THE RHODODENDRON COLLECTORS: FRANK KINGDON-WARD

Julian Taylor-Whall

The Rhododendron Collectors:

Forrest - F; Kingdon-Ward - KW; Wilson - W; Rock - R; Ludlow and Sherriff - L&S; Cox - C; and Clark - AC: initials and names most rhododendron enthusiasts will be familiar with from avidly seeking out the labels dangling from the lower branches of the plants those collectors introduced, mature specimens of which can be found populating all the principal UK gardens that specialise in the genus and are open to the general public throughout the flowering season.

Yet the exquisite treasures they discovered have never before been gathered together and illustrated within the pages of a single volume, each opus highlighting the work of an individual plant hunter.

So a host of photographs portraying those plants in UK cultivation - images captured over the course of the last three decades on a myriad of visits to the leading horticultural establishments of England, Scotland and Wales - have been gathered together across the heptad, with each volume augmented with pertinent texts and articles, most written at the time the expeditions took place, plus full field number listings of all the species and natural hybrids that were so painstakingly amassed on those trips across the rhododendron-rich regions of Southeast Asia.

THE RHODODENDRON COLLECTORS

Julian Taylor-Whall

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Julian Taylor-Whall has asserted the moral right
to be identified as the author of this work.

- *Front Cover* -
KW 5830 - *R. cerasinum* 'Coals of Fire'

- *Title Page* -
KW 6833 - *R. hylaeum* var. *hylaeum*

- *Contents* -
Frank Kingdon-Ward.
The photograph was taken on New Year's Day, 1920.

- *Historical Texts* -
KW 8163 - *R. arizelum* ssp. *arizelum*

- *The Kingdon-Ward Plant Hunting Expeditions* -
KW 4170 - *R. wardii* var. *wardii*

Contents:

Historical Texts: 9

Frank Kingdon-Ward, 1885-1958. 10

Address to the Rhododendron Society given on May 6th, 1925. 16

Address to the Rhododendron Society given on May 3rd, 1927. 21

Rhododendrons in Burma, Assam and Tibet. 24
by Frank Kingdon-Ward

Rhododendrons in the wild. 30
by Frank Kingdon-Ward

K-W – the gardener's plant hunter. 34
by Charles Lyte.

The Kingdon-Ward Plant Hunting Expeditions: 39

Tibet & N Yunnan, 1913. 40
NE Upper Burma, 1919. 42
Sichuan & NE Yunnan, 1921. 44
NE Burma, Sichuan, Tibet & Yunnan, 1922. 66
Bhutan & Tibet, 1924/1925. 74
Burma & Assam, 1926. 162
Mishmi Hills & Assam, 1927/1928. 206
Upper Burma & Tibet, 1931. 256
Upper Burma & Assam, 1933. 268
Assam & Tibet, 1935. 284
NE Upper Burma & Tibet, 1937. 285
N Burma, 1938/1939. 294
Meghalaya, 1946. 295
E Manipur, 1948. 295
Assam, 1949. 295
Arunachal Pradesh, Assam & Tibet, 1950. 302
Burma, 1953. 306
Burma, 1956. 306

Photographic Acknowledgements 352

Plant Portraits Index 354

About the Author 357



Historical Texts:

Frank Kingdon-Ward, 1885-1958

This obituary was originally published in the *Journal of the Royal Horticultural Society,* Volume LXXXIV, Part Five, in May 1959. No author details are given.

Frank Kingdon-Ward has very rightly been described as the doyen of plant collectors. He devoted his whole life to plant collecting and to travel in the Sino-Himalayan regions. For nearly fifty years he was in the field with only short breaks for refitting and reorganising between expeditions. Probably no other plant collector has ever given himself up to his chosen pursuit for a longer time or so completely. He was also unusually successful, which indeed he well deserved to be, since he was most careful and painstaking as well as persistent in reaching the areas he wanted. There can hardly be a garden of distinction in this country that does not have some Kingdon-Ward plants. Rhododendrons, primulas, meconopsis, lilies and gentians were perhaps the genera in which he was most interested and these formed a large part of the flora of the regions in which he travelled, but he also made valuable introductions among many other trees and shrubs such as magnolia, viburnum, cotoneaster and berberis.

Even in his earlier days the planning of his expeditions was beset with political difficulties, for the region has long been unsettled, but these were not as great then as they are today. It is indeed sad that practically all this area, particularly Tibet and Western China, is now closed to European collectors.

From his earliest days Ward nearly always travelled alone, apart from native carriers. He did not, however, follow the system of some other plant collectors, such as George Forrest, of increasing the area covered by employing native collectors to bring in specimens and seeds. He liked to see each plant himself, in many cases to mark it individually and then to return in the autumn to collect the seed. In consequence his field notes were unusually full. After each of his main expeditions between the Wars they were published in little booklets by the sponsors of the Expedition and are still well worth study. In some cases important introductions were made from a single plant in seed, such as *Rhododendron imperator* and *R. pemakoense* and perhaps he did not see his plant in flower until he visited the gardens of the sponsor of his expedition, or one of the great Botanic Gardens, some years later. However, there was probably among his seeds, a very small proportion of plants without potential horticultural value.

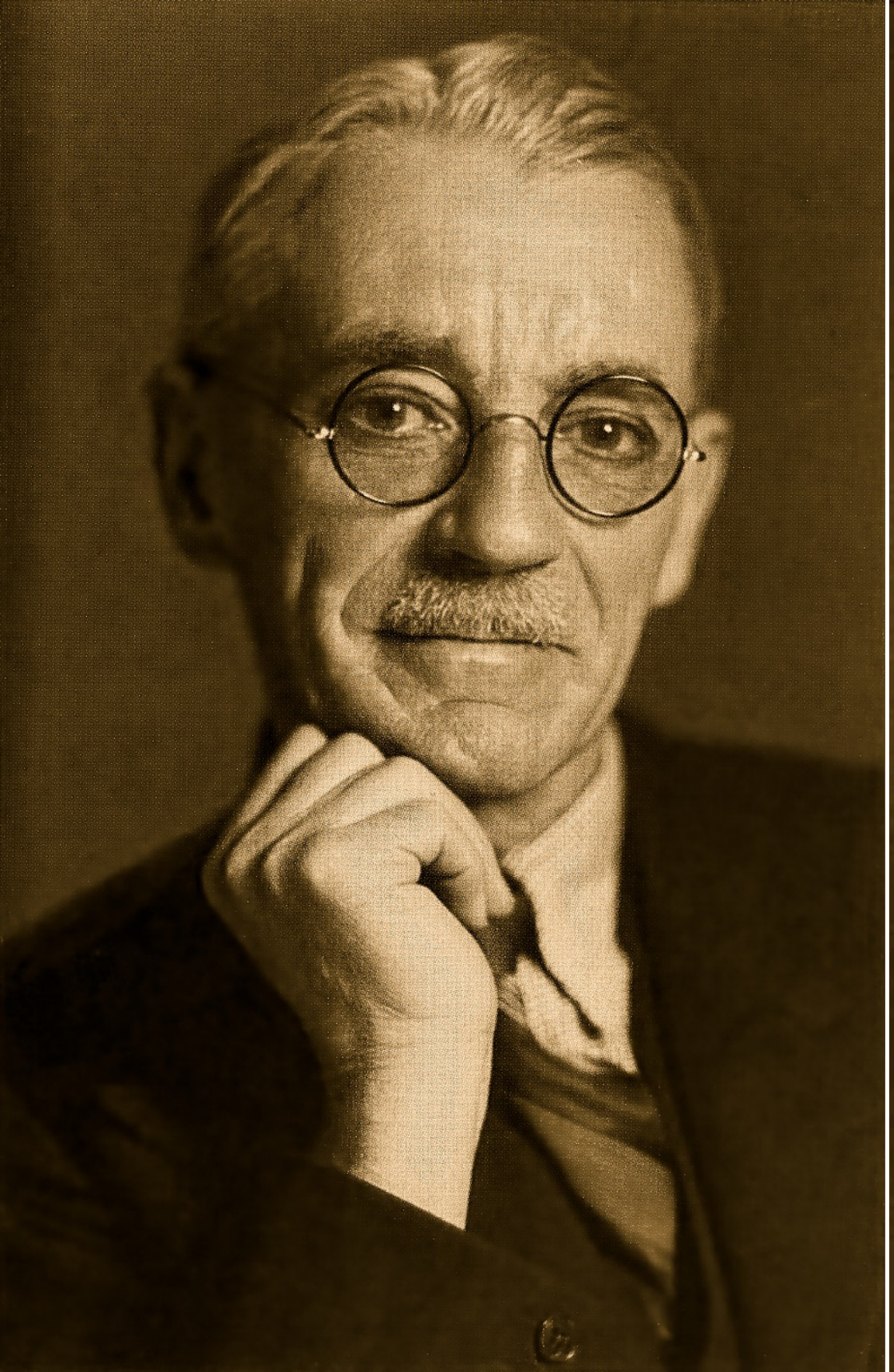
He had great courage and persistence. Even on his seventy-first birthday he celebrated the event by climbing to 10,000 feet. A few years earlier, one day he was delirious with a severe throat infection but thirty-six hours later he was climbing up a track so steep and difficult that most of the way handholds were as necessary as footholds. All his life he had an aversion to the frail-looking and apparently precarious bridges that are frequently found in the Himalayan valleys, but he always conquered this when in quest of a plant. The long retreat down the shattered Lohit valley in 1950 after the devastating experience of the earthquake, which he described so vividly in *Nature*, was a very special feat of courage on his part since he and his wife had to meet and pass often several times daily and for weeks on end the kind of "airy" passages and positions which he so much disliked.

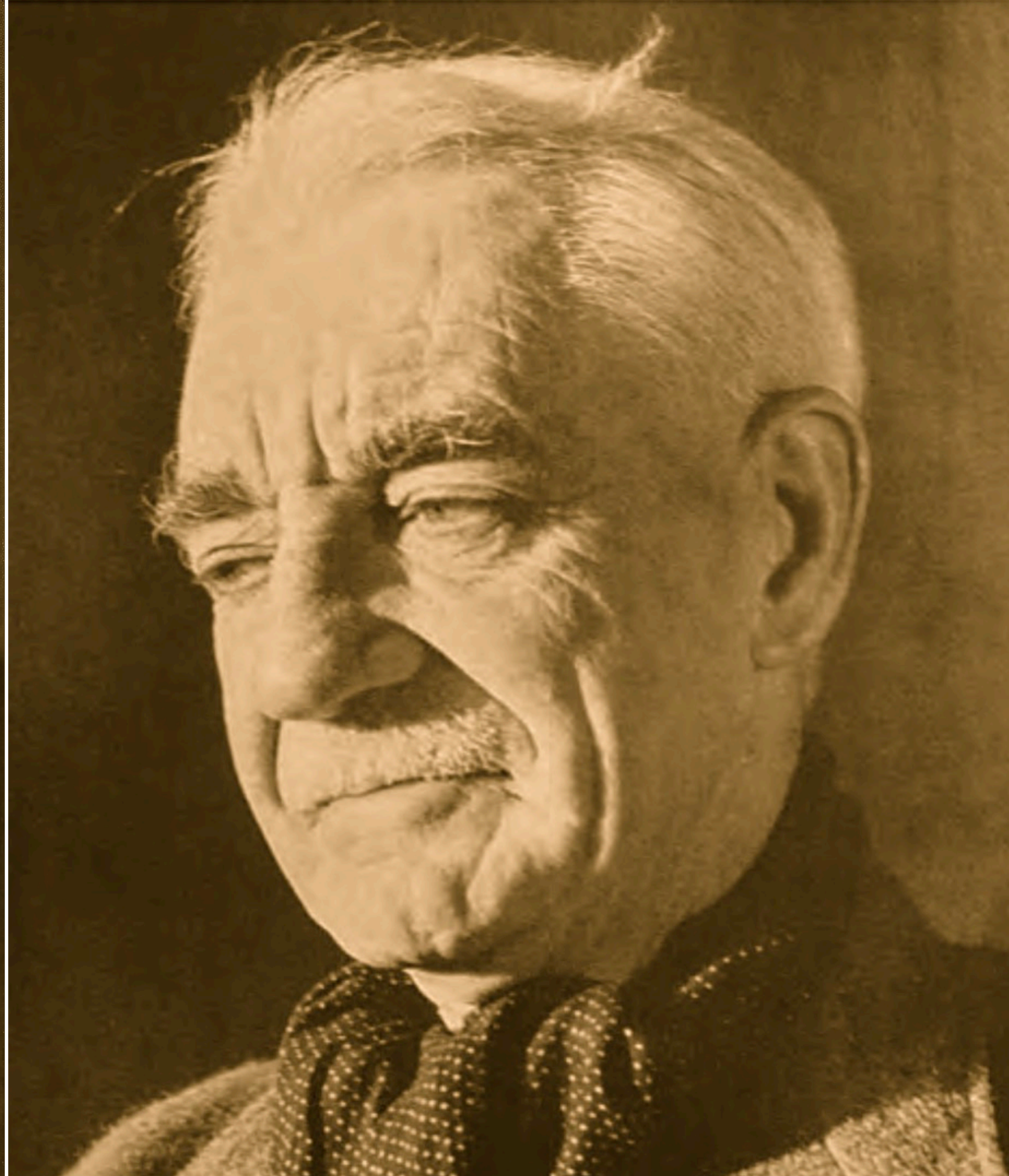
Kingdon-Ward was born in 1885, the son of Harry Marshall Ward, F.R.S., Professor of Botany at Cambridge. Thus an interest in botany was an early part of the life around him and naturally stimulated him. Prior to moving to Cambridge his father had been Professor of Botany at the Royal Indian Engineering College at Cooper's Hill and his young son would be likely to have come into touch with forest officers and botanists returning from India and Burma and probably heard tales of the great forests, rivers and mountains of the Himalaya.



A young explorer on horseback.

- *opposite* -
Formal portraits from later on in his life.





In 1904 he went up to Cambridge with an entrance scholarship in Natural Sciences and took Honours in his tripos in 1906. In 1907 he was offered a job as schoolmaster in Shanghai and accepted it, thus starting his life in Asia. His first expedition was not, however, till 1909-10, when he joined the late Malcolm Anderson in a journey to Western China. His main career as a plant collector, however, began in 1911, when he was engaged by Mr. A. K. BULLEY, who owned Bees Ltd., the nursery firm of Liverpool, to make an expedition for plants to North-Western Yunnan. He records in the first paragraph of *The Land of the Blue Poppy,* the first and one of the best of his travel books, how he returned to Shanghai in 1910 expecting to settle down but in vain, "travel had bitten too deeply into my soul and I soon began to feel restless again, so that when after four months of civilised life something better turned up, I accepted with alacrity". It was Bulley who had also engaged George Forrest for his first expedition seven years before. Bulley was, however, chiefly interested in alpine and herbaceous plants and it was only on later expeditions that Ward was able to develop his intense interest in the genus *Rhododendron*. One of the finest species, *R. wardii,* was first collected by him on his 1913 expedition to Northern Yunnan and the Tibetan frontier provinces and subsequently named after him. With its pale lemon-yellow saucer-shaped flowers and orange flushed buds, it is one of the most beautiful members of the genus and is hardy throughout this country, while as a parent it has given good character to very many distinguished hybrids. His other great rhododendron introduction, *R. macabeanum,* was not collected until a visit to Manipur in 1927. This promises to be the finest of all the large-leaved rhododendrons for the majority of gardens both in respect of hardiness as well as in flower, foliage and young growth, which is the smoothest suede grey. He also introduced the best flowering form of *R. forrestii* var. *forrestii* Repens Group.

Ward was fortunate in that he started his collecting career during one of the great periods of English gardening, when the more formal gardening was giving place to a much greater interest in the individual plant and when the garden was being spread into the wilder woodland. The plants from Sino-Himalaya were excellent for this and perhaps stimulated a more natural form of planting. In return, the greater knowledge of these areas stimulated a greater wish for more plants and there were fortunately at this time a number of keen and very knowledgeable gardeners with the resources to sponsor plant collecting expeditions, among them the late Lord Aberconway, Lionel de Rothschild of Exbury, J. B. Stevenson of Tower Court, Sir Frederick Stern of Highdown, Col. Stephenson Clarke of Borde Hill, Col. Leonard Messel of Nymans and J. C. Williams of Caerhays. The gardens which they made have now come to a period of fruition and magnificence, of which we may never see the like again.

Yunnan and the Western Chinese provinces were, however, being covered thoroughly by other collectors, such as George Forrest and Dr. J. F. Rock. In consequence, Ward turned more westwards to South-Eastern Tibet, the frontier regions between North Burma, China and Assam and to North Burma and Assam. Probably he had a greater knowledge, both botanical and geographical, of these mountains than anyone else living. These were thinly populated or, in some cases, entirely unpopulated regions. Since a list of his expeditions is given after this notice it is unnecessary to recapitulate them all here. In 1913 and in 1914 he was back again on the China-Tibetan-Northern Burma border and again in 1919, after the War. This is an area of tremendously high rainfall, thick forest and alpine regions, where dwarf rhododendrons take the place of heathers in thick matted scrub. Curiously it is also a region of few animals and birds and Ward often commented on the stillness.

Many of the plants have proved difficult of cultivation in this country, particularly in the south, lacking the long winter rest under snow and the very high humidity of the monsoon periods. It is far wetter in these mountains than in Yunnan and Szechwan, and even than in most of Tibet.

Possibly the 1924 expedition was Ward's greatest, when he started from Sikkim and explored along the southern boundary of Tibet, then along the course of the Tsangpo, through the great gorges and, finally, down to Rangiya, near the frontier of Bhutan and India. On this expedition he was able to confirm for the first time that the Tsangpo, which flows from west to east in Tibet, crosses the eastern Himalayas and does so without any very outstanding fall of water. Although not very high in altitude, plants from this gorge have done well in English gardens and proved hardy.

Of his plants, the number is so great that it is impossible to discuss them in detail, or even a good proportion of them. Perhaps the achievement most commonly associated with his name is the introduction of Colonel Bailey's Blue Poppy *Meconopsis betonicifolia,* a plant of singular beauty which has become so well established as to find its way into most seed catalogues each year and in countries so widely apart as New Zealand, Canada and those of Scandinavia. This he collected several times, but the first introduction came from near Tumbatse in South-Eastern Tibet, under number K.W. 5784, where he remarks "among a paradise of primulas the flowers flutter out from amongst the sea-green leaves like blue and gold butterflies". He also first introduced *M. violacea* and several times collected the apparently equally beautiful *M. speciosa,* but unfortunately we have not been able to keep it in cultivation.

Among primulas, of which he collected a very large number, perhaps the best known is *P. florindae,* named after his first wife. It is not only the largest but also one of the most adaptable of the bog-loving candelabra section. He also introduced *P. bulleyana, P. chungensis, P. concholoba* and *P. normaniana*.

Among rhododendrons we have already mentioned *R. wardii* and *R. macabeanum,* but he introduced also *R. elliottii, R. imperator, R. patulum, R. cephalanthum* var. *cephalanthum* Crebreflorum Group and *R. leucaspis* and many good forms of other species already known. His lilies are particularly notable and interesting and include *L. wardii,* a very fine martagon-type pinkish-purple lily with a stoloniferous stem at the base, *L. mackliniae,* named after his second wife, Jean Macklin, who accompanied him on his later expeditions, and *L. arboricola,* the interesting epiphytic lily with Nile-green flowers which flowered once in this country, but unfortunately appears to have died out again. He also saw, and in most cases collected, further stock of *L. nepalense, L. primulinum, L. bakerianum, L. nanum, L. souliei,* as well as *Nomocharis saluenensis,* a white *N. pardanthina,* which, alas, seems lost today, and *N. farreri.* Among his gentians, perhaps *G. gilvostriata* was the most exciting and beautiful, but unfortunately it has not proved an easy plant in this country and is now very rare.

Among berried shrubs there are two particularly fine introductions in *Cotoneaster, C. conspicuus* and *C. franchetti* var. *sternianus,* the latter being usually found in gardens under the name *C. wardii,* which name should really belong to a different plant. These are both plants suitable for all gardens.

His superb Carmine Cherry, *Prunus cerasoides* var. *rubea,* was collected in 1931 in Northern Burma and introduced from his seed, although trees of it had been recorded before by other collectors. The large tree in Sir Frederick Stern's garden at Highdown flowered for the first time in 1938 and has done so since quite regularly. It has, however, proved tender in other less sheltered positions.

The number of new species found by kingdon-Ward was considerable. He records that in 1939, on his third visit to the Hpimaw Hills of Northern Burma, he found fifty new species out of 500 species collected. He adds with characteristic generosity that any trained

collector avoiding his exact routes might do the same again. Some of his introductions have yet to show their full worth but are growing in a number of gardens. They include a sulphur-yellow *Cornus,* of which he thought very highly, probably *C. chinensis.* It is allied to *Cornus mas.* An unusually fine *Sorbus,* K.W. 17219 from Manipur, and allied to *S. harrowiana,* has still to show us its full magnificence, described by its collector in a burst of enthusiasm as "one of the most beautiful forest trees imaginable"'.

Kingdon-Ward was a prolific writer. His style was careful and painstaking but he managed to convey to us something of the excitement and floral wonder of the great forests and high mountains. But for a gardener he never told us quite enough and one always wished for just a little more. Perhaps that was due in part to the natural modesty of this short, wiry man with the ready smile but distant look in his eyes. On his return from an expedition he would mingle quietly with the crowds at Vincent Square or Chelsea and greet his many friends. For him there was always yet another expedition to be considered. Only a few days before he died, very suddenly, he had been discussing plans for other expeditions. His visits to this country were only unavoidable interludes in a life among the mountains, although unfortunately, owing to the many restrictions of modern travel in these regions the interludes had tended to become longer of late, and to fill in the intervals he worked as a part-time botanist in the Herbarium of the British Museum (Natural History), where there were so many of his specimens to be identified and laid into the National Collections.

During these times he must have been much sustained by his second wife, who shared his enthusiasm for the wild, and constantly encouraged him to hope that they would soon be able to leave again. In his last expeditions, when the higher mountains were closed to him, he tended to visit relatively lower areas and the plants were more suitable for the warmer parts of Northern America than for English gardens, and from there he found his later sponsors. At the end of the 1939-45 War he also returned to the mountains with the mission of finding American aircraft which had crashed while flying into China, and trying to trace the graves of the crew, but even then he found time to collect a few plants.

In spite of the enormous and widespread interest in horticulture today it seems doubtful if this generation will see again any whole-time professional plant collectors of his capabilities and experience. But probably there is much more to be collected.

Kingdon-Ward was awarded the Founders' Gold Medal of The Royal Geographical Society in 1930, their highest award, the Victoria Medal of Honour by this Society in 1932, the Livingstone Gold Medal for explorations by The Royal Scottish Geographical Society in 1936, while in 1957 he was installed as an Honorary Freeman of the Worshipful Company of Gardeners. He was awarded the O.B.E. in 1952.

Finally, we would like to quote the concluding sentences from a chapter on rhododendron collecting which he wrote for Mrs. Beryl Urquhart's book, *The Rhododendron,* only a short time before his death.

"Rhododendrons in the wild, lashed by the mountain gales, caressed by the sun or stung by the driven rain, in winter buried under 10 or 20 feet of snow, are unforgettable. Man can assemble in close embrace a far greater range of rhododendrons than nature ever knew; but never can he reproduce the drama of living plants on the high and lonely passes of Sino-Himalaya."

THE PLANT COLLECTING EXPEDITIONS OF
F. KINGDON-WARD

1909-10	Western China with Mr. Malcom P. Anderson.
1911-12	Western China, Yunnan and S.E. Tibet, including valleys of Upper Mekong, Salween and Yangtze. Described in *The Land of the Blue Poppy.*
1913-14	N. Yunnan and Tibetan frontiers, including Chungtien plateau, valleys of Upper Yangtze, Mekong and Salween, Ka-Kar-po range and Pai-ma-shan range. Described in *The Mystery Rivers of Tibet.*
1914	N.E. Upper Burma, including Hpimaw, Imaw Bum, Wulaw pass and valley of 'Nmai Hka.' Described in *In Farthest Burma*.
1919	N.E. Upper Burma. Partly described in *The Romance of Plant Hunting*.
1921	N.E. Yunnan, Yunnan-Szechwan borders, including Muli.
1922	Yunnan, Szechwan, S.E. Tibet and N.E. Burma, including Lukiang, Tali and Muli, Yangtze-Mekong divide, valleys of Mekong, Salween and Taron, Hkamti Long. Described in *From China to Hkamti Long* and in part in *The Romance of Plant Hunting*.
1924-25	With Lord Cawdor. Tibet and Bhutan. From Sikkim through S. Tibet to the upper Tsangpo valley and gorges. Described in *The Riddle of the Tsangpo Gorges*.
1926	Upper Burma and Assam. Seinghku, Di Chu and Lohit valleys, Mishmi hills. Described in *Plant Hunting on the Edge of the World*.
1927-28	With Mr. H. M. Clutterbuck. Assam and Mishmi hills. Japvo, Naga hills, Delei valley. Described in *Plant Hunting on the Edge of the World*.
1931	N.E. Upper Burma and Tibetan frontier, including Adung valley.
1933	In earlier part with Mr. Ronald Kaulback and Mr. Brooks Carrington. Assam, S. Tibet and Upper Burma, including Lohit and Rong To valleys, Zayul, Shugden Gompa, Upper Salween, Nagong and Delei valleys, Mishmi hills. Described in *A Plant Hunter in Tibet,* and in part by Ronald Kaulback in *Tibetan Trek*.
1935	S.E. Tibet. Assam-Himalaya frontier tract, including Saramati peak, Naga hills, Balipara frontier track, Se La, Tsari, Ménynl, Karta, Chayul. Upper Tsangpo and Tsari valleys, gorge of Yigrong. Described in *Assam Adventure*.
1937	N.E. Upper Burma and S.E. Tibet, including Nam Tamai and Adung valleys, Ka Karpo Razi. Described in *Burma's Icy Mountains*.
1938-39	Assam Himalaya and N. Burma with Vernay-Cutting Expedition, including Manda La, Dirang Dzong, Tembang, Poshing La, Orka La, Manda La, Phutang, Rupa, Lagam, Senge Dzong and Ze La. Described in *Burma's Icy Mountains*.
1946	Assam, Khasi and Jainta hills.
1948:	With Dr. S. K. Mukerjee and Mrs. Jean Kingdon-Ward. Assam, East Manipur, Ukhrul and Sirhoi. Described in *Plant Hunter in Manipur.*
1949	Assam including Mishmi, Khasi and Naga hills.
1950	With Jean Kingdon-Ward. Assam-Tibet frontier. Lohit valley. Described in *My Hill so Strong,* by Jean Kingdon-Ward.
1953:	With Mrs. Jean Kingdon-Ward and two Burmese botanists, U. Tha Hla and U. Chit Ko Ko. N. Burma. The triangle between the Eastern (Nmai Hka) and Western (Mali Hka) branches of the Irrawaddy, including Tama Bum and Tagulam Bum. Described in *Return to the Irrawaddy*.
1956	With Mrs. Jean Kingdon-Ward and two Burmese botanists, U. Maung Gale and U. Chit Ko Ko. West Central Burma, Chin Hills including Mt. Victoria.



