F 29254	dryophyllum
F 28302	cephalanthum	F 29256	adenogynum
F 28304	irroratum	F 29257	roxieanum Cucullatum
F 28305	edgeworthii	F 29258	taliense aff.
F 28311	crassum	F 29259	glomerulatum
F 28312	crassum	F 29260	glomerulatum
F 28315	decorum	F 29262	sphaeroblastum
F 28319	crassum	F 29263	balfourianum
F 28323	adenogynum	F 29264	balfourianum
F 28326	rigidum	F 29266	intricatum
F 28342	lepidotum	F 29267	primuliflorum
F 28343	rupicola	F 29268	impeditum
F 28344	telmateium	F 29269	telmateium
F 28347	unidentified species	F 29271	trichostomum
F 28348	dichroanthum	F 29273	hemitrichotum
F 28351	haematodes	F 29278	balfourianum
F 28353	taliense	F 29280	x sinosimulans aff.
F 28355	taliense	F 29281	x sinosimulans
F 28357	taliense	F 29282	balfourianum
F 29130	taliense aff.	F 29283	primuliflorum
F 29131	dryophyllum	F 29293	primuliflorum
F 29132	taliense aff.	F 29305	wardii

F 29312	adenogynum	F 30392	griersonianum
F 29313	adenogynum	F 30393	edgeworthii
F 29314	adenogynum	F 30394	scyphocalyx
F 29317	roxieanum Cucullatum	F 30395	rupicola
F 29320	sphaeroblastum	F 30526	beesianum
F 29321	sphaeroblastum	F 30527	mekongense
F 29322	wardii	F 30528	rothschildii
F 29323	yunnanense	F 30531	traillianum
F 29325	dryophyllum	F 30532	beesianum
F 29326	taliense aff.	F 30533	stewartianum
F 29327	dryophyllum	F 30534	aperantum
F 29328	taliense aff.	F 30535	haematodes
F 29329	taliense aff.	F 30536	aperantum
F 29331	tatsienense	F 30539	chaetomallum
F 29333	sphaeroblastum	F 30540	riparioides
F 29341	x detonsum (NH)	F 30543	prostratum
F 29545	neriiflorum	F 30880	prunum
F 29559	ciliicalyx	F 30883	campylogynum
F 29588	habrotrichum	F 30887	decorum
F 29599	ciliicalyx	F 30888	adenogynum
F 29647	myiagram	F 30889	pseudorupicola
F 29655	tephropeplum	F 30891	prostratum
F 29663	stewartianum	F 30892	beesianum
F 29666	calostrotum	F 30893	fictolacteum
F 29685	stewartianum	F 30894	beesianum
F 29687	yunnanense	F 30896	rubiginosum
F 29762	griersonianum	F 30910	oreotrepthes
F 29763	facetum	F 30911	unidentified species
F 29785	arizelum	F 30912	weihsiense
F 29809	megacalyx	F 30937	unidentified species
F 29894	rupicola	F 30940	hemitrichotum
F 29926	kyawii	F 30941	impeditum
F 29929	kyawii	F 30942	chryseum
F 29937	campylogynum	F 30967	campylogynum
F 29938	aperantum	F 30977	heliolepis
F 30375	kyawii		



1913 - Tibet & N Yunnan			
KW 260	davidsonianum	KW 768	aganniphum
KW 406	mekongense	KW 793	campylogynum
KW 529	wardii		
1919 - NE Upper Myanmar			
KW 3038	edgeworthii	KW 3299	oreotrephes
KW 3039	zaleucum	KW 3300	stewartianum
KW 3040	neriiflorum	KW 3301	aperantum
KW 3042	glischrum	KW 3302	hypolepidotum
KW 3042a	habrotrichum	KW 3303	campylogynum
KW 3061	sidereum	KW 3304	rupicola
KW 3095	megeratum	KW 3305	trichocladum
KW 3096	stewartianum	KW 3365	cephalanthum
KW 3097	trichocladum	KW 3390	keleticum
KW 3101	arizelum	KW 3391	campylogynum
KW 3155	hylaeum	KW 3392	scyphocalyx
KW 3172	campylogynum	KW 3408	caloxanthum
KW 3248	crassum	KW 3721	caloxanthum
KW 3267	euchroum	KW 3721a	caloxanthum
KW 3267a	scyphocalyx		
1921 - Sichuan & NE Yunnan			
KW 3776	ciliicalyx	KW 4184	intricatum
KW 3784	delavayi	KW 4185	sphaeroblastum
KW 3805	decorum	KW 4207	roxieanum
KW 3948	delavayi	KW 4211	beesianum
KW 3952	racemosum	KW 4268	telmateium
KW 3952a	pubescens	KW 4308	rubiginosum
KW 3952b	pubescens	KW 4309	oreotrephes
KW 3953	pubescens	KW 4322	yunnanense
KW 3998	trichostomum	KW 4410	wardii
KW 4023	chryseum	KW 4456	x lysolepis (NH)
KW 4050	hemitrichotum	KW 4458	wardii aff.
KW 4102	telmateium	KW 4465	trichostomum
KW 4160	primuliflorum	KW 4486	ravum
KW 4170	wardii	KW 4487	decorum
KW 4177	balfourianum	KW 4509	rex

KW 4583	lepidotum	KW 4995	uvariifolium
KW 4583a	racemosum	KW 5001	scabrifolium
KW 4733	telmateium	KW 5002	decorum
KW 4843	phaeochrysum	KW 5002a	irroratum
KW 4860	traillianum	KW 5004	scabrifolium
KW 4974	yunnanense	KW 5005	irroratum
KW 4994	hemitrichotum		
1922 - NE Myanmar, Tibet, Sichuan & Yunnan			
KW 5384	primuliflorum	KW 5439	edgeworthii
KW 5385	tapetiforme	KW 5440	seinghkuense
KW 5405	vernicosum	KW 5445	facetum
KW 5409	phaeochrysum	KW 5446	xanthostephanum
KW 5414	selense	KW 5447	dendricola
KW 5415	anthosphaerum	KW 5448	crassum
KW 5416	sanguineum	KW 5449	dendricola
KW 5417	forrestii	KW 5457	unidentified species
KW 5418	sinogrande	KW 5458	anthosphaerum
KW 5421	virgatum	KW 5466	nuttallii
KW 5425	moulmainense	KW 5469	kyawii
KW 5427	crinigerum	KW 5480	neriiflorum
KW 5428	rubiginosum	KW 5481	hypolepidotum
KW 5430	keleticum	KW 5482	riparium
KW 5431	chaetomallum	KW 5483	phaedropum
KW 5432	sanguineum	KW 5484	pocophorum
KW 5432a	didymum	KW 5485	sidereum
KW 5433	sanguineum	KW 5487	septentrionale
KW 5434	martinianum	KW 5489	mekongense
KW 5435	temenium	KW 5490	unidentified species
KW 5436	saluenense	KW 5505	unidentified species
KW 5437	hypolepidotum	KW 5533	kyawii
KW 5438	arizelum	KW 5602	oreotrepes
KW 5438a	arizelum	KW 5607	unidentified species
KW 5438b	unidentified species		

1924/1925 - Bhutan & Tibet			
KW 5656	vellereum	KW 5851	x rubrolineatum
KW 5659	hirtipes	KW 5853	campylocarpum
KW 5660	griseum	KW 5856	pumilum
KW 5687	mahogani	KW 5861	unidentified species
KW 5687a	mahogani	KW 5862	nivale
KW 5700	kongboense	KW 5862a	pumilum
KW 5718	dignabile	KW 5863	x doshongense (NH)
KW 5718a	mekongense	KW 5874	concatenans
KW 5718b	caloxanthum	KW 5875	parmulatum
KW 5729	nivale	KW 5876	uniflorum
KW 5732	faucium aff.	KW 5877	arizelum
KW 5733	laudandum	KW 5878	temenium
KW 5734	fragariiflorum	KW 5879	x chamaethauma aff. (NH)
KW 5735	nivale	KW 5880	stewartianum
KW 5736	wardii	KW 5911	unidentified species
KW 5756	wardii x ? (NH)	KW 5917a	calvescens aff.
KW 5756a	wardii	KW 5940	lepidotum
KW 5759	x agglutinatum (NH)	KW 5953	unidentified species
KW 5777	nivale	KW 5971	lanatoides
KW 5778	nivale	KW 5994	lepidotum
KW 5790	oreotrepes	KW 6020	kongboense
KW 5792	nivale	KW 6021	kongboense
KW 5828	riparium	KW 6026	xanthocodon
KW 5829	viridescens	KW 6069	virgatum
KW 5830	cerasinum	KW 6069a	lepidotum
KW 5842	campylogynum	KW 6079	unidentified species
KW 5843	tsangpoense	KW 6215	griffithianum
KW 5843	tsangpoense x campylogynum (NH)	KW 6223	hirtipes
KW 5844	tsangpoense	KW 6229	campylocarpum
KW 5845	forrestii	KW 6250	megeratum
KW 5846	forrestii	KW 6250a	baileyi
KW 5847	x chamaethauma (NH)	KW 6251	leptocarpum
KW 5848	temoense	KW 6256	rude
KW 5849	temoense	KW 6257	keysii
KW 5850	kongboense	KW 6257a	unidentified species

KW 6258	lanigerum	KW 6304	unidentified species
KW 6261	sinogrande	KW 6307	unidentified species
KW 6261a	montroseanum	KW 6310	taggianum
KW 6263	mahogani	KW 6311	uvariifolium
KW 6273	leucaspis	KW 6325	scopulorum
KW 6275	unidentified species	KW 6330	unidentified species
KW 6276	maddenii	KW 6333	nuttallii
KW 6276a	maddenii	KW 6335	ovatum
KW 6278	auritum	KW 6354	scopulorum
KW 6279	virgatum	KW 6401	faucium
KW 6281	glischrum	KW 6403	delavayi
KW 6284	ramsdenianum	KW 6409	mahogani
KW 6285	venator	KW 6411	unidentified species
KW 6286	megacalyx	KW 6413	polyandrum
KW 6291	leucaspis	KW 6414	unidentified species
KW 6301	pemakoense	KW 6415	rhabdotum
KW 6303	tephropeplum	KW 6457a	keysii
1926 - Myanmar & Assam, India			
KW 6676	dendricola	KW 6807	edgeworthii
KW 6711	dendricola	KW 6809	taggianum
KW 6716	sinogrande	KW 6818	arizelum
KW 6736	maddenii	KW 6819	megeratum
KW 6738	phaedropum	KW 6829	beanianum
KW 6751	xanthostephanum	KW 6831	x didymoides (NH)
KW 6752	vesiculiferum	KW 6832	forrestii
KW 6753	sidereum	KW 6833	hylaeum
KW 6769	horlickianum	KW 6834	tephropeplum
KW 6781	megacalyx	KW 6835	beanianum
KW 6782	sinogrande	KW 6848	leptocarpum
KW 6792	sidereum	KW 6854	phaedropum
KW 6793	edgeworthii	KW 6855	exasperatum
KW 6794	tephropeplum	KW 6856	vesiculiferum
KW 6795	martinianum	KW 6868	caloxanthum
KW 6805	beanianum	KW 6869	eclecteum
KW 6805	beanianum x ? (NH)	KW 6884	imperator
KW 6806	trichocladum	KW 6896	eclecteum

KW 6900	eclecteum x ? (NH)	KW 7062	riparium
KW 6903	riparium	KW 7084	rupicola
KW 6912	forrestii	KW 7090	unidentified species
KW 6913	forrestii	KW 7108	brevistylum
KW 6914	cephalanthum	KW 7121	triflorum
KW 6920	eclecteum	KW 7122	uvariifolium
KW 6921	eclecteum	KW 7123	crinigerum
KW 6922	eclecteum	KW 7124	weihsiense
KW 6923	cerasinum	KW 7125	hylaeum
KW 6924	pruniflorum	KW 7136	manipurense
KW 6930	campylocarpum	KW 7137	edgeworthii
KW 6934	saluenense	KW 7138	virgatum
KW 6935	forrestii	KW 7139	megacalyx
KW 6936	eclecteum	KW 7140	arboreum
KW 6945	sanguineum	KW 7171	leucaspis
KW 6953	beesianum	KW 7184	recurvoides
KW 6954	dryophyllum	KW 7185	sanguineum
KW 6955	haematodes aff.	KW 7187	unidentified species
KW 6960	tapetiforme	KW 7188	pruniflorum
KW 6961	pumilum	KW 7189	dasycladum
KW 6962	myiagrum	KW 7190	setiferum
KW 6965	caloxanthum	KW 7196	campylocarpum
KW 6967	cephalanthum	KW 7229	lepidotum
KW 6984	riparium	KW 7259	unidentified species
KW 6986	myiagrum	KW 7327	facetum
KW 6991	euchroum	KW 7426	lukiangense
KW 6993	seinghkuense	KW 7427	protistum
KW 7001	nivale	KW 7428	nuttallii
KW 7012	saluenense	KW 7455	chrysolepis
KW 7023	anthopogon	KW 7484	hylaeum
KW 7038	pruniflorum	KW 7500	x didymoides (NH)
KW 7045	pruniflorum	KW 7523	riparium
KW 7046	hypolepidotum	KW 7550	pruniflorum
KW 7048	rupicola	KW 7553	crassum
KW 7058	nivale	KW 7606	unidentified species
KW 7061	riparium	KW 7612	martinianum

KW 7625	tanastylum	KW 7633	tapetiforme
KW 7630	dendricola	KW 7642	sinogrande
1927/1928 - Arunachal Pradesh & Assam, India			
KW 7701	formosum	KW 8239	xanthocodon
KW 7717	inaequale	KW 8250	exasperatum
KW 7723	maddenii	KW 8251	lanigerum
KW 7724	macabeanum	KW 8254	piercei
KW 7725	elliottii	KW 8256	campylocarpum
KW 7731	bauhiniiflorum	KW 8257	pruniflorum
KW 7732	johnstoneanum	KW 8258	cerasinum
KW 7968	arboreum	KW 8259	trichocladum
KW 8016	dendricola	KW 8260	patulum
KW 8044	tanastylum	KW 8288	lanatum
KW 8052	edgeworthii	KW 8289	pocophorum
KW 8069	protistum	KW 8293	sanguineum
KW 8112	phaedropum	KW 8294	stewartianum
KW 8113	boothii	KW 8300	fulvoides
KW 8130	sinogrande	KW 8326	leptanthum
KW 8163	arizelum	KW 8337	cephalanthum
KW 8164	crinigerum	KW 8341	x chamaethauma (NH)
KW 8165	tephropeplum	KW 8400	crassum
KW 8205	megacalyx	KW 8415	pruniflorum
KW 8206	edgeworthii	KW 8521	phaedropum
KW 8225	megeratum	KW 8522	kasoense
KW 8229	riparium	KW 8545	manipurense
KW 8238	hookeri	KW 8700	kasoense
1931 - Upper Myanmar & Tibet			
KW 9130	unidentified species	KW 9254	seinghkuense
KW 9170	horlickianum	KW 9258	vesiculiferum
KW 9195	unidentified species	KW 9260	arizelum
KW 9200	magnificum	KW 9261	megacalyx
KW 9210	unidentified species	KW 9263	phaedropum
KW 9220	taggianum	KW 9273	manipurense
KW 9236	tanastylum	KW 9274	nuttallii
KW 9250	xanthostephanum	KW 9293	phaedropum
KW 9252	unidentified species	KW 9294	calostrotum

KW 9301	magnificum	KW 9567	xanthostephanum
KW 9321	phaedropum aff.	KW 9569	megeratum
KW 9322	hylaeum	KW 9584	crassum
KW 9361	horlickianum	KW 9591	cephalanthum
KW 9371	chrysodoron	KW 9601	beesianum
KW 9382	neriiflorum	KW 9608	chaetomallum
KW 9385	montroseanum	KW 9609	chryseum & nivale
KW 9394	riparium	KW 9621	selense
KW 9397	arizelum	KW 9629	forrestii
KW 9400	xanthostephanum	KW 9633	saluenense
KW 9402	taggianum	KW 9634	eclecteum
KW 9403	horlickianum	KW 9635	x chamaethauma (NH)
KW 9405	unidentified species	KW 9636	chryseum
KW 9413	eclecteum	KW 9637	chaetomallum
KW 9414	campylogynum	KW 9641	cephalanthum
KW 9415	genestierianum	KW 9665	unidentified species
KW 9416	tephropeplum	KW 9704	hypolepidotum
KW 9446	nuttallii	KW 9710	rupicola
KW 9478	triflorum	KW 9717	riparium
KW 9479	uvariifolium	KW 9726	vesiculiferum
KW 9483	phaedropum	KW 9735	pruniflorum
KW 9485	vesiculiferum	KW 9790	campylogynum
KW 9490	genestierianum	KW 9795	praestans
KW 9500	selense	KW 9800	lepidotum
KW 9503	crinigerum	KW 9810	campylogynum
KW 9504	edgeworthii	KW 9815	campylogynum
KW 9505	oreotrepes	KW 9816	forrestii aff.
KW 9506	neriiflorum	KW 9909	chryseum
KW 9509	oreotrepes	KW 10005	tapetiforme x ? (NH)
KW 9517	riparium	KW 10012	traillianum
KW 9519	trichocladum	KW 10020	heliolepis
KW 9529	virgatum	KW 10121	campylogynum
KW 9543	seinghkuense	KW 10129	leptocarpum
KW 9544	arizelum	KW 10134	coelicum
KW 9561	phaedropum	KW 10136	unidentified species
KW 9565	tephropeplum	KW 10139	unidentified species

KW 10140	campylogynum	KW 10161	unidentified species
KW 10142	boothii	KW 10175	dendricola
KW 10159	eclecteum	KW 10180	dendricola
KW 10160	eclecteum	KW 10231	simsii
1933 - Upper Myanmar & Assam			
KW 10351	virgatum	KW 10870	campylogynum
KW 10379	edgeworthii	KW 10928	manipurense
KW 10401b	tephropeplum	KW 10929	edgeworthii
KW 10490	trichocladum	KW 10950	tanastylum
KW 10496	haematodes aff.	KW 10951	unidentified species
KW 10497	beesianum	KW 10952	rude
KW 10498	fulvum	KW 10959	x spilotum aff. (NH)
KW 10498a	uvariifolium	KW 10969	unidentified species
KW 10500	pruniflorum	KW 10970	unidentified species
KW 10521	tapetiforme & nivale	KW 10971	cinnabarinum
KW 10530	campylocarpum	KW 11002	neriiflorum aff.
KW 10531	rupicola & nivale	KW 11004	unidentified species
KW 10532	anthopogon	KW 11011	cerasinum
KW 10533	dryophyllum	KW 11012	unidentified species
KW 10541	unidentified species	KW 11016	nivale
KW 10542	saluenense & riparium	KW 11029	xanthostephanum
KW 10579	dryophyllum	KW 11035	weihsiense
KW 10582	saluenense & riparium	KW 11040	piercei
KW 10595	nivale	KW 11043	cerasinum
KW 10700	vellereum	KW 11050	sanguineum
KW 10830	unidentified species	KW 11052	kasoense
KW 10832	x dictyotum (NH)	KW 11055	unidentified species
KW 10841	lepidotum	KW 11057	dendricola
KW 10842	kongboense	KW 11060	unidentified species
1935 - Assam & Tibet			
KW 11175	macabeanum	KW 11569	anthopogon
KW 11378	kendrickii	KW 11586	phaeochrysum
KW 11464	megeratum	KW 11587	fulgens
KW 11532	manipurense	KW 11588	wightii
KW 11565	glaucophyllum	KW 11605	argioplum
KW 11568	concatenans	KW 11612	wallichii

KW 11640	hodgsonii	KW 12438	erosum
KW 11915	trichocladum	KW 12585	formosum
KW 11964	circinnatum	KW 12588	bauhiniiflorum
KW 12404	tsariense	KW 12589	maddenii
1937 - NE Upper Myanmar & Tibet			
KW 13017	martinianum	KW 13550	magnificum x ? (NH)
KW 13020	unidentified species	KW 13606	kendrickii
KW 13130	unidentified species	KW 13625	keysii
KW 13150	coelicum x ? (NH)	KW 13632	edgeworthii
KW 13151	oreotrepthes	KW 13645	leptocarpum
KW 13165	unidentified species	KW 13647	falconeri x ? (NH)
KW 13180	unidentified species	KW 13648	protistum
KW 13190	unidentified species	KW 13649	grande aff.
KW 13194	unidentified species	KW 13650	hookeri
KW 13195	monanthum	KW 13652	falconeri
KW 13210	unidentified species	KW 13653	hodgsonii
KW 13225	forrestii	KW 13654	falconeri
KW 13230	monanthum	KW 13655	wightii
KW 13324	pocophorum aff.	KW 13662	thomsonii
KW 13327	unidentified species	KW 13663	tsariense
KW 13355	unidentified species	KW 13665	fulgens
KW 13361	pruniflorum	KW 13666	succothii
KW 13365	rupicola	KW 13670	argioplum
KW 13367	calostrotum	KW 13681	magnificum
KW 13369	praestans	KW 13681	magnificum x ? (NH)
KW 13370	tapetiforme	KW 13683	grande
KW 13371	saluenense	KW 13699	anthopogon
KW 13399	campylogynum	KW 13705	wallichii
KW 13405	unidentified species	KW 13708	dryophyllum
KW 13416	sanguineum	KW 13712	thomsonii
KW 13419	martinianum	KW 13750	lanatum
KW 13420	dasycladum	KW 13758	cinnabarinum
KW 13424	unidentified species	KW 13789	x candelabrum (NH)
KW 13480	unidentified species	KW 13965	aganniphum
KW 13494	unidentified species	KW 14314	campanulatum
KW 13500	unidentified species	KW 14342	arizelum

1938/1939 - N Myanmar			
KW 5	simsii	KW 286	neriiflorum
KW 51	kyawii	KW 293	edgeworthii
KW 52	dendricola	KW 312	neriiflorum
KW 61	oreotrepes	KW 346	edgeworthii
KW 62	microphyton	KW 347	kasoense
KW 71	simsii	KW 354	chrysodoron
KW 87	dendricola	KW 372	edgeworthii aff.
KW 100	decorum	KW 395	chrysodoron
KW 135	moulmainense	KW 396	delavayi
KW 152	dendricola	KW 400	manipureense
KW 180	dendricola	KW 404	habrotrichum
KW 203	protistum	KW 409	habrotrichum
KW 213	magnificum	KW 413	leptothrium
KW 227	megeratum	KW 416	tanastylum
KW 228	eclecteum	KW 424	genestierianum
KW 233	oreotrepes	KW 433	moulmainense
KW 234	neriiflorum	KW 438	tanastylum
KW 236	arizelum	KW 440	dendricola
KW 245	campylogynum	KW 445	neriiflorum
KW 250	moulmainense	KW 448	neriiflorum
KW 251	chrysodoron	KW 460	leptothrium
KW 252	callimorphum	KW 461	microphyton
KW 280	dendricola	KW 499	simsii
KW 281	dendricola		
1946 - Meghalaya, India			
KW 16029	inaequale	KW 16060	unidentified species
1948 - E Manipur, India			
KW 17044	arboreum	KW 17405	bauhiniiflorum
KW 17200	unidentified species	KW 17407	macabeanum
KW 17215	johnstoneanum	KW 17436	unidentified species
KW 17216	arboreum	KW 17700	manipureense
KW 17217	manipureense	KW 17818	manipureense
1949 - Assam			
KW 18540	moulmainense	KW 18753	formosum
KW 18541	unidentified species	KW 18811	unidentified species



KW 18985	johnstoneanum	KW 19083	elliottii
KW 19082	macabeanum	KW 19101	bauhiniiflorum
1950 - Arunachal Pradesh, Assam & Tibet			
KW 19244	virgatum	KW 19452	hylaeum
KW 19245	peramoenum aff.	KW 19453	neriiflorum x ? (NH)
KW 19259	dendricola	KW 19573	x rubrolineatum
KW 19325	virgatum	KW 19588	sanguineum
KW 19404	manipurense	KW 19589	x eudoxum (NH)
KW 19405	weihsiense	KW 19590	anthopogon
KW 19406	sidereum	KW 19591	pumilum
KW 19431	hylaeum	KW 19606	nivale
KW 19432	megacalyx	KW 19620	pruniflorum
KW 19433	edgeworthii	KW 19657	manipurense
KW 19447	crinigerum	KW 20260	unidentified species
KW 19448	triflorum	KW 20280	unidentified species
KW 19449	sinogrande	KW 20285	cerasinum aff.
KW 19450	riparium	KW 20305a	johnstoneanum
KW 19451	uvariifolium		
1953 - Myanmar			
KW 20601	dendricola	KW 20876	protistum
KW 20629	moulmainense	KW 20877	sinogrande
KW 20651	dendricola	KW 20878	chrysodoron
KW 20679	moulmainense	KW 20919	unidentified species
KW 20680	tanastylum	KW 20922	arizelum
KW 20681	unidentified species	KW 20923	apodectum
KW 20682	genestierianum	KW 20924	haematodes
KW 20696	neriiflorum aff.	KW 20925	x chamaethauma (NH)
KW 20702	crassum	KW 20926	tamaense
KW 20836	megacalyx	KW 20927	caloxanthum
KW 20837	flaviflorum	KW 20928	campylogynum
KW 20838	sidereum	KW 20929	cephalanthum
KW 20839	edgeworthii	KW 20934	trichocladum
KW 20840	edgeworthii	KW 20981	ciliicalyx
KW 20843	neriiflorum	KW 21000	apodectum
KW 20844	tephropeplum	KW 21001	sulfureum
KW 20845	luteiflorum	KW 21003	tamaense

KW 21005	crassum	KW 21111	sinogrande
KW 21006	eclecteum	KW 21130	campylogynum
KW 21006A	atrokermesinum	KW 21481	campylogynum
KW 21007	leptocarpum	KW 21498	protistum
KW 21021	tamaense	KW 21512	dendricola
KW 21040	luteiflorum	KW 21525	moulmainense
KW 21072	trichocladum	KW 21547	martinianum
KW 21073	forrestii x ? (NH)	KW 21556	luteiflorum
KW 21074	unidentified species	KW 21557	martinianum aff.
KW 21075	coelicum	KW 21559	megeratum
KW 21077	coelicum	KW 21601	unidentified species
KW 21078	cephalanthum	KW 21602	protistum
KW 21079	mekongense	KW 21679	tephropeplum
KW 21086	neriiflorum		
1956 - WC Myanmar			
KW 21768	delavayi	KW 21976	albotomentosum
KW 21796	unidentified species	KW 22036	simsii
KW 21909	unidentified species	KW 22200	johnstoneanum
KW 21921	burmanicum	KW 22291	unidentified species

Joseph Rock:



1923/1924 - SE Tibet & NW Yunnan			
R 6002	yunnanense	R 6681	decorum
R 6031	yunnanense	R 6743	thymifolium / delavayi
R 6073	rubiginosum	R 6744	neriiflorum
R 6232	unidentified species	R 6745	edgeworthii
R 6249	sinogrande	R 6826	yunnanense
R 6253	taliense / roxieanum Cucullatum	R 6827	racemosum
R 6254	unidentified species	R 6828	rubiginosum
R 6259	irroratum	R 6829	vernicosum
R 6269	haematodes	R 6830	hippophaeoides
R 6270	helirolepis	R 6831	fictolacteam
R 6273	cyanocarpum	R 6832	traillianum
R 6274	trichocladum	R 6999	edgeworthii
R 6291	scabrifolium	R 7075	unidentified species
R 6294	irroratum	R 7077	unidentified species
R 6295	fictolacteam	R 7272	unidentified species
R 6296	bureavii	R 7376	sidereum
R 6308	irroratum	R 7377	edgeworthii
R 6309	fictolacteam	R 7381	sinogrande
R 6323	cephalanthum	R 7577	stamineum aff.
R 6334	fastigiatum	R 7640	rubiginosum
R 6335	neriiflorum	R 7646	leptothrium
R 6346	lacteam	R 7648	facetum
R 6353	riparioides	R 7649	zaleucum
R 6354	campylogynum	R 7650	neriiflorum
R 6357	jucundum	R 7651	sulfureum
R 6364	haematodes	R 7658	habrotrichum
R 6365	taliense / roxieanum Cucullatum	R 7662	fulvum
R 6369	edgeworthii	R 7663	apodectum
R 6370	crassum	R 7664	anthosphaerum
R 6450	hemitrichotum	R 7665	fulvum
R 6451	hemitrichotum	R 7666	neriiflorum
R 6460	thymifolium	R 7667	unidentified species
R 6524	unidentified species	R 7794	adenogynum
R 6525	rigidum	R 7795	beesianum
R 6656	delavayi	R 7796	traillianum

R 7865	edgeworthii	R 10911	x haemaleum (NH)
R 7866	stamineum	R 10912	martinianum
R 7906	peramoeunum	R 10913	praestans
R 7907	peramoeunum	R 10914	chryseum
R 7911	delavayi	R 10915	setiferum
R 7935	delavayi	R 10916	beesianum
R 7954	pseudociliipes	R 10917	hypolepidotum
R 10276	x haemaleum (NH)	R 10918	chaetomallum
R 10545	cephalanthum	R 10919	hypolepidotum
R 10550	oreotrepthes	R 10920	roxieanum
R 10551	vernicosum	R 10921	fictolacteum
R 10552	cuneatum x ? (NH)	R 10922	sanguineum
R 10553	telmateium	R 10923	x triplonaevium (NH)
R 10572	tatsienense	R 10924	cephalanthum
R 10882	vernicosum	R 10925	wardii
R 10883	dryophyllum	R 10926	sanguineum
R 10884	brevistylum	R 10927	sanguineum
R 10885	unidentified species	R 10928	sanguineum
R 10893	sanguineum	R 10929	selense
R 10894	sanguineum	R 10930	selense
R 10895	x haemaleum (NH)	R 10931	fulvoides
R 10896	beesianum	R 10932	x eudoxum (NH)
R 10897	sanguineum	R 10933	x dictyotum
R 10898	x eudoxum (NH)	R 10934	sanguineum
R 10899	sanguineum	R 10935	cephalanthum
R 10900	x didymoides (NH)	R 10936	dryophyllum
R 10901	sanguineum	R 10937	chasmanthum
R 10902	sanguineum	R 10938	sanguineum
R 10903	x didymoides (NH)	R 10939	eclecteum
R 10904	x didymoides (NH)	R 10940	x didymoides (NH)
R 10905	horaenum	R 10941	temenium
R 10906	x himertum (NH)	R 10942	anthosphaerum
R 10907	x eudoxum (NH)	R 10943	rubiginosum
R 10908	beesianum	R 10944	x bellatulum (NH)
R 10909	temenium	R 10945	sanguineum
R 10910	x bellatulum (NH)	R 10946	citriniflorum

R 10947	x haemaleum (NH)	R 10985	chaetomallum
R 10948	haematodes	R 10986	oreotrepthes
R 10950	x eudoxum (NH)	R 10987	beesianum
R 10951	x himertum / temenium Gilvum	R 10988	beesianum
R 10952	temenium	R 10989	chaetomallum
R 10953	x didymoides (NH)	R 10990	beesianum
R 10954	oreotrepthes	R 10991	hypolepidotum
R 10955	coriaceum	R 10992	crinigerum
R 10956	roxieanum	R 10993	forrestii
R 10957	praestans	R 10994	forrestii
R 10958	martinianum	R 10995	praestans
R 10959	floccigerum	R 10996	floccigerum
R 10960	crinigerum	R 10997	forrestii
R 10961	selense	R 10998	proteoides
R 10963	selense	R 10999	floccigerum
R 10964	forrestii	R 11000	oreotrepthes
R 10965	martinianum	R 11001	saluenense
R 10966	praestans	R 11002	sanguineum
R 10967	crinigerum	R 11003	x chamaethauma (NH)
R 10968	crinigerum	R 11004	beesianum
R 10969	mekongense	R 11005	saluenense
R 10970	crinigerum	R 11006	megeratum
R 10971	crinigerum	R 11007	praestans
R 10972	crinigerum	R 11008	praestans
R 10973	crinigerum	R 11010	saluenense
R 10974	crinigerum	R 11011	sanguineum
R 10975	crinigerum	R 11012	saluenense
R 10976	crinigerum	R 11013	praestans
R 10977	crinigerum	R 11014	oreotrepthes
R 10978	crinigerum	R 11015	lukiangense
R 10979	roxieanum	R 11016	fulvoides
R 10980	crinigerum	R 11017	beesianum
R 10981	crinigerum	R 11018	sanguineum
R 10982	crinigerum	R 11019	cephalanthum
R 10983	crinigerum	R 11020	roxieanum
R 10984	chaetomallum	R 11021	beesianum

R 11022	x haemaleum (NH)	R 11058	selense
R 11023	fulvum	R 11059	eclecteum
R 11024	sanguineum	R 11060	x bellatulum (NH)
R 11025	x bellatulum (NH)	R 11061	eclecteum
R 11026	selense	R 11062	selense
R 11027	x bellatulum (NH)	R 11063	selense
R 11028	selense	R 11064	selense
R 11029	sanguineum	R 11065	selense
R 11030	x bellatulum (NH)	R 11066	selense
R 11031	x bellatulum (NH)	R 11067	x erythrocalyx (NH)
R 11032	eclecteum	R 11068	beesianum
R 11033	forrestii	R 11069	coriaceum
R 11034	fulvoides	R 11071	rubiginosum
R 11035	eclecteum	R 11072	heliolepis
R 11036	chamaethomsonii	R 11073	floccigerum
R 11037	x bellatulum (NH)	R 11074	forrestii
R 11038	eclecteum	R 11075	uvariifolium
R 11039	sanguineum	R 11076	proteoides
R 11040	x bellatulum (NH)	R 11077	selense
R 11041	x bellatulum (NH)	R 11078	x eudoxum (NH)
R 11042	chamaethomsonii	R 11079	mekongense
R 11043	fictolacteum	R 11080	eclecteum
R 11044	fulvoides	R 11081	chaetomallum
R 11045	uvariifolium	R 11082	x haemaleum (NH)
R 11046	x haemaleum (NH)	R 11083	crinigerum
R 11047	x haemaleum (NH)	R 11084	roxieanum
R 11048	fulvoides	R 11085	x agglutinatum (NH)
R 11049	x haemaleum (NH)	R 11086	tapetiforme
R 11050	x bellatulum (NH)	R 11087	dryophyllum
R 11051	eclecteum	R 11088	tapetiforme
R 11052	x didymoides (NH)	R 11089	cephalanthum
R 11053	x bellatulum (NH)	R 11090	dryophyllum
R 11054	x bellatulum (NH)	R 11091	tapetiforme
R 11055	x bellatulum (NH)	R 11092	tapetiforme
R 11056	x bellatulum (NH)	R 11093	tapetiforme
R 11057	x bellatulum (NH)	R 11094	esetulosum

R 11095	selense	R 11132	oreotrepthes
R 11096	dryophyllum	R 11133	x flavorufum (NH)
R 11097	aganniphum	R 11134	adenogynum
R 11098	tapetiforme	R 11135	aganniphum
R 11099	beesianum	R 11137	wardii
R 11100	roxieanum Globigerum	R 11138	lukiangense
R 11101	x russotinctum (NH)	R 11139	lukiangense
R 11102	dryophyllum	R 11140	lukiangense
R 11103	dryophyllum	R 11141	oreotrepthes
R 11104	dryophyllum	R 11142	crinigerum
R 11105	dryophyllum	R 11143	x flavorufum (NH)
R 11106	dryophyllum	R 11144	roxieanum
R 11106a	roxieanum Globigerum	R 11145	wardii
R 11107	dryophyllum	R 11146	x tritifolium (NH)
R 11108	x agglutinatum (NH)	R 11147	wardii
R 11109	tapetiforme	R 11148	chryseum
R 11110	beesianum	R 11149	dryophyllum
R 11111	selense	R 11150	x flavorufum (NH)
R 11112	beesianum	R 11151	x flavorufum (NH)
R 11113	x tritifolium (NH)	R 11152	wardii
R 11114	wardii	R 11153	x flavorufum (NH)
R 11115	roxieanum	R 11154	citriniflorum
R 11116	x iodes (NH)	R 11155	pocophorum
R 11117	x tritifolium (NH)	R 11156	chaetomallum
R 11118	x schizopeplum (NH)	R 11157	horeaeum
R 11119	dryophyllum	R 11158	sanguineum
R 11120	dryophyllum	R 11159	fictolacteum
R 11121	dryophyllum	R 11160	campylogynum
R 11122	x russotinctum (NH)	R 11161	sanguineum
R 11123	x tritifolium (NH)	R 11162	x hemidartum (NH)
R 11124	unidentified species	R 11163	pocophorum
R 11125	aganniphum	R 11164	chaetomallum x ? (NH)
R 11126	chryseum	R 11165	arizelum
R 11127	selense	R 11166	crassum
R 11128	oreotrepthes	R 11167	leptocarpum
R 11130	tapetiforme	R 11168	fulvum

R 11169	forrestii	R 11207	arizelum Rubicosum
R 11170	chaetomallum x ? (NH)	R 11208	x haemaleum (NH)
R 11172	brachyanthum	R 11209	selense
R 11173	sinogrande	R 11210	haematodes
R 11174	coryanum	R 11211	unidentified species
R 11175	chaetomallum	R 11212	sanguineum aff.
R 11176	sanguineum	R 11213	setiferum
R 11177	x haemaleum (NH)	R 11214	temenium
R 11178	sanguineum	R 11216	didymum
R 11179	x hemidartum (NH)	R 11217	anthosphaerum
R 11180	eclecteum	R 11219	virgatum
R 11181	sanguineum	R 11222	megacalyx
R 11182	x hemidartum (NH)	R 11223	arizelum
R 11183	sanguineum	R 11225	fulvoides
R 11184	chaetomallum	R 11227	chaetomallum
R 11185	catacosmum	R 11228	tephropeplum
R 11186	horeaum	R 11233	nuttallii
R 11187	fictolacteum	R 11238	saluenense
R 11188	keleticum	R 11239	sinogrande
R 11189	crinigerum	R 11240	beesianum
R 11190	bainbridgeanum	R 11241	selense
R 11191	keleticum	R 11242	fictolacteum
R 11192	crinigerum	R 11243	rupicola
R 11193	crinigerum	R 11244	fictolacteum
R 11194	setiferum	R 11246	traillianum
R 11195	bainbridgeanum	R 11247	wardii
R 11196	crinigerum	R 11248	unidentified species
R 11198	chryseum	R 11249	telmateium
R 11199	sanguineum aff.	R 11250	roxieanum Cucullatum
R 11200	moulmainense	R 11251	roxieanum
R 11201	pocophorum	R 11252	roxieanum Cucullatum
R 11202	genestierianum	R 11253	roxieanum Cucullatum
R 11203	horeaum aff.	R 11254	clementinae
R 11204	chaetomallum	R 11255	clementinae
R 11205	martinianum	R 11256	anthosphaerum
R 11206	horeaum aff.	R 11257	anthosphaerum

R 11257a	x pallescens (NH)	R 11292	roxieanum
R 11258	oreotrephe	R 11293	roxieanum
R 11259	dasycladum	R 11294	russatum
R 11260	trichostomum	R 11295	russatum
R 11261	roxieanum	R 11296	russatum
R 11262	oreotrephe	R 11297	irroratum
R 11263	rubiginosum	R 11298	oreotrephe
R 11264	racemosum	R 11299	xanthostephanum
R 11265	racemosum	R 11300	oreotrephe
R 11266	irroratum	R 11301	roxieanum
R 11267	rigidum	R 11302	roxieanum Oreonastes
R 11268	rigidum	R 11303	fastigiatum
R 11269	dasycladum	R 11304	telmateium
R 11270	dasycladum	R 11305	campylogynum
R 11271	cuneatum	R 11306	prorum
R 11272	lukiangense	R 11307	roxieanum Cucullatum
R 11273	irroratum	R 11308	xanthostephanum
R 11274	irroratum	R 11309	roxieanum Cucullatum
R 11275	lukiangense	R 11310	irroratum
R 11276	crassum	R 11311	roxieanum
R 11277	edgeworthii	R 11312	roxieanum
R 11278	edgeworthii	R 11313	traillianum
R 11279	delavayi	R 11314	traillianum
R 11280	yunnanense	R 11315	fimbriatum
R 11281	yunnanense x ? (NH)	R 11316	molle
R 11282	delavayi	R 11317	leptothrium
R 11282a	delavayi	R 11318	russatum
R 11283a	brevistylum	R 11319	scintillans
R 11284	russatum x rupicola (NH)	R 11321	wardii
R 11285	roxieanum Oreonastes	R 11322	cephalanthum
R 11286	fictolacteum	R 11323	dryophyllum
R 11287	cuneatum	R 11324	phaeochrysum
R 11288	rigidum	R 11325	vernicosum
R 11289	dasycladum	R 11326	vernicosum
R 11290	fictolacteum	R 11328	dryophyllum
R 11291	roxieanum	R 11329	vernicosum

R 11331	vernicosum	R 11370	bureavii
R 11333	dryophyllum	R 11371	traillianum
R 11334	beesianum	R 11372	traillianum
R 11335	x agglutinatum (NH)	R 11373	traillianum
R 11336	aganniphum	R 11376	anthosphaerum
R 11337	beesianum	R 11376a	bureavii
R 11338	dryophyllum	R 11377	anthosphaerum
R 11339	x schizopeplum (NH)	R 11377a	bureavii
R 11339a	aganniphum	R 11378	fictolacteam
R 11340	x agglutinatum (NH)	R 11379	beesianum aff.
R 11341	x agglutinatum (NH)	R 11380	irroratum
R 11341a	aganniphum	R 11381	irroratum
R 11342	dryophyllum	R 11382	bureavii
R 11342a	x flavorufum (NH)	R 11383	beesianum aff.
R 11343	x agglutinatum (NH)	R 11385	dasycladum
R 11343a	aganniphum	R 11386	uvariifolium
R 11344	dryophyllum	R 11387	oreotrepes
R 11345	x agglutinatum (NH)	R 11388	glischrum
R 11346	anthosphaerum	R 11389	wardii
R 11348	sinogrande	R 11390	anthosphaerum
R 11349	beesianum	R 11391	uvariifolium
R 11351	fulvoides	R 11392	cuneatum
R 11352	unidentified species	R 11393	cuneatum
R 11354	anthosphaerum	R 11395	fictolacteam
R 11355	wardii	R 11396	traillianum
R 11357	lukiangense	R 11397	fictolacteam
R 11358	anthosphaerum	R 11401	trichostomum
R 11362	lepidotum	R 11403	racemosum
R 11363	hippophaeoides	R 11404	decorum
R 11364	hippophaeoides	R 11408	vernicosum
R 11365	hippophaeoides	R 11415	racemosum
R 11366	anthosphaerum	R 11418	yunnanense
R 11367	adenogynum	R 11419	oreotrepes x ? (NH)
R 11368	cuneatum	R 11421	traillianum
R 11368a	heliolapis	R 11422	hormophorum
R 11369	anthosphaerum	R 11424	racemosum

R 11429	oreotrepes	R 11501	beesianum
R 11430	lepidotum	R 11502	praestans
R 11434	rupicola	R 11503	praestans
R 11452	fictolacteam	R 11504	uvariifolium
R 11453	brevistylum	R 11505	lukiangense
R 11454	traillianum	R 11506	saluenense
R 11455	cephalanthum	R 11507	selense
R 11459	traillianum	R 11567	wardii
R 11460	traillianum	R 11597	chamaethomsonii
R 11461	traillianum	R 11634	praestans
R 11463	beesianum	R 11635	selense
R 11465	telmateium	R 11636	beesianum
R 11468	primuliflorum	R 11640	rex
R 11469	impeditum	R 11642	rex
R 11470	traillianum	R 11644	coriaceum
R 11471	adenogynum	R 11702	dryophyllum
R 11473	unidentified species	R 11703	unidentified species
R 11476	racemosum	R 11704	heliolapis
R 11500	dryophyllum	R 11706	leptothrium



1925/1926 - NW Gansu			
R 13278	przewalskii	R 13649	rufum
R 13279	anthopogonoides	R 13650	rufum
R 13302	przewalskii	R 13674	capitatum
R 13303	thymifolium	R 13675	rufum
R 13357	chaetomallum aff.	R 13676	przewalskii
R 13596	capitatum	R 13677	przewalskii
R 13597	anthopogonoides	R 13678	rufum
R 13598	thymifolium	R 13679	przewalskii
R 13599	rufum	R 13680	rufum
R 13600	capitatum	R 13681	przewalskii
R 13601	rufum	R 13682	rufum
R 13605	capitatum	R 13683	rufum
R 13610	anthopogonoides	R 13684	rufum
R 13611	capitatum	R 13685	przewalskii
R 13612	przewalskii	R 13686	przewalskii
R 13613	rufum	R 13688	capitatum
R 13622	capitatum	R 13691	rufum
R 13628	rufum	R 13692	rufum
R 13629	przewalskii	R 13693	rufum
R 13630	rufum	R 13694	przewalskii
R 13634	capitatum	R 13695	przewalskii
R 13635	capitatum	R 13696	rufum
R 13636	anthopogonoides	R 13697	rufum
R 13640	rufum	R 14928	rufum
R 13643	rufum	R 15004	micranthum
R 13645	rufum	R 15014	rufum
R 13647	rufum		
1929 - NW Yunnan			
R 18119	rubiginosum	R 18143	unidentified species
R 18125	unidentified species	R 18144	intricatum
R 18138	dryophyllum	R 18149	beesianum
R 18139	vernicosum aff.	R 18150	beesianum
R 18140	oreotrepthes	R 18152	aganniphum
R 18141	dryophyllum	R 18153	balfourianum
R 18142	cookeanum	R 18155	roxieanum Cucullatum

