

## Rhododendrons of the Tropical Seacoasts & Plains

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from the Journal of the American Rhododendron Society

Volume 33, No.3, Summer 1979

For the most part correctly, rhododendrons are commonly regarded as inhabitants of cool, montane environments, even those tender to frost. Nonetheless, in such a large genus it is perhaps not surprising that a few species have adapted to quite different conditions. Among those of section *Vireya* a small proportion are found in the tropical lowlands, and several occur at sea level.

Thus Beccari encountered *R.brookeanum* in a most definitive setting of the Torrid Zone - growing as an epiphyte on mangroves in equatorial Borneo, "a lovely plant with large yellow flowers". It had been named by Sir Hugh Low in honor of his friend Sir James Brooke, the first white rajah of Sarawak.

Low comments, "I shall never forget the first discovery of this gorgeous plant; it was epiphytic upon a tree which was growing in the water of a creek. The head of flowers was very large, arranged loosely, of the richest golden yellow, resplendent when in the sun; the habit was graceful, the leaves large. Very high and large trees in damp forests are its favourite haunts."

"Perhaps the most gorgeous of the native plants are the various species of the genus *Rhododendron*", Low says elsewhere, then goes on to rate *R.brookeanum* the most beautiful of all. He continues with this description. "Its large heads of flowers are produced in the greatest abundance throughout the year; they much exceed in size that of any known species, frequently being formed of eighteen flowers, which are of all shades, from pale and rich yellow to a rich reddish salmon; in the sun the flowers sparkle with a brilliance resembling that of gold dust."

Low also discovered *R.brookeanum* var.*gracile*, which he treated as a separate species; it is distinguished from the typical var.*brookeanum* primarily on the basis of its narrow leaves. The original examples were found only in a small area at the "Sirul" mouth of the Sarawak River growing "luxuriantly" on sandstone rocks blanketed by moss and humus. The flowers were "a rich fiery red, with a pale violet coloured throat; the anthers deep brown." A highly variable species, indeed.

Except for its aptly named var.*extraneum* from Sumatra, *R.brookeanum* is confined to Borneo. In Sarawak and Brunei the species is found upwards from sea level, but seldom or never in the lowlands of Sabah where the rainfall may not be sufficiently reliable. At the upper extreme, forms of *R.brookeanum* occur on Mt. Kinabalu at elevations as high as 8,000'.

*R.brookeanum* first became a horticultural subject when Thomas Lobb succeeded in getting a yellow form of var.*gracile* to England, where it was displayed in 1855 and used in the making of such extant Veitch hybrids as 'Taylori', 'Ne Plus Ultra', 'Triumphans', and 'Souvenir de J.H.Mangles'. Although it was awarded a First Class Certificate in 1869, Henslow reported that by the time of his paper (1891) the form had been lost to cultivation.

Prior to World War II the species was reintroduced by R.E. Holttum, director of the botanic garden at Singapore, who received it from one O.F. Ricketts. After finding the plant "at no more than 1,000 feet altitude, on a tree by a river in Sarawak", Ricketts grew it for some time at Kuching, where it flowered 3-4 times a year. Holttum offers this assessment: "*Rhododendron brookeanum* is a first class flowering plant, and if it will bloom freely and regularly in the lowlands of Malaya, should be a great acquisition to local horticulture. It should be used in the raising of local hybrids." Regrettably this rhododendron, along with his others, seems not to have survived the Japanese occupation.

A decade after the war Holttum's successor, J.W. Purseglove, returned from a collecting trip in Sarawak with a superior form. In his words, "One of the most

spectacular plants collected was *Rhododendron* sp. (Purseglove 5440), a shrub 5 feet in height growing as an epiphyte 30 feet above ground level on a tree along the Tatau River. This was the only specimen seen. It had an inflorescence of eight very attractive flowers; nearly 4 inches in diameter and salmon pink in colour with a white star in the centre. A living plant was brought back to Singapore and has so far survived. It is certainly one of the most attractive rhododendrons so far discovered in the lowland tropics. Herbarium material has been sent to Dr. Sleumer of Leiden for determination."

In due course Purseglove 5440 turned out to be *R.brookeanum*, and like its predecessors apparently was allowed to die away. Today most authentic members of the species being grown have descended from material gathered on Mt. Kinabalu by E.F. Allen. He has named three red-flowered clones 'Mandarin', 'Titan', and 'Mesilau' - along with a yellow one, 'Raja', which has been identified as *var.gracile*. Seeds of these forms have been widely distributed, and both 'Mandarin' and 'Raja' have received First Class Certificates. Since all were collected at elevations of a thousand metres or more, they are, strictly speaking, well outside the scope of this article.

