POLLINIA

NEWSLETTER OF THE IRISH ORCHID SOCIETY

Cumann Magairlíní na hÉireann

Volume 17, Issue Two

THE IRISH ORCHID SOCIETY
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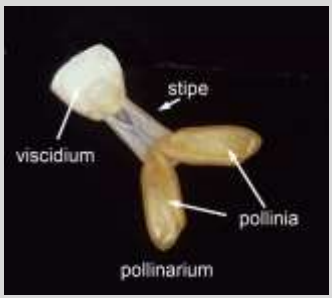
POLLINIA

(pol-LIN-ee-uh)

The compact packets of pollen found in orchid flowers. The plural of *Pollinium.*

Waxy pollen clumps or grains usually found in the anthers of most orchids; often yellow, distinct, and found under the pollen cap of the column.

Pollinia contain the male reproductive cells. Latin *pollin-*, stem of pollen "fine flour, dust."



Orchid Pollinia

MEMBERSHIP DETAILS

ANNUAL SUBSCRIPTION

Adult Single	€20.00
Family	€30.00
OAP/Student*	€15.00

*Confirmation of student status required

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Applications, questions about membership and other Society communications should be made to:
Hon. Secretary
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Botanic Road, Dublin, D09 VY63 , Ireland

EDITORIAL INFORMATION

The Editorial Staff reserve the right to edit and/or amend articles submitted to the Newsletter.

The views or comments published within this Newsletter are not necessarily views shared by either the Editorial Staff or the Irish Orchid Society.

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Copies of this and previous issues (in pdf format) are available at:
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Print copies may be ordered. Please contact the Editor.

Cumann Magairlíní na hÉireann

IOS & OTHER ORCHID EVENTS, FAIRS, MEETINGS, SHOWS, CONFERENCES

NOV 4 2019

THE ORCHID TRADE

Monday November 4th, 2019, 7:30pm
An overview of the legal complexities and a guide on how to be a responsible consumer.

Dr. Noeleen Smyth holds an Honours Degree in Botany and a Diploma in Statistics from Trinity College Dublin. She completed a PhD at Trinity College Dublin on invasive species control and restoration of the threatened native flora of Pitcairn Island in the South Pacific. Noeleen has worked for National Parks and Wildlife Service, BEC Consultants, and Natura Environmental Consultants, and as a horticulturalist both at the National Botanic Gardens and Talbot Botanic Garden, Malahide Castle. She has also carried out botanical research in Uganda, Guyana, and Pitcairn Island and participated on plant expeditions to Belize, Bhutan, China, and Jordan.

DEC 2 2019

CHRISTMAS PARTY

Monday December 2th, 2019, 7:30pm
Test your orchid knowledge with Brendan Sayers' Orchid Quiz, along with a few nibbles and light refreshments! As with all meetings, bring along any orchids you'd like to show your fellow members.

A Happy Christmas to all IOS members and family.

CHRISTMAS AT KEW

Wednesday 20 November 2019 – Sunday 5 January 2020

A magical new route
Now in its seventh year, the 2019 winter trail takes a magical new route and includes a host of all-new installations.

Framed by glittering spiral trees, dynamic laser projections will illuminate the iconic Temperate House.

A dazzling arch leads to a cascade of glowing silvery shards at the Treetop Walkway. Walk amongst immersive vines as they surprise with changing ribbons of light, and wander beneath the branches where mysterious fairy-fire known as Will -o'the Wisp softly glows.

Platystele jungermannioides - believed to be the world's smallest Orchid

Taichung, Taiwan, March 29, 2020

IOS & OTHER ORCHID EVENTS, FAIRS, MEETINGS, SHOWS, CONFERENCES

2020

JAN 1 2020

JANUARY

No Meeting

Athbhliain faoi shéan is faoi mhaise daoibh.

Happy New Year!

FEB 3 2020

MEMBERS' NIGHT

February 3rd 2020 7.30pm

Potting demonstration no need for members to bring any plants to this meeting. The evening will start with a short lecture and be followed with a practical potting demonstration for beginners and experts.

MAR 2 2020

MEMBERS' NIGHT

March 2nd 2020 7.30pm

Marie Hourigan will talk on Climate Change and Gardeners

APR ? 2020

ANNUAL ORCHID FAIR

Annual Orchid Fair in The National Botanic Gardens - Dates to be confirmed

This is the premier annual orchid event in Ireland with a large selection of species and hybrids for sale. See website for dates and times.

MAY 11 2020

MEMBERS' NIGHT

Monday May 11th, 7.30pm

All are welcome to bring your plants new and old, sick and healthy for discussion, tips and help

JUN 8 2020

ANNUAL GENERAL MEETING

Monday June 8th, 7.30pm

The traditional 'State of the Society Address' will be given with the Committee putting forward ideas to advance the Society in the year ahead. It is also the forum for members to give their feedback and suggestions.

