

The Discovery of the Malaysian Rhododendrons

by David G. Leach

Royal Horticultural Society

Rhododendrons with Magnolias and Camellias 1977

We tend to take our planet for granted. Complacently, we assume that the unknown parts of it were explored long ago, that the adventure and excitement and romance of penetrating faraway lands vanished with the hobble skirt and turkey trot.

But one of the strangest stories in the annals of plant exploration was unfolded 16 years ago with the abrupt publication by Dr. Herman Sleumer, a Dutch botanist, of descriptions of 96 new species of rhododendrons.

When all the discoveries of the previous three decades were brought together in orderly array, taxonomists were disconcerted to learn that the size of the genus was increased by half in one stroke, to about 900 species. Hobbyists were startled to hear that the newcomers were ever-blooming and that they came in "high octane" scarlets and yellows as well as in psychedelic combinations of orange and pink. The flowers of some were mammoth, with trumpets an incredible eight inches across. Oddest of all, more were epiphytic, growing high on forest tree limbs with mosses and orchids, rather than rooting solidly in the ground.

With the great wonder at such marvels came much speculation about their origins. How was it possible in mid-century for any wilderness on earth to yield so many new rhododendrons never before seen by man?

The story goes back to 1823 when Dr. William Jack "of the late East India Company's service" discovered in Sumatra a rhododendron with small cerise-crimson flowers and bizarre appearance, later called *R. malayanum*. (At the time, the only known Asiatic rhododendron was the blood-red flowered tree

from India, *R. arboreum*, forerunner of multitudes of popular garden hybrids.) Jack's discovery was followed before 1845 by *R. jasminiflorum*, with exotic white flowers stained deep pink in the centre, sent from Malacca to James Veitch & Sons Nursery at Exeter by their collector, Thomas Lobb. (Soon thereafter came the even more flamboyant *R. javanicum* from Java, with electrifying orange flowers spotted red, and purple anthers.) *R. jasminiflorum* bloomed for the first time in 1849 and was proudly exhibited by Lobb's employer at the Royal Horticultural Society's first show of the year 1850. It was so unlike any rhododendron known, a reporter implied it was not a rhododendron at all.

It was the next year, 1851, when Hugh Low, a government official at Labuan Island, made a remarkable climb to 13,500 feet on a mountain in nearby Borneo in the course of which he discovered a rhododendron which he called *R. brookeanum*. It was named for his dear friend, the celebrated Rajah of Sarawak, Sir James Brooke. The flowers, beautiful orange-pink with an ivory centre, were a sensational find.

Low's journey to climb Mount Kina Balu was a dramatic one. As he rounded a bend in his little boat on the Tauran River, he was suddenly confronted with a fleet of war canoes in full regalia, led by a notorious pirate with the comic-opera title, Sultan of Layer-Layer, who later in the year was to behead the British adventurer, Robert Burns. But the encounter was one of welcome; Low's reputation for love of the country and affection for its natives had preceded him.

After the final agonizing climb to the summit of the mountain, numbed with cold in the rarefied air, he made a gesture of the sort which built the Empire. Encountering a cliff near the top, with an awesome drop to the valley below, he lay down to peer over the edge and there toasted Her Majesty with a bottle of Madeira. He placed the empty bottle in a gulley, where it was found seven years later by a friend on a second ascent.

Low's coppery yellow *Rhododendron brookeanum* bloomed in England in 1855, a novelty of such interest that "attracted great attention" when it was exhibited at a Royal Horticultural Society show. "*R. lobbii*" (now *R. longiflorum*), bright glossy crimson, came in from Borneo in 1870. Fifteen years later "*R. teysmannii*" (now *R. javanicum* var. *teysmannii*), from Sumatra and Penang, was given an award by the Society for its deep golden-yellow flowers when it was first shown. *R. multicolor* aptly described the variety of hues to be found in the flowers of the species which arrived shortly afterwards in England. The Society awarded it a First Class Certificate in 1883.

A frenzy of hybridizing was in progress with the tropical rhododendrons of the Malay Archipelago in the greenhouses of the Veitch firm which had sponsored the equatorial explorations. From the seven species sent back to England by their collectors in the preceding 30 years several hundred new hybrids were produced for the glasshouses of the gentry. The first and most famous was 'Princess Royal', a glowing pink which astounded its breeder because it came from a white crossed with a yellow species. He was even more bemused when the white *R. jasminiflorum*, crossed with the strong pink 'Princess Royal', produced the snowy white 'Princess Alexandra'.