R 18156	balfourianum	R 18277	unidentified species
R 18157	roxieanum Cucullatum	R 18281	uvariifolium
R 18158	balfourianum	R 18331	sinogrande
R 18159	dryophyllum	R 18332	wardii
R 18160	balfourianum	R 18333	wardii
R 18161	roxieanum	R 18336	arizelum
R 18162	adenogynum	R 18337	arizelum
R 18163	unidentified species	R 18338	semnoides
R 18164	balfourianum	R 18339	fulvum
R 18168	dryophyllum	R 18341	megeratum
R 18169	cookeanum	R 18350	stewartianum
R 18170	balfourianum	R 18351	oreotrepthes
R 18171	dryophyllum	R 18352	aperantum
R 18172	roxieanum Cucullatum	R 18353	campylocarpum
R 18173	balfourianum	R 18354	aperantum
R 18174	roxieanum Globigerum	R 18355	chaetomallum aff.
R 18175	balfourianum	R 18356	chaetomallum aff.
R 18176	roxieanum Cucullatum	R 18357	chaetomallum aff.
R 18177	balfourianum	R 18359	chaetomallum
R 18178	sphaeroblastum	R 18365	rupicola
R 18179	dryophyllum	R 18366	roxieanum Cucullatum
R 18180	sphaeroblastum	R 18367	rupicola
R 18181	primuliflorum	R 18369	mekongense
R 18182	sphaeroblastum	R 18373	caloxanthum
R 18185	x simulans aff. (NH)	R 18375	stewartianum
R 18186	roxieanum Cucullatum	R 18376	stewartianum
R 18187	chryseum aff.	R 18377	stewartianum
R 18189	rubiginosum	R 18378	stewartianum
R 18222	intricatum	R 18379	aperantum aff.
R 18223	impeditum	R 18380	riparioides
R 18224	unidentified species	R 18381	riparioides
R 18226	adenosum	R 18382	haematodes
R 18227	wardii	R 18383	caloxanthum
R 18228	adenosum	R 18384	rubiginosum
R 18234	rex	R 18385	coriaceum
R 18275	racemosum	R 18386	glischrum

R 18387	glischrum	R 18440	beesianum
R 18388	mekongense	R 18441	traillianum
R 18389	chaetomallum	R 18442	rupicola
R 18390	semnoides	R 18443	beesianum
R 18391	basilicum aff.	R 18444	traillianum
R 18395	sulfureum	R 18445	beesianum
R 18396	semnoides	R 18446	clementinae
R 18397	semnoides	R 18447	fictolacetum
R 18399	nuttallii	R 18448	clementinae
R 18400	unidentified species	R 18449	glischrum
R 18402	crinigerum	R 18450	chameunum
R 18403	unidentified species	R 18451	fictolacteam
R 18404	crassum	R 18452	fictolacteam
R 18405	caloxanthum	R 18453	riparioides
R 18406	chaetomallum	R 18454	riparioides
R 18407	coriaceum	R 18455	wardii
R 18407a	lanigerum	R 18456	oreotrepes
R 18408	tephropeplum	R 18457	oreotrepes
R 18409	xanthospethanum	R 18458	fimbriatum
R 18410	zaleucum	R 18459	fictolacteam
R 18411	zaleucum	R 18460	orthocladum x ? (NH)
R 18412	tephropeplum	R 18462	russatum
R 18413	tephropeplum	R 18463	horaeum
R 18415	eclecteum	R 18464	x didymoides (NH)
R 18416	eclecteum	R 18465	floccigerum
R 18418	zaleucum	R 18466	weihsiense
R 18420	glischrum	R 18467	weihsiense
R 18421	martinianum	R 18468	weihsiense
R 18424	unidentified species	R 18469	floccigerum / sperabile
R 18433	rothschildii	R 18471	leptothrium
R 18434	crassum	R 18473	leptothrium
R 18435	roxieanum	R 18474	unidentified species
R 18436	roxieanum	R 18475	leptocarpum
R 18437	traillianum	R 18476	unidentified species
R 18438	traillianum	R 18477	euadenium
R 18439	traillianum	USDA 4021	vernicosum

1932 - NW Yunnan			
R 21993	x haemaleum (NH)	R 22056	monanthum
R 21994	sperabiloides	R 22058	chaetomallum
R 21995	bainbridgeanum	R 22059	chaetomallum
R 21997	saluenense	R 22063	rupicola
R 21999	bainbridgeanum	R 22064	sanguineum
R 22000	crinigerum	R 22065	chaetomallum
R 22001	pocophorum	R 22066	chaetomallum
R 22002	pocophorum	R 22069	chaetomallum
R 22003	eclecteum	R 22070	dealbatum
R 22004	chaetomallum	R 22090	mekongense
R 22005	stewartianum	R 22091	fictolacteam
R 22006	genestierianum	R 22092	fulvodes
R 22007	xanthostephanum	R 22094	arizelum
R 22013	genestierianum	R 22095	anthosphaerum
R 22014	xanthostephanum	R 22096a	uvariifolium
R 22019	edgeworthii	R 22096b	uvariifolium
R 22021	fictolacteam	R 22097	fulvodes
R 22023	fictolacteam	R 22100	eclecteum
R 22024	arizelum Rubicosum	R 22102	setiferum
R 22025	fictolacteam	R 22106	arizelum aff.
R 22028	selense	R 22108	arizelum
R 22029	selense	R 22110	arizelum Rubicosum
R 22030	selense	R 22111	fulvodes
R 22031	bainbridgeanum	R 22112	crinigerum
R 22032	selense	R 22117	fictolacteam
R 22033	selense	R 22119	martinianum
R 22034	x haemaleum (NH)	R 22120	megeratum
R 22037	fictolacteam	R 22121	floccigerum
R 22038	fictolacteam	R 22122	sperabiloides
R 22039	fictolacteam	R 22123	martinianum
R 22040	beesianum	R 22126	floccigerum
R 22041	beesianum	R 22183	didymum
R 22042	uvariifolium	R 22184	hypolepidotum
R 22045	virgatum	R 22187	chaetomallum
R 22050	chamaethomsonii	R 22188	chaetomallum

R 22189	hormaeum	R 22231	fictolactum
R 22191	citriniflorum	R 22232	arizelum
R 22192	hormaeum	R 22233	fictolactum
R 22193	hormaeum	R 22234	beesianum
R 22194	hormaeum	R 22235	temenium Gilvum x ? (NH)
R 22196	hormaeum	R 22236	x haemaleum (NH)
R 22197	chaetomallum	R 22237	selense
R 22198	sanguineum	R 22238	x haemaleum (NH)
R 22199	chaetomallum	R 22269	eclectum
R 22201	sanguineum	R 22271	temenium Gilvum
R 22202	sanguineum	R 22272	temenium Gilvum
R 22203	sanguineum	R 22277	citriniflorum
R 22204	sanguineum	R 22279	fictolactum
R 22205	hormaeum	R 22288	tapetiforme
R 22206	hormaeum	R 22289	campylogynum
R 22207	hormaeum	R 22290	temenium Gilvum
R 22208	hormaeum	R 22291	selense
R 22210	citriniflorum	R 22292	temenium Gilvum
R 22211	chaetomallum	R 22293	sanguineum
R 22212	hormaeum	R 22295	x eudoxum (NH)
R 22213	hormaeum	R 22297	saluenense
R 22214	leptocarpum	R 22298	temenium Gilvum
R 22215	x himertum x ? (NH)	R 22301	floccigerum
R 22216	nuttallii	R 22302	fletcherianum
R 22219	fictolactum	R 22303	floccigerum
R 22220	fictolactum	R 22304	chaetomallum
R 22221	beesianum	R 22305	chaetomallum
R 22222	eclectum	R 22306	chaetomallum
R 22223	beesianum	R 22307	fictolactum
R 22224	eclectum	R 22345	brevistylum
R 22225	selense	R 22440	megacalyx
R 22226	x erythrocalyx (NH)	R 22465	catacosmum
R 22227	fictolactum	R 22466	chaetomallum
R 22228	crinigerum	R 22634	virgatum
R 22229	rex	R 22649	anthosphaerum
R 22230	eclectum	R 22657	habrotrichum aff.

R 22659	fletcherianum	R 23414	wardii
R 23294	chaetomallum	R 23452	beesianum
R 23301	brevistylum	R 23453	fictolactum
R 23302	brevistylum	R 23467	rupicola
R 23304	chaetomallum	R 23477	chasmanthum
R 23305	chaetomallum	R 23480	crinigerum
R 23306	chaetomallum	R 23481	eclectum
R 23307	x schizopeplum (NH)	R 23482	martinianum
R 23308	beesianum	R 23483	megeratum
R 23310	ramosissimum	R 23485	crinigerum
R 23314	wardii	R 23487	fulvodes
R 23321	x agglutinatum (NH)	R 23488	fulvodes
R 23322	primuliflorum	R 23489	crinigerum
R 23324	x agglutinatum (NH)	R 23490	crinigerum
R 23325	x agglutinatum (NH)	R 23491	oreotrepes
R 23326	fargesii	R 23492	selense
R 23328	aganniphum	R 23494	unidentified species
R 23330	chameunum	R 23495	floccigerum / sperabile
R 23331	aganniphum	R 23496	praestans
R 23332	hormophorum	R 23497	fulvodes
R 23333	x doshongense (NH)	R 23498	chamaethomsonii
R 23338	x doshongense (NH)	R 23502	fulvum
R 23348	unidentified species	R 23506	floccigerum / sperabile
R 23350	dryophyllum	R 23508	fulvum
R 23360	chryseum	R 23509	eclectum
R 23369	dryophyllum	R 23510	eclectum
R 23371	aganniphum	R 23511	eclectum
R 23394	dryophyllum	R 23512	eclectum
R 23398	chryseum	R 23513	mekongense
R 23400	primuliflorum	R 23514	rubiginosum
R 23401	aganniphum	R 23515	unidentified species
R 23405	aganniphum	R 23516	eclectum
R 23406	dryophyllum	R 23517	uvariifolium
R 23407	unidentified species	R 23518	beesianum
R 23408	wardii	R 23520	praestans
R 23410	nigropunctatum	R 23521	beesianum

R 23524	sanguineum	R 23617	temenium
R 23526	roxieanum	R 23618	x agglutinatum (NH)
R 23527	beesianum	R 23619	beesianum
R 23528	beesianum	R 23620	saluenense
R 23529	sanguineum	R 23621	eclecteum
R 23530	beesianum	R 23622	sanguineum
R 23540a	chryseum	R 23625	beesianum
R 23540b	proteoides	R 23626	unidentified species
R 23545	saluenense	R 23627	saluenense
R 23546	chameunum	R 23628	sanguineum
R 23548	saluenense	R 23629	temenium
R 23553	hypolepidotum	R 23630	eclecteum
R 23555	fictolacteum	R 23631	sanguineum
R 23556	saluenense	R 23632	eclecteum
R 23559	cephalanthum	R 23633	cephalanthum
R 23560	campylogynum	R 23634	saluenense
R 23561	roxieanum	R 23635	x himertum (NH)
R 23562	x iodes (NH)	R 23636	x didymoides (NH)
R 23563	sanguineum	R 23637	x haemaleum (NH)
R 23564	citriniflorum	R 23638	citriniflorum
R 23569	brevistylum	R 23639	x haemaleum (NH)
R 23575	x iodes (NH)	R 23640	temenium Gilvum
R 23578	unidentified species	R 23641	sanguineum
R 23579	citriniflorum	R 23642	x haemaleum (NH)
R 23580	sanguineum	R 23643	sanguineum
R 23581	citriniflorum	R 23645	x himertum (NH)
R 23586	fictolacteum	R 23646	x eudoxum (NH)
R 23587	praestans	R 23647	citriniflorum
R 23588	floccigerum	R 23648	campylogynum
R 23589	coriaceum	R 23649	horaeum
R 23590	rubiginosum	R 23650	sanguineum
R 23591	lukiangense	R 23651	x flavorufum (NH)
R 23592	edgeworthii	R 23652	x flavorufum (NH)
R 23593	temenium	R 23653	x flavorufum (NH)
R 23615	mekongense	R 23660	x iodes (NH)
R 23616	nigropunctatum	R 23661	adenogynum

R 23662	adenogynum	R 24363	x agglutinatum (NH)
R 23663	x eudoxum (NH)	R 24365	x agglutinatum (NH)
R 23664	sanguineum	R 24366	x agglutinatum (NH)
R 23666	brevistylum	R 24368	wardii
R 23669	citriniflorum	R 24369	impeditum
R 24278	impeditum	R 24381	balfourianum
R 24280	sphaeroblastum	R 24382	balfourianum
R 24281	balfourianum	R 24383	balfourianum
R 24282	rufescens	R 24384	impeditum aff.
R 24283	rubiginosum	R 24385	nigropunctatum
R 24284	x agglutinatum (NH)	R 24395	x agglutinatum
R 24285	primuliflorum	R 24403	dryophyllum
R 24295	x agglutinatum (NH)	R 24404	oreotrepes
R 24296	proteoides	R 24406	balfourianum
R 24299	roxieanum Cucullatum	R 24410	x agglutinatum (NH)
R 24302	x agglutinatum (NH)	R 24413	sphaeroblastum
R 24304	primuliflorum	R 24414	x agglutinatum (NH)
R 24306	x agglutinatum (NH)	R 24418	dryophyllum
R 24307	beesianum	R 24421	yunnanense
R 24309	aechmophyllum	R 24432	aechmophyllum
R 24310	sphaeroblastum	R 24433	decorum
R 24311	sphaeroblastum	R 24434	vernicosum
R 24314	dryophyllum	R 24439	trichostomum
R 24317	phaeochrysum	R 24440	cookeanum
R 24319	telmateium	R 24445	dryophyllum
R 24320	thymifolium	R 24446	intricatum
R 24321	trichostomum	R 24446	x intricatum (NH)
R 24322	cookeanum	R 24457	dryophyllum
R 24325	sphaeroblastum	R 24458	unidentified species
R 24336	telmateium	R 24459	dryophyllum
R 24339	wardii	R 24460	impeditum
R 24343	sphaeroblastum	R 24461	dryophyllum
R 24350	sphaeroblastum	R 24464	impeditum
R 24359	x agglutinatum (NH)	R 24471	cookeanum
R 24360	wardii	R 24481	sphaeroblastum
R 24361	telmateium	R 24487	wardii

R 24489	primuliflorum	R 25278	lepidotum
R 24495	wardii	R 25301	traillianum
R 24501	proteoides	R 25302	rupicola
R 24503	roxieanum	R 25303	prostratum
R 24512	x agglutinatum (NH)	R 25305	adenogynum
R 24524	x agglutinatum (NH)	R 25306	fictolacteum
R 24531	hemitrichotum	R 25308	adenogynum
R 24540	primuliflorum	R 25313	sphaeroblastum
R 24541	hemitrichotum	R 25314	phaeochrysum
R 24544	trichostomum	R 25326	rubiginosum
R 24569	impeditum & rex	R 25327	hormophorum
R 24573	rex	R 25328	traillianum
R 24582	beesianum	R 25329	rubiginosum
R 24583	beesianum	R 25331	vernicosum
R 24591	aechmophyllum	R 25334	lepidotum
R 24592	aechmophyllum	R 25340	anthosphaerum
R 24599	rubiginosum	R 25345	beesianum
R 24602	yunnanense	R 25349	adenogynum
R 24604	uvariifolium	R 25350	primuliflorum
R 25233	unidentified species	R 25352	uvariifolium
R 25234	scabrifolium	R 25368	traillianum
R 25235	unidentified species	R 25370	yungningense
R 25236	unidentified species	R 25372	rubiginosum
R 25237	spinuliferum	R 25373	vernicosum
R 25238	unidentified species	R 25375	adenogynum
R 25239	microphyton	R 25376	primuliflorum
R 25240	unidentified species	R 25377	drumonium
R 25246	adenogynum	R 25381	hormophorum
R 25247	rubiginosum	R 25384	traillianum
R 25251	uvariifolium	R 25386	irroratum
R 25252	traillianum	R 25387	adenogynum
R 25258	rupicola	R 25388	semnoides aff.
R 25259	traillianum	R 25389	semnoides
R 25260	dasycladum	R 25390	roxieanum Globigerum
R 25272	preptum aff.	R 25391	wardii
R 25277	rupicola	R 25393	basilicum

R 25394	semnoides	R 25440	cephalanthum
R 25395	irroratum	R 25441	fictolacteum
R 25396	fictolacteum	R 25442	bureavii
R 25398	dasycladum	R 25443	scabrifolium
R 25400	irroratum	R 25444	fictolacteum
R 25401	clementinae	R 25445	bureavii
R 25402	hippophaeoides	R 25446	scabrifolium
R 25405	roxieanum Cucullatum	R 25447	fictolacteum
R 25406	roxieanum Cucullatum	R 25448	fictolacteum
R 25407	roxieanum Cucullatum	R 25451	irroratum
R 25414	fictolacteum	R 25452	roxieanum
R 25417	fastigiatum	R 25453	edgeworthii
R 25418	fictolacteum	R 25454	edgeworthii
R 25419	uvariifolium	R 25455	roxieanum Cucullatum
R 25421	uvariifolium	R 25458	pronom
R 25422	roxieanum	R 25459	campylogynum
R 25423	roxieanum	R 25462	roxieanum Cucullatum
R 25424	fictolacteum	R 25463	roxieanum Cucullatum
R 25425	fulvoides	R 25464	roxieanum
R 25426	fulvoides	R 25465	xanthostephanum
R 25428	dasycladum	R 25466	fictolacteum
R 25429	oreotrepes	R 25467	wardii
R 25430	clementinae	R 25468	fulvoides
R 25431	fulvoides	R 25470	x agglutinatum (NH)
R 25432	clementinae	R 25472	sphaeroblastum
R 25435	bureavii	R 25474	dryophyllum
R 25436	bureavii	R 25476	cookeanum
R 25437	balfourianum	R 25478	sphaeroblastum
R 25438	rubiginosum	R 25480	sphaeroblastum
R 25439	bureavii	R 25482	phaeochrysum

- opposite -
Self-portrait with outlaw escort, China, 20th June, 1928.



1948/1949 - Tibet & Yunnan			
R 1	caloxanthum	R 36	beesianum
R 2	crinigerum	R 37	eclecteum
R 3	crinigerum	R 38	crinigerum
R 4	unidentified species	R 39	chaetomallum
R 5	chameunum	R 40	chaetomallum
R 6	dealbatum aff.	R 41	chaetomallum
R 6a	sanguineum aff.	R 42	beesianum
R 6b	x eudoxum (NH)	R 42a	unidentified species
R 7	unidentified species	R 43	unidentified species
R 8	beesianum	R 44	didymum
R 9	fulvoides	R 45	didymum
R 10	floccigerum	R 46	sanguineum
R 11	sanguineum	R 47	martinianum
R 12	hypolepidotum	R 48	bainbridgeanum
R 13	chaetomallum	R 49	floccigerum
R 14	arizelum	R 50	fulvoides
R 15	xanthostephanum	R 51	unidentified species
R 16	arizelum	R 51a	arizelum
R 17	virgatum	R 52	chaetomallum
R 18	sanguineum	R 53	didymum
R 19	x iodes (NH)	R 54	didymum
R 20	crinigerum	R 56	chameunum
R 21	mekongense	R 57	martinianum
R 22	chaetomallum	R 58	keleticum
R 23	sanguineum	R 59	sanguineum
R 24	sanguineum	R 60	dealbatum
R 25	arizelum	R 61	didymum
R 26	fulvoides	R 62	didymum
R 27	sanguineum	R 63	x iodes (NH)
R 28	rubiginosum	R 64	x iodes (NH)
R 29	eclecteum	R 65	didymum
R 31	x haemaleum (NH)	R 69	unidentified species
R 32	floccigerum	R 70	genestierianum
R 33	eclecteum	R 71	rubiginosum
R 34	unidentified species	R 72	lukiangense

R 73	uvariifolium	R 125b	sanguineum
R 92	forrestii	R 126	sanguineum
R 93	hypolepidotum	R 128	didymum
R 94	proteoides	R 129	heliolepis
R 95	megeratum	R 131	eclecteum
R 96	oreotrepes	R 132	campylogynum
R 97	arizelum	R 133	crassum
R 98	crinigerum	R 134	fulvoides
R 100	crinigerum	R 135	edgeworthii
R 101	temenium Gilvum aff.	R 136	sanguineum
R 101a	x haemaleum aff. (NH)	R 137	rubiginosum
R 102	arizelum aff.	R 138	roxieanum
R 103	praestans	R 139	x iodes (NH)
R 104	martinianum	R 140	coriaceum
R 105	campylogynum	R 141	x iodes (NH)
R 106	sanguineum	R 142	roxieanum
R 107	aganniphum	R 143	fulvoides
R 108	citriniflorum	R 144	floccigerum
R 109	beesianum	R 145	brevistylum
R 110	saluenense	R 146	mekongense
R 111	sanguineum aff.	R 147	proteoides
R 112	sanguineum	R 148	eclecteum
R 113	temenium	R 149	sanguineum
R 114	temenium	R 150	sanguineum
R 115	unidentified species	R 150	x eudoxum (NH)
R 116	unidentified species	R 151	proteoides
R 117	beesianum	R 152	saluenense
R 118	praestans	R 153	praestans
R 119	citriniflorum aff.	R 154	selense
R 120	coriaceum	R 155	beesianum
R 121	anthosphaerum	R 158	uvariifolium
R 122	mekongense	R 159	leptothrium
R 123	eclecteum	R 161	fulvum
R 124	citriniflorum aff.	R 162	glischrum
R 125	sperabiloides	R 163	anthosphaerum
R 125a	temenium	R 164	beesianum

R 165	oreotrephes	R 180	fulvoides
R 166	chaetomallum	R 182	sinogrande
R 167	rothschildii	R 184	rubiginosum
R 169	stewartianum	R 185	irroratum
R 170	rothschildii aff.	R 186	rubiginosum
R 171	temenium	R 187	rubiginosum
R 172	annae	R 188	fastigiatum
R 173	uvariifolium	R 189	rubiginosum
R 174	unidentified species	R 190	rubiginosum
R 175	chameunum	R 191	unidentified species
R 176	beesianum	R 192	irroratum
R 177	weihsiense	R 193	fictolacteum
R 178	riparioides	R 199	hardyi

- opposite -
Joseph Rock with the King of Muli, Xiang Cicheng Zhaba.



Frank Ludlow & George Sherriff:



Two photos from the LS&E expedition, taken in Tibet during 1946 by Arthur J. Hopkinson, then the UK's Political Officer for Sikkim, Bhutan and Tibet.

- above -

George Sherriff, an un-named Tibetan assistant, Frank Ludlow, Henry Elliott and Betty Sherriff.

- below -

Frank Ludlow, George Sherriff, an un-named Tibetan assistant, Henry Elliott and Betty Sherriff.

1933 - Bhutan			
L&S 7	cinnabarinum	L&S 49	wightii
L&S 8	cinnabarinum	L&S 88	setosum
L&S 9	campylocarpum	L&S 123	lepidotum
L&S 15	triflorum	L&S 173	triflorum
L&S 18	thomsonii	L&S 175	lepidotum
L&S 19	wallichii	L&S 176	lepidotum
L&S 21	hodgsonii	L&S 184	keysii
L&S 22	wallichii	L&S 190	camelliiflorum
L&S 25	arboreum	L&S 218	maddenii
L&S 31	thomsonii	L&S 253	camelliiflorum
1934 - Bhutan & S Tibet			
L&S 569	maddenii	L&S 634	lepidotum
L&S 570	maddenii	L&S 638	anthopogon
L&S 582	dalhousiae	L&S 647	cinnabarinum
L&S 583	rhabdotum	L&S 661	hypananthum
L&S 586	arboreum	L&S 716	lepidotum
L&S 588	keysii	L&S 811	aganniphum
L&S 589	camelliiflorum	L&S 976	lindleyi
L&S 590	leptocarpum	L&S 1081	unidentified species
L&S 595	thomsonii	L&S 1082	campanulatum
L&S 605	campanulatum	L&S 1083	tsariense
L&S 606	wightii	L&S 1084	fulgens
L&S 613	hodgsonii	L&S 1085	campanulatum
L&S 616	campanulatum	L&S 1091	anthopogon
L&S 619	campanulatum	L&S 1105	arboreum
L&S 622	campanulatum	L&S 1115	arboreum
L&S 624	campanulatum		
1936 - Bhutan & S Tibet			
L&S 1134	grande	L&S 1183	camelliiflorum
L&S 1141	maddenii	L&S 1184	zeylanicum
L&S 1142	maddenii	L&S 1185	arboreum
L&S 1143	arboreum	L&S 1186	grande
L&S 1148	grande	L&S 1193	papillatum
L&S 1181	camelliiflorum	L&S 1204	rhabdotum
L&S 1182	arboreum	L&S 1205	dalhousiae

L&S 1206	kendrickii	L&S 1355	glaucophyllum
L&S 1208	grande aff.	L&S 1356	ciliatum
L&S 1209	camelliiflorum	L&S 1357	fulvum
L&S 1227	kendrickii	L&S 1358	arizelum
L&S 1235	grande	L&S 1359	populare
L&S 1251	edgeworthii	L&S 1360	dekatanum
L&S 1252	papillatum	L&S 1361	megeratum
L&S 1257	neriiflorum	L&S 1362	pumilum
L&S 1258	grande	L&S 1364	tsariense
L&S 1260	papillatum	L&S 1365	amandum
L&S 1261	arboreum	L&S 1366	virgatum
L&S 1262	triflorum	L&S 1380	arizelum
L&S 1266	lindleyi	L&S 1381	fulvum
L&S 1269	lindleyi	L&S 1383	fulvum
L&S 1276	arboreum	L&S 1384	fulvum
L&S 1279	virgatum	L&S 1385	hodgsonii
L&S 1280	kendrickii	L&S 1386	pudorosum
L&S 1281	arboreum	L&S 1387	erosum
L&S 1282	argipeplum	L&S 1389	luciferum
L&S 1283	thomsonii	L&S 1390	sherriffii
L&S 1285	baileyi	L&S 1391	populare
L&S 1296	wallichii	L&S 1392	vellereum
L&S 1297	fulgens	L&S 1396	erosum
L&S 1302	wallichii	L&S 1397	vellereum
L&S 1303	tsariense	L&S 1541	erosum
L&S 1304	argipeplum	L&S 1542	fulvum
L&S 1305	arboreum	L&S 1549	vellereum
L&S 1306	wallichii	L&S 1555	vellereum
L&S 1307	arboreum	L&S 1557	luciferum
L&S 1308	arboreum	L&S 1558	luciferum
L&S 1309	pendulum	L&S 1559	vellereum
L&S 1342	vellereum	L&S 1564	dignabile
L&S 1346	virgatum	L&S 1565	anthopogon
L&S 1352	neriiflorum	L&S 1566	dignabile
L&S 1353	triflorum	L&S 1567	aganniphum aff.
L&S 1354	xanthocodon Purpurellum	L&S 1568	unidentified species

L&S 1575	cinnabarinum	L&S 1770	x agglutinatum (NH)
L&S 1583	cephalanthum	L&S 1771	calostrotum
L&S 1598	nivale	L&S 1772	fragariiflorum
L&S 1606	anthopogon	L&S 1773	pumilum
L&S 1607	dignabile	L&S 1776	lopsangianum
L&S 1608	luciferum	L&S 1779	nivale
L&S 1610	luciferum	L&S 1788	nivale
L&S 1612	pudorosum	L&S 1796	primuliflorum
L&S 1619	dignabile	L&S 1855	lepidotum
L&S 1624	pumilum	L&S 1860	vellereum
L&S 1628	campylocarpum	L&S 1863	mahogani
L&S 1629	erosum	L&S 1870	lepidotum
L&S 1634	pumilum	L&S 1873	cerasinum
L&S 1636	tsariense	L&S 1881	tsangpoense
L&S 1647	pruniflorum	L&S 1882	campylogynum
L&S 1649	calostrotum	L&S 1883	forrestii Repens
L&S 1651	lopsangianum	L&S 1889	pumilum
L&S 1653	anthopogon	L&S 1890	mekongense
L&S 1656	caloxanthum	L&S 1893	campylocarpum
L&S 1666	megeratum	L&S 1894	cinnabarinum
L&S 1675	triflorum	L&S 1895	loudlowii
L&S 1676	neriiflorum	L&S 1896	mekongense
L&S 1677	neriiflorum	L&S 1904	keysii
L&S 1702	lindleyi	L&S 2085	wardii
L&S 1715	lindleyi	L&S 2108	leptocarpum
L&S 1718	lopsangianum	L&S 2109	trichocladum
L&S 1720	phaedropum	L&S 2160	laudandum
L&S 1728	x pallidum (NH)	L&S 2210	tsariense
L&S 1730	x pallidum (NH)	L&S 2225	lepidotum
L&S 1741	pumilum	L&S 2244	lepidotum
L&S 1751	leptocarpum	L&S 2300	nivale
L&S 1756	anthopogon	L&S 2332	crassum
L&S 1757	concatenans	L&S 2334	keysii
L&S 1760	aganniphum	L&S 2335	trichocladum
L&S 1761	x agglutinatum (NH)	L&S 2338	crassum
L&S 1762	luciferum	L&S 2378	pumilum

L&S 2447	lepidotum	L&S 2824	anthopogon
L&S 2505	megeratum	L&S 2825	arboreum
L&S 2552	pumilum	L&S 2826	thomsonii
L&S 2622	bulu	L&S 2827	unidentified species
L&S 2627	vellereum	L&S 2828	anthopogon
L&S 2652	cinnabarinum	L&S 2833	maddenii
L&S 2652	pumilum	L&S 2835	griffithianum
L&S 2653	forrestii	L&S 2836	edgeworthii
L&S 2654	campylogynum	L&S 2837	rhabdotum
L&S 2736	lopsangianum	L&S 2843	rhabdotum
L&S 2738	vellereum	L&S 2845	camelliiflorum
L&S 2739	ciliatum	L&S 2846	fulgens
L&S 2743	unidentified species	L&S 2847	thomsonii
L&S 2744	lindleyi	L&S 2848	unidentified species
L&S 2745	edgeworthii	L&S 2849	camelliiflorum
L&S 2748	kendrickii	L&S 2850	camelliiflorum
L&S 2751	sherriffii	L&S 2851	unidentified species
L&S 2752	pudorosum	L&S 2852	camelliiflorum
L&S 2753	arizelum	L&S 2853	camelliiflorum
L&S 2754	fulvum	L&S 2855	camelliiflorum
L&S 2755	erosum	L&S 2856	tubiforme
L&S 2757	ciliatum	L&S 2857	leptocarpum
L&S 2758	trichocladum	L&S 2858	tsariense
L&S 2759	megeratum	L&S 2859	wightii
L&S 2760	camelliiflorum	L&S 2860	unidentified species
L&S 2761	megeratum	L&S 2891	dalhousiae
L&S 2762	pumilum	L&S 2892	maddenii
L&S 2764	glaucophyllum	L&S 2893	campbelliae
L&S 2765	camelliiflorum	L&S 2894	tsariense
L&S 2766	tsariense	L&S 2895	wallichii
L&S 2767	unidentified species	L&S 2896	baileyi
L&S 2770	virgatum	L&S 2898	pendulum
L&S 2797	vellereum	L&S 2903	campanulatum aff.
L&S 2816	unidentified species	L&S 2906	campanulatum aff.
L&S 2817	unidentified species	L&S 2907	unidentified species
L&S 2818	lepidotum	L&S 2915	fulgens

L&S 2916	wightii	L&S 2917	rhabdotum
1937 - Bhutan			
L&S 2940	rhabdotum	L&S 3082	anthopogon
L&S 2944	rhabdotum	L&S 3087	campanulatum
L&S 2952	edgeworthii	L&S 3088	wightii
L&S 2960	arboreum	L&S 3089	flinckii
L&S 2977	grande	L&S 3090	fulgens
L&S 2980	lindleyi	L&S 3091	wightii
L&S 2983	falconeri	L&S 3095	glaucophyllum
L&S 2987	hodgsonii	L&S 3096	argipeplum
L&S 2988	argipeplum	L&S 3111	lepidotum
L&S 2989	eximium	L&S 3132	edgeworthii
L&S 2990	hodgsonii	L&S 3136	rhabdotum
L&S 2992	keysii	L&S 3147	maddenii
L&S 3017	arboreum	L&S 3164	polyandrum
L&S 3021	virgatum	L&S 3184	glaucophyllum
L&S 3025	phaedropum	L&S 3202	baileyi
L&S 3026	griffithianum	L&S 3216	pogonophyllum
L&S 3039	keysii	L&S 3217	anthopogon
L&S 3041	falconeri	L&S 3218	bhutanense
L&S 3042	thomsonii	L&S 3221	setosum
L&S 3047	hodgsonii	L&S 3239	fulgens
L&S 3048	campylocarpum	L&S 3243	bhutanense
L&S 3049	argipeplum	L&S 3244	aeruginosum
L&S 3050	cinnabarinum	L&S 3254	lepidotum
L&S 3058	campylocarpum	L&S 3267	camelliiflorum
L&S 3061	triflorum	L&S 3289	lepidotum
L&S 3063	lanatum	L&S 3324	camelliiflorum
L&S 3066	x candelabrum (NH)	L&S 3400	anthopogon
L&S 3074	lanatum	L&S 3428	pogonophyllum
L&S 3075	fulgens	L&S 3578	wallichii
L&S 3081	bhutanense		

1938 - Tibet (with George Taylor)			
LS&T 3587	vellereum	LS&T 3676	hookeri
LS&T 3589	unidentified species	LS&T 3677	ramsdenianum
LS&T 3600	vellereum	LS&T 3680	grande
LS&T 3601	primuliflorum	LS&T 3689	unidentified species
LS&T 3607	vellereum	LS&T 3692	lindleyi
LS&T 3609	vellereum	LS&T 3702	neriiflorum
LS&T 3613	thomsonii	LS&T 3706	rude
LS&T 3618	clementinae	LS&T 3709	edgeworthii
LS&T 3619	unidentified species	LS&T 3720	edgeworthii
LS&T 3620	lanatum	LS&T 3726	xanthostephanum
LS&T 3623	vellereum	LS&T 3728	edgeworthii
LS&T 3624	hirtipes	LS&T 3731	campylocarpum
LS&T 3628	vellereum	LS&T 3736	leptocarpum
LS&T 3629	kongboense	LS&T 3741	lindleyi
LS&T 3631	hirtipes	LS&T 3749	arizelum
LS&T 3632	exasperatum	LS&T 3750	x pallidum (NH)
LS&T 3635	lopsangianum	LS&T 3751	charitopes
LS&T 3641	sulfureum	LS&T 3752	charitopes
LS&T 3642	forrestii Repens	LS&T 3753	lopsangianum
LS&T 3643	hodgsonii	LS&T 3761	concatenans
LS&T 3644	sulfureum	LS&T 3765	cerasinum
LS&T 3645	tsariense	LS&T 3766	lopsangianum
LS&T 3646	hodgsonii	LS&T 3768	lopsangianum
LS&T 3652	hookeri	LS&T 3769	tsariense
LS&T 3654	ciliatum	LS&T 3777	dignabile
LS&T 3655	hookeri	LS&T 3778	tsangpoense
LS&T 3656	phaedropum	LS&T 3783	forrestii Repens
LS&T 3657	megeratum	LS&T 3784	pumilum
LS&T 3663	grande	LS&T 3785	riparium
LS&T 3664	tsangpoense	LS&T 3786	x chamaephytum (NH)
LS&T 3665	lindleyi	LS&T 3792	pudorosum
LS&T 3666	xanthostephanum	LS&T 3793	luciferum
LS&T 3667	lindleyi	LS7T 3795	mahogani
LS&T 3670	rude	LS&T 3797	hirtipes
LS&T 3674	arizelum	LS&T 3801	cinnabarinum Roylei

LS&T 3802	kongboense	LS&T 4396	wardii
LS&T 3805	nivale	LS&T 4440	bulu
LS&T 3829	dignabile	LS&T 4489	mahogani
LS&T 3830	nivale	LS&T 4496	bulu
LS&T 3849	wardii	LS&T 4536	vellereum
LS&T 3861	anthopogon	LS&T 4620	wardii
LS&T 3878	clementinae	LS&T 4621	dignabile
LS&T 3900	laudandum	LS&T 4711	calostrotum
LS&T 3902	x agglutinatum (NH)	LS&T 4738	campylogynum
LS&T 3925	pumilum	LS&T 4747	wardii
LS&T 3933	kongboense	LS&T 4751	forrestii Repens
LS&T 3938	lopsangianum	LS&T 4755	cephalanthum
LS&T 3939	callimorphum	LS&T 4757	tsariense
LS&T 3940	lopsangianum	LS&T 4765	pumilum
LS&T 3941	ludlowii	LS&T 4773	wardii
LS&T 3942	forrestii Repens	LS&T 4781	anthopogon
LS&T 3975	calostrotum	LS&T 4781a	cephalanthum
LS&T 3976	luciferum	LS&T 4784	nivale
LS&T 3994	campylocarpum	LS&T 4785	fragariiflorum
LS&T 3995	forrestii Repens	LS&T 4808	dignabile
LS&T 3997	populare	LS&T 4826	nivale
LS&T 3999	nivale	LS&T 4902	trichocladum
LS&T 4028	grande	LS&T 4902	campylocarpum
LS&T 4029	arboreum	LS&T 4916	charitopes
LS&T 4031	arboreum	LS&T 4946	puralbum
LS&T 4034	thomsonii	LS&T 4955	cerasinum
LS&T 4035	argipeplum	LS&T 4996	bulu
LS&T 4046	mahogani	LS&T 5010	x agglutinatum (NH)
LS&T 4139	primuliflorum	LS&T 5032	mahogani
LS&T 4140	vellereum	LS&T 5042	laudandum
LS&T 4253	nivale	LS&T 5182	lepidotum
LS&T 4277	bulu	LS&T 5198	campylogynum
LS&T 4359	luciferum	LS&T 5198a	charitopes
LS&T 4360	dasycladum	LS&T 5198b	pumilum
LS&T 4361	cinnabarinum Roylei	LS&T 5237	charitopes
LS&T 4362	dignabil	LS&T 5240	cephalanthum Nmaiense

LS&T 5243	mekongense	LS&T 6533	pumilum
LS&T 5261	campylocarpum	LS&T 6538	trichocladum
LS&T 5283	nivale	LS&T 6548	wardii
LS&T 5431	lepidotum	LS&T 6549	lanatum
LS&T 5544	chamaethomsonii	LS&T 6556	pumilum
LS&T 5555	mekongense	LS&T 6560	xanthocodon
LS&T 5558	esetulosum	LS&T 6561	lopsangianum
LS&T 5559	pumilum	LS&T 6562	lindleyi
LS&T 5560	campylogynum	LS&T 6563	phaedropum
LS&T 5565	charitopes	LS&T 6565	keysii
LS&T 5568	x erythrocalyx (NH)	LS&T 6567	viscidifolium
LS&T 5571	ludlowii	LS&T 6568	ciliatum
LS&T 5572	forrestii	LS&T 6569	rude
LS&T 5581	tsariense	LS&T 6572	monanthum
LS&T 5583	campylocarpum	LS&T 6573	manipurense
LS&T 5584	callimorphum	LS&T 6576	hypolepidotum
LS&T 5599	lepidotum	LS&T 6579	hookeri
LS&T 5664	bulu	LS&T 6580	sulfureum
LS&T 5679	wardii	LS&T 6581	edgeworthii
LS&T 5768	cerasinum	LS&T 6582	xanthostephanum
LS&T 5769	charitopes	LS&T 6583	kasoense
LS&T 5783	campylocarpum	LS&T 6586	wardii
LS&T 5844	trichocladum	LS&T 6587	cerasinum
LS&T 5847	campylogynum	LS&T 6588	riparium
LS&T 5848	charitopes	LS&T 6590	mekongense
LS&T 5855	calostrotum	LS&T 6591	wardii
LS&T 5868	wardii	LS&T 6598	forrestii
LS&T 5869	cerasinum	LS&T 6599	wardii
LS&T 5883	xanthocodon	LS&T 6600	ludlowii
LS&T 6213	bulu	LS&T 6602	campylocarpum
LS&T 6302	vellereum	LS&T 6608	clementinae
LS&T 6342	pumilum	LS&T 6612	x doshongense (NH)
LS&T 6349a	xanthocodon Purpurellum	LS&T 6626	neriiflorum
LS&T 6350	lepidotum	LS&T 6633	leptocarpum
LS&T 6411	cinnamomeum	LS&T 6638	miniatum aff.
LS&T 6424	wallichii	LS&T 6645	vellereum

LS&T 6648	arglpeplum	LS&T 6694	dalhousiae
LS&T 6652	lanatum	LS&T 6754	maddenii
LS&T 6656	baileyi	LS&T 6776	arboreum
LS&T 6657	tsariense	LS&T 7012	crassum
LS&T 6659	wallichii	LS&T 7190	vellereum
LS&T 6660	pendulum	LS&T 7200	clementinae
LS&T 6661	tsariense	LS&T 7291	lepidotum
LS&T 6676	crassum		



A photo taken at Kashgar, in the Tarim Basin region of southern Xinjiang, China, during 1930. Ludlow and Sherriff are seated (left and right), with the rest of the group named as Pantsiloo, Williamson, unknown, Schomberg, Swedish missionary, and Ridley.