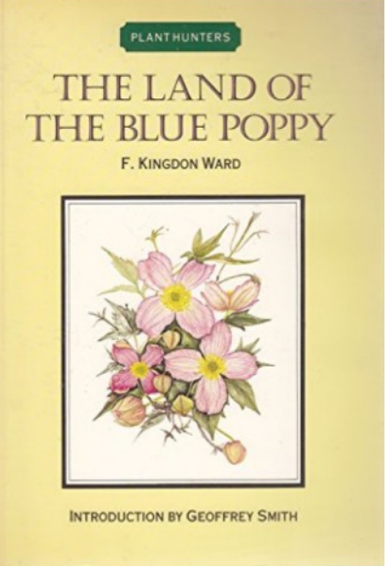


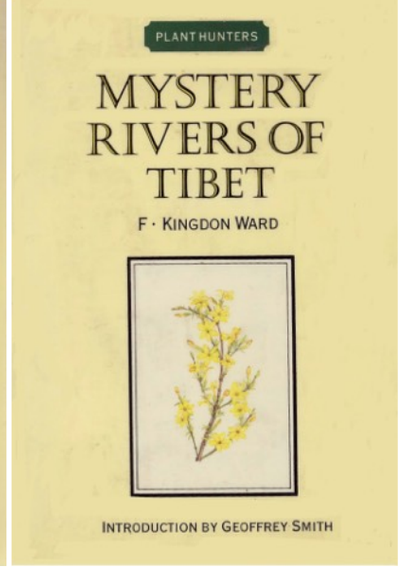
FKW collecting in Northern Burma during the early 1950s.

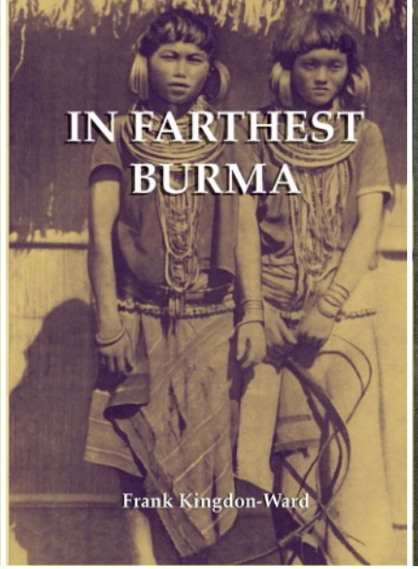
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Frank and Jean Kingdon-Ward studying their copy of Joseph Hooker's *The Rhododendrons of Sikkim-Himalaya*.

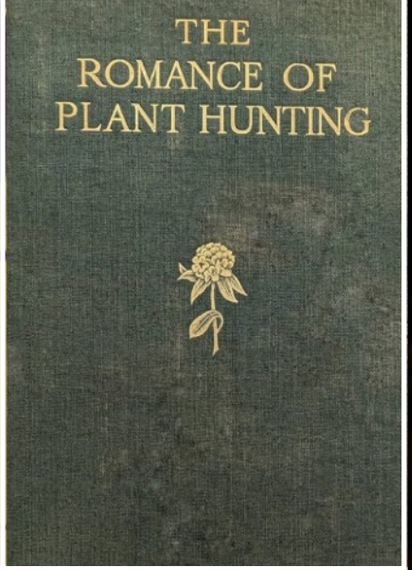
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The twelve FKW titles mentioned in the expeditions listing.

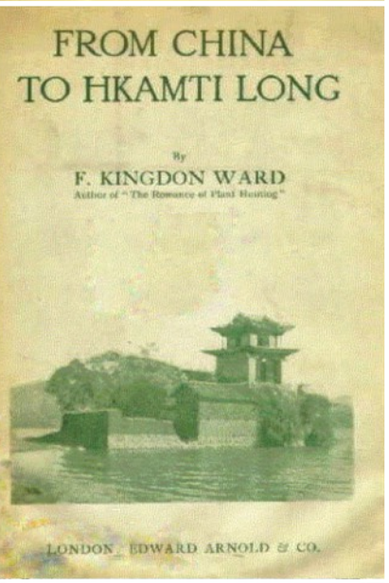
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The books' author, photographed at Ukhrul, in Manipur State, during 1948.

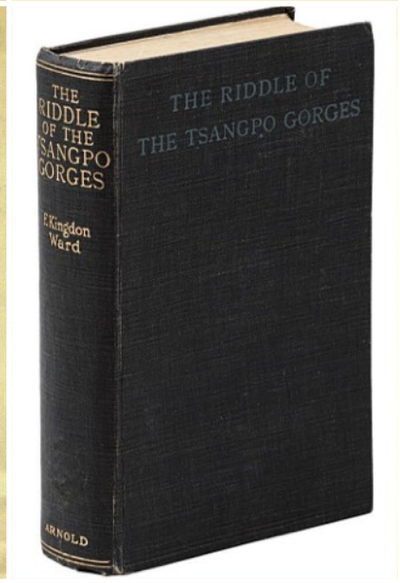

PLANT HUNTERS
THE LAND OF THE BLUE POPPY
F. KINGDON WARD
INTRODUCTION BY GEOFFREY SMITH

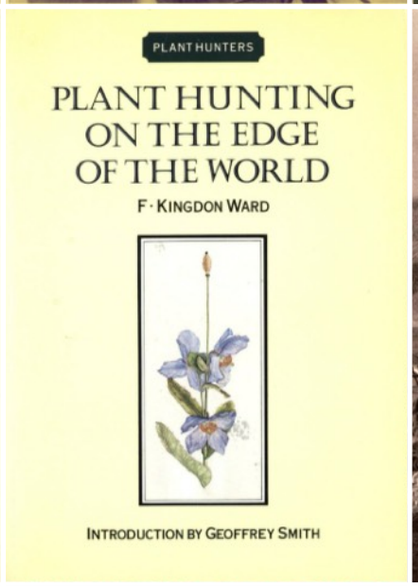

PLANT HUNTERS
MYSTERY RIVERS OF TIBET
F · KINGDON WARD
INTRODUCTION BY GEOFFREY SMITH

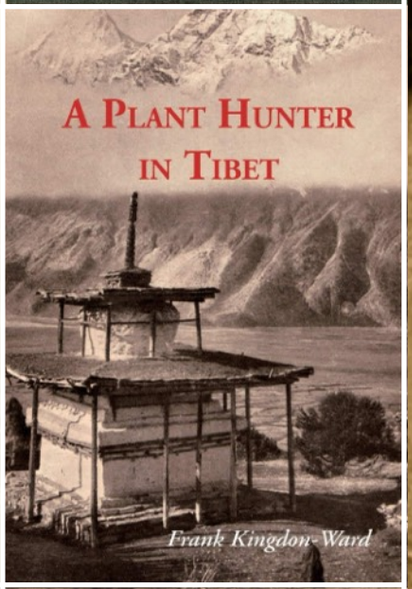

IN FARTHEST BURMA
Frank Kingdon-Ward

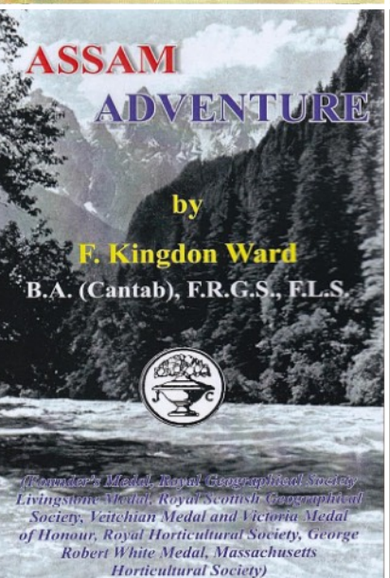

THE ROMANCE OF PLANT HUNTING

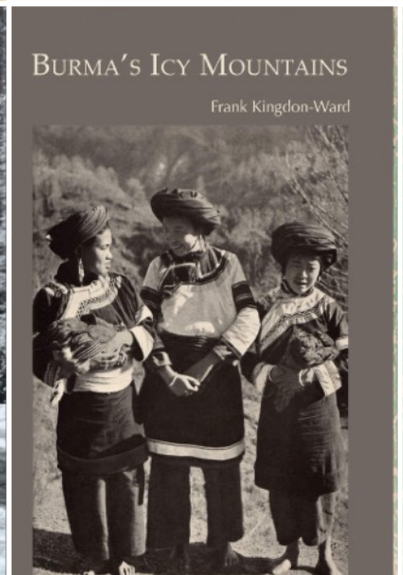

FROM CHINA TO HKAMTI LONG
By
F. KINGDON WARD
Author of "The Romance of Plant Hunting"
LONDON: EDWARD ARNOLD & CO.

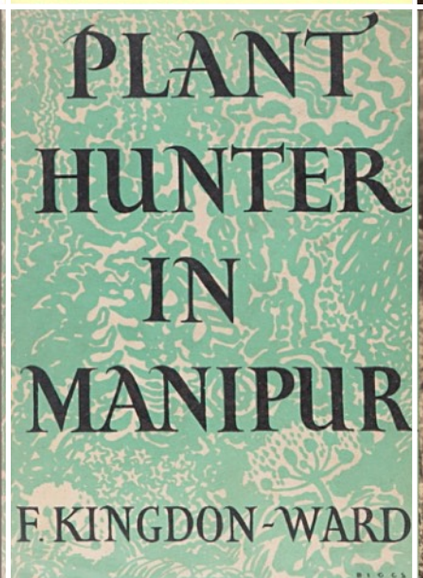

THE RIDDLE OF THE TSANGPO GORGES
F. Kingdon Ward
ARNOLD


PLANT HUNTERS
PLANT HUNTING ON THE EDGE OF THE WORLD
F · KINGDON WARD
INTRODUCTION BY GEOFFREY SMITH


A PLANT HUNTER IN TIBET
Frank Kingdon-Ward


ASSAM ADVENTURE
by
F. Kingdon Ward
B.A. (Cantab), F.R.G.S., F.L.S.
(Founder's Medal, Royal Geographical Society, Livingstone Medal, Royal Scottish Geographical Society, Veitchian Medal and Victoria Medal of Honour, Royal Horticultural Society, George Robert White Medal, Massachusetts Horticultural Society)


BURMA'S ICY MOUNTAINS
Frank Kingdon-Ward


PLANT HUNTER IN MANIPUR
F. KINGDON-WARD


Frank Kingdon-Ward
Return to the Irrawaddy



Address to the Rhododendron Society - May 6th, 1925.

The lecture transcript was published within the 1925 edition of *The Rhododendron Society Notes* (Volume 3, Number 1).

Captain KINGDON WARD:

These are about half the number of species of Rhododendrons that I collected. Kew kindly sent on these mounted. I have only here those which I found in flower. I should think about as many more I found out of flower. I am sorry to say that two species in flower are not included here, the orange cinnabarinium and a curious little aromatic dwarf purple-flowered species, which I could not place. All those which were collected in the Gorge in the winter - we went through the Gorge during the period from the middle of November to the end of December - are not included here, as I thought it not worth while to show foliage only.

5845. The first one is obviously the Forrestii series, but is not repens itself. It covered the rocks with scarlet flowers, and is a very floriferous species. The flowers themselves were higher above the surface of the rock than any other part of the plant; that is to say, it is an absolutely prostrate species. I do not know whether it will do better or worse than repens. It grows on the sunnier side of the valley, where the snow melted first in June, and where the snow was melting again in the middle of October when I collected the seed. A great many of the plants, of the Alpine plants, of which seed was collected in October had to be dug out of two feet of snow, but this scarlet repens was on the rocks where the sun had melted the snow, on very steep cliffs. In June you could see these great sheets of scarlet a mile away across the valley.

A MEMBER:

How would you separate that from the forms of repens you have met with in the Yunnan country?

Capt. WARD:

I have never seen repens itself in flower. I have never seen one of them before.

A MEMBER:

Mr. Farrer found one, did he not?

Capt. WARD:

I do not remember. I saw either repens or Forrestii in Upper Burma, but it was not in flower.

A MEMBER:

They grow in very much the same sort of places?

Capt. WARD:

Very much the same, on very steep granite cliffs with a south aspect; that is to say, where the snow melts first in June and where it melts in the intervals between the snowstorms in October.

A MEMBER:

How much drought do they get?

Capt. WARD:

They get none at all. They only grow where the rainfall is very heavy and all the year round; that is to say, as soon as the rain ceases the snow begins.

A MEMBER:

Do they get much sun?

Capt. Ward:

Very little. I do not think the sun does them much harm so long as the ground is drenched. You may get one day's sunshine, but the rock is absolutely soaked.

A MEMBER:

Have you the seed number with you?

Capt. WARD:

It is on them, 5845.

5846. The second is either a Forrestii or a Neriiflorum. It is rather bigger than this repens one, and with deep crimson instead of scarlet flowers. The truss bears about three flowers.

A MEMBER:

The same sort of country?

Capt. WARD:

Exactly the same place. This grew on the same sheltered side where the Rhododendrons are larger.

A MEMBER:

Is this the one you called Scarlet Runner?

Capt. WARD:

The first one was Scarlet Runner. The second we called Scarlet Pimpernel. As a matter of fact, the second one is not scarlet but more crimson.

A Member:

Did you take any water-colours?

Capt. WARD:

No.

A MEMBER:

What is the height of these?

Capt. WARD:

These grow rather low. I saw them as low as 10,000 feet.

The third one I called Carmelita in the despatches. It is bigger again. It grows, I should think, a foot high and forms a big low-growing shrub with very bright carmine flowers, so different from Scarlet Runner that it was easily distinguished when you got the whole mass. It did not actually grow with Scarlet Runner, as a matter of fact, but again kept to the more sheltered part of the rock. I think it is of the Neriiflorum series, and probably of the Sanguineum subseries. This one in particular had to be dug out of two or three feet of snow. The capsules are rather striking. They are rather long-shaped and very nearly scarlet before they are ripe. It is one of the few Rhododendrons I have seen in which the capsules themselves are picturesque objects. You have generally about three flowers in a truss, and lots of the capsules which I dug out of the snow were intact. I found them still in threes, simply lying in the snow. A few were just cracked at the top, whereas on the other hand with Scarlet Runner practically every capsule I collected was wide open, and flat on the rock. A puff of wind scattered the seeds immediately.

A MEMBER:

About how long is it from the ripening to the flowering of the seed?

Capt. WARD:

They were all found in flower about the 20th June, and the seeds were ripe in the middle of October, the shortest period of any Rhododendron I know. All the dwarfs, as a matter of fact, and the Campylogynums were just about the same, about four to five months.

A MEMBER:

How far away were 45 from 47?

Capt. WARD:

No more than half a mile, just across the valley. But the two sides of the valley were very distinct. One was a sort of Giant's Stairway, the sunny side of the valley, and the other

side was just a great mass of boulders and rocks. There were no glaciers in this part, but it was obviously a glaciated valley.

5861. That was, I think, one of the Sanguineum subseries, of which I found no flowers. I found it just at the end. It had the Sanguineum type of flower, and then I found some plants in fruit in October. It is bigger again. It grows perhaps 18 inches to 2 feel high and forms a bush. It was generally swamped in a series of other species, so that it was rather difficult to spot it, and we practically missed it in flower.

A MEMBER:

Did the Gorge run east and west?

Capt. WARD:

The Gorge runs north-east-south-west. These were found actually to the east. Perhaps I had better explain that all these species I am showing at the moment, these four Sanguineums to which I am referring, were found only on the extreme eastern end of the Himalayas; that is to say, on the south side of the Brahmaputra.

A MEMBER:

It is quite a different district from the Sanguineums that we have.

Capt. WARD:

Absolutely. You would have to cross the whole of the Irrawaddy basin to get there.

5659. I now go on to a species which was found on both sides of the Tsangpo in the beginning of the forest country. Coming down the Tsangpo Valley from the very high, barren plateau country, where there were no trees at all, this was one of the first Rhododendrons that we found where the forest of Juniper and Picea began. To my mind it recalls a very fine habrotrichum, but there are never more than four flowers in the trusses. They are drooping. They are striped a very pale pink-and-white. It gives a very beautiful effect. The tree grows perhaps 20 feet high, and is always in the forest. It has larger corollas.

A MEMBER:

The foliage is very distinct, is it not?

Capt. WARD:

The foliage is very distinct. The pedicle, the leaf pedicle, is hairy and bristly. I think it must be one of the Barbatum series. Otherwise I cannot place it.

A MEMBER:

The Souliei is very nearly as hairy in some places.

Capt. WARD:

I think it is a Campylocarpum or a Barbatum. I was very doubtful whether it was a Barbatum or a Campylocarpum.

A MEMBER:

The hairs are very well shown there.

Capt. WARD:

Yes, they are very distinct. It grows on both sides of the Tsangpo.

A MEMBER:

What is the Picea that you were speaking about?

Capt. WARD:

I do not know. l think I got some seed. I certainly got some specimens. l do not think it is anything very out of the way.

5736. This was the - I think I called it in my notes Wardii; anyhow, it is a Souliei, one of the Souliei subseries. It is rather like campylocarpum in this respect, that it has brick-red buds which then open to very bright yellow flowers - that is to say, sulphur-yellow.

A MEMBER:

One notices the bark and the twigs are quite different from the bark of the European flower. It is harder, and it has a grey-and-fawn-coloured look about it, which ours does not have.

Capt. WARD:

5853. l thought at first that this was an Alpine form of the Souliei species. 1t is the one I have referred to in my notes as the Yellow Peril, because it seemed to swamp the mountain-sides in certain parts. The flowers are very like the previous one - that is to say, they are bright sulphur-yellow; but I found a good many botanical distinctions between the two. But apart from that, in the winter this was easily distinguished by the very bright glaucous foliage. This again was visible against the cliffs a mile away, great splashes of a sort of light sea-bluey green due to the glaucous foliage. The flowers are rather like the previous one. I do not remember that the buds were bright red. These grow in the same valley as the Sanguineums, and grow mixed up with Carmelita. One could almost walk over the top of it. It formed enormous patches of this brilliant sulphur-yellow flower in June, and seeded rather late. I did not collect the seed until the end of October.

5759. This was a Lacteum with very variable flowers. It formed a shrub, generally growing socially, as high as 8 or 10 feet, but very often, where it ascended right into the Alpine region, becoming rather smaller, perhaps 3, 4, or 5 feet. The under surface of the leaf has the typical Lacteum indumentum, very like Traillianum. The flowers vary enormously, purple and cream, sometimes red, and sometimes white, rather as Farrer described aiolosalpinx [*R. stewartianum*].

A MEMBER:

What kind of yellow?

Capt. WARD:

Quite a pleasant yellow, but not a striking yellow, perhaps more cream than sulphur. It does not compare with the colour of a Souliei or Campylocarpum.

A MEMBER:

You could see it from all sides?

Capt. WARD:

Yes, I collected it on both sides of the river.

A MEMBER:

I take it that you have gathered it more or less from the top branches of the shrub?

Capt. WARD:

Yes, I generally do.

A MEMBER:

What would be the average height of this Lacteum series?

Capt. WARD:

About 8 feet. It grew a bit higher than that and a bit shorter. There is one point I would like to make, and that is the beauty of its foliage, when it is breaking. In the usual way the leaf-buds break vertically. Their leaves come up in a sort of plume and form a very striking patch. The outer surface of the leaf is covered with a sort of sheen of small scales, which drop off eventually when the leaf is mature; and the under surface is bright silver. When this catches the sun, it is even more striking. The young seedlings of this plant do not have any indumentum till about four years old. In fact, I was greatly puzzled: I thought it was a different species, and spent quite a long time looking for the parent plants of it.

5863. Another Lacteum, which in fact I think is only the Alpine form of the previous one. This forms the same sort of dense jungle, growing not more than 3 feet high, and has the same variegated-coloured flowers. This grew with Yellow Peril and the Sanguineums in the same valley on the sheltered side of the slope.

A MEMBER:
About what height?
Capt. WARD:
About 3 feet.
A MEMBER:
And very slow-growing, I suppose?
Capt. WARD:
Yes, and the branches all twisted amongst each other. You could walk on top of the thing, practically, rather after the style of niphargum [*R. uvariifolium* var. *uvariifolium*]. It is certainly a Lacteum.
A MEMBER:
That was quite out in the open?
Capt. WARD:
Yes, in the Alpine region. By Alpine I mean above the normal tree growth. The snow-line is very low on the Eastern Himalayas, not more than 14,000 feet.

5718 was the only other Lacteum which I got, and recalled to me Beesianum. It has rather the leaf of Beesianum. It is a tree, I should think, on the average 20 to 30 feet high. It grows more or less socially in the Upper Abies Forest, and it has very large, handsome trusses of flowers, which also vary. I should say they were usually cream with a blotch at the base. It flowered very badly last year, so that I only got one or two specimens of the flowers, but I got a fair amount of seed, I think. I notice particularly that some species in any given year flower extraordinarily well, and others extraordinarily badly.

5671. This is the first specimen I found flowering.
A MEMBER:
What series is that we have just seen?
Capt. WARD:
Lacteum, I think. It recalls Beesianum, but the Beesianum flower is pink, and this one is usually cream and has a flash at the base of the corolla, which I do not think Beesianum has.

5732 is the one I referred to in my notes as the pink Fortunei. It is a tree of about 25 feet, growing in the middle of dense forest with a certain number of Picea trees. Not high up; I should think about 10,000 feet on the average. It flowers in early June. It has rather handsome trusses of bright rose-pink flowers without any purple in them. It is one of the species with tawny, absolutely smooth trunks. There is a plant, gymnogynum [*R. anthosphaerum*], which has the same sort of trunk.
A MEMBER:
How many lobes has the flower? We are rather inclined to separate Fortunei from Arboreums from the fact that they have more lobes to the flower.
Capt. WARD:
I think this has only five.

5830. This is the one about which there has been a certain amount of controversy. l called it "Coals of Fire" in my despatches. It has bright scarlet pendent flowers, and a truss of four or five. It is distinguished from any Rhododendron known to me by having at the base of the corolla five small circular jet-black glands. These are not, as you get in the Arboreums and Delavayi, patches which look black; the base of the corolla is not pinched up at all. It is perfectly open, and you get a circle of five coal-black glands. The leaf rather suggests Thomsonii.
A MEMBER:
This is the nearest point to China?
Capt. WARD:
Yes, barring the Gorge itself.
A MEMDER:
Did you find the seeds on the plant?
Capt. WARD:
I got one or two specimens with capsules. This plant was a forest plant, generally occurring on the banks of streams. It also grew in the Picea forest on very sleep slopes right away in the dark. Of course, this forest is not jungle: it is fairly open, but heavily shaded. It grew into a considerable bush. I should think the highest plant I saw was about 10 feet high, but it grew rather spreading, rather in the ponticum style. It did not go into the Alpine region, but was more or less sheltered; but it certainly preferred to grow absolutely on the banks of flowing streams in the forest. I think it was a very striking species, but that was partly because it was the first scarlet-flowered Rhododendron we saw, and we had been rather bemoaning our fate on the Tibetan side of the river that we had seen no scarlet-flowered Rhododendrons. As soon as we tackled the Himalayan Ridge itself in the middle of June, the first thing we came across was this brilliant scarlet-flowered Thomsonii. The fruit itself is not very like a Thomsonii. The flowers are abundant, and the pedicle of the flower is peculiarly curved. As you know, in most pendent flowers, when they fruit the pedicle gives a twist to bring the fruit vertical in order to shake the seeds out. This species hardly did that at all. The capsules themselves remained almost pendent.