MEMBERS SUBSCRIPTION REMINDER Members are reminded that the Membership year now begins on the date a member joins the Society. Annual Subscriptions are now due for 2020-2021. Subscription payments per the schedule on page two are to be posted to: Secretary, The Irish Orchid Society c/o National Botanic Gardens, Dublin, D09 VY63. If you prefer, you may use the Credit Card/PayPal form at our website: www.irishorchidsociety.org/membership.php

Cypripedium is a genus of 58 species and nothospecies of hardy orchids; it is one of five genera that together compose the subfamily of lady's slipper orchids.
Scientific name: *Cypripedium*
Order: *Asparagales*
Rank: Genus
Tribe: *Cypripedieae*
Higher classification: Orchids
Subfamily: *Cypripedioideae*

Cypripedioideae includes the genera Cypripedium, Mexipedium, Paphiopedilum, Phragmipedium and Selenipedium.

[Nothospecies (plural: nothospecies)
A hybrid which is formed by direct hybridization of two species, not other hybrids.]

FROM THE EDITOR - LAURENCE MAY

In 1968 I entered my first year at Harvard College. As part of my scholarship I was required to work; they gave me a job delivering the post around the university. One of my stops was the Peabody Botanical Museum, the original home to the American Orchid Society before they moved to Florida.

One morning I entered the AOS office and there on the desk was a very ugly plant, ugly to me anyway, but somebody's darling. It reminded me of a toad on a stick. Later, I was told it was a prized Paphiopedilum Maudiae.

I picked up some leaflets, read them, and I was very interested. Before long I had joined the American Orchid Society and the Massachusetts Orchid Society. Next, I was growing plants under lights in the basement of my home in Cambridge.

In the mid-90s I gave most of the plants to a society charity auction, keeping only a few Oncidium. I had begun computer school and no longer had time for my basement 'hobby' garden.

I didn't lose interest in Orchids, though, still read about them and avidly scanned the catalogues. My favourites were and are Oncidium species and one other treasure: *Phalaenopsis violacea.*

The scene shifts, and one day I decided to move to Ireland, which is a story for another time. I joined the Irish Orchid Society but as I live in Sligo and do not drive I seldom made it to meetings in Dublin. (Continued on Page 39))

FRONT COVER: A dwarf, self-pollinating form of *Cypripedium tibeticum* was also seen on the trip. Holger Perner calls these plants v. *amesianum* based on plants described by Schlechter in 1919.
Coming up on an impressive colony of *C. tibeticum* like this in the wild (above) is an experience not soon forgotten. These are located in Huanglong Valley in northern Sichuan.

HENGDUAN MOUNTAINS BIOTECHNOLOGY'S NURSERY IN HUANGLONG CHINA

A LADY SLIPPER ORCHID BONANZA

Hengduan Mountains Biotechnology operates two nurseries in China, one in the high mountains of northern Sichuan, and the other on the hot Sichuan Plain on the outskirts of Chengdu city. The high mountain nursery is located nearly within the boundaries of Huanglong National Park in a deep valley at around 3000 meters elevation. Here the winters are cold, long, and dry, extending from November through March uninterrupted. Summers are cool and wet with most days overcast and temperatures rarely, if ever, above 25 C.

In this climate Holger and Wenqing Perner have their temperate ladyslipper orchid nursery. Several long shadehouses containing thousands of Cypripedium seedlings as well as adult stud plants make up the bulk of the nursery. Native Chinese Cypripediums flourish in these conditions. In late June 2013 I visited the nursery on one of Wenqing and Holger's botanical tours of the region. What follows is a pictoral essay showing what was in bloom at the time of our visit.

A few kilometers up the highway from the nursery is Huanglong Valley, home to literally thousands of Cypripediums, especially *C. tibeticum, C. flavum*, and *C. bardolphianum.* For this reason it isn't surprising the local climate is perfect for growing Cyps. The plants are grown in a mix of four to five parts perlite to one part sedge peat taken from the alpine grasslands of the region. In this mix the plants flourish in beds overlain with conifer needles. Lets take a look at some of the plants we saw at the nursery the day we visited.

Cypripedium tibeticum

This lovely white based colored *C. tibeticum* is one of their stud plants at the nursery. As you can see, this form lacks the white rim around the lip orifice. Flowers of this type are the largest of this variable species. If you buy plants from them, then expect flowers similar to this one.

***Cypripedium flavum* with red spots**

C. flavum is a common, yet endemic orchid of western China, found only in the cool wet conditions these high mountains can provide. Flower color is highly variable from pure yellows, to near white flowered ones, as well as spotted flowers such as this lovely plant at the Huanglong nursery.

A challenging group of Cypripediums to grow are the spotted leaf types (Sections Trigonipedia and Sinopedilum). Here are clumps of *C. sichuanense* (left) and *C. bardolphianum* (right, out of flower) growing with abandon. These plants cannot withstand wet conditions in winter and so must be protected from winter rain and snow.

Cypripedium sichuanense* and *Cypripedium bardolphianum

C. sichuanense is a very rare plant, hailing only from northern Sichuan in the Min Mountains (Minshan). Virtually all plants on the world market today have been collected and then shipped illegally out of country to Europe, Japan, and North America. Most if not all are destined to perish due to poor collecting methods and the long road to someone's garden. This past fall (2013) Holger was able to offer for the first time young lab produced plants to gardeners the world over. These will have a far greater chance at establishing compared to wild collect plants, and their production doesn't threaten this endangered orchid in its native home. protected from winter rain and snow.