1939 - Kashmir			
L&S 7369	lepidotum	L&S 7385	campanulatum
L&S 7384	hypenanthum		
1940 - Kashmir			
L&S 7660	hypenanthum	L&S 8134	campanulatum
L&S 7736	lepidotum		
1942 - Tibet			
L&S 8653	nivale	L&S 8824	nivale
L&S 8654	primuliflorum	L&S 8825	primuliflorum
1943 - Tibet			
L&S 9145	hypenanthum	L&S 9538	primuliflorum
L&S 9146	lepidotum	L&S 9574	primuliflorum
L&S 9537	nivale	L&S 9575	nivale
1944 - Tibet			
L&S 9979	nivale	L&S 10039	cinnabarinum
L&S 9980	primuliflorum		
1946/1947 - Tibet (with Henry Elliott)			
LS&E 12002	vellereum	LS&E 12326	virgatum
LS&E 12010	mahogani	LS&E 12329	griseum
LS&E 12014	mahogani	LS&E 12342	uvarifolium
LS&E 12019	faucium	LS&E 12348	auritum
LS&E 12024	virgatum	LS&E 12354	scopulorum
LS&E 12045	faucium	LS&E 12370	scopulorum
LS&E 12117	nuttallii	LS&E 12372	uvarifolium
LS&E 12137	tanastylum	LS&E 12374	mahogani
LS&E 12208	faucium	LS&E 12375	uvarifolium
LS&E 12231	scopulorum	LS&E 12380	vellereum
LS&E 12239	unidentified species	LS&E 12388	griseum
LS&E 12246	tanastylum	LS&E 12393	vellereum
LS&E 12248	maddenii	LS&E 12395	mahogani
LS&E 12253	virgatum	LS&E 12397	russatum
LS&E 12264	scopulorum	LS&E 12400	mahogani
LS&E 12280	tanastylum	LS&E 12428	primuliflorum
LS&E 12289	faucium	LS&E 12469	cinnabarinum Roylei
LS&E 12290	faucium	LS&E 12470	wallichii
LS&E 12313	faucium	LS&E 12484	campylocarpum

LS&E 12485	mahogani	LS&E 13147	concatenans
LS&E 12490	baileyi	LS&E 13151	x haemaleum (NH)
LS&E 12491	arboreum	LS&E 13152	hirtipes
LS&E 12498	tsariense	LS&E 13155	stewartianum
LS&E 12505	mekongense	LS&E 13163	oreotrepthes
LS&E 12510	tanastylum	LS&E 13166	temoense
LS&E 12514	faucium	LS&E 13177	pomense
LS&E 12515	virgatum	LS&E 13180	beesianum
LS&E 12525	pendulum	LS&E 13181	campylogynum
LS&E 12526	campylocarpum	LS&E 13183	pumilum
LS&E 12535	glaucophyllum	LS&E 13205	cerasinum
LS&E 12536	keysii	LS&E 13217	wardii
LS&E 12537	ciliatum	LS&E 13251	vellereum
LS&E 12548	maddenii	LS&E 13269	kongboense
LS&E 12550	maddenii	LS&E 13276	campylogynum
LS&E 12564	maddenii	LS&E 13278a	forrestii
LS&E 12592	maddenii	LS&E 13278b	chamaethomsonii
LS&E 13035	nuttallii	LS&E 13283	unidentified species
LS&E 13043	lanigerum	LS&E 13316	bulu
LS&E 13044	glischrum	LS&E 13509	vellereum
LS&E 13045	pruniflorum	LS&E 13516	vellereum
LS&E 13077	nuttallii	LS&E 13520	bulu
LS&E 13108	cerasinum	LS&E 13521	griseum
LS&E 13109	wardii	LS&E 13524	vellereum
LS&E 13110	oreotrepthes	LS&E 13526	hirtipes
LS&E 13113	pruniflorum	LS&E 13527	kongboense
LS&E 13118	trichocladum	LS&E 13534	kongboense
LS&E 13120	uniflorum	LS&E 13535	kongboense
LS&E 13123	calostrotum	LS&E 13546	mahogani
LS&E 13124	cephalanthum	LS&E 13549	leucaspis
LS&E 13125	nivale	LS&E 13550	virgatum
LS&E 13126	x haemaleum (NH)	LS&E 13551	hirtipes
LS&E 13127	forrestii Repens	LS&E 13554	uvarifolium
LS&E 13128	hirtipes	LS&E 13559	faucium
LS&E 13129	didymum	LS&E 13561	ramsdenianum
LS&E 13133	laudandum	LS&E 13567	uvarifolium

LS&E 13568	montroseanum	LS&E 13671	vellereum
LS&E 13570	auritum	LS&E 13672	kongboense
LS&E 13584	venator	LS&E 13675	hirtipes
LS&E 13589	thomsonii	LS&E 13698	primuliflorum
LS&E 13590	glischrum	LS&E 13699	primuliflorum
LS&E 13591	lanigerum	LS&E 13701	nivale
LS&E 13592	uniflorum	LS&E 13703	dignabile
LS&E 13593	faucium	LS&E 13705	oreotrephe
LS&E 13594	faucium aff.	LS&E 13732	oreotrephe
LS&E 13595	exasperatum	LS&E 13733	wardii
LS&E 13596	ramsdensianum	LS&E 13746	lanatoides
LS&E 13598	populare	LS&E 13747	vellereum
LS&E 13603	megacalyx	LS&E 13753	x agglutinatum (NH)
LS&E 13606	adenosum	LS&E 13754	wardii
LS&E 13609	fictolacteum	LS&E 13755	faucium
LS&E 13610	faucium	LS&E 13756	stewartianum
LS&E 13611	faucium	LS&E 13760	dignabile
LS&E 13612	parmulatum	LS&E 13761	oreotrephe
LS&E 13613	oreotrephe	LS&E 13780	calostrotum
LS&E 13614	oreotrephe	LS&E 13781	puralbum
LS&E 13618	boothii	LS&E 13782	hirtipes
LS&E 13619	wardii	LS&E 13783	forrestii Repens
LS&E 13620	faucium aff.	LS&E 13792	dignabile
LS&E 13622	oreotrephe	LS&E 13793	dignabile
LS&E 13625	tephropeplum	LS&E 13794	dignabile
LS&E 13629	hirtipes	LS&E 13795	x agglutinatum (NH)
LS&E 13633	kongboense	LS&E 13842	puralbum
LS&E 13634	hirtipes	LS&E 13843	dignabile
LS&E 13643	faucium	LS&E 13855	x agglutinatum (NH)
LS&E 13645	virgatum	LS&E 13857	dignabile
LS&E 13661	wardii	LS&E 13858	x agglutinatum (NH)
LS&E 13663	forrestii Repens	LS&E 13872	nigropunctatum
LS&E 13664	wardii	LS&E 13909	vellereum
LS&E 13665	uvarifolium	LS&E 13969	forrestii Repens
LS&E 13667	x pallidum (NH)	LS&E 13974	calostrotum
LS&E 13668	wardii	LS&E 13981	puralbum

LS&E 13982	hirtipes	LS&E 15044	dignabile
LS&E 13985	lepidotum	LS&E 15048	dignabile
LS&E 14006	x agglutinatum (NH)	LS&E 15049	dignabile
LS&E 14023	temoense	LS&E 15050	dignabile
LS&E 14024	x agglutinatum	LS&E 15054	griseum
LS&E 14026	x agglutinatum	LS&E 15055	wardii
LS&E 14028	hirtipes	LS&E 15055a	hirtipes
LS&E 14029	campylogynum	LS&E 15056	hirtipes
LS&E 14030	calostrotum	LS&E 15057	selense
LS&E 14101	lepidotum	LS&E 15058	nivale
LS&E 14244	trichocladum	LS&E 15059	oreotrephe
LS&E 14295	campylogynum	LS&E 15070	forrestii Repens
LS&E 14297	campylogynum Cremastum	LS&E 15071	cephalanthum
LS&E 14395	aganniphum	LS&E 15072	hirtipes
LS&E 15001	vellereum	LS&E 15073	calostrotum
LS&E 15002	vellereum	LS&E 15074	fragariiflorum
LS&E 15003	vellereum	LS&E 15078	cephalanthum
LS&E 15004	mahogani	LS&E 15080	uvariifolium
LS&E 15005	hirtipes	LS&E 15081	wardii
LS&E 15006	lanatoides	LS&E 15087	wardii
LS&E 15008	kongboense	LS&E 15088	hirtipes
LS&E 15009	wardii	LS&E 15089	wardii
LS&E 15010	wardii	LS&E 15090	hirtipes
LS&E 15013	oreotrephe	LS&E 15091	puralbum
LS&E 15014	wardii	LS&E 15092	hirtipes
LS&E 15016	principis	LS&E 15093	x erythrocalyx (NH)
LS&E 15021	mahogani	LS&E 15094	puralbum
LS&E 15022	principis	LS&E 15096	charitopes
LS&E 15029	hirtipes	LS&E 15098	forrestii Repens
LS&E 15030	primuliflorum	LS&E 15099	x erythrocalyx (NH)
LS&E 15033	hirtipes	LS&E 15102	chamaethomsonii
LS&E 15034	uvarifolium	LS&E 15103	x chamaethauma (NH)
LS&E 15036	principis	LS&E 15106	forrestii Repens
LS&E 15039	oreotrephe	LS&E 15107	tsangpoense
LS&E 15040	wardii	LS&E 15109	cephalanthum
LS&E 15041	hirtipes	LS&E 15113	cephalanthum

LS&E 15121	x agglutinatum	LS&E 15289	x agglutinatum
LS&E 15157	vellereum	LS&E 15290	x agglutinatum
LS&E 15161	pumilum	LS&E 15291	parmulatum
LS&E 15165	x chamaethauma (NH)	LS&E 15292	forrestii Repens
LS&E 15169	x chamaethauma (NH)	LS&E 15295	x chamaethauma (NH)
LS&E 15170	forrestii Repens	LS&E 15296	x chamaethauma (NH)
LS&E 15171	campylogynum	LS&E 15297	x chamaethauma (NH)
LS&E 15175	dignabile	LS&E 15306	caloxanthum
LS&E 15178	x agglutinatum	LS&E 15307	dignabile
LS&E 15179	x agglutinatum	LS&E 15308	dignabile
LS&E 15193	mekongense	LS&E 15309	x agglutinatum (NH)
LS&E 15207	forrestii Repens	LS&E 15321	oreotrepes
LS&E 15208	nivale	LS&E 15324	x agglutinatum (NH)
LS&E 15209	x chamaethauma (NH)	LS&E 15325	unidentified species
LS&E 15241	cephalanthum Nmaiense	LS&E 15326	x agglutinatum (NH)
LS&E 15243	aganniphum	LS&E 15327	x agglutinatum (NH)
LS&E 15245	x agglutinatum (NH)	LS&E 15328	x agglutinatum (NH)
LS&E 15246	x agglutinatum (NH)	LS&E 15356	lepidotum
LS&E 15247	aganniphum	LS&E 15399	x agglutinatum (NH)
LS&E 15250	x chamaethauma (natural hybrid)	LS&E 15400	forrestii Repens
LS&E 15256	x agglutinatum	LS&E 15443	x agglutinatum (NH)
LS&E 15257	x agglutinatum	LS&E 15462	x agglutinatum (NH)
LS&E 15258	kongboense	LS&E 15466	x agglutinatum (NH)
LS&E 15259	x agglutinatum (NH)	LS&E 15469	wardii
LS&E 15263	hirtipes	LS&E 15499	lepidotum
LS&E 15272	hirtipes	LS&E 15535	x agglutinatum
LS&E 15273	hirtipes	LS&E 15650	nivale
LS&E 15277	mekongense	LS&E 15668	nivale
LS&E 15279	cerasinum	LS&E 15669	rufescens
LS&E 15280	cerasinum	LS&E 15729	russatum
LS&E 15281	cerasinum	LS&E 15751	kongboense
LS&E 15284	pumilum	LS&E 15752	kongboense
LS&E 15285	forrestii Repens	LS&E 15763	x agglutinatum (NH)
LS&E 15286	cephalanthum Nmaiense	LS&E 15764	wardii
LS&E 15287	x chamaethauma (NH)	LS&E 15765	hirtipes
LS&E 15288	x agglutinatum	LS&E 15774	vellereum

LS&E 15796	calostrotum	LS&E 15828	fragariiflorum x ? (NH)
LS&E 15817	griseum	LS&E 15831	vellereum
LS&E 15819	oreotrepes		
1948 - Sikkim			
L&S 15835	ciliatum	L&S 15841	virgatum
L&S 15840	dalhousiae		
1949 - Bhutan (with John Hicks)			
LS&H 16007	arboreum	LS&H 16184	lindleyi
LS&H 16009	ramsdenianum	LS&H 16206	virgatum
LS&H 16019	ciliatum	LS&H 16246	campylocarpum
LS&H 16026	cinnamomeum	LS&H 16248	wallichii
LS&H 16027	cinnabarinum	LS&H 16249	wightii
LS&H 16054	virgatum	LS&H 16250	campanulatum
LS&H 16062	triflorum	LS&H 16294	nivale
LS&H 16068	griffithianum	LS&H 16324	lanatum
LS&H 16090	wallichii	LS&H 16339	campanulatum
LS&H 16095	arboreum x ? (NH)	LS&H 16346	hodgsonii
LS&H 16096	papillatum	LS&H 16349	campanulatum
LS&H 16099	hypenanthum	LS&H 16351	succothii
LS&H 16100	wightii	LS&H 16366	campylocarpum
LS&H 16101	succothii	LS&H 16371	falconeri
LS&H 16103	papillatum	LS&H 16372	keysii
LS&H 16116	thomsonii	LS&H 16378	edgeworthii
LS&H 16117	pendulum	LS&H 16392	keysii
LS&H 16120	hodgsonii	LS&H 16419	anthopogon
LS&H 16121	wallichii	LS&H 16442	baileyi
LS&H 16123	kendrickii	LS&H 16443	campanulatum
LS&H 16126	xanthocodon	LS&H 16448	thomsonii
LS&H 16128	wallichii	LS&H 16492	xanthocodon
LS&H 16136	wallichii	LS&H 16493	xanthocodon
LS&H 16137	hodgsonii	LS&H 16494	hodgsonii
LS&H 16140	wallichii	LS&H 16495	campylocarpum
LS&H 16155	lanatum	LS&H 16510	lepidotum & rhabdotum
LS&H 16157	setosum	LS&H 16523	rhabdotum
LS&H 16160	campylocarpum	LS&H 16524	maddenii
LS&H 16168	campylocarpum	LS&H 16532	vaccinioides

LS&H 16578	lepidotum	LS&H 18720	griffithianum
LS&H 16604	lepidotum	LS&H 18732	keysii
LS&H 16681	lepidotum	LS&H 18736	grande
LS&H 16752	lepidotum	LS&H 18739	lindleyi
LS&H 16851	bhutanense	LS&H 18743	argipeplum
LS&H 16865	lepidotum	LS&H 18771	pendulum
LS&H 16927	camelliiflorum	LS&H 18776	griffithianum
LS&H 17359	baileyi	LS&H 18777	edgeworthii
LS&H 17447	baileyi	LS&H 18801	hodgsonii
LS&H 17448	wallichii	LS&H 18850	thomsonii
LS&H 17449	campanulatum	LS&H 18877	rhabdotum
LS&H 17478	wallichii	LS&H 18881	triflorum
LS&H 17498	ciliatum	LS&H 18882	arboreum
LS&H 17501	trichocladum	LS&H 18884	hodgsonii
LS&H 17509	lepidotum	LS&H 18887	glaucophyllum
LS&H 17512	wallichii	LS&H 18888	pendulum
LS&H 17521	xanthocodon	LS&H 18889	cinnabarinum
LS&H 17525	barbatum	LS&H 18890	lanatum
LS&H 17526	aeruginosum	LS&H 18893	fulgens aff.
LS&H 17527	wallichii	LS&H 18898	wallichii
LS&H 17531	camelliiflorum	LS&H 18899	wightii
LS&H 17531a	maddenii	LS&H 18921	xanthocodon
LS&H 17543	setosum	LS&H 18922	campylocarpum
LS&H 17546	hirtipes	LS&H 18927	keysii
LS&H 17550	anthopogon	LS&H 18930	hodgsonii
LS&H 17552	lepidotum	LS&H 18945	campanulatum
LS&H 18620	arboreum	LS&H 18949	anthopogon
LS&H 18660	grande	LS&H 18956	setosum
LS&H 18677	argipeplum	LS&H 18959	wightii
LS&H 18682	argipeplum	LS&H 18960	nivale
LS&H 18683	ciliatum	LS&H 18961	wallichii
LS&H 18687	virgatum	LS&H 18966	bhutanense
LS&H 18697	thomsonii	LS&H 18998	lanatum
LS&H 18703	arboreum	LS&H 19023	hodgsonii
LS&H 18710	kendrickii	LS&H 19039	bhutanense
LS&H 18719	falconeri	LS&H 19046	thomsonii

LS&H 19049	baileyi	LS&H 20613	tubiforme
LS&H 19071	bhutanense	LS&H 20614	thomsonii
LS&H 19102	campanulatum	LS&H 20615	triflorum
LS&H 19124	baileyi	LS&H 20620	niveum
LS&H 19140	lepidotum	LS&H 20622	cinnabarinum
LS&H 19234	lepidotum	LS&H 20623	tubiforme
LS&H 19277	camelliiflorum	LS&H 20626	campylocarpum
LS&H 19361	anthopogon	LS&H 20627	pendulum
LS&H 19481	keysii	LS&H 20628	lanatum
LS&H 19847	tsariense aff.	LS&H 20640	fulgens
LS&H 19848	basfordii	LS&H 20641	wightii
LS&H 19849	triflorum	LS&H 20642	wightii
LS&H 19850	succothii	LS&H 20643	fulgens aff.
LS&H 19869	unidentified species	LS&H 20648	lanatum
LS&H 20107	fulgens aff.	LS&H 20649	hodgsonii
LS&H 20182	hodgsonii	LS&H 20655	anthopogon
LS&H 20184	fulgens	LS&H 20659	baileyi
LS&H 20186	fulgens aff.	LS&H 20665	fulgens
LS&H 20205	maddenii	LS&H 20672	wallichii
LS&H 20220	griffithianum	LS&H 20686	pumilum
LS&H 20232	arboreum	LS&H 20720	fragariiflorum
LS&H 20239	phaedropum	LS&H 20825	leptocarpum
LS&H 20267	hodgsonii	LS&H 20900	lepidotum
LS&H 20277	wightii	LS&H 21170	hypenanthum
LS&H 20286	bhutanense	LS&H 21184	pumilum
LS&H 20366	lepidotum	LS&H 21257	rhabdotum
LS&H 20488	camelliiflorum	LS&H 21274	unidentified species
LS&H 20489	rhabdotum	LS&H 21282	tubiforme
LS&H 20519	arboreum	LS&H 21283	cinnabarinum
LS&H 20523	arboreum	LS&H 21284	keysii
LS&H 20527	argipeplum	LS&H 21285	thomsonii
LS&H 20535	lindleyi	LS&H 21286	x candelabrum (NH)
LS&H 20581	keysii	LS&H 21287	papillatum
LS&H 20582	phaedropum	LS&H 21289	leptocarpum
LS&H 20583	arboreum	LS&H 21290	phaedropum
LS&H 20586	arboreum	LS&H 21292	lepidotum

LS&H 21293	cinnabarinum	LS&H 21298	campanulatum
LS&H 21294	arboreum	LS&H 21299	keysii
LS&H 21295	succothii	LS&H 21475	baileyi
LS&H 21296	hodgsonii	LS&H 21483	griffithianum
LS&H 21297	baileyi		

The Ludlow & Sherriff collection lists set out above were published in Part One of *The Rhododendron Handbook 1967* and contain a far more extensive set of field numbers than printed in subsequent editions. All are designated as 'Rhododendrons in Cultivation in Great Britain and Ireland', so viable seed for each and every entry was presumably gathered, returned and successfully germinated.



Campsite, Tibet, 1936.

Alpine Garden Society:

1983 - Sikkim			
AGS 418	anthopogon	AGS 561	anthopogon
AGS 547	hodgsonii	AGS 637	lepidotum
1988 - Japan			
AGS 43	brachycarpum	AGS 177	kaempferi
AGS 64	degronianum	AGS 282	camtschaticum
AGS 69	brachycarpum	AGS 366	aureum
AGS 139	aureum	AGS 441	dauricum
AGS 163	albrechtii		
1994 - China			
AGS 1183	phaeochrysum aff.	AGS 2069	unidentified species
AGS 1275	nivale aff.	AGS 2071	uvariifolium
AGS 1423	primuliflorum aff.	AGS 2083	unidentified species
AGS 1481	campylogynum aff.	AGS 2086	unidentified species
AGS 1485	nivale aff.	AGS 2087	unidentified species
AGS 1506	chryseum	AGS 2088	unidentified species
AGS 1513	nigropunctatum aff.	AGS 2089	unidentified species
AGS 1515	primuliflorum aff.	AGS 2090	beesianum aff.
AGS 1549	unidentified species	AGS 2091	fictolacteam
AGS 1572	primuliflorum	AGS 2096	decorum
AGS 1619	hippophaeoides	AGS 2097	yunnanense
AGS 1637	racemosum	AGS 2100	unidentified species
AGS 1664	rubiginosum aff.	AGS 2102	russatum
AGS 1670	unidentified species	AGS 2103	unidentified species
AGS 1706	primuliflorum	AGS 2115	unidentified species
AGS 1756	telmateium aff.	AGS 2116	unidentified species
AGS 1775	unidentified species	AGS 2118	roxieanum
AGS 1776	chameunum	AGS 2130	unidentified species
AGS 1777	phaeochrysum aff.	AGS 2143	chameunum
AGS 1779	unidentified species	AGS 2152	unidentified species
AGS 1787	unidentified species	AGS 2154b	unidentified species
AGS 1824	unidentified species	AGS 2155	unidentified species
AGS 1864	russatum aff.	AGS 2161	roxieanum
AGS 1879	beesianum	AGS 2192	decorum
AGS 1928	rubiginosum aff.	AGS 2255	phaeochrysum aff.
AGS 2011	yunnanense aff.	AGS 2256	unidentified species

AGS 2257	wardii aff.	AGS 2441	unidentified species
AGS 2258	chryseum	AGS 2496	fastigiatum
AGS 2259	unidentified species	AGS 2499	campylogynum
AGS 2384	unidentified species	AGS 2518	unidentified species

Anisko, Rabideau & Vergara:

2002 - Tibet			
TARRVS 036	vellereum	TARRVS 145	oreotrephes
TARRVS 037	vellereum	TARRVS 146	aganniphum
TARRVS 038	unidentified species	TARRVS 167	wardii / campylocarpum
TARRVS 065	hirtipes	TARRVS 169	unidentified species
TARRVS 069	forrestii	TARRVS 171	tsangpoense
TARRVS 076	x agglutinatum	TARRVS 172	campylogynum
TARRVS 080	uvariifolium var. griseum	TARRVS 173	riparioides
TARRVS 111	scopulorum	TARRVS 174	cephalanthum
TARRVS 122	gorei (sino-nutallii)	TARRVS 175	viridescens
TARRVS 125	wardii	TARRVS 176	viridescens
TARRVS 126	nivale	TARRVS 190	cerasinum
TARRVS 128	calostrotum	TARRVS 191	cerasinum
TARRVS 138	dignabile	TARRVS 192	hirtipes
TARRVS 142	lanatoides	TARRVS 193	uvariifolium
TARRVS 144	aganniphum	TARRVS 215	aganniphum

Apold, Cox & Hutchison:

1962 - Turkey			
ACH 102	x sochadzeae (NH)	ACH 129	smirnowii
ACH 103	x sochadzeae (NH)	ACH 130	x sochadzeae (NH)
ACH 114	caucasicum	ACH 131	x sochadzeae (NH)
ACH 118	smirnowii	ACH 147	caucasicum
ACH 119	ungernii	ACH 204	luteum
ACH 120	ungernii x ? (NH)	ACH 205	ponticum
ACH 121	ungernii x ? (NH)	ACH 206	caucasicum
ACH 121b	ungernii		

Arunachal Pradesh-Abroka Expedition:

2005 - NE India			
APA 14	titapuriense	APA 57	caloxanthum
APA 34	nuttallii	APA 87	venator aff.
APA 42	leucaspis	APA 95	mekongense
APA 49	heatherae aff.	APA 128	titapuriense

Timothy Atkinson:

2011 - Sikkim			
TDA 09	arboreum	TDA 34	anthopogon
TDA 10	falconeri	TDA 35	nivale
TDA 11	arboreum	TDA 38	fulgens aff.
TDA 12	arboreum	TDA 40	lanatum
TDA 13	arboreum	TDA 43	unknown species
TDA 14	barbatum	TDA 44	fulgens
TDA 15	hodgsonii	TDA 48	lanatum
TDA 16	hodgsonii	TDA 49	cinnabarinum
TDA 17	thomsonii	TDA 50	hodgsonii
TDA 20	thomsonii	TDA 52	lepidotum aff.
TDA 21	lanatum	TDA 55	lepidotum
TDA 22	campylocarpum	TDA 58	anthopogon
TDA 23	fulgens	TDA 60	cinnabarinum
TDA 24	fulgens	TDA 65	lanatum
TDA 25	lanatum	TDA 66	thomsonii
TDA 26	anthopogon	TDA 69	cinnabarinum
TDA 27	baileyi aff.	TDA 73	thomsonii
TDA 28	anthopogon	TDA 74	barbatum
TDA 29	nivale aff.	TDA 76	barbatum
TDA 31	lanatum aff.	TDA 77	unknown species
TDA 33	thomsonii	TDA 80	falconeri
2012 - Sikkim			
TDA 088	arboreum	TDA 118	grande
TDA 089	arboreum	TDA 120	barbatum
TDA 090	griffithianum	TDA 147	falconeri
TDA 096	ssp. cinnamomeum	TDA 157	grande
TDA 098	grande	TDA 158	dalhousiae
TDA 110	arboreum	TDA 159	dalhousiae

TDA 162	dalhousiae	TDA 165	grande
TDA 163	grande	TDA 198	ssp. cinnamomeum
2013 - Sikkim & West Bengal			
TDA 211	arboreum	TDA 333	campylocarpum
TDA 212	arboreum	TDA 334	campylocarpum
TDA 213	griffithianum	TDA 335	campylocarpum
TDA 214	ssp. cinnamomeum	TDA 338	wightii
TDA 215	griffithianum	TDA 340	wightii
TDA 235	arboreum	TDA 341	wightii
TDA 237	arboreum	TDA 342	wightii
TDA 239	ssp. cinnamomeum	TDA 345	lepidotum/nivale?
TDA 254	triflorum	TDA 346	lepidotum/nivale?
TDA 256	triflorum	TDA 347	lepidotum/nivale?
TDA 263	arboreum	TDA 348	cinnabarinum
TDA 264	barbatum	TDA 349	cinnabarinum
TDA 268	barbatum	TDA 350	cinnabarinum
TDA 269	barbatum	TDA 352	campylocarpum
TDA 270	barbatum	TDA 354	wallachii aff.
TDA 271	falconeri	TDA 355	campylocarpum
TDA 272	barbatum	TDA 356	campylocarpum
TDA 273	arboreum	TDA 357	campylocarpum
TDA 274	barbatum	TDA 359	fulgens/campanulatum
TDA 276	falconeri	TDA 360	thomsonii
TDA 277	falconeri	TDA 361	thomsonii
TDA 283	barbatum	TDA 362	thomsonii
TDA 290	arboreum	TDA 366	camelliflorum
TDA 292	arboreum	TDA 368	camelliflorum
TDA 294	barbatum	TDA 369	camelliflorum
TDA 295	barbatum	TDA 371	camelliflorum
TDA 296	falconeri	TDA 373	pendulum
TDA 310	grande	TDA 374	niveum
TDA 320	wightii	TDA 375	unknown species
TDA 324	wightii	TDA 376	niveum
TDA 325	lepidotum	TDA 377	pendulum
TDA 329	cinnabarinum	TDA 378	hodgsonii
TDA 332	campylocarpum	TDA 379	hodgsonii

TDA 381	niveum	TDA 475	triflorum
TDA 388	triflorum	TDA 491	campanulatum
TDA 390	triflorum	TDA 493	campanulatum
TDA 399	arboreum	TDA 496	argipeplum
TDA 404	anthopogon	TDA 497	campanulatum
TDA 406	anthopogon	TDA 498	thomsonii
TDA 407	anthopogon	TDA 499	thomsonii
TDA 408	anthopogon	TDA 500	hodgsonii
TDA 409	anthopogon	TDA 501	niveum
TDA 429	anthopogon	TDA 502	thomsonii
TDA 430	anthopogon	TDA 503	campanulatum
TDA 435	anthopogon	TDA 505	thomsonii
TDA 436	anthopogon	TDA 507	glaucophyllum
TDA 437	anthopogon	TDA 516	unknown species
TDA 442	cililatum	TDA 540	grande
TDA 443	cililatum	TDA 553	grande
TDA 444	cililatum	TDA 555	lindleyi
TDA 445	cililatum	TDA 572	arboreum
TDA 446	cililatum	TDA 575	grande
TDA 474	edgeworthii	TDA 576	grande
2014 - Arunachal Pradesh			
TDA 595	crassum	TDA 650	arizelum
TDA 603	sidereum	TDA 657	calostrotum
TDA 605	catacosmum	TDA 661	stewartianum
TDA 606	catacosmum	TDA 662	stewartianum
TDA 612	fulvum	TDA 664	stewartianum
TDA 615	arizelum	TDA 665	calostrotum
TDA 616	arizelum	TDA 666	cerasinum
TDA 623	crinigerum	TDA 667	calostrotum
TDA 626	pocophorum	TDA 668	stewartianum
TDA 628	glaucophyllum	TDA 669	cerasinum
TDA 629	arizelum	TDA 670	cerasinum
TDA 636	arizelum	TDA 671	wardii
TDA 639	glaucophyllum	TDA 673	cerasinum
TDA 640	calostrotum	TDA 676	praestans
TDA 649	faucium aff.	TDA 677	praestans

TDA 679	praestans	TDA 717	campylocarpum
TDA 680	praestans	TDA 718	calostrotum
TDA 682	praestans	TDA 721	campylocarpum
TDA 683	cinnabarinum	TDA 722	calostrotum
TDA 684	wardii	TDA 723	stewartianum
TDA 686	cerasinum	TDA 725	calostrotum
TDA 688	wardii	TDA 732	anthopogon
TDA 691	cerasinum	TDA 733	anthopogon
TDA 692	stewartianum	TDA 734	wardii
TDA 698	cerasinum	TDA 741	cinnabarinum
TDA 700	stewartianum	TDA 745	fulvum
TDA 701	calostrotum	TDA 748	sidereum
TDA 702	campylocarpum	TDA 749	sidereum
TDA 703	glaucophyllum	TDA 765	elliottii
TDA 704	stewartianum	TDA 766	elliottii
TDA 706	glaucophyllum	TDA 767	manipurense
TDA 707	glaucophyllum	TDA 768	manipurense
TDA 709	campanulatum	TDA 769	manipurense
TDA 715	glaucophyllum	TDA 772	mcabe anum
TDA 716	stewartianum	TDA 717	campylocarpum
2016 - Sikkim			
TDA 777	thomsonii	TDA 885	aeruginosum
TDA 780	argipeplum	TDA 902	arboreum
TDA 78?	thomsonii	TDA 903	arboreum
TDA 787	argipeplum	TDA 914	arboreum
TDA 789	thomsonii	TDA 920	arboreum
TDA 819	ciliatum	TDA 930	pendulum
TDA 821	ciliatum	TDA 933	niveum
TDA 823	ciliatum	TDA 934	niveum
TDA 840	camelliiflorum	TDA 935	niveum
TDA 852	camelliiflorum	TDA 936	niveum
TDA 871	wightii	TDA 938	niveum
TDA 874	wightii	TDA 939	pendulum
TDA 876	wightii	TDA 942	pendulum
TDA 879	aeruginosum	TDA 955	glaucophyllum
TDA 881	aeruginosum	TDA 956	barbatum

TDA 957	barbatum	TDA 1014	hodgsonii
TDA 958	pendulum	TDA 1015	hodgsonii
TDA 961	thomsonii	TDA 1016	hodgsonii
TDA 964	glaucophyllum	TDA 1019	wightii
TDA 966	thomsonii	TDA 1021	wightii
TDA 969	thomsonii	TDA 1027	wightii
TDA 970	pendulum	TDA 1031	setosum
TDA 97?	glaucophyllum	TDA 1037	setosum
TDA 978	hodgsonii	TDA 1052	aeruginosum
TDA 982	glaucophyllum	TDA 1057	cinnabarinum
TDA 984	cinnabarinum	TDA 1065	campylocarpum
TDA 985	barbatum	TDA 1066	campylocarpum
TDA 988	wallichii	TDA 1072	campylocarpum
TDA 992	campylocarpum	TDA 1075	campylocarpum
TDA 996	campylocarpum	TDA 1078	hodgsonii
TDA 999	campylocarpum	TDA 1095	griffithianum
TDA 1004	campylocarpum	TDA 1098	grande
TDA 1007	hodgsonii		

Frederick Marshman Bailey:

1913 - Nyamjang Chu, Assam-Bhutan border			
Bailey 3	arboreum	Bailey 5	arboreum
Bailey 4	arboreum		

Bruce Bartholomew:

1974 - Bhutan & West Bengal			
Bartholomew 130	lepidotum	Bartholomew 185b	lanatum
Bartholomew 141	keysii	Bartholomew 200	arboreum
Bartholomew 147	barbatum	Bartholomew 207	hodgsonii
Bartholomew 150	barbatum	Bartholomew 259	barbatum
Bartholomew 151	campbelliae	Bartholomew 261	arboreum
Bartholomew 185a	succothii		

Len Beer:

1975 - Nepal			
Beer 620	lepidotum	Beer 655	barbatum x ? (NH)
Beer 633	setosum	Beer 662	camelliiflorum
Beer 643	campanulatum	Beer 670	grande
Beer 652	cinnabarinum	Beer 703	campbelliae
Beer 653	hodgsonii		

Beer, Lancaster & Morris:

1971 - Nepal			
BLM 26	ciliatum	BLM 287	wightii
BLM 92	wightii	BLM 294	campanulatum
BLM 153	camelliiflorum	BLM 298	virgatum
BLM 217	setosum	BLM 300	dalhousiae
BLM 220	cinnabarinum	BLM 305	dalhousiae
BLM 228	thomsonii	BLM 314	ciliatum
BLM 231	anthopogon	BLM 315	glaucophyllum
BLM 233	hodgsonii	BLM 323	hodgsonii
BLM 234	cinnabarinum	BLM 324	ciliatum
BLM 239	triflorum	BLM 325	barbatum
BLM 260	thomsonii	BLM 327	campanulatum
BLM 279	lepidotum	BLM 329	glaucophyllum
BLM 280	cinnabarinum	BLM 330	fulgens
BLM 281	anthopogon	BLM 332	anthopogon
BLM 283	campanulatum	BLM 336	vaccinoides
BLM 286	setosum	BLM 344	campanulatum

Finn Bertelsen:

2018 - Sichuan & Yunnan			
FB1-2018	spinuliferum	FB15-2018	sikangense
FB3-2018	irroratum	FB22-2018	fictolacteum
FB9-2018	chryseum	FB31-2018	websterianum
FB10-2018	impeditum		

Beyer, Erskine & Cowley:

1982 - Korea			
BEC 28	weyrichii	BEC 139	schlippenbachii
BEC 45	mucronulatum	BEC 271	poukhanense

Binns, Mason & Wright:

1978 - Nepal			
BMW 66	falconeri	BMW 152	barbatum
BMW 107	campanulatum	BMW 153	thomsonii
BMW 151	hodgsonii	BMW 172	campbelliae

Simon Bowes-Lyon:

1962 - Nepal			
Bowes-Lyon 48	cinnamomeum	Bowes-Lyon 88	barbatum
Bowes-Lyon 84	campanulatum	Bowes-Lyon 142	lepidotum
1964 - Nepal			
Bowes-Lyon 2031	cinnabarinum	Bowes-Lyon 2098	nivale
Bowes-Lyon 2072	lepidotum		
1966 - Bhutan & Sikkim			
Bowes-Lyon 3011	lindleyi	Bowes-Lyon 3194	ciliatum
Bowes-Lyon 3012	barbatum	Bowes-Lyon 3197	griffithianum
Bowes-Lyon 3013	barbatum	Bowes-Lyon 3214	dalhousiae var. rhabdotum
Bowes-Lyon 3024	pendulum	Bowes-Lyon 3225	campanulatum
Bowes-Lyon 3040	virgatum	Bowes-Lyon 3226	wallichii
Bowes-Lyon 3047	triflorum	Bowes-Lyon 3231	anthopogon
Bowes-Lyon 3068	virgatum	Bowes-Lyon 3232	lanatum
Bowes-Lyon 3069	xanthocodon	Bowes-Lyon 3241	wightii
Bowes-Lyon 3071	xanthocodon	Bowes-Lyon 3255	thomsonii
Bowes-Lyon 3098	pendulum	Bowes-Lyon 3260	fulgens
Bowes-Lyon 3124	nivale	Bowes-Lyon 3268	campylocarpum x ? (NH)
Bowes-Lyon 3149	anthopogon	Bowes-Lyon 3286	x candelabrum (NH)
Bowes-Lyon 3152	lanatum	Bowes-Lyon 3355	baileyi
Bowes-Lyon 3155	aeruginosum	Bowes-Lyon 3462	lepidotum
Bowes-Lyon 3173	xanthocodon	Bowes-Lyon 3491	maddenii
Bowes-Lyon 3189	keysii	Bowes-Lyon 3493	maddenii
Bowes-Lyon 3193	edgeworthii		

1967 - Bhutan			
Bowes-Lyon 5089	wightii	Bowes-Lyon 5194a	grande
Bowes-Lyon 5089a	aeruginosum	Bowes-Lyon 5795	grande
Bowes-Lyon 5194	maddenii	Bowes-Lyon 9703	kesangiae
1969 - Bhutan			
Bowes-Lyon 15005	maddenii	Bowes-Lyon 15041	wightii
Bowes-Lyon 15006	maddenii	Bowes-Lyon 15042	succothii
Bowes-Lyon 15018	camelliiflorum	Bowes-Lyon 15043	xanthocodon
Bowes-Lyon 15020	dalhousiae var. rhabdotum	Bowes-Lyon 15051	bhutanense
Bowes-Lyon 15027	campanulatum	Bowes-Lyon 15073	argipeplum
Bowes-Lyon 15040	campanulatum	Bowes-Lyon 15150	maddenii
Bowes-Lyon 15040a	lanatum		
1970 - Bhutan			
Bowes-Lyon 6003	niveum	Bowes-Lyon 6035	succothii
Bowes-Lyon 6004	x candelabrum (NH)	Bowes-Lyon 6037	maddenii
Bowes-Lyon 6005	glaucophyllum	Bowes-Lyon 6038	maddenii
Bowes-Lyon 6006	argipeplum	Bowes-Lyon 6074	argipeplum
Bowes-Lyon 6007	pendulum	Bowes-Lyon 6075	argipeplum
Bowes-Lyon 6008	niveum	Bowes-Lyon 6076	ciliatum
Bowes-Lyon 6016	argipeplum	Bowes-Lyon 6077	xanthocodon
Bowes-Lyon 6020	glaucophyllum	Bowes-Lyon 6078	succothii
Bowes-Lyon 6025	lindleyi	Bowes-Lyon 6086	kendrickii
Bowes-Lyon 6026	dalhousiae	Bowes-Lyon 6092	maddenii
1987/198 - Bhutan			
Bowes-Lyon 1	dalhousiae var. rhabdotum	Bowes-Lyon 18	campylocarpum
Bowes-Lyon 2	maddenii	Bowes-Lyon 19	cinnabarinum
Bowes-Lyon 4	wightii	Bowes-Lyon 22	grande
Bowes-Lyon 6	camelliiflorum	Bowes-Lyon 23	thomsonii
Bowes-Lyon 7	glaucophyllum	Bowes-Lyon 25	unidentified species
Bowes-Lyon 12	barbatum	Bowes-Lyon 31	griffithianum
Bowes-Lyon 13	cinnabarinum	Bowes-Lyon 32	maddenii
Bowes-Lyon 16	lindleyi	Bowes-Lyon 425	kesangiae
1994 - Bhutan			
Bowes-Lyon 10133	edgeworthii	Bowes-Lyon 10139	kesangiae
Bowes-Lyon 10134	maddenii	Bowes-Lyon 10140	succothii
Bowes-Lyon 10138	falconeri	Bowes-Lyon 10141	flinckii

Bowes-Lyon 10142	unidentified species	Bowes-Lyon 10147	unidentified species
Bowes-Lyon 10143	unidentified species	Bowes-Lyon 10148	unidentified species
Bowes-Lyon 10144	unidentified species	Bowes-Lyon 10149	unidentified species
Bowes-Lyon 10145	unidentified species	Bowes-Lyon 10150	unidentified species
Bowes-Lyon 10146	unidentified species		

British-American Salween Expedition:

2000 - Yunnan			
BASE 9532	megacalyx	BASE 9657	gongshanense
BASE 9577	fletcherianum	BASE 9659	hylaeum
BASE 9579	floccigerum	BASE 9671	diaprepes
BASE 9580	arizelum	BASE 9672	mallotum
BASE 9583	crinigerum	BASE 9688	pseudociliipes
BASE 9584	eclecteum	BASE 9697	pseudociliipes
BASE 9588	crinigerum	BASE 9698	araiophyllum
BASE 9594	xanthospethanum	BASE 9701	facetum
BASE 9635	protistum	BASE 9707	fulvum
BASE 9640	leptocarpum	BASE 9716	calostrotum
BASE 9649	tephropeplum	BASE 9726	ciliicalyx
BASE 9651	laterifolium		

George Cave:

1914 - Sikkim & Bengal			
Cave 6712	falconeri	Cave 6715	campbelliae
Cave 6714	argipeplum		

David Chamberlain:

1975 - Meghalaya, NE India			
Chamberlain 109	formosum		

Chamberlain, Cox, Hootman & Hutchison:

1997 - Yunnan			
CCHH 8015	peramoenum	CCHH 8120	zaleucum
CCHH 8016	edgeworthii	CCHH 8125	phaedropum
CCHH 8041	monanthum	CCHH 8126	chrysodoron
CCHH 8208	monanthum	CCHH 8126a	edgeworthii
CCHH 8000	spinuliferum	CCHH 8133	monanthum
CCHH 8016	edgeworthii	CCHH 8136	fulvum
CCHH 8036	peramoenum	CCHH 8137	stewartianum
CCHH 8052	sulfureum	CCHH 8140	arizelum
CCHH 8053	facetum	CCHH 8162	cinnabarinum
CCHH 8054	sidereum	CCHH 8177	citriniflorum
CCHH 8070	xanthostephanum	CCHH 8178	cephalanthum
CCHH 8074	maddenii	CCHH 8180	caloxanthum
CCHH 8075	maddenii	CCHH 8185	sanguineum aff.
CCHH 8076	megacalyx	CCHH 8197	sperabile
CCHH 8077	nuttallii	CCHH 8199	charitopes
CCHH 8078	kyawii	CCHH 8201	keleticum
CCHH 8079	sinogrande	CCHH 8205	leptocarpum
CCHH 8080	caloxanthum	CCHH 8206	charitopes
CCHH 8080	genestierianum	CCHH 8209	edgeworthii
CCHH 8087	lukiangense	CCHH 8222	heliolepis
CCHH 8100	gongshanense	CCHH 8225	trichocladum
CCHH 8100a	dendricola	CCHH 8230	cyanocarpum
CCHH 8104	nuttallii	CCHH 8236	sulfureum
CCHH 8106	seinghkuense	CCHH 8253	impeditum
CCHH 8107	protistum	CCHH 8254	taliense
CCHH 8108	taggianum	CCHH 8258	campylogynum
CCHH 8109	chrysodoron	CCHH 8260	brachyanthum
CCHH 8116	chrysodoron	CCHH 8262	dichroanthum
CCHH 8119	genestierianum		

Chamberlain, Cox & Hutchison:

1989 - Sichuan			
CCH 3902	x monosematum (NH)	CCH 3932	aganniphum
CCH 3903	pachytrichum	CCH 3933	rufum
CCH 3904	faberi	CCH 3938	aganniphum
CCH 3905	pingianum	CCH 3939	watsonii
CCH 3906	wiltonii	CCH 3944	przewalskii
CCH 3907	pachytrichum	CCH 3946	aganniphum
CCH 3908	calophytum	CCH 3951	oreodoxa
CCH 3909	strigillosum	CCH 3952	rufum
CCH 3910	pachytrichum	CCH 4012	dendrocharis
CCH 3911	calophytum	CCH 4016	orbiculare
CCH 3912	pingianum	CCH 4020	augustinii
CCH 3914	strigillosum	CCH 4021	x balangense (NH)
CCH 3915	dendrocharis	CCH 4023	galactinum
CCH 3917	davidii	CCH 4026	watsonii
CCH 3919	pachytrichum	CCH 4029	concinnum
CCH 3920	longesquamatum	CCH 4030	nigropunctatum
CCH 3921	augustinii	CCH 4034	primuliflorum
CCH 3922	lutescens	CCH 4054	phaeochrysum
CCH 3923	calophytum	CCH 4064	aganniphum
CCH 3924	prattii	CCH 4065	phaeochrysum
CCH 3925	concinnum	CCH 4066	rufum
CCH 3926	wasonii	CCH 4089	rufum
CCH 3927	vernicosum	CCH 4103	primuliflorum
CCH 3928	nigropunctatum	CCH 4104	rufum
CCH 3929	przewalskii	CCH 4105	capitatum
CCH 3930	aganniphum	CCH 4107	aganniphum

Chengdu Edinburgh Expedition:

1991 - Sichuan			
CEE 102	concinnum	CEE 171	pachytrichum
CEE 133	strigillosum	CEE 172	calophytum
CEE 140	moupinense	CEE 174	trichanthum
CEE 141	wiltonii	CEE 191	strigillosum
CEE 142	argyrophyllum	CEE 200	strigillosum
CEE 160	argyrophyllum	CEE 209	calophytum

CEE 217	prattii	CEE 392	nigropunctatum
CEE 227	wiltonii	CEE 393	intricatum
CEE 228	wiltonii aff.	CEE 394	websterianum
CEE 229	pachytrichum	CEE 407	websterianum
CEE 230	orbiculare	CEE 429	websterianum
CEE 231	sikangense	CEE 430	nigropunctatum
CEE 232	faberi	CEE 432	x agglutinatum (NH)
CEE 233	prattii aff.	CEE 450	galactinum
CEE 242	trichanthum	CEE 455	unidentified species
CEE 245	faberi	CEE 459	x balangense (NH)
CEE 246	sikangense	CEE 468	trichostomum
CEE 257	unidentified species	CEE 477	nivale
CEE 284	polylepis	CEE 479	augustinii aff.
CEE 285	ririei	CEE 480	unidentified species
CEE 299	prattii	CEE 483	unidentified species
CEE 311	argyrophyllum	CEE 485	heliolepis aff.
CEE 313	rubiginosum	CEE 500	argyrophyllum
CEE 318	floribundum	CEE 501	lutescens
CEE 334	tatsienense	CEE 502	strigillosum
CEE 335	decorum	CEE 511	calophytum
CEE 336	nitidulum aff.	CEE 518	concinnum aff.
CEE 344	bureavioides	CEE 524	trichanthum
CEE 345	unidentified species	CEE 525	unidentified species
CEE 348	fargesii	CEE 526	prattii
CEE 355	decorum	CEE 531	ambiguum
CEE 364	intricatum	CEE 532	pachytrichum
CEE 365	nitidulum	CEE 554	unidentified species
CEE 369	x agglutinatum (NH)	CEE 556	unidentified species
CEE 370	x agglutinatum (NH)	CEE 557	hippophaeoides
CEE 371	souliei	CEE 559	websterianum
CEE 391	nitidulum	CEE 565	x agglutinatum (NH)

Chungdien-Lijiang-Dali Expedition:

1990 - Yunnan			
CLD 129	rubiginosum	CLD 1283	haematodes
CLD 130	decorum	CLD 1285	fastigiatum
CLD 144	racemosum	CLD 1287	taliense
CLD 211	decorum	CLD 1295	fictolacteum
CLD 214	oreotrepthes	CLD 1297	cyanocarpum aff.
CLD 245	unidentified species	CLD 1300	selense ssp. jucundum
CLD 302	hippophaeoides	CLD 1334	fastigiatum
CLD 412	rubiginosum aff.	CLD 1347	trichocladum
CLD 511	hippophaeoides	CLD 1357	unidentified species
CLD 512	rubiginosum	CLD 1427	haematodes
CLD 513	primuliflorum aff.	CLD 1430	edgeworthii
CLD 514	decorum	CLD 1444	irroratum
CLD 515	hippophaeoides	CLD 1444	x agastum (NH)
CLD 516	rubiginosum	CLD 1455	fictolacteum aff.
CLD 539	decorum	CLD 1464	delavayi
CLD 558	racemosum	CLD 1471	rubiginosum aff.
CLD 652	hormophorum	CLD 1473	decorum
CLD 715	telmateium	CLD 1490	unidentified species
CLD 719	rubiginosum	CLD 1497	unidentified species
CLD 787	cuneatum	CLD 1507	cyanocarpum
CLD 795	adenogynum	CLD 1511	unidentified species
CLD 807	cuneatum	CLD 1512	yunnanense
CLD 857	primuliflorum	CLD 1514	trichocladum
CLD 868	cuneatum	CLD 1522	haematodes
CLD 928	yunnanense	CLD 1526	trichocladum
CLD 935	lepidotum	CLD 1529	unidentified species
CLD 1016	trichostomum	CLD 1533	haematodes
CLD 1019	hippophaeoides	CLD 1538	fastigiatum
CLD 1057	lepidotum	CLD 1539	unidentified species
CLD 1095	adenogynum	CLD 1541	racemosum
CLD 1096	unidentified species	CLD 1544	dichroanthum
CLD 1097	rupicola	CLD 1547	unidentified species
CLD 1275	cyanocarpum	CLD 1553	unidentified species
CLD 1281	unidentified species	CLD 1564	unidentified species
CLD 1282	lacteum	CLD 1575	unidentified species

Alan Clark:

1990 - Bhutan			
AC 100	pendulum	AC 107	camplylocarpum
AC 102	flinckii	AC 108	keysii
AC 103	tsariense aff.	AC 112	phaedropum
AC 105	argipeplum	AC 120	barbatum
AC 106	camelliiflorum	AC 128	camelliiflorum
1990 - Vietnam			
AC 165	nuttallii	AC 221	suoienhense
1992 - Hong Kong & Vietnam			
AC 314	simiarum	AC 431	protistum
AC 347	fleuryi	AC 432	suoienhense
AC 350	emarginatum	AC 435	nuttallii
AC 357	maddenii	AC 436	hemsleyanum aff.
AC 358	nuttallii	AC 446	nuttallii
AC 359	nuttallii	AC 448	suoienhense
AC 360	nuttallii	AC 449	nuttallii
AC 364	nuttallii	AC 450	saxicolum
AC 368	hemsleyanum aff.	AC 453	unknown species
AC 370	nuttallii	AC 462	unknown species
AC 371	nuttallii	AC 474	unknown species
AC 374	unknown species	AC 477	hemsleyanum aff.
AC 380	unknown species	AC 481	saxicolum
AC 415	saxicolum aff.	AC 486	nuttallii
AC 428	protistum	AC 501	tephropeplum aff.
1993 - Yunnan			
AC 557	sinogrande	AC 587	cookeanum
AC 565	decorum	AC 589	araiophyllum
AC 567	coryanum aff.	AC 590	unknown species
AC 568	vialii aff.	AC 591	unknown species
AC 576	unknown species	AC 592	unknown species
AC 577	sidereum	AC 596	unknown species
AC 578	facetum	AC 597	peramoenum aff.
AC 582	sinogrande	AC 598	facetum
AC 583	delavayi aff.	AC 599	sidereum
AC 585	zaleucum	AC 600	unknown species
AC 586	annae (laxiflorum)	AC 601	unknown species

AC 605	peramoenum aff.	AC 663	stewartianum
AC 606	sinogrande	AC 685	rubiginosum
AC 607	araiophyllum	AC 666	edgeworthii
AC 609	basilicum	AC 667	haematodes
AC 610	basilicum	AC 668	taliense
AC 611	basilicum Gratum	AC 669	stewartianum
AC 612	unknown species	AC 670	lacteam
AC 613	basilicum Gratum	AC 671	lacteam
AC 614	semnoides	AC 672	lacteam
AC 615	basilicum Gratum aff.	AC 673	taliense
AC 616	basilicum Gratum	AC 674	lacteam
AC 617	trichostomum aff.	AC 675	roxieanum Cucullatum
AC 621	fulvum	AC 676	cyanocarpum
AC 623	fulvum	AC 677	unknown species
AC 624	anthosphaerum	AC 678	fictolacteam
AC 626	zaleucum	AC 679	lacteam
AC 627	peramoenum aff.	AC 680	stewartianum
AC 629	facetum aff.	AC 681	cyanocarpum
AC 630	anthosphaerum	AC 682	unknown species
AC 631	unknown species	AC 685	unknown species
AC 633	facetum aff.	AC 686	brachyanthum
AC 635	sidereum	AC 688	unknown species
AC 636	sinogrande	AC 689	unknown species
AC 637	edgeworthii	AC 691	lacteam
AC 641	zaleucum	AC 692	microphyton
AC 642	fulvum	AC 693	haematodes
AC 644	fulvum	AC 694	fictolacteam
AC 646	unknown species	AC 695	fictolacteam
AC 648	edgeworthii	AC 696	racemosum
AC 649	sinogrande aff.	AC 697	lacteam aff.
AC 651	auritum aff.	AC 698	cyanocarpum
AC 653	decorum	AC 699	unknown species
AC 654	racemosum	AC 701	decorum
AC 658	yunnanense	AC 702	tephropeplum
AC 660	racemosum	AC 703	unknown species
AC 661	stewartianum	AC 705	neriiflorum

AC 706	edgeworthii	AC 763	unknown species
AC 707	xanthostephanum	AC 768	spinuliferum
AC 708	crassum	AC 772	yunnanense
AC 710	unknown species	AC 773	unknown species
AC 711	unknown species	AC 774	spiciferum
AC 712	edgeworthii	AC 775	spinuliferum
AC 716	racemosum	AC 776	unknown species
AC 718	hippophaeoides	AC 780	unknown species
AC 719	racemosum	AC 785	uvariifolium
AC 723	yunnanense	AC 787	unknown species
AC 724	hippophaeoides	AC 794	unknown species
AC 726	racemosum	AC 795	racemosum aff.
AC 729	vernicosum	AC 797	decorum
AC 730	diaprepes aff.	AC 803	unknown species
AC 740	hippophaeoides aff.	AC 804	fulvum
AC 742	vernicosum	AC 805	unknown species
AC 744	fortunei aff.	AC 806	trichocladum
AC 745	yunnanense	AC 807	microphyton
AC 747	yunnanense	AC 808	basilicum Gratum
AC 748	yunnanense	AC 809	unknown species
AC 749	hippophaeoides aff.	AC 810	unknown species
AC 750	rubiginosum	AC 812	decorum
AC 751	yunnanense	AC 813	unknown species
AC 756	serotinum	AC 815	selense ssp. jucundum
AC 757	decorum	AC 816	unknown species
AC 761	virgatum aff.		
1995 - Yunnan			
AC 826	scabrifolium	AC 879	cookeanum
AC 828	scabrifolium	AC 880	bureavii
AC 832	siderophyllum	AC 896	sikangense x ? (NH)
AC 833	siderophyllum	AC 897	x pubicostatum aff. (NH)
AC 872	lacteam	AC 901	rex
AC 873	cookeanum	AC 903	heliolapis
AC 874	bureavii	AC 911	delavayi
AC 875	x pubicostatum (NH)	AC 914	x pubicostatum (NH)
AC 878	sphaeroblastum	AC 923	x alutaceum (NH)

AC 928	wumengense	AC 1145	strigillosum
AC 929	wumengense	AC 1146	huanum
AC 930	tsaii aff.	AC 1148	huanum
AC 942	campylogynum	AC 1149	denudatum
AC 982	irroratum	AC 1150	strigillosum
AC 1024	atrovirens	AC 1152	yiliangense
AC 1027	decorum	AC 1153	strigillosum
AC 1029	denudatum aff.	AC 1156	pogonostylum
AC 1031	fargesii aff.	AC 1157	moupinense
AC 1035	racemosum aff.	AC 1162	yiliangense
AC 1040	unidentified species	AC 1163	strigillosum aff.
AC 1041	qiaojiaense	AC 1171	unidentified species
AC 1043	qiaojiaense	AC 1172	yiliangense
AC 1054	pauciflorum	AC 1174	denudatum
AC 1056	ochraceum	AC 1175	yiliangense
AC 1058	lutescens	AC 1177	unidentified species
AC 1073	oreodoxa aff.	AC 1178	unidentified species
AC 1079	lutescens	AC 1184	lutescens
AC 1087	denudatum	AC 1194	unidentified species
AC 1088	denudatum	AC 1199	pogonostylum
AC 1089	yunnanense aff.	AC 1202	coeloneuron
AC 1095	unidentified species	AC 1205	coeloneuron
AC 1098	unidentified species	AC 1206	glanduliferum
AC 1100	unidentified species	AC 1207	strigillosum
AC 1103	denudatum	AC 1211	yiliangense
AC 1104	fargesii aff.	AC 1213	sinofalconeri
AC 1106	yunnanense aff.	AC 1217	siderophyllum
AC 1108	fargesii aff.	AC 1219	flumineum
AC 1109	yunnanense	AC 1225	irroratum
AC 1128	ochraceum aff.	AC 1229	microphyton aff.
AC 1131	moupinense aff.	AC 1230	valentinioides
AC 1132	denudatum aff.	AC 1239	serotinum
AC 1133	ochraceum aff.	AC 1243	irroratum
AC 1140	delavayi	AC 1258	valentinioides
AC 1142	yiliangense	AC 1268	unidentified species
AC 1143	denudatum		

1996 - Yunnan			
AC 1331	decorum	AC 1532	vernicosum
AC 1332	yunnanense	AC 1533	wardii
AC 1333	brachyanthum	AC 1534	wardii
AC 1337	edgeworthii	AC 1535	wardii
AC 1344	maddenii	AC 1536	aganniphum Glaucopeplum
AC 1347	rubiginosum	AC 1537	aganniphum Glaucopeplum
AC 1348	trichocladum	AC 1538	russatum
AC 1350	trichocladum	AC 1539	unidentified species
AC 1351	decorum	AC 1545	colletum
AC 1352	cyanocarpum	AC 1546	colletum
AC 1356	neriiflorum	AC 1547	colletum
AC 1359	heliolepis	AC 1552	wardii
AC 1362	maddenii	AC 1560	aganniphum Glaucopeplum
AC 1371	brachyanthum	AC 1565	rupicola
AC 1374	auritum	AC 1568	russatum aff.
AC 1376	rubiginosum	AC 1570	aganniphum Glaucopeplum
AC 1394	racemosum	AC 1575	balfourianum
AC 1396	trichocladum	AC 1577	wardii
AC 1397	neriiflorum	AC 1580	selense
AC 1417	yunnanense	AC 1582	heliolepis
AC 1430	yunnanense	AC 1589	primuliflorum
AC 1470	yunnanense	AC 1590	heliolepis
AC 1480	vernicosum	AC 1594	edgarianum aff.
AC 1486	racemosum	AC 1618	rubiginosum
AC 1493	cuneatum	AC 1622	yunnanense
AC 1505	racemosum x hippophaeoides ? (NH)	AC 1626	rubiginosum
AC 1517	wardii	AC 1660	wardii x ? (NH)
AC 1518	fimbriatum	AC 1662	rubiginosum
AC 1520	wardii	AC 1663	rubiginosum
AC 1523	yunnanense	AC 1665	wardii x vernicosum ? (NH)
AC 1524	aganniphum Glaucopeplum	AC 1666	wardii x vernicosum ? (NH)
AC 1526	aganniphum Glaucopeplum	AC 1685	rubiginosum
AC 1527	aganniphum Glaucopeplum	AC 1686	rubiginosum
AC 1528	beesianum	AC 1689	wardii aff.
AC 1529	wardii	AC 1704	cuneatum aff.

AC 1712	rubiginosum	AC 1769	x doshongense (NH)
AC 1714	tapetiforme	AC 1770	puralbum
AC 1716	roxieanum	AC 1772	dryophyllum
AC 1720	proteoides	AC 1773	tapetiforme
AC 1722	x doshongense (NH)	AC 1776	selense
AC 1723	proteoides	AC 1777	dryophyllum
AC 1726	prostratum	AC 1778	roxieanum aff.
AC 1729	x doshongense (NH)	AC 1779	uvariifolium
AC 1730	roxieanum Oreonastes	AC 1780	beesianum
AC 1732	uvariifolium	AC 1781	dryophyllum
AC 1733	roxieanum Oreonastes	AC 1783	uvariifolium
AC 1735	sanguineum	AC 1784	unknown species
AC 1737	chryseum	AC 1785	chryseum
AC 1738	chryseum	AC 1796	beesianum
AC 1739	chryseum	AC 1798	oreotrepthes
AC 1740	puralbum	AC 1799	oreotrepthes
AC 1741	uvariifolium	AC 1811	oreotrepthes
AC 1744	x doshongense (NH)	AC 1821	beesianum
AC 1745	primuliflorum aff.	AC 1823	oreotrepthes
AC 1749	sanguineum	AC 1827	vernicosum
AC 1750	roxieanum Oreonastes	AC 1831	aganniphum
AC 1751	chryseum	AC 1832	vernicosum
AC 1753	roxieanum	AC 1842	x agglutinatum (NH)
AC 1754	tapetiforme	AC 1849	chameunum
AC 1755	x doshongense (NH)	AC 1850	trichostomum
AC 1756	selense	AC 1852	anthosphaerum
AC 1757	dryophyllum	AC 1853	sinogrande
AC 1758	chameunum	AC 1855	glischrum
AC 1759	roxieanum	AC 1856	uvariifolium
AC 1760	dryophyllum	AC 1857	decorum
AC 1761	proteoides	AC 1858	rubrum
AC 1762	chameunum	AC 1861	beesianum
AC 1763	roxieanum	AC 1863	floccigerum
AC 1764	chameunum	AC 1864	rubrum
AC 1767	chryseum	AC 1868	rothschildii
AC 1768	puralbum	AC 1874	wardii

AC 1878	rubiginosum	AC 1930	sinogrande
AC 1879	rubrum	AC 1936	chryseum
AC 1880	oreotrepthes	AC 1937	fictolacteum
AC 1881	fulvoides	AC 1938	fictolacteum
AC 1882	uvariifolium	AC 1939	beesianum
AC 1883	fulvoides	AC 1942	fictolacetum
AC 1884	rubiginosum	AC 1943	dasycladum
AC 1887	glischrum	AC 1944	wardii
AC 1888	sinogrande	AC 1945	wardii
AC 1892	rubrum	AC 1946	fictolacteum
AC 1893	anthosphaerum	AC 1949	roxieanum Cucullatum
AC 1894	mollicomum aff.	AC 1950	clementinae
AC 1895	riparioides	AC 1953	roxieanum
AC 1896	decorum	AC 1962	scintillans aff.
AC 1898	floccigerum	AC 1963	roxieanum
AC 1899	oreotrepthes	AC 1964	fictolacteum
AC 1900	lukiangense	AC 1965	roxieanum
AC 1901	vernicosum	AC 1966	heliolepis
AC 1902	oreotrepthes	AC 1968	roxieanum Cucullatum
AC 1903	rubiginosum	AC 1969	scintillans aff.
AC 1905	beesianum	AC 1970	roxieanum
AC 1908	sinogrande	AC 1976	roxieanum Oreonastes
AC 1909	fulvoides	AC 1978	fictolacteum Miniforme
AC 1910	anthosphaerum	AC 1981	rubiginosum
AC 1915	weihsiense	AC 1983	oreotrepthes
AC 1916	sinogrande	AC 1984	beesianum
AC 1917	glischrum	AC 1985	roxieanum
AC 1918	lukiangense	AC 1986	wardii
AC 1919	decorum	AC 1987	scintillans aff.
AC 1920	floccigerum	AC 1988	heliolepis
AC 1921	coriaceum	AC 1991	molle
AC 1925	fictolacetum Miniforme	AC 1992	unknown species
AC 1926	platyphyllum	AC 1993	ciliicalyx
AC 1927	uvariifolium	AC 1994	unknown species
AC 1928	rubiginosum	AC 1995	unknown species
AC 1929	anthosphaerum	AC 1996	unknown species

AC 1997	unknown species	AC 2062	wumengense
AC 1998	unknown species	AC 2063	wumengense
AC 2000	spiciferum	AC 2064	wumengense
AC 2001	spiciferum	AC 2065	lacteam
AC 2002	delavayi	AC 2066	cookeanum
AC 2008	spinuliferum	AC 2067	bureavii
AC 2009	siderophyllum	AC 2068	unknown species
AC 2011	delavayi	AC 2069	helirolepis
AC 2012	aganniphum aff.	AC 2070	cookeanum
AC 2013	searsiae	AC 2072	bureavii
AC 2014	searsiae	AC 2073	bureavii
AC 2015	cardiobasis	AC 2078	unidentified species
AC 2016	unknown species	AC 2079	unidentified species
AC 2017	unknown species	AC 2080	decorum aff.
AC 2018	atrovirens	AC 2081	davidsonianum
AC 2019	racemosum aff.	AC 2082	yunnanense aff.
AC 2020	unknown species	AC 2084	delavayi
AC 2022	unknown species	AC 2085	davidsonianum
AC 2029	fargesii	AC 2086	decorum aff.
AC 2035	longipes	AC 2087	unknown species
AC 2036	ririei ?	AC 2090	microphyton
AC 2043	spinuliferum	AC 2091	spinuliferum
AC 2046	yunnanense	AC 2093	microphyton
AC 2047	racemosum	AC 2094	siderophyllum
AC 2048	fargesii	AC 3002	siderophyllum x yunnanense
AC 2049	unknown species	AC 3006	trichostomum
AC 2050	lacteam	AC 3009	basilicum Gratum
AC 2051	x pubicostatum (NH)	AC 3011	calostrotum
AC 2052	x pubicostatum (NH)	AC 3014	basilicum Gratum
AC 2054	cookeanum	AC 3018	sinogrande
AC 2055	wumengense	AC 3019	uvariifolium aff.
AC 2056	wumengense	AC 3029	basilicum Gratum
AC 2058	wumengense	AC 3031	fulvum
AC 2059	lacteam	AC 3036	calostrotum
AC 2060	montiganum	AC 3041	sinogrande
AC 2061	x pubicostatum (NH)	AC 3042	fulvum

AC 3045	basilicum Gratum	AC 3061	facetum
AC 3048	basilicum Gratum	AC 3064	sidereum
AC 3049	facetum	AC 3067	calostrotum
AC 3050	uvariifolium	AC 3076	virgatum
AC 3052	calostrotum	AC 3079	dichroanthum
AC 3053	calostrotum	AC 3083	fulvum
AC 3055	zaleucum	AC 3094	facetum
AC 3056	sidereum		
1997 - Tibet			
AC 3125	kongboense	AC 3243	charitopes
AC 3127	vellereum	AC 3244	pumilum
AC 3128	vellereum	AC 3245	caloxanthum
AC 3129	vellereum	AC 3250	forrestii
AC 3131	vellereum	AC 3251	martinianum
AC 3133	kongboense	AC 3253	unknown species
AC 3134	vellereum	AC 3256	unknown species
AC 3136	aganniphum	AC 3257	hirtipes
AC 3137	circinatum	AC 3258	riparium
AC 3139	unknown species	AC 3259	mekongense
AC 3157	kongboense	AC 3261	unknown species
AC 3192	nivale	AC 3262	fragariiflorum
AC 3193	kongboense	AC 3263	unknown species
AC 3194	kongboense	AC 3264	unknown species
AC 3195	x doshongense (NH)	AC 3266	cerasinum
AC 3207	mahogani	AC 3267	martinianum
AC 3218	mahogani	AC 3269	lepidotum
AC 3220	wardii	AC 3270	faucium
AC 3221	wardii	AC 3271	kongboense
AC 3223	wardii	AC 3272	charitopes
AC 3224	griseum	AC 3274	griseum
AC 3225	xanthocodon	AC 3275	fragariiflorum
AC 3236	forrestii	AC 3276	mekongense
AC 3237	faucium	AC 3277	faucium x cerasinum ? (NH)
AC 3238	laudandum	AC 3279	wardii x cerasinum ? (NH)
AC 3239	wardii	AC 3282	unknown species
AC 3242	cerasinum	AC 3285	trichocladum

AC 3286	wardii	AC 3367	faucium
AC 3287	x doshongense (NH)	AC 3369	griseum
AC 3292	unknown species	AC 3376	lepidotum
AC 3293	unknown species	AC 3378	lepidotum
AC 3294	cerasinum	AC 3381	virgatum
AC 3295	forrestii	AC 3384	mahogani
AC 3298	laudandum	AC 3386	triflorum
AC 3299	fragariiflorum	AC 3395	faucium
AC 3302	riparium	AC 3400	lepidotum
AC 3303	cerasinum	AC 3409	mahogani
AC 3304	campylocarpum aff.	AC 3412	faucium
AC 3308	cerasinum	AC 3415	wardii
AC 3309	faucium	AC 3416	mahogani
AC 3310	mekongense	AC 3417	kongboense
AC 3314	riparium	AC 3421	wardii
AC 3316	charitopes	AC 3425	wardii
AC 3317	caloxanthum	AC 3443	x doshongense (NH)
AC 3319	riparium	AC 3444	dignabile
AC 3320	charitopes	AC 3445	dignabile
AC 3321	trichocladum	AC 3454	unknown species
AC 3326	hirtipes	AC 3455	xanthocodon
AC 3329	vellereum	AC 3456	x doshongense (NH)
AC 3333	nivale	AC 3468	unidentified species
AC 3335	wardii	AC 3469	wardii aff.
AC 3344	nivale	AC 3472	aganniphum aff.
AC 3345	lepidotum	AC 3474	laudandum
AC 3346	kongboense	AC 3478	aganniphum aff.
AC 3350	nivale	AC3479	aganniphum aff.
AC 3354	griseum	AC 3480	unknown species
AC 3355	phaeochrysum aff.	AC 3482	nivale
AC 3357	hirtipes	AC 3486	laudandum
AC 3359	mahogani	AC 3488	unknown species
AC 3360	hirtipes aff.	AC 3489	primuliflorum
AC 3361	faucium	AC 3492	x doshongense (NH)
AC 3363	mahogani	AC 3495	nivale
AC 3365	wardii	AC 3499	nivale

AC 3500	mixed species seed	AC 3600	populare
AC 3502	kongboense	AC 3601	megeratum
AC 3503	laudandum	AC 3602	citriniflorum
AC 3504	kongboense	AC 3604	unknown species
AC 3505	laudandum	AC 3605	viridescens
AC 3507	x doshongense (NH)	AC 3607	trichocladum
AC 3510	primuliflorum	AC 3608	trichocladum
AC 3511	laudandum	AC 3609	trichocladum
AC 3512	x doshongense (NH)	AC 3610	uniflorum
AC 3514	griseum	AC 3611	calostrotum
AC 3515	x doshongense (NH)	AC 3612	populare
AC 3523	nivale	AC 3613	populare
AC 3529	mahogani	AC 3614	citriniflorum
AC 3544	dignabile	AC 3616	populare
AC 3547	unknown species	AC 3618	calostrotum
AC 3554	virgatum	AC 3619	calostrotum
AC 3557	mahogani	AC 3621	trichocladum
AC 3563	xanthocodon	AC 3624	populare
AC 3564	xanthocodon	AC 3625	x erythrocalyx (NH)
AC 3565	calvescens aff.	AC 3627	calostrotum
AC 3567	hirtipes aff.	AC 3628	populare
AC 3568	griseum	AC 3630	populare
AC 3569	xanthocodon	AC 3631	tsangpoense
AC 3570	griseum	AC 3632	populare
AC 3573	faucium	AC 3633	campylogynum
AC 3574	unknown species	AC 3634	kongboense
AC 3579	xanthocodon	AC 3635	populare
AC 3582	virgatum	AC 3636	campylogynum
AC 3583	unknown species	AC 3638	citriniflorum
AC 3584	faucium	AC 3641	tsangpoense
AC 3586	trichocladum	AC 3644	ramsdenianum
AC 3595	populare	AC 3646	ramsdenianum
AC 3596	pruniflorum	AC 3652	ramsdenianum
AC 3597	faucium aff.	AC 3665	laudandum
AC 3598	citriniflorum	AC 3669	scopulorum
AC 3599	tsangpoense	AC 3670	virgatum

AC 3673	virgatum	AC 3689	kongboense
AC 3675	nivale	AC 3697	bulu
AC 3676	kongboense	AC 3701	bulu
AC 3677	aganniphum	AC 3703	bulu
1998 - Sichuan			
AC 3712	ambiguum	AC 4034	przewalski
AC 3720	concinnum	AC 4040	dryophyllum
AC 3737	ambiguum	AC 4046	barkamense
AC 3742	ambiguum	AC 4062	przewalski
AC 3757	decorum	AC 4065	oreodoxa
AC 3758	racemosum	AC 4067	nigropunctatum
AC 3808	micranthum aff.	AC 4074	przewalski
AC 3810	polylepis	AC 4079	fargesii
AC 3829	watsonii	AC 4100	davidii
AC 3854	unidentified species	AC 4101	phaeochrysum aff.
AC 3879	aganniphum	AC 4104	bureavioides
AC 3896	aganniphum	AC 4109	nigropunctatum
AC 3931	dryophyllum	AC 4110	bureavioides
AC 3953	oreodoxa	AC 4133	vernicosum
AC 3989	barkamense	AC 4159	davidsonianum
AC 3990	barkamense	AC 4162	davidsonianum
AC 3991	dryophyllum	AC 4182	polylepis
AC 4006	bureavii	AC 4188	racemosum
AC 4007	przewalski	AC 4194	unidentified species
AC 4010	fargesii	AC 4207	maoerense
AC 4014	bureavioides	AC 4223	unidentified species
AC 4015	dryophyllum	AC 4238	unidentified species
AC 4016	fargesii	AC 4244	chienianum
1999 - Guizhou & Yunnan			
AC 4271	discolor	AC 4311	araiophyllum ssp. lapidosum
AC 4284	irroratum	AC 4312	siderophyllum
AC 4284	irroratum	AC 4315	coeloneuron
AC 4293	decorum aff.	AC 4318	yunnanense (bodineri)
AC 4305	longipes	AC 4324	coeloneuron
AC 4307	arboreum x ? (NH)	AC 4329	strigillosum
AC 4310	decorum aff.	AC 4331	fargesii

2000 - Tibet			
AC 4343	kongboense	AC 4544	coryanum
AC 4361	nivale	AC 4548	virgatum
AC 4362	primuliflorum	AC 4577	dignabile
AC 4382	primuliflorum	AC 4578	lopsangianum
AC 4385	unknown species	AC 4579	wardii
AC 4389	nivale	AC 4580	lopsangianum x hirtipes ? (NH)
AC 4391	vellereum	AC 4581	lanatoides
AC 4394	vellereum	AC 4582	lanatoides
AC 4397	kongboense	AC 4583	pruniflorum
AC 4403	unknown species	AC 4585	pruniflorum
AC 4408	bulu	AC 4586	lanatoides
AC 4426	mahogani	AC 4589	thymifolium
AC 4443	vellereum	AC 4591	wardii
AC 4455	x agglutinatum (NH)	AC 4597	hirtipes
AC 4456	dignabile	AC 4601	pruniflorum
AC 4460	lopsangianum	AC 4620	virgatum
AC 4469	aganniphum	AC 4626	kongboense
AC 4480	keleticum	AC 4627	kongboense
AC 4482	mahogani	AC 4628	thymifolium
AC 4496	keleticum	AC 4629	x agglutinatum (NH)
AC 4497	hirtipes	AC 4630	dignabile
AC 4498	laudandum	AC 4637	hirtipes
AC 4499	griseum	AC 4638	hirtipes
AC 4500	mahogani	AC 4639	calostrotum aff.
AC 4501	neriiflorum Agetum	AC 4641	phaeochrysum
AC 4502	neriiflorum Agetum	AC 4642	keleticum
AC 4506	hylaeum	AC 4644	hirtipes
AC 4509	griseum	AC 4645	lanatoides
AC 4511	mahogani	AC 4646	pruniflorum
AC 4521	hylaeum	AC 4653	kongboense
AC 4527	lanatoides	AC 4655	unknown species
AC 4531	griseum	AC 4656	kongboense
AC 4532	lanatoides	AC 4659	lanatoides
AC 4534	virgatum	AC 4660	lanatoides
AC 4535	coryanum	AC 4661	pruniflorum

AC 4662	lanatoides	AC 4686	vellereum
AC 4664	mahogani	AC 4687	kongboense
AC 4665	wardii	AC 4692	primuliflorum
AC 4668	hirtipes	AC 4694	kongboense
AC 4669	hirtipes	AC 4723	hirtipes
AC 4677	unknown species	AC 4730	hirtipes x lopsangianum ? (NH)
AC 4680	aganniphum	AC 4731	hirtipes x lopsangianum ? (NH)
AC 4682	phaeochrysum	AC 4736	bulu
AC 4683	aganniphum	AC 4739	bulu
AC 4685	kongboense		
2000 - Nepal			
AC 4751	arboreum	AC 4760	arboreum
AC 4752	arboreum	AC 4767	arboreum
AC 4753	arboreum	AC 4768	arboreum
AC 4754	arboreum		
2001 - Sichuan			
AC 4769	selense	AC 4798	dendrocharis
AC 4770	selense	AC 4800	selense
AC 4771	oreodoxa	AC 4801	x aggultinatum (NH)
AC 4773	maculiferum	AC 4802	x aggultinatum (NH)
AC 4774	rufum	AC 4805	primuliflorum
AC 4775	faberi	AC 4806	faberi
AC 4777	maculiferum	AC 4809	prattii aff.
AC 4781	maculiferum	AC 4812	ambiguum
AC 4782	maculiferum	AC 4816	souliei
AC 4783	faberi	AC 4817	wardii
AC 4784	maculiferum	AC 4819	ambiguum
AC 4785	ambiguum	AC 4822	souliei
AC 4786	watsonii	AC 4824	primuliflorum
AC 4789	pingianum	AC 4826	x aggultinatum (NH)
AC 4790	wiltonii	AC 4829	sargentianum
AC 4791	faberi	AC 4834	sargentianum
AC 4792	faberi	AC 4835	hippophaeoides aff.
AC 4793	orbiculare	AC 4837	souliei
AC 4794	wiltonii	AC 4838	bureavii
AC 4797	faberi	AC 4839	phaeochrysum

AC 4840	watsonii	AC 4945	phaeochrysum
AC 4841	bureavii aff.	AC 4947	unknown species
AC 4842	bureavii	AC 4948	barkamense
AC 4843	unidentified species	AC 4952	maculiferum
AC 4848	x aggultinatum (NH)	AC 4953	primuliflorum
AC 4849	watsonii	AC 4954	oreodoxa
AC 4851	bureavioides	AC 4955	watsonii
AC 4853	fargesii	AC 4956	maculiferum
AC 4854	przewalski	AC 4957	prattii
AC 4856	x aggultinatum (NH)	AC 4958	watsonii
AC 4858	x aggultinatum (NH)	AC 4960	unknown species
AC 4863	rufum aff.	AC 4961	wiltonii
AC 4868	davidii	AC 4962	augustinii
AC 4876	davidii	AC 4963	polylepis
AC 4877	danbaense aff.	AC 4965	molle
AC 4879	wardii	AC 4966	molle
AC 4881	bureavioides	AC 4967	molle
AC 4888	x aggultinatum (NH)	AC 4968	molle
AC 4889	x aggultinatum (NH)	AC 4974	augustinii
AC 4890	primuliflorum	AC 4978	chienianum
AC 4891	rufescens	AC 4979	unknown species
AC 4892	unknown species	AC 4981	omeiense
AC 4934	rufum	AC 4984	chienianum
AC 4936	rufum	AC 4985	chienianum
AC 4937	rufum	AC 4992	platypodum
AC 4939	prattii	AC 4994	pachytrichum
AC 4940	prattii	AC 4996	chienianum
AC 4941	nigroglandulosum	AC 4997	unknown species
AC 4942	wardii	AC 5002	platypodum
AC 4943	watsonii	AC 5003	chienianum
AC 4944	unidentified species	AC 5009	unknown species
2002 - Sichuan			
AC 5019	openshawianum	AC 5078	unidentified species
AC 5021	openshawianum	AC 5080	simsii
AC 5049	maculiferum	AC 5082	polyraphidoideum
AC 5052	unidentified species	AC 5083	fortunei

AC 5087	liliiflorum aff.	AC 5128	unidentified species
AC 5090	gingongshanicum	AC 5136	latoucheae
AC 5091	discolor	AC 5137	simsii
AC 5093	fortunei	AC 5145	championiae
AC 5094	brevinerve	AC 5166	calophytum
AC 5095	leptothrium	AC 5179	fargesii
AC 5102	simiarum var. versicolor	AC 5182	unidentified species
AC 5105	gingongshanicum	AC 5186	vernicosum
AC 5106	simiarum	AC 5193	unidentified species
AC 5107	latoucheae	AC 5202	galactinum
AC 5108	gingongshanicum	AC 5202	unidentified species
AC 5109	denudatum	AC 5208	discolor
AC 5113	simiarum	AC 5211	ziyanense
AC 5115	kiangsiense	AC 5220	cardiobasis
AC 5116	unidentified species	AC 5226	cardiobasis
AC 5121	kiangsiense	AC 5227	ziyanense
AC 5123	simiarum	AC 5229	yuefengense
AC 5127	liliiflorum aff.		
2004 - Arunachal Pradesh			
AC 5249	delavayi	AC 5295	barbatum / argipeplum
AC 5253	delavayi	AC 5296	kesangiae x ? (NH)
AC 5255	arboreum	AC 5299	megeratum
AC 5256	peramoeunum	AC 5300	eximium
AC 5259	arboreum	AC 5301	maddenii
AC 5264	edgeworthii	AC 5305	kesangiae aff.
AC 5267	grande	AC 5306	argipeplum
AC 5268	kendrickii	AC 5306	barbatum / argipeplum
AC 5271	grande	AC 5307	megeratum
AC 5272	kendrickii	AC 5308	lindleyi
AC 5273	phaedropum	AC 5309	argipeplum
AC 5278	arboreum x ? (NH)	AC 5309	barbatum / argipeplum
AC 5281	grande	AC 5310	kesangiae aff.
AC 5284	kendrickii	AC 5311	kesangiae aff.
AC 5285	kendrickii	AC 5312	kesangiae aff.
AC 5288	lindleyi	AC 5313	triflorum
AC 5290	unidentified species	AC 5314	leptocarpum

AC 5315	keysii	AC 5359	erosum aff.
AC 5318	kesangiae aff.	AC 5362	arizelum
AC 5319	leptocarpum	AC 5363	arizelum
AC 5320	keysii	AC 5364	hodgsonii
AC 5321	leptocarpum	AC 5365	arizelum
AC 5325	maddenii	AC 5366	tsangpoense
AC 5327	argipeplum	AC 5368	lopsangianum aff.
AC 5327	barbatum / argipeplum	AC 5369	erosum aff.
AC 5328	phaedropum	AC 5370	lopsangianum
AC 5329	hookeri	AC 5371	keysii
AC 5331	kesangiae	AC 5372	lopsangianum aff.
AC 5332	maddenii	AC 5374	lopsangianum
AC 5333	kesangiae x ? (NH)	AC 5375	hodgsonii
AC 5333	kesangiae x ? (NH)	AC 5376	keysii
AC 5334	hookeri	AC 5377	flinckii aff.
AC 5335	arizelum aff.	AC 5378	arizelum
AC 5336	arizelum aff.	AC 5379	campylocarpum
AC 5338	praestans aff.	AC 5380	hodgsonii
AC 5339	praestans aff.	AC 5381	hookeri
AC 5340	eximium	AC 5383	keysii
AC 5341	maddenii	AC 5385	maddenii
AC 5342	leptocarpum	AC 5392	arboreum
AC 5343	kesangiae	AC 5396	grande
AC 5344	hookeri	AC 5397	griffithianum
AC 5345	sidereum	AC 5399	rhabdotum
AC 5346	kesangiae	AC 5406	kesangiae
AC 5347	falconeri x ? (NH)	AC 5406a	arizelum
AC 5348	leptocarpum	AC 5407	wallichii
AC 5349	kesangiae	AC 5408	arizelum
AC 5350	kesangiae x ? (NH)	AC 5410	kesangiae
AC 5351	hookeri	AC 5411	keysii
AC 5352	falconeri	AC 5412	wallichii
AC 5352	falconeri aff.	AC 5413	cinnabarinum
AC 5354	hookeri	AC 5415	x candelabrum (NH)
AC 5357	kesangiae aff.	AC 5416	cinnabarinum
AC 5358	hookeri	AC 5417	bhutanense x ? (NH)

AC 5418	thomsonii	AC 5487	thomsonii
AC 5419	lepidotum	AC 5489	wightii
AC 5421	wallichii	AC 5490	phaedropum
AC 5422	wallichii	AC 5491	fulgens
AC 5423	wallichii-flinckii (intermediate)	AC 5493	bhutanense
AC 5424	campylocarpum	AC 5494	lepidotum
AC 5425	flinckii	AC 5495	wallichii
AC 5426	wallichii-flinckii (intermediate)	AC 5496	anthopogon
AC 5429	flinckii	AC 5497	wightii
AC 5430	wightii	AC 5505	unidentified species
AC 5431	thomsonii	AC 5512	unidentified species
AC 5432	wallichii	AC 5513	fulgens
AC 5433	flinckii	AC 5514	unidentified species
AC 5434	bhutanense x ? (NH)	AC 5515	wightii
AC 5435	cinnabarinum	AC 5516	fulgens
AC 5436	bhutanense	AC 5517	lepidotum
AC 5437	campylocarpum	AC 5518	polyandrum
AC 5438	hodgsonii	AC 5519	polyandrum
AC 5439	hodgsonii aff.	AC 5520	hodgsonii aff.
AC 5440	wightii	AC 5521	polyandrum
AC 5441	flinckii	AC 5522	phaedropum
AC 5442	bhutanense	AC 5525	phaedropum
AC 5443	flinckii / tsariense	AC 5529	hodgsonii aff.
AC 5444	thomsonii	AC 5530	keysii aff.
AC 5445	campylocarpum	AC 5532	johnstoneanum
AC 5446	bhutanense	AC 5533	manipurense
AC 5447	bhutanense	AC 5538	macabeanum
AC 5448	bhutanense	AC 5539	elliottii
AC 5449	bhutanense	AC 5540	elliottii
AC 5451	bhutanense	AC 5541	elliottii
AC 5456	anthopogon	AC 5543	macabeanum
AC 5457	anthopogon	AC 5545	nilagiricum
AC 5460	fulgens	AC 5546	macabeanum
AC 5470	wallichii	AC 5552	bauhiniiflorum
AC 5477	lepidotum	AC 5555	peramoeunum
AC 5484	wightii	AC 5556	unidentified species

AC 5559	macabeanum	AC 5594	megeratum
AC 5561	crassum	AC 5596	dalhousiae
AC 5566	elliottii	AC 5597	griffithianum
AC 5569	bauhiniiflorum	AC 5603	wallichii
AC 5572	bauhiniiflorum	AC 5604	thomsonii
AC 5577	arboreum	AC 5611	unidentified species
AC 5590	tsangpoense		

Clark & Gallavan:

2006 - Vietnam			
C&G 5615	nuttallii	C&G 5678	unidentified species
C&G 5616	nuttallii	C&G 5680	unidentified species
C&G 5617	crassum	C&G 5684	sinofalconeri
C&G 5618	emarginatum	C&G 5685	crenulatum
C&G 5620	hemsleyanum aff.	C&G 5686	unidentified species
C&G 5630	nuttallii	C&G 5687	sinofalconeri
C&G 5631	nuttallii	C&G 5689	ovatum aff.
C&G 5645	veitchianum	C&G 5705	delavayi aff.
C&G 5648	veitchianum	C&G 5707	crenulatum
C&G 5651	emarginatum	C&G 5709	klossii
C&G 5663	tanastylum aff.	C&G 5714	ovatum aff.
C&G 5664	unidentified species	C&G 5726	emarginatum
C&G 5665	unidentified species	C&G 5727	emarginatum
C&G 5667	unidentified species	C&G 5728	protistum aff.
C&G 5668	unidentified species	C&G 5729	unidentified species
C&G 5669	saxicolum	C&G 5730	unidentified species
C&G 5670	unidentified species	C&G 5731	unidentified species
C&G 5671	ovatum aff.	C&G 5732	nuttallii
C&G 5672	crenulatum	C&G 5733	unidentified species
C&G 5674	unidentified species	C&G 5737	nuttallii
C&G 5676	unidentified species	C&G 5740	nuttallii
C&G 5677	unidentified species		

Clark & Newman:

2007 - Sichuan & Yunnan			
C&N 5757	unidentified species	C&N 5875	flavoflorum
C&N 5759	wasonii aff.	C&N 5881	yunnanense
C&N 5760	x dictyotum aff.	C&N 5882	decorum
C&N 5761	ovatum	C&N 5883	decorum
C&N 5764	setiferum	C&N 5888	yunnanense
C&N 5765	unidentified species	C&N 5898	brachyanthum
C&N 5766	racemosum	C&N 5904	cyanocarpum
C&N 5768	brevistylum	C&N 5904	cyanocarpum aff.
C&N 5769	unidentified species	C&N 5910	decorum
C&N 5771	rubiginosum	C&N 5924	virgatum
C&N 5772	roxieanum	C&N 5925	rigidum aff.
C&N 5773	unidentified species	C&N 5927	hypolepidotum
C&N 5784	araiophyllum	C&N 5932	unidentified species
C&N 5785	decorum aff.	C&N 5934	trichocladum
C&N 5786	araiophyllum	C&N 5943	edgeworthii
C&N 5793	araiophyllum	C&N 5946	unidentified species
C&N 5796	araiophyllum	C&N 5950	decorum
C&N 5802	araiophyllum	C&N 5953	sulfureum
C&N 5813	araiophyllum	C&N 5958	siderophyllum
C&N 5822	brevinerve aff.	C&N 5965	spinuliferum
C&N 5832	xanthostephanum	C&N 5967	glabrescens
C&N 5834	sinogrande	C&N 5968	siderophyllum
C&N 5835	basilicum Gratum	C&N 5969	unidentified species
C&N 5839	tephropeplum	C&N 5971	spinuliferum
C&N 5840	zaleucum	C&N 5974	fumidum
C&N 5845	facetum	C&N 5975	montiganum
C&N 5848	zaleucum	C&N 5979	delavayi
C&N 5849	delavayi x ? (NH)	C&N 5981	fictolacteam aff.
C&N 5855	zaleucum	C&N 5982	delavayi
C&N 5859	saluenense	C&N 5983	cookeanum
C&N 5862	neriiflorum	C&N 5986	fumidum
C&N 5867	facetum	C&N 5987	racemosum aff.
C&N 5869	calostrotum aff.	C&N 5988	rex aff.
C&N 5873	facetum	C&N 5989	wumengense
C&N 5874	facetum	C&N 5990	tsaii aff.

C&N 5993	decorum aff.	C&N 6075	unidentified species
C&N 6002	unidentified species	C&N 6077	unidentified species
C&N 6003	openshawianum	C&N 6078	oreodoxa x ? (NH)
C&N 6004	hanceanum aff. / bodinierii	C&N 6079	unidentified species
C&N 6005	openshawianum	C&N 6080	unidentified species
C&N 6006	coeloneuron	C&N 6081	oreodoxa aff.
C&N 6007	unidentified species	C&N 6082	unidentified species
C&N 6009	openshawianum	C&N 6083	ambiguum
C&N 6010	denudatum	C&N 6085	vernicosum
C&N 6012	praeavernum aff.	C&N 6086	fictolacteam Miniforme
C&N 6014	praeavernum aff.	C&N 6087	fictolacteam
C&N 6015	lutescens	C&N 6088	fictolacteam
C&N 6017	denudatum	C&N 6090	unidentified species
C&N 6020	strigillosum	C&N 6091	rex
C&N 6021	riparium	C&N 6093	unidentified species
C&N 6023	riparium	C&N 6094	oreodoxa aff.
C&N 6026	riparium	C&N 6095	fictolacteam Miniforme
C&N 6042	nankingense aff.	C&N 6098	unidentified species
C&N 6044	nankingense aff.	C&N 6101	unidentified species
C&N 6047	oreodoxa aff.	C&N 6103	unidentified species
C&N 6050	unidentified species	C&N 6125	pachytrichum
C&N 6052	unidentified species	C&N 6126	sutchuenense
C&N 6055	augustinii aff.	C&N 6128	wiltonii
C&N 6056	ambiguum	C&N 6129	pachytrichum aff.
C&N 6057	polylepis aff.	C&N 6130	ambiguum
C&N 6058	searsiae	C&N 6131	pachytrichum
C&N 6059	searsiae	C&N 6132	pachytrichum
C&N 6062	lukiangense aff.	C&N 6134	ambiguum
C&N 6063	polylepis aff.	C&N 6135	sutchuenense
C&N 6064	searsiae	C&N 6138	wiltonii
C&N 6065	racemosum	C&N 6139	pachytrichum
C&N 6069	polylepis aff.	C&N 6140	sutchuenense
C&N 6070	hypoglaucom aff.	C&N 6141	pachytrichum
C&N 6071	polylepis aff.	C&N 6142	praeavernum
C&N 6073	ambiguum	C&N 6143	wiltonii
C&N 6074	rex aff.	C&N 6144	calophytum aff.