5843 is the one I called Plum Glaucum because it had the foliage of a glaucum Rhododendron and the flowers of campylogynum.
A MEMBER:
There are no hard varieties in that district?
Capt. WARD:
Do you mean as timber?
A MEMBER:
Yes.
Capt. WARD:
I really could not say. You mean like maple? Not in these particular forests. We did not see any oaks till we got down the Gorge, but we saw maple and birch .
A MEMBER:
Where are we now?
Capt. WARD:
We are still on the Himalayas.
A MEMBER:
What sort of height is this?
Capt. WARD:
This is on the Alpine region, 12,000 feet. I only found one patch of it, and we came across the flowers absolutely by accident when we were on our way back to camp. I thought the thing was probably quite common, and did not mark it. When we came to collect seed, we never saw it again, and when we were collecting seed l thought I should not be able to find them because the whole mountain was under snow, but I came by chance on the one patch we had found.
A MEMBER:
How did you mark them?
Capt. WARD:
Generally speaking, I did not mark an individual plant unless I found it was very rare. Then I tied on a metal label.

A MEMBER:

And you can find that again in October?

Capt. WARD:

I trust to do so. As a matter of fact, I found nearly all. In the case of that Ivory Meconopsis, of which we found only six plants, I marked it with cairns of stone, but shrubs and trees I mark with a metal label.

5844. I think, is of the pink Himalayan glaucum type. It has not nearly such a red flower as those shown yesterday. This is much more a cherry pink, like many of the Japanese flowering cherries. Particularly when we crossed the Himalayas we found it running almost to mauve. It really was a beautiful sight, little bushes growing in tremendous thickets. This was quite one of the commonest species of the thickets, and the flowers ran from almost apple pink to very nearly a pure mauve.

A MEMBER:

Is the seed very like the bracteatum seed?

Capt. WARD:

I do not know the bracteatum seed.

A MEMBER:

For the ordinary layman it is very like glaucum seed.

Capt. WARD:

Yes, this was very like glaucum seed. It was slightly aromatic, but not very strong and not unpleasant.

5661. This was the one and only taliense, which at its best is a very fine plant. It has the thick, bright, silver-white indumentum of the typical taliense. In a broad way it is the Taliense series.

5644. Then come these Lapponicums, of which l distinguished three species in the field. They grew as low down as any Rhododendron we saw; I think the lowest down we saw, as a matter of fact. Great masses of these plants grow wherever you get birchwood. Just above the drier path of the river you would get silver birches with an undergrowth of these purple flowers, Lapponicums. I suggest that as a rather picturesque effect.

A MEMBER:

What heights were these?

Capt. WARD:

This was quite low down. They were generally under copse-wood. It also grew as undergrowth amongst bigger bushes of the Taliense, the previous one.

A MEMBER:

Always in the shade?

Capt. WARD:

I suppose half-shade.

5792 is an alpine Lapponicum. There is one thing about the Lapponicums: in the drier country and the great river gorges, you get hundreds of square miles of practically nothing else but Lapponicums and R. racemosum, growing together when it is very dry. That is to say, you get a very heavy summer rainfall, but then at least six months of really dry weather with very little snow. The Lapponicums seem to require conditions of that kind. They seem to stand a great deal more drought than most Rhododendrons. They must not get drought in the summer. Therefore in this country in which I was working they were particularly scarce. On the other hand. that may be because in Yunnan, as you know, it was practically all limestone rock, and possibly the Lapponicums thrive on limestone. Certainly great patches are definitely found on limestone and nothing else. We saw no limestone at all, and the rock we are dealing with is gneiss or schist, and there were only one or two species of Alpine Lapponicum.

5829, I think, is a trichocladum. That is the specimen with the rather hairy surface.

A MEMBER:

How far west is racemosum?

Capt. WARD:

l did not see it on this journey at all.

5851. I think this is a good one, a good trichocladum. It is an Alpine, growing also with the Sanguineums in the same place, on the fully exposed side of the mountain on very steep grassy slopes. The plants which grew with it were mostly herbaceous. It was in little scattered bushlets, amongst primulas and gentians, in very gravelly well-drained soil. It flowered before the leaves came out, and was simply one mass of bright yellow, the corollas reddened on the reverse. When we first saw it, we thought we had found something entirely new, but it turned out to be a trichocladum of this nature. It flowered very freely indeed. It flowered in the middle of June. and I collected seed of it at the end of October. It might have been 3 feet high in some places, but the average was less. In exposed places they were not more than 2 feet high.

5810. This was the Strawberry Saluenense, but I am open to correction there. It flowered rather late, considering that it was found on the north side of the Tsangpo rather high up in the Alpine region, about 14,000 feet, in huge clumps and mixed with two other species, one Lapponicum and one Anthopogon; that is to say, there were no Sanguineums or Campylogynums there, only these three species covering scores of square miles of moorland, absolutely open moorland, but rather drier than the Himalaya itself. This is the next range to the north of the Himalayas. These great ranges run east and west, and they get successively drier and drier as you go north, until you reach the plateau, where there are no Rhododendrons and hardly any plants at all.

It was replaced on the Himalayas by another quite obvious Saluenense, 5828. which rather recalls to my mind calostrotum. This forms little bushlets 6 or 9 inches high, generally growing by the side of streams, but also in the open meadows, with bright purplish-crimson flowers. The flowers of both recall saluenense. To my mind the previous one is the better. It has flowers of crushed-strawberry. Also, the previous one has very aromatic foliage, which this one has not. For this reason I am very doubtful whether the previous one is a Saluenense.

We now go right down to the Tsangpo Gorge itself, and come to a bush which I found growing on an exposed rubble scree in very poor earth, a bush with extraordinary leathery leaves and bright pink flowers. The number is 6354. I cannot place it in any section. It does not get a great deal of sun because there is so little, but it flowers in the winter when all the sun that is going is to be had. It corresponds to what is the cold weather in India. It is about 6000 feet up. I think it is quite a handsome bush. It might be useful because it grows in a particularly poor soil and in a sunny situation. The rock here was mostly schist.

A MEMBER:

Is it sweet-scented?

Capt. WARD:

No, it is not scented at all. The flower is pink, a rose-pink, not purple. I do not think it has the Maddenii leaf at all.

5790. This is going back to the drier range again. This plant 1 could not place. I thought at first it was a Triflorum, and then perhaps a Heliolepis. The flowers are a very bright rosy purple. It formed undergrowth in the Picea forest, on rocky slopes, growing at certainly not less than 11,000 to 12,000 feet. A very fine sight massed in the forest. The bushes were 8 or 10 feel through. and grew perhaps 12 feet high.

It liked particularly growing in these deep glens in the Picea forest where the torrents were coming straight down from the Alpine region. The colour is bright rosy purple. The bells are hanging. It is much brighter and deeper than rubiginosum.

6333. This is an obvious Maddenii from the Gorge, a rather slim and slender thing. It was flowering in December, and the capsules were ripe, of course, at the same time. Evidently it takes ten to twelve months to ripen its seed.

A MEMBER:

Did you get frost in the Gorge at that time?

Capt. WARD:

Yes, I have the degrees in my diary. I should think somewhere about 5 to 8 degrees. This species grew in thickets , where it probably did not get any frost at all. It grows about 15 feet high, and flowers very freely at the top. It is very fragrant. The leaves are quite flat. The flowers are white, with a dash of egg-yellow at the bottom. There were three or four flowers to a truss. The biggest plant I saw was 12 to 15 feet high, but very slender. The one from which the flowers were taken was only about 6000 feet. It was growing right in the Gorge.

5877. This is the big fulvum, a tree of about 25 feet high, growing at the upper limit of the forest, but always in the forest, just on the edge of the forest, amongst birch and maple. I only saw it in one place on the Himalaya. The leaves were extraordinarily striking. They were bright cinnamon-red beneath. We found the plant rather by luck. We went up to the top of the pass in June. We were unable to cross the pass because we could not get our kit over in the deep snow. This was at the very end of June. On the top of the pass we found a sprig of this Rhododendron stuck in a little cairn of stones. We knew this tree did not grow on our side of the pass, and we decided to make an expedition down the valley until we came to it. We returned to camp that day, and next day started very early in the morning, climbed up to the pass, and had a difficult time in the snow on the other side. We got down into the valley on the other side, and one of the first things we saw was this tree in the forest. The flowers are cream with a purple flash. In October we were able to move our camp over the pass and get the seed.

5687. This was what I call the mahogany Triflorum. The flowers vary enormously, but on the whole they are yellowish. Not the pure yellow of R. Lutescens, but rather a browny or sometimes salmon-pink yellow. I think this is one of the most striking Rhododendrons we saw. It was very widely distributed. Sometimes we got really bright salmon-pink flowers, with a mahogany splash al the base, sometimes more yellow, and sometimes brown. I got seed from a great many different localities. It is fairly widely distributed.

A MEMBER:

Did you mix the seed?

Capt. WARD:

Yes, they are all mixed.

5842. A Campylogynum. This flower was plum-coloured, very like damascenum [*R, campylogynum*]. It was growing with the Sanguineums and the plum-pink Glaucums. It seeded rather earlier than the others, and I am afraid I did not get very much seed of it. A good deal of it was lost in the snow, but I think there is enough to raise it. The flower trusses are quite upright, but it is one of these sprawly things, perhaps nearer a Sanguineum than a Campylogynum. The flowers are like ship's ventilators on long stalks. The flowers are fluorescent, as I think they are in all the Campylogynums I have seen. That is to say, by reflected light they have this purple bloom on them, but if you have the sun shining through them they are sheer port-wine colour.

5994 is a yellow Lepidotum. The only other yellow Lepidotum I know is a salignum [*R. lepidotum*] from Sikkim. I only found one patch of it. It flowered very badly and seeded worse. The flowers are quite a bright yellow. If it flowered well, it would be a good plant.

5940. This was another Lepidotum, with purple flowers. I take it the purple one is Baileyi. The point about the Lepidotums is that they flower so late.

5879-5880. In the Abor Hills I found a series of Rhododendrons which I am quite unable to place. They had very big flowers, and are small shrubs. They are not all the same, but evidently related to each other. These were growing in the most appalling tangle I have ever seen, about knee-deep, rather more than knee-deep. You could not walk on top of them, and it was almost impossible to hack your way through them. The slopes were very steep and rocky, and there was just this absolutely intricate confusion of gnarled stems. They had flowers of all colours, some cherry-coloured and some white speckled purple. It has a leaf rather like an Azalea. These were growing in the wettest climate that we struck anywhere, a place where it rained six months in the year and snowed the other six.

5875 and 5878 I cannot place. They belong to this same set.

A MEMBER:

Do you consider the colour of this last flower to be good?

Capt. WARD:

The best forms of them certainly. One had white flowers speckled purple. As a group they were very good.

5655. A Virgatum. Fine pink flowers, very fragrant. It grows where most Virgatums grow, on bracken-clad slopes under pinewood, in rather dry, sunny situations. It grows in semi-open situations and thickets . The highest was about 9000 feet, but it may well be hardy. There is quite a sharp winter there. It flowers rather early, but I think it breaks late. It flowers about May.

5641 and 5700. The Anthopogons were very confusing, with either pale shell-pink or pure white flowers and almost a blood-red under-leaf. I think these two are the same species. They generally grew as rather thin, straggly shrubs.

5849 and 5850 are Alpine Anthopogons. 5819 has yellow flowers and 5850 red flowers. They were also found in the same valley as the Sanguineums, quite close to them but on the shadier side. They form thickets sometimes by themselves. They grow about 1 to 1½ feet high.

5733. The last is the snow-white Anthopogon, which is a dwarf. It has snow-white little flowers, rather after the style of sphaeranthum, and a very dark indumentum. It grew with the crushed-strawberry Saluenense. It covered acres and acres of this rather dry, peaty moorland. When at full bloom it was perhaps one of the most striking dwarf Rhododendrons of all. You got these little clots of flowers just like sea foam scattered all over the dark-green surface of the moorland, mixed up with clouds of Strawberry Saluenense and a little purple Lapponicum. It grows no more than 9 inches high, and the leaves are aromatic, and dark chocolate on the reverse. It is a very floriferous species also. Most of the Anthopogons that we found are inclined to be rather leggy and to get straggly, but this was a very compact little shrub, and formed hassocks of these deep-green leaves.

Addendum:

The verbatim transcript of FKW’s Q&A address to the members of the Rhododendron Society on May 6th, 1925, plus that for a second coming together on May 3rd, 1927 - set out opposite - were both originated by Lionel de Rothschild.

Address to the Rhododendron Society - May 3rd, 1927.

The lecture transcript was published within the 1927 edition of *The Rhododendron Society Notes* (Volume 3, Number 3).

Captain KINGDON WARD:

This first specimen is a plant collected in Tibet two years ago. It was included because it throws a little light on a specimen collected last year also. It is a new species called Rhododendron UNIFLORUM. On the Burma-Tibet frontier last year I collected a plant which I call "Purple Emperor," No. 6884. For some time we were unable to find what it was related to at all, but I think it is related to the specimen I have just handed round. It seems to me to be a Lepidotum, related, I should think, to Rhododendron PUMILUM. The latter had never been found outside until we found it in Tibet. In 1926 I found this very curious thing, which might also deserve the name of uniflorum, that is to say there is only one flower on the truss. I do not know that it has been named at all. I called it "Purple Emperor" in my dispatches.

The PUMILUM was collected twice: once in Tibet, and 6961 in Burma. No. 6884 is the Purple Emperor. I do not think PUMILUM is in cultivation. If you can imagine an ordinary campylogynum with pink flowers, you have PUMILUM exactly.

The next three are epiphytic species of the Vaccinioides type. I do not think the Vaccinioides are much use in cultivation. They are rather small flowers; ordinarily one would never take them for Rhododendrons at all. But 6735 is a new species called INSCULPTUM, which looked very promising. It has flowers of a very good colour, a pure orange, but they are not very numerous. There are only one or two on the truss, and they are rather small. I do not think the Vaccinioides are of any more than botanical interest.

A MEMBER:

What height are they?

Capt. WARD:

They form a very spreading bush, rather loose, and not more than a couple of feet high. The young shoots are very often purple, which are really more effective than the actual flowers. The flowers are so frightfully small and so few that they hardly show up at all. They grow in the forest, are semi-tropical, and from 7000 to 9000 feet up. That yellow variety grows at about 8000 feet. They generally grow on very big trees and in the forest. They flower rather early, some as early as May.

6806 is MEKONGENSE. It is rather a poor plant. A plant I got in Tibet with the same name was a very much darker and better colour.

6819 is MEGERATUM. I call it a very good colour and a very good plant, but I do not think it would be very hardy. It grows very much better on cliffs. Where there is water perpetually dropping it grows best. Then it had these bright silver leaves, and a tremendous number of very good flowers - a very good yellow but not an orange. Whether it will be hardy or not I do not like to say, but I think you have it in cultivation.

A MEMBER:

Where are the roots?

Capt. WARD:

I should think the roots are in moss practically always.

A MEMBER:

We get so much wet in the winter.

Capt. WARD:

I think this would be wet in the winter, too, because the great masses of snow on the cliff would be melting and dropping down the cliffs. In the middle of June it was flowering excellently.

A MEMBER:

It will not stand a great deal of wet in heavy soil in England.

Capt. WARD:

No. 6834 has been identified as TEPHROPEPLUM. I saw Mr. J. C. Williams' TEPHROPEPLUM today, and I am bound to say I do not think it is the same plant, but it is near that.

A MEMBER:

How would it compare with what you saw today?

Capt. WARD:

I think the truss was smaller and a comparatively long pedicel, so that the truss was extremely loose and of a much brighter rose, more rose than purple. This may be TEPHROPEPLUM. I do not want to be dogmatic about that at all. I think this plant has a much darker leaf than the TEPHROPEPLUM that was exhibited by Mr. Williams today. I think myself it is a very good plant. It is a bush about as big as AUREUM. It was extremely rare, or rather local. I only found it in two gullies. I do not suppose I saw a hundred plants of it. It also grows on limestone as well as igneous rocks. I would not call it a typical limestone plant.

A MEMBER: Is it not very like CERINUM [*R. sulfureum*]?

Capt. WARD:

I do not know CERINUM.

The valley where I was working last year was fairly rich in SALUENENSES. There were certainly three species and possibly more. The first one, 6903, is a new species called RIVULARE [*R. calostrotum* ssp. *riparium*]. I call it a new species. As a matter of fact, I collected it in Tibet in 1924.

6934 and 7012. The next was HUMICOLA [*R. saluenense* var. *saluenense*]. It has a very dark rich purple flower. It is a rather spreading bush type. CALOSTROTUM in Burma is absolutely prostrate, and only the flower rises above the ground, but as grown here the whole bloom comes up. I think it is a question of whether it is in a sheltered position or out in the open moorland.

The HUMICOLA flowers very late, certainly not before the beginning of July. SALUENENSE and HUMICOLA are very much alike. It is a very livid flower. Unless you get a very fine illumination over it, it has a rather bad colour. With bright sunlight it is a very fine colour.

This is rather too wet for a good development of the type. In Tibet in 1924 we found about five or six different species of Anthopogon, but on this Tibet frontier, where the rain is far more persistent, the Anthopogon had rather deteriorated, and the Saluenense rather came to the front. We had at least four species of Saluenense and only about two of Anthopogon. I do not know that those two are at all striking, except that one had a very big pink flower. They are aromatic but not fragrant. In Tibet in 1924 it was very much drier in many parts of the country, and there was a great deal of red Anthopogon. This approaches it, but it is pink.

6960 was the first of the Lapponicums to flower. This was a scented Lapponicum. It was not very obvious, but I found, when I collected specimens and put them into a tin and carried them back to my camp, when I opened the tin they were very obviously scented. They scented my hut as soon as I opened the tin, Otherwise the plant was a fairly ordinary Lapponicum with purple flowers. The second Lapponicum was found a good deal higher up, and was consequently a good deal smaller.

6967 was the second Anthopogon with very pale rose-pink flowers in very good trusses. That came from about 14,000 feet.

6984. This is an interesting plant because it is a new Saluenense. I call it "Limestone Rose". It has been called CALCIPHILA [*R. calostrotum* ssp. *riparium*]. That was growing on poor limestone, and as far as we could make out the limestone is not magnesium limestone, and is quite soluble. Like so much of these regions, you very often get belts of limestone. There was one range of limestone ran right through the country. It ran about 17,000 feet, and had a flora quite peculiar to itself.

This "Limestone Rose" grew on no other rock. The flowers are a most beautiful rose-pink, with very little of the purple which is usually seen in the Saluenense series. I thought it myself one of the best specimens of the exhibition. That is why I gave it a name. The plant itself was not very rare. I made a special expedition to get it. It only grew on this limestone rubble.

6985 I think is ordinary CAMPYLOGYNUM or GLAUCUM. It is a good dark bloom, purple with a blue-grey outside, rather a florescent type of flower. If you get the light reflected from it, it is more of a dead purple. There was very little seed of it.

7023 is only a coloured variety of the Anthopogon.

7038 is identified with HYPOLEPIDOTUM. The flowers of that vary a good deal, some of the best forms being almost salmon pink. It seemed to vary between the real cream of HYPOLEPIDOTUM and the real plum of a new species called PRUNIFLORUM. It might possibly have been a hybrid. That was found only on the igneous rocks. It forms much more compact tuffets than the ordinary HYPOLEPIDOTUM.

7045 is this new PRUNIFLORUM. I take it it is something like SHWELIENSE. It has almost cherry-coloured flowers. Below 11,000 feet it was always yellow (HYPOLEPIDOTUM), and above 11,000 feet it is this plum-coloured variety (PRUNIFLORUM). The best variety of it was found on the other side of the pass in Tibet, and is found under another number.

7188 is the best form of PRUNIFLORUM. That, when well grown, is a very pretty flower if you can get the sunshine on the flowers. When I first saw it, it was raining, and it was rather a drab-looking colour.

The second Lapponicum to flower is 7048. It is probably a new species. It is a form of HIPPOPHAEOIDES, and has these extraordinary deep-coloured purple flowers about the colour of RUPICOLA. On the reverse of the leaves are very conspicuous shining bands of scales. It grows up to about 12,000 feet on the open moor and in the valley. That again with the sun shining on it or through it is an extraordinarily striking species. On a really wet day it is so dark as to be almost black.

7068 is the third Lapponicum. That is a plant of the open wind-swept moorlands. It has very small leaves. It is a very bright-flowered species, but otherwise there is nothing to single it out for notice.

7070 is an elaeagnoides [*R. lepidotum*]. I would not call it a very good plant.

7186. That is OBOVATUM [*R. lepidotum*], a purple lepidotum.

7187 is the Anthopogon. It is a plant with a very chocolate leaf. It may be anything.

7456 is the golden-flowered Maddenii. The flower is a bright golden yellow. It is an epiphytic, not very hardy. It is a very good plant when it is in full bloom. It flowers so freely that the ground underneath the trees was often yellow with fallen corollas. It has very small flowers. It grows in the shade, and wants plenty of water.

6912 is, I think, REPENS. In most of the Sanguineums you find a large number of small flies, and the birds used to visit them, particularly a small honey-sucker. For one seed there are generally about ten flowers, so you used to see sheets of these small scarlet-runners, and then had to look all over the hill-side to capture any seeds at all. I rather took it that it was the birds that pollenated the repens and not the insects. A bird is not going to poke its head inside a plant that is lying on the hill-side, and the ants were not very effective, so apparently it is only casually that they get pollenated at all. They vary particularly in the size of the leaf.

6913. I only found one plant of this, and the only seeds I got from it numbered exactly five.

6955 is, I consider, the best Sanguineum I have ever seen. I call it the "Scarlet Letter". It is really the most extraordinary glowing and intense scarlet on very large trusses. It is an alpine species growing 12,000 feet and upwards on the steep hill-sides. It also grew on limestone. It spread out horizontally instead of vertically, certainly not more than a foot above the surface. You could see it a mile away. Very free-flowering.

The Haematodes has an extraordinarily waxy appearance which prevents the light shining through it. If that wax is not on the surface of the corolla, the corolla seems to be much more translucent.

6854 is a true Neriiflorum. The corolla is red. It gives you a real flame colour from the distance, a sort of flickering effect of orange and red. It is a good one. I believe it has been named in Edinburgh. It forms a good solid bush 6 or 8 feet high.

6818 is a Falconeri. It is near ARIZELUM. It is very like the Falconeri I got in Tibet, in 1924, which has so far not been named. It is good. It opens pink and gradually changes to scarlet. The buds of this plant are always pure pink. The pink gradually fades, while the flower shows no sign of bronzing or browning, gradually changing to white. It forms a good big bush, 10 or 12 feet high, growing along the margins of the Abies Forest. It wants a good deal of shade. It grows rather high up.

7327 is an Irroratum, of which I got seed in 1922. I did not get seed of it this time.

7090 is rather an interesting plant. It is one of what I consider a large number of hybrids which I found last year. I am a complete convert to the theory that hybrids occur in nature quite commonly. To my mind hybrids in nature are as common as species. In this particular expedition half the Thomsoniis were hybrids. The reason why I think so can be briefly stated. I used to find one plant, we will say with bright pink flowers, growing in the midst of yellows and whites. There would be just a little group, or occasionally just a solitary plant. When it came to seeding time, one knows that hybrids do not seed very freely. I usually found that the thing had either given no seed at all, or had seeded very little, and where you had had a dozen trusses of flowers there would be one truss of fruit with about two capsules on it. In only one case did I have a complete failure in getting seed, but in all cases the seed was extremely slight.

In two instances I found what appeared to be a cross between a Thomsonii and a Sanguineum, and in both cases I got seed of them.

While I am on the subject of hybrids, it might be opportune to say that I noticed a rather peculiar thing, that the seeds of Rhododendrons appear to be of three types. The alpine type have seeds which have absolutely no wing at all. The forest type has a wing all round, more or less equal, right round the seed. The third type, the epiphytic type, has a very long narrow seed. The lateral wing is almost obsolete, and it is drawn out towards the end. That occurs in most of the Maddeniis. It seemed to me that if there is any empirical rule for hybrids, probably all the species or series which have the wingless seed will breed into seed, and the same with the winged seed. Curiously enough the Triflorum has the alpine type of seed. I take it that the Triflorums will therefore breed with Lapponicums or Saluenense, and possibly not with Falconeri, a forest type of seed. That is purely an empirical rule and a shot in the dark.

6903 is a large Lacteum. It is rather a fine thing with great big globular trusses or flowers, which vary somewhat from pink to white. In full flower I thought it was one of the finest species I saw but I doubt if it is particularly novel. The plant has a way of growing on

very steep hills, with all the branches coming up in such a way as to get all the blossoms together. The small Lacteum is a much more ordinary type, forming a very deep tangled scrub. I did not see any yellows. The Lacteum very like it, which I got in Tibet, ran right through the gamut of colours.

7184 was the COCCINOPEPLUM type [*R. roxieanum* Cucullatum Group], a little scrub plant, but I did not see it in flower. It was apparently an extraordinarily free-flowering species. That grew on the Tibetan side of the range only. In the Tsangpo Valley rain was practically perpetual. On the other side of the range we had much finer weather. I made two trips over there, one in the summer for about three weeks, and the second on the way home. There I think I found about ten species of Rhododendron on the Tibetan side. They are not being shown tonight because naturally most of them were found out of flower. I went over there rather late, in the middle of July for the first trip, and in October and November for the second trip. My anxiety to come home by Assam was chiefly centred on the hope of getting seed of Rhododendrons which had been found on the Tibetan side of the range.

6835 is probably a Haematodes. It has very waxy flowers of an intense scarlet.

Growing with it was 6991, which I fancy is a Sanguineum.

