

*Central Vancouver Island  
Orchid Society Newsletter  
April 2011*



*Cattleya schroederiae* 'Malia' AM/AOS 80pts  
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Photo: Judith Higham

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Meetings are held September through June on the Saturday before the 4th Wednesday of each month at the Harewood Activity Centre, 195 Fourth Street, Nanaimo, in the hall on the second floor, doors open at 11:30, with the business meeting starting at 12:00 noon

**Coming Meeting Dates:**

April 23, May 21, June 11, Sept 24, Oct 22, Nov 19, Dec 17

**Program for April 23<sup>rd</sup>**

**Phragmipediums and Their Culture**  
By Chuck Taylor of Edmonton

**Coming Events:**

CVIOS Show and Sale, Country Club Center, April 15<sup>th</sup> – 17<sup>th</sup> 2011

CVIOS Summer Picnic July 23<sup>rd</sup> at Shirley and Ernie McClare's home in Yellow Point

**Editorial:**

Well the Auction is over Our Show is in hand and over the next couple of months we have to consider who will lead the Society over the next year. Be thinking of a position you may like to fill for the Society. The president can only be in the chair for two years running so Bryan will become Past President as of the first of July. In May we will start taking names of people interested in positions, you can volunteer or have someone nominated you, but we do need a full slate of names before the election in June.

Chuck Taylor our speaker has been growing orchids in Edmonton for a little less than twenty years under the name Fatoldbaldguy Orchids. The name arose as a joke made by a student years ago and it stuck. He has a mixed collection of plants but concentrates on phragmipediums. As a retired teacher of mathematics, chemistry and art he tries to bring a mixture of logic, science and aesthetics to his small intermediate greenhouse. Being retired gives him time to pursue his other interests, photography, fly fishing, fly tying, wood carving and pheasant hunting. Chuck feels that his wife, Trudy, makes a significant contribution to the orchid collection because she cares competently for the plants when Chuck is absent.

I hope you all participate in the show and help where you can. Remember it is OUR show! That means the whole Society not just the regular members who supply plants. Even if you have only one, please bring it in. Others will heop you enter it if you need help.

Cheers Mike

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There are no minutes of the march meeting s it was our 50/50 Auction and there was no regular meeting. It would have been nice if more people and attended the auction as there was a smaller crowd this year, but we tried. Ed.

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**Goodies for the April meeting will be supplied by Nancy Miklic, Mary Palmer, Laurie Forbes and Maureen Hawthorn**

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## ***Cultivation and Flowering Behaviour of Orchids***

By A. V. N. Rao, Sadanand N. Hegde and A. K. Banerjee

### **Dendrobium**

Dendrobiums are one of the important groups of orchids known for their beautiful flowers. In India, about 168 species have been reported to occur. In this communication, a study on the cultivation and flowering behaviour of 20 species of *Dendrobium* Sw. maintained at the National Orchidarium, Shevaroy Hills, Yercaud, South India has been presented.

***Dendrobium aggregatum***  
**Now *Dendrobium lindleyi***



## Introduction

Orchids, a very interesting group of flowering plants with their flowers in various colour combinations and varied forms mimicking at times the features of birds, insects, etc., are well known all over the world for their horticultural value. With the production of a hybrid - *Calanthe* X *Dominii* in the year 1856 there have been as many as 35,000 established hybrid varieties produced by various hobbyists and nurserymen (Gary & Sweet 1974). Because of promiscuous behaviour among orchidaceous species and at times among genera, it has been possible to get varied character combinations among the hybrids, which continually increase numerically. In the wild, there are about 17,000 species in 750 genera reported to occur in the world (Hunt 1967), the majority of them being distributed in tropical countries. Among these, 1,235 species in 117 genera are reported (Hooker 1885-1890) from the erstwhile British India (comprising the present day India, Burma, Ceylon, Pakistan and Bangladesh). In other words, nearly 14% of the orchid species known today are represented in India. In spite of the rich occurrence of orchids in this sub-continent, the works with respect to their cultivation, propagation, and flowering behaviour are scanty. However, in the recent years, there has been some information on the general cultivation of orchids in India by Arora and Jain (1977), Ghose (1968), Herklots (1973), Jain and Kataki (1977) and Pradhan (1976).

With the aim of conserving the orchids and studying the various aspects of growth and flowering behaviour, the Botanical Survey of India started three National Orchidaria in India, in the year 1963, one of which is located at Yercaud, Shevaroy Hills in Tamil Nadu. This National Orchidarium maintains about 8,000 sets of orchids in about 178 species introduced through the collection by the officials of Botanical Survey of India, occasionally through purchase from nurseries, through exchange and through propagation of orchids. Among these, *Dendrobiums* are one of the major groups cultivated here.