C&N 6145	wasonii aff.	C&N 6165	unidentified species
C&N 6146	fargesii	C&N 6166	omeiense
C&N 6147	fargesii	C&N 6172	faberi
C&N 6148	oreodoxa	C&N 6174	maculiferum aff.
C&N 6151	oreodoxa	C&N 6175	orbiculare
C&N 6156	selense	C&N 6176	denudatum
C&N 6157	sutchuenense aff.	C&N 6178	maculiferum
C&N 6158	faberi	C&N 6179	denudatum
C&N 6159	ambiguum	C&N 6180	x pubicostatum (NH)
C&N 6162	unidentified species		

Clark & Sinclair:

1990 - Bhutan			
C&S 1514	kesangiae	C&S 1594	flinckii
C&S 1515	delavayi	C&S 1595	succothii
C&S 1516	kesangiae	C&S 1596	hodgsonii
C&S 1517	kesangiae	C&S 1597	cinnabarinum
C&S 1523	arboreum	C&S 1599	succothii
C&S 1528	virgatum	C&S 1602	camelliiflorum
C&S 1531	triflorum	C&S 1608	kesangiae
C&S 1532	campbelliae	C&S 1609	falconeri
C&S 1561	campbelliae	C&S 1614	virgatum
C&S 1562	kesangiae	C&S 1615	maddenii
C&S 1563	kesangiae	C&S 1618	kesangiae
C&S 1568	barbatum	C&S 1623	kendrickii
C&S 1572	argipeplum	C&S 1624	grande
C&S 1573	kesangiae	C&S 1632	kesangiae
C&S 1576	hodgsonii	C&S 1633	tubiforme
C&S 1578	thomsonii	C&S 1634	wallichii
C&S 1581	camelliiflorum	C&S 1635	thomsonii
C&S 1582	argipeplum	C&S 1637	wallichii
C&S 1583	thomsonii	C&S 1638	thomsonii
C&S 1584	thomsonii	C&S 1639	flinckii
C&S 1590	wightii	C&S 1640	wightii
C&S 1591	xanthocodon	C&S 1642	nivale
C&S 1592	hodgsonii aff.	C&S 1643	bhutanense

C&S 1644	unidentified species	C&S 1682	falconeri
C&S 1645	bhutanense	C&S 1683	kendrickii
C&S 1646	unidentified species	C&S 1692	campylocarpum
C&S 1647	flinckii	C&S 1693	cinnabarinum
C&S 1648	bhutanense	C&S 1694	hodgsonii
C&S 1652	campylocarpum	C&S 1695	arboreum
C&S 1655	keysii	C&S 1696	keysii
C&S 1656	glaucophyllum	C&S 1697	falconeri
C&S 1658	cinnabarinum	C&S 1698	hodgsonii
C&S 1659	phaedropum	C&S 1699	argipeplum
C&S 1662	kesangiae	C&S 1703	griffithianum
C&S 1664	lepidotum	C&S 1708	lindleyi
C&S 1666	flinckii aff.	C&S 1715	campylocarpum
C&S 1667	succothii	C&S 1759	fulgens

Clark & Wilson:

2014 - Guangxi			
C&W 6512	fortunei	C&W 6651	nutriforme
C&W 6519	auriculatum	C&W 6656	brevinerve aff.
C&W 6524	maoerense	C&W 6661	hongkongense
C&W 6525	fangchengense aff.	C&W 6665	orbiculare ssp. maolinense
C&W 6552	hancockii	C&W 6677	orbiculare ssp. oblongum
C&W 6553	chisinanum aff.	C&W 6678	rivulare
C&W 6585	farrerae	C&W 6679	orbiculare ssp. oblongum
C&W 6598	moulmainense var. calcaratum	C&W 6681	haofui
C&W 6617	pachyphyllum	C&W 6687	fortunei
C&W 6640	discolor	C&W 6709	simiarum Versicolor

Clark, Nielsen & Wilson:

1994 - Yunnan			
CNW 16	hippophaeoides	CNW 183	unknown species
CNW 29	hippophaeoides	CNW 186	unknown species
CNW 35	racemosum	CNW 188	beesianum
CNW 73	brevistylum	CNW 189	beesianum
CNW 85	beesianum	CNW 190	phaeochrysum aff.
CNW 100	yunnanense	CNW 191	unknown species
CNW 101	rubiginosum	CNW 192	unknown species
CNW 103	wardii x vernicosum (NH)	CNW 195	wardii
CNW 104	wardii x vernicosum (NH)	CNW 198	rubiginosum
CNW 107	wardii x vernicosum (NH)	CNW 201	phaeochrysum aff.
CNW 110	beesianum	CNW 203	unknown species
CNW 113	selense aff.	CNW 209	unknown species
CNW 115	wardii aff.	CNW 229	unknown species
CNW 118	wardii aff.	CNW 230	beesianum
CNW 119	rubiginosum	CNW 231	x dictyotum aff. (NH)
CNW 121	vernicosum aff.	CNW 232	unknown species
CNW 122	vernicosum	CNW 233	vernicosum
CNW 126	wardii	CNW 234	heliolepis
CNW 150	aganniphum	CNW 235	unknown species
CNW 156	unknown species	CNW 236	unknown species
CNW 163	unknown species	CNW 238	phaeochrysum
CNW 164	unknown species	CNW 239	unknown species
CNW 165	unknown species	CNW 240	unknown species
CNW 166	unknown species	CNW 241	unknown species
CNW 167	unknown species	CNW 244	proteoides
CNW 168	unknown species	CNW 245	proteoides
CNW 169	unknown species	CNW 247	unknown species
CNW 170	unknown species	CNW 248	unknown species
CNW 171	unknown species	CNW 249	unknown species
CNW 175	unknown species	CNW 255	unknown species
CNW 176	unknown species	CNW 256	unknown species
CNW 177	unknown species	CNW 257	unknown species
CNW 178	unknown species	CNW 258	unknown species
CNW 179	wardii	CNW 259	unknown species
CNW 182	unknown species	CNW 261	unknown species

CNW 262	unknown species	CNW 314	chameunum
CNW 263	unknown species	CNW 315	unknown species
CNW 265	prostratum	CNW 316	unknown species
CNW 267	unknown species	CNW 317	unknown species
CNW 268	chameunum aff.	CNW 318	chameunum
CNW 269	beesianum	CNW 324	chryseum
CNW 270	beesianum	CNW 326	wardii
CNW 271	unknown species	CNW 327	roxieanum Cucculatum aff.
CNW 272	unknown species	CNW 330	chameunum
CNW 273	unknown species	CNW 333	primuliflorum
CNW 274	unknown species	CNW 334	prostratum
CNW 275	unknown species	CNW 336	proteoides
CNW 276	unknown species	CNW 340	primuliflorum aff.
CNW 278	unknown species	CNW 347	beesianum
CNW 279	unknown species	CNW 350	wardii
CNW 280	unknown species	CNW 351	phaeochrysum
CNW 281	unknown species	CNW 352	rubiginosum
CNW 282	unknown species	CNW 354	yunnanense
CNW 283	unknown species	CNW 355	unknown species
CNW 284	unknown species	CNW 356	unknown species
CNW 286	wardii	CNW 357	unknown species
CNW 288	hippophaeoides	CNW 359	uvariifolium
CNW 289	hippophaeoides aff.	CNW 362	unknown species
CNW 290	unknown species	CNW 363	unknown species
CNW 291	hippophaeoides	CNW 364	anthosphaerum
CNW 292	unknown species	CNW 365	unknown species
CNW 295	oreotrepes	CNW 374	virgatum
CNW 298	oreotrepes	CNW 380	edgeworthii
CNW 302	vernicosum	CNW 381	rubiginosum
CNW 307	roxieanum	CNW 382	uvariifolium
CNW 308	unknown species	CNW 383	rubiginosum
CNW 309	unknown species	CNW 384	selense aff.
CNW 310	unknown species	CNW 385	unknown species
CNW 311	chryseum	CNW 386	decorum
CNW 312	unknown species	CNW 387	uvariifolium
CNW 313	unknown species	CNW 388	oreotrepes

CNW 389	racemosum aff.	CNW 484	wardii
CNW 390	glischrum	CNW 488	vernicosum
CNW 391	glischrum	CNW 489	vernicosum
CNW 392	unknown species	CNW 490	rubiginosum
CNW 393	racemosum aff.	CNW 493	oreotrephes
CNW 395	unknown species	CNW 494	rubiginosum
CNW 398	glischrum	CNW 498	unknown species
CNW 406	rubiginosum	CNW 499	phaeochrysum aff.
CNW 408	lukiangense	CNW 502	unknown species
CNW 417	sinogrande	CNW 529	unknown species
CNW 428	roxieanum	CNW 530	unknown species
CNW 429	x iodes aff.	CNW 531	unknown species
CNW 430	x iodes aff.	CNW 532	unknown species
CNW 431	roxieanum	CNW 533	unknown species
CNW 432	balfourianum	CNW 534	unknown species
CNW 433	unknown species	CNW 541	unknown species
CNW 434	racemosum	CNW 542	unknown species
CNW 435	wardii	CNW 543	chasmanthum
CNW 436	roxieanum aff.	CNW 546	unknown species
CNW 437	beesianum aff.	CNW 548	unknown species
CNW 438	unknown species	CNW 551	weihsiense
CNW 440	primuliflorum	CNW 552	unknown species
CNW 441	unknown species	CNW 553	decorum
CNW 442	phaeochrysum aff.	CNW 555	unknown species
CNW 443	heliolepis	CNW 557	unknown species
CNW 444	phaeochrysum aff.	CNW 558	chasmanthum
CNW 445	aganniphum	CNW 559	unknown species
CNW 447	aganniphum	CNW 560	uvariifolium
CNW 454	unknown species	CNW 564	weihsiense
CNW 458	unknown species	CNW 568	unknown species
CNW 460	selense	CNW 569	unknown species
CNW 462	wardii	CNW 570	weihsiense
CNW 472	hippophaeoides	CNW 571	weihsiense
CNW 473	racemosum	CNW 572	weihsiense
CNW 481	wardii	CNW 574	unknown species
CNW 482	beesianum aff.	CNW 576	x spilotum aff. (NH)

CNW 577	coriaceum	CNW 654	hippophaeoides
CNW 579	unknown species	CNW 660	vernicosum
CNW 580	rubiginosum	CNW 664	megeratum aff.
CNW 582	decorum	CNW 667	yunnanense
CNW 583	chasmanthum aff.	CNW 668	unknown species
CNW 585	uvariifolium	CNW 674	unknown species
CNW 587	wardii	CNW 675	unknown species
CNW 591	wardii	CNW 676	unknown species
CNW 592	calostrotum aff.	CNW 679	roxieanum Cucculatum
CNW 596	wardii	CNW 680	roxieanum Cucculatum
CNW 597	wardii	CNW 682	wardii aff.
CNW 599	trichocladium	CNW 683	rubiginosum
CNW 601	unknown species	CNW 684	selense
CNW 602	decorum	CNW 685	roxieanum Cucculatum
CNW 608	wardii	CNW 686	roxieanum Cucculatum
CNW 612	unknown species	CNW 687	roxieanum
CNW 613	unknown species	CNW 688	unknown species
CNW 617	racemosum x trichocladium (NH)	CNW 690	roxieanum Cucculatum
CNW 618	racemosum	CNW 691	fictolacteum
CNW 619	wardii	CNW 692	roxieanum Oreonastes
CNW 620	selense	CNW 693	wardii aff.
CNW 622	trichocladium	CNW 695	roxieanum Cucculatum
CNW 623	selense	CNW 696	selense aff.
CNW 625	wardii	CNW 698	selense aff.
CNW 628	yunnanense	CNW 702	roxieanum aff.
CNW 629	unknown species	CNW 703	unknown species
CNW 630	unknown species	CNW 706	roxieanum aff.
CNW 635	beesianum	CNW 707	fictolacteum
CNW 636	decorum aff.	CNW 709	roxieanum
CNW 640	unknown species	CNW 710	roxieanum
CNW 641	vernicosum	CNW 711	unknown species
CNW 643	beesianum	CNW 712	beesianum
CNW 644	unknown species	CNW 713	unknown species
CNW 645	oreotrephes aff.	CNW 715	fictolacteum
CNW 649	unknown species	CNW 719	roxieanum aff.
CNW 651	yunnanense	CNW 720	fictolacteum

CNW 721	roxieanum Oreonastes	CNW 793	unknown species
CNW 723	roxieanum	CNW 799	yunnanense
CNW 724	unknown species	CNW 811	cyanocarpum
CNW 725	unknown species	CNW 812	cyanocarpum
CNW 726	wardii	CNW 813	taliense
CNW 727	roxieanum	CNW 816	simsii
CNW 728	fictolacteum	CNW 819	neriiflorum
CNW 729	roxieanum Oreonastes	CNW 820	unknown species
CNW 730	unknown species	CNW 830	haematodes
CNW 731	fictolacteum Miniforme	CNW 834	edgeworthii
CNW 732	yungningense	CNW 835	platyphyllum
CNW 734	roxieanum	CNW 839	platyphyllum
CNW 735	selense	CNW 840	unknown species
CNW 736	unknown species	CNW 841	trichocladum
CNW 737	selense	CNW 844	virgatum
CNW 738	fictolacteum	CNW 845	yunnanense
CNW 739	unknown species	CNW 846	unknown species
CNW 740	roxieanum	CNW 847	brachyanthum
CNW 741	oreotrepthes	CNW 849	campylogynum
CNW 742	beesianum	CNW 850	platyphyllum
CNW 743	roxieanum Oreonastes	CNW 851	impeditum aff.
CNW 745	wardii	CNW 852	crassum
CNW 746	traillianum aff.	CNW 853	platyphyllum
CNW 747	traillianum aff.	CNW 857	unknown species
CNW 748	wardii	CNW 859	campylogynum
CNW 749	wardii	CNW 860	taliense
CNW 750	selense	CNW 861	cephalanthum
CNW 756	yungningense	CNW 862	platyphyllum
CNW 775	decorum	CNW 864	platyphyllum
CNW 784	unknown species	CNW 867	sulfureum
CNW 786	uvariifolium	CNW 872	unknown species
CNW 787	decorum	CNW 873	brachyanthum
CNW 788	unknown species	CNW 874	unknown species
CNW 789	racemosum aff.	CNW 876	taliense
CNW 791	fictolacteum	CNW 880	trichocladum
CNW 792	wardii	CNW 886	trichocladum

CNW 891	microphyton	CNW 945	rex
CNW 893	sulfureum	CNW 948	wumengense
CNW 894	simsii	CNW 949	rex
CNW 895	crassum	CNW 950	heliolapis
CNW 896	edgeworthii	CNW 951	heliolapis
CNW 906	neriiflorum	CNW 952	x monosematum (NH)
CNW 907	virgatum	CNW 953	x monosematum (NH)
CNW 908	brachyanthum	CNW 954	rex
CNW 909	racemosum	CNW 955	sinogrande
CNW 910	yunnanense	CNW 956	x monosematum (NH)
CNW 912	unknown species	CNW 957	sinogrande
CNW 920	cookeanum	CNW 958	cookeanum
CNW 921	heliolapis	CNW 959	cookeanum
CNW 922	x pubicostatum (NH)	CNW 960	sinogrande
CNW 923	cookeanum	CNW 961	cookeanum
CNW 924	cookeanum	CNW 962	wumengense
CNW 925	wumengense	CNW 963	wumengense
CNW 926	unknown species	CNW 964	sinogrande
CNW 927	cookeanum	CNW 965	bureavii aff.
CNW 928	lacteum	CNW 966	lacteum
CNW 929	cookeanum	CNW 967	cookeanum
CNW 930	lacteum	CNW 968	wumengense
CNW 931	wumengense	CNW 969	bureavii aff.
CNW 932	wumengense	CNW 970	cookeanum
CNW 933	wumengense	CNW 971	cookeanum
CNW 934	cookeanum	CNW 972	lacteum
CNW 935	wumengense	CNW 973	cookeanum
CNW 936	lacteum	CNW 974	heliolapis
CNW 937	unknown species	CNW 975	wumengense
CNW 938	unknown species	CNW 976	wumengense
CNW 939	unknown species	CNW 977	lacteum
CNW 940	sinogrande	CNW 978	lacteum
CNW 941	wumengense	CNW 979	wumengense
CNW 942	wumengense	CNW 980	lacteum
CNW 943	cookeanum	CNW 981	wumengense
CNW 944	heliolapis	CNW 982	cookeanum

CNW 983	wumengense	CNW 1056	sinogrande
CNW 984	x pubicostatum (NH)	CNW 1057	wumengense
CNW 985	heliolepis	CNW 1058	sinogrande
CNW 986	wumengense	CNW 1059	lacteam
CNW 987	wumengense	CNW 1060	cookeanum
CNW 988	wumengense	CNW 1061	cookeanum
CNW 989	wumengense	CNW 1062	cookeanum
CNW 990	wumengense	CNW 1063	sinogrande
CNW 991	wumengense	CNW 1065	unknown species
CNW 994	delavayi	CNW 1066	lacteam
CNW 995	delavayi	CNW 1075	spinuliferum
CNW 996	decorum aff.	CNW 1081	unknown species
CNW 997	unknown species	CNW 1083	spinuliferum
CNW 998	rubiginosum	CNW 1084	spinuliferum
CNW 1000	bureavii	CNW 1085	molle
CNW 1006	fastigiatum	CNW 1086	delavayi
CNW 1023	unknown species	CNW 1087	microphyton
CNW 1024	wumengense	CNW 1088	microphyton
CNW 1025	unknown species	CNW 1089	microphyton
CNW 1027	heliolepis	CNW 1090	unknown species
CNW 1028	unknown species	CNW 1091	wardii
CNW 1029	unknown species	CNW 1092	rubiginosum aff.
CNW 1033	heliolepis	CNW 1098	siderophyllum aff.
CNW 1034	unknown species	CNW 1101	spiciferum
CNW 1038	heliolepis	CNW 1102	spiciferum
CNW 1039	sinogrande	CNW 1103	spiciferum
CNW 1042	sinogrande	CNW 1112	siderophyllum
CNW 1045	cookeanum	CNW 1114	spinuliferum
CNW 1046	unknown species	CNW 1119	spiciferum
CNW 1047	lacteam	CNW 1127	unknown species
CNW 1048	heliolepis	CNW 1131	spiciferum
CNW 1049	heliolepis	CNW 1136	aberconwayi (cultivated plant)
CNW 1050	wumengense	CNW 1137	spiciferum
CNW 1051	wumengense	CNW 1139	spiciferum
CNW 1052	wumengense	CNW 1143	rubiginosum aff.
CNW 1055	sinogrande	CNW 1148	yungningense

CNW 1160	chameunum	CNW 1240	unknown species
CNW 1164	aganniphum	CNW 1241	unknown species
CNW 1165	aganniphum	CNW 1242	unknown species
CNW 1166	aganniphum	CNW 1243	unknown species
CNW 1174	aganniphum	CNW 1244	unknown species
CNW 1175	aganniphum	CNW 1245	unknown species
CNW 1176	aganniphum	CNW 1246	unknown species
CNW 1177	wardii	CNW 1247	prostratum
CNW 1178	beesianum	CNW 1254	primuliflorum
CNW 1179	wardii	CNW 1255	unknown species
CNW 1180	unknown species	CNW 1256	chameunum
CNW 1181	unknown species	CNW 1257	unknown species
CNW 1182	unknown species	CNW 1262	unknown species
CNW 1183	unknown species	CNW 1271	wardii
CNW 1184	unknown species	CNW 1274	unknown species
CNW 1185	unknown species	CNW 1275	uvatifolium
CNW 1186	unknown species	CNW 1276	clementinae
CNW 1187	rupicola	CNW 1283	unknown species
CNW 1188	unknown species	CNW 1285	platyphyllum
CNW 1189	unknown species	CNW 1286	aganniphum aff.
CNW 1192	fulvodes	CNW 1299	oreotrepes
CNW 1193	adenogynum	CNW 1300	wardii
CNW 1194	adenogynum Adenophorum	CNW 1302	vernicosum
CNW 1197	complexum aff.	CNW 1303	siderophyllum
CNW 1229	phaeochrysum	CNW 1304	siderophyllum
CNW 1230	primuliflorum	CNW 1305	spiciferum
CNW 1231	primuliflorum	CNW 1309	spiciferum
CNW 1232	primuliflorum	CNW 1313	primuliflorum
CNW 1233	balfourianum	CNW 1314	primuliflorum
CNW 1234	aganniphum aff.	CNW 1316	beesianum aff.
CNW 1235	primuliflorum	CNW 1320	brachyanthum
CNW 1236	primuliflorum	CNW 1321	unknown species
CNW 1237	primuliflorum	CNW 1326	spinuliferum
CNW 1238	heliolepis	CNW 1327	spiciferum
CNW 1239	balfourianum	CNW 1328	spiciferum

Clark, Wilson & Taggart:

2011 - Vietnam			
CWT 6278	emarginatum	CWT 6389	emarginatum
CWT 6279	nuttallii	CWT 6390	fansipanense aff.
CWT 6280	nuttallii	CWT 6393	unidentified species
CWT 6281	nuttallii	CWT 6394	klossii
CWT 6282	serotinum aff.	CWT 6395	facetum
CWT 6316	emarginatum	CWT 6398	unidentified species
CWT 6317	lyi aff.	CWT 6402	obtusum
CWT 6336	sinofalconeri	CWT 6404	unidentified species
CWT 6338	unidentified species	CWT 6405	sinofalconeri
CWT 6339	unidentified species	CWT 6406	unidentified species
CWT 6340	unidentified species	CWT 6407	unidentified species
CWT 6341	pogonostyllum	CWT 6410	suoiленhense
CWT 6342	tanastyllum aff.	CWT 6413	unidentified species
CWT 6343	tanastyllum aff.	CWT 6414	unidentified species
CWT 6344	tanastyllum aff.	CWT 6416	unidentified species
CWT 6345	tanastyllum aff.	CWT 6417	unidentified species
CWT 6346	klossii	CWT 6422	peramoenum aff.
CWT 6347	irroratum aff.	CWT 6423	unidentified species
CWT 6348	unidentified species	CWT 6424	crassum
CWT 6349	unidentified species	CWT 6427	unidentified species
CWT 6350	tanastyllum aff.	CWT 6432	unidentified species
CWT 6351	unidentified species	CWT 6441	unidentified species
CWT 6352	unidentified species	CWT 6442	unidentified species
CWT 6353	leptocladon aff.	CWT 6486	nuttallii
CWT 6362	crassum	CWT 6490	emarginatum
CWT 6386	saxiculum	CWT 6494	pogonostyllum Mengzentze
CWT 6388	unidentified species	CWT 6498	suoiленhense

Roland Cooper:

1914 - Bhutan			
Cooper 1	cinnabarinum	Cooper 2233	hodgsonii
Cooper 15	campylocarpum	Cooper 2315	griffithianum
Cooper 46	setosum	Cooper 2475	cinnamomeum (var. roseum)
Cooper 47	lepidotum	Cooper 2487	succothii
Cooper 91	lepidotum	Cooper 2489	succothii
Cooper 155	aeruginosum	Cooper 2490	setosum
Cooper 237	lepidotum	Cooper 2503	setosum
Cooper 295	lepidotum	Cooper 2504	campylocarpum
Cooper 743	lepidotum	Cooper 2505	hodgsonii
Cooper 744	lepidotum	Cooper 2523	lepidotum
Cooper 745	cinnabarinum	Cooper 2552	lepidotum
Cooper 747	cinnabarinum	Cooper 2581	cinnabarinum
Cooper 749	campylocarpum	Cooper 2590	wightii
Cooper 1282	maddenii	Cooper 2592	campanulatum
Cooper 1291	arboreum	Cooper 2648	cinnabarinum
Cooper 1292	maddenii	Cooper 2756	edgeworthii
Cooper 1456	keysii	Cooper 2760	arboreum
Cooper 1545	arboreum	Cooper 2819	virgatum
Cooper 1575	arboreum	Cooper 2843	arboreum
Cooper 1741	lepidotum	Cooper 2903	arboreum
Cooper 1805	lepidotum	Cooper 2922	cinnabarinum
Cooper 1937	cinnabarinum	Cooper 2922a	camelliiflorum
Cooper 2040	grande	Cooper 2924	cinnamomeum (var. roseum)
Cooper 2088	hodgsonii	Cooper 2928	thomsonii
Cooper 2088a	hodgsonii x ? (NH)	Cooper 3064	virgatum
Cooper 2089	arboreum	Cooper 3151	virgatum
Cooper 2146	xanthocodon	Cooper 3233	aeruginosum
Cooper 2147	wallichii	Cooper 3234	wightii
Cooper 2148	tsariense Magnum	Cooper 3235	anthopogon
Cooper 2149	wallichii	Cooper 3236	lepidotum
Cooper 2154	xanthocodon	Cooper 3238	wallichii
Cooper 2217	aeruginosum	Cooper 3256	cinnabarinum
Cooper 2217a	wightii	Cooper 3257	argipeplum
Cooper 2223	lepidotum	Cooper 3287	barbatum
Cooper 2224	baileyi	Cooper 3383	keysii

Cooper 3423	maddenii	Cooper 3498	wightii
Cooper 3469	lepidotum	Cooper 3503	arboreum
Cooper 3479	lepidotum	Cooper 3507	barbatum
Cooper 3480	campanulatum	Cooper 3527	wightii
Cooper 3482	setosum	Cooper 3528	aeruginosum
Cooper 3483	nivale	Cooper 3540	cinnamomeum (var. roseum)
Cooper 3484	lanatum	Cooper 3541	triflorum
Cooper 3485	anthopogon	Cooper 3588	virgatum
Cooper 3487	unidentified species	Cooper 3593	cinnamomeum (var. roseum)
Cooper 3490	lanatum	Cooper 3601	polyandrum
Cooper 3491	campylocarpum	Cooper 3615	griffithianum
Cooper 3492	wallichii	Cooper 3698	wightii
Cooper 3493	unidentified species		
1915 - Bhutan			
Cooper 3786	arboreum	Cooper 3998	xanthocodon
Cooper 3806	dalhousiae	Cooper 4003	setosum
Cooper 3815	virgatum	Cooper 4009	baileyi
Cooper 3819	cinnabarinum	Cooper 4083	camelliiflorum
Cooper 3831	triflorum	Cooper 4084	hodgsonii
Cooper 3838	nivale	Cooper 4086	kendrickii
Cooper 3873	cinnabarinum	Cooper 4101	succothii
Cooper 3876	pendulum	Cooper 4115	erosum
Cooper 3879	edgeworthii	Cooper 4128	lepidotum
Cooper 3903	anthopogon	Cooper 4160	kendrickii
Cooper 3913	keysii	Cooper 4285	baileyi
Cooper 3935	dalhousiae	Cooper 4804	cinnabarinum
Cooper 3939	griffithianum	Cooper 4830	barbatum
Cooper 3940	grande	Cooper 4978	kendrickii
Cooper 3957	maddenii	Cooper 4979	cinnabarinum
Cooper 3959	camelliiflorum	Cooper 4980	polyandrum
Cooper 3990	flinckii	Cooper 4981	cinnamomeum (var. roseum)
Cooper 3991	thomsonii	Cooper 4982	cinnabarinum
1916 - NE Myanmar & Punjab, India			
Cooper 5738	hypananthum	Cooper 5928	lepidotum
Cooper 5768	campanulatum	Cooper 5975	burmanicum
Cooper 5926	campanulatum		

Kenneth Cox:

1990 - Thailand			
KC 9001	veitchianum		
2001 - Arunachal Pradesh			
KC 101	griffithianum	KC 117	glischrum ssp. rude
KC 104	venator aff.	KC 120	leucaspis
KC 105	grande	KC 122	beanianum
KC 106	edgeworthii	KC 123	faucium
KC 112	keysii	KC 124	heatherae aff.
KC 113	leucaspis	KC 126	populare
KC 114	tephropeplum	KC 127	populare
KC 115	keysii	KC 132	exasperatum
KC 116	exasperatum		

Peter Cox:

1990 - Sichuan			
Cox 5000	wiltonii	Cox 5039	bureavioides
Cox 5001	pachytrichum	Cox 5040	davidsonianum
Cox 5003	decorum	Cox 5043	nitidulum
Cox 5005	racemosum	Cox 5044	thymifolium
Cox 5008	lutescens	Cox 5045	intricatum
Cox 5009	davidsonianum	Cox 5046	wasonii aff.
Cox 5011	concinnum	Cox 5047a	decorum
Cox 5012	sikangense	Cox 5056	souliei
Cox 5013	watsonii	Cox 5057	dryophyllum
Cox 5014	faberi	Cox 5058	x agglutinatum (NH)
Cox 5015	orbiculare	Cox 5059	unidentified species
Cox 5016	dendrocharis	Cox 5060	intricatum
Cox 5020	floribundum	Cox 5061	prattii
Cox 5021	calophytum	Cox 5062	concinnum
Cox 5022	lutescens	Cox 5063	fargesii
Cox 5025	polylepis	Cox 5064	unidentified species
Cox 5028b	prattii	Cox 5066	bureavii x ? (NH)
Cox 5029	longesquamatum	Cox 5069	nigropunctatum
Cox 5030	prattii	Cox 5070	concinnum
Cox 5031	nitidulum	Cox 5071	primuliflorum
Cox 5035	davidsonianum	Cox 5072	bureavioides

Cox 5073	przewalskii	Cox 5099	racemosum
Cox 5075	watsonii	Cox 5100	lutescens
Cox 5076	bureavioides	Cox 5101	galactinum
Cox 5080	websterianum	Cox 5105	sikangense
Cox 5081	x agglutinatum	Cox 5110	wiltonii
Cox 5085	concinnum	Cox 5118	phaeochrysum
Cox 5089	trichanthum	Cox 5121	intricatum
Cox 5090	denudatum	Cox 5123	websterianum
Cox 5091	davidsonianum	Cox 5132	dryophyllum
Cox 5092	lutescens	Cox 5133	prattii
1992 - Sichuan & Yunnan			
Cox 6000	unidentified species	Cox 6095	campylogynum
Cox 6001	unidentified species	Cox 6096	campylogynum aff.
Cox 6012	chryseum	Cox 6099	chamaethomsonii
Cox 6016	x flavorufum (NH)	Cox 6100	forrestii
Cox 6021	edgeworthii	Cox 6101	sanguineum
Cox 6024	selense	Cox 6108	wardii
Cox 6025	praestans	Cox 6111	sanguineum aff.
Cox 6026	fulvum	Cox 6112	chameunum
Cox 6035	saluenense	Cox 6117	uvariifolium
Cox 6036	eudoxum	Cox 6119	wardii
Cox 6037a	temenium	Cox 6124	chasmanthum
Cox 6038	temenium aff.	Cox 6130	unidentified species
Cox 6047	selense	Cox 6132	intricatum
Cox 6048	arizelum x ? (NH)	Cox 6136	primuliflorum
Cox 6051	hypolepidotum	Cox 6143	flavidum
Cox 6053	cephalanthum	Cox 6144	souliei
Cox 6054	eclecteum	Cox 6145a	radendum
Cox 6055	mekongense	Cox 6146	x agglutinatum (NH)
Cox 6056	sanguineum	Cox 6148	bureavii
Cox 6067	selense	Cox 6149	trichanthum
Cox 6070	x flavorufum	Cox 6150	wiltonii
Cox 6094	tapetiforme aff.	Cox 6157	riparium
1994 - Yunnan			
Cox 6502	adenogynum	Cox 6511	praestans
Cox 6507	edgeworthii	Cox 6512	arizelum

Cox 6513	eclecteum	Cox 6534	eclecteum
Cox 6514	rubiginosum	Cox 6538	citriniflorum
Cox 6515	chryseum	Cox 6539	citriniflorum aff.
Cox 6516	x flavorufum (NH)	Cox 6540	x didymoides aff. (NH)
Cox 6517	saluenense	Cox 6541	x bathyphyllum (NH)
Cox 6519	uvariifolium	Cox 6542a	proteoides
Cox 6521	sanguineum	Cox 6542b	x bathyphyllum (NH)
Cox 6529	saluenense	Cox 6543	citriniflorum
Cox 6530	heliolepis	Cox 6544	mekongense
Cox 6531	coriaceum	Cox 6548	decorum
Cox 6532	fulvoides		
2014 - Sichuan			
Cox 14005	platypodum		

Cox & Cox:

1996 - Tibet			
C&C 7500	nivale	C&C 7526	lanigerum
C&C 7501	bulu	C&C 7527	megeratum
C&C 7502	mahogani	C&C 7530	imperator
C&C 7503	viridescens	C&C 7531	viridescens
C&C 7504	cephalanthum	C&C 7536	fulvoides
C&C 7506	griseum	C&C 7537	cerasinum
C&C 7508	hirtipes	C&C 7538	parmulatum
C&C 7509	dignabile	C&C 7540	lanatoides
C&C 7510	cerasinum	C&C 7541	campylocarpum
C&C 7514	wardii	C&C 7542	riparium
C&C 7516	forrestii	C&C 7545	laudandum
C&C 7517	concatenans	C&C 7546	temoense
C&C 7518	parmulatum	C&C 7547	lepidotum
C&C 7519	mekongense	C&C 7549	hirtipes
C&C 7520	viridescens	C&C 7550	oreotrephe aff.
C&C 7521	cephalanthum x laudandum (NH)	C&C 7553	lepidotum
C&C 7522	arizelum aff.	C&C 7554	scopulorum
C&C 7523	exasperatum	C&C 7556	griseum
C&C 7524	rude aff.	C&C 7557	viridescens
C&C 7525	rude aff. x ? (NH)	C&C 7558	lepidotum

C&C 7559	primuliflorum	C&C 7574	lanatoides
C&C 7561	pemakoense	C&C 7575	kongboense
C&C 7562	sanguineum	C&C 7577	lanatoides
C&C 7563	riparium	C&C 7578	hirtipes
C&C 7565	tsangpoense	C&C 7580	fragariiflorum
C&C 7566	faucium	C&C 7581	temoense
C&C 7567	ramsdenianum	C&C 7584	wardii
C&C 7570	nuttallii	C&C 7585	lepidotum
C&C 7571	scopulorum	C&C 7591	nivale

Cox & Hootman:

2003 - Arunachal Pradesh			
KCSH 0306	xanthostephanum	KCSH 0355	leptocarpum
KCSH 0310	rhabdotum	KCSH 0361	megeratum
KCSH 0312	arboreum	KCSH 0362	saktengianum
KCSH 0313	thomsonii	KCSH 0364	wallichii
KCSH 0322	wightii	KCSH 0371	flinckii
KCSH 0337	tubiforme	KCSH 0375	cinnabarinum
KCSH 0346	argipeplum	KCSH 0379	keysii
KCSH 0347	saktengianum	KCSH 0382	saktengianum
KCSH 0349	camelliiflorum	KCSH 0390	griffithianum
KCSH 0350	eximium		

Cox & Hutchison:

1965 - Arunachal Pradesh, Meghalaya & Bengal			
C&H 301	inaequale	C&H 419	vaccinioides
C&H 302	formosum	C&H 420	leptocarpum
C&H 305	delavayi	C&H 421	edgeworthii
C&H 320	formosum	C&H 422	phaedropum
C&H 373	dendricola aff.	C&H 427	eximium
C&H 389	griffithianum	C&H 431	grande
C&H 396	coxianum	C&H 438	maddenii
C&H 399	lindleyi	C&H 459	unidentified species
C&H 416	neriiflorum	C&H 475	unidentified species
C&H 418	subansiriense	C&H 579	cinnabarinum

C&H 580	barbatum	C&H 584	falconeri
C&H 581	hodgsonii		
1995 - Sichuan & Yunnan			
C&H 7003	rex	C&H 7078	augustinii
C&H 7008	augustinii	C&H 7085	denudatum
C&H 7009	vernicosum	C&H 7100	yiliangense
C&H 7010	racemosum	C&H 7108	strigillosum
C&H 7012	denudatum	C&H 7111	calophytum
C&H 7022	tsaii aff.	C&H 7116	calophytum
C&H 7025	ambiguum	C&H 7118	denudatum
C&H 7027	vernicosum	C&H 7124	lutescens
C&H 7032	argyrophyllum	C&H 7131	glanduliferum
C&H 7033	argyrophyllum	C&H 7132	vernicosum
C&H 7034	rex	C&H 7145	yunnanense
C&H 7035	strigillosum	C&H 7150	vernicosum aff.
C&H 7037	racemosum	C&H 7157	wumengense
C&H 7040	augustinii	C&H 7158	bureavii
C&H 7041	rubiginosum	C&H 7158b	bureavii
C&H 7044	argyrophyllum	C&H 7159	unidentified species
C&H 7045	argyrophyllum	C&H 7164	lacteam
C&H 7047	strigillosum	C&H 7166	cookeanum
C&H 7049	huanum	C&H 7178	delavayi
C&H 7050	unidentified species	C&H 7179	delavayi
C&H 7051	asterochnoum	C&H 7180	excellens
C&H 7052	ochraceum	C&H 7183	sinofalconeri
C&H 7053	tatsienense aff.	C&H 7185	pogonostylum
C&H 7055	openshawianum	C&H 7186	oblongilobatum
C&H 7072	longipes	C&H 7189	serotinum
C&H 7073	huanum		

Cox & Vergara:

1995 - SE Tibet			
C&V 9501	primuliflorum	C&V 9533	arizelum aff.
C&V 9503	bulu	C&V 9535	rude aff.
C&V 9504	cerasinum	C&V 9540	kongboense
C&V 9506	wardii	C&V 9541	aganniphum
C&V 9508	faucium	C&V 9544	chamaethomsonii
C&V 9513	cephalanthum Nmaiense	C&V 9546	hirtipes
C&V 9514	aganniphum	C&V 9547	vellereum
C&V 9515	tsangpoense	C&V 9548	wardii
C&V 9516	forrestii	C&V 9552	x agglutinatum (NH)
C&V 9517	forrestii	C&V 9557	oreotrepbes aff.
C&V 9519	fragariiflorum	C&V 9558	wardii
C&V 9522	viridescens	C&V 9561	phaeochrysum
C&V 9523	concatenans	C&V 9564	fragariiflorum
C&V 9524	rude aff.	C&V 9565	temoense
C&V 9526	lanigerum	C&V 9567	wardii
C&V 9527	arizelum aff.	C&V 9569	dignabile
C&V 9530	lanigerum	C&V 9574	x agglutinatum (NH)
C&V 9532	sinogrande	C&V 9575	mahogani

Cox, Dodson, Hootman & Milliken:

2010 - Sichuan			
CDHM 14508	bureavii	CDHM 14530	spinuliferum
CDHM 14520	rex	CDHM 14576	augustinii

Cox, Evans & Richardson:

1999 - Tibet			
CER 9906	puderosum	CER 9926	xanthocodon Purpurellum
CER 9907	circinnatum/luciferum	CER 9927	miniatum
CER 9920	wardii	CER 9931	puderosum
CER 9922	lopsangianum	CER 9935	circinnatum/luciferum

Cox, Hootman & Cox:

1998 - Tibet			
CHC 8501	aganniphum	CHC 8512	phaeochrysum aff.
CHC 8502	aganniphum Glaucopeplum	CHC 8518	circinnatum
CHC 8503	wardii	CHC 8524	phaeochrysum aff.
CHC 8504	phaeochrysum aff.	CHC 8527	phaeochrysum aff.
CHC 8509	vellereum		

Cox, Hutchison & McDonald:

1985 - Nepal			
CHM 2003	triflorum	CHM 2036	cinnamomeum
CHM 2006	griffithianum	CHM 2049	setosum
CHM 2011	lindleyi	CHM 2054	thomsonii
CHM 2024	campanulatum	CHM 2069	glaucophyllum var. barunianum
1986 - Sichuan & Yunnan			
CHM 2500	polylepis	CHM 2619	decorum
CHM 2501	rufum	CHM 2620	vernicosum
CHM 2517	dryophyllum	CHM 2620	x detonsum (NH)
CHM 2523	capitatum	CHM 2630	primuliflorum
CHM 2531	rufum	CHM 2635	rubiginosum
CHM 2545	przewalskii	CHM 2636	cuneatum
CHM 2568	invictum	CHM 2638	adenogynum
CHM 2578	watsonii	CHM 2638	x detonsum (NH)
CHM 2591	rufum	CHM 2639	traillianum
CHM 2604	yunnanense	CHM 2646	uvariifolium
CHM 2606	racemosum	CHM 2652	tatsienense
1988 - Bhutan			
CHM 3006	kesangiae	CHM 3036	triflorum
CHM 3007	barbatum	CHM 3050	camelliiflorum
CHM 3008	camelliiflorum	CHM 3056	hodgsonii
CHM 3009	keysii	CHM 3057	thomsonii
CHM 3017	falconeri	CHM 3058	kesangiae
CHM 3020	grande	CHM 3060	griffithianum
CHM 3024	campylocarpum	CHM 3062	falconeri
CHM 3025	succothii	CHM 3070	argipeplum
CHM 3026	argipeplum	CHM 3076	camelliiflorum
CHM 3030	thomsonii	CHM 3077	hodgsonii

CHM 3079	succothii	CHM 3106	campylocarpum
CHM 3080	flinckii	CHM 3108	cinnabarinum
CHM 3082	setosum	CHM 3109	succothii
CHM 3088	thomsonii	CHM 3113	argipeplum
CHM 3089	wallichii	CHM 3114	glaucophyllum
CHM 3090	aeruginosum	CHM 3115	kesangiae
CHM 3091	bhutanense	CHM 3116	camelliiflorum
CHM 3093	hodgsonii aff.	CHM 3130	wightii
CHM 3094	pendulum	CHM 3132	fulgens
CHM 3099	kesangiae aff.	CHM 3136	flinckii
CHM 3105	succothii		

Cox, Newton & Campbell:

2012 - Sichuan			
CNC 12002	heliolepis	CNC 12079	selense
CNC 12003	racemosum	CNC 12080	bureavii
CNC 12009	wardii	CNC 12082	searsiae aff
CNC 12011	oreotrephes	CNC 12088	polylepis
CNC 12012	beesianum	CNC 12091	rex
CNC 12020	rupicola	CNC 12095	pingianum
CNC 12024	vernicosum	CNC 12096	augustinii
CNC 12025	rubiginosum	CNC 12105	lutescens
CNC 12027	davidsonianum	CNC 12107	openshawianum
CNC 12031	decorum	CNC 12109	argyrophyllum
CNC 12053	sphaeroblastum	CNC 12122	augustinii
CNC 12054	lacteum	CNC 12123	strigillosum
CNC 12057	phaeochrysum	CNC 12124	polylepis
CNC 12058	souliei	CNC 12128	pingianum
CNC 12059	pachytrichum	CNC 12133	ambiguum
CNC 12060	bureavoides aff	CNC 12134	wiltoni
CNC 12064	racemosum	CNC 12136	strigillosum
CNC 12069	dasycladum	CNC 12141	ririei

Danish Sichuan Expedition:

2004 - Sichuan			
SI04-??	x agglutinatum (NH)	SI04-61	phaeochrysum
SI04-04	aganniphum	SI04-62	phaeochrysum
SI04-19	roxieanum Globigerum	SI04-63	aganniphum
SI04-24	prattii	SI04-64	phaeochrysum
SI04-32	roxieanum Globigerum	SI04-65	phaeochrysum
SI04-37	faberi	SI04-66	phaeochrysum
SI04-54	sikangense aff.		