7123 is the second Roxieanum, and was found only on the Tibetan side of the range.

6831 is one of a batch of Sanguineums and Haematodes.

7427 is the Irroratum with very large leaves. It must be a most magnificent plant. The leaves are about one foot long. There was only one tree of it in a forest of much more ordinary looking Irroratum. I thought it must be a Grande, but I think there is no doubt that it is really an Irroratum. I am afraid it will not be hardy.

7612 is a plant I have not been able to place. It looks to me more like MARTINIANUM than anything else. The seeds are slightly curved.

6855 is a rather interesting Barbatum. I found some plants of it in 1924. Out of hundreds and hundreds of bushes I could not find a single seed. Then by a stroke of fortune I came across some last year. The only way of getting across to it was across a snow bridge, and that lasted till the end of June, then broke, so I missed it in flower altogether. I got some seed in October. It has a very fine foliage. If the flowers in any way extend with the leaves I think it will be a good plant. It is a thickish tree, and has these enormous leaves. The most distinctive feature of the plant is the way the leaves are persistent for quite a number of years.

There are a large number of Thomsoniis (6923), which I call “Cherry Brandy”. They have a cream corolla, a loose truss and very free-flowering. I can only compare it with THOMSONII itself.

6900 is the one I wrote home about, a Thomsonii with glowing pink flowers. There was only one plant of it. I cut three trusses of it. When I came to collect the seed of it there was only about one truss left, so I am afraid it was another of these hybrids. It is an extraordinarily fine plant, because both the size of the corolla is unusual and the colour is of the purest pink, more like CALLIMORPHUM, a most beautiful colour and very large.

6922 is another of those chaotic kinds of Thomsonii. I think that is a yellow Souliei, rather like the one I got in Tibet which I called the “Yellow Peril”. That was the commonest Thomsonii on the hills there. There were two species which I called fundamental species, one a bright sulphur yellow and the other bright speckled purple. The others were all extremely rare, and only found in one solitary clump or one solitary plant. Apart from those three, all the rest must have been hybrids or else possible mutations.



FKW and his wife Jean, going over their field notes in the mid 1950s.

Rhododendrons in Burma, Assam and Tibet.

by Frank Kingdon-Ward.

What the orchid hunter was in the nineteenth century, the Rhododendron collector has been in the twentieth. Not that Rhododendrons have taken the place of orchids. The two can hardly be compared, so different, and in fact contrasted, are their functions. Each has its own niche, and we should be the poorer without either. But there is a certain parallelism in the story of their introduction and acceptance into the life and manifold activities of a great and rich civilisation.

Rhododendrons are pre-eminently plants of a cold temperate ever-moist climate - cold enough to have a heavy snowfall in winter, moist enough to have not less than about 75 inches of rain well distributed through 7 or 8 months of the year, and a *humid atmosphere* all the year round. It will be remarked immediately that these ideal conditions are rarely attained in the temperate zone, which lies mainly across the greatest breath of the northern hemisphere, resulting in a generally continental type of climate; but that it *is* attained in most of the transverse - and in some of the meridional - tropical and sub-tropical mountains ranges (or in parts of them) of the northern hemisphere.

Yet obviously ideal climatic conditions are not of themselves enough to ensure the presence of Rhododendrons. A climate such as that described can be found in New Zealand, in Southern Chile, in Oregon, and doubtless in other parts of the world, where Rhododendrons do not occur at all, or only sparingly. And it is the peculiar good fortune of the great sub-tropical mountain ranges of South-East Asia that not only do they offer the ideal conditions outlined above, but also that one or more species of Rhododendrons reached them in pre-glacial or inter-glacial times, and that they reacted in an amazing manner, with results well know today.

That the same result, on a smaller scales, *might* have happened in New Zealand, had the genus reached that island a million or more years ago, is suggested by the ease with which Rhododendrons can be cultivated there; and the same may be true of other regions. But there can be no doubt that the glaciation of South-East Asia had much to do with the success of the genus there. Neither snow in winter, nor an ever humid atmosphere is absolutely essential for all species of Rhododendron, some being adapted to much bleaker, others to softer conditions; indeed the degree of toleration shown by the genus as a whole, and by particular species, is remarkable. But the further we get away from the ideal climate the more rapidly the tuber of species falls off. Even under extreme conditions, however, Rhododendrons may still be the dominant plant, growing socially in vast numbers, though one or two species are represented.

Thus in the Burmese Alps (26°-28° N. Lat.), conditions are ideal between about 10,000 and 12,000 feet, and it is in this comparatively narrow belt, from a little below to a little above the highest forest - here represented mainly by *Abies fargesii* and *Larix griffithiana,* together with a few small broad-leafed trees such as Acer, Betula and Sorbus - that the greatest concentration and variety of Rhododendron is found. Within this belt they range in size from stout gnarled trees, 30-40 ft. high, through big bushy shrubs and tufty under shrubs, to creepy crawly plants plastered flat against the rocks, and to floppy epiphytes perched jauntily in the trees - though in this cold zone epiphytes are as a matter of fact rare; that is through practically the whole gamut of Rhododendron habit.

If we as gardeners were to divide our Rhododendrons into groups according to their uses, we would naturally divide them into trees, shrubs and bushes, undershrubs, rock shrubs (pygmies) and epiphytes, the latter being, with few exceptions, greenhouse plants. The field collector in Burma and Assam would then say that *trees* are found mainly in the cool temperate or mixed forest zone; *shrubs* almost throughout the forest zone from temperate forest to tree line; *epiphytes* mainly in the warm to cool temperate forest; *undershrubs* in the sub-alpine and alpine regions. It would not be difficult to find exceptions to all these - nature abhors a strait jacket; but that is the general background of this noble family.

As to the actual habitat, Rhododendrons grow almost anywhere, except in water. In the Burmese Alps we find them growing on rocks in the river bed; or fringing the grassy banks of torrents, on the cliffs; in bogs; in pastures; and on screes or amongst piled boulders. In the alpine region particularly there is great variety of habitat, not one of which is disdained by Rhododendron; nor are the conditions, though conforming with the somewhat elastic term alpine, by any means everywhere the same in the alpine region. Screes, for example, which face south or west, are clear of snow long before north slopes. The surface gets hot, and owing to the perfect drainage little water is available except deep down in the finer material of the scree, though towards the end of the rainy season the water situation improves considerably.

Cliffs again offer very different conditions from bogs. It is a measure of the remarkable flexibility of Rhododendrons that they can adapt themselves to such a variety of extremes. Nor is that all. For while the above-mentioned optimum conditions appear to encourage the greatest variation and the maximum number of species - and be it added of individuals - nevertheless many species steal beyond, sometimes far beyond, the limits of the peak zone, and by means of more exact adjustment live happily ever after.

Let us then take a look first at Rhododendrons growing in the "Burmese Oberland", as we might nickname Burma north of Myitkyina, and observe their sequence as we climb the hills. We had better start in the early spring if we wish to see the greatest number of them in bloom, remembering that the highest alpines do not flower before June, by which time enough snow has melted to expose them. Our present journey is to the Htawgaw-Hpimaw hills, following the eastern branch of the Irrawaddy (Nmai Hka) along the China frontier. After that we might go, *via* the western Irrawaddy (Mali Hka) to Fort Hertz, and thence across the mountains to the very sources of the river, and the snow peaks of the Tibet frontier - no easy journey.

From Myitkyina itself on a fine winter's day we can see mountains 7,000-10,000 ft. high virtually unexplored, though the ranges eastwards to China have been crossed along a beaten track a number of times. Still there are unexplored mountains within 100 miles of Myitkyina over 10,000 ft. high..

We are likely to get a shock as we follow up the Nmai Hka in March, for no sooner do we come down to the bed of that river on the fourth day out, than we find the rocks glowing with a brick red crust of Azalea (*R. simsii*); and this less than 1,000 ft. above sea level, in the midst of tropical jungle. We shall not see another Rhododendron till we are at least 5,000 ft. above sea level; so evidently our Azalea is exceptional, or at any rate an exception to the general rules that Rhododendrons are cold temperate plants.

Leaving the river and ascending into the hills towards the distant crest of the main watershed, we begin to come across Rhododendrons again between 5,000 and 7,000 feet altitude. Here they are trees - and epiphytes. Unless they are in bloom we are likely to miss the former, and will certainly miss the latter, which are high up in the thick canopy, out of sight, betrayed only when their great milk-white corollas strew the ground. This epiphytic shrub is *R. dendricola.* In the same type of evergreen rain forest are the shrub or small tree species, *R. kyawii,* with gorgeous scarlet-crimson flowers, and the tree species *R. stenaulum* [*R. moulmainense*], with rose-purple flowers sometimes lathering the whole tree - which must attain an age of well over a century. We can easily recognise *R. stenaulum* out of flower by its great smooth tawny trunk - if it happens to grow close to the

path. But if *it is* in flower - and then we couldn't miss it if we tried - *R. kyawii* will *not* be in flower, and we might easily overlook it. For *R. stenaulum* flowers in March, *R. kyawii* not till after the rains have fully broken, in June.

Still deeper in the hills, no higher but sheltered now by lofty ranges from the hot breath of the Nmai valley, we find several shrubby species, including the curious little Azalea, *R. microphyton,* growing along the river bank with many other shrubs.

Stepping up a couple of thousand feet, that is from 6,000 to about 8,000 feet, several more species appear - the beautiful *R. decorum,* commonly scattered in the woods with such trees as *Rhodoleia forrestii* and Gordonia; and on the open downs, the flaming scarlet *R. delavayi.* As we approach solid conifer forest, Rhododendrons increase rapidly both in numbers and variety, especially along the exposed and steep flanked ridges. *R. genestierianum,* a curiosity but no beauty, with thin willow-like leaves, snow-white beneath, and small fleshy, dark purple flowers, hanging like little plums, puts in an appearance, and with it *R. sulfureum,* which if it ever had any flowers on it, would be a lovely shrub. In the conifer belt proper, comprising hemlock spruce (Tsuga) below, silver fir and larch above, we approach optimum conditions, and Rhododendrons begin to dominate the scene completely. In May and June, when all the scuppers of the mountains are foaming with snow water, and avalanches are thundering down the gullies, the alpine valley is dynamic with colour. Whole mountain sides glow with the pinkish shimmer of *R. arizelum,* its brown swollen-gloved leaves beginning to spread themselves out again after being curled up and put away for the winter. *R. sinogrande,* too, with yellow lamp globes to illuminate its enormous green and silver leaves, and the sticky *R. habrotrichum,* bearing a too generous display of rather muddy purple flowers in reduced circumstances, are sure to occur. There are epiphytes also, sunk in the voluptuous moss which smothers the trunks of the first - brassy yellow of *R. megeratum,* chick-down yellow of *R. seinghkuense*, sickly yellow of *R. micromeres* [*R. leptocarpum*]*,* atoned for by the brilliant gamboge and scarlet of its autumn leaves, and others. Thus we climb by easy stages up the long slanted valley, or perhaps up and down along the crest of a ridge, to emerge at last on the windswept braes of the alpine zone. Now for the first time we gaze over square miles of rock and Rhododendron, and not much else, the swirling colours of the pygmy Lapponicums, Saluenenses, aromatic Anthopogons and bubbling Campylogynums making a never-to-be-forgotten picture; the whole Rhododendron sea is flecked with shimmering foam, sulphur, apricot, salmon, Tyrian purple, violet. On the sheltered side of the valley the Neriiflorums in their various crouching attitudes glow blood red against the irregular patches of snow.

About fifty species of Rhododendron are known from the Htawgaw-Hpimaw hills, of which less than twenty have been found north of Fort Hertz. On the other hand, nearly fifty species are recorded from the northern valleys (Nam Tamai, Seinghku, Adung, Taron) which have not been collected in the Htawgaw-Hpimaw area. This speaks for itself; it seems highly probable that many new species will yet be discovered in the immense unexplored areas of North Burma.

Before leaving Burma, I will add a few notes on particular species. *R. imperator* is, I think, one of the most extraordinary of the pygmy Rhododendrons, though some people say it is difficult. It grows in the Seinghku valley on cliffs and in rock scuppers where the snow lingers late, at 9,000-10,000 feet - that is far below the tree line. I found only one plant bearing flowers, and not many of them, so that I dared not pick more than a couple, and the type material is scanty in consequence. I believe I found five capsules containing seed in the autumn. The species has never been found again since 1926. In cultivation it has proved itself one of the most popular and floriferous of the pygmies, a first class rock garden plant.

R. calciphilum [*R. calostrotum* ssp. *riparium*], is another pygmy from the same valley, this time from 12,000 feet, which does not seem to have been collected again since I discovered and introduced it in 1926. It is a plant of limestone screes, prostrate, clothed over with purplish-rose flowers, which, as in all the Saluenenses, are large.

R. myrtilloides [*R. campylogynum* Myrtilloides Group] is now fairly well known to rock gardeners. I found it at a low altitude, 8,500 feet, which is certainly low for a Campylogynum or indeed any pygmy Rhododendron, though it was in a cold valley under the shadow of Imaw Bum. It has been found and re-introduced once or twice since 1919, but I do not know where or at what altitude. I found only a single bushlet, which was still there in 1939 - twenty years on.

A species I referred to *R. neriiflorum* - K.W. 9561 and also apparently 9483, both from the Adung valley - has been described by a correspondent, who is a good judge of a plant, as having flowers "of a salmony shade and extremely beautiful". I confess I have no clear recollection of the plant - perhaps I collected seed of it "blind". Can it by any chance be the mysterious *R. euchroum*? Anyway it belongs in the Neriiflorum series.

In the Adung valley grew a gnarled tree Rhododendron, 25-30 feet high, forming a sort of filling in material amongst stunted Abies on a sheltered slope at over 12,000 feet - the highest tree Rhododendron I ever came across. I do not know what the flowers are like - it is one of the 'Grande' series - but it should be of cast iron constitution. It may be a form of *R. praestans.*

In the Seinghku valley, too, grows a form of *R. cerasinum,* originally discovered in Tibet, with rich cherry-crimson flowers. The Seinghku plant, however, has cream-coloured flowers with a broad cherry-red band round the top; connoisseurs say it is the more handsome form.

There are not many Lapponicums in far northern Burma, probably the climate is too wet for this type. I recall four only, including the delightful yellow-flowered *R. chryseum* [*R. rupicola* ssp. *chryseum*], another with dusky purple corollas and bronze stamens - a notable contrast - which I called *R. luridum,* and one with tiny purple flowers which were unexpectedly fragrant. Saluenenses and Anthopogons, however, are abundant and include such favourites as *R. keleticum, R. riparium,* and the charming *R. crebreflorum* [the three respectively *R. calostrotum* ssp. *keleticum, R. calostrotum* ssp. *riparium,* and *R. cephalanthum* ssp*. cephalanthum* Crebreflorum Group].

In 1937 I found in the Nam Tamai valley what looked very much like *R. fulgens,* though I did not see it in flower. *R. fulgens* is a Himalayan species.

Now let us take a quick look at Assam, so often headlined during the war. There are three or four mountainous areas here, more or less separate from one another - the Assam Himalaya bounding the valley to the north, the Manipur and Naga Hills to the south, the great tangled knot of mountains - Mishmi and Abor Hills - at the apex of the Assam valley, running up into Tibet, and the Khasi plateau (with three species of Rhododendron) athwart the mouth of the valley.

- *overleaf page 26* -

Left:
Michelia doltsopa in flower within the temperate rain forest of the Adung Valley.
Right:
R. nuttallii, Adung Valley.

- *overleaf page 27* -

Left:
Nam Tamai.
Right:
Larch, oak and an epiphytic *R. bullatum,* Mishmi Hills.





The Rhododendrons of the Assam Himalaya are on the whole like those of Sikkim and Bhutan, and include *R. fulgens, R. wightii* and other well-known species. But there is at least one which appears to be different, a pink flowered species with the habit and leaves of *R. lanatum,* but with always four flowers to the truss instead of the five to six flowers characteristic of *R. lanatum.* As this last-named also grows in the Assam Himalaya - though the two forms, or species, never mix, the correct diagnosis of their relationship is not easy. Other good Assam Himalaya species are the very late flowering *R. polyandrum;* the dwarf Saluenense, *R. fragariiflorum,* originally discovered north of the Tsangpo in Tibet; and the beautiful apricot flowered *R. concatenans* [*R. cinnabarinum* ssp. *concatenans*], which might be described as a variety of the well-known Sikkim *R. cinnabarinum.* Over twenty-five species have been collected in the Assam Himalaya, but there must be many more.

Crossing the Assam valley to the southern boundary ranges, which run first in a south-westerly direction, then, after shaving the eastern end of the transverse Khasi plateau, turn almost due south, we find a different assemblage of Rhododendrons. Nor is this due to the fact that the mountains here are far lower than the Himalaya, at any rate not entirely. The finest species is the tree *R. macabeanum,* with furry leaves and spherical trusses of clear yellow flowers. It does not grow below 9,000 feet, but is common towards the summit of Japvo mountain, where it forms small forests, mingled with other Rhododendron species, birch, and other temperate similar trees. More gorgeous, though less hardy, is the crimson-scaled flowered form of *R, elliottii;* while a third good species is *R. johnstoneanum.* In 1946 I collected seed of an unknown species, not yet seen in flower, in Manipur; and there are undoubtedly others on the high ridge separating Manipur from Burma. Further north, on Saramati peak, which is over 12,000 feet, are dwarf species and alpine shrubs; of these we know nothing.

But the part of Assam which is least known is the knot of steep high mountains beyond the apex of the valley where the Brahmaputra river breaks up into its three principal affluents. Follow the main stream up through the hills, and you come to the fabulous gorge of the Tsangpo. follow the Lohit, and after passing through the Mishmi Hills you reach a drier country of forest and pasture, beyond Rima, where there are still forests of Rhododendrons.

Between the Lohit and the Dihang (or Tsangpo) is the Dibang, with its tangle of mountain, gorge and wind-swept ridge, where no botanist or collector has ever been.

Even of the Mishmi we know next to nothing; so deep and narrow are the gorges, that it is impossible to follow even quite large streams like the Delei river, and one is forced high up the mountain sides. To reach the alpine region one must follow the toothed ridges, never an easy matter, and in this wet climate made infinitely worse by the most resistant and impenetrable barrier it is possible to imagine - a mixture of cane break (Arundinaria) and Rhododendron scrub. It was on one such ridge that I found the mat-like *R. patulum,* its thin branching thread-like stems jewelled with relatively huge funnel-shaped flowers of old rose. It is, in habit, a perfect rock garden species, but is alleged to be difficult. However, when I recollect the job I had to get seed of it, which included a long slither down the icy face of the crag, and three horrible nights spent in a cave - or rather a hollow - high up on the ridge, I am thankful it is in cultivation at all. It has been I think quite wrongly placed in the Lepidotum series.

Another fine species from the Mishmi Hills is the Maddenii *R. headfortianum* [*R. lindleyi* var. *taggianum* Headfortianum Group]; the even more magnificent *R. griffithianum* also grows there.

There can be few genera of plants which produce a higher ratio of viable seed to flower than Rhododendron. In the temperate rain forest region which stretches from the Eastern Himalayan to Western China, and from Tibet to Assam and Burma, where moss clothes rocks and trees and banks with a soft green dripping sponge, Rhododendron seedlings spring up by the million. A new clearing, a path through the forest, a roadside bank, every tree trunk and branch, every rock and cliff is seized on as a nursery for Rhododendrons which often come up in dense masses, touching one another, to the exclusion of all other plants. Indeed this huge amount of easily germinating viable seed may account in some measure for the success of the genus; and the readiness with which the seeds germinate in damp moss may account for the epiphytic habit. Nearly all epiphytes will grow equally well on logs of wood lying about in the open, or on rocks. Conversely, almost any Rhododendron, including the largest tree species, will grow epiphytical for a year or two. I have seen *R. sinogrande* growing thus.

Amongst some of the finest epiphytic species are *R. bullatum* [*R. edgeworthii*], *R, megeratum, R. taggianum* [*R. lindleyi* var. *taggianum*] and a primrose-yellow flowered species I collected in North Burma in 1937. The Vaccinioides series are all epiphytes, but their flowers are too small, and usually too drab in colour, to matter. *R. seinghkuense* has flowers of good colour and shape, but it is an untidy little shrub, at least as seen growing on the derelict fir trees of the Seinghku valley. *R. nuttallii* is perhaps the finest, as it is the largest flowered, of all epiphytes. Never shall I forget a specimen I saw hanging out over the Adung river when it was carrying its peak load of snow water, so that the spray formed a mist for several feet above the surface. In that savage thunderous setting, *R. nuttallii* struck just the right note of wild beauty.

I have left myself no time to mention the fourth area of this rain forest land - Tibet, with its incredible gorges, filled from crashing whirlpools to grinding glaciers with every colour of Rhododendron known, trees, shrubs, tufts, and carpets. Here grow *R. leucaspis, R. pemakoense, R. vellereum, R. hirtipes, R. tsangpoense* and many more.

It may be that in the next fifty years we shall throw out many species of Rhododendron from our gardens as being either too difficult, or not quite first class. But there can be no doubt whatever that there is still an almost inexhaustible supply of new species and varieties awaiting discovery to take their place.

Kingdon-Ward's account was originally included within *The Rhododendron Year Book 1947,* edited by N. K. Gould and P. M. Synge, M.A., F.L.S., and published in November of that year by the Royal Horticultural Society.

- page 29 left -
The Seinghku Valley.

- page 29 above right -
Imaw Bum, Kachin State, Burma, July 1916.
The photograph was taken from near Hpimaw fort.

- page 29 below right -
R. patulum in the Mishmi Hills.







Rhododendrons in the wild.

by Frank Kingdon-Ward.

It is not difficult for the plant collector, after a little experience, to get his eye in, so to speak, for a particular type of plant, so long as it is reasonably abundant. Take Rhododendron, for example. By the time he knows forty or fifty species in and out of flower, he should be able to pick out the genus almost unconsciously, while ignoring almost any plant which is *not* a Rhododendron. Occasionally, no doubt, he will be deceived - I remember being nicely 'had' over *Daphniphyllum himalayense* in Tibet, which in winter foliage looked exactly like a particularly desirable type of Rhododendron - but he will pass by few of the genuine article without instinctively pulling up short. Of course, if a Rhododendron happens to be in flower - and the great majority flower between early spring and midsummer - it is hardly possible to ignore it. But even when out of flower, Rhododendrons possess the hallmark of the aristocrat which, though difficult to define, is sensed at a glance. Indeed, few even of the largest genera of plants display so great a variety of form under a universal hallmark of excellence.

It would be absurd to pretend that dwarf alpine Rhododendrons share anything very obviously with tree species of the forest, either in foliage or flower. But leaving alpines aside for the moment, the tree and shrub species have a certain common denominator, which is unmistakable to the expert. The poise of their leaves; their smooth, pale trunks (innocent of all alien vegetation, even moss, in a region where most trees are habitually plastered with moss and tangled with creepers); their angular gnarled branches, cunningly arranged so as to give the tree a shapely and regular outline - these may be some of the details which combine to help one recognise a Rhododendron in the Himalayan forests. But so great is the variety, they almost defy analysis. The fact that in certain zones Rhododendrons are a majority group of the plant population, is a help; but even in other parts where they form a minority, one can train oneself to notice only Rhododendrons, where, in fact, many other trees and shrubs are equally prominent.

A proviso: except for comparatively short visits to the China coast, Java, Borneo, the United States of America and Switzerland, my experience of Rhododendrons in the field is confined to Yunnan, Tibet, Assam, Burma and the Himalayas. The following notes therefore refer to these regions.

The collector's happiest hunting ground is the Eastern Himalayan region, with its extension eastwards into China, north-eastwards into Tibet, and south-eastwards into Assam and Burma - a region which may be called Sino-Himalaya. This is the nucleus of the Rhododendron world in Asia. There is a satellite area further east, including the China coast, Korea and Japan, with a precarious link through the great Chinese divide, where few, if any, species have been discovered, though the Shensi ranges are quite high enough; and another satellite area in the far south, including Malaya and the the islands from Sumatra to New Guinea, with a more certain life-line through the Burma-Malay arc. The more isolated eastern satellite area is characterised by an abundance of Azaleas (not very different from some met with in the main region), but the southern area is characterised by a group of Rhododendrons which have no counterpart in the Sino-Himalaya. The only links between the tropical and extra-tropical regions seem to be through series 'Maddeni' and 'Stenaulum'. The main concentration lies entirely outside the tropic, in the sub-tropical region (25-35°) of the monsoon belt. But as Rhododendrons are all mountain plants, the latitude gives no idea of the true climate, which is, on the whole, temperate - warm or cool - and alpine. The most important factor in a Rhododendron climate, however, seems to be this: that when the air is warm enough for the plant to grow at all, there is abundant moisture in the air and in the soil; and that when it is too cold for growth, both atmosphere and soil are comparatively dry.

Rhododendrons in the wild are of two types: (i) trees and shrubs in the forest; (ii) 'dwarf' undershrubs in the alpine region. In the forest there are also epiphytic shrubs, which may be more or less dwarf (e.g. *R. megeratum, R. vaccinioides*), or quite large shrubs (e.g. *R. nuttallii*). But there are few epiphytes which will not grow equally well on rocks in the open, where the same conditions of moisture and light can be obtained. They are opportunists, ready to grow on trees if no other site is available. So far as I know, only *R. micromeres* [*R. leptocarpum*] and *R. seinghkuense* are complete epiphytes.