Privileged amateurs were also attempting crosses among the newcomers. J. H. Mangles, well known as a plantsman and for the prolixity of his contributions to gardening publications, in describing an exasperating failure, repeated the admonition of a friend : there are "certain atmospheric moments for the union of vegetable species", he wrote. "Never try such things when an east wind is blowing." The advice surely ranks as history's most singular explanation for the failure of crosses to produce seeds.

By 1893 Veitch's catalogue listed scores of hybrid cultivars : four years later the year-round flowering of the Veitch hybrids was demonstrated by exhibiting a tray of cut blooms at every fortnightly meeting of the Royal Horticultural Society throughout 1897.

But it all came to a sudden end. For at the height of the popularity of the Malaysians, there sprang into the horticultural world a second burst of hybridizing that rivalled and quickly overwhelmed the Malaysian fancy. Hundreds of new species of rhododendrons were suddenly pouring in from that vast continent to the north, mainland Asia.

Reports of rhododendrons found by French Catholic missionaries on the mountain slopes of western China and the Himalaya were circulating in Britain, so Veitch sent out E. H. "Chinese" Wilson to investigate further. After all, these mainland rhododendrons could be expected to survive outdoors; the Malaysians were then believed to require hot-house conditions. Within two years Wilson sent back to his delighted employers 40 new, hardy, mainland species.

In one decade of the 20th century's early years an astounding 312 novel rhododendrons suitable for garden use were discovered in the mountains of south-eastern Asia. The plant riches of the Orient came in to the sponsors of the expeditions in such floods that greenhouse benches filled with tiny rhododendrons grown from the explorers' seeds were shovelled out to make room for later arrivals thought to be even more promising.

But, the near-total eclipse of the tropical Malaysians came with the economic disruptions of the First World War. The vaulted conservatories, vast ranges of greenhouses, the labour and heat used for their cultivation became too luxurious for even the very rich.

The interval between the two world wars produced a strange chapter in that sometime science, botany. For the best part of a human generation, a third of the planet's rhododendrons were ignored as if they did not exist. The taxonomists hunched over their herbarium sheets of temperate mainland rhododendrons at Edinburgh and Havard, in Paris and Berlin, New York and

Stockholm. In all the world only Dr. Herman Sleumer at the Rijksherbarium in Leiden continued a systematic study of the tropical Malaysians.

Between the wars the sporadic interest in plant exploration in the Malay Archipelago moved eastward to centre on New Guinea, which held in its hidden interior a forbidden Tibet of its own : the immense verdant valleys, home to half a million people not then known to exist. The island, twice the size of Japan, stretched eastward toward Borneo the distance from Scotland to Istanbul, a giant bloated tyrannosaurus on the map, with its head grazing the equator. At the time, it was popularly supposed that, with a patch or two of South American jungle, the earth was fully known and neatly mapped.

But it was not until 1933 that two brothers prospecting for gold penetrated the interior of Papua New Guinea and discovered that it was not a series of barren sawtooth mountains, but one of the most beautiful and fertile regions on earth. By the end of the 1930's the Archbold expeditions for the United States and other, more individual efforts had begun to open up the country. Richard Archbold was a pre-war pioneer in air supported surveys. Amateur mammalogist and heir to an American oil fortune, he ultimately mounted seven expeditions to New Guinea both before and after the war. In 1936 the capsizing of a single engine Fairchild Amphibian marooned his advance party for more than a month. The party had been heading for the Star Mountains, which, as a result of the mishap, were not explored botanically until nearly 40 years later in 1973.

The hardships for the explorers were savage. One of the best known, a man named Carr, died of blackwater fever in 1936; his collections have still not been completely studied. Chilling rain, mosquitoes, poisonous snakes, leeches, tropical ulcers and unbearable itchiness from various nettled plants plagued their struggle through the forests. Dengue, graphically known as breakbone fever, scrub typhus and malaria were constant threats. At the higher elevations the lichens and mosses on the ground often formed a

continuous carpet, concealing pits and crevices which became dangerous traps.

There were other perils. Natives closed the mountain trails. The dreaded Kukukuku, great warriors and cannibals, lived with their own dead, whom they dried and kept. Down the long course of the Sepik River the people measured their prowess in human heads. In the highlands, a bereaved native who had lost a devoted spouse chopped off the end of a finger. And to add to the difficulties, about 700 different languages were spoken on New Guinea. The outbreak of the Second World War not only brought an abrupt halt to the exploration of the New Guinea flora, it also marked the end of most of the Veitchian hybrids in the United Kingdom. Both heat and human energy went to much higher priorities than the cultivation of exotic and tender rhododendrons under glass. The aging stars of the fashionable turn-of -the-century flower shows, no longer popular, died out almost completely.