Also widely grown are plants labeled "*R.brookeanum var.gracile*" that bear only a tenuous resemblance to the species and a yet slighter one to the subspecies. Most knowledgeable persons regard these plants as hybrids with a possible or likely contribution from the genome of *R.brookeanum*. The matter is very confused; I can only offer these data and observations for what they may be worth:

- a) Plant material labeled "*R.longiflorum*" arrived on these shores from Kew in 1959 and was assigned the number P.I.257475.
- b) When it first bloomed at Strybing ("a beautiful apricot orange") the species identity was questioned, and by the time P.I. 257475 was officially distributed by the National Arboretum - in 1967 under their accession number NA 18203-
- c) the name had been changed to "*R.brookeanum var.gracile*" on the basis of a colour slide.

c) Currently no less than three distinct clones go under the label "*R.brookeanum* var.*gracile*, P.I. 257475", all of which have leaves too wide for that subspecies. In addition to apricot orange, I have seen forms with pink and with scarlet flowers.

d) "*R.longiflorum*" was also sent from Kew to Australia (in 1968), where "it" is also viewed as a hybrid distinct from either of the species named in these paragraphs.

e) 'Longiflorum' (to distinguish it from the true species) resembles 'Souvenir de J.H. Mangles', a Veitch hybrid, and 'Chlorinda', of unknown parentage. Also similar is an orange-red form of "*R.brookeanum* var.*gracile*" that may well have gotten to Australia via the U.S. Quite possibly some or all of these clones are the same.

I would be pleased to hear from anyone with definitive information regarding the clonal identities suggested above, especially from persons who have made direct comparisons between flowering plants with the different labels. Once such data are collated it should be possible to assign the most appropriate name to each distinct cultivar. Since the superior orange-red form of "*R.brookeanum* var.*gracile*" is being used for hybridizing, it is particularly to be desired that its true nature be discovered.

In April 1977 I visited Sarawak and collected live material of two rhododendrons growing at the very edge of the S. China Sea north of Bako, less than 2 deg. above the equator. One of them was *R.brookeanum*, a mature plant of which I found growing on a sandstone rock about 6m above the beach. Although the parent was not easily accessible, seedlings of various sizes grew directly below at near shoulder height; several of them are now thriving in S. Florida. The first two inflorescences appeared recently, in trusses of six and eight, each flower measuring 7.5cm across the limb. The lobes are of a salmon hue, while the throat is rose-coloured in the shape of a star with extended points. 'Bako' provides a convenient name for the grex.

Not far away, on a small rock protruding only slightly above the sea, grew a very different rhododendron, well exposed to sun and no doubt to salt spray at times. The plants carried a few small buds, but there was no bloom, nor has any yet appeared on the cultivated progeny. Thus it is not clear that this *R. sp.* 'China Sea' is either of the two species other than *R. brookeanum* reported to grow in this region at sea level: *R. longiflorum*, "on sandstone rocks immediately above high tide level at edge of mangrove" on the Bako Peninsula, and *R. jasminiflorum* var. *oblongifolium* from the coastal rock forest surrounding Mt. Santubong.

In addition to Borneo, *R. longiflorum* is widely distributed in lands to the west: Sumatra, Malay Peninsula, Banka, and Karimata Islands. Vertically, it extends to some 1,500m, growing in varied situations - on rocks, trees, or terrestrially in "heath forest".

As with the foregoing species, the history of *R. longiflorum* in cultivation is spotty. Originally it was introduced by Veitch from Sarawak as *R. lobbii*, to figure in the hybrid clones 'Ne Plus Ultra' and 'Triumphans', as well as a number of others now extinct before itself meeting the same fate, 'Longiflorum', a namesake from Kew, has already been discussed.

Holtum's pioneering work with lowland tropical rhododendrons at Singapore included *R. longiflorum*, and in fact he succeeded in rearing a few of its hybrid offspring to the flowering stage. Although there was a plant growing locally on one of the tall trees on Bukit Timah, Holtum evidently acquired his material indirectly from Kanching, near Kuala Lumpur at quite a low elevation.

With *R. longiflorum* as seed parent, Holtum applied pollen of two obtusum azaleas, *R. jasminiflorum*, and a hybrid of the latter species. The azalea crosses yielded a few weak seedlings, which soon died. On the other hand, healthy plants resulted from within vireya pollinations, three of which had flowered after 2 1/4 years. A photograph of the first to bloom, a small plant carrying a truss of 11 flowers each 4.3cm across, confirms the worth of

Holtum's efforts. He concludes that: "The flowers of these rhododendrons are unlike anything else one can think of. They have a delicacy and grace, and a series of most attractive shades of colour. If this beginning is as successful as it seems likely to be, we ought to try to raise further series of hybrids, employing *R.javanicum*, *R.brookeanum*, and other larger-flowered Malayan mountain species as pollen parents."