Danish Sikkim Expedition:

1994 - Sikkim			
DSE 19	barbatum	DSE 110	niveum
DSE 32	campanulatum	DSE 111	niveum
DSE 65	fulgens	DSE 118	setosum
DSE 76	lanatum	DSE 123	setosum
DSE 87	lanatum	DSE 135	thomsonii
DSE 94	lepidotum	DSE 144	wallichii
DSE 95	lepidotum	DSE 154	wightii
DSE 97	lepidotum	DSE 159	wightii
DSE 106	maddenii		

H. R. Dingle:

1984 - Nepal			
Dingle 1	arboreum	Dingle 18	thomsonii
Dingle 5	arboreum	Dingle 21	ciliatum
Dingle 8	lepidotum	Dingle 22	barunianum
Dingle 9	lepidotum	Dingle 23	ciliatum
Dingle 13	hodgsonii		

Frank Doleshy:

1965 - Honshu, Kyushu & Yakushima Island, Japan			
Doleshy 1	makinoi	Doleshy 8	kiusianum
Doleshy 2	makinoi	Doleshy 9	yakushmanum
Doleshy 3	makinoi	Doleshy 10	yakushmanum
Doleshy 4	makinoi	Doleshy 12	degronianum
Doleshy 5	heptamerum	Doleshy 13	japonicum
Doleshy 6	keiskei	Doleshy 14	japonicum
Doleshy 7	heptamerum Hondoense	Doleshy 15	brachycarpum
1967 - Honshu, Kyushu, Oki Island & Shikoku, Japan			
Doleshy 21	heptamerum	Doleshy 42	heptamerum
Doleshy 22	heptamerum	Doleshy 43	kiusianum
Doleshy 26	japonicum	Doleshy 44	pentaphyllum
Doleshy 27	japonicum	Doleshy 45	heptamerum
Doleshy 28	brachycarpum	Doleshy 50	heptamerum
Doleshy 32	weyrichii aff.	Doleshy 52	tschonoskyi
Doleshy 35	heptamerum	Doleshy 53	brachycarpum
Doleshy 37	kiusianum	Doleshy 70	heptamerum Hondoense
Doleshy 38	heptamerum	Doleshy 75	heptamerum Hondoense
Doleshy 39	keiskei	Doleshy 81	degronianum
Doleshy 40	pentaphyllum	Doleshy 89	brachycarpum
Doleshy 41	heptamerum	Doleshy 123	degronianum Kyomaruense
1970 - Kyushu & Yakushima Island, Japan			
Doleshy 41	heptamerum	Doleshy 219	reticulatum Nudipes aff.
Doleshy 202	keiskei	Doleshy 221	reticulatum Nudipes aff.
Doleshy 205	x sataense (NH)	Doleshy 228	tashiroi
Doleshy 212	yakushmanum	Doleshy 219	reticulatum Nudipes aff.
1971 - Honshu, Japan			
Doleshy 503	aureum	Doleshy 529	degronianum
Doleshy 509	nikomontanum (NH)	Doleshy 531	heptamerum
Doleshy 510	tschonoskyi	Doleshy 536	kaempferi aff.
Doleshy 518	aureum	Doleshy 537	kaempferi aff.
Doleshy 521	brachycarpum	Doleshy 541	heptamerum
Doleshy 523	degronianum	Doleshy 543	keiskei
Doleshy 527	brachycarpum	Doleshy 544	heptamerum

1982 - South Korea			
Doleshy 703	taquetii	Doleshy 713b	schlippenbachii
Doleshy 705	mucronulatum	Doleshy 713c	schlippenbachii
Doleshy 706	schlippenbachii	Doleshy 714	mucronulatum
Doleshy 712	brachycarpum	Doleshy 716	mucronulatum
Doleshy 713a	schlippenbachii		
1983 - Hokkaido & Honshu, Japan			
Doleshy 802	dauricum	Doleshy 827	brachycarpum
Doleshy 803	kaempferi	Doleshy 829	brachycarpum
Doleshy 804	albrechtii	Doleshy 831	amagianum
Doleshy 810	brachycarpum	Doleshy 832	makinoi
Doleshy 816	dauricum	Doleshy 834	pentaphyllum
Doleshy 821	brachycarpum	Doleshy 839	makinoi
Doleshy 823	brachycarpum	Doleshy 841	makinoi
Doleshy 824	brachycarpum	Doleshy 843	makinoi
Doleshy 825	kaempferi		

Dulong Jiang/Gaoligong Shan Expedition to Yunnan:

2001 - Yunnan			
DGEY 15	glischrum aff.	DGEY 143	leptocarpum
DGEY 26	megacalyx	DGEY 176	hypolepidotum
DGEY 27	crassum	DGEY 180	stewartianum
DGEY 34	arizelum	DGEY 181	concatenans
DGEY 36	hypolepidotum	DGEY 186	citriniflorum
DGEY 39	citriniflorum	DGEY 196	cephalanthum
DGEY 43b	didymum aff.	DGEY 201	mekongense
DGEY 46	dendricola	DGEY 214	rubiginosum
DGEY 57	dendricola	DGEY 215	edgeworthii
DGEY 67	moulmainense	DGEY 224	gongshanense
DGEY 75	glischrum	DGEY 233	floccigerum
DGEY 79	nuttallii	DGEY 234	mekongense
DGEY 101	genestierianum	DGEY 239	sanguineum
DGEY 133	seinghkuense	DGEY 249	stewartianum
DGEY 136	chrysodoron	DGEY 250	horaenum
DGEY 137	taggianum	DGEY 251	keleticum
DGEY 142	monanthum	DGEY 253	sanguineum

DGEY 254	citriniflorum	DGEY 356	sanguineum
DGEY 255	citriniflorum	DGEY 400	zaleucum
DGEY 259	chamaethomsonii	DGEY 401	edgeworthii
DGEY 266	forrestii	DGEY 405	basilicum
DGEY 269	dealbatum	DGEY 406	mallotum
DGEY 271	concatenans	DGEY 407	scyphocalyx
DGEY 272	forrestii	DGEY 413	zaleucum
DGEY 278	dealbatum	DGEY 418	mekongense
DGEY 281	citriniflorum	DGEY 426	facetum
DGEY 282	horeaum	DGEY 426	heliolapis
DGEY 283	anthosphaerum	DGEY 428	leptothrium
DGEY 286	rubiginosum	DGEY 501	griffithianum
DGEY 288	monanthum	DGEY ***	coriaceum
DGEY 295	caloxanthum		

Edinburgh Japan Expedition:

2003 - Amori, Ishikawa & Iwate Prefectures, Honshu			
EJE 97	pentandrum	EJE 276	brachycarpum
EJE 99	albrechtii	EJE 285	albrechtii
EJE 102	brachycarpum	EJE 298	kaempferi
EJE 262	albrechtii		

Edinburgh-Makalu Nepal Expedition:

1991 - Nepal			
EMAK 304	pumilum	EMAK 685	pumilum
EMAK 557	nivale	EMAK 730	camelliiflorum
EMAK 569	wightii	EMAK 916	wightii
EMAK 641	wightii	EMAK 1055	grande

Edinburgh Sikkim Expedition:

1992 - Sikkim			
ESIK 151	leptocarpum	ESIK 220	lanatum
ESIK 163	pendulum		

Edinburgh Taiwan Expedition:

1993 - Taiwan			
ETE 42	morii	ETE 439	pseudochrysanthum
ETE 67	morii	ETE 442	pseudochrysanthum
ETE 99	lasiostylum	ETE 443	pseudochrysanthum
ETE 180	oldhamii aff.	ETE 444	pseudochrysanthum
ETE 248	nakaharae	ETE 452	pseudochrysanthum
ETE 250	unidentified species	ETE 475	oldhamii
ETE 264	rubropilosum	ETE 485	oldhamii
ETE 395	rubropilosum aff.	ETE 613	kawakamii
ETE 412	pseudochrysanthum	ETE 623	kanehirae

Bent Ernebjerg:

2005 - Sikkim			
BE 05-42	aeruginosum	BE 05-48	aeruginosum
BE 05-43	aeruginosum	BE 05-49	aeruginosum
BE 05-44	anthopogon	BE 05-50	nivale var. nivale
BE 05-45	aeruginosum	BE 05-52	lepidotum
BE 05-46	aeruginosum	BE 05-53	aeruginosum
BE 05-47	setosum	BE 05-54	aeruginosum
2009 - Myanmar			
BE 09-01	kasoense	BE 09-15	sanguineum
BE 09-02	edgeworthii	BE 09-16	chamaethomsonii/forrestii Repens
BE 09-03	edgeworthii	BE 09-17	eclecteum aff.
BE 09-04	tephropeplum aff.	BE 09-20	forrestii Repens
BE 09-05	charitopes	BE 09-21	hypolepidotum/pruniflorum
BE 09-06	arizelum	BE 09-22	forrestii Repens
BE 09-07	pocophorum	BE 09-23	forrestii Repens
BE 09-08	eclecteum aff.	BE 09-24	lopsangianum
BE 09-09	pocophorum	BE 09-25	eclecteum aff.
BE 09-10	charitopes	BE 09-26	eclecteum aff.
BE 09-11	arizelum	BE 09-27	lopsangianum
BE 09-12	mekongense	BE 09-28	hypolepidotum/pruniflorum
BE 09-13	eclecteum aff.	BE 09-29	forrestii Repens
BE 09-14	trichocladum/mekongense	BE 09-30	charitopes

2012 - Myanmar			
BE 12-01	edgeworthii	BE 12-25	caloxanthum
BE 12-02	maddenii	BE 12-26	crassum
BE 12-03	martinianum/callimorphum	BE 12-29	beanianum
BE 12-04	edgeworthii	BE 12-30	beanianum/pocophorum
BE 12-05	maddenii	BE 12-32	luteiflorum & dendricola
BE 12-06	arizelum	BE 12-34	sp. nova/roseatum
BE 12-07	beanianum aff.	BE 12-37	edgeworthii aff.
BE 12-08	atrokermesinum	BE 12-38	horlickianum
BE 12-09	citriniflorum/scyphocalyx	BE 12-39	sidereum
BE 12-10	edgeworthii	BE 12-40	edgeworthii
BE 12-11	Trichoclada S.S.	BE 12-41	beanianum
BE 12-12	formosum/leptocarpum	BE 12-42	citriniflorum
BE 12-13	lepidostylum/saluenense	BE 12-43	stewartianum aff.
BE 12-14	trichocladum	BE 12-44	citriniflorum/dichroanthum
BE 12-15	caloxanthum	BE 12-45	beanianum/citriniflorum
BE 12-16	saluenense	BE 12-46	stewartianum aff.
BE 12-17	forrestii	BE 12-47	citriniflorum/dichroanthum
BE 12-18	dichroanthum	BE 12-48	caloxanthum
BE 12-19	horlickianum	BE 12-49	dekatanum
BE 12-20	saluenense	BE 12-50	beanianum
BE 12-21	dendricola	BE 12-51	trichocladum
BE 12-22	tanastylum/ramsdenianum	BE 12-52	beanianum
BE 12-24	dendricola	BE 12-54	peramoenum/sidereum
2013 - Yunnan			
BE 13-11	proteoides	BE 13-23	rex
BE 13-12	proteoides	BE 13-44	proteoides
BE 13-14	aganniphum	BE 13-46	aganniphum
BE 13-19	floccigerum		
2015 - Yunnan			
BE 15-01	roxieanum Cucullatum	BE 15-10	aperantum
BE 15-03	rupicola	BE 15-11	stewartianum
BE 15-05	scyphocalyx	BE 15-12	heliolepis
BE 15-06	taliense	BE 15-13	unknown spcies
BE 15-08	heliolepis	BE 15-15	rupicola aff.
BE 15-09	riparioides	BE 15-17	taliense

BE 15-18	calostrotum	BE 15-37	taliense
BE 15-19	taliense	BE 15-38	aperantum
BE 15-20	aperantum	BE 15-39	cephalanthum
BE 15-21	mekongense	BE 15-40	coriaceum
BE 15-24	aperantum	BE 15-41	prunum
BE 15-27	taliense	BE 15-43	anthosphaerum
BE 15-28	aperantum	BE 15-45	coriaceum
BE 15-29	calostrotum	BE 15-46	anthosphaerum
BE 15-30	anthosphaerum	BE 15-47	rubiginosum
BE 15-33	campylogynum	BE 15-48	stewartianum
BE 15-34	prunum	BE 15-49	selense
BE 15-36	prunum		

Erskine, Fliegner, Howick & McNamara:

1995 - Sichuan & Tibet			
EFH&M S 1610	lutescens	EFH&M T 001	unidentified species
EFH&M S 1630	calophytum	EFH&M T 023	unidentified species
EFH&M S 1643	ambiguum	EFH&M T 041	unidentified species
EFH&M S 1648	oreodoxa	EFH&M T 044	unidentified species
EFH&M S 1656	calophytum		

Expedition to Eastern Russia:

1994 - Khabarovsk Krai, Primorsky Krai & Sakhalin Oblast			
ESUS 12	mucronulatum	ESUS 125	schlippenbachii
ESUS 33	dauricum	ESUS 129	schlippenbachii
ESUS 101	aureum	ESUS 135	schlippenbachii
ESUS 107	lapponicum	ESUS 170	aureum

Expedition to Hokkaido:

1997 - Hokkaido, Japan			
EHOK 68	aureum	EHOK 98	albrechtii

Expedition to Taiwan:

1992 - Taiwan			
ETOT 37	formosanum	ETOT 174	pseudochrysanthum
ETOT 69	breviperulatum	ETOT 183	hyperythrum
ETOT 90	morii	ETOT 195	nakaharae
ETOT 136	chilanshanense	ETOT 196	hyperythrum

Expedition to Turkey:

1990 - N, W & S Turkey			
TURX 120	ponticum	TURX 131	luteum

Reginald Farrer:

1914 - Gansu & Guizhou			
Farrer 46	ririei aff.	Farrer 510	thymifolium
Farrer 63	oreodoxa	Farrer 510c	przewalskii
Farrer 79	invictum	Farrer 511	capitatum
Farrer 88	primuliflorum aff.	Farrer 512	capitatum
Farrer 104	przewalskii	Farrer 584	anthopogonoides
Farrer 119	capitatum		
1919 - Upper Myanmar			
Farrer 801	moulmainense	Farrer 887	habrotrichum
Farrer 811	araiophyllum	Farrer 887a	glischrum
Farrer 812	tanastylum	Farrer 888	sperabile
Farrer 813	sulfureum	Farrer 891	zaleucum
Farrer 814	anthosphaerum	Farrer 918	megacalyx
Farrer 815	mallotum	Farrer 926	stewartianum
Farrer 842	edgeworthii	Farrer 937	caloxanthum
Farrer 848	pseudociliipes	Farrer 938	megeratum
Farrer 863	arizelum	Farrer 959	sinogrande
Farrer 872	sidereum	Farrer 979	decorum
Farrer 873	basilicum	Farrer 980	zaleucum
Farrer 874	fulvum	Farrer 1022	facetum
Farrer 875	rubiginosum	Farrer 1024	scyphocalyx
Farrer 876	trichocladum	Farrer 1044	crassum
Farrer 877	neriiflorum	Farrer 1045	calostrotum
Farrer 878	heliolepis	Farrer 1046	campylogynum

Farrer 1047	rupicola	Farrer 1196a	campylogynum
Farrer 1065	heliolepis	Farrer 1444	kyawii
Farrer 1196	lepidotum	Farrer 1539	x spilotum (NH)

Forestry Commission and the Royal Botanic Garden, Edinburgh:

1995 - Yunnan			
FED 61	racemosum	FED 253	selense
FED 62	rubiginosum	FED 254	uvariifolium
FED 63	vernicosum	FED 302	aganniphum aff.
FED 143	vernicosum	FED 305	wardii aff.
FED 146	phaeochrysum	FED 308	beesianum
FED 147	oreotrepthes	FED 311	chryseum
FED 205	yunnanense	FED 328	fictolacteam
FED 206	beesianum	FED 365	heliolepis
FED 209	phaeochrysum	FED 367	wardii
FED 210	dryophyllum	FED 439	decorum
FED 227	uvariifolium	FED 440	vernicosum

Maurice Foster:

2003 - Mongolia			
MFM 0347	parvifolium	MFM 0351	dauricum
MFM 0349	parvifolium		

Derek Fox:

1986 - Nepal			
DF 86023	arboreum	DF 86059	cinnabarinum
DF 86039	barbatum	DF 86075	cinnabarinum
DF 86048	arboreum	DF 86099	campanulatum
DF 86050	campanulatum	DF 86134	ciliatum
DF 86055	campylocarpum	DF 86540	thomsonii
DF 86057	thomsonii		

Stephen Fox:

1990 - Bhutan			
Fox 9	kesangiae	Fox 45	camelliiflorum
Fox 12	griffithianum	Fox 47	thomsonii
Fox 17	hodgsonii	Fox 50	cinnabarinum
Fox 28	triflorum	Fox 53	hodgsonii
Fox 41	kesangiae	Fox 55	flinckii
Fox 43	argipeplum	Fox 60	cinnamomeum
Fox 62	keysii	Fox 93	bhutanense
Fox 71	pendulum	Fox 96	thomsonii
Fox 91	bhutanense	Fox 98	wightii
1995 - Nepal			
Fox 7	anthopogon	Fox 70	anthopogon
Fox 30	barbatum	Fox 103	barbatum
Fox 37	anthopogon	Fox 125	unidentified species

Galletti, MacDougall, Nielsen & Weagle:

2004 - Newfoundland, Canada			
GMNW 1	lapponicum	GMNW 4	canadense
GMNW 2	lapponicum		

Gaoligong Shan Expedition:

1996 - Yunnan			
GSE 967600	protistum	GSE 968299	unidentified species
GSE 967602	taggianum		

Gongligong Shan Expedition:

2000 - Yunnan			
GLGS 15969	decorum	GLGS 17052	protistum
GLGS 16516	edgeworthii	GLGS 17120	sinogrande

Gosainkund Nepal Expedition:

1995 - Nepal			
Gosainkund 7	setosum		

Basil Gould:

1937 - Sikkim			
Gould 2a	aeruginosum	Gould 31	hodgsonii
Gould 18	lepidotum	Gould 37	barbatum
Gould 22	niveum		

Grierson & Long:

1982 - Bhutan			
G&L 4475	falconeri		

Guizhou Expedition:

1985 - Guizhou			
GUIZ 74	unidentified species	GUIZ 125	nankingense x maculiferum (NH)
GUIZ 75	haofui	GUIZ 148	oligocarpum
GUIZ 120	petrocharis	GUIZ 163	liliiflorum
GUIZ 121	oligocarpum	GUIZ 233	simsii

Brian Halliwell:

1970 - Nepal			
BH 20	unidentified species	BH 102	unidentified species
BH 62	unidentified species	BH 124	campanulatum
BH 85	campanulatum		
1979 - Japan			
BH 4013	aureum	BH 4283	unidentified species
BH 4236	brachycarpum	BH 4348	japonicum
BH 4259	unidentified species	BH 4355	aureum

Jes Hansen:

2006 - France & Switzerland			
SJH-06-27	hirsutum	SJH-06-29	ferrugineum

Matt Heasman:

1992 - Bhutan			
Heasman 9	virgatum	Heasman 47	lepidotum
Heasman 17a	thomsonii	Heasman 48	succothii
Heasman 18a	kesangiae	Heasman 50	camelliiflorum
Heasman 20	ciliatum	Heasman 54	argipeplum
Heasman 24	hodgsonii aff.	Heasman 56	pendulum
Heasman 36	hodgsonii	Heasman 62	kendrickii
Heasman 44	campylocarpum	Heasman 65	dalhousiae
Heasman 46	xanthocodon	Heasman 68	maddenii

Johannes Hedegaard:

1983 - Bhutan			
Hedegaard B100	wightii	Hedegaard B112	flinckii
Hedegaard B102	aeruginosum	Hedegaard B113	lepidotum
Hedegaard B103	aeruginosum	Hedegaard B114	anthopogon
Hedegaard B107	barbatum	Hedegaard B116	campylocarpum
Hedegaard B108	ciliatum	Hedegaard B117	wightii
Hedegaard B110	fulgens		

Hedge & Wendelbo:

1969 - Afghanistan			
H&W 8975	collettianum	H&W 9706	afghanicum

Bent Henriksen:

1997 - NW Yunnan			
Henriksen 004	phaeochrysum	Henriksen 072	beesianum
Henriksen 016	phaeochrysum	Henriksen 074	uvarifolium
Henriksen 029	beesianum	Henriksen 078	anthosphaerum
Henriksen 032	beesianum	Henriksen 079	wardii
Henriksen 035	rubiginosum	Henriksen 080	anthosphaerum
Henriksen 036	campylocarpum aff.	Henriksen 081	anthosphaerum
Henriksen 042	vernicosum	Henriksen 082	anthosphaerum
Henriksen 047	wardii aff.	Henriksen 091	traillianum aff.
Henriksen 054	uvarifolium	Henriksen 095	aganniphum
Henriksen 071	beesianum	Henriksen 102	fictolacteum

Henriksen 121	rubiginosum	Henriksen 146	lacteum
Henriksen 122	orthocladum	Henriksen 149	cyanocarpum
Henriksen 124	anthosphaerum	Henriksen 154	leptothrium
Henriksen 128	uvarifolium	Henriksen 159	heliolepis
Henriksen 137	campylocarpum aff.	Henriksen 160	trichocladum
Henriksen 141	triflora series	Henriksen 162	cyanocarpum
Henriksen 143	edgeworthii		

Héronswood-Cobblewood Expedition to Korea:

1997 - South Korea			
HC 970147	brachycarpum	HC 970195	poukhanense

Holmberg & Stringberg:

1992 - South Korea			
H&S 92/044	mucronulatum	H&S 92/349	mucronulatum
H&S 92/148	schlippenbachii	H&S 92/423	poukhanense
H&S 92/232	brachycarpum	H&S 92/449	weyrichii

Howick & McNamara:

1990 - NE USA			
H&M 1287	viscosum	H&M 1339	periclymenoides
H&M 1318	maximum	H&M 1353	unidentified species
H&M 1320	viscosum	H&M 1355	unidentified species
1990 - Sichuan & Yunnan			
H&M 1381	dichroanthum	H&M 1450	unidentified species
H&M 1386	racemosum	H&M 1452	traillianum
H&M 1414	davidsonianum	H&M 1463	unidentified species
H&M 1414a	unidentified species	H&M 1466	fictolacteum
H&M 1417	pubescens	H&M 1467	unidentified species
H&M 1420	spinuliferum	H&M 1468	puralbum
H&M 1423	chasmanthum	H&M 1469	williamsianum
H&M 1425	unidentified species	H&M 1490	unidentified species
H&M 1440	unidentified species	H&M 1497	denudatum
H&M 1448	pachytrichum	H&M 1509	racemosum
H&M 1449	unidentified species	H&M 1511	unidentified species

H&M 1529	unidentified species	H&M 1547	unidentified species
H&M 1539	yunnanense	H&M 1553	tatsienense
H&M 1541	racemosum	H&M 1564	unidentified species
H&M 1544	dichroanthum		
1993 - Himachal Pradesh, India			
H&M 1784	anthopogon	H&M 1844	lepidotum
H&M 1801	lepidotum	H&M 1850	anthopogon
H&M 1805	campanulatum	H&M 1854	campanulatum
H&M 1837	campanulatum	H&M 1923	arboreum

T. Hruby:

1975 - Nepal			
Hruby 3	campanulatum	Hruby 14	campanulatum
Hruby 4	lepidotum	Hruby 16	wallichii
Hruby 10	setosum		

Matti Huotari:

2018 - Yunnan			
MH 369-04	sulfureum	MH 369-42	x agglutinatum
MH 369-06	arizelum	MH 369-44	aganniphum
MH 369-07	arizelum	MH 369-61	racemosum
MH 369-09	sinogrande	MH 369-63	rubiginosum
MH 369-29	fulvoides	MH 369-64	oreotrephe
MH 369-30	mekongense		

Hutchison, Evans, Cox & Cox:

2002 - Arunachal Pradesh			
HECC 100??	eclectum aff.	HECC 10015	grande aff.
HECC 10004	dendricola aff.	HECC 10016	succothii
HECC 10005	nuttallii	HECC 10017	ludlowii
HECC 10006	dendricola	HECC 10018	chaetomallum Chamaephytum
HECC 10007	boothii	HECC 10019	trilectorum
HECC 10009	kasoense	HECC 10023	lindleyi
HECC 10010	sinofalconeri aff.	HECC 10024	kasoense
HECC 10014	sidereum	HECC 10025	edgeworthii

HECC 10028	faucium	HECC 10054	succothii
HECC 10029	leptocarpum	HECC 10064	cerasinum
HECC 10031	boothii	HECC 10066	chaetomallum
HECC 10035	hookeri	HECC 10067	rude
HECC 10039	exasperatum	HECC 10068	arizelum
HECC 10040	kasoense	HECC 10075	dendricola aff.
HECC 10040	rude	HECC 10010	unidentified species
HECC 10041	trilectorum	HECC 10005	nuttallii
HECC 10042	sherriffii	HECC 10011	kendrickii
HECC 10043	succothii	HECC 10036	megeratum
HECC 10044	arizelum	HECC 10042	lopsangianum aff.
HECC 10050	ludlowii	HECC 10053	lopsangianum aff.

Kew-Edinburgh Kanchenjunga Expedition:

1989 - Nepal			
KEKE 440	lepidotum	KEKE 806	unidentified species
KEKE 635	anthopogon	KEKE 1110	pendulum
KEKE 694	anthopogon	KEKE 1157	unidentified species
KEKE 698	wightii	KEKE 1223	unidentified species

Kew-Quarryhill Expedition:

1989 - Japan			
KQ 8	reticulatum	KQ 310	yakushmanum
KQ 37	heptamerum Hondoense	KQ 356	indicum
KQ 99	kaempferi	KQ 384	kaempferi
KQ 117	weyrichii	KQ 399	kaempferi
KQ 148	weyrichii	KQ 414	keiskei
KQ 294	kiusianum	KQ 434	kaempferi
KQ 309	tashiroi		

F. Kinmouth:

1990 - Bhutan			
Kinmouth 78	anthopogon	Kinmouth 92	kesangiae
Kinmouth 79	anthopogon	Kinmouth 93	maddenii
Kinmouth 80	barbatum	Kinmouth 94	phaedropum
Kinmouth 81	bhutanense	Kinmouth 95	arboreum
Kinmouth 82	camelliiflorum	Kinmouth 96	nivale
Kinmouth 83	campylocarpum	Kinmouth 97	pendulum
Kinmouth 84	falconeri	Kinmouth 98	thomsonii
Kinmouth 85	flinckii	Kinmouth 99	thomsonii
Kinmouth 86	tubiforme	Kinmouth 100	triflorum
Kinmouth 87	grande aff.	Kinmouth 101	triflorum
Kinmouth 88	hodgsonii	Kinmouth 102	flinckii aff.
Kinmouth 89	hodgsonii	Kinmouth 103	wallichii
Kinmouth 90	kendrickii	Kinmouth 104	wightii
Kinmouth 91	kendrickii		
1991 - Vietnam			
Kinmouth 150	unidentified species	Kinmouth 194	maddenii
Kinmouth 151	unidentified species	Kinmouth 195	unidentified species
Kinmouth 152	pogonostylum	Kinmouth 196	unidentified species
Kinmouth 153	maddenii	Kinmouth 197	suoilenhense
Kinmouth 154	tsoi	Kinmouth 198	maddenii
Kinmouth 155	crassum	Kinmouth 199	unidentified species
Kinmouth 156	nuttallii	Kinmouth 201	unidentified species
Kinmouth 157	maddenii	Kinmouth 202	unidentified species
Kinmouth 158	maddenii	Kinmouth 203	unidentified species
Kinmouth 159	unidentified species	Kinmouth 204	pogonostylum
Kinmouth 160	tsoi	Kinmouth 205	nuttallii

Kirkham, Flanagan & Boyce:

1989 - South Korea			
KFB 48	brachycarpum	KFB 101	schlippenbachii
KFB 54	dauricum	KFB 144	mucronulatum
KFB 57	brachycarpum		

Virendra Kumar:

1975 - Himachal Pradesh, India			
Kumar 674	arboreum	Kumar 738	campanulatum
Kumar 690	arboreum	Kumar 739	arboreum x campanulatum (NH)
Kumar 698	arboreum	Kumar 741	arboreum
Kumar 715	arboreum	Kumar 776	arboreum
Kumar 717	arboreum		

Kunming-Edinburgh-Gothenberg Expedition:

1993 - Yunnan			
KEG 313	nigropunctatum	KEG 347	rupicola
KEG 317	aganniphum	KEG 799	chryseum
KEG 319	primuliflorum	KEG 1219	complexum
KEG 332	primuliflorum		

Kunming-Edinburgh Yulong Shan Expedition:

1985 - Yunnan			
KEY 23	oreotrephes	KEY 29	decorum
KEY 28	oreotrephes		

Kunming-Gothenberg Expedition:

1993 - Yunnan			
KGB 19	wardii	KGB 172	beesianum
KGB 20	beesianum	KGB 173	oreotrephes
KGB 21	dryophyllum	KGB 174	rubiginosum
KGB 22	aganniphum	KGB 203	chryseum
KGB 23	aganniphum	KGB 206	chameunum
KGB 24	x agglutinatum	KGB 227	aganniphum
KGB 25	x agglutinatum	KGB 236	nigropunctatum
KGB 26	rupicola	KGB 243	nigropunctatum
KGB 28	brevistylum	KGB 245	yunnanense
KGB 136	primuliflorum	KGB 262	hippophaeoides
KGB 137	nigropunctatum	KGB 265	hippophaeoides
KGB 142	beesianum	KGB 291	chryseum
KGB 153	trichostomum	KGB 292	tapetiforme
KGB 154	vernicosum	KGB 293	chameunum

KGB 294	nivale	KGB 597	aganniphum
KGB 295	primuliflorum	KGB 654	rupicola
KGB 296	aganniphum	KGB 680	anthosphaerum
KGB 365	phaeochrysum	KGB 684	roxieanum
KGB 366	beesianum	KGB 688	roxieanum
KGB 375	rupicola	KGB 691	selense
KGB 400	uvariifolium	KGB 692	wardii
KGB 440	chryseum	KGB 693	saluenense
KGB 447	primuliflorum	KGB 695	proteoides
KGB 448	chameunum	KGB 699	sanguineum
KGB 449	nigropunctatum	KGB 700	proteoides
KGB 484	wardii	KGB 742	rupicola x ? (NH)
KGB 485	x dictyotum (NH)	KGB 745	complexum
KGB 486	dryophyllum	KGB 750	rupicola
KGB 495	vernicosum	KGB 778	wardii
KGB 496	brevistylum	KGB 802	haematodes
KGB 558	uvariifolium	KGB 804	cyanocarpum
KGB 559	yunnanense	KGB 805	fastigiatum
KGB 564	x agglutinatum (NH)	KGB 806	lacteam
KGB 565	wardii	KGB 808	balfourianum
KGB 566	oreotrepes	KGB 809	campylogynum
KGB 574	phaeochrysum	KGB 827	lacteam

Yuji Kurashige:

1987 - Japan			
Kurashige 16	brachycarpum	Kurashige 441	reticulatum Hidakanum
Kurashige 100	tashiroi	Kurashige 443	kaempferi
Kurashige 179	amagianum	Kurashige 458	camtschaticum
Kurashige 180	degronianum Kyomaruense	Kurashige 461	aureum
Kurashige 183	tschonoskyi	Kurashige 491	fauriei
Kurashige 241	nipponicum	Kurashige 494	degronianum
Kurashige 269	semibarbatum	Kurashige 498	albrechtii
Kurashige 276	makinoi	Kurashige 499	fauriei
Kurashige 385	tosaense	Kurashige 501	tschonoskyi
Kurashige 392	dilatatum	Kurashige 510	pentaphyllum
Kurashige 427	lapponicum	Kurashige 518	reticulatum Kiyosumense

Kurashige 544	kaempferi	Kurashige 759	kaempferi
Kurashige 545	kaempferi	Kurashige 765	kaempferi
Kurashige 557	reticulatum	Kurashige 768	kaempferi
Kurashige 573	albrechtii	Kurashige 771	tsusiophyllum
Kurashige 594	reticulatum	Kurashige 772	kaempferi
Kurashige 603	kaempferi	Kurashige 802	semibarbatum
Kurashige 604	kaempferi	Kurashige 829	semibarbatum
Kurashige 656	tschonoskyi	Kurashige 830	heptamerum
Kurashige 672	kaempferi	Kurashige 846	heptamerum
Kurashige 711	weyrichii	Kurashige 876	reticulatum Mayebarae
Kurashige 719	weyrichii	Kurashige 889	keiskei
Kurashige 730	weyrichii	Kurashige 934	reticulatum
Kurashige 751	kaempferi	Kurashige 971	kaempferi Mikawanum
Kurashige 752	kaempferi	Kurashige 975	stenopetalum
Kurashige 756	kaempferi	Kurashige 984	indicum

Lijiang Project Expedition:

2003 - Yunnan			
LPE 161	decorum		

Donald Lowndes:

1950 - Nepal			
Lowndes 950	anthopogon	Lowndes 1005	anthopogon
Lowndes 986	lepidotum	Lowndes 1174	lowndesii
Lowndes 1004	lepidotum	Lowndes 1392	lepidotum

Ron McBeath:

1981 - Nepal			
McBeath 1110	lepidotum	McBeath 1236	barbatum
McBeath 1120	pumilum	McBeath 1243	hodgsonii
McBeath 1171	nivale	McBeath 1254	campylocarpum
McBeath 1173	setosum	McBeath 1256	cinnabarinum
McBeath 1183	hypenanthum	McBeath 1262	cinnabarinum
McBeath 1208	nivale	McBeath 1279	thomsonii
McBeath 1234	wightii	McBeath 1282	cinnabarinum
McBeath 1235	wallichii		
1983 - Nepal			
McBeath 1506	lowndesii	McBeath 1518	lepidotum
McBeath 1507	anthopogon	McBeath 1548	hypenanthum
1990 - Nepal			
McBeath 2247	cowanianum	McBeath 2529	camelliiflorum
McBeath 2491	pendulum		

Henry McLaren (Lord Aberconway):

1932/1939 - Sichuan & Yunnan			
McLaren A 29	dimitrium	McLaren D 19	unidentified species
McLaren A 29a	unidentified species	McLaren D105	beesianum
McLaren A 183	coriaceum	McLaren D106	unidentified species
McLaren A 183a	unidentified species	McLaren D148	brevistylum
McLaren A 226	delavayi	McLaren D268	sinogrande
McLaren C 01	haematodes	McLaren D271	fulvoides
McLaren C 01a	delavayi	McLaren D272	beesianum
McLaren C 03	crassum aff.	McLaren D273	lukiangense
McLaren C 29	dimitrium	McLaren D274	coriaceum
McLaren C 33	edgeworthii	McLaren D333	crassum
McLaren C 44	neriiflorum	McLaren K 50	unidentified species
McLaren C 47	microphyton	McLaren L 49	x agastum (NH)
McLaren C 78	virgatum	McLaren L 60	x agastum (NH)
McLaren C 184	caesium	McLaren L 112a	trichocladum
McLaren C 226	delavayi	McLaren P 69	oreotrephes
McLaren C 226a	unidentified species	McLaren P 70	cuneatum
McLaren D 07	weihsiense	McLaren P 71	vernicosum
McLaren D 18	uvariifolium	McLaren S 33	spinuliferum

McLaren S 38	spinuliferum	McLaren AA 52	spinuliferum
McLaren S 39	scabrifolium	McLaren AA 121	microphyton
McLaren S 122	crassum	McLaren AD 75	prattii
McLaren S 124	x flavorufum (NH)	McLaren AD 106	wasonii
McLaren S 124a	haematodes	McLaren AD 106	wasonii/bureavii aff.
McLaren S 127	x erythrocalyx (NH)	McLaren AG 45	unidentified species
McLaren S 127a	pseudoidoneum	McLaren AG 344	unidentified species
McLaren S 131	haematodes	McLaren AG 395	davidsonianum
McLaren S 146	unidentified species	McLaren AG 396	polylepis
McLaren S 158	edgeworthii	McLaren AH 217	unidentified species
McLaren T 41	aberconwayi	McLaren AH 270	unidentified species
McLaren T 71	vernicosum	McLaren AH 300	unidentified species
McLaren T 107	haematodes	McLaren AH 307	oreodoxa
McLaren T 126	lacteam	McLaren AH 314	unidentified species
McLaren T 133	unidentified species	McLaren AH 407	unidentified species
McLaren U 35a	aberconwayi	McLaren AH 440	unidentified species
McLaren V 11	spinuliferum	McLaren AH 444	unidentified species
McLaren V 33	pogonostylum Ningyuenense	McLaren 38/010	ambiguum
McLaren V 69	decorum	McLaren 38/013	trichanthum
McLaren V 71	pogonostylum	McLaren 38/016	argyrophyllum
McLaren V 139	x bodinieri (NH)	McLaren 38/020	wasonii
McLaren V 169	cilicalyx	McLaren 38/023	bureavii
McLaren V 172	decorum	McLaren 38/025	orbiculare
McLaren V 187	decorum	McLaren 38/030	oreodoxa
McLaren Z 05	concinnum	McLaren 39/117	delavayi var peramoeunum
McLaren AA 01	spinuliferum	McLaren 39/120	unidentified species
McLaren AA 12	spiciferum	McLaren 39/279	polylepis
McLaren AA 16	siderophyllum	McLaren 39/284	pachytrichum
McLaren AA 17	x pauciflorum (NH)	McLaren 39/297	wasonii
McLaren AA 27	spinuliferum	McLaren 39/329	unidentified species
McLaren AA 33	x pauciflorum (NH)		

Edward Gray Millais:

1988 - Bhutan			
EGM 51	xanthocodon	EGM 82	campylocarpum
EGM 52	triflorum	EGM 83	flinckii aff.
EGM 55	falconeri	EGM 84	thomsonii
EGM 56	barbatum	EGM 85	xanthocodon
EGM 57	arboreum	EGM 86	succothii
EGM 58	grande	EGM 87	anthopogon
EGM 59	camelliiflorum	EGM 88	xanthocodon
EGM 61	kesangiae	EGM 89	pendulum
EGM 62	keysii	EGM 90	flinckii
EGM 64	keysii	EGM 91	cinnabarinum
EGM 65	kesangiae	EGM 92	campylocarpum
EGM 66	argipeplum	EGM 93	kendrickii
EGM 68	aeruginosum	EGM 94	succothii
EGM 69	aeruginosum	EGM 95	campylocarpum
EGM 70	wightii	EGM 96	xanthocodon
EGM 71	tsariense aff.	EGM 97	argipeplum
EGM 72	fulgens	EGM 98	arboreum
EGM 75	bhutanense	EGM 100	cinnabarinum
EGM 76	bhutanense	EGM 101	griffithianum
EGM 77	flinckii	EGM 102	kesangiae
EGM 79	flinckii	EGM 103	falconeri
EGM 80	hodgsonii	EGM 104	succothii
EGM 81	hodgsonii aff.	EGM 105	lindleyi
1990 - Sichuan			
EGM 106	wiltonii	EGM 118a	calophytum
EGM 107	concinnum	EGM 121	prattii
EGM 108	sikangense	EGM 122	wasonii aff.
EGM 109	watsonii	EGM 124	decorum
EGM 110	orbiculare	EGM 125	intricatum
EGM 111	faberi	EGM 126	unidentified species
EGM 114	unidentified species	EGM 127	dryophyllum
EGM 115	pachytrichum	EGM 129	phaeochrysum
EGM 116	hypoglaucum	EGM 130	intricatum
EGM 117	polylepis	EGM 131	intricatum
EGM 118	floribundum	EGM 134	x agglutinatum (NH)

EGM 135	phaeochrysum	EGM 149	davidsonianum
EGM 136	unidentified species	EGM 150	floribundum aff.
EGM 137	fargesii	EGM 151	concinnum
EGM 138	watsonii	EGM 152	racemosum
EGM 139	souliei	EGM 153	lutescens
EGM 142	dryophyllum	EGM 155	sikangense
EGM 144	dryophyllum	EGM 156	nitidulum
EGM 146	websterianum	EGM 157	faberi
EGM 147	prattii	EGM 158	galactinum
EGM 148	phaeochrysum		
1993 - Yunnan			
EGM 173	chryseum	EGM 213	x flavorufum (NH)
1995 - Sichuan & Yunnan			
EGM 288	polylepis	EGM 333	siderophyllum
EGM 293	augustinii	EGM 334	denudatum
EGM 294	denudatum	EGM 336	longipes
EGM 295	rex	EGM 337	longipes
EGM 300	decorum	EGM 338	strigillosum / pachytrichum
EGM 302	fastigiatum	EGM 339	yiliangense
EGM 303	polylepis	EGM 340	yiliangense
EGM 304	pingianum	EGM 341	calophytum
EGM 305	strigillosum	EGM 346	siderophyllum
EGM 312	ochraceum	EGM 347	glanduliferum
EGM 314	asterochnoum	EGM 348	vernicosum
EGM 315	unidentified species	EGM 349	cookeanum
EGM 316	huianum	EGM 350	wumengense
EGM 318	openshawianum	EGM 354	lacteam
EGM 321	tatsienense	EGM 356	lacteam
EGM 322	argyrophyllum aff.	EGM 357	lacteam
EGM 323	denudatum	EGM 358	fumidum
EGM 328	longipes	EGM 359	wumengense
EGM 330	huanum	EGM 360	delavayi

Nagaland & Arunachal Pradesh Expedition:

2003 - Arunachal Pradesh & Nagaland, India			
NAPE 0010	elliottii	NAPE 0121	kesangiae
NAPE 0019	crassum	NAPE 0123	hodgsonii
NAPE 0025	crassum	NAPE 0137	flinckii
NAPE 0027	macabeanum	NAPE 0142	eximium
NAPE 0043	macabeanum x ? (NH)	NAPE 0161	wightii
NAPE 0048	trichocladum	NAPE 0163	bhutanense
NAPE 0066	arboreum	NAPE 0196	fulgens
NAPE 0111	edgeworthii	NAPE 0216	bhutanense

Edward Needham:

Pre 1982 - Bhutan			
EN 3	davidsonianum	EN 13	thomsonii
EN 8	delavayi	EN 21	delavayi
1984 - Nepal			
EN 514	hodgsonii	EN 592	ciliatum
EN 548	hodgsonii	EN 614	hodgsonii
EN 549	cinnabarinum	EN 617	campylocarpum
EN 571	ciliatum	EN 619	cinnamomeum
EN 572	cinnabarinum	EN 673	barbatum
Post 1985 - Sichuan & Yunnan			
EN 903	adenogynum	EN 3537	galactinum
EN 2097	hemsleyanum	EN 3551	calophytum
EN 2451	haematodes	EN 3640	wiltonii
EN 2452	campylogynum	EN 3655	discolor
EN 3074	ririei	EN 4028	huanum
EN 3107	x balangense (NH)	EN 4029	coeloneuron
EN 3255	davidii	EN 4186	moupinense
EN 3520	x balangense (NH)	EN 4213	davidii
EN 3527	augustinii	EN 6053	kiangsiense
EN 3530	x balangense (NH)	EN 6228	fortunei

Jens Nielsen:

1996 - Yunnan			
JN 8	beesianum	JN 297	rothschildii
JN 9	beesianum	JN 298	beesianum
JN 21	aganniphum	JN 299	heliolapis
JN 22	aganniphum	JN 300	beesianum
JN 83	heliolapis	JN 302	chameunum
JN 158	oreotrepthes	JN 330	fictolacteam
JN 189	aganniphum	JN 334	roxieanum
JN 235	beesianum	JN 335	fictolacteam
JN 237	aganniphum aff.	JN 379	aganniphum
JN 239	proteoides	JN 439	uvarifolium
JN 242	chameunum	JN 484	oreotrepthes
JN 245	proteoides	JN 486	rothschildii
JN 249	proteoides	JN 493	chaetomallum
JN 264	prostratum	JN 498	aperantum
JN 268	proteoides	JN 499	aperantum
JN 270	prostratum	JN 581	phaeochrysum
JN 271	proteoides	JN 582	phaeochrysum
JN 274	proteoides	JN 584	x agglutinatum (NH)
JN 284	rubrum	JN 586	phaeochrysum
JN 290	rubrum	JN 588	rupicola
JN 293	rothschildii	JN 596	roxieanum aff.
1999 - Yunnan			
JN 260	saluenense	JN 746	scintillans
JN 290	rubrum	JN 756	crinigerum
JN 300	beesianum	JN 757	septentrionale
JN 630	telmateium	JN 758	heliolapis
JN 719	traillianum	JN 759	caloxanthum aff.
JN 722	clementinae	JN 760	rothschildii
JN 723	clementinae	JN 761	stewartianum
JN 729	clementinae	JN 762	chaetomallum
JN 736	roxieanum Cucullatum	JN 765	riparioides
JN 736	x alutaceum (NH)	JN 768	aperantum
JN 739	puralbum	JN 782	taliense aff.
JN 740	roxieanum	JN 783	prunum
JN 741	oreotrepthes	JN 784	platyphyllum

JN 819	proteoides	JN 962	rupicola
JN 827	proteoides	JN 965	rigidum
JN 841	nigropunctatum	JN 987	irroratum
JN 842	primuliflorum	JN 988	pubescens
JN 861	tapetiforme	JN 993	vernicosum
JN 862	chryseum	JN 993	vernicosum
JN 885	yunnanense	JN 996	yungningense
JN 895	decorum	JN 997	intricatum
JN 908	telmateium	JN 1013	roxieanum
JN 913	balfourianum	JN 1028	neriiflorum
JN 916	wardii	JN 1029	jucundum
JN 917	phaeochrysum	JN 1030	fictolacteam
JN 919	orthocladum	JN 1031	cyanocarpum
JN 921	beesianum	JN 1038	impeditum
JN 923	roxieanum	JN 1040	haematodes
JN 926	aganniphum	JN 1041	taliense
JN 940	rubiginosum	JN 1042	taliense
JN 944	trichostomum	JN 1047	campylocarpum
JN 946	hippophaeoides	JN 1052	lacteam
JN 950	aganniphum Glaucopelium	JN 1053	heliopsis
JN 957	complexum	JN 1055	edgeworthii
JN 959	complexum	JN 1057	dichroanthum
JN 960	idoneum	JN 1058	crassum
2011 - Chongqing, Henan, Shaanxi & Yunnan			
JN 11002	unidentified species	JN 11024	maculiferum
JN 11003	aureodorsale	JN 11025	roxieoides
JN 11004	aureodorsale	JN 11026	fargesii
JN 11005	purdomii	JN 11029	changii
JN 11006	taibaiense	JN 11030	platypodium
JN 11008	rockii	JN 11031	ochraceum
JN 11010	unidentified species	JN 11033	discolor
JN 11013	augustinii	JN 11034	tsai
JN 11014	henanense aff.	JN 11036	farinosum
JN 11021	hypoglaucom	JN 11037	decorum aff.
JN 11022	unidentified species	JN 11038	dauidsonianum aff.
JN 11023	sutchuenense	JN 11039	cyanocarpum