In the two decades that followed the Second World War nearly 300 airfields were built in New Guinea. The tremendous advantage of air travel in botanical exploration of the incredibly difficult New Guinea terrain is illustrated by the flight from Keglsugl airstrip at 9,250 feet on Mount Wilhelm, over the Bismarck Ranges to the coast. (The runway slopes so that aircraft can land uphill and take off downhill in the thin air.) One of the pioneering botanists in New Guinea, R. Schlechter, with frightful difficulties, fought his way for weeks from the coast along the same Bismarck ridges in 1902. But the flight takes only 35 minutes to the sea. As recently as 1948, Dutch botanist Kostermans took three and a half days from the coast to reach a lake at 6,000 feet in the Arfak Range of Irian Jaya (western New Guinea). In 1962 it was 12 minutes by helicopter to this lake region so rich in rhododendrons. Thus began a new era for the Malaysian rhododendron.

So, when 16 years ago Dr. Sleumer startled the horticultural and botanical worlds with his descriptions of nearly a hundred new rhododendron species, and followed it with a sequel in 1966, he was chronicling the discoveries of

numerous explorers in the preceding 30 years, in addition to his own. Many were known only as dried specimens sent back to botanical gardens and arboreta just before and after World War II. Few had been introduced to cultivation. Then the first species from the upper mountains of New Guinea began to bloom in cultivation. *R. beyerinckianum* produced its dark, blood-red flowers in 1956 at the Royal Botanic Garden in Edinburgh, and the confirmation was at hand for an article about the singular New Guinea rhododendrons published by the Royal Horticultural Society in 1951. The author, C. R. Stonor, estimated that there were over a hundred species on the island. Twenty years later 163 species were known to occur there. So scantily have the mountains been explored that the total must be far higher.

The Stonor article, and the Malaysian rhododendron which flowered at Edinburgh, aroused wide interest. Few horticulturalists realised that the newcomer was but an addition to a distinctive group, now called the Vireyas, which had been known for 130 years and had produced scores of hybrids in the great glass orangeries of the rich at the turn of the century. The long obscurity was at an end.

The Vireyas are marked botanically by seeds which have wings or tails at both ends, but ornamentally they are so different from our garden shrubs as to be scarcely recognizable as rhododendrons. They are vastly varied in leaf, stature, manner of growth and in flower. There are no blue admixtures to flaw the purity of the plangent oranges and yellows. The whites are immaculate. The pinks deepen to rose, then red, scarlet and deep crimson. Some have long, thin tubes dilating abruptly to corollas with reflexed petals. The leaves of *R. stenophyllum* resemble pine needles. Those of *R. leucogigas* are huge blades a foot long and five inches across; the sumptuous flowers are white, suffused pink, eight inches long and nearly as wide. They are the largest so far known of any rhododendron. *R. buxifolium*, found as high as 13,500 feet, has, as its name suggests, tiny, boxwood-like leaves about a half inch long and a third of an inch wide, with nodding little pink or dark red bells about an inch long. *R. ericoides*, from Borneo, looks for all the world like an overgrown

heath with densely packed miniature bristles in spirals at the ends of the branches. Some of the Malaysians are long and lanky, vine-like stragglers with ropy roots; others are small trees; still others are prostrate little cushions anchored to mountain tops by thin hairs of roots. The variety in every conceivable respect is bewildering.

Even the methods of fertilization are exotic and diverse. Above 10,000 feet, where red flowered species predominate, and the mouths of the down-slanted flowers are facing toward convenient perches, nectar eating birds are the pollinators. At lower elevations, drier and more suitable for the flight of lepidoters, hawk-moths are attracted to the scented flowers with long, narrow, nearly horizontal corolla tubes. Dr. Peter Stevens of the Arnold Arboretum, who has both studied and explored for the *Vireya* rhododendrons of New Guinea intensively, suggests that the brightly coloured red-, yellow- and orange-flowered rhododendrons attractive to butterflies, with nearly erect, spreading corolla lobes on which they can alight, are pollinated by them. Some species seem constructed to self-pollinate. I have grown one, *R. dielsianum*, in which the stamens form an arc directly above the style, so that the pollen is spilled from the anther pores directly upon the receptive stigma below. Other species are described as having a style which elongates as the anthers mature so that the stigma is pushed through a curtain of dripping pollen.