*Dendrobiums* are one of the gem orchids known for their diverse morphological features and beautiful flowers. They are popular especially among cut-flower traders, mainly because of their vividly coloured and long-lasting flowers in terminal or lateral racemes on the pseudobulbs.

The genus *Dendrobium* Sw. consists of about 900 to 1,600 species distributed in Old and New World (Hegde and Boraiah 1973). Among them, about 168 species have been reported to occur in India (Hooker 1888). In the National Orchidarium at Yercaud about 591 sets in 27 species are presently being cultivated. Of them three species have been found wild locally (Rao 1966). In the present study, however, cultivation, propagation and flowering behaviour of only the following 20 selected species of *Dendrobium* Sw. have been presented.

1. *Dendrobium aggregatum* Roxb.
2. *D. nanum* Hook f.
3. *D. parishii* Reichb. f.
4. *D. lawianum* Lindl.
5. *D. aqueum* Lindl.
6. *D. crumenatum* Sw.
7. *D. herbaceum* Lindl.
8. *D. nobile* var. *pendulum* Roxb.
9. *D. wardianum* Warn.
10. *D. chrysotoxum* Lindl.
11. *D. nutans* Lindl.
12. *D. barbatulum* Lindl.
13. *D. heterocarpum* Wall.
14. *D. chrysanthum* Lindl.
15. *D. macrostachyum* Lindl.
16. *D. haemoglossum* Thw.
17. *D. falconeri* Hook.

18. *D. calceolaria* Carey ex. Hook.
19. *D. gibsonii* Lindl.
- 20a. *D. fimbriatum* var. *fimbriatum* Hook.
- 20b. *D. fimbriatum* var. *oculatum* Hook.

The natural occurrence of the above species has been indicated in the table. Data on all the above mentioned taxa has been collected for more than six years with respect to their compost and container efficiency and methods of propagation. Thorough observations on flowering behaviour such as size and colour of flower parts and period of flowering have been carried out and the results maintained as permanent records at the National Orchidarium, Yercaud.

### **Weather Conditions**

The National Orchidarium is situated in an open reserved forest area about 4km from Yercaud town, which is a small hill station in Tamil Nadu, at an elevation range of 1,380 to 1,511 m from MSL. It is situated between 11° 43' to 11° 52' N longitude and between 78° 6' to 78° 22' E latitude and enjoys a moderate climate throughout the year. The variations in temperature and humidity are recorded throughout the year for the last 10 years and it is found that the temperature varies between 52-82°F. (11 0-28°C.) and the humidity between 67-87%. In general, the atmosphere is more humid for nearly 8 months from May to January, the rest of the months being partially dry.

### **General description**

Dendrobiums are essentially epiphytes, a few thriving also as lithophytes as in the case of *D. herbaceum* and *D. nanum*.

The plants are either short as in the species 1 and 2 ( number in the list above), medium pendulous as in 3 to 5, branched and bushy as in 6 and 7, medium erect as in species 8 to 12, long, slender and pendulous as in 14-17 or long and erect (cane-like) as in the species 18-20. They are uninodal as in 2 and pleurinodal as in the rest and the stems are pseudobulbous, either terete, flattish, fusiform, long, narrow or stout. The roots are formed in tufts, which adhere to the substratum. Some species bear leaves at the time of flowering as in Species Nos. 1, 6, 10, 11 and 14 and others do not. The flowers are either solitary, in fascicles of 2 or 3 or racemes with number of flowers appearing terminally or laterally according to the species. The size of flowers varies in different species from 1 cm to 7cm. The colour of the flower also varies from species to species as shown in the table.

Fruit-setting has been observed in most of the species, while in a few species like *D. calceolaria*, *D. gibsonii* and *D. fimbriatum* no fruit-setting has been observed in the weather conditions of this area.

### **Cultivation**

At the time of collection, the natural habitat of each species was noted. Accordingly a similar environment was artificially created in the Orchidarium for better acclimatization of these species, which are subsequently brought under cultivation using different media with different combinations of composts and containers. From the outset the following six media have proved to be suitable in cultivating these species. The particular medium in which an individual species can be best grown has been shown in the table.