That promise is even greater now, in view of the introduction of superior new vireyas of every sort from New Guinea and elsewhere in the Malay Peninsula and Archipelago. After a lapse of several decades *R.longiflorum* has re-entered horticulture from collections at Gunung Jerai (Kedah Peak) in W. Malaysia, several thousand feet above sea level.

*R.jasminiflorum* was yet another of the "Veitch Seven" (actually six species, since *R.teysmannii* is now considered to be a form of *R.javanicum*); it and *R.multicolor* are the only two that survived what David Leach has called "the long eclipse" and into the present resurgence of interest in vireyas. It was used in breeding a number of the classical hybrids, most notably the first of them, 'Princess Royal', and others such as 'Princess Alexandra', 'Souvenir de J.H. Mangles', and 'Taylori'.

Normally *R.jasminiflorum* inhabits the mountains of Sumatra, Mindanao, Borneo, and the Malay Peninsula, from 3,100m down to 750m; but as mentioned above, *var.oblongifolium* descends to sea level around Mt. Santubong, where it is reported to have red flowers - though white or blush pink is the usual colour. This subspecies is not known to have been cultivated. *R.zoelleri* is the only vireya so far observed at sea level in New Guinea, which is surprising in view of the richness of that island's rhododendron flora - with more than fivefold the number of species indigenous to Borneo. On the occurrence of *R.zoelleri* at unusually low elevations, Sleumer comments that whereas the higher altitudinal limit for rhododendrons is reasonably constant, the lower limit is not so well defined. This, "Many rhododendrons appear lower in damp places (gorges) than on the somewhat drier ridges of the mountains.

One day our two carriers, who had climbed down to Ormu on the north coast, brought fresh blooms of *R.zoelleri* which they found as epiphytes on high trees close to the village near sea level. This sounded rather unbelievable to me then, particularly as the usual height for *R.zoelleri* is between 1,000m and 1,800m."

Later Sleumer himself visited Tanahmerah Bay, where he saw the species growing at an altitude of only a few metres above sea level, and goes on to remark that "Now I believe the native who brought back *R.zoelleri* from the coast at Ormu." No live material was collected, unfortunately, and the various forms that have come into cultivation in recent years all seem to have come from the more typical elevations.

We have seen that rhododendrons sometimes occur in the extreme lowlands of the two largest tropical islands, down to the edge of the sea. We may ask: What is there about the handful of species found under these conditions that sets them apart from the vast majority that are not? How do these few coasts and plains that support the needs of rhododendrons differ from the many that do not? Of the countless billions of seeds that must have wafted down to the lowlands over the millennia, why have so few established their kind in so few places?

At first glance resistance to heat might appear to be the prime attribute of these rhododendrons, and there can be no doubt that they manage quite well in the warmest tropics. A closer analysis, however, indicates that water economy is in fact more limiting, as Sleumer's observations imply.

Even *R.brookeanum*, for all its heat tolerance, is much more plentiful where the wetness is reliable and fairly constant, as on Mt. Kinabalu. On a lesser but more typical mountain in Sarawak, Syngé with the Oxford Expedition to Mt. Dulit, encountered moss forest at 3,600', noting the abrupt change in vegetation - including the appearance of *R.brookeanum* and its congeners in abundance.

Given the vulnerability to desiccation of small, slow growing vireya seedlings, it is understandable that they might gain a foothold only under the most favourable conditions and times in the lowlands. As it happens, the NW coastal plain where *R.brookeanum* occurs is by all accounts the rainiest in Borneo. Kuching, up the Sarawak River from Santubong, records almost 148" per annum, with 7.0" for the driest month; for Bintulu the comparable figures are 141" and 10.0". In contrast, farther north in Sabah there is less rain as well as a more pronounced dry season, as exemplified by Kota Kinabalu (Jesselton), with 109" and 2.1" respectively - and few rhododendrons except in the mountains. It should be interesting to see whether any of the genus might be found in such wet places as Padang, Sumatra (174" annually, 10 foot elevation) and perhaps the lowlands in the vicinity of Kikori, New Guinea (231" at 806 feet).

Reciprocally, vireyas that do become established in situations lacking the more or less steady wetness of the moss forest must surely possess an exceptional faculty to withstand episodes of dryness, especially when small. This hypothesis could be tested experimentally by comparing the endurance under artificial "drought" conditions of "China Sea" and "Bako" seedlings vis-a-vis those of species endemic to higher and wetter elevations.

It seems likely, in any case, that these two rhododendrons of the tropical seacoast will be of unique value in producing hybrids resistant to drought, heat, sun, and salt air.

Note: Certain other rhododendrons occur at exceptionally low altitudes, but have not yet been found on the seacoast or otherwise at sea level. These include *Rs. malayanum*, *nortoniae*, *chamaepitys*, *loranthiflorum*, *baenitzianum*, and *macgregoriae*, all of which have been seen below 300m.

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