There are several peculiarities about Rhododendrons as a group which are not all immediately obvious, but which dawn on the explorer gradually: (i) the immense variation, even within a single undoubted species; (ii) the entire absence of obvious hybrids; (iii) the localisation of species in certain valleys; (iv) their vitality and good health; (v) the sharing of territory by several or many species.

The first point has been stressed of late by the herbarium worker, who has been able to examine critically the large collections made in different, but adjacent, regions during the present century. It is perhaps less obvious to the explorer, who cannot be acquainted with a species from every locality, and who perhaps finds an extreme form of an already described species. Comparing his plant with the published description, he decides that at least it is not *that* plant, and hence needs a new name. Colour variation in such species as *RR. arizelum, selense, aperantum,* and others is, of course, a commonplace; but other species are more fixed, even in colour, (notably those with blood-red flowers such as *R. beanianum* and *R. repens* [*R. forrestii* var. *forrestii* Repens Group], although *R. cerasinum* is an exception).

The localisation of species which, broadly speaking, have a fairly wide range, is curious. It is, of course, an example of discontinuous distribution on a small scale. I once spent an entire season in the Seinghku valley, North Burma, where I found three species of 'Lapponicums', but never saw a sign of the yellow-flowered *R. chryseum* [*R. rupicola* ssp. *chryseum*]. Yet at the head of the main Adung valley (into which the Seinghku river flows), not forty miles distant, *R. chryseum* (which is widespread in Western China, sometimes under the name *R. muliense* [now synonymous under *R. rupicola* ssp. *chryseum*]) is the commonest 'Lapponicum' species. Examples could be multiplied.

The absence of disease, particularly epidemic disease, amongst Rhododendrons which so completely dominate the vegetation, is striking, and will be referred to again. Save for minor ills, they appear to be as near disease proof as any group of living organisms has any right to be.

Finally we observe the communistic equality, and more than communistic toleration, displayed by the great Rhododendron family; and it is this fact that allows those magnificent colour displays which so enchant the explorer. This toleration is especially noticeable on the alpine moorland, where species of the 'Lapponicum', 'Saluenense' and 'Cephalanthum' type are frequently mixed together, sometimes as many as five or six species in a restricted space. No two plants can occupy exactly the same place, and intensive observation might reveal slight differences of habitat for each species; but on the whole it is unusual for several species of a genus to crowd into a small area. Even alpine Primulas do not mix so readily as Rhododendrons; at least, the different habitats are more clearly defined. An apparent exception is furnished by grasses growing in a meadow; but even here several genera are usually involved.

- *opposite* -
A carpet of dwarf alpine Rhododendrons, at about 12,000 feet, in Tibet.
Around a dozen different species are represented here,
with colours ranging from blood-red to pink, violet, purple, yellow and white.



One's first sight of a Rhododendron forest in early summer, where the majority of the smaller trees belong to this genus, is unforgettable. Such forest occurs between 9,000 and 11,000 feet in the Assam Himalaya, in the Tsangpo Gorge, in the south-eastern quadrant of Tibet, and in North Burma. The big trees in this zone are Tsuga, or sometimes Larix and Picea, in the lower strata; Abies - rarely Picea - in the upper. The Rhododendrons occur both scattered and in pure stands, and are not confined to a single species. I remember a marvellous wealth of tree species, including *RR. arboretum, sidereum, magnificum* and *cinnabarinum* (to mention but a few) in the Assam Himalayas. In places they grew on either side of the narrow ridge, their branches meeting overhead, so that following the ridge one ascended through a sort of pleached Rhododendron walk. They happened that year to be flowering well, and when the thousands of corollas dropped they lay for several days, dappling the path with brilliant colours. One stepped from the deep crimson-scarlet of red-hot cinders into sunny pools of sulphur-yellow, apricot and purple, thence back again to blood red.

In the Adung Valley, North Burma, *R. arizelum* in shades of ivory, yellow and rose is dominant between 8,000 and 9,000 feet, clashing at intervals with the jade foliage and amethyst flowers of a more splendid and rarer tree species; while along the river bank *RR. bullatum* [*R. edgeworthii*], *crinigerum,* and *vesiculiferum* mingled freely. Higher up, approaching the tree line, *R. selense* in many pastel shades has the bottom of the valley almost to itself, before *R. beesianum* and *R. niphargum* [*R. uvariifolium* var. *uvariifolium*], the two highest tree species, take over just below the alpine region, when *R. selense* reappears smaller but still in many shades.

No less exciting than the forest aflame with Rhododendrons is the moorland of higher and drier ranges, where one may look across thousands of acres of Rhododendron heath, gleaming with purple and gold, in the thin mountain air. Usually several species (mostly 'Lapponicums') make up the flower foam-crested Rhododendron sea which surges over the Chinese alps; but though the extent of pure Rhododendron is far greater, the number of dwarf species is considerably less than in the mistier alpine regions of Burma-Assam-Tibet. In the Adung valley alone, at least twelve dwarf species cover the rocks towards the Tibetan passes, some choosing open, others more sheltered, positions.

Where rain and mist are everlasting and the snow lies deep and long, there one will seek the greatest concentration and the greatest variety of species. Such a spot is the Doshong La, the last pass over the eastern Himalayas, which cuts across the great hairpin bend of the Tsangpo gorge. Within a few square miles grow some twenty-five species, mostly alpine dwarfs, milling together between the rocks, in the gullies, on the cliffs and screes, in early June one of the most colourful and memorable sights of a lifetime. It needs only a flash of sunshine to turn the steep mountainside into a cascade of red-hot lava, from which dart little white, pink, yellow or lilac flames. But sunshine on the Doshong La is as rare as nuts in May, especially in June.

I have seldom seen the effect of shelter on the Rhododendron family so clearly marked as here - and shelter in the alpine region means no more than that in the shadow of a cliff the snow lies longer in spring, melting more gradually. Yet it is enough to turn the whole Rhododendron population upside-down, to change *R. repens* into *R. repens chamaedoxa* and *R. repens chamaethauma* - [the latter two both now synonymous under *R. forrestii* var. *forrestii*] - and substitute *R. tsangpoense* for *R. campylogynum, R. temoense* [*R. laudandum* var. *temoense*] for *R. fragariiflorum,* and *R. concatenans* [*R. cinnabarinum* ssp. *concatenans*] for *R. doshongense* [*R. x doshongense*]. So critical is shelter above the tree line that in the Seinghku valley, North Burma, between 11,000 and 12,000 feet an entirely different assemblage of Rhododendrons, grows on either side of the

valley, within 200 yards. The exposed flank comprises a succession of almost naked screes, whose fan-shaped boulder-strewn bases coalesce just above the torrent. The sheltered flank, broken by low cliffs, is mostly covered with Rhododendron scrub, including species of 'Neriiflorum' while the screes support scattered dwarf species such as *R. pumilum, R. calciphilum* [*R. calostrotum* ssp. *riparium* Calciphilum Group] and *R. riparium,* but also the larger *R. trichocladum* [*R. trichocladum* var. *trichocladum*]. On the sheltered slope the scrub forms solid tapering tongues which lick the mountainside like cones of fire, between narrower belts of stunted trees.

Rhododendrons do not in nature flower regularly every year. Some years they are smothered in bloom; in the years between they bear little or none. It certainly exhausts a big tree to flower all over, and them to ripen hundreds or thousands of fruits, producing millions of seeds; and although I have never watched a particular tree over several years (having tried to cover as much ground as possible in the course of my plant hunting career), I have come across trees which had obviously flowered profusely the year before bearing only a few trusses in the current season. That is where the cultivated plant has the advantage: it can be persuaded to make the best possible display each year, first by dead-heading it after flowering, secondly by giving it extra rations of mulch.

To return for a moment to spotting Rhododendrons in the forest, especially at lower altitudes. A few epiphytic species grow high up in big trees where the crowns form a closed canopy. They cannot be seen except when in flower - and not even then unless one looks down on the forest roof from above. Their presence is detected from their fallen corollas strewing the ground, and intensive search will often result in finding an accessible specimen. I picked up corollas of two yellow-flowered 'Maddeni' species in 1937 (K.W. 13130 and K.W. 13195) in North Burma, several months before I secured other material. One of them produced both flowers and ripe capsules in November, so it must have two flowering seasons.

In spite of their enormous numbers and their light, easily scattered seeds, few species of Rhododendron have a wide distribution, and with two exceptions, no species found within the Sino-Himalayan concentration has been discovered outside that area, even in the satellite areas. *R. arboreum* occurs along half the length of the Himalaya, and is the only species to have crossed the Indo-Gangetic plain (the "great plains of India") and reappeared in peninsula India on the very ancient uplifts known as the Ghats, whence it reaches Adam's Peak in Ceylon (Sri Lanka). Eastwards it reaches the Sino-Burma frontier, to be replaced inside Yunnan by its near-twin *R. delavayi* [*R. arboreum* ssp. *delavayi* var. *delavayi*], which is hardly more than a variety. It would seem that *R. arboreum* must have been one of the earliest Rhododendrons to appear in the Himalayas. *R. simsii,* a Chinese coastal species, reappears in Western China and in North Burma at very low altitudes - 750-2,000 feet.

It is a common observation that the leaves of many Rhododendrons (e.g. *R. sinogrande*) are much larger than normal before they reach flowering age. After they have begun to flower they seem to shrink, no doubt due to the fact that the same food supply now has to go further. This is apt to be deceptive when one finds a Rhododendron sapling with relatively huge leaves; but it is not confined to this genus. Another relationship between foliage and flowers is noticeable in the field, namely that the leaf buds of a flowering Rhododendron will break later than those of the same species before it has reached flowering age. In other words, Rhododendrons flower before the leaf buds open, a fact which suggests their derivation from a precocious deciduous leafed species - an Azalea in fact, turned evergreen. This has an important practical bearing, since it is obvious that if a tender plant can be successfully nursed through the winters till it reaches flowering age, it will thereafter be less likely to have its young foliage cut by late frosts.

In any part of the Sino-Himalaya one can gauge something of the climate by the proportion of Rhododendrons to other woody plants, and by the number of epiphytes; the altitude by their number and variety. They are excellent indicators, sensitive to the slightest change, whether of climate, altitude, or aspect. But climate itself depends largely on altitude, so that one must suppose climate is all-important. It is not, however, the sole factor. There are many mountainous parts of South-East Asia (not to mention Africa) with climates suitable for Rhododendrons, where those plants are scarce, or entirely lacking; and one infers that when the pre-glacial flora was being pushed around by the ice, Rhododendron never reached these places.

A genus so successful as Rhododendron, even over a limited area, provokes the question: how does it do it? They are not highly specialised plants. They do not exploit poor soil swamps (a few species grow on ground made temporarily boggy during the rainy season), or semi-desert. They stick to one growth form, and the genus includes neither herbaceous nor climbing species. On the contrary, they are prepared for the battle of life, aiming for the most coveted ground, measuring themselves against all comers, ready to compete with and defeat the best.

If, then, they have a peculiar advantage in the struggle for existence, wherein does that advantage lie? Of course, conditions in the Sino-Himalayan mountains - soil, climate, length of day and of growing season, and so forth - must suit them admirably; but many other plants must be equally well suited. The most obvious reasons for their outstanding success seem to be: (i) the huge amount of fertile seed produced - dry seed, easily scattered by a light puff of air, winged in most of the forest species, wingless and dust-like in most alpine species; (ii) their gregarious habit and large, brightly coloured or otherwise conspicuous flowers; and (iii) their powers of resistance to disease.

That the abundance of seed produced has some bearing on the matter is suggested by the promptness with which Rhododendrons appear whenever an opening occurs. In the forest belt, between 6,000 and 10,000 feet, they colonise every type of ground - boulders in the river bed, the mossy limbs of trees, the banks of newly cut paths, scree chutes, clearings. I have often been struck by the number of seedling Rhododendrons coming up, usually of a single species, wherever a new road is being cut through the hills. So low as 5,000 feet they may be numerous, though you would be hard put to it to find a fully grown shrub in the forest at this altitude. Where forest has been burnt at 6,000 feet I have seen two-three year old plants of *Rhododendron magnificum* crammed together like the citizens of London in the rush hour. At this age, and perhaps for many years, the leaves do not wear the characteristic under-surface pelt of the mature plant; they are often purple in colour and almost glabrous. The mature pelt may not be developed till the plant reaches its twenty-first birthday or perhaps not till it is of flowering age.

One gets the impression that in the fine weather the air is filled with Rhododendron seed circling round, waiting to pounce on the first available landing-ground, whether it be a roadside bank, a newly fallen rock, or a tree trunk; and where a seed lands, there it quickly germinates.

The gregarious habit of many species makes cross-pollination easier, and helps to hold the ground gained for that species, while the large, brilliantly coloured flowers massed in conspicuous heads can hardly be missed by the dullest insect. Not only do great numbers of one species grow in close association, but in the higher forest belt, and above the tree line, several species help to form each association, all flowering together. Nevertheless, hybrids, so easy to make in the garden, appear to be very rare in nature, and I cannot recall for certain ever having met with one, though they should not be difficult

to recognise. Either they do not occur at all, or they are liquidated as dangerous before they flower.

Not very much is known about the pollination of Rhododendrons in nature, but there is no doubt that a number of ingenious structural devices are used to ensure cross-pollination. As to the agents, I have seen several species of birds - sibias and honey-suckers, for example, the former with their dark grey heads yellow-capped with pollen - visiting flower after flower, and undoubtedly pollinating them. Bees often visit the flowers, especially of the dwarf moorland species; butterflies rarely - the Rhododendron season is over before many butterflies have emerged from hiding. In the rainiest parts of Tibet, such as the Tsangpo gorge, I have found the inverted bells of crouching alpine species filled with tiny flies, much too small, one would think, to move the stringy pollen from one flower to another. The flies, however, may serve to attract birds, which effect pollination. I have seen tough tree Rhododendrons in full bloom, covered with snow at 7,000 or 8,000 feet - a sight not unfamiliar in Britain; and it is hardly likely that these early bloomers depend upon insects for pollination - even though "early" here means March-April.

Not a few species are deliciously fragrant, but these are plants which grow in extreme isolation, usually as epiphytes. Moreover, their flowers are generally white, or near white, and very large. Scent must, one would surmise, attract certain insects, possible hawk moths; but I have never seen these tree-top species being pollinated, though they set good seed. Massed plants with brightly coloured flowers have no need of fragrance, and no such species known to me - except possibly a single tiny flowered 'Lapponicum' which I found on the Diphuk La in 1926 - is fragrant. *RR. bullatum* [*R. edgeworthii*] and *megacalyx,* also fragrant, are by nature epiphytes, although often found growing on cliffs.

Finally, Rhododendrons in nature appear to have exceptionally sound constitutions; they are prone to attack neither by fungus nor insect pests, the latter itself often the result of poor health. True, one finds the large capsules of *R. sinogrande* and a few other species bug-ridden - the result of puncture during youth by some insect which finds the growing ovary a promising receptacle for its eggs; when in due course the grubs emerge, they feed on the soft ovules. But this is rather exceptional.

The capsules of some moorland 'Lapponicums' are destroyed by a mildew-like fungus, but I have never seen anything in the nature of epidemic disease, nor failed to collect good seed of a species. Several species - notably *R. arboreum* and a Manipur plant allied with *R. cilliicalyx* - have their foliage attacked by - of all fungus diseases - blister blight! This is a matter of particular interest to the Tea industry of Assam, although it is probably a different species from that which is epidemic in the Tea gardens on the plains. But the blister blight of Rhododendrons and other Ericaceae is comparatively rare, and if it injures the plant, seems to have no effect on the species.

This is not, of course, a list of all the diseases to which Rhododendrons are heir; it comprises only those which I have noticed in the field. Curiously enough, honey fungus, which is such a curse in many English gardens, seems to be absent in the field, but it would be difficult to recognise its presence in the mountains.

While the above mentioned factors are no doubt partly responsible for the extraordinary success of Rhododendrons in the region of greatest concentration of the species, it can hardly be supposed that that is the whole story. The close association of individual plants is itself a result rather than a cause of success, though no doubt it leads to further success.

Whence is derived the adaptability of Rhododendrons, which have staked a claim between 5,000 and 15,000 feet second to none, growing as trees, bushes shrubs, or undershrubs (erect and prostrate), on the hillsides and along the valleys, in bogs and meadows, in forest and scrub, on cliffs and screes, and as epiphytes?

Kingdon-Ward's account was originally included within *The Rhododendron Year Book 1949,* edited by N. K. Gould and P. M. Synge, M.A., F.L.S., and published in November of that year by the Royal Horticultural Society.



FKW with a dendrobium orchid, Burma, *c.* 1950.

K-W – the gardener's plant hunter.

By Charles Lyte.

On Easter Sunday, 1958, Frank Kingdon-Ward (1885–1958) was having a drink in a Kensington pub with his wife Jean when he was taken ill, collapsed and was rushed to the Atkinson Morley Hospital in Wimbledon where he fell into a coma, from which he never recovered, and died a few days later. It was the unexceptional death of an exceptional man.

For nearly fifty years his life had been devoted to exploration, and above all plant collecting in the Far East. Apart from the fact that he had a remarkably true eye for fine garden plants, he also brought to his work a keen academic discipline. This latter quality was not only in his genes, but part of the very fabric of his upbringing. His father, Harry Marshall Ward, was Professor of Botany at Cambridge University, and scientists, particularly botanists, were frequent visitors; one in particular, a Mr. Fisher, recently returned from India, fired his boyhood imagination when he remarked: 'There are places up the Brahmaputra where no white man has ever been.'

Frank's school days began in a French convent at the age of four and ended abruptly when he was expelled. His first report from his public school, St. Paul's, was equally unpromising – 'French: poor; Divinity and English: poor, especially Divinity; Mathematics: weak, careless; Drawing: very fair; General remarks: rather a curious boy. Apparently conceited and obstinate.' However, he went on to win a Science Exhibition to Christ's, Cambridge, and was marked down for a brilliant academic career. Instead his father's early death left the family in straitened circumstances, and in 1907, before he could complete his university career, he left England for a post as a schoolmaster at the Shanghai Public School.

Teaching held no appeal and when he was offered the chance to join a zoological expedition backed by the Duke of Bedford – the Bedford Expedition – he jumped at it. His understanding employers gave him leave of absence. Although he did make a small collection of plants, which he sent to the School of Botany in Cambridge, the main purpose of the expedition was to collect animals. He discovered two voles new to science, *Microtus wardii* and *M. custos*, and a shrew, *Sorex wardii*.

Back in the classroom his life became as irksome as before, and might have remained so had not A.K. Bulley, the founder of Bees Seeds, and creator of the Ness Garden, now part of Liverpool University, been looking for a collector. George Forrest had made two spectacularly successful trips to China for Bulley. The Director of the Royal Botanic Gardens in Edinburgh, Bayley Balfour, recommended Frank Kingdon-Ward, always known as K-W.

In 1911 he set off via Burma to Yunnan, enjoying the young hero treatment from his fellow steamer passengers on the voyage to Rangoon, but at Bhamo in Burma reality clicked in. K-W was a realist, and while he revelled in the wilderness, and the vast and spectacular terrain in which he spent so much of his time, he never under-estimated the dangers, hardships, and above all, the personal isolation that was part of his job.

Plant collecting conjures up a kind of 'Sound of Music' picture of picking blooms in a flower-bedecked alpine meadow, not exhausting trekking, wind-blasted screes and plains, leech-infested forests, glaciers and huge snowfields, and the sheer slog of collecting and preserving plant specimens, and harvesting seeds. The first night of his first solo expedition brought with it a crushing sense of loneliness and desolation.

He wrote later:

'Never again did the sense of paralysing isolation come so vividly upon me as on the first night when all the trials that awaited me seemed to take shape and rise in arms to mock my ignorance and feebleness.'



One of FKW's base camps in southeast Tibet.

As a plant collecting expedition it was successful, but not spectacular. In an appendix to his beautifully written account of the journey – *Land of the Blue Poppy* – he lists two hundred numbers (it was an incomplete list) among which there was only one rhododendron species, as against twenty-one primulas; however, the diversity of plants he gathered proved him as a naturally talented collector.

While his first loyalty lay with Bulley and the commercial objectives of the expedition, he never forgot that he was also a scientist, making copious botanical and geological observations. Although his fame was established as a plant hunter, his ambition was to be regarded as an important explorer. EHM Cox who travelled with Reginald Farrer in Upper Burma, wrote:

'He [K-W] tells me that he is prouder of the Royal Medal of the Royal Geographical Society than of his three gold medals for horticulture. There is no doubt that pure exploration is his first love, but, alas, it cannot be commercialised and one cannot live by exploration alone.'

On his return to England in 1912 he was sought after as a lecturer, and it was these lectures that attracted the attention of the Royal Geographical Society. Before going back into the field the Society put him through a crash course in surveying and map making, and also provided him with surveying equipment.

In 1913 and 1914 he was collecting in Yunnan, Tibet and North Burma, and despite endless frustration and clashes with Chinese and Tibetan officials, he established himself as an important rhododendron collector with the introduction of five first-class new species, which included the lovely yellow *Rhododendron wardii,* the sire of so many fine hybrids; the other four were *R. charianthum* [now *R. yunnanense* ssp. *davidsonianum*], *R. melianthum* [now *R. trichocladum* var. *mekongense*], *R. aganniphum* and *R. campylogynum.*

K-W was contentedly in the wilds when the First World War broke out and it was only when he reached civilisation – 'with six weeks' growth of beard , dirty and haggard, my clothes worn out, my boots flapping, my hair long' – that he learned that Britain was at war with Germany. He joined the Indian Army and was posted to Victoria Point at Tenasserim in Lower Burma where he more or less kicked his heels until he was posted to Mesopotamia as a lieutenant in the 116th Mahrattas with the Indian Expeditionary Force 'D'. He left the army in 1918 feeling that he had been underused and that the whole episode had been a disappointment. This feeling was to be reprised in the Second World War.

By 1919 he was back in the field in a modest way in Burma, producing a great favourite, the dwarf *Rhododendron myrtilloides* (now the Myrtilloides Group of *R. campylogynum*); he loved the small plum-coloured bell flowers held above the tiny, aromatic leaves.

After an absence of seven years he returned to England and embarked on a partnership in what was little more than a market garden in Devon, which he planned to turn into a nursery raising his introductions. In fact he spent the summer growing and harvesting beans and tomatoes and taking them to market in 'a ripping little Ford van'. His somewhat drunken and feckless partner brought the enterprise to ruin.

In 1921 he was back in Yunnan collecting for Bulley. The following year he was in the Tibetan Marches, but before he could complete his work he was brought close to death with fever; fever was to affect him from time to time for the rest of his life.

Emotionally, 1922 was a striking year. First was the long delayed news that his mother, to whom he was devoted, had died; second, a dramatically good-looking young woman, Florinda Norman-Thompson, who had turned down his proposal of marriage, wrote to him on New Year's Day, asking him to marry her. They married at Kensington Register Office on April 11, 1923, and he named a number of plants in her honour - the best known, being *Primula florindae*. The marriage did not last.

Early in 1924 K-W was heading towards Tibet and the Tsangpo Gorge country. The Tsangpo, which once it has burst out of the rampart mountains of Tibet becomes the Brahmaputra, had been a subject of fascination and speculation for generations. The story was that there were a series of huge waterfalls on its journey through the mountains. K-W wanted to prove or disprove the belief, but was unable to do so because at the time it was impossible to get through the gorge – subsequently it has been proved that there are no gigantic falls.

The other and equally important objective was to 'collect plants in a region which was an even greater mystery from the botanist's point of view than from the geographer's. We intended to make a collection of garden plants, and so introduce them into Britain, which is the world's temperate garden.'

The plant collecting expedition was a huge success. Before K-W went to the Tsangpo country, the Political Officer for Sikkim, Lt-Co. P.M. Bailey, had travelled through it in 1922, during which he had picked a specimen of a blue poppy, pressed it in his pocket book and sent it to England. It was not unknown, having first been collected in Yunnan by the Catholic missionary priest and naturalist, Père Delavay, in 1886, but seed had never been introduced to Europe. K-W's contribution was to collect viable seed and introduce it to Britain. He found it two hundred miles east of Lhasa, demurely tucked away in the scrub, and looking at first glance like a gorgeously plumaged bird.

In his book – *The Riddle of the Tsangpo Gorges* – he wrote:

'Here among the spiteful thickets of hippophae, barberry and rose, grew that lovely poppy-wort, *Meconopsis baileyi,* the woodland blue poppy… the flowers flutter out from amongst the sea-green leaves like blue-and-gold butterflies… '.

Seventy-five per cent of the seed he sent home in February 1925 germinated in the fifty gardens in England, Scotland and Wales where it had been sent to be trialed. At the RHS June Show in 1926 it was awarded an unchallenged Award of Merit, and the following year a First Class Certificate. There were mass plantings in Hyde Park in London, and Ibrox Park, Glasgow, and at the 1927 Chelsea Flower Show seedlings were sold for a guinea each. For years it was known as *Meconopsis betonicifolia baileyi,* but now it is simply, *Meconopsis betonicifolia*.

In a way it was a pity that the blue poppy was the star of the expedition as the most important part of the collections were the rhododendrons, no less than ninety-seven species, as well as the enchanting scented pink turk's cap lily, *Lilium wardii.*

While the blue poppy grabbed the headlines, the expedition made an enormous contribution to garden rhododendrons. One of the most exciting was 'Orange Bill', a particularly fine form of *Rhododendron cinnabarinum* ssp. *cinnabarinum* Roylei Group [now *R. cinnabarinum* ssp. *concatenans*]. Of the moment when he found it he wrote:

'It was that dreamed of, but scarcely hoped for, treasure, a real orange-flowered Rhododendron! And in that moment of triumph I was almost delirious with pride and joy. 'Orange Bill - the Prince of Orange Rhododendrons,' I cried aloud; for I felt lyrical.'