#### *Medium-1*

Compost: 2cm thick burnt brick bats 2 parts; 1 to 1.5cm thick charcoal 2 parts; tree fern choppings or dried and cut leaf mould 1 part. Container: earthenware pot with extra drainage holes.

The plants were potted with part of their roots exposed above the compost which was filled up to 2cm below the brim of the pot, with staking wherever required for support

**TABLE SHOWING THE DETAILS OF DISTRIBUTION, GROWING MEDIUM AND FLOWERING BEHAVIOUR ON 20 SPECIES OF DENDROBIUM SW**

Sl. No. 1	Species 2	Distribution 3	Medium 4	Active flowering period 5	Maximum No. of Flowers					Recommendations 11
					Flowers/plant 6	Blooming days 7	Size in cm 8	colour 9	Colour of Lip 10	
1.	<i>AGGREGATUM</i>	Assam	1	March, April	10	16	3.5	orange-yellow	orange, yellow towards margin with a deeper tinge at centre	For window, gallery and indoor decorations
2.	<i>NANUM</i>	W.ghats, Nilgiris, Shevaroy's	3 & 1	July-October	3	54	1.5	greenish white	greenish at the tip and pinkish spots within	As miniature orchid at sunny windows
3.	<i>PARISHII</i>	Upper Burmah and Tenneserim	1 & 5	March, April	6	9	5.0	crimson	patterned with dark violet patches at centre	For button-holes, indoor and greenhouse decoration
4.	<i>LAWLANUM</i>	W.ghats	1 & 2	March	8	9	3.5	pink-lilac	pink-lilac	For button-holes, indoor and glasshouse decorations
5.	<i>AQUEUM</i>	Nilgiris, W.ghats	1	September, October	10	30	4.0	white	white with yellow streaks inside	Ornamental in groups and good germplasm for breeding
6.	<i>CRUMENATUM</i>	Andamas	1	May-July	10	4	1.5	white	white	Good germplasm
7.	<i>HERBACEUM</i>	W.ghats, Bababudans and Nilgiris	1	February, March, June and October	numerous	10	0.5	white	—	Ornamental in groups for outdoor decorations
8.	<i>NOBILE VAR Pendulum</i>	Sikkim and Khasia hills	1 & 4	March, April	6	20	6.5	purplish white	white in the middle, purple at tip and deep purple at the base	For indoor and outdoor decorations
9.	<i>WARDIANUM VAR Giganteum</i>	Assam, Khasia hills and Burma	1 & 5	February, March	12	29	1.0	white with purplish tinge	white in the middle, purple at the tip, yellow at the base and deep purple laterally	For window, table and greenhouse decorations
10.	<i>CHRYSOTOXUM</i>	Burma and Assam	1 & 2	April, May	40	13	5	golden yellow	orange, yellow with reddish brown streaks	Whole plant with flower as bouquet in cut-flower trade and for home decorations
11.	<i>NUTANS</i>	Kemmana, Kundia, W.ghats	1 & 4	March-May	17	29	4.5	ochreous yellow	yellow with purple colouration in the middle	For button-holes, indoor and greenhouse decorations
12.	<i>BARBATHLUM</i>	W.ghats	1 & 5	February	25	19	2.2	white with yellow tinge	white with yellow colouration in the middle, sidelobes pink veined	For cut-flower and indoor and outdoor decorations and good germplasm for breeding
13.	<i>HETEROCARPUM</i>	W.ghats, Malabar and Assam	1	March	6	12	6	yellowish cream	yellowish cream without pale yellow within and rusty brown blotch inside	For greenhouse and indoor decorations
14.	<i>CHRYSANTHUM</i>	Khasia hills	2 & 5	April	12	8	4.8	white with pink patches	white with dark pink patches at the centre	For glasshouse, greenhouse and home decorations
15.	<i>MACROSTACHYUM</i>	W.ghats	2, 3 & 5	May, June	16	23	3.5	cream yellow	cream, yellow with pink veins	For glasshouse, greenhouse and garden decorations
16.	<i>HAEMOGLOSSUM</i>	Malabar and Nilgiris	2 & 3	March, April and August	5	8	1.0	yellow with green tinge	yellow with green tinge and a brownish patch on either side	As germplasm
17.	<i>FALCONERI</i>	Assam, Khasia hills and Manipur	1 & 2	April	7	15	7.0	white with pinkish tinge at the apex	white in the middle, pale pink at the apex, deep pink at the centre and yellowish white towards the base with pink markings in the middle	Indoor and glasshouse decorations and good germplasm for breeding
18.	<i>CALCEOLARIA</i>	Rumajon, Khasia hills and Assam east	1 & 6	April, May	10	11	8.6	golden yellow	deep yellow	Indoor and outdoor decorations and for cut-flower trade
19.	<i>GIBSONII</i>	Assam and Khasia hills	1	April	22	10	6.0	golden yellow	golden yellow with purple blotches on the sidelobes	For cut-flower trade and outdoor decorations
20.	<i>FIMBRIATUM</i>									
	(a) <i>var-fimbriatum</i>	Kumaon, Haripur and Khasia hills	1 & 6	April	24	15	6.5	bright orange yellow	orange yellow with purple blotches	For cut-flower trades and outdoor decorations
	(b) <i>var-occulatum</i>	Kumaon, Haripur and Khasia hills	1 & 6	March, April, September	22	15	6.3	bright orange yellow	golden, yellow with purple blotch	For cut-flower trades and outdoor decorations