The New Guinea explorers struggled through five more or less distinct zones in their search for new species. Up to 3,000 feet the lowland wilderness starts with mangrove swamp, rain forest, savannas and grassland. Rhododendrons occur a sea-level but they are rare. The florid *R. zoelleri*, with large orange and red flowers resembling Dutch amaryllis, grows as a 25-foot tree near the seaside. The always-terrestrial *R. christiana* with small yellow to dark red flowers on a 15-foot shrub, starts to appear in the rain forest zone at 1,500 feet.

From 3,000 to 5,000 feet there are many rhododendrons and other heaths in

grassland cleared by native burning, especially on slopes and cliffs, and in the mountain forests dominated by oaks (*Lithocarpus*), pines (*Araucaria*) and chinquapins (*Castanopsis*). At 5,000 feet the mountains are almost constantly shrouded in mist. This is the level of the cloud base, where begins the ceaseless drip and pervasive wetness leading to the mossy forest. The drenching produces there a weird world of vegetation gone wild. Nearly every surface is felted with foliation. Underfoot a thick mat of mosses and liverworts forms a luxurious green carpet. The rocks are cloaked in green herbage. Bizarre, foot-long tendrils of moss crowd out from the tree trunks. Upward, the limbs are hanging gardens of flowering epiphytes: myriad orchids, together with rhododendrons, bilberry (*Vaccinium*) and other Ericaceae. Filmy translucent ferns form feather necklaces on the branches, and lichens dangle languidly from the twigs. The teeming, jungled growth absorbs all noise. The mist drifts by silently in the eerie stillness of a sound-proof room. Here the medley of rhododendrons have migrated upward from the ground toward the light, to crown the treetops with jewels of ruby-red, topaz-yellow and carnelian-orange. Their thickened roots on the branches below support their precarious perches in the aerial canopy.

At about 6,500 feet the top of the cloud layer thins out and the forest becomes more open, with enormous beech-like *Nothofagus* trees and stands of *Araucarias* much like giant editions of the Norfolk Island pines so familiar as house plants. Clearings abound with rhododendrons now able to survive as terrestrial dwellers, and the first of the strange *Solenovireya* rhododendrons are found. These are the least rhododendron-like of the genus, with spidery clusters of white flowers having long, thin tubes terminating in small starbursts of mini-petals. The appearance is that of a honeysuckle, or a nicotiana; the fragrance of these rhododendrons toward evening is equally captivating. They are rarely, if ever, epiphytic.

Another thousand feet upward on the mountains and the tree line is reached; in some parts of New Guinea this is also the elevation where the temperature drops below freezing overnight. Here begin the elfin woods, with grotesquely

dwarfed trees, their roots on top of the ground, twisting like snakes through the matted moss underfoot. The gnarled and stunted growths are mantled with lichens. Where climbing bamboo grows it is so tough and tenacious that it is unpractical to attempt cutting a path through it. Such barriers have halted the exploration of some mountain tops on foot, as have the terrified native carriers who believe that the nightmare fantasia of the elfin wood is the lair of demons, goblins and monstrous evil spirits.

But to the botanical explorer the elfin wood is a magnet for the profusion of plants in it. Here rhododendrons can compete with the dwarfed conifers and scrubby tropical beeches and myrtles. The species from lower elevations join those which are found here for the first time in the mountain ascent, occasionally to form thickets. The humid chill and more open slopes provide ideal conditions for rhododendrons and other ericaceous plants.

The fifth and final zone, above 9,000 feet, is open alpine meadow on the slopes and ridge tops to the mountain summits. Only pygmy rhododendrons are found on grassy glades in the rarefied atmosphere. These low cushions of densely matted leaves, such as *R. saxifragoides*, send up long stems above the foliage, each with a single inch-long, downcurved blood red flower. At a little more than 13,000 feet, these are the ultimate alpine rhododendrons to be found. They are also the most difficult to grow in cultivation. A rule of thumb among connoisseurs is that the higher the elevation of origin and the smaller the leaves the more cranky is the species in the greenhouse.

The zones of vegetation occur in the same sequence throughout New Guinea but with wide differences in the elevations. On some parts of the island the mossy forest may begin at 3,000 feet; elsewhere it may first appear at 8,000 feet.

About 60 different species and hybrids of the Malaysian rhododendrons have grown well outdoors in the United States, primarily in the San Francisco Bay area, in central Florida and in Hawaii. Although so many come from 10,000 to

12,000 feet where there are occasional frosts, the cold is of short duration. At the Strybing Arboretum in San Francisco, the collection survived 28 degrees F, with only minor damage, but it was later all but decimated by 23 degrees F, except for the high altitude sorts. The heaviest blooming there is in September and October, continuing on to March.