K-W had a rather endearing habit of giving names to his new discoveries, thus 'Coals of Fire' (*R. cerasinum*); 'Yellow Peril' (a *R. campylocarpum* variety); 'Scarlet Runner' (*R. repens* var. *chamaedoxa*) [so now synonymous under *R. forrestii* var. *forrestii* Repens Group]; the carmine 'Carmelita' (*R. chamaethomsonii* var. *chamaethauma*) [synonymous under *R. forrestii* var. *forrestii* Tumescens Group]; the fragrant white 'Madonna' (a *R. nuttalli* variety). 'Plum Warner' (*R. campylogynum*) was named after the famous cricketer of the day, although the great sportsman might have been a little disconcerted by K-W's description of the flowers – 'absurd little plummy mouths pouting discontentedly at us'.



FKW in 1950.

One reason why he was such a good plant collector was the fact that he could be completely bowled over by a discovery. One such was his 'Tea Rose' primula (*Primula agleniana* var. *thearosa*).

In *Plant Hunting on the Edge of the World* he described how he discovered it flowering on the brink of an alpine snowfield during his 1926 expedition in Assam and Burma:

'I can recall several flowers which at first sight have knocked the breath out of me, but only two or three which have taken me by storm as did this one. The sudden vision is like a physical blow in the pit of the stomach; one can only gasp and stare. In the face of such unsurpassed loveliness, one is afraid to move, as with bated breath one mutters the single word "God" – a prayer rather than exclamation.'

Although he was by nature a loner, K-W did take travelling companions with him, partly to help finance the expeditions, but also to make themselves useful, particularly with surveying and map-making, both of which he came to find tedious and time-consuming.

His companion in 1924 was the then Lord Cawdor, a man fifteen years his junior, and in many ways as different in character and temperament as it was possible to find. He kept a detailed, and frequently very entertaining, journal, appealingly peppered with English public school, naval officers' wardroom language – he had served with distinction in the Royal Navy in the First World War.

When the cook filled the mince pies with tinned sardines instead of mincemeat, he noted: 'They weren't at all bad, though rather unexpected.'

He gave some sharp insights to travelling with K-W, he always called him 'W', and the slowness of the progress of a plant hunting expedition:

'… move at his pace – God knows how he does it…It drives me clean daft to walk behind him – Stopping every 10 yards and hardly moving in between – In the whole of my life, I've never seen such an incredibly slow mover – If I ever travel again I'll make damned sure its not with a botanist. They are always stopping to gape at weeds.'

Cawdor who normally wore riding breeches and puttees, admired K-W's eccentric dress code: 'W wears long pants with shorts – it is admirable – I shouldn't have the courage to do it.'

While he did not form close friendships with many of his travelling companions, they all admired and respected him.

Ronald Kaulback was twenty-three when he accompanied him in 1933 in Assam. When they parted company – K-W continued into Tibet – Kaulback recalled in his book *Tibetan Trek:*

'…when finally we shook hands…and he turned to go, I felt more miserable than any human being had a right to feel. Kingdon Ward had not only been a magnificent leader who had filled us all with the utmost confidence from start to finish, but a most marvellous companion, and when he went, it was just as though there had been a death in the family.'

Apart from a boyhood friend, Kenneth Ward, the closest friend he made was with the Arctic explorer, Hugh Clutterbuck, who was with him in Assam in 1928. He was a calm and kindly man. At the end of the expedition K-W was able to write of Clutterbuck, whom he nicknamed 'Buttercup':

'Staunch, brave, patient, and competent, no man ever had a better companion. Throughout all those months of discomfort, anxiety and stress, no harsh word, no reproach had passed his lips.'

The dearest and most treasured companion on his travels was his second wife, Jean, who was many years his junior. From 1948 until his death she accompanied him on his final six expeditions.

She was a brilliant organiser, and rapidly became a good plant hunter, as well as cheerfully carrying out the labour intensive job of pressing and preserving herbarium specimens, harvesting, drying and cleaning seed.

Their first expedition was to the tiny Indian Himalayan state of Manipur. Although he had done important work during the war locating sites for military dumps in Burma for the campaign against the Japanese invaders, and running courses in jungle survival for the RAF, he found his war career disappointing. However, his last military assignment searching for crashed American aircraft on the mountain sides, and in the gorges of Manipur, brought him back into plant hunting. The aircraft search took him to the 8,500 foot mountain, Sirhoi, where he spotted ripe seed capsules of what appeared to be a Nomocharis.

He dug up some bulbs which he sent to friends to grow. The reports were disappointing – 'dirty white' – but K-W was not discouraged. He believed it was not a Nomocharis but a new lily, and a good one. In 1948 he and Jean travelled to Sirhoi where they found the lily in flower 'the buds are almost carmine, but when they open the inside takes on a pale blush-pink, the outside (which has a radiant satiny sheen) being rose-purple'. He named it *Lilium mackliniae* in honour of Jean, whose maiden name was Macklin, and it has gone on to become an established garden favourite.

Together they collected in Assam, Tibet, Burma and Ceylon, surviving in August 1950 being at the epicentre of the great Assam earthquake, at that time one of the biggest 'quakes ever recorded.

In 1953 they were in North Burma where they discovered an epiphytic lily, the first epiphytic lily ever to be found. It was a Nile-green turk's cap with vermilion anthers and the fragrance of nutmeg. It was named *Lilium arboricola* and was flowered at Wisley and the Liverpool Municipal Parks, but did not survive in cultivation. At the end of 2006 an epiphytic lily was discovered in Vietnam (an area he was planning to explore) by Bleddyn and Sue Wynn-Jones, but the flowers have turned out to be purple.

Kingdon-Ward's contribution to horticulture and botany is enormous, and without his remarkable dedication to plant hunting our gardens would be the poorer now, but he also left another rich legacy – his writings. Apart from a mass of magazine articles, he published twenty five books, which include superb accounts of his travels, the plants he found and collected, as well as the vivid descriptions of the countries where he explored and hunted, and the people he lived with.

Apart from the travel books, he also wrote a series of practical books for gardeners - *Rhododendrons for Everyone; Rhododendrons; Commonsense Rock Gardening; Berried Treasure; The Romance of Gardening*.

Anthropology and geography were two areas for which he is not known, but these interests produced three books; *Footsteps in Civilisation,* the story of man, *Modern Exploration,* and *About this Earth,* an introduction to the science of geography.

Acerbic, intolerant, compassionate, affectionate, dedicated, witty, clever, eccentric and talented are all words that describe the remarkable and complex character of Frank Kingdon-Ward. He was certainly the last of the great and intrepid plant-collectors of the 19th and early 20th century. His achievements in his lifetime, and even now, have, perhaps, not been given the full recognition they deserve, for his contribution to science and horticulture, and to the beauty of our gardens today, is a gift to be treasured.

This account appeared in *Rhododendrons, Camellias & Magnolias 2009.* Charles Lyte's full biography of FKW - *Frank Kingdon-Ward: The Last of the Great Plant Hunters* - went to print via John Murray (Publishers) Ltd in 1989. It had been proceeded by *Sir Joseph Banks: 18th Century Explorer, Botanist and Entrepreneur,* and, *The Plant Hunters*.



Frank Kingdon-Ward's gravestone in Grantchester churchyard.

The Kingdon-Ward Plant Hunting Expeditions:

The 1913 Tibet & N Yunnan Collections:

KW 260	davidsonianum	KW 768	aganniphum
KW 406	mekongense	KW 793	campylogynum
KW 529	wardii		



Another of FKW's Tibetan base camps, this one near the base of a glacier at an altitude of 14,000 feet.



- *opposite* -
Chömbo, Tibet.

KW 406 - *R.* *R. trichocladum* var. *mekongense* ‘Yellow Fellow’ AM 1979

KW 406 - *R.* *R. trichocladum* var. *mekongense* ‘Yellow Fellow’ AM 1979

KW 406 - *R.* *R. trichocladum* var. *mekongense* ‘Yellow Fellow’ AM 1979

The 1919 NE Upper Myanmar Collections:

KW 3038	edgeworthii
KW 3039	zaleucum
KW 3040	neriiflorum
KW 3042	glischrum
KW 3042a	habrotrichum
KW 3061	sidereum
KW 3095	megeratum
KW 3096	stewartianum
KW 3097	trichocladum
KW 3101	arizelum
KW 3155	hylaeum
KW 3172	campylogynum
KW 3248	crassum
KW 3267	euchroum
KW 3267a	scyphocalyx
KW 3299	oreotrephes
KW 3300	stewartianum
KW 3301	aperantum
KW 3302	hypolepidotum
KW 3303	campylogynum
KW 3304	rupicola
KW 3305	trichocladum
KW 3365	cephalanthum
KW 3390	keleticum
KW 3391	campylogynum
KW 3392	scyphocalyx
KW 3408	caloxanthum
KW 3721	caloxanthum
KW 3721a	caloxanthum



R. bullatum [*R. edgeworthii*].

- opposite -
FKW's base camp in Northern Burma.



The 1921 Sichuan & NE Yunnan Collections:

KW 3776	ciliicalyx	KW 4102	telmateium	KW 4184	intricatum	KW 4465	trichostomum
KW 3784	delavayi	KW 4160	primuliflorum	KW 4185	sphaeroblastum	KW 4486	ravum
KW 3805	decorum	KW 4170	wardii	KW 4207	roxieanum	KW 4487	decorum
KW 3948	delavayi	KW 4177	balfourianum	KW 4211	beesianum	KW 4509	rex
KW 3952	racemosum	KW 4583	lepidotum	KW 4268	telmateium	KW 4995	uvariifolium
KW 3952a	pubescens	KW 4583a	racemosum	KW 4308	rubiginosum	KW 5001	scabrifolium
KW 3952b	pubescens	KW 4733	telmateium	KW 4309	oreotrephes	KW 5002	decorum
KW 3953	pubescens	KW 4843	phaeochrysum	KW 4322	yunnanense	KW 5002a	irroratum
KW 3998	trichostomum	KW 4860	traillianum	KW 4410	wardii	KW 5004	scabrifolium
KW 4023	chryseum	KW 4974	yunnanense	KW 4456	x lysolepis (NH)	KW 5005	irroratum
KW 4050	hemitrichotum	KW 4994	hemitrichotum	KW 4458	wardii aff.		



Yak transport over the Himalaya.

KW 3953 - *R. scabrifolium* ssp. *pubescens*



KW 3953 - *R. scabrifolium* ssp. *pubescens* ‘Fine Bristles’ AM 1955

KW 3953 - *R. scabrifolium* ssp. *pubescens* ‘Fine Bristles’ AM 1955

KW 4023 - *R. rupicola* ssp. *chryseum*

KW 4023 - *R. rupicola* ssp. *chryseum*


KW 4050 - *R. hemitrichotum*


KW 4050 - *R. hemitrichotum*


KW 4050 - *R. hemitrichotum*

KW 4170 - *R. wardii* var. *wardii*

KW 4170 - *R. wardii* var. *wardii*

KW 4170 - *R. wardii* var. *wardii*

KW 4268 - *R. telmateium*

KW 4308 - *R. rubiginosum*

KW 4308 - *R. rubiginosum*

KW 4308 - *R. rubiginosum*

KW 4456 - *R. x lysolepis*

KW 4456 - *R. x lysolepis*

KW 4509 - *R. rex* ssp. *rex*

KW 4509 - *R. rex* ssp. *rex*

KW 4974 - *R. yunnanense* ssp. *yunnanense*

KW 4974 - *R. yunnanense* ssp. *yunnanense*

KW 4974 - *R. yunnanense* ssp. *yunnanense*

KW 5001 - *R. scabrifolium* ssp. *scabrifolium* var. *scabrifolium*

The 1922 NE Myanmar, Sichuan, Tibet & Yunnan Collections:

KW 5384	primuliflorum	KW 5430	keleticum	KW 5440	seinghkuense	KW 5483	phaedropum
KW 5385	tapetiforme	KW 5431	chaetomallum	KW 5445	facetum	KW 5484	pocophorum
KW 5405	vernicosum	KW 5432	sanguineum	KW 5446	xanthostephanum	KW 5485	sidereum
KW 5409	phaeochrysum	KW 5432a	didymum	KW 5447	dendricola	KW 5487	septentrionale
KW 5414	selense	KW 5433	sanguineum	KW 5448	crassum	KW 5489	mekongense
KW 5415	anthosphaerum	KW 5434	martinianum	KW 5449	dendricola	KW 5490	unidentified species
KW 5416	sanguineum	KW 5435	temenium	KW 5457	unidentified species	KW 5505	unidentified species
KW 5417	forrestii	KW 5436	saluenense	KW 5458	anthosphaerum	KW 5533	kyawii
KW 5418	sinogrande	KW 5437	hypolepidotum	KW 5466	nuttallii	KW 5602	oreotrephes
KW 5421	virgatum	KW 5438	arizelum	KW 5469	kyawii	KW 5607	unidentified species
KW 5425	moulmainense	KW 5438a	arizelum	KW 5480	neriiflorum		
KW 5427	crinigerum	KW 5438b	unidentified species	KW 5481	hypolepidotum		
KW 5428	rubiginosum	KW 5439	edgeworthii	KW 5482	riparium		



FKW seeing his porters safely across the Ata Chu river, with the tributary in full spate.

KW 5445 [or 7327] - *R. elliottii* ssp. *facetum*


KW 5445 [or 7327] - *R. elliottii* ssp. *facetum*


KW 5445 [or 7327] - *R. elliottii* ssp. *facetum*


KW 5445 [or 7327] - *R. elliottii* ssp. *facetum*

KW 5445 [or 7327] - *R. elliottii* ssp. *facetum*

KW 5458 - *R. anthosphaerum*

KW 5458 - *R. anthosphaerum*

KW 5483 - *R. neriiflorum* ssp. *phaedropum*

KW 5483 - *R. neriiflorum* ssp. *phaedropum*

The 1924/1925 Bhutan & Tibet Collections:

KW 5656	vellereum	KW 5853	campylocarpum
KW 5659	hirtipes	KW 5856	pumilum
KW 5660	griseum	KW 5861	unidentified species
KW 5687	mahogani	KW 5862	nivale
KW 5687a	mahogani	KW 5862a	pumilum
KW 5700	kongboense	KW 5863	x doshongense (NH)
KW 5718	dignabile	KW 5874	concatenans
KW 5718a	mekongense	KW 5875	parmulatum
KW 5718b	caloxanthum	KW 5876	uniflorum
KW 5729	nivale	KW 5877	arizelum
KW 5732	faucium aff.	KW 5878	temenium
KW 5733	laudandum	KW 5879	x chamaethauma aff. (NH)
KW 5734	fragariiflorum	KW 5880	stewartianum
KW 5735	nivale	KW 5911	unidentified species
KW 5736	wardii	KW 5917a	calvescens aff.
KW 5756	wardii x ? (NH)	KW 5940	lepidotum
KW 5756a	wardii	KW 5953	unidentified species
KW 5759	x agglutinatum (NH)	KW 5971	lanatoides
KW 5777	nivale	KW 5994	lepidotum
KW 5778	nivale	KW 6020	kongboense
KW 5790	oreotrephes	KW 6021	kongboense
KW 5792	nivale	KW 6026	concatenans
KW 5828	riparium	KW 6069	virgatum
KW 5829	viridescens	KW 6069a	lepidotum
KW 5830	cerasinum	KW 6079	unidentified species
KW 5842	campylogynum	KW 6215	griffithianum
KW 5843	calostrotum	KW 6223	hirtipes
KW 5843	tsangpoense x campylogynum (NH)	KW 6229	campylocarpum
KW 5844	tsangpoense	KW 6250	megeratum
KW 5845	forrestii	KW 6250a	baileyi
KW 5846	forrestii	KW 6251	leptocarpum
KW 5847	x chamaethauma (NH)	KW 6256	rude
KW 5848	temoense	KW 6257	keysii
KW 5849	temoense	KW 6257a	unidentified species
KW 5850	kongboense	KW 6258	lanigerum
KW 5851	x rubrolineatum	KW 6261	sinogrande
KW 6261a	montroseanum	KW 6307	unidentified species
KW 6263	mahogani	KW 6310	taggianum
KW 6273	leucaspis	KW 6311	uvariifolium
KW 6275	unidentified species	KW 6325	scopulorum
KW 6276	maddenii	KW 6330	unidentified species
KW 6276a	maddenii	KW 6333	nuttallii
KW 6278	auritum	KW 6335	ovatum
KW 6279	virgatum	KW 6354	scopulorum
KW 6281	glischrum	KW 6401	faucium
KW 6284	ramsdenianum	KW 6403	delavayi
KW 6285	venator	KW 6409	mahogani
KW 6286	megacalyx	KW 6411	unidentified species
KW 6291	leucaspis	KW 6413	polyandrum
KW 6301	pemakoense	KW 6414	unidentified species
KW 6303	tephropeplum	KW 6415	rhabdotum
KW 6304	unidentified species	KW 6457a	keysii



FKW's tent in Tibet.

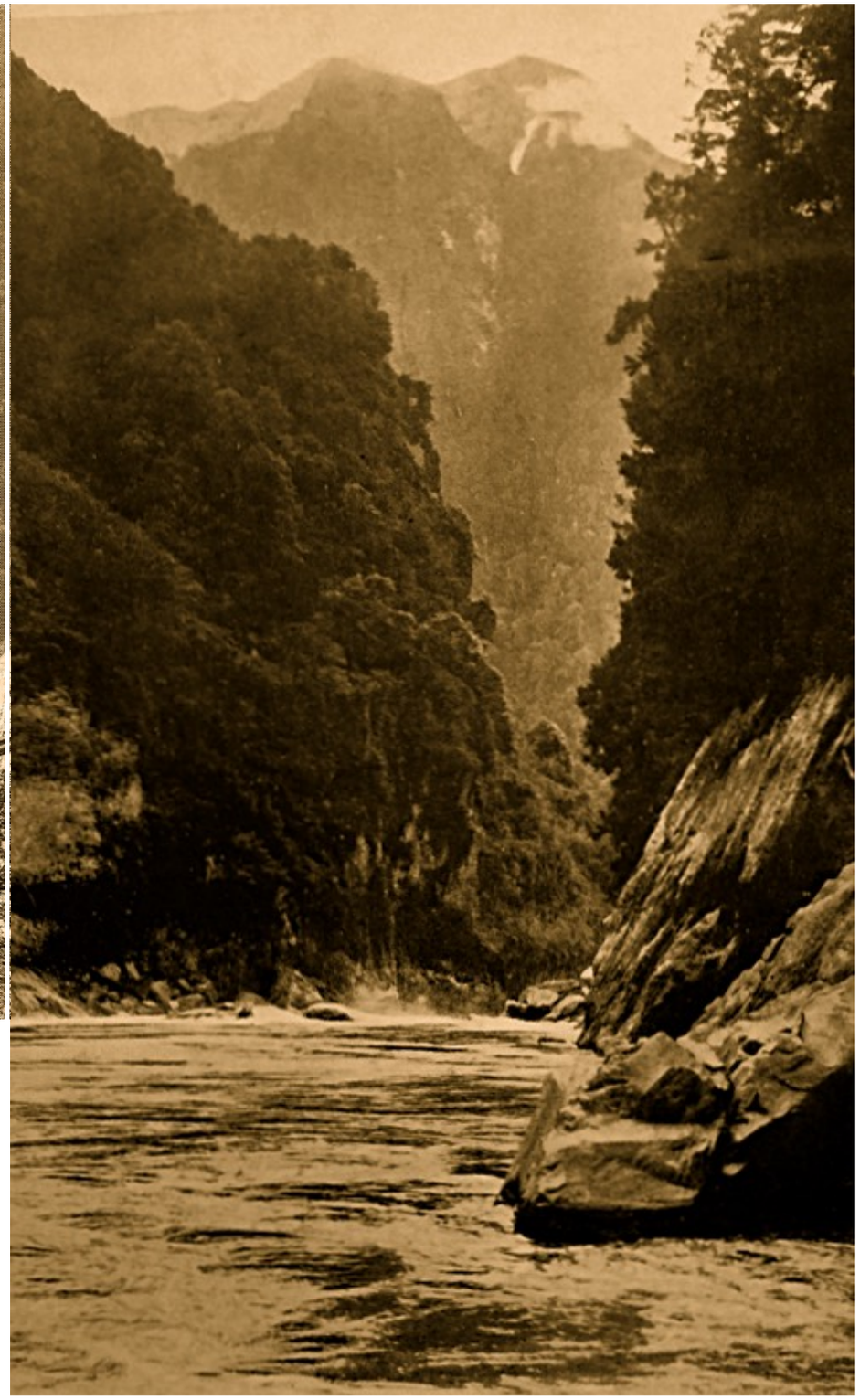


FKW’s team of porters resting on the trek to the Tsangpo gorge.

- right -
The wooded cliffs of the Tsangpo gorge.

- overleaf page 76 left -
R. vellereum in the Tsangpo valley.

- overleaf page 76 right -
R. nuttallii in the Tsangpo gorge.







KW 5656 - *R. vellereum*

KW 5656 - *R. vellereum*

KW 5656 - *R. vellereum*

KW 5656 - *R. vellereum* ‘Lost Horizon’ AM 1976

KW 5656 - *R. vellereum* 'Lost Horizon' AM 1976



KW 5659 - *R. hirtipes*

KW 5660 - *R. uvariifolium* var. *griseum*

KW 5687 - *R. triflorum* var. *mahogani*

KW 5718b - *R. campylocarpum* ssp. *caloxanthum*

KW 5732 - *R. hylaeum* var. *faucium* aff.

KW 5732 - *R. hylaeum* var. *faucium* aff.