JN 11040	delavayi	JN 11065	monanthum
JN 11041	facetum	JN 11066	kyawii
JN 11043	racemosum	JN 11069	xanthostephanum
JN 11044	crassum	JN 11070	pseudociliipes
JN 11045	irroratum	JN 11073	pogonostylum
JN 11046	ciliicalyx	JN 11074	diaprepes
Jn 11048	dendricola	JN 11076	ciliicalyx
JN 11050	baihuaense	JN 11077	leptothrium
JN 11051	neriiflorum	JN 11079	annae
Jn 11053	trichocladum	JN 11080	unidentified species
JN 11054	apodectum	JN 11081	edgeworthii
JN 11055	facetum	JN 11082	crassum
JN 11056	basilicum	JN 11084	rex
Jn 11057	scyphocalyx	JN 11085	triflorum ssp. multiflorum
JN 11058	mallotum	JN 11087	unidentified species
JN 11059	heliopsis	JN 11088	pseudociliipes aff.
Jn 11062	sulfureum		
2012 - Hunan, Jiangxi, Sichuan & Yunnan			
JN 12012	huidongense	JN 12058	asterochnum
JN 12013	aberconwayi	JN 12059	asterochnum x oreodoxa (NH)
JN 12017	hunnewellianum	JN 12060	galactinum
JN 12019	x balangense (NH)	JN 12061	wasonii
JN 12020	bracteatum	JN 12065	dauidsonianum
JN 12021	longesquamatum	JN 12067	openshawianum
JN 12023	oreodoxa	JN 12070	trichanthum
JN 12026	prattii	JN 12077	orbiculare
JN 12027	watsonii	JN 12078	wiltonii
JN 12037	nigropunctatum	JN 12080	concinnum/ambiguum
JN 12038	zheguense	JN 12081	pachytrichum
JN 12041	oreodoxa	JN 12082	decorum
JN 12045	prattii	JN 12083	dauidsonianum
JN 12046	danbaense aff.	JN 12084	bureavioides
JN 12047	danbaense aff.	JN 12085	ambiguum
JN 12050	heteroclitum aff.	JN 12086	souliei
JN 12051	aganniphum	JN 12087	vernicosum
JN 12057	pachytrichum	JN 12088	intricatum

JN 12089	nitidulum	JN 12172	delavayi
JN 12094	flavidum	JN 12173	decorum
JN 12095	thymifolium	JN 12175	coriaceum
JN 12097	aganniphum	JN 12176	glischrum
JN 12099	vernicosum	JN 12178	neriiflorum
JN 12101	oreotrephes	JN 12187	anthosphaerum
JN 12102	phaeochrysum	JN 12188	scintillans
JN 12103	beesianum	JN 12189	irroratum
JN 12104	wardii	JN 12193	ciliicalyx
JN 12105	telmateium x trichostomum (NH)	JN 12199	rigidum
JN 12110	racemosum	JN 12207	fulvum
JN 12125	x alutaceum	JN 12208	fictolacteam
JN 12126	fimbriatum	JN 12209	fastigiatum
JN 12127	anthosphaerum	JN 12212	lacteam
JN 12128	lukiangense	JN 12214	bureavii
JN 12131	coriaceum	JN 12216	adenogynum
JN 12133	edgeworthii	JN 12225	scabrifolium
JN 12135	hylaenum	JN 12240	elegantulum
JN 12136	hypolepidotum	JN 12241	cuneatum
JN 12137	glischrum	JN 12242	vernicosum
JN 12140	floccigerum	JN 12243	oreotrephes
JN 12142	monanthum	JN 12244	rubiginosum
JN 12143	eclecteum	JN 12245	telmateium
JN 12145	crinigerum	JN 12246	yunnanense
JN 12146	tephropeplum	JN 12248	hemitrichotum
JN 12150	sinogrande	JN 12249	cuneatum
JN 12151	sinogrande x fictolacteam (NH)	JN 12250	yunnanense
JN 12152	sinogrande	JN 12253	pubescens
JN 12153	dasycladum	JN 12254	rex
JN 12154	fulvum	JN 12255	balfourianum
JN 12155	fictolacteam	JN 12260	cookeanum
JN 12157	rupicola	JN 12261	yunnanense
JN 12158	heliolepis	JN 12262	cookeanum
JN 12160	beesianum	JN 12263	decorum
JN 12164	clementinae	JN 12265	xichangense
JN 12166	taliense	JN 12266	aganniphum

JN 12267	intricatum	JN 12343	spinuliferum
JN 12268	chryseum	JN 12344	x agastum (NH)
JN 12272	wardii	JN 12345	simsii
JN 12273	beesianum	JN 12346	aberconwayi
JN 12275	xichangense	JN 12347	fuyuanense
JN 12278	rex	JN 12348	irroratum
JN 12281	oreodoxa	JN 12349	yunnanense
JN 12282	watsonii	JN 12350	delavayi
JN 12290	concinnum	JN 12351	rubiginosum
JN 12291	denudatum	JN 12352	augustinii
JN 12292	rex	JN 12354	cookeanum
JN 12293	dendrocharis	JN 12357	fumidum
JN 12294	tatsienense	JN 12358	bureavii
JN 12295	sikangense	JN 12359	lacteam
JN 12297	souliei	JN 12360	wumengense
JN 12298	sphaeroblastum	JN 12363	fastigiatum
JN 12300	mianningense	JN 12372	latoucheae
JN 12301	roxieanum Cuccullatum	JN 12373	Tsutsusi sp.
JN 12303	nitidulum	JN 12376	mitriforme (? - ovatum)
JN 12304	amunsenianum	JN 12377	latoucheae
JN 12310	augustinii	JN 12380	polytrichum
JN 12313	rubiginosum	JN 12387	delavayi
JN 12314	bureavii aff.	JN 12388	discolor/maoerense aff.
JN 12315	souliei	JN 12390	discolor/maoerense aff.
JN 12317	lacteam	JN 12393	unidentified species
JN 12318	bureavii	JN 12395	stamineum
JN 12319	sphaeroblastum	JN 12402	simiarum
JN 12320	roxieanum Cuccullatum	JN 12403	levinei aff.
JN 12321	amunsenianum	JN 12408	championae
JN 12322	ambiguum	JN 12409	farrerae
JN 12323	faberi	JN 12412	latoucheae
JN 12324	pingianum	JN 12413	ovatum
JN 12325	calophytum	JN 12417	unidentified species
JN 12326	wiltonii	JN 12419	telmateium
JN 12334	ririei		

Nielsen & Nielsen:

2009 - Guizhou, Sichuan & Yunnan			
NN 0901	racemosum	NN 0935	lutescens
NN 0902	concinnum	NN 0937	vernicosum
NN 0903	qiaojiaense	NN 0939	augustinii
NN 0904	farinosum	NN 0941	tatsienense
NN 0907	decorum	NN 0942	rex
NN 0908	denudatum	NN 0943	pachytrichum
NN 0909	bureavii	NN 0944	dendrocharis
NN 0910	fastigiatum	NN 0945	spinuliferum
NN 0911	complexum	NN 0946	irroratum
NN 0914	yaoshanense	NN 0954	simsii
NN 0915	rufohirtum	NN 0958	liliiflorum
NN 0926	coeloneuron	NN 0959	magniflorum
NN 0932	lutescens	NN 0961	irroratum
NN 0933	strigillosum	NN 0962	unidentified species
NN 0934	denudatum	NN 0963	brevicaudatum

Christopher Page:

1975 - Honshu, Japan, & Taiwan			
CP 9857	heptamerum Hondoense	CP 10230	moulmainense
CP 10069	rubropilosum	CP 10276	moulmainense
CP 10093	rubropilosum		

Paterson & Clarke:

1991 - W USA				
P&C 12	occidentale	P&C	136	unidentified
P&C 71	occidentale	P&C	155	unidentified
P&C 72	macrophyllum			

Paterson & Main:

1994 - Yunnan			
P&M 26	decorum	P&M 68	racemosum
P&M 46	racemosum	P&M 70	neriiflorum
P&M 47	neriiflorum	P&M 71	unidentified species
P&M 62	cyanocarpum	P&M 78	sulfureum

P&M 79	sulfureum	P&M 187	decorum
P&M 81	rubiginosum	P&M 192	unidentified species
P&M 83	cyanocarpum	P&M 195	yunnanense
P&M 88	racemosum	P&M 198	yunnanense
P&M 172	yunnanense		

Patrick & Hsu:

1968 - Taiwam			
RV 681106	pseudochrysanthum	RV 681111	morii
RV 681107	kawakamii	RV 681112	rubropilosum
RV 681108	moulmainense	RV 681113	rubropilosum
RV 681109	morii	RV 681114	nakaharae
RV 681110	morii	RV 681115	oldhamii
1969 - Taiwan			
RV 69/200	kawakamii	RV 69/216	pseudochrysanthum
RV 69/203	kawakamii	RV 69/217	kanehirae
RV 69/212	rubropilosum	RV 69/218	hyperythrum
RV 69/215	formosanum	RV 69/219	moulmainense
1970 - Taiwan			
RV 8829	moulmainense	RV 9835	hyperythrum
RV 9803	oldhamii	RV 9837	pseudochrysanthum
RV 9804	oldhamii	RV 9840	morii
RV 9809	morii	RV 9844	pseudochrysanthum
RV 9811	morii	RV 9863	morii
RV 9812	hyperythrum	RV 9866	taiwanalpinum
RV 9814	sikayotaisanense	RV 9880	ovatum
RV 9816	pseudochrysanthum	RV 9881	hyperythrum
RV 9819	oldhamii	RV 9882	lasiostylum
RV 9821	kawakamii	RV 9889	morii
RV 9829	morii	RV 9890	morii
RV 9831	rubropilosum	RV 9891	pseudochrysanthum
RV 9832	morii	RV 9892	formosanum
RV 9834	morii		
1972 - Taiwan			
RV 72/001	pachysanthum	RV 72/002	pseudochrysanthum
RV 72/001	pachysanthum x morii (NH)	RV 72/003	pseudochrysanthum

1973 - Taiwan			
RV 73/100	morii	RV 73/104	moulmainense
RV 73/101	sikayotaisanense	RV 73/105	farrerae
RV 73/102	formosanum	RV 73/106	oldhamii
RV 73/103	kawakamii	RV 73/107	ovatum
1974 - Taiwan			
RV 74/001	morii	RV 74/005	rubropilosum
RV 74/002	noriakianum	RV 74/006	formosanum
RV 74/003	taiwanalpinum	RV 74/007	formosanum
RV 74/004	morii		

T Pes:

1994 - Nepal			
Pes 2585	cowanianum	Pes 2590	campanulatum
Pes 2588	campanulatum		

PMDT Taiwan Expedition:

2006 - Taiwan			
PMDT 2	oldhamii	PMDT 73	hyperythrum
PMDT 11	rubropilosum	PMDT 92	oldhamii
PMDT 39	formosanum	PMDT 93	rubropilosum
PMDT 50	unidentified species		

Oleg Polunin:

1949 - Nepal			
Polunin 106	setosum	Polunin 409	lepidotum
Polunin 135	lepidotum	Polunin 427	barbatum
Polunin 175	cowanianum	Polunin 551	cowanianum
Polunin 176	campanulatum	Polunin 1009	barbatum
Polunin 178	setosum	Polunin 1041	lepidotum
Polunin 207	anthopogon	Polunin 1103	anthopogon
Polunin 210	lepidotum	Polunin 1202	campanulatum
Polunin 352	nivale	Polunin 1252	lepidotum
Polunin 359	setosum	Polunin 1352	cinnamomeum

Polunin, Sykes & Williams:

1952 - Nepal			
PSW 4	nivale	PSW 3670	arboreum
PSW 28	nivale	PSW 3853	arboreum
PSW 300	lepidotum	PSW 3854	arboreum
PSW 959	campanulatum	PSW 3875	barbatum
PSW 1065	lepidotum	PSW 4061	hypenanthum
PSW 1141	nivale	PSW 4071	campanulatum
PSW 1344	nivale	PSW 4113	campanulatum
PSW 1345	lowndesii	PSW 4141	barbatum
PSW 1872	arboreum	PSW 4142	campanulatum
PSW 2047	campanulatum	PSW 4548	lepidotum
PSW 2057	hypenanthum	PSW 4629	hypenanthum
PSW 2161	lepidotum	PSW 5943	campanulatum
PSW 2205	nivale	PSW 5944	campanulatum
PSW 2359	lepidotum	PSW 5945	campanulatum
PSW 3486	lowndesii	PSW 5947	campanulatum

Pradhan & Lachungpa:

1986 - Sikkim			
P&L 2	niveum	P&L 21	niveum
P&L 8	cinnamomeum	P&L 29	griffithianum
P&L 10	x sikkimense (NH)	P&L 31	fulgens
P&L 12	wightii	P&L 32	unidentified species
P&L 13	ciliatum	P&L 33	unidentified species
P&L 17	cinnabarinum	P&L 34	grande
P&L 19	grande	P&L 35	virgatum
P&L 20	setosum	P&L 39	campanulatum x thomsonii (NH)

Ranheim & Nielsen:

2008 - Yunnan			
R&N 026	nigropunctatum	R&N 086	proteoides
R&N 048	proteoides	R&N 092	x erythrocalyx (NH)
R&N 050	tapetiforme	R&N 093	beesianum
R&N 052	chryseum	R&N 142	selense
R&N 059	aganniphum	R&N 158	yunnanense
R&N 069	tapetiforme	R&N 175	racemosum
R&N 074	chameunum		

Garratt Richardson:

2003 - Arunachal Pradesh & Nagaland, India			
GR 5003	crassum	GR 5025	delavayi
GR 5012	bhutanense	GR 5028	crassum
GR 5015	thomsonii	GR 5029	rhabdotum
GR 5023	glaucophyllum	GR 5032	camelliiflorum

Keith Rushforth:

1980 - Sichuan			
KR 100	unidentified species	KR 177	faberi
KR 139	ambiguum	KR 178a	faberi
KR 141	calophytum	KR 178c	faberi
KR 142	calophytum	KR 184	pingianum
KR 143b	ambiguum	KR 185	nitidulum x ? (NH)
KR 143c	wiltonii	KR 187	ambiguum
KR 143d	calophytum	KR 193	faberi
KR 150	pingianum	KR 195	ambiguum
KR 156	delavayi	KR 198	pachytrichum x ? (NH)
KR 172	oreodoxa x ? (NH)	KR 214	pachytrichum
KR 172a	davidii	KR 336	decorum
KR 173	unidentified species	KR 337	siderophyllum
KR 176	pachytrichum		
1985 - Bhutan			
KR 755	arboreum	KR 839	lepidotum
KR 813	succothii	KR 850	wallichii
KR 818	lepidotum	KR 862	aeruginosum

KR 870	aeruginosum	KR 909	lepidotum
KR 873	lanatum	KR 911	baileyi
KR 882	wallichii	KR 931	barbatum
KR 884	xanthocodon	KR 938	arboreum
KR 885	lanatum	KR 954	keysii
KR 886	wightii	KR 958	kesangiae
KR 890	baileyi	KR 966	cinnamomeum
KR 901	baileyi	KR 974	keysii
KR 903a	lepidotum	KR 1014	edgeworthii
KR 904	lepidotum	KR 1017	dalhousiae
KR 905	lepidotum		

1987 - Bhutan			
KR 1023	arboreum	KR 1214	kesangiae
KR 1047	cinnabarinum	KR 1219	bhutanense
KR 1050	cinnamomeum	KR 1221	bhutanense
KR 1051	wallichii	KR 1226	kesangiae
KR 1053	campylocarpum	KR 1231	argioplum
KR 1059	edgeworthii	KR 1232	pendulum
KR 1078	camelliiflorum	KR 1233	camelliiflorum
KR 1084	kesangiae	KR 1234	flinckii
KR 1087	barbatum	KR 1235	campylocarpum
KR 1091	kesangiae	KR 1237	campylocarpum
KR 1091a	falconeri	KR 1242	kesangiae
KR 1093	lindleyi	KR 1243	argioplum
KR 1100	kesangiae	KR 1245	campylocarpum
KR 1121	falconeri	KR 1253	camelliiflorum
KR 1128	falconeri	KR 1257	kesangiae aff.
KR 1130	kesangiae	KR 1270	rhabdotum
KR 1131	delavayi	KR 1277	camelliiflorum
KR 1135	argioplum	KR 1286	rhabdotum
KR 1136	kesangiae	KR 1289	camelliiflorum
KR 1175	kesangiae	KR 1291	camelliiflorum
KR 1176	argioplum	KR 1292	edgeworthii
KR 1181	hodgsonii	KR 1296	camelliiflorum
KR 1181a	unidentified species	KR 1298	camelliiflorum
KR 1194	thomsonii	KR 1304	maddenii

KR 1308	kesangiae	KR 1442	flinckii
KR 1309	cinnabarinum	KR 1453	hodgsonii aff
KR 1310	argipeplum	KR 1455	unidentified species
KR 1312a	glaucophyllum	KR 1459	tubiforme
KR 1333	maddenii	KR 1465	flinckii
KR 1340	grande	KR 1472a	kendrickii
KR 1349	succothii	KR 1481	kesangiae aff.
KR 1371	hodgsonii	KR 1483	hodgsonii
KR 1401	falconeri	KR 1488	kesangiae aff.
KR 1424	succothii	KR 1496	flinckii
KR 1432	hodgsonii		
1990 - Bhutan			
KR 1562	delavayi	KR 1745	nivale
KR 1583	virgatum	KR 1750	bhutanense
KR 1626	arboreum	KR 1751	bhutanense
KR 1629	kesangiae	KR 1752	unidentified species
KR 1640	kesangiae aff.	KR 1753	bhutanense
KR 1655	thomsonii	KR 1754	unidentified species
KR 1666	wightii	KR 1755	flinckii aff.
KR 1682	kesangiae x ? (NH)	KR 1756	bhutanense
KR 1685	kesangiae x ? (NH)	KR 1763	thomsonii
KR 1695	maddenii	KR 1767	kesangiae
KR 1710	grande aff	KR 1768	campylocarpum
KR 1712	kendrickii	KR 1771	keysii
KR 1720	grande aff	KR 1778	phaedropum
KR 1726	argipeplum	KR 1800	falconeri
KR 1727	kesangiae	KR 1811	hodgsonii
KR 1737	kesangiae	KR 1814	argipeplum
KR 1738	thomsonii	KR 1820	lindleyi
KR 1739	arboreum	KR 1821	griffithianum
KR 1743	wightii		
1991 - Vietnam			
KR 1877	leptocladon	KR 1894	maddenii ssp. crassum
KR 1880	nuttallii	KR 1922	lyi
KR 1881	unidentified species	KR 1922a	unidentified species
KR 1885	unidentified species	KR 1925	unidentified species

KR 1929	leptocladon	KR 1995	nuttallii aff.
KR 1955	unidentified species	KR 1998	suoilenhense
KR 1981	unidentified species	KR 2002	suoilenhense
KR 1986	suoilenhense	KR 2005	unidentified species
KR 1990	arboreum aff.	KR 2015	hemsleyanum aff.
KR 1992	suoilenhense		
1992 - Vietnam			
KR 2108	nuttallii	KR 2246	crassum
KR 2116	lyi aff.	KR 2247	veitchianum aff.
KR 2165	crassum	KR 2247a	veitchianum aff.
KR 2178	suoilenhense	KR 2248	ovatum
KR 2180	lyi aff.	KR 2251	unidentified species
KR 2184a	unidentified species	KR 2260	veitchianum aff.
KR 2189	unidentified species	KR 2261	nuttallii
KR 2199	suoilenhense	KR 2270	nuttallii aff.
KR 2202	unidentified species	KR 2279	sulfureum
KR 2203	crassum	KR 2279a	nuttallii aff.
KR 2203a	nuttallii aff.	KR 2279b	unidentified species
KR 2204	unidentified species	KR 2314	leptocladon
KR 2204a	nuttallii aff.	KR 2319	sulfureum
KR 2205	suoilenhense	KR 2321	unidentified species
KR 2205a	crassum	KR 2330	edgeworthii
KR 2214	nuttallii aff.	KR 2334	lyi
KR 2215	lyi	KR 2359	lyi
KR 2225	lyi	KR 2385	nuttallii aff.
KR 2229	crassum		
1993 - Yunnan			
KR 2494	dendricola	KR 2610	leptothrium
KR 2499	decorum	KR 2628	facetum
KR 2553	peramoeunum	KR 2637	unidentified species
KR 2559	unidentified species	KR 2639	unidentified species
KR 2570	delavayi	KR 2651	sinogrande
KR 2571	diaprepes	KR 2657	basilicum
KR 2572	sinogrande	KR 2681	sidereum
KR 2584	neriiflorum aff	KR 2682	neriiflorum
KR 2586	leptothrium	KR 2687	zaleucum

KR 2701	edgeworthii	KR 2748	cyanocarpum
KR 2710	coriaceum	KR 2750	fictolacteam
KR 2711	edgeworthii	KR 2758	virgatum
KR 2719	unidentified species	KR 2760	lacteam
KR 2720	calostrotum aff.	KR 2761	jucundum
KR 2725	racemosum	KR 2763	fictolacteam
KR 2726	decorum	KR 2764	taliense
KR 2731	neriiflorum	KR 2765	balfourianum
KR 2734	rubiginosum	KR 2780	racemosum
KR 2735	taliense	KR 2793	decorum
KR 2736	trichocladum	KR 2801	rubiginosum
KR 2740	stewartianum	KR 2805	yunnanense
KR 2745	rubiginosum	KR 2833	vernicosum
1994 - Vietnam			
KR 2919	unidentified species	KR 3026	crassum
KR 2932	leptocladum	KR 3028	unidentified species
KR 2935	moulmainense	KR 3045	chunii aff.
KR 2939	unidentified species	KR 3057	crassum
KR 2941	unidentified species	KR 3093	nuttallii
KR 2960	saxicolum	KR 3095	xanthostephanum
KR 2961	lyi	KR 3096a	facetum aff.
KR 2962	lyi	KR 3097a	unidentified species
KR 2978	crassum	KR 3099	nuttallii aff.
KR 2987	lyi	KR 3111	tephropeplum
KR 2989	unidentified species	KR 3112	suoienhense
KR 2992	veitchianum aff.	KR 3114	suoienhense
KR 2998	nuttallii aff.	KR 3116	maddenii ssp. crassum
KR 3002a	unidentified species	KR 3121	pogonostylum
KR 3011	chunii aff.	KR 3145	unidentified species
KR 3021	tanastylum	KR 3284	irroratum Langbianense
KR 3023	huidongense aff.	KR 3285	fleuryi
KR 3025	sulfureum	KR 3295	irroratum Langbianense
1995 - Tibet			
KR 3325	unidentified species	KR 3423	griseum
KR 3336	vellereum	KR 3440	cerasinum
KR 3388	mahogani	KR 3446	vellereum

KR 3448	nivale	KR 3628	faucium
KR 3453	lepidotum	KR 3654	vellereum
KR 3458	griseum	KR 3684	wardii
KR 3460	cerasinum	KR 3688	dignabile / pomense aff.
KR 3465	faucium	KR 3689	x agglutinatum (NH)
KR 3489	unidentified species	KR 3720	fragariiflorum
KR 3490	hirtipes	KR 3721	unidentified species
KR 3492	unidentified species	KR 3722	kongboense aff.
KR 3501	forrestii	KR 3723	unidentified species
KR 3503	mekongense	KR 3724	unidentified species
KR 3506	x chamaethauma (NH)	KR 3725	kongboense aff.
KR 3516	caloxanthum	KR 3726	vellereum
KR 3519	forrestii	KR 3732	wardii
KR 3520	unidentified species	KR 3749	campylogynum
KR 3521	charitopes ssp. tsangpoense	KR 3771	faucium aff.
KR 3522	x chamaethauma (NH)	KR 3774	griseum
KR 3523	tsangpoense	KR 3783	griseum
KR 3528	aganniphum	KR 3784	faucium aff.
KR 3532	wardii	KR 3804	vellereum
KR 3582	virgatum	KR 3844	vellereum
KR 3604	mahogani	KR 3845	anthopogon
1996 - Yunnan			
KR 3902	spinuliferum	KR 4028	leptothrium
KR 3908	microphyton	KR 4029	araiophyllum
KR 3909	delavayi	KR 4049	rubiginosum
KR 3910	delavayi	KR 4049a	trichostomum
KR 3939	microphyton	KR 4051	jucundum
KR 3946	decorum	KR 4051a	cyanocarpum
KR 3969	fulvoides	KR 4051b	jucundum
KR 3979	zaleucum	KR 4054	fictolacteam
KR 3980	sidereum	KR 4055	lacteam
KR 3986	facetum	KR 4056	taliense aff.
KR 3997	neriiflorum aff.	KR 4056a	taliense
KR 4006	valentinianum aff.	KR 4057	lacteam
KR 4013	unidentified species	KR 4084	racemosum
KR 4027	sinogrande	KR 4085	cuneatum or hippophaeoides

KR 4086	vernicosum	KR 4154	heliolepis aff.
KR 4089	unidentified species	KR 4158	uvariifolium
KR 4099	vernicosum	KR 4164	yunnanense
KR 4103	vernicosum	KR 4208	vernicosum
KR 4104	racemosum	KR 4217	yunnanense
KR 4112	wardii	KR 4229	delavayi
KR 4113	oreotrephes	KR 4255	nuttallii
KR 4114	beesianum	KR 4256	unidentified species
KR 4131	wardii	KR 4270	rufosquamosum aff.
KR 4150	beesianum	KR 4303	rufosquamosum aff. / ciliicalyx
1997 - Vietnam			
KR 4461	nuttallii	KR 4653	chihsinianum
1998 - Tibet			
KR 4913	wardii	KR 5189	faucium
KR 4955	campylocarpum	KR 5268	wardii
KR 5024	faucium	KR 5640	x neriiflorum
KR 5040	faucium	KR 5702	unidentified species
KR 5043	faucium	KR 5713	tsangpoense
KR 5053	faucium	KR 5722	wardii
KR 5181	faucium		
1999 - Tibet			
KR 6027	nuttallii / goreri	KR 6171	xanthocodon
KR 6033	ramsdenianum	KR 6172	lanatum aff
KR 6093	calostrotum	KR 6179	campylocarpum
KR 6154	dignabile	KR 6180	campylocarpum
KR 6158	heatherae	KR 6189	arizelum
KR 6160	heatherae		
2001 - Vietnam			
KR 7342	sinofalconeri	KR 7454	nuttallii
KR 7369	crenulatum		
2002 - Yunnan			
KR 7473	sulfureum	KR 7540	basilicum
KR 7482	diaprepes	KR 7557	ciliicalyx
KR 7532	basilicum	KR 7559	diaprepes
KR 7536	rubiginosum	KR 7577	ciliicalyx
KR 7538	rubiginosum	KR 7593	facetum

KR 7609	basilicum	KR 7714	decorum
KR 7632	anthosphaerum	KR 7719	manipurense
KR 7637	edgeworthii	KR 7721	ciliicalyx
KR 7667	facetum	KR 7722	edgeworthii
2003 - Vietnam			
KR 7766	unidentified species	KR 7916	nuttallii
2004 - Yunnan			
KR 4461	nuttallii	KR 5655	tsangpoense
KR 4501	maddenii	KR 6054	faucium aff.
KR 4963	trichocladum	KR 6195	triflorum ssp. multiflorum
KR 5059	hirtipes	KR 7500	edgeworthii
KR 5386	phaeochrysum	KR 7728	siderophyllum
2005 - Arunachal Pradesh			
KR 7972	arboreum	KR 8141	unidentified species
KR 8009	griffithianum	KR 8142	hookeri
KR 8017	unidentified species	KR 8152	leptocarpum
KR 8024	edgeworthii	KR 8154	grande
KR 8029	arboreum	KR 8156	tubiforme
KR 8030	dalhousiae	KR 8179	unidentified species
KR 8035	phaedropum	KR 8180	grande
KR 8068	leptocarpum	KR 8181	grande
KR 8074	lindleyi	KR 8183	arizelum
KR 8074a	argipeplum	KR 8184	argipeplum
KR 8075	argipeplum	KR 8185	unidentified species
KR 8079	eximium	KR 8186	arizelum
KR 8082	unidentified species	KR 8187	sherriffii
KR 8083	unidentified species	KR 8188	unidentified species
KR 8084	grande aff.	KR 8192	sherriffii
KR 8090	triflorum	KR 8195	tsariense Trimoense
KR 8091	argipeplum	KR 8201	tsariense Trimoense
KR 8093	crassum	KR 8204	fulgens
KR 8094	crassum	KR 8205	wightii
KR 8098	cinnamomeum	KR 8209	xanthocodon
KR 8100	kendrickii	KR 8212	campylocarpum aff.
KR 8101	keysii	KR 8213	campylocarpum
KR 8140	unidentified species	KR 8214	fulgens aff.

KR 8215	bhutanense	KR 8285	hodgsonii
KR 8222	tsariense Trimoense	KR 8286	tsariense aff.
KR 8223	tsariense Trimoense x ? (NH)	KR 8287	tsariense Trimoense
KR 8224	tsariense Trimoense aff.	KR 8287a	wightii
KR 8225	tsariense Trimoense aff.	KR 8288	wightii
KR 8226	campylocarpum	KR 8295	anthopogon
KR 8227	wallichii	KR 8298	anthopogon
KR 8228	tsariense Poluninii	KR 8299	thomsonii
KR 8231	tsariense Poluninii	KR 8302	pudorosum
KR 8245	tsariense Trimoense aff.	KR 8303	erosum
KR 8246	fulgens	KR 8328	pendulum
KR 8251	fulgens	KR 8329	erosum
KR 8252	unidentified species	KR 8345	grande aff.
KR 8253	bhutanense aff.	KR 8347	kendrickii
KR 8279	wightii	KR 8357	maddenii
KR 8281	x candelabrum (NH)	KR 8366	erosum
2006 - Arunachal Pradesh			
KR 8383	sidereum	KR 8433	hylaeum
KR 8384	sidereum aff.	KR 8445	arizelum
KR 8385	magnificum	KR 8446	arizelum
KR 8386	maddenii	KR 8453	unidentified species
KR 8396	sidereum aff.	KR 8455	tephropeplum
KR 8397	tanastylum aff.	KR 8462	maddenii
KR 8398	tanastylum aff.	KR 8463	unidentified species
KR 8401	hylaeum	KR 8465	pruniflorum
KR 8402	concinnoides	KR 8489	unidentified species
KR 8405	sinogrande	KR 8496	trichocladum
KR 8406	sinogrande	KR 8497	leptocarpum
KR 8407	arizelum	KR 8498	concinnoides
KR 8420	keysii	KR 8499	exasperatum
KR 8421	phaedropum	KR 8509	arizelum
KR 8422	maddenii	KR 8518	edgeworthii
KR 8423	arizelum	KR 8519	leptocarpum
KR 8424	exasperatum	KR 8547	griffithianum
KR 8425	sidereum	KR 8549	wallichii
KR 8428	tephropeplum	KR 8577	flinckii

KR 8578	flinckii	KR 8605	wightii
KR 8579	thomsonii	KR 8606	cinnabarinum
KR 8581	hodgsonii	KR 8612	keysii
KR 8583	hodgsonii	KR 8614	kendrickii
KR 8584	wallichii	KR 8635	lindleyi
KR 8585	flinckii	KR 8653	unidentified species
KR 8586	cinnabarinum	KR 8662	unidentified species
KR 8600	kesangiae	KR 8663	maddenii
KR 8603	cinnabarinum	KR 8664	griffithianum
KR 8604	eximium	KR 8699	virgatum
2007 - Vietnam			
KR 8802	unidentified species	KR 8864	unidentified species
KR 8803	unidentified species	KR 8880	unidentified species
KR 8843	dendricola		
2008 - Arunachal Pradesh			
KR 8913	unidentified species	KR 9355	eximium
KR 8918	unidentified species	KR 9356	magnificum
KR 8963	emerginatum	KR 9416	camelliiflorum
KR 8965	leptocladum	KR 9417	argipeplum
KR 8966	unidentified species	KR 9418	maddenii
KR 8967	unidentified species	KR 9419	hookeri
KR 9000	sinofalconeri aff.	KR 9421	eximium
KR 9188	unidentified species	KR 9422	unidentified species
KR 9194	unidentified species	KR 9425	blumei
KR 9235	lindleyi	KR 9426	megeratum
KR 9308	phaedropum	KR 9428	unidentified species
KR 9309	edgeworthii	KR 9431	unidentified species
KR 9312	leptocarpum	KR 9432	unidentified species
KR 9313	keysii	KR 9434	hookeri
KR 9340	argipeplum	KR 9435	lagamensis
KR 9348	magnificum aff.	KR 9439	lindleyi
KR 9349	magnificum aff.	KR 9444	kesangiae aff.
KR 9350	magnificum aff.	KR 9445	eximium
KR 9351	montroseanum aff.	KR 9464	kendrickii
KR 9352	unidentified species	KR 9465	eximium
KR 9353	unidentified species	KR 9483	grande

KR 9497	lepidotum	KR 9545	campylocarpum
KR 9504	bhutanense	KR 9546	campylocarpum
KR 9511	bhutanense	KR 9572	hodgsonii
KR 9513	anthopogon	KR 9573	pudorosum
KR 9525	unidentified species	KR 9575	tubiforme
KR 9527	wightii	KR 9604	thomsonii
KR 9535	flinckii	KR 9605	thomsonii x ? (NH)
KR 9536	flinckii aff.	KR 9606	thomsonii x ? (NH)
KR 9537	flinckii	KR 9608	pudorosum
KR 9538	fulgens	KR 9609	unidentified species
KR 9542	unidentified species	KR 9623	tsariense
KR 9543	unidentified species	KR 9624	unidentified species
KR 9544	campylocarpum	KR 9647	unidentified species
2010 - Arunachal Pradesh			
KR 9672	unidentified species	KR 9869	arizelum
KR 9689	kyawii	KR 9871	praestans
KR 9708	unidentified species	KR 9875	arizelum
KR 9720	atrokermesinum	KR 9891	arizelum
KR 9725	maddenii	KR 9892	leptocarpum
KR 9744	tanastylum	KR 9919	cinnabarinum
KR 9768	magnificum aff.	KR 9920	crinigerum
KR 9768a	maddenii	KR 9941	faucium aff.
KR 9769	magnificum aff.	KR 9942	campylocarpum aff.
KR 9770	sidereum	KR 9943	praestans
KR 9771	sidereum	KR 9944	arizelum
KR 9772	sidereum	KR 9945	pocophorum
KR 9782	unidentified species	KR 9948	unidentified species
KR 9783	asperulatum	KR 9949	riparium
KR 9811	unidentified species	KR 9950	stewartianum
KR 9832	crinigerum	KR 9951	praestans
KR 9833	unidentified species	KR 9952	leptocarpum
KR 9836	unidentified species	KR 9954	unidentified species
KR 9840	triflorum	KR 9973	campylocarpum
KR 9845	edgeworthii	KR 9983	calostrotum
KR 9851	arizelum	KR 9985	calostrotum
KR 9861	fulvum	KR 9992	stewartianum

KR 9994	souliei aff.	KR 10075	griffithianum
KR 9995	stewartianum x ? (NH)	KR 10077	unidentified species
KR 9996	mekongense	KR 10078	unidentified species
KR 9997	stewartianum aff. / campylocarpum aff.	KR 10080	unidentified species
KR 9999	unidentified species	KR 10081	atrokermesinum
KR 10001	anthopogon	KR 10082	griffithianum
KR 10027	stewartianum	KR 10084	fulvum
KR 10031	keleticum	KR 10086	leptocarpum
KR 10045	trichocladum	KR 10087	magnificum aff.
KR 10046	cinnabarinum	KR 10089	maddenii
KR 10048	praestans	KR 10092	griffithianum
KR 10062	anthopogon	KR 10093	arizelum
2012 - Arunachal Pradesh			
KR 10359	kendrickii	KR 10459	trilectorum
KR 10365	boothii Mishmiense	KR 10461	campylogynum
KR 10372	falconeri	KR 10462	cerasinum
KR 10377	hookeri	KR 10481	ludlowii
KR 10380	kasoense	KR 10490	unidentified species (populare ?)
KR 10383	vaccinoides	KR 10491	hookerii (or sp. nova?)
KR 10388	rude	KR 10492	succothii
KR 10395	kendrickii	KR 10497	hookerii (or sp. nova?)
KR 10396	sidereum	KR 10500	tsariense Trimoense aff.
KR 10413	edgeworthii	KR 10502	tubiforme
KR 10415	rude	KR 10503	wardii
KR 10419	falconeri	KR 10507	concatenans cf
KR 10420	falconeri/arizelum	KR 10515	concatenans cf
KR 10426	cerasinum	KR 10516	cerasinum
KR 10428	falconeri/arizelum	KR 10520	unidentified species (populare ?)
KR 10430	falconeri/arizelum	KR 10521	tubiforme
KR 10435	crassum	KR 10526	tubiforme
KR 10438	falconeri/arizelum	KR 10530	ludlowii
KR 10454	succothii	KR 10531	concatenans cf
KR 10455	tubiforme	KR 10534	concatenans cf
KR 10456	trilectorum	KR 10537	trilectorum
KR 10457	succothii	KR 10552	crassum
KR 10458	caloxanthum	KR 10577	kasoense

KR 10597	sidereum	KR 10680	tsariense Trimoense aff
KR 10614	unidentified species (kendrickii ?)	KR 10681	cerasinum
KR 10624	arizelum aff	KR 10682	cerasinum
KR 10626	arizelum aff	KR 10686	unidentified species (kendrickii ?)
KR 10627	exasperatum	KR 10687	boothii Mishmiense
KR 10629	unidentified species	KR 10690	exasperatum
KR 10630	tsariense Trimoense aff	KR 10715	unidentified species (dendricola ?)
KR 10649	keysii	KR 10716	boothii Mishmiense
KR 10679	tsariense aff.		