For most gardeners, the splendours of the Vireya rhododendrons must be enjoyed in the greenhouse. Whether outdoors or under glass, their growing medium must recognize the epiphytic tendency. There are almost as many methods as there are cultivators. Australians like to use tree fern logs, slitted to receive young plants with bare roots. In England, the Malaysians are often grown on hanging platforms with a bit of moss, exactly as are orchids. A retired explorer of Borneo uses a third each of oakleaf mould, peat-moss and chopped bracken fern. The Germplasm Resources Laboratory of the Agricultural Research Center in Beltsville, Maryland, prefers pure sphagnum moss. Hobbyists in Oregon like coarse fir bark. I use a modification of Cornell University's epiphytic mix: a third each of coarse vermiculite, coarse peat and fine grind fir bark, with five ounces of dolomitic limestone, three grams of fritted trace elements and three-quarters of a gram of iron sulphate to the bushel. So many different mixtures succeed that it would probably be simpler and just as feasible to buy one of the bark and perlite mixtures pre-packaged for orchids. The principle to be observed is that the growing medium must be loose, well aerated and with very quick drainage. The plants flower best in containers which restrict their roots; they should not be overpotted.

In nature the Malaysian rhododendrons grow on soils of extraordinarily low fertility and high acidity. The epiphytes receive traces of nitrogen dissolved in rain during lightning storms. Although they do respond to fertilizing, in cultivation their tot should be doled out with a delicate hand.

A fallacy persists from the days of the Veitchian hybrids that these rhododendrons require hothouse treatment. They do not. A minimum night temperature of 45 degrees F suits them very well. In summer, a vacation

outdoors with the pots plunged in a shady bed invigorates them as much as a holiday does for humans.

The Vireya rhododendrons have a great deal to recommend them for indoor cultivation. Many of them are so fragrant that they scent an entire hobby greenhouse. The flowers are renowned for their durability. It is common for them to remain in good condition for a month. Expert growers are careful not to self-pollinate the plants in bloom by jostling them, because the corollas then drop off much more quickly. They often cut off the stigmas of those that spontaneously self-pollinate because of the arrangement of the flower parts. By pinching and cutting back, even the strongest growing of the Vireyas can be kept to about 30 inches. The largest in my greenhouse are in six-inch pots. Under glass in the United States the Malaysians flower most profusely as short-day plants, from late fall to early spring, when their colour is most appreciated. They have no definite resting period; instead, they grow, bloom and grow once more to bloom again, more or less at random.

The manipulation of the blooming period makes a fascinating project for the amateur. In nature near the equator the days and nights are of about equal length. The difference between day and night temperature varies hardly at all all the year round. The only fluctuation throughout the seasons which appears to affect flowering is the amount of moisture and sunlight they receive. Most growers recommend keeping these tropical rhododendrons on the dry side, which of course promotes aeration of the roots.

Vireya rhododendrons root easily from cuttings. The simplest method for hobbyists is to cut off a three-inch length of firm green terminal growth, nip out the terminal bud and make a one-inch slice wound on each side of the bottom of the stem. Dip the wounded stem in hormone powder, wrap it in a handful of damp sphagnum moss from which all free water has been squeezed, and hold it in place with a rubber band. Place the whole in a plastic bag, securing it with another rubber band. After two months in a warm but not sunny spot the cutting will be luxuriantly rooted. Thereafter the terminal buds should be

pinched after each flush of growth to insure the development of a many branched, well formed specimen.

Finally, from these multitudes of exotic and unfamiliar rhododendrons which should be chosen? My own selection for ease of cultivation and freedom of flowering, for the beginner: macgregoriae (light orange, salmon pink or pale yellow); lochae (rich red); christiana (brilliant orange); laetum (brassy yellow, big flowers); aurigeranum (orange-yellow, big flowers); 'Pink Delight' (pink). A selection for the most spectacular flowers: zoelleri (yellow, orange, salmon or red); leucogigas (white); hellwigii (blood red); lowii (yellow, orange, salmon or cerise); rhodoleucum (tubes deep pink, corollas white); brookeanum (orange-pink, cream centre); orbiculatum (white or pale pink); laetum (brassy yellow); aurigeranum (orange-yellow); 'George Budgen' (orange-yellow).

The newly discovered species of rhododendrons are in great demand and difficult to obtain. The American Rhododendron Society does operate a referral service at the following address: Mr. Theodore Van Veen, Secretary-Treasurer, American Rhododendron Society, 4201 Southeast Franklin St., Portland, Oregon 97206.