KW 5736 - *R. wardii* var. *wardii*



KW 5736 - *R. wardii* var. *wardii*

KW 5777 - *R. nivale* ssp. *nivale*

KW 5790 - *R. oreotrephes*

KW 5829 - *R. viridescens*

KW 5829 - *R. viridescens*

KW 5830 - *R. cerasinum* ‘Coals of Fire’

KW 5830 - *R. cerasinum* ‘Coals of Fire’

KW 5843 - *R. calostrotum* ssp. *calostrotum*

KW 5843 - *R. tsangpoense* x *campylogynum* (Seed Pan Rogue)

KW 5843 - *R. tsangpoense* x *campylogynum* (Seed Pan Rogue)

KW 5843 - *R. tsangpoense* x *campylogynum* (Seed Pan Rogue)

KW 5844 - *R. charitopes* ssp. *tsangpoense*

KW 5844 - *R. charitopes* ssp. *tsangpoense*

KW 5844 - *R. charitopes* ssp. *tsangpoense*

KW 5844 - *R. charitopes* ssp. *tsangpoense*

KW 5846 - *R. forrestii* var. *forrestii*

KW 5846 - *R. forrestii* var. *forrestii*

KW 5846 - *R. forrestii* var. *forrestii*

KW 5846 - *R. forrestii* var. *forrestii*

KW 5863 - *R. x doshongense*

KW 5863 - *R. x doshongense*

KW 5863 - *R. x doshongense*

KW 5863 - *R. x doshongense*

KW 5874 - *R. cinnabarinum* ssp. *concatenans*

KW 5874 - *R. cinnabarinum* ssp. *concatenans*

KW 5876 - *R. uniflorum*

KW 5876 - *R. uniflorum*

KW 5877 - *R. arizelum* ssp. *arizelum* Rubicosum Group

KW 5877 - *R. arizelum* ssp. *arizelum* Rubicosum Group



KW 5877 - *R. arizelum* ssp. *arizelum* Rubicosum Group



KW 5877 - *R. arizelum* ssp. *arizelum* Rubicosum Group

KW 5877 - *R. arizelum* ssp. *arizelum* Rubicosum Group

KW 5971 - *R. lanatoides*

KW 5971 - *R. lanatoides*

KW 5971 - *R. lanatoides*

KW 5971 - *R. lanatoides*


KW 6020 - *R. kongboense*


KW 6020 - *R. kongboense*


KW 6020 - *R. kongboense*

KW 6020 - *R. kongboense*

KW 6026 - *R. cinnabarinum* ssp. *concatenans*

KW 6026 - *R. cinnabarinum* ssp. *concatenans*

KW 6258 - *R. lanigerum* 'Round Wood' AM1951

KW 6258 - *R. lanigerum* ‘Round Wood’ AM1951

KW 6261a - *R. montroseanum*


KW 6261a - *R. montroseanum*


KW 6261a - *R. montroseanum*


KW 6261a - *R. montroseanum*

KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957

KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957

KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957

KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957

KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957



KW 6261a - *R. montroseanum* ‘Benmore’ FCC 1957

KW 6273 - *R. leucaspis* AM 1929

KW 6273 - *R. leucaspis* AM 1929


KW 6278 - *R. auritum*


KW 6278 - *R. auritum*


KW 6278 - *R. auritum*

KW 6278 - *R. auritum*

KW 6284 - *R. ramsdenianum*



KW 6284 - *R. ramsdenianum*



KW 6284 - *R. ramsdenianum*

KW 6284 - *R. ramsdenianum*

KW 6284 - *R. ramsdenianum*

KW 6285 - *R. venator*

KW 6285 - *R. venator*


KW 6285 - *R. venator*


KW 6285 - *R. venator*


KW 6285 - *R. venator*

KW 6301 - *R. pemakoense*

KW 6301 - *R. pemakoense*

KW 6301 - *R. pemakoense*

KW 6354 - *R. dendricola* ssp. *scopulorum*

KW 6354 - *R. dendricola* ssp. *scopulorum*

KW 6354 - *R. dendricola* ssp. *scopulorum*

KW 6354 - *R. dendricola* ssp. *scopulorum*

KW 6401 - *R. hylaeum* var. *faucium*

KW 6401 - *R. hylaeum* var. *faucium*

KW 6409 - *R. triflorum* var. *mahogani*

KW 6409 - *R. triflorum* var. *mahogani*

KW 6409 - *R. triflorum* var. *mahogani*

KW 6409 - *R. triflorum* var. *mahogani*

The 1926 Myanmar & Assam Collections:

KW 6676	dendricola	KW 6900	eclecteum x ? (NH)
KW 6711	dendricola	KW 6903	riparium
KW 6716	sinogrande	KW 6912	forrestii
KW 6736	maddenii	KW 6913	forrestii
KW 6738	phaedropum	KW 6914	cephalanthum
KW 6751	xanthostephanum	KW 6920	eclecteum
KW 6752	vesiculiferum	KW 6921	eclecteum
KW 6753	sidereum	KW 6922	eclecteum
KW 6769	horlickianum	KW 6923	cerasinum
KW 6781	megacalyx	KW 6924	pruniflorum
KW 6782	sinogrande	KW 6930	campylocarpum
KW 6792	sidereum	KW 6934	saluenense
KW 6793	edgeworthii	KW 6935	forrestii
KW 6794	tephropeplum	KW 6936	eclecteum
KW 6795	martinianum	KW 6945	sanguineum
KW 6805	beanianum	KW 6953	beesianum
KW 6805	beanianum x ? (NH)	KW 6954	dryophyllum
KW 6806	trichocladum	KW 6955	haematodes aff.
KW 6807	edgeworthii	KW 6960	tapetiforme
KW 6809	taggianum	KW 6961	pumilum
KW 6818	arizelum	KW 6962	myiagrum
KW 6819	megeratum	KW 6965	caloxanthum
KW 6829	beanianum	KW 6967	cephalanthum
KW 6831	x didymoides (NH)	KW 6984	riparium
KW 6832	forrestii	KW 6986	myiagrum
KW 6833	hylaeum	KW 6991	euchroum
KW 6834	tephropeplum	KW 6993	seinghkuense
KW 6835	beanianum	KW 7001	nivale
KW 6848	leptocarpum	KW 7012	saluenense
KW 6854	phaedropum	KW 7023	anthopogon
KW 6855	exasperatum	KW 7038	pruniflorum
KW 6856	vesiculiferum	KW 7045	pruniflorum
KW 6868	caloxanthum	KW 7046	hypolepidotum
KW 6869	eclecteum	KW 7048	rupicola
KW 6884	imperator	KW 7058	nivale
KW 6896	eclecteum	KW 7061	riparium
KW 7062	riparium	KW 7190	setiferum
KW 7084	rupicola	KW 7196	campylocarpum
KW 7090	unidentified species	KW 7229	lepidotum
KW 7108	brevistylum	KW 7259	unidentified species
KW 7121	triflorum	KW 7327	facetum
KW 7122	uvariifolium	KW 7426	lukiangense
KW 7123	crinigerum	KW 7427	protistum
KW 7124	weihsiense	KW 7428	nuttallii
KW 7125	hylaeum	KW 7455	chrysolepis
KW 7136	manipurense	KW 7484	hylaeum
KW 7137	edgeworthii	KW 7500	x didymoides (NH)
KW 7138	virgatum	KW 7523	riparium
KW 7139	megacalyx	KW 7550	pruniflorum
KW 7140	arboreum	KW 7553	crassum
KW 7171	leucaspis	KW 7606	unidentified species
KW 7184	recurvoides	KW 7612	martinianum
KW 7185	sanguineum	KW 7625	tanastylum
KW 7187	unidentified species	KW 7630	dendricola
KW 7188	pruniflorum	KW 7633	tapetiforme
KW 7189	dasycladum	KW 7642	sinogrande

KW 6793 - *R. edgeworthii*


KW 6793 - *R. edgeworthii*


KW 6793 - *R. edgeworthii*


KW 6793 - *R. edgeworthii*



KW 6805 - *R. beanianum* ssp. *beanianum*

KW 6805 - *R. beanianum* ssp. *beanianum*

KW 6805 - *R. beanianum* ssp. *beanianum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6833 - *R. hylaeum* var. *hylaeum*

KW 6868 - *R. campylocarpum* ssp. *caloxanthum*


KW 6903 - R. calostrotum ssp. riparium


KW 6903 - R. calostrotum ssp. riparium


KW 6903 - R. calostrotum ssp. riparium

KW 6923 - *R. cerasinum* ‘Cherry Brandy’

KW 6923 - *R. cerasinum* ‘Cherry Brandy’

KW 6923 - *R. cerasinum* ‘Cherry Brandy’

KW 6923 - *R..cerasinum* 'Cherry Brandy'

KW 6955 - *R. haematodes* ssp. *haematodes* aff.

KW 6955 - *R. haematodes* ssp. *haematodes* aff.



KW 6984 - *R. calostrotum* ssp. *riparium*



KW 6984 - *R. calostrotum* ssp. *riparium*



KW 7012 - *R. saluenense* var. *saluenense*


KW 7038 - *R. pruniflorum*


KW 7038 - *R. pruniflorum*


KW 7038 - *R. pruniflorum*

KW 7038 - *R. pruniflorum*

KW 7046 - *R. brachyanthum* ssp. *hypolepidotum*

KW 7046 - *R. brachyanthum* ssp. *hypolepidotum*

KW 7046 - *R. brachyanthum* ssp. *hypolepidotum*

KW 7048 - *R. rupicola* ssp. *rupicola*

KW 7048 - *R. rupicola* ssp. *rupicola*

KW 7122 - *R. uvariifolium* var. *uvariifolium*

KW 7122 - *R. uvariifolium* var. *uvariifolium*

KW 7124 - *R. weihsiense*



KW 7124 - *R. weihsiense*



KW 7124 - *R. weihsiense*

KW 7124 - *R. weihsiense*

KW 7124 - *R. weihsiense*

KW 7171 - *R. leucaspis*

KW 7171 - *R. leucaspis*

KW 7171 - *R. leucaspis*

KW 7184 - *R. recurvoides*



KW 7184 - *R. recurvoides*



KW 7184 - *R. recurvoides*

KW 7184 - *R. recurvoides*

KW 7184 - *R. recurvoides*

KW 7184 - *R. recurvoides*

KW 7184 - *R. recurvoides*

KW 7184 - *R. recurvoides*

KW 7188 - *R. pruniflorum*

The 1927/1928 Arunachal Pradesh & Assam Collections:

KW 7701	formosum	KW 8112	phaedropum	KW 8250	exasperatum	KW 8294	stewartianum
KW 7717	inaequale	KW 8113	boothii	KW 8251	lanigerum	KW 8300	fulvoides
KW 7723	maddenii	KW 8130	sinogrande	KW 8254	piercei	KW 8326	leptanthum
KW 7724	macabeanum	KW 8163	arizelum	KW 8256	campylocarpum	KW 8337	cephalanthum
KW 7725	elliottii	KW 8164	crinigerum	KW 8257	pruniflorum	KW 8341	x chamaethauma (NH)
KW 7731	bauhiniiflorum	KW 8165	tephropeplum	KW 8258	cerasinum	KW 8400	crassum
KW 7732	johnstoneanum	KW 8205	megacalyx	KW 8259	trichocladum	KW 8415	pruniflorum
KW 7968	arboreum	KW 8206	edgeworthii	KW 8260	patulum	KW 8521	phaedropum
KW 8016	dendricola	KW 8225	megeratum	KW 8288	lanatum	KW 8522	kasoense
KW 8044	tanastylum	KW 8229	riparium	KW 8289	pocophorum	KW 8545	manipurense
KW 8052	edgeworthii	KW 8238	hookeri	KW 8293	sanguineum	KW 8700	kasoense
KW 8069	protistum	KW 8239	xanthocodon				



R. megacalyx in the Mishmi Hills.



KW 7724 - *R. macabeanum*

KW 7724 - *R. macabeanum*

KW 7724 - *R. macabeanum*

KW 7724 - *R. macabeanum*

KW 7724 - *R. macabeanum*

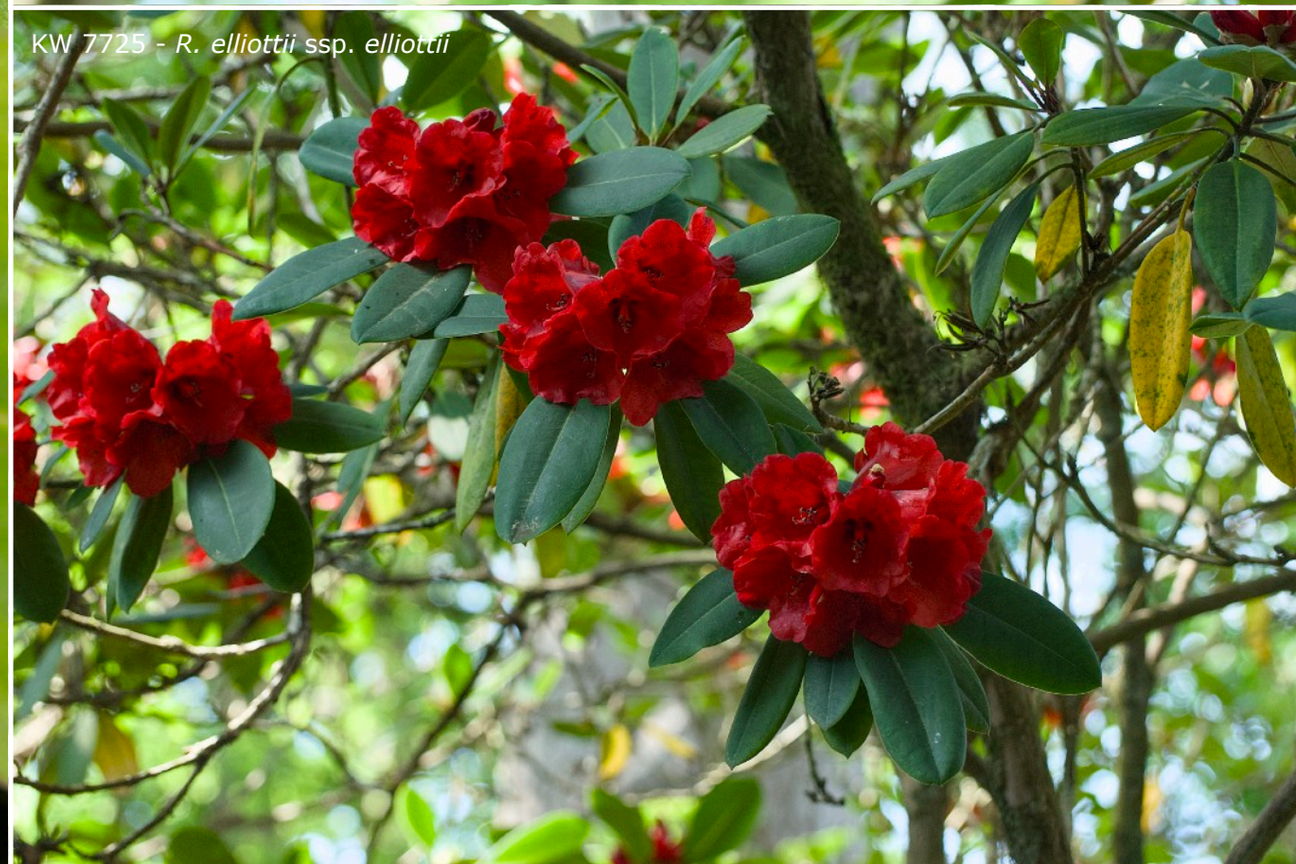
KW 7725 - *R. elliottii* ssp. *elliottii*



KW 7725 - *R. elliottii* ssp. *elliottii*


KW 7725 - R. elliottii ssp. elliottii


KW 7725 - R. elliottii ssp. elliottii


KW 7725 - R. elliottii ssp. elliottii

KW 7732 - *R. johnstoneanum*

KW 7732 - *R. johnstoneanum*

KW 7732 - *R. johnstoneanum*

KW 7732 - *R. johnstoneanum*

KW 7732 - *R. johnstoneanum* ‘Rubeotinctum’ AM 1941

KW 8044 - *R. tanastylum* var. *pennivenium*

KW 8069 - *R. protistum*

KW 8163 - *R. arizelum* ssp. *arizelum*



KW 8163 - *R. arizelum* ssp. *arizelum*



KW 8163 - *R. arizelum* ssp. *arizelum*

KW 8163 - *R. arizelum* ssp. *arizelum*

KW 8163 - *R. arizelum* ssp. *arizelum*



KW 8165 - *R. tephropeplum* Deleiense Group

KW 8165 - *R. tephropeplum* Deleiense Group

KW 8229 - *R. calostrotum* ssp. *riparium*



KW 8229 - *R. calostrotum* ssp. *riparium*


KW 8238 - *R. hookeri*


KW 8238 - *R. hookeri*

KW 8238 - *R. hookeri*

KW 8239 - *R. cinnabarinum* ssp. *cinnabarinum* Roylei Group

KW 8250 - *R. exasperatum*

KW 8250 - *R. exasperatum*

KW 8250 - *R. exasperatum*

KW 8250 - *R. exasperatum*


KW 8251 - *R. lanigerum*


KW 8251 - *R. lanigerum*


KW 8251 - *R. lanigerum*

KW 8251 - *R. lanigerum* (après gel nocturne)

KW 8251 - *R. lanigerum* (après gel nocturne)

KW 8254 - *R. beanianum* ssp. *piercei*

KW 8254 - *R. beanianum* ssp. *piercei*

KW 8254 - *R. beanianum* ssp. *piercei*

KW 8254 - *R. beanianum* ssp. *piercei*

KW 8254 - *R. beanianum* ssp. *piercei*

KW 8256 - *R. campylocarpum* ssp. *campylocarpum*



KW 8258 - *R. cerasinum*



KW 8258 - *R. cerasinum*

KW 8258 - *R. cerasinum*

KW 8288 - *R. lanatum* ssp. *lanatum*

KW 8288 - *R. lanatum* ssp. *lanatum*

KW 8288 - *R. lanatum* ssp. *lanatum*

KW 8289 - *R. coelicum* var. *pocophorum*

KW 8289 - *R. coelicum* var. *pocophorum*

KW 8289 - *R. coelicum* var. *pocophorum* ‘Cecil Nice’ AM 1971

KW 8289 - *R. coelicum* var. *pocophorum* ‘Cecil Nice’ AM 1971

KW 8289 - *R. coelicum* var. *pocophorum* ‘Cecil Nice’ AM 1971

KW 8521 - *R. neriiflorum* ssp. *phaedropum*

KW 8521 - *R. neriiflorum* ssp. *phaedropum*

The 1931 Upper Myanmar & Tibet Collections:

KW 9130	unidentified species	KW 9478	triflorum
KW 9170	horlickianum	KW 9479	uvariifolium
KW 9195	unidentified species	KW 9483	phaedropum
KW 9200	magnificum	KW 9485	vesiculiferum
KW 9210	unidentified species	KW 9490	genestierianum
KW 9220	taggianum	KW 9500	selense
KW 9236	tanastylum	KW 9503	crinigerum
KW 9250	xanthostephanum	KW 9504	edgeworthii
KW 9252	unidentified species	KW 9505	oreotrephes
KW 9254	seinghkuense	KW 9506	neriiflorum
KW 9258	vesiculiferum	KW 9509	oreotrephes
KW 9260	arizelum	KW 9517	riparium
KW 9261	megacalyx	KW 9519	trichocladum
KW 9263	phaedropum	KW 9529	virgatum
KW 9273	manipurense	KW 9543	seingkhuense
KW 9274	nuttallii	KW 9544	arizelum
KW 9293	phaedropum	KW 9561	phaedropum
KW 9294	calostrotum	KW 9565	tephropeplum
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 9717	riparium	KW 10121	campylogynum
KW 9726	vesiculiferum	KW 10129	leptocarpum
KW 9735	pruniflorum	KW 10134	coelicum
KW 9790	campylogynum	KW 10136	unidentified species
KW 9795	praestans	KW 10139	unidentified species
KW 9800	lepidotum	KW 10140	campylogynum
KW 9810	campylogynum	KW 10142	boothii
KW 9815	campylogynum	KW 10159	eclecteum
KW 9816	forrestii aff.	KW 10160	eclecteum
KW 9909	chryseum	KW 10161	unidentified species
KW 10005	tapetiforme x ? (NH)	KW 10175	dendricola
KW 10012	traillianum	KW 10180	dendricola
KW 10020	heliolepis	KW 10231	simsii



R. brevistylum in Burma.

KW 9200 - *R. magnificum* ‘Kildonan’ FCC 1966

KW 9200 - *R. magnificum* ‘Kildonan’ FCC 1966

KW 9200 - *R. magnificum* ‘Kildonan’ FCC 1966

KW 9403 - *R. horlickianum*

KW 9403 - *R. horlickianum*



KW 9413 - *R. eclecteum*

KW 9519 - *R. trichocladum* var. *trichocladum*

KW 9544 - *R. arizelum* ssp. *arizelum*

KW 9544 - *R. arizelum* ssp. *arizelum*

KW 9544 - *R. arizelum* ssp. *arizelum*

KW 9609 - *R. rupicola* ssp. *chryseum*

The 1933 Upper Myanmar & Assam Collections:

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



A Nung tribesman crossing a rope bridge over the Adung River.

KW 10490 - *R. trichocladum* var. *trichocladum*

KW 10498a - *R. uvariifolium* var. *uvariifolium*



KW 10498a - *R. uvariifolium* var. *uvariifolium*

KW 10500 - *R. pruniflorum*

KW 10500 - *R. pruniflorum*

KW 10952 - *R. glischrum* ssp. *rude* ‘High Flier’ AM 1968

KW 10952 - *R. glischrum* ssp. *rude* ‘High Flier’ AM 1968

KW 10952 - *R. glischrum* ssp. *rude* ‘Frank Kingdon-Ward’ AM 1969

KW 10952 - *R. glischrum* ssp. *rude* ‘Frank Kingdon-Ward’ AM 1969

KW 11011 - *R. cerasinum*

KW 11011 - *R. cerasinum*

KW 11040 - *R. beanianum* ssp. *piercei*

KW 11040 - *R. beanianum ssp. piercei*

KW 11040 - *R. beanianum* ssp. *piercei*

KW 11040 - *R. beanianum* ssp. *piercei*

The 1935 Assam & Tibet Collections:

KW 11175	macabeanum	KW 11568	concatenans	KW 11605	argipeplum	KW 12404	tsariense
KW 11378	kendrickii	KW 11569	anthopogon	KW 11612	wallichii	KW 12438	erosum
KW 11464	megeratum	KW 11586	phaeochrysum	KW 11640	hodgsonii	KW 12585	formosum
KW 11532	manipurense	KW 11587	fulgens	KW 11915	trichocladum	KW 12588	bauhiniiflorum
KW 11565	glaucophyllum	KW 11588	wightii	KW 11964	circinnatum	KW 12589	maddenii



The Gyamda valley on the old Lhasa to Peking road.

The 1937 NE Upper Myanmar & Tibet Collections:

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	oreotrephes	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	argipeplum
KW 13367	calostrotum	KW 13681	magnificum
KW 13369	praestans	KW 13681	x hodconeri (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



On the move - a porter carrying FKW's personal trunk.

KW 13369 - *R. praestans*

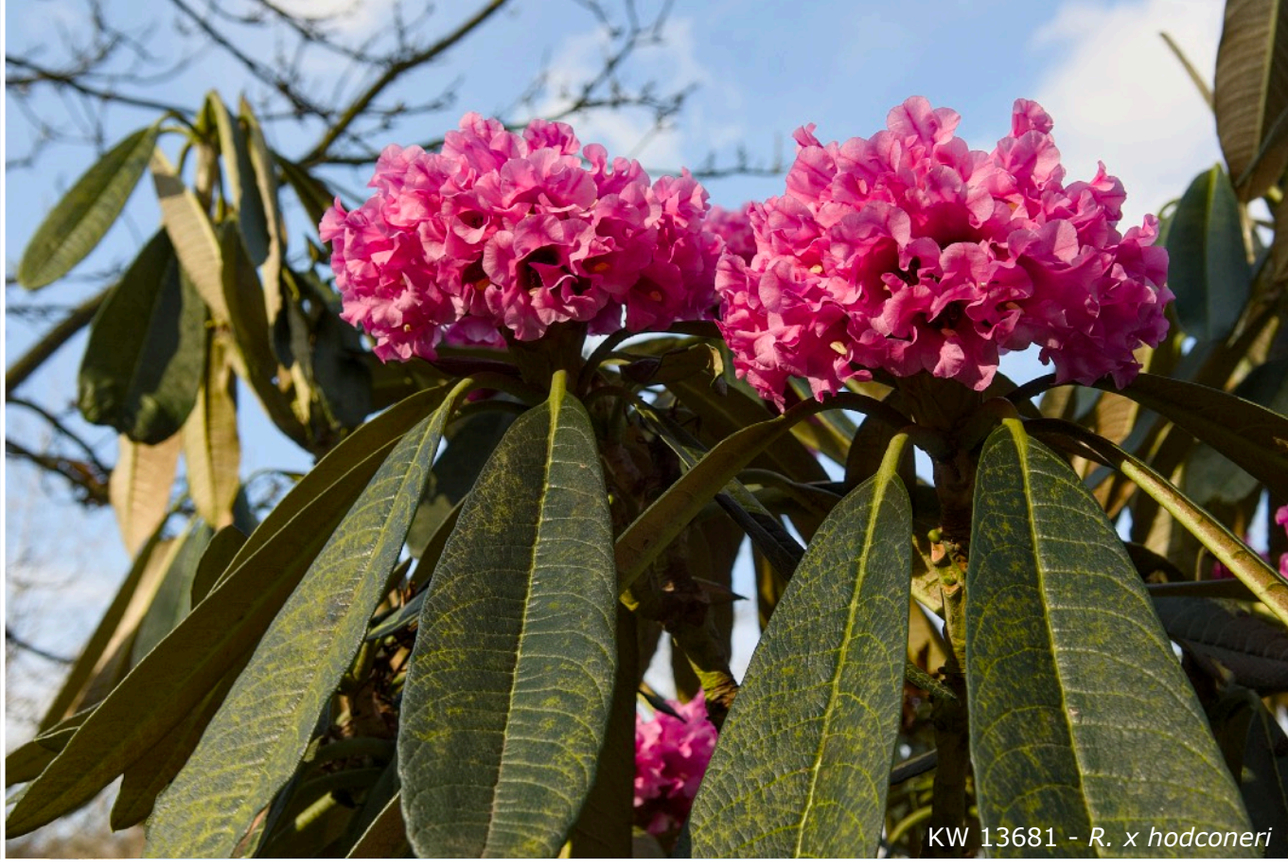
KW 13665 - *R. fulgens*

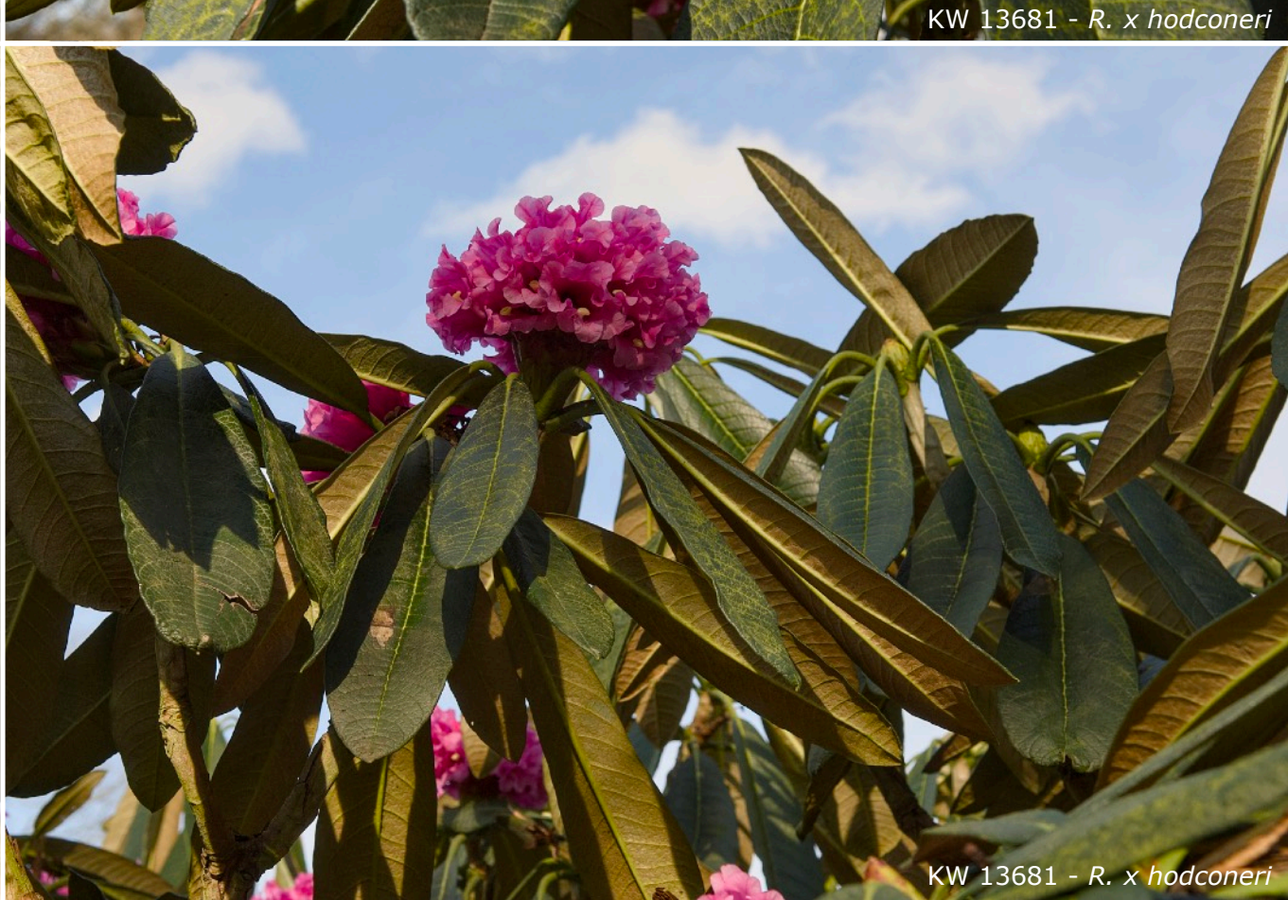
KW 13665 - *R. fulgens*

KW 13665 - *R. fulgens*

KW 13681 - *R. x hodconeri*


KW 13681 - *R. x hodconeri*


KW 13681 - *R. x hodconeri*


KW 13681 - *R. x hodconeri*

KW 13681 - *R. x hodconeri*

KW 13681 - *R. x hodconeri* ‘Himalayan Child’ AM 1981

KW 13681 - *R. x hodconeri* ‘Himalayan Child’ AM 1981

The 1938/1939 N Myanmar Collections:

KW 5	simsii	KW 286	neriiflorum
KW 51	kyawii	KW 293	edgeworthii
KW 52	dendricola	KW 312	neriiflorum
KW 61	oreotrephes	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	manipurense
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	oreotrephes	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		



A roadside *mani* stone in Mönyul decorated with *R. polyandrum*.