#### *Medium-2*

Tree fern (*Alsophila latifrosa*) stumps of 10 to 12cm thickness and 30cm long were used on which plants were tied with 1 mm G.I. wire or dried *Agave* or *Musa* fibre, exposing the roots.

#### *Medium-3*

Logs of *Vaccinium*, *Syzigium*, *Terminalia* or *Cupresses* (any rough barked tree) in about 30cm length and 10 to 15cm diameter were used on which plants were tied with a patch of moss as matting. Roots of plants were partially exposed. G.I. wire or dried *Agave* fibre was used for tying.

#### *Medium-4*

Container: Wooden cradle made up of reapers tied with G.I. wire. Compost: As in Medium-1. Brick-bats and charcoal of bigger size were used as first fillings. Plants were placed half buried in the above compost exposing the roots partially above and providing proper support if necessary.

#### *Medium-5*

Container: Wire meshed basket of 1 mm G.I. wire with hooks to hang. Compost: As in Medium-4. The roots of the plants were partially exposed as in Medium-4.

#### *Medium-6*

Container: Trenches in the ground are dug out 20 to 30cm deep and 15 to 20cm broad. Thin layer (2.5cm) of uniform gravel and sand were provided in the bottom. Compost: As in Medium-1, put into the trench. Plants were placed in the ground upright, with stakes if necessary, exposing the roots partially.

Planting was generally effected with the onset of monsoon. Plants with different containers and composts were kept under the shade of the trees on platform-like constructions and stone bunds. Gravel and sand beds were made here and there which were often dampened during dry summer days to provide necessary humidity in the surroundings and to maintain optimum temperature. In some places water-filled cement tanks (1 m X 0.5m X 0.5m) were placed so as to provide humidity and to bring down the temperature in the surrounding areas. Those plants, which needed more sun light were placed in semi-shaded areas.

#### **Watering**

Care was taken not to over-water the plants. Containers were provided with sufficient drainage for the same purpose. Medium with plants was mostly kept on drier side. Slight drooping of leaves or shriveling of pseudobulbs and more aerial root formations warranted frequent watering. However, no watering was done during rainy season. During drier months, i.e. February to April, watering three times a week was practiced.

It has been observed that under the optimum conditions of temperature (between 65° and 80°F. (18-26°C.)) and humidity (70-80%), plants may be conveniently watered moderately twice a week keeping them more on the drier side. Over-watering results in decay of roots, patch-formations on leaves, attack of diseases and delay in' flowering. Unclean environment induces more damage of plants due to slugs, snails and insect attacks.

#### **Control of diseases and pests**

Because of the maintenance of clean environment and judicious watering, very little damage from fungal or viral diseases, slugs, snails, etc. was encountered. However, dilute spray of DDT (0.5% W/V in water), Metacid or Rogor in water was given once in 2-3 months for insect control, and a spray of Bordeaux mixture was given twice in the rainy season alternatively to control diseases.

#### **Manuring**

Except for repotting or retying practiced once in two years with fresh compost, feeding was not done regularly. Repotting with fresh composts provided sufficient nourishment for these plants.

## Flowering behaviour

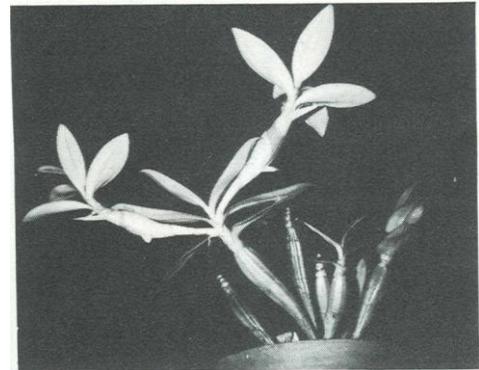
Details of flowering behaviour such as blooming period, number of blooming days, number of flowers per plant, flower size and colour with special reference to lip of the individual species have been furnished in the table.