James Russell:

1987 - Japan			
Russell 871	japonicum	Russell 943	quinquefolium
Russell 893	makinoi	Russell 949	amagianum
Russell 919	decandrum	Russell 965	amagianum
Russell 941	kaempferi	Russell 992	indicum

Anthony David 'Tony' Schilling:

1966 - Nepal			
SCH 1111	arboreum		
1975 - Nepal			
SCH 2047	triflorum	SCH 2049	cinnamomeum
SCH 2048	setosum		
1976 - Nepal			
SCH 2169	campylocarpum	SCH 2187	cinnamomeum
SCH 2170	setosum	SCH 2188	campylocarpum
SCH 2171	anthopogon	SCH 2193	unidentified species
SCH 2172	wallichii		
1977 - Nepal			
SCH 2252	campylocarpum	SCH 2269	nivale
SCH 2259	anthopogon	SCH 2281	lepidotum
SCH 2260	setosum	SCH 2295	triflorum
SCH 2264	lepidotum	SCH 2299	barbatum
1978 - Nepal			
SCH 2328	barbatum	SCH 2330	triflorum

SCH 2343	hodgsonii		
1980 - Nepal			
SCH 2407	cinnabarinum	SCH 2474	thomsonii
1983 - Nepal			
SCH 2649	cinnamomeum		
1988 - Bhutan			
SCH 2963	lowndesii	SCH 2980	dalhousiae

Sichuan Expedition:

1988 - Sichuan			
SICH 40	polylepis	SICH 310	floribundum
SICH 141	przewalskii	SICH 316	argyrophyllum
SICH 142	nigropunctatum	SICH 320	argyrophyllum
SICH 143	primuliflorum	SICH 342	nigropunctatum
SICH 153	rufum aff.	SICH 343	decorum
SICH 155	rufum	SICH 349	intricatum
SICH 163	concinnum	SICH 357	przewalskii
SICH 239	lutescens	SICH 377	souliei
SICH 240	decorum	SICH 378	unidentified species
SICH 244	unidentified species	SICH 380	decorum
SICH 246	polylepis	SICH 385	unidentified species
SICH 265	lutescens	SICH 390	concinnum
SICH 284	floribundum	SICH 401	pachytrichum
SICH 300	polylepis		
1991 - Sichuan			
SICH 531	decorum	SICH 611	decorum
SICH 533	davidsonianum	SICH 622	davidsonianum
SICH 542	unidentified species	SICH 650	dryophyllum
SICH 550	przewalskii	SICH 676	vernicosum
SICH 552	thymifolium	SICH 685	davidsonianum
SICH 584	souliei	SICH 698	unidentified species
SICH 585	unidentified species	SICH 702	thymifolium
SICH 586	souliei aff.	SICH 712	trichostomum
SICH 587	concinnum aff.	SICH 713	vernicosum
SICH 588	bureavii aff.	SICH 756	polylepis
SICH 595	bureavii	SICH 785	ambiguum

SICH 786	pachytrichum	SICH 821	sikangense aff.
SICH 818	unidentified species	SICH 823	wiltonii aff.
SICH 819	pachytrichum	SICH 832	oreodoxa
SICH 820	concinnum	SICH 846	argyrophyllum
1992 - Sichuan			
SICH 921	decorum	SICH 1071	chryseum
SICH 922	yunnanense	SICH 1074	beesianum
SICH 928	lutescens	SICH 1075	x agglutinatum (NH)
SICH 929	floribundum	SICH 1084	beesianum
SICH 930	decorum	SICH 1085	wardii
SICH 943	irroratum	SICH 1095	adenogynum
SICH 944	decorum	SICH 1124	hormophorum
SICH 947	yunnanense	SICH 1134	rex
SICH 949	racemosum	SICH 1151	yunnanense
SICH 960	rubiginosum	SICH 1152	rex
SICH 981	decorum	SICH 1153	rex
SICH 990	sikangense	SICH 1154	rex
SICH 1010	x agglutinatum (NH)	SICH 1171	ambiguum
SICH 1012	racemosum	SICH 1177	spinuliferum
SICH 1014	rubiginosum	SICH 1185	rubiginosum
SICH 1026	davidsonianum	SICH 1187	racemosum
SICH 1037	rex	SICH 1188	racemosum
SICH 1041	racemosum	SICH 1198	coeloneuron
SICH 1045	davidsonianum	SICH 1207	yunnanense
SICH 1053	rubiginosum	SICH 1230	polylepis
SICH 1054	x monosematum (NH)	SICH 1236	rex
SICH 1065	davidsonianum	SICH 1241	pingianum
SICH 1070	intricatum		
1994 - Sichuan			
SICH 1317	phaeochrysum	SICH 1425	primuliflorum
SICH 1318	unidentified species	SICH 1428	tsaii aff.
SICH 1322	vernicosum	SICH 1436	yunnanense
SICH 1352	unidentified species	SICH 1437	oreotrepes
SICH 1409	davidsonianum	SICH 1445	beesianum
SICH 1411	phaeochrysum	SICH 1452	augustinii
SICH 1412	unidentified species	SICH 1456	floribundum

SICH 1458	floribundum aff.	SICH 1643	ambiguum
SICH 1473	fictolacteum	SICH 1648	oreodoxa
SICH 1476	ambiguum	SICH 1650	pachytrichum
SICH 1480	rubiginosum	SICH 1656	calophytum
SICH 1610	lutescens	SICH 1760	argyrophyllum
SICH 1630	calophytum	SICH 1785	argyrophyllum
SICH 1633	ambiguum	SICH 1821	sutchuenense
SICH 1640	openshawianum		
1999 - Sichuan			
SICH 2064	davidsonianum	SICH 2103	argyrophyllum
SICH 2084	augustinii	SICH 2110	vernicosum
2001 - Sichuan			
SICH 2123	x agglutinatum (NH)	SICH 2185	petrocharis
SICH 2133	tatsienense	SICH 2190	argyrophyllum
SICH 2150	concinnum	SICH 2196	floribundum
SICH 2153	decorum	SICH 2204	rubiginosum
SICH 2154	trichanthum	SICH 2216	decorum
SICH 2158	heliolepis	SICH 2244	dryophyllum
SICH 2170	polylepis	SICH 2256	pachytrichum
SICH 2181	floribundum	SICH 2257	trichanthum
SICH 2182	davidsonianum		

Simmons & Elsley:

1981 - E USA			
S&E 18	catawbiense	S&E 62	calendulaceum

Ian Sinclair:

1993 - Bhutan			
Sinclair 1720	virgatum	Sinclair 1735	flinckii
Sinclair 1721	ciliatum	Sinclair 1736	wightii
Sinclair 1722	thomsonii	Sinclair 1737	succothii
Sinclair 1724	thomsonii	Sinclair 1738	argipeplum
Sinclair 1725	barbatum	Sinclair 1739	camelliiflorum
Sinclair 1726	maddenii	Sinclair 1740	pendulum
Sinclair 1727	lindleyi	Sinclair 1741	falconeri
Sinclair 1728	griffithianum	Sinclair 1742	kendrickii
Sinclair 1730	argipeplum	Sinclair 1743	keysii
Sinclair 1731	hodgsonii aff.	Sinclair 1744	dalhousiae
Sinclair 1732	hodgsonii	Sinclair 1748	griffithianum
Sinclair 1734	xanthocodon		
1994 - E USA			
Sinclair 1753	viscosum		

Sinclair & Long:

1984 - Bhutan			
S&L 5220	aeruginosum	S&L 5695	falconeri
S&L 5348	setosum	S&L 5696	camelliiflorum
S&L 5671	kesangiae		

Sino-American Botanical Expedition:

1991 - Hubei & Sichuan			
SABE 863	maculiferum	SABE 943	maculiferum
SABE 942	fargesii	SABE 1322	hypoglaucum

Sino-British Expedition to the Cangshan:

1981 - Yunnan			
Species collected around the environs of Kunming, at a lower altitude than the Cangshan mountains, are identified by a 'K' preceding the field number.			
SBEC K058	spinuliferum	SBEC 194	yunnanense
SBEC K059	duclouxii (NH)	SBEC 207	edgeworthii
SBEC K063	decorum	SBEC 210	sulfureum
SBEC K064	siderophyllum	SBEC 218	yunnanense
SBEC K068	spinuliferum	SBEC 228	decorum
SBEC K108	decorum	SBEC 235	lacteam
SBEC K112	decorum	SBEC 239	irroratum
SBEC K113	microphyton	SBEC 240	brevistylum
SBEC K141	ciliicalyx	SBEC 244	cyanocarpum
SBEC K143a	microphyton	SBEC 249	sulfureum
SBEC K160	spiciferum	SBEC 257	facetum
SBEC K161	siderophyllum	SBEC 258	helirolepis
SBEC 15	ciliicalyx	SBEC 260	cyanocarpum
SBEC 42	decorum	SBEC 265	virgatum
SBEC 47	delavayi	SBEC 295	crassum
SBEC 60	yunnanense	SBEC 323	x agastum (NH)
SBEC 64	irroratum	SBEC 331	yunnanense
SBEC 100	irroratum	SBEC 334	sinogrande
SBEC 103	sulfureum	SBEC 343	haematodes
SBEC 104	sinogrande	SBEC 345	lacteam
SBEC 115	ciliicalyx	SBEC 349	jucundum
SBEC 116	decorum	SBEC 350	roxieanum Cucullatum aff.
SBEC 119	x agastum (NH)	SBEC 351	trichocladum
SBEC 120	delavayi	SBEC 361	cyanocarpum
SBEC 121	rubiginosum	SBEC 363	helirolepis
SBEC 130	rubiginosum	SBEC 364	haematodes
SBEC 160	fictolacteam	SBEC 365	jucundum
SBEC 162	cyanocarpum	SBEC 439	decorum
SBEC 163	anthosphaerum	SBEC 471	trichocladum
SBEC 172	neriiflorum	SBEC 473	neriiflorum
SBEC 181	decorum	SBEC 474	racemosum
SBEC 182	sinogrande	SBEC 484	anthosphaerum
SBEC 183	facetum	SBEC 504	trichocladum
SBEC 184	neriiflorum	SBEC 507	neriiflorum

SBEC 519	campylogynum	SBEC 694	crassum
SBEC 532	sulfureum	SBEC 720	delavayi
SBEC 533	fastigiatum	SBEC 721	irroratum
SBEC 534	fictolacteum	SBEC 734	decorum
SBEC 535	cyanocarpum	SBEC 749	fastigiatum
SBEC 543	jucundum	SBEC 750	trichocladum
SBEC 544	jucundum	SBEC 751	cephalanthum
SBEC 545	dichroanthum	SBEC 753	fastigiatum
SBEC 546	taliense	SBEC 804	fastigiatum
SBEC 554	balfourianum	SBEC 805	trichocladum
SBEC 555	taliense	SBEC 806	racemosum
SBEC 557	fastigiatum	SBEC 840	anthosphaerum
SBEC 561	haematodes	SBEC 883	irroratum x ? (NH)
SBEC 565	yunnanense	SBEC 890	facetum
SBEC 581	taliense	SBEC 897	fictolacteum
SBEC 582	lacteum	SBEC 898	irroratum
SBEC 583	balfourianum	SBEC 949	facetum
SBEC 584	balfourianum x ? (NH)	SBEC 957	fictolacteum
SBEC 585	haematodes	SBEC 969	unidentified species
SBEC 586	haematodes	SBEC 971	cyanocarpum
SBEC 587	campylogynum	SBEC 1014	facetum
SBEC 601	dichroanthum	SBEC 1058	yunnanense
SBEC 607	edgeworthii	SBEC 1059	decorum
SBEC 621	virgatum	SBEC 1060	decorum
SBEC 640	crassum	SBEC 1072	crassum
SBEC 641	brachyanthum	SBEC 1225	decorum
SBEC 664	yunnanense	SBEC 1227	virgatum

Sino-British Lijiang Expedition:

1987 - Yunnan			
SBLE 24	telmateium	SBLE 306	oreotrephe
SBLE 25	cuneatum	SBLE 316	hippophaeoides
SBLE 61	primuliflorum	SBLE 317	rubiginosum
SBLE 71	racemosum	SBLE 333	telmateium
SBLE 81	vernicosum	SBLE 357	vernicosum
SBLE 83	rubiginosum	SBLE 364	fastigiatum
SBLE 103	uvariifolium	SBLE 403	mekongense
SBLE 104	cuneatum	SBLE 406	dasycladum
SBLE 111	orthocladum	SBLE 423	lukiangense
SBLE 141	fastigiatum	SBLE 424	leptothrium
SBLE 142	decorum	SBLE 433	racemosum
SBLE 144	vernicosum	SBLE 435	edgeworthii
SBLE 199	cuneatum	SBLE 437	fictolacteum
SBLE 200	rubiginosum	SBLE 438	anthosphaerum
SBLE 201	oreotrephe	SBLE 449	fulvoides
SBLE 202	beesianum	SBLE 453	chameunum
SBLE 203	adenogynum	SBLE 454	phaeochrysum
SBLE 204	traillianum	SBLE 457	unidentified species
SBLE 205	unidentified species	SBLE 458	russatum
SBLE 206	primuliflorum	SBLE 459	wardii
SBLE 219	heliolepis	SBLE 481	scintillans
SBLE 235	adenogynum	SBLE 489	mekongense
SBLE 236	telmateium	SBLE 494	scintillans
SBLE 237	traillianum	SBLE 557	rupicola
SBLE 245	primuliflorum aff.	SBLE 560	balfourianum
SBLE 247	cuneatum	SBLE 565	traillianum
SBLE 299	trichostomum	SBLE 586	cuneatum
SBLE 305	unidentified species		

Sino-Scottish Expedition to Northwestern Yunnan:

1992 - Yunnan			
SSNY 2a	vernicosum	SSNY 164	primuliflorum
SSNY 10	racemosum	SSNY 173	tapetiforme
SSNY 14	hippophaeoides	SSNY 221	oreotrephes
SSNY 24	oreotrephes	SSNY 224	balfourianum
SSNY 35	vernicosum	SSNY 228	wardii
SSNY 46	hippophaeoides	SSNY 229	hippophaeoides
SSNY 47	racemosum	SSNY 230	trichostomum
SSNY 55	selense	SSNY 248	primuliflorum
SSNY 56	wardii	SSNY 250	beesianum
SSNY 63	uvariifolium	SSNY 270	chryseum aff.
SSNY 65	beesianum	SSNY 275	oreotrephes
SSNY 66	heliolepis	SSNY 276	oreotrephes
SSNY 83	russatum	SSNY 285	trichostomum
SSNY 90	fictolacteum	SSNY 292	beesianum
SSNY 92	oreotrephes x rubiginosum (NH)	SSNY 296	complexum
SSNY 94	decorum	SSNY 303	beesianum
SSNY 95	decorum	SSNY 304	heliolepis
SSNY 99	wardii	SSNY 305	rupicola aff.
SSNY 104	vernicosum	SSNY 320a	aganniphum
SSNY 108	phaeochrysum	SSNY 322	aganniphum
SSNY 112a	phaeochrysum	SSNY 323	beesianum
SSNY 129	telmateium	SSNY 350	platyphyllum
SSNY 131	chameunum	SSNY 352	taliense
SSNY 138	aganniphum	SSNY 354	fastigiatum
SSNY 140	dryophyllum	SSNY 358	lacteum
SSNY 143	x flavorufum (NH)	SSNY 363	brachyanthum
SSNY 144	dryophyllum	SSNY 364	dichroanthum
SSNY 148	primuliflorum	SSNY 369	campylogynum
SSNY 149	chryseum	SSNY 370	cyanocarpum
SSNY 151	selense	SSNY 371	haematodes
SSNY 160	tapetiforme	SSNY 372	trichocladum
SSNY 161	primuliflorum	SSNY 374	crassum
SSNY 162	unidentified species	SSNY 375	virgatum
SSNY 163	phaeochrysum		

Karl August Harald 'Harry' Smith:

1934 - Gansu			
Smith 13979	unidentified species	Smith 17920	concinnum
Smith 13982	dryophyllum		

Smith & Mossman:

1965/1975 - California & Oregon			
S&M 5	occidentale	S&M 140	occidentale
S&M 7	occidentale	S&M 142	occidentale
S&M 10	occidentale	S&M 147	occidentale
S&M 12	occidentale	S&M 148	occidentale
S&M 13	occidentale	S&M 151	occidentale
S&M 21	occidentale	S&M 153	occidentale
S&M 22	occidentale	S&M 154	occidentale
S&M 24	occidentale	S&M 157	occidentale 'Miniskirt'
S&M 28	occidentale 'Crescent City Double'	S&M 160	occidentale
S&M 28	occidentale	S&M 163	occidentale
S&M 29	occidentale	S&M 176	occidentale
S&M 30	occidentale 'Crescent City Gold'	S&M 183	occidentale
S&M 33	occidentale	S&M 186	occidentale
S&M 34	occidentale	S&M 189	occidentale
S&M 35	occidentale	S&M 202	occidentale
S&M 36	occidentale	S&M 205	occidentale
S&M 51	occidentale	S&M 225	occidentale
S&M 53	occidentale	S&M 232	occidentale 'Leonard Frisbie'
S&M 55	occidentale	S&M 238	occidentale
S&M 56	occidentale	S&M 245	occidentale
S&M 69	occidentale	S&M 252	occidentale
S&M 112	occidentale	S&M 283	occidentale
S&M 113	occidentale	S&M 308	occidentale
S&M 119	occidentale	S&M 406	occidentale
S&M 120	occidentale	S&M 414	occidentale
S&M 125	occidentale	S&M 502	occidentale 'Humboldt Picotee'
S&M 126	occidentale	S&M 509	occidentale
S&M 127	occidentale	S&M 602	occidentale
S&M 136	occidentale	S&M 604	occidentale

Tem Smitinand:

1962 - Thailand			
Smitinand 7819	ludwigianum		
1974 - Thailand			
Smitinand 6	lyi		

Southern Japan Expedition:

1989 - Japan			
SOJA 099	kaempferi	SOJA 356	indicum
SOJA 294	kiusianum	SOJA 384	kaempferi
SOJA 298	kiusianum	SOJA 399	kaempferi
SOJA 309	tashiroi	SOJA 401	kaempferi
SOJA 310	yakushmanum	SOJA 434	kaempferi

Tom Le Mesurier Spring-Smyth:

1961/1962 - Nepal			
TSS 1	grande	TSS 21	barbatum
TSS 2	arboreum	TSS 22	arboreum
TSS 3	arboreum	TSS 23	arboreum
TSS 4	dalhousiae	TSS 24	dalhousiae
TSS 5	arboreum	TSS 25	arboreum
TSS 6	campanulatum	TSS 26	arboreum
TSS 7	campanulatum	TSS 27	arboreum
TSS 8	campanulatum	TSS 28	dalhousiae
TSS 9	hodgsonii	TSS 29	cinnamomeum
TSS 10	hodgsonii aff.	TSS 30	barbatum
TSS 11	campanulatum	TSS 31	dalhousiae
TSS 12	campylocarpum	TSS 32	dalhousiae
TSS 13	campylocarpum	TSS 32a	campylocarpum
TSS 14	campanulatum	TSS 33	camelliiflorum
TSS 15	barbatum	TSS 34	lepidotum
TSS 16	arboreum	TSS 35	lepidotum
TSS 17	wallichii	TSS 36	unidentified species
TSS 18	arboreum	TSS 37	grande
TSS 19	camelliiflorum	TSS 38	barbatum
TSS 20	camelliiflorum	TSS 39	camelliiflorum

TSS 40	barbatum	TSS 51	lepidotum
TSS 41	campanulatum	TSS 52	lepidotum
TSS 42	hodgsonii	TSS 53	lepidotum
TSS 43	campylocarpum	TSS 54	unidentified species
TSS 44	campanulatum	TSS 55	unidentified species
TSS 45	arboreum	TSS 56	lindleyi
TSS 46	lepidotum	TSS 57	lindleyi aff
TSS 47	unidentified species	TSS 58	arboreum
TSS 48	unidentified species	TSS 59	dalhousiae
TSS 49	camelliiflorum	TSS 60	arboreum
TSS 50	arboreum		
1970 - Nepal			
TSS 61a	unidentified species	TSS 64	grande
TSS 61b	arboreum	TSS 65	arboreum
TSS 61c	arboreum	TSS 67	arboreum
TSS 61d	grande	TSS 68	arboreum
TSS 61e	arboreum	TSS 69	grande
TSS 62	grande	TSS 70	arboreum
TSS 63	grande		

J. D. Adam Stainton:

1956 - Nepal			
Stainton 166	virgatum	Stainton 240	fulgens
Stainton 183	dalhousiae	Stainton 241	wightii
Stainton 184	arboreum	Stainton 244	thomsonii
Stainton 187	triflorum	Stainton 245	wallichii
Stainton 193	triflorum	Stainton 263	anthopogon
Stainton 195	glaucophyllum	Stainton 270	anthopogon
Stainton 226	campanulatum	Stainton 271	setosum
Stainton 227	hodgsonii	Stainton 272	wightii
Stainton 228	arboreum	Stainton 273	campanulatum
Stainton 230	cinnabarinum Roylei	Stainton 275	campylocarpum
Stainton 239	anthopogon	Stainton 276	hodgsonii

Stainton, Sykes & Williams:

1954 - Nepal			
SSW 8	arboreum	SSW 3047	cowanianum
SSW 224	arboreum	SSW 3353	lepidotum
SSW 231	barbatum	SSW 4914	arboreum
SSW 235	campanulatum	SSW 4947	barbatum
SSW 730	lepidotum	SSW 4963	arboreum
SSW 769	lepidotum	SSW 5083	arboreum
SSW 776	cowanianum	SSW 5096	campanulatum
SSW 822	hypananthum	SSW 5097	arboreum
SSW 845	campanulatum	SSW 5384	dalhousiae
SSW 928	campanulatum	SSW 5435	lepidotum
SSW 930	cowanianum	SSW 5590	cowanianum
SSW 1020	lepidotum	SSW 5698	lepidotum
SSW 1090	lowndesii	SSW 5699	lowndesii
SSW 1128	lepidotum	SSW 5785	barbatum
SSW 1167	lepidotum	SSW 6096	hypananthum
SSW 1205	lepidotum	SSW 6190	lepidotum
SSW 1316	hypananthum	SSW 6359	lowndesii
SSW 1327	lepidotum	SSW 7913	hypananthum
SSW 1428	lowndesii	SSW 7960	lepidotum
SSW 1473	lowndesii	SSW 8216	unidentified species
SSW 1530	lepidotum	SSW 8239	lowndesii
SSW 1681	lepidotum	SSW 8251	lowndesii
SSW 1712	lepidotum	SSW 8274	dalhousiae
SSW 1732	lowndesii	SSW 8293	campanulatum
SSW 2601	campanulatum	SSW 8294	barbatum
SSW 2607	campanulatum	SSW 9090	hypananthum
SSW 2608	arboreum	SSW 9097	cowanianum
SSW 2609	campanulatum	SSW 9106	campanulatum
SSW 2614	arboreum	SSW 9107	campanulatum
SSW 2914	lepidotum	SSW 9362	arboreum
SSW 2971	hypananthum		

Tran Van On:

1993 - Vietnam			
Tran 5	moulmainense	Tran 33	unidentified species
Tran 27	nuttallii aff.	Tran 34	crassum
Tran 28	unidentified species	Tran 35	sinofalconeri
Tran 31	nuttallii	Tran 36	unidentified species
Tran 32	tanastylum	Tran 64	unidentified species

Peter Valder:

1972 - Cameron Highlands, Pahang, Malaysia			
Valder F1	wrayi	Valder F6	wrayi
Valder F2	wrayi	Valder F7	wrayi
Valder F3	wrayi	Valder F9	wrayi
Valder F4	wrayi		
1974/1975 - Hong Kong			
Valder I47	simiarum	Valder I50	simsii
Valder I49	hongkongense	Valder I51	farrerae
Valder I49a	moulmainense	Valder I51a	championiae
1994/1995 - Malaysia & Thailand			
Valder I12	moulainmense	Valder I30	veitchianum
Valder I19	lyi	Valder I38	veitchianum
Valder I20	lyi	Valder I39	delavayi
Valder I21	simsii	Valder I42	veitchianum
Valder I29	veitchianum	Valder I42a	moulmainense

Warner & Howick:

1985 - E USA			
W&H 96	maximum	W&H 142	unidentified species
W&H 141	unidentified species	W&H 177	catawbiense
1986 - British Columbia, California & Washington			
W&H 212	occidentale	W&H 235	occidentale
1987 - Japan			
W&H 576	brachycarpum	W&H 673	japonicum
W&H 632	brachycarpum	W&H 691	albrechtii
W&H 633	albrechtii	W&H 704	albrechtii
W&H 686	brachycarpum	W&H 708	brachycarpum

W&H 709	tschonoskyi	W&H 794	dilatatum
W&H 757	kaempferi	W&H 796	stenopetalum
W&H 763	kaempferi	W&H 797	keiskei
W&H 790	makinoi	W&H 819	amagianum
1989 - Pyrenees			
W&H 964	ferrugineum		

Peter Wharton:

1994 - Guizhou			
PW 7a	coeloneuron	PW 77	barbatum
PW 9	coeloneuron	PW 83	unidentified species
PW 20	unidentified species	PW 83	discolor
PW 27	coeloneuron	PW 85	annae
PW 34	discolor	PW 86	unidentified species
PW 39	discolor	PW 90	x agastum (NH)
PW 41	glanduliferum	PW 95	x agastum (NH)
PW 44	glanduliferum	PW 97	unidentified species
PW 49	sutchuenense aff.	PW 98	x agastum (NH)
PW 50	auriculatum	PW 99	simsii
PW 76	discolor		
199? - Vietnam			
PW 116	liliiflorum	PW 178	facetum

Michael Wickenden:

1997 - Primorsky Krai, E Russia			
MW 10 R	aureum	MW 175	schlippenbachii
MW 31	unidentified species	MW 243	sichotense
MW 131 R	fauriei	MW 318	lapponicum Parvifolium
MW 133	aureum		

Te-Tsun Yu:

1932/1939 - Sichuan & Yunnan			
Yu 7859	x schizopeplum (NH)	Yu 10596	beesianum
Yu 7860	saluenense	Yu 10599	unidentified species
Yu 7863	unidentified species	Yu 10609	unidentified species
Yu 7867	selense	Yu 10678	roxieanum
Yu 7868	unidentified species	Yu 10679	aganniphum
Yu 7869	uvarifolium	Yu 10680	unidentified species
Yu 7870	unidentified species	Yu 10681	setosum
Yu 7871	x dictyotum (NH)	Yu 10682	unidentified species
Yu 7872	aganniphum	Yu 10683	x bathyphyllum (NH)
Yu 7887	unidentified species	Yu 10684	traillianum
Yu 7896	heliolepis	Yu 10685	beesianum
Yu 7905	heliolepis	Yu 10686	x schizopeplum (NH)
Yu 7922	unidentified species	Yu 10687	unidentified species
Yu 7924	uvarifolium	Yu 10688	roxieanum
Yu 7926	unidentified species	Yu 10689	unidentified species
Yu 7927	beesianum	Yu 10690	aganniphum
Yu 7933	rubiginosum Desquamatum	Yu 10691	apodectum
Yu 7934	anthosphaerum Eritimum	Yu 10692	roxieanum Oreonastes
Yu 7949	unidentified species	Yu 10698	yunnanense
Yu 7951	unidentified species	Yu 10699	uvarifolium
Yu 7962	unidentified species	Yu 10700	oreotrepthes
Yu 7989	chasmanthum	Yu 10701	heliolepis
Yu 7991	oreotrepthes	Yu 10709	unidentified species
Yu 7992	unidentified species	Yu 10723	unidentified species
Yu 7994	telmateium Diacritum	Yu 10729	unidentified species
Yu 7995	unidentified species	Yu 10755	x agglutinatum (NH)
Yu 8000	unidentified species	Yu 10779	unidentified species
Yu 8610	sanguineum	Yu 10795	phaeochrysum
Yu 8611	chameunum	Yu 10851	unidentified species
Yu 8624	chryseum	Yu 10857	unidentified species
Yu 8630	campylogynum	Yu 10884	unidentified species
Yu 8645	chameunum	Yu 10925	racemosum
Yu 8660	cephalanthum	Yu 10937	anthosphaerum Eritimum
Yu 8823	hemsleyanum	Yu 10949	unidentified species
Yu 10566	mekongense	Yu 10952	phaeochrysum

Yu 10953	traillianum	Yu 13911	uvarifolium
Yu 10958	decorum aff.	Yu 13913	heliolepis
Yu 10961	rubiginosum Desquamatum	Yu 13919	heliolepis
Yu 10974	unidentified species	Yu 13920	beesianum
Yu 10979	unidentified species	Yu 13924	aganniphum
Yu 10983	unidentified species	Yu 13925	aganniphum
Yu 10984	primuliflorum	Yu 13926	beesianum
Yu 10993	racemosum	Yu 13927	adenogynum
Yu 13680	racemosum	Yu 13928	adenogynum
Yu 13721	aganniphum	Yu 13931	beesianum
Yu 13723	unidentified species	Yu 13937	hippophaeoides
Yu 13729	aganniphum	Yu 13961	diaprepes
Yu 13730	beesianum	Yu 13978	unidentified species
Yu 13731	aganniphum	Yu 13984	unidentified species
Yu 13732	aganniphum	Yu 13986	heliolepis
Yu 13736	unidentified species	Yu 13989	beesianum
Yu 13755	unidentified species	Yu 13995	traillianum
Yu 13760	roxieanum Oreonastes	Yu 14405	racemosum
Yu 13762	aganniphum	Yu 14431	unidentified species
Yu 13763	aganniphum	Yu 14436	rubiginosum
Yu 13765	beesianum	Yu 14444	unidentified species
Yu 13785	setosum	Yu 14636	x agglutinatum (NH)
Yu 13806	x agglutinatum (NH)	Yu 14641	chryseum
Yu 13809	vernicosum	Yu 14647	primuliflorum
Yu 13845	hippophaeoides	Yu 14662	balfourianum
Yu 13851	unidentified species	Yu 14663	beesianum
Yu 13880	racemosum	Yu 14694	vernicosum
Yu 13881	unidentified species	Yu 14703	rubiginosum
Yu 13886	rubiginosum	Yu 14720	unidentified species
Yu 13893	racemosum	Yu 14752	unidentified species
Yu 13894	decorum	Yu 14753	unidentified species
Yu 13895	unidentified species	Yu 14754	unidentified species
Yu 13897	unidentified species	Yu 14755	rubiginosum Desquamatum
Yu 13901	unidentified species	Yu 14757	puralbum
Yu 13909	fulvum	Yu 14803	unidentified species
Yu 13910	unidentified species	Yu 14843	hemitrichotum

Yu 14901	unidentified species	Yu 18288	decorum
Yu 14904	traillianum	Yu 19005	decorum
Yu 14917	unidentified species	Yu 19034	forrestii
Yu 14935	decorum	Yu 19037	sanguineum
Yu 14945	roxieanum	Yu 19040	praestans
Yu 14947	beesianum	Yu 19042	selense
Yu 14950	clementinae	Yu 19046	mekongense
Yu 14952	uvariifolium	Yu 19047	fulvum
Yu 14953	fictolacteam	Yu 19049	sanguineum
Yu 14955	adenogynum	Yu 19058	saluenense
Yu 14957	rubiginosum Desquamatum	Yu 19065	chryseum
Yu 14987	anthosphaerum Eritimum	Yu 19073	rubiginosum Desquamatum
Yu 14990	rubiginosum	Yu 19074	beesianum
Yu 15009	unidentified species	Yu 19088	chameunum
Yu 15010	hippophaeoides	Yu 19306	x haemaleum (NH)
Yu 15011	racemosum	Yu 19310	sanguineum
Yu 15012	racemosum	Yu 19314	keleticum
Yu 15013	rubiginosum	Yu 19315	hypolepidotum
Yu 15014	hormophorum	Yu 19339	horeaeum
Yu 15027	cuneatum	Yu 19340	campylogynum
Yu 15089	x dictyotum (NH)	Yu 19341	forrestii Repens
Yu 15104	vernicosum	Yu 19351	unidentified species
Yu 15139	primuliflorum	Yu 19358	chryseum
Yu 15155	telmateium Diacritum	Yu 19373	dealbatum
Yu 15157	traillianum	Yu 19374	trichocladum
Yu 15300	adenogynum	Yu 19423	nuttallii
Yu 15362	lepidotum	Yu 19510	anthosphaerum Eritimum
Yu 15629	primuliflorum	Yu 19567	seingkuense
Yu 15641	setosum	Yu 19568	megacalyx
Yu 15656	unidentified species	Yu 19583	genestierianum
Yu 15821	microphyton	Yu 19615	vaccinioides
Yu 16063	irroratum aff.	Yu 19631	edgeworthii
Yu 16694	crassum	Yu 19642	lukiangense
Yu 17431	edgeworthii	Yu 19650	vesiculiferum
Yu 17839	diaprepes	Yu 19676	rubiginosum Desquamatum
Yu 18226	edgeworthii	Yu 19677	fulvum

Yu 19709	neriiflorum	Yu 20750	fulvum
Yu 19734	riparium	Yu 20778	chryseum
Yu 19740	eclecteum	Yu 20780	selense
Yu 19741	unidentified species	Yu 20796	hypolepidotum
Yu 19744	hypolepidotum	Yu 20812	sanguineum
Yu 19754	riparium	Yu 20816	unidentified species
Yu 19757	calostrotum	Yu 20817	cephalanthum
Yu 19779	campylogynum	Yu 20820	chryseum
Yu 19792	chryseum	Yu 20834	floccigerum
Yu 19803	cephalanthum	Yu 20840	unidentified species
Yu 19813	heliolepis	Yu 20844	anthosphaerum Eritimum
Yu 20052	hypolepidotum	Yu 20849	xanthostephanum
Yu 20066	calostrotum	Yu 20886	vaccinioides
Yu 20247	sanguineum	Yu 20897	floccigerum
Yu 20266	keleticum	Yu 20906	trichocladum
Yu 20291	rubiginosum Desquamatum	Yu 20909	sanguineum
Yu 20372	forrestii Repens	Yu 20910	sanguineum
Yu 20595	seinghkuense	Yu 20916	hypolepidotum
Yu 20606	chryseum	Yu 20924	keleticum
Yu 20607	saluenense	Yu 20928	chameunum
Yu 20609	chaetomallum	Yu 20929	campylogynum
Yu 20611	temenium	Yu 20931	temenium
Yu 20614	forrestii	Yu 20936	unidentified species
Yu 20616	mekongense	Yu 20959	unidentified species
Yu 20623	sanguineum	Yu 20961	decorum
Yu 20700	crinigerum	Yu 20962	edgeworthii
Yu 20704	rubiginosum Desquamatum	Yu 20971	arizelum
Yu 20705	sanguineum	Yu 20981	unidentified species
Yu 20706	keleticum	Yu 20997	tanastylum
Yu 20707	campylogynum	Yu 20998	nuttallii
Yu 20714	sanguineum	Yu 21000	facetum
Yu 20716	horaeum	Yu 21005	dendricola
Yu 20729	forrestii Repens	Yu 21021	xanthostephanum
Yu 20738	chaetomallum	Yu 21030	nuttallii
Yu 20744	arizelum	Yu 21031	manipurens
Yu 20745	anthosphaerum Eritimum	Yu 21043	unidentified species

Yu 21047	unidentified species	Bowes-Lyon 6035	succothii
Yu 21049	dendricola	Bowes-Lyon 6037	maddenii
Yu 21069	rubiginosum Desquamatum	Yu 22929	saluenense
Yu 21070	seinghkuense	Yu 22930	sanguineum
Yu 21071	megeratum	Yu 22935	stewartianum
Yu 22101	leptocarpum	Yu 22946	forrestii Repens
Yu 22133	chryseum	Yu 22954	arizelum
Yu 22163	saluenense	Yu 22955	megeratum
Yu 22191	sanguineum	Yu 22957	anthosphaerum Eritimum
Yu 22228	sanguineum	Yu 22958	floccigerum
Yu 22354	campylogynum	Yu 22962	edgeworthii
Yu 22791	sanguineum	Yu 22966	floccigerum
Yu 22891	decorum	Yu 22969	rubiginosum Desquamatum
Yu 22910	decorum	Yu 22971	floccigerum
Yu 22925	leptocarpum	Yu 22998	decorum
Yu 22928	trichocladum	Yu 23231	temenium aff.

As with the Ludlow & Sherriff field numbers, this more extensive list of Te-Tsun Yu’s collections were published in Part One of *The Rhododendron Handbook 1967*.

All are designated as ‘Rhododendrons in Cultivation in Great Britain and Ireland’, so viable seed for each and every entry was presumably gathered, returned and successfully germinated.

Yu, also known as Yu Dejun or Dejun Yu, was the principal collector on two Chinese botanical expeditions lead by Professor Hsen-Hsu Hu that took place in the 1930s, the first to western Sichuan between 1932 and 1934, the second to northwest Yunnan between 1937 and 1939. Areas visited included Atuntze, the Lichiang Range, the Mekong-Salween Divide, Muli, the Salween-Kiukiang Divide and the Wei-hsi-lung-Chungtien Plateau.

A consequence of the expedition’s hierarchy will often result in the field numbers mistakenly being referenced as Hu instead of Yu.

Hong-Guang Zha:

2006 - Yunnan			
ZH-G 047	fuyuanense	ZH-G 072	anthosphaerum
ZH-G 049	aberconwayi	ZH-G 076	rubiginosum
ZH-G 059	delavayi	ZH-G 078	trichocladum
ZH-G 065	racemosum	ZH-G 079	cyanocarpum
ZH-G 067	crassum	ZH-G 082	irroratum
ZH-G 068	decorum	ZH-G 083	x agastum (NH)
ZH-G 070	sinogrande	ZH-G 084	haematodes
ZH-G 071	edgeworthii	ZH-G 085	fictolacteum

Photographic Acknowledgements:

The plant portraits presented within the seven volumes of *Temperate Rhododendrons* were the result of innumerable trips to the woodland gardens and botanical institutes of England, Scotland and Wales that specialised in Genus *Rhododendron*; that were open to the general public across the bulk of the flowering season; and had accurately labelled collections. The photos were mostly captured on a Nikon D200, and later, on a Nikon D810, using a variety of prime and zoom Nikkor lenses. In the main, RAW format files were used to store the digital images, this avoiding any unnecessary compression, and all the portraits were achieved 'handheld', on site, even the macro close-ups. No colour modification has been made to any of the photographs, nor were any filters employed to enhance or otherwise change the palette, pre or post capture, with natural light the only source of illumination.

What was photographed where is set out below, along with the website details of those collections visited. Thanks is extended to each establishment for allowing images taken in a private-use capacity, to be reproduced herein.

Appreciation is also due their gardening staff, who maintain the species and hybrids in such robust good health despite the depredations of a changing climate. Getting to know many of these dedicated and world-class horticulturalists over repeated visits often prompted an exchange of invaluable knowledge, including insights into cultivation issues, provided the locations of some of their rarer specimens - that might otherwise have been missed despite the most diligent searching - and frequently occasioned an escort over or around beds of foreground perennials to admire and photograph a particularly distant-from-the-permitted-path or extremely well-hidden individual. Especial thanks is therefore extended to Alan, Colin, Douggie, Mark, Maurice, Nigel, Patrick and Richard, some of whom, sadly, are no longer with us, so for them, this laudation must be posthumous.

The scanning electron micrograph images that are featured in the section detailing the pollination process were taken by Barbara F. Palser and first appeared in Volume 24, No. 4, of the *Journal of the Australian Rhododendron Society*, which was published in 1985. They are reproduced here courtesy of the ARS.

Portrait photographs of historical and noted figures associated with Genus *Rhododendron* were made available for use in the book by the institutions, organisations and individuals listed below, for which again, much gratitude is due.

Key: AL - above left; AC - above centre; AR - above right; ACL - above centre left; ACR - above centre right; BL - below left; BC - below centre; BR - below right; BCL - below centre left; BCR - below centre right; L - left; R - right.

Alpine Journal

<https://www.alpinejournal.org.uk/>

p. 170-BR, Frank Ludlow and George Sherriff.

Photograph included within the article *Exploration of the Bhutan Himalaya*, by Michael Ward, published in *The Alpine Journal* 1997, and reproduced courtesy of the Alpine Club and the Sherriff collection.

Arboretum Ellerhoop:

<https://www.arboretum-ellerhoop.de/vorstand/>

p. 20 - Wolfgang Spethmann.

Arduaine Garden, Oban, Argyll:

<https://www.nts.org.uk/visit/places/arduaine-garden>

p. 65-R; p. 82-ACL; p. 90-L; p. 91-BR.

Arnold Arboretum:

<https://arboretum.harvard.edu/>

p. 15 - Ernest Wilson; p. 20 - Alfred Rehder; p. 125 - Ernest Wilson, AR, BR.

Australian Systematic Botany Society:

<https://www.asbs.org.au/>

p. 55 - Lyn Craven, photographed by M. Fagg (Newsletter 167, June 2016).

Benmore Botanic Garden, Argyll:

<https://www.rbge.org.uk/visit/benmore-botanic-garden/>

p. 60-BR; p. 61-AL, BL; p. 62-ACR, R; p. 63-BL; p. 70-AR, BL; p. 71-BL; p. 72-AL, BR; p. 77-AL, R; p. 80-BC; p. 81-AL; p. 83-BCL, BR; p. 84-C; p. 88-AL; p. 91-AR; p. 93-L; Back Cover-BR.

Branklyn Garden, Perth:

<https://www.nts.org.uk/visit/places/branklyn-garden>

p. 89-BL; p. 96-AR.

Brodick Castle Garden, Isle of Arran:

<https://www.nts.org.uk/visit/places/brodick-castle-garden-country-park>

p. 80-AR; p. 81-AR; p. 93-BR; Back Cover-BL.

Cambridge University Botanic Garden:

<https://www.botanic.cam.ac.uk/>

p. 21 - James Cullen.

Dawyck Botanic Garden, Stobo, Peebles:

<https://www.rbge.org.uk/visit/dawyck-botanic-garden/>

p. 62-L; p. 65-BL; p. 80-BR; p. 82-BCL; Back Cover-AR.

Bent Ernebjerg:

p. 25 - Bent Ernebjerg, from the 2013 China SBBE, photograph posted online at the Google Album Archive.

Exbury Gardens, Hampshire:

<https://www.exbury.co.uk/>

p. 63-AC; p. 96-AL.

Glenarn Gardens, Rhu, Helensburgh:

<https://www.discoverscottishgardens.org/garden/glenarn-glorious-gardens-of-argyll-and-bute/>

p. 60-BL.

Glendoick Gardens Ltd, Perth:

<https://glendoick.com/>

p. 24 - Keith Rushforth; p. 25 - Peter Hutchison & Peter Cox; p. 65-BC; p. 70-BR; p. 72-AR; p. 76-BR; p. 84-BL; p. 88-AR; p. 92-AL, R.

Howick Hall Gardens & Arboretum, Alnwick, Northumberland:

<https://howickhallgardens.com/>

p. 76-BL; p. 88-BL.

Tom Hudson, Tregrehan Garden, Saint Blazey, Cornwall:

<http://www.tregrehangarden.uk/>

p. 25 - Edward Needham.

Inverewe Gardens, Poolewe, Wester Ross:

<https://www.nts.org.uk/visit/places/inverewe>

p. 57; p. 62-ACL; p. 63-BC.

John Innes Centre:

<https://www.jic.ac.uk/>

p. 43 - E. K. Janaki Ammal.

Lakeland Horticultural Society, Holehird Gardens:

<https://holehirdgardens.org.uk/the-society>

p. 60-AR.

Logan Botanic Garden, Stranraer:

<https://www.rbge.org.uk/visit/logan-botanic-garden/>

p. 74-AR, BL, BR; p. 83-AR; p. 91-AL; p. 94-BL; p. 97-AR.

Missions Étrangères de Paris:

<https://irfa.paris/en/the-mep-in-asia/>

p. 14 - Armand David, Jean-Marie Delavay, Paul Farges, André Soulié.

Muncaster Castle Gardens, Ravenglass, Cumbria:

<https://www.muncaster.co.uk/>

Front cover; p. 5-Title Page; p. 9-Overview; p. 58; p. 59; p. 61-R; p. 62-BCL; p. 63-AL, R; p. 64-AC, BC, AR, BR; p. 65-AL, AC; p. 70-AL, AC; p. 71-AL, AC, AR; p. 75; p. 76-AR; p. 79; p. 80-BL; p. 82-ACR, BL, BR; p. 83-ACR, BL, BCR; p. 84-AL, BR; p. 85-L, BR; p. 91-BL; p. 94-AL; p. 95-AR, BL, BR; p. 96-BR; p. 97-AL, BL, BR; p. 98; p. 99; p. 243-AR.

National Geographic Society:

<https://www.nationalgeographic.org/society/>

p. 15 - Joseph Rock; p. 153 - Joseph Rock; p. 157 - Joseph Rock; p. 163 - Joseph Rock and outlaw escort; p. 165 - Joseph Rock with the King of Muli, Xiang Cicheng Zhaba.

National Herbarium Nederland:

<http://www.nationaalherbarium.nl/>

p. 21 - Hermann Sleumer.

The New York Botanical Garden:

<https://www.nybg.org/>

p. 20 - Jeffrey Harborne & Brian Knights; p. 21 - Johannes Hedegaard & Almut Seithe, Melva & William Philipson.

North Carolina State University, Department of Horticultural Science:

<https://cals.ncsu.edu/horticultural-science/news/>

p. 51 - root tip cells of *R. austrinum* showing the chromosomes during prophase. A photomicrograph by Professor Thomas Ranney, originally taken for the scientific paper *Ploidy Levels and Relative Genome Sizes of Diverse Species, Hybrids, and Cultivars of Rhododendron*, published in Volume 61, Number 4, of the *Journal American Rhododendron Society*; p. 54 - Thomas Ranney.

The Northern Echo:

<https://www.thenorthernecho.co.uk/news/12906069.new-look-himalayan-garden-set-reopen/>

p. 25 - Jens Nielsen, photographed by Stuart Minting.

Dr. M. R. Paton, Barnhourie Mill:

<https://www.parksandgardens.org/places/barnhourie-mill>

p. 16 - H. H. Davidian.

Kristian Peters:

https://en.wikipedia.org/wiki/File:Plagiomnium_affine_laminazellen.jpeg

p. 40 - Chloroplasts in the leaf cells of *Plagiomnium affine*.

Public Domain:

p. 41 - Gregor Mendel, Carl Correns, Thomas Hunt Morgan, Erich von Tschermak, Hugo de Vries; p. 42 - Erwin Baur, Otto Renner; p.123 - Ernest Wilson; p. 175 - Ludlow & Sherriff campsite, Tibet, 1936.

Pushed Up The Mountain:

<https://www.pushed-up-the-mountain-film.com/>

p. 21 - David Chamberlain.

Ray Wood, Castle Howard, North Yorkshire:

<https://www.castlehoward.co.uk/visit-us/the-gardens/the-woodland-garden>

p. 81-BR; p. 90-AR; Back Cover-AL.

Royal Botanic Garden, Edinburgh:

<https://www.rbge.org.uk/visit/royal-botanic-garden-edinburgh/>

p. 14 - Sir Issac Bayley Balfour; p. 15 - Roland Cooper, Reginald Farrer, George Forrest, Frank Ludlow, George Sherriff; p. 21 - John MacQueen Cowan; p. 50 - *Mimulus peregrinus* Herbarium catalogue image (E00570050); p. 60; p. 62-BCR; p. 64-L; p. 71-BR; p. 72-BR; p.77-BL; p. 81-BL; p. 82-AL, AR; p. 83-ACL; p. 84-AR; p. 85-AR; p. 89-AL; p. 90-BR; p. 93-AR; p. 94-AR, BR; p. 95-AL; p. 126 - George Forrest; p 127 - Forrest's native collectors; p. 129 - George Forrest with French missionary; p. 134 - George Forrest on horseback; p. 144 - George Forrest at rest.

Royal Botanic Garden, Kew:

<https://www.kew.org/>

p. 15 - Frank Kingdon-Ward; p. 20 - Joseph Hooker, Charles Clarke, John Hutchinson; p. 25 - Mark Flanagan & Tony Kirkham, Tony Schilling; p. 89-R.

Royal Scottish Geographic Society:

<https://www.rsgs.org/>

p. 146 - Frank Kingdon-Ward; p. 151 - Frank Kingdon-Ward c. 1920.

Scottish Rhododendron Society:

<http://scottishrhododendronsociety.org.uk/>

p. 25 - Alan Clark, photographed by John Roy.

Sir Harold Hillier Gardens, Ampfield, Romsey:

<https://www.hants.gov.uk/thingstodo/hilliergardens>

p. 88-BR.

Tiroler Landesmuseum Ferdinandeum, Innsbruck:

<https://www.tiroler-landesmuseen.at/>

p. 10 - fossil specimen photographed by Thomas Denk for his 2006 paper *Rhododendron ponticum* L. var. *sebinense* in the Late Pleistocene flora of Hötting, Northern Calcareous Alps: witness of a climate warmer than today?

University of Edinburgh, Department of Evolutionary Biology:

<https://www.ed.ac.uk/biology/evolutionary-biology>

p. 55 - Richard Milne.

University of Stirling, Department of Biological and Environmental Sciences:

<https://www.stir.ac.uk/people/255926>

p. 54 - Mario Vallejo-Marin.

University of Washington, College of Arts & Sciences:

<https://artsci.washington.edu/news/2019-07/back-basics>

p. 55 - Loretta Goetsch, Professor Benjamin Hall.

Valley Gardens, Windsor Great Park:

<https://www.windsorgreatpark.co.uk/en/experiences/the-valley-gardens>

p. 80-AL; p. 82-BCR; p. 83-AL; p. 92-BL; p. 96-BL.

Virginia Commonwealth University, College of Humanities & Sciences:

<https://biology.vcu.edu/directory-/faculty-staff/andrew-eckert.html>

p. 55 - Andrew Eckert.

Wake Forest University, College of Arts & Sciences:

<https://college.wfu.edu/college-news/teacher-scholar-legacies/kathleen-kron/>

p. 54 - Kathleen Kron.

Kate Wentworth:

http://tibet.prm.ox.ac.uk/tibet_Arthur_Hopkinson.html

p. 166-AL, BL - Ludlow, Sherriff and Elliot, photographed in Tibet, during 1946, by the UK's Political Officer for Sikkim, Bhutan and Tibet, Arthur J. Hopkinson, the images reproduced by kind permission of his daughter, Kate Wentworth.

About the author:



Julian Taylor-Whall was born in Lowestoft at the end of November, 1957. He received a grammar school education before beginning a three-decades-long career with the BBC at Television Centre in West London. During that time he worked on many of the now classic shows made in the production facilities there, the studios at Lime Grove and Elstree, and at the Television Theatre. He retired early in 2008, moving to a small village in West Cumbria, just outside the Lake District National Park.

Twenty years earlier, in late April 1988, on a day when the hills of Torridon and Applecross were hidden in cloud, a visit to the nearby Inverewe Gardens offered an alternative distraction. By chance it took place at the peak of the flowering season, during a particularly profligate year for bloom, and turned into an encounter never to be forgotten. Thus did the species and hybrids of Genus *Rhododendron* become yet another enduring passion, along with music, film, photography, and concocting the occasional science fiction novel.

- above -
Observed in the woodland at Muncaster,
any resemblance to the author is totally denied.

- back cover -

<i>R. orbiculare</i>	<i>R. souliei</i> (SICH 584)
<i>R. magnificum</i>	<i>R. campanulatum</i> x <i>thomsonii</i> (P&L 39)