The 1946 Meghalaya Collections:

KW 16029	inaequale	KW 16060	unidentified species

The 1948 E Manipur Collections:

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	manipurense
KW 17217	manipurense	KW 17818	manipurense

The 1949 Assam Collections:

KW 18540	moulmainense	KW 18985	johnstoneanum
KW 18541	unidentified species	KW 19082	macabeanum
KW 18753	formosum	KW 19083	elliottii
KW 18811	unidentified species	KW 19101	bauhiniiflorum



FKW, with his new wife, Jean, about to set off on the 1948 Manipur expedition.

KW 19083 - *R. elliottii* ssp. *elliottii*

KW 19083 - *R. elliottii* ssp. *elliottii*

KW 19083 - *R. elliottii* ssp. *elliottii*

KW 19083 - *R. elliottii* ssp. *elliottii*


KW 19083 - *R. elliottii* ssp. *elliottii*


KW 19083 - *R. elliottii* ssp. *elliottii*


KW 19083 - *R. elliottii* ssp. *elliottii*

KW 19083 - *R. elliottii* ssp. *elliottii*

The 1950 Arunachal Pradesh, Assam & Tibet Collections:

KW 19244	virgatum	KW 19432	megacalyx	KW 19452	hylaeum	KW 19606	nivale
KW 19245	peramoenum aff.	KW 19433	edgeworthii	KW 19453	neriiflorum x ? (NH)	KW 19620	pruniflorum
KW 19259	dendricola	KW 19447	crinigerum	KW 19573	x rubrolineatum	KW 19657	manipurense
KW 19325	virgatum	KW 19448	triflorum	KW 19588	sanguineum	KW 20260	unidentified species
KW 19404	manipurense	KW 19449	sinogrande	KW 19589	x eudoxum (NH)	KW 20280	unidentified species
KW 19405	weihsiense	KW 19450	riparium	KW 19590	anthopogon	KW 20285	cerasinum aff.
KW 19406	sidereum	KW 19451	uvariifolium	KW 19591	pumilum	KW 20305a	johnstoneanum
KW 19431	hylaeum						



Mishmi porters carry Jean to safety after she and FKW survived being at the epicentre of the massive earthquake that struck the region in August 1950.

KW 19405 - *R. weihsiense*

KW 19405 - *R. wehsiense*

KW 19451 - *R. uvariifolium* var. *uvariifolium*

The 1953 Myanmar Collections:

KW 20601	dendricola	KW 20928	campylogynum
KW 20629	moulmainense	KW 20929	cephalanthum
KW 20651	dendricola	KW 20934	trichocladum
KW 20679	moulmainense	KW 20981	ciliicalyx
KW 20680	tanastylum	KW 21000	apodectum
KW 20681	unidentified species	KW 21001	sulfureum
KW 20682	genestierianum	KW 21003	tamaense
KW 20696	neriiflorum aff.	KW 21005	crassum
KW 20702	crassum	KW 21006	eclecteum
KW 20836	megacalyx	KW 21006a	atrokermesinum
KW 20837	flaviflorum	KW 21007	leptocarpum
KW 20838	sidereum	KW 21078	cephalanthum
KW 20839	edgeworthii	KW 21079	mekongense
KW 20840	edgeworthii	KW 21086	neriiflorum
KW 20843	neriiflorum	KW 21111	sinogrande
KW 20844	tephropeplum	KW 21130	campylogynum
KW 20845	luteiflorum	KW 21481	campylogynum
KW 20876	protistum	KW 21498	protistum
KW 20877	sinogrande	KW 21512	dendricola
KW 20878	chrysodoron	KW 21525	moulmainense
KW 20919	unidentified species	KW 21547	martinianum
KW 20922	arizelum	KW 21556	luteiflorum
KW 20923	apodectum	KW 21557	martinianum aff.
KW 20924	haematodes	KW 21559	megeratum
KW 20925	x chamaethauma (NH)	KW 21601	unidentified species
KW 20926	tamaense	KW 21602	protistum
KW 20927	caloxanthum	KW 21679	tephropeplum

The 1956 WC Myanmar Collections:

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



FKW and Jean outside their tent in the Adung Valley.

KW 20682 - *R. genestierianum*

KW 20682 - *R. genestierianum*

KW 20682 - *R. genestierianum*



KW 20837 - *R. zaleucum* var. *flaviflorum*

KW 20837 - *R. zaleucum* var. *flaviflorum*

KW 20837 - *R. zaleucum* var. *flaviflorum*



KW 20837 - *R. zaleucum* var. *flaviflorum*



KW 20837 - *R. zaleucum* var. *flaviflorum*

KW 20922 - *R. arizelum* ssp. *arizelum*

KW 20927 - *R. callimorphum* var. *myiagrum*

KW 20981 - *R. dendricola* ssp. *dendricola*

KW 21003 - *R. cinnabarinum* ssp. *tamaense*

KW 21003 - *R. cinnabarinum* ssp. *tamaense*



KW 21003 - *R. cinnabarinum* ssp. *tamaense*



KW 21006 - *R. eclecteum*

KW 21006a - *R. meddianum* var. *atrokermesinum*

KW 21006a - *R. meddianum* var. *atrokermesinum*

KW 21006a - *R. meddianum* var. *atrokermesinum*

KW 21021 - *R. cinnabarinum* ssp. *tamaense*

KW 21040 - *R. luteiflorum*



KW 21040 - *R. luteiflorum*



KW 21040 - *R. luteiflorum*

KW 21040 - *R. luteiflorum*

KW 21075 - *R. coelicum* var. *coelicum*

KW 21075 - *R. coelicum* var. *coelicum*

KW 21079 - *R. trichocladum* var. *mekongense*

KW 21079 - *R. trichocladum* var. *mekongense*

KW 21079 - *R. trichocladum* var. *mekongense*

KW 21079 - *R. trichocladum* var. *mekongense*

KW 21111 - *R. sinogrande*

KW 21111 - *R. sinogrande*

KW 21111 - *R. sinogrande*

KW 21111 - *R. sinogrande*

KW 21111 - *R. sinogrande*

KW 21111 - *R. sinogrande*

KW 21556 - *R. luteiflorum*

KW 21556 - *R. luteiflorum*



KW 21556 - *R. luteiflorum*



KW 21556 - *R. luteiflorum* ‘Glen Cloy’ AM 1960 & FCC 1966



KW 21556 - *R. luteiflorum* ‘Glen Cloy’ AM 1960 & FCC 1966

KW 21557 - *R. martinianum* aff.

KW 21557 - *R. martinianum* aff.

KW 21921 - *R. burmanicum*

KW 21921 - *R. burmanicum*



KW 21976 - *R. arboreum* ssp. *albotomentosum*



KW 21976 - *R. arboreum* ssp. *albotomentosum*

KW 21976 - *R. arboreum ssp. albotomentosum*

KW 21976 - *R. arboreum* ssp. *albotomentosum*

KW 21976 - *R. arboreum* ssp. *albotomentosum*

Photographic Acknowledgements:

The black-and-white photographs captured by Frank Kingdon-Ward over the course of his twenty-one expeditions are preserved in the archives of the Royal Geographical Society (with the Institute of British Geographers), at 1 Kensington Gore, London, SW7 2AR, and much gratitude is due that organisation for allowing a goodly selection of those images to be displayed in this volume.

They are:

p. 7 - FKW, New Year's Day, 1920;
p. 10 - A young explorer on horseback;
p. 11 left - a formal portrait of FKW probably from the late 1930s;
p. 11 right - a formal portrait of FKW from the 1950s;
p. 14 above right - FKW, collecting in Northern Burma in the early 1950s;
p. 15 right - FKW, photographed at Ukhrul, in Manipur State, 1948;
p. 23 - FKW and his wife Jean, going over their field notes in the mid 1950s;
p. 26 left - *Michelia doltsopa* in flower within the temperate rain forest of the Adung Valley;
p. 26 right - *R. nuttallii,* Adung Valley;
p. 27 left - Nam Tamai;
p. 27 right - larch, oak and *R. bullatum,* Mishmi Hills.
p. 29 left - Seinghku Valley;
p. 29 above right - Imaw Bum, Kachin State, Burma, July 1916, from near Hpimaw fort;
p. 29 below right - *R. patulum* in the Mishmi Hills;
p. 31 - a carpet of dwarf alpine Rhododendrons, at about 12,000 feet, in Tibet;
p. 33 right - FKW with a dendrobium orchid, Burma, *c*. 1950;
p. 34 - one of FKW's base camp in southeast Tibet;
p. 40 left - another of FKW's Tibetan base camps, this one near the base of a glacier at an altitude of 14,000 feet;
p. 40 right - Chömbo, Tibet;
p. 42 - *R. bullatum* [*R. edgeworthii*];
p. 43 - FKW's base camp in Northern Burma;
p. 44 - Yak transport over the Himalaya;
p. 66 - FKW seeing his porters safely across the Ata Chu river, with the tributary in full spate;
p. 74 - FKW's tent in Tibet;
p. 75 left - FKW's team of porters resting on the trek to the Tsangpo gorge;
p. 75 right - the wooded cliffs of the Tsangpo gorge;
p. 76 left - *R. vellereum* in the Tsangpo valley;
p. 76 right - *R. nuttallii* in the Tsangpo gorge;
p. 206 - *R. megacalyx* in the Mishmi Hills;
p. 256 - *R. brevistylum* in Burma;
p. 268 - a Nung tribesman crossing a rope bridge over the Adung River;
p. 284 - the Gyamda valley on the old Lhasa to Peking road;
p. 285 - a porter carrying FKW's personal trunk;
p. 294 - a roadside *mani* stone in Mönyul decorated with *R. polyandrum;*
p. 295 - FKW, with his new wife, Jean, setting off on the 1948 Manipur expedition;
p. 302 - Mishmi porters carry Jean to safety after she and FKW survived a massive earthquake that struck the region in August 1950;
p. 306 - FKW and Jean outside their tent in the Adung Valley.

Mirroring the first volume, details of where each of the colour portraits was taken is set out below, along with the website details of those collections visited. Thanks is again extended to each establishment for allowing images taken in a private-use capacity, to be reproduced here. Gratitude is also due the other institutions and individuals who allowed their own portraits and field photographs of FKW to appear alongside the text.

Key: AL - above left; AC - above centre; AR - above right; BL - below left; BC - below centre; BR - below right; L - left; R - right.

Arduaine Garden, Oban, Argyll:
https://www.nts.org.uk/visit/places/arduaine-garden
p. 177; p. 219; p. 348 - L, R; p. 349; p. 350; p. 351.

Benmore Botanic Garden, Argyll:
https://www.rbge.org.uk/visit/benmore-botanic-garden/
p. 9; p. 39; p. 62; p. 63; p. 64; p. 86; p. 87; p. 88; p. 96; p. 116; p. 117; p. 118 - L, R; p. 119; p. 132; p. 133; p. 134; p. 135; p. 136; p. 137; p. 157; p. 167; p. 200 - L; p. 204; p. 205; p. 221; p. 222; p. 223; p. 224; p. 225; p. 237- AR; p. 240 - R; p. 243; p. 247; p. 248; p. 249; p. 250; p. 251; p. 280; p. 281; p. 282; p. 283; p. 317; p. 318; p. 319; p. 324; p. 325; p. 326 - L, R; p. 327; p. 330; p. 331; p. 332; p. 333; p. 334; p. 335; p. 336; p. 337; p. 338; p. 339; p. 358 - BL, BR.

Branklyn Garden, Perth:
https://www.nts.org.uk/visit/places/branklyn-garden
p. 48; p. 49; p. 114.

Brodick Castle Garden, Isle of Arran:
https://www.nts.org.uk/visit/places/brodick-castle-garden-country-park
p. 257; p. 258; p. 259; p. 307; p. 308; p. 309; p. 342 - R; p. 343; p. 346; p. 347.

Tim Chamberlain:
https://eccentricparabola.blogspot.com/2018/06/exploring-land-of-blue-poppy-frank.html
p. 37 - Frank Kingdon-Ward's gravestone in Grantchester churchyard. Photograph by Tim Chamberlain; posted on his Waymarks blog.

Dawyck Botanic Garden, Stobo, Peebles:
https://www.rbge.org.uk/visit/dawyck-botanic-garden/
p. 53.

Exbury Gardens, Hampshire:
https://www.exbury.co.uk/
p. 138; p. 139; p. 176; p. 212; p. 213; p. 214 - AR, BR.

Glendoick Gardens Ltd, Perth:
https://glendoick.com/
p. 108; p. 109; p. 124 - BL, R; p. 125; p. 340; p. 341; p. 342 - L.

Inverewe Gardens, Poolewe, Wester Ross:
https://www.nts.org.uk/visit/places/inverewe
p. 310; p. 311; p. 312; p. 313 - L, R.

Logan Botanic Garden, Stranraer:
https://www.rbge.org.uk/visit/logan-botanic-garden/
p. 149; p. 150; p. 151; p. 152; p. 153; p. 154; p. 155; p. 163; p. 164 - L, AR, BR; p. 215; p. 216; p. 217; p. 260; p. 261; p. 316.

Muncaster Castle Gardens, Ravenglass, Cumbria:
https://www.muncaster.co.uk/
p. 5; p. 67; p. 68 - AL, BL, R; p. 69; p. 77; p. 78; p. 79; p. 80; p. 81; p. 124 - AL; p. 130; p. 131 - L, AR, BR; p. 142; p. 143 - L, R; p. 144; p. 145; p. 168; p. 169 - L, R; p. 170; p. 171; p. 172; p. 173; p. 200 - R; p. 214 - L; p. 218; p. 252; p. 253; p. 254; p. 296; p. 297; p. 298; p. 299; p. 300 - L, AR, BR; p. 301; p. 328; p. 329.

Nymans Garden, Handcross, West Sussex:
https://www.nationaltrust.org.uk/nymans
p. 1; p. 41 - AL, BL, R; p. 89; p. 94; p. 95; p. 102; p. 146; p. 148 - L, AR; p. 180; p. 181; p. 207; p. 208; p. 209; p. 210; p. 245 - L, R; p. 246; p. 290; p. 291 - L, AR, BR.

Kåre Olsen & Ole Jonny Larsen:
http://www.lapponicum.com/uploads/2/6/1/3/26138093/jean_rasmussen_in_norway.pdf
p. 14 left - Frank and Jean Kingdon-Ward studying their copy of Joseph Hooker's *The Rhododendrons of Sikkim-Himalaya* - a photograph discovered inside one of Jean's books by Kåre Olsen, and first published in the article *Jean Rasmussen in Norway,* by Ole Johnny Larsen, which appeared in *Rhododendrons Camellias & Magnolias 2015*.

Popperfoto:
www.gettyimages.co.uk/detail/news-photo/english-botanist-plant-explorer-and-writer-frank-kingdon-news-photo/2212892915?adppopup=true
p. 36 - FKW in 1950. Photographed by Paul Popper.

Ray Wood, Castle Howard, North Yorkshire:
https://www.castlehoward.co.uk/visit-us/the-gardens/the-woodland-garden
p. 60; p. 82; p. 120; p. 121; p. 122; p. 123; p. 314.

Royal Botanic Garden, Edinburgh:
https://www.rbge.org.uk/visit/royal-botanic-garden-edinburgh/
p. 45; p. 50 - L, AR, BR; p. 55; p. 56; p. 57; p. 51; p. 90; p. 97; p. 98; p. 99; p. 100; p. 101; p. 103; p. 104; p. 105; p. 106; p. 107; p. 126; p. 127; p. 140 - L, AR, BR; p. 141; p. 147; p. 148 - BR; p. 158; p. 159; p. 160; p. 161 p. 165; p. 175 - L, AR, BR; p. 182 - L, R; p. 183; p. 184 - AL, BL, R; p. 185; p. 186; p. 187 - L, R; p. 188; p. 189; p. 192; p. 193 - L, R; p. 194; p. 195; p. 196; p. 197; p.198; p. 201 - R; p. 202; p. 203; p. 211; p. 220; 226; p. 227; p. 228; p. 229; p. 230 - L, R; p. 231; p. 233; p. 234; p. 235; p. 236; p. 237 - L, BR; p. 238; p. 239; p. 240 - L; p. 241; p. 242; p. 255 - L, R; p. 263; p. 264; p. 265; p. 266; p. 267; p. 269; p. 272; p. 273; p. 278; p. 279; p. 286; p. 303; p. 304; p. 321; p. 322; p. 323; p. 358 - AR.

Royal Botanic Garden, Kew:
https://www.kew.org/
p. WWW - FKW with his new wife, Jean, about to set off on the 1948 Manipur Expedition.

Royal Botanic Garden, Wakehurst Place:
https://www.kew.org/wakehurst
p. 85; p. 92; p. 93; p. 115; p. 178; p. 179; p. 199.

Sir Harold Hillier Gardens, Ampfield, Romsey:
https://www.hants.gov.uk/thingstodo/hilliergardens
p. 58; p. 59.

Valley Gardens, Windsor Great Park:
https://www.windsorgreatpark.co.uk/en/experiences/the-valley-gardens
p. 46; p. 47; p. 51; p. 52; p. 54; p. 65; p. 70; p. 71; p. 72; p. 73; p. 83; p. 84; p. 91; p. 110; p. 111; p. 112; p. 113; p. 128; p. 129; p. 156; p. 166; p. 174; p. 190; p. 191; p. 232; p. 244; p. 262; p. 270; p. 271; p. 274; p. 275; p. 276; p. 277; p. 287; p. 288; p. 289; p. 292; p. 293; p. 305; p. 315; p. 320; p. 344; p. 345; p. 358 - AL.

Plant Portraits Index:

anthosphaerum 70, 71
arboreum ssp. albotomentosum 348, 349, 350, 351
arizelum ssp. arizelum 9, 222, 223, 224, 225, 264, 265, 266, 314
arizelum ssp. arizelum Rubicosum Group 116, 117, 118, 119
auritum 140, 141
beanianum ssp. beanianum 165, 166, 167
beanianum ssp. piercei 240, 241, 242, 243, 280, 281, 282, 283
brachyanthum ssp. hypolepidotum 186, 187
burmanicum 346, 347
callimorphum var. myiagrum 315
calostrotum ssp. calostrotum 96
calostrotum ssp. riparium 175, 182, 228, 229
campylocarpum ssp. caloxanthum 85, 174
campylocarpum ssp. campylocarpum 244
cerasinum 245, 246, 278, 279
cerasinum 'Cherry Brandy' 176, 177, 178, 179
cerasinum 'Coals of Fire' 1, 94, 95
charitopes ssp. tsangpoense 100, 101, 102, 103
cinnabarinum ssp. cinnabarinum Roylei Group 232
cinnabarinum ssp. concatenans 112, 113, 126, 127
cinnabarinum ssp. tamaense 317, 318, 319, 324
coelicum var. coelicum 328, 329
coelicum var. pocophorum 250, 251
coelicum var. pocophorum 'Cecil Nice' 252, 253, 254
dendricola ssp. dendricola 316
dendricola ssp. scopulorum 152, 153, 154, 155
doshongense 108, 109, 110, 111
eclecteum 262, 320
edgeworthii 163, 164
elliottii ssp. elliottii 212, 213, 214, 296, 297, 298, 299, 300, 301
elliottii ssp. facetum 67, 68, 69
exasperatum 233, 234, 235, 236
forrestii var. forrestii 104, 105, 106, 107
fulgens 287, 288, 289
genestierianum 307, 308, 309
glischrum ssp. rude 'Frank Kingdon-Ward' 276, 277
glischrum ssp. rude 'High Flier' 274, 275
haematodes ssp. haematodes aff. 180, 181
hemitrichotum 50
hirtipes 82
hodconeri 290, 291
hodconeri 'Himalayan Child' 292, 293
hookeri 230, 231
horlickianum 260, 261
hylaeum var. faucium 156, 157
hylaeum var. faucium aff. 86, 87
hylaeum var. hylaeum 5, 168, 169, 170, 171, 172, 173
johnstoneanum 215, 216, 217, 218
johnstoneanum 'Rubeotinctum' 219
kongboense 124, 125
lanatoides 120, 121, 122, 123
lanatum ssp. lanatum 247, 248, 249
lanigerum 237, 238, 239
lanigerum 'Round Wood' 128, 129
leucaspis 138, 139, 196, 197, 198
luteiflorum 325, 326, 327, 340, 341, 342
luteiflorum 'Glen Cloy' 342, 343
lysolepis 58, 59
macabeanum 207, 208, 209, 210, 211
magnificum 'Kildonan' 257, 258, 259
martinianum aff. 344, 345
meddianum var. atrokermesinum 321, 322, 323
montroseanum 130, 131
montroseanum 'Benmore' 132, 133, 134, 135, 136, 137
neriiflorum ssp. phaedropum 72, 73, 255
nivale ssp. nivale 90
oreotrephes 91
pemakoense 149, 150, 151
praestans 286
protistum 221
pruniflorum 184, 185, 205, 272, 273
ramsdenianum 142, 143, 144, 145
recurvoides 199, 200, 201, 202, 203, 204
rex ssp. rex 60, 61
rubiginosum 55, 56, 57
rupicola ssp. chryseum 48, 49, 267
rupicola ssp. rupicola 188, 189
saluenense var. saluenense 183
scabrifolium ssp. pubescens 45
scabrifolium ssp. pubescens 'Fine Bristles' 46, 47
scabrifolium ssp. scabrifolium var. scabrifolium 65
sinogrande 334, 335, 336, 337, 338, 339
tanastylum var. pennivenium 220
telmateium 54
tephropeplum Deleiense Group 226, 227
trichocladum var. mekongense 330, 331, 332, 333
trichocladum var. mekongense 'Yellow Fellow' 41
trichocladum var. trichocladum 263, 269
triflorum var. mahogani 84, 158, 159, 160, 161
tsangpoense x campylogynum (Seed Pan Rogue) 97, 98, 99
uvariifolium var. griseum 83
uvariifolium var. uvariifolium 190, 191, 270, 271, 305
uniflorum 114, 115
vellereum 77, 78, 79

vellereum ‘Lost Horizon’ 80, 81
venator 146, 147, 148
viridescens 92, 93
wardii var. wardii 39, 51, 52, 53, 88, 89
weihsiense 192, 193, 194, 195, 303, 304
yunnanense ssp. yunnanense 62, 63, 64
zaleucum var. flaviflorum 310, 311, 312, 313



About the Author.

Julian Taylor-Whall was born in Lowestoft at the end of November, 1957. He received a grammar school education before embarking on a three-decades-long career with the BBC at Television Centre. 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.

His interests include landscape and plant photography, music, film, writing, and of course, the cultivation of rhododendrons. His previous multivolume treatise on that genus can be freely downloaded at:

https://www.rhodogroup-rhs.org/publications/books/temperate-rhododendrons.

- above -
Atop Great Gable, a self portrait against cloud.

- *back cover* images -

KW 3953 - *R. scabrifolium* ssp. *pubescens*	KW 5844 - *R. charitopes* ssp. *tsangpoense*
KW 8288 - *R. lanatum* ssp. *lanatum*	KW 21003 - *R. cinnabarinum* ssp. *tamaense*