It is clear from this table that the majority of the species referred to in the present study are summer flowering types (Le. from late February to May), while a few species like *D. herbaceum*, *D. macrostachyum*, *D. nanum* and *D. aqueum* show flowers in the rainy season, Le. June to October. There are also a few winter blooming species. Sometimes, erratic flowering has been observed as in *D. fimbriatum* var. *occulatum*, *D. herbaceum* and *D. haemoglossum*. Certain species flower twice in a year as in *D. herbaceum* and *D. nanum* or thrice in two years as in *D. fimbriatum* var. *occulatum*. Such characteristics are advantageous in breeding and plant improvement programmes.

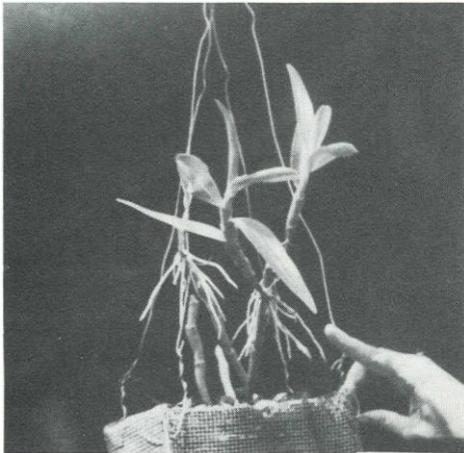
The size of flowers varies from 1 cm to 7cm across. Similarly, the range of colour of flowers varies from white, yellow, cream-yellow, orange-yellow to purple and green, also presenting intermediate colours in different colour stripes and blotches on labellum (see table).

## Propagation

New growths generally arise from the base of the old pseudobulb. However, new offsets are also given out at the nodes of the pseudobulbs. When the fresh ones are healthy, active and robust with tufts of fresh roots protruding out of the brim of the pots, they are ready for vegetative propagation.



***Dendrobium chrysotoxum* -showing offsets on pseudobulbs.**



***Dendrobium nobile*-showing offsets ready for separation from the mother plant.**

The best medium for each species suggested in the table is used at the time of propagation. Vegetatively, Dendrobiums have been propagated by two methods in this experimental station. 1. By division: The older pseudobulbs are cut at the base and separated from the new adult pseudobulbs. They are separately potted in the medium suitable to the respective species. 2. By Offsets (bulbils): The offsets arise on the old pseudobulbs at the node regions. When the offsets give out 3-4 roots from the base, they can be separated from the mother plant and grown in the

suitable medium.

Seed propagation through aseptic culture methods is another popular method (cf. *Orchid Care*, by W. Richter, 1972). Attempts to raise seedlings through this method have also been made and will be published separately.

## Discussion and Conclusion

Although Dendrobiums are frequently grown in glasshouses, it has been shown in the present study that they can be conveniently grown in the open forest areas also, in the weather conditions of Yercaud. The merits of the individual species as ornamentals in green houses, out-door and indoor



decorations and in cut-flower trade (for bouquet, flower vase and for button-holes) have also been indicated in the table.

### *Dendrobium nobile*

Further, it is also seen from the enclosed table that the flowering period differs from species to species-flowering either in summer, winter or rainy season as the case may be. Such a behaviour obviously hints at the specific physiological requirements of the individual species. In the case of *Dendrobium crumenatum*, for instance, it has been observed that the plants burst into blooms simultaneously within a few days following the first summer shower. Such a

phenomenon could be due to sudden cooling caused by the rain during summer days (Arditti 1967). It is further indicative also that blooming could be achieved at will amongst *Dendrobium nobile*-showing flowers

dendrobiums provided their requirements of light, temperature, humidity, etc. are suitably met.

With the programme of conservation of the wild species, several species of *Dendrobium* Sw. have been collected and are undercultivation in the National Orchidarium. Many of them are a great asset as germ plasm having varied colour combinations and size of flower and lip (ct. table). They differ also in period, longevity and frequency of blooming, etc. Such characters can be advantageously exploited in plant improvement programmes through hybridisation.



*Dendrobium aqueum*

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## TWIGS AFLAME

### Two *Oxyglossum Dendrobiums* from Papua, New Guinea

The Rev. Canon Norman E. G. Cruttwell, M.A. Oxon



*Dendrobium thionatum* Schltr. *Dendrobium tricostatum* Schlu.

Photographs courtesy of Dr. George Kennedy

Sometimes, as I have walked along the Daga tracks in S.E. Papua, I have seen what looked like flames of bright red fire on the twigs and branches of trees.

I well remember my first ascent of Kwapuari Ridge, after days of weary mountain walking inland from Goodenough Bay. This was long before you could fly into Auaun in twenty minutes from Cape Vogel strip. The climb to the ridge is a steep ascent of 2,200 ft. from the valley below, with no shade all the way and one little trickle of water just below the summit. We were met on the top by some small brown boys with pineapples which we gratefully ate, four thousand feet above the four-days-distant sea. Ahead of us and far below stretched

the verdant Agaun valley where I now live. On either side of the ridge on which we sat, almost sheer cliffs fell 2,000 ft. to the white threads of rocky torrents in the gorges below.

We followed the undulating ridge for another mile and started the steep slippery descent on the other side. On the edge of the precipice on the right stand some stunted trees of *Dodonaea visco sa*, a small willow like tree with pinkish-winged fruits. Here and there tufts of the lichen *Usnea barbata* hung like beards from the branches. But it was not these that riveted our attention. It was the flashes of scarlet red, dazzling in the bright sun, which glowed here and there on the twigs like fire. It was obviously a miniature orchid, but what a beauty! No one but a Daga would have attempted to collect it, but these people are quite undaunted by heights and they were soon slithering over the edge and climbing up the slender trees to collect them.

There were little tufts and patches of a miniature *oxyglossum Dendrobium* which J. S. Summerhayes of Kew identified as *D. tricostatum*. This name is only tentative, but will do as a label until someone has studied this section thoroughly.

The plant when not in flower rises scarcely ½ inch from the tree bark and not more than 1 inch in flower. It slowly spreads into a mat of tiny purple pseudobulbs which may completely encircle a small branch. The dark green strap-shaped leaves are only about ½ inch long and purple beneath, spreading outwards. The spreading roots are also purple. The flowers arise in pairs from the center of the leaves standing stiffly erect. The ovary is triangular in cross section with three prominent wings, hence the name "*tricostatum*." The form of the flower, as in all *oxyglossums*, is triangular and claw-like, but rather narrow and pointed, with a triangular tipped labellum. The texture is crystalline, translucent, like ground glass and the color bright scarlet to crimson red, or occasionally orange. The labellum is the same color except for its orange tip. The whole flower lights up in sunlight like a neon sign.

Although the individual flowers are smaller than in the much popularized *D. sophronites*, the total effect is even more showy because of the profuseness of its flowers, which make an almost solid mass of vivid red, sometimes 6 inches across.

However, like some of the stars, it often has a cool companion, as it did here on Kwapuari. On the left of the track a little lower down is a hanging copse of *Castanopsis acuminatissima*, a beautiful dark leaved tree related to the Beech.

The branches of these trees are also decked with various epiphytes, including several patches of *D. tricostatum*. But on some of the slender branches close to the track are little tufts of the companion species, identified as *D. thionatum*.

Similar in habit to *D. tricostatum* it differs in the slenderer, even more densely packed pseudobulbs, and much longer, narrower and erect leaves. The flowers are, if possible, even more closely packed and of a cool lime yellow, though still retaining the orange tip. It does not spread into such wide mats as the other, but is more like a pincushion, with the green pins of its leaves projecting about 2 inches from the tree. It too has the crystalline texture, which seems to derive from the large transparent cells. Its flowers also light up in the sun with a cool primrose light.

The two species make a perfect foil for each other and look most attractive when growing together, as they often do. They are usually found at the edge of the forest or on isolated trees where there is plenty of light and air. They seem to favor gorge-sides and exposed ridges where mists and cloud sweep over them. They both have an altitude range of from 3,000 to 5,000 feet.

These are only two of the fascinating *oxyglossum* section of the genus *Dendrobium*, which in my opinion contains the gems of the orchid world. They are nearly all, if not all, mountain plants, ranging from about 3,000 feet to the summits of the Owen Stanley Range, where they often become terrestrial, and fill a niche in the alpine flora for which they seem well fitted.

In fact, they have the attraction, which all alpine plants exert - compactness of growth, large or profuse flowers in relation to overall, and brilliance of color. Needless to say they need cool conditions, plenty of light and air and high humidity. Given these there is no reason why they should not flourish and delight the eyes of all who behold them.