Cypripedium sichuanense

Cypripedium fargesii

Closely related to *C. sichuanense* is *C. fargesii*, another endemic of southwestern China, that has proven to be perhaps a bit more easy to grow than other members of Section Trigonipedia. People often wonder if this plant is cold hardy and the answer is 'yes.'

Holger has successfully grown *C. fargesii*, *C. margaritaceum*, and *C. sichuanense* at the Huanglong nursery where winters are long and cold. It is interesting to note that he has had no success maintaining *C. lichiangenese* however.

One of the more fascinating plants we saw at the nursery were these alba *C. tibeticum* var *amesianum* plants. This form of *C. tibeticum* is small in stature, and the flowers are half the size of a normal *C. tibeticum*. They also are self pollinating.

Alba flowered plants have only been found at one site to date and are therefore as rare as hen's teeth.

Alba flowered form of Cypripedium tibeticum* var *amesianum

Cypripedium wardii

A surprising plant to see at the nursery were two small clumps of *C. wardii*, the dwarf *C. subtropicum* relative found only in a tiny area where northern Yunnan meets southern Sichuan. It was nice to see them being grown and with any hope they will produce seedlings in the future. This species is found at much lower altitudes than at the nursery which has the odd effect of delaying their development in the spring, hence they were just in bud.

Cypripedium yunnanense

Another plant of southern Sichuan and northern Yunnan is *C. yunnanense*, a dwarf looking version of *C. tibeticum*. The plant's flower is tiny in comparison with its larger cousin. The pink staminode with a broad band of purple down its length is one common feature of this dwarf species.

Cypripedium guttatum

A plant found mostly in the boreal forests of northern Asia as well as Alaska and the Yukon is *C. guttatum*. This miniature bifoliate species has a unique flower shape resembling a Paphiopedilum more than a Cypripedium. The Hengduan Mountains of southwest China are home to a disjunct population, left here after the last ice age. This species is totally intolerant of high temperatures while in growth.

Cypripedium palangshanense

A tiny member of Section Enantiopedilum found only in the mountains of southwest China is *C. palangshanense*. Though found at lower elevations than the nursery, the colder winters here apparently are not injurious to them, proving their cold hardiness as well. These are truly tiny plants, so much so that a flowering specimen would easily fit in the palm of your hand. Once thought a close cousin to *C. debile*, another tiny Asian Cypripedium with pendent flowers, it is now considered to be closer to the western North American species, *C. fasciculatum*.

Another color form of *C. flavum* is this lovely one with a red speckled lip and lime green sepals and petals. This plant was found in a valley at a much lower elevation than the species is normally found and tends to flower latter than the ones from higher areas. Another lovely group of stock plants at the nursery.

***Cypripedium flavum* – red spotted lip form**

Cypripedium shanxiense

An unusual self pollinating plant very closely related to *C. henryi* and *C. calceolus* is the orange-brown flowered *C. shanxiense*. This species is odd not only for its self pollinating habit, but also its linear, band-like distribution across northern China, into extreme SW Russia, North Korea, and onto a few outlier colonies on Hokkaido Island in Japan. Not the most visually striking species of Cypripedium, but unusual indeed. This is one plant commonly offered by Hengduan Mountains Biotech.

A truly rare plant, both in the wild and in cultivation, is *C. farreri*. This species has been recorded from only a handful of sights, all confined to the Hengduan Mountains. Holger and Wenqing are the first to offer legal, lab produced plants, in fact the plant in the photo below is the first seedling they have flowered out. This species is fairly simple to grow in fact and should become more common as a garden plant in time, taking at least some collecting pressure off wild populations.

Cypripedium farreri

Cypripedium farreri seedlings

Here is their first batch of near flowering size seedlings of *C. farreri*. This year their stud plants produced many pods, so Holger thinks that in a few years he'll be able to have thousands of plants. That's good news for this species and for buyers since the price will come down appreciably.

Finally, a plant of *C. Wenqing*, an artificial remake of the naturally occurring hybrid, *C.* x *wenqingiae* (*C. farreri* x *C. tibeticum*). The plants in flower at the nursery were very beautifully colored such as this fine flower. In times past they have offered flasks of this hybrid and this year they also offered flowering sized seedling

Cypripedium Wenqing (C. farreri* x *C. tibeticum)

BOTANY BOY
Plant Encyclopedia
http://botanyboy.org/

Please visit website for additional plant information.

HOW TO GROW ORCHIDS FROM CUTTINGS

The orchid family Orchidaceae is a huge group that features epiphytic, lithophytic and terrestrial members. Although most orchids won't grow from cuttings, some members of the Dendrobium genus will produce new plants from stem cuttings. The Noble Dendrobium (*Dendrobium nobile*) is one such species. Grown as a houseplant, it provides an impressive display of flowers from late winter to early summer.

Flowers

The Noble Dendrobium produces single blossoms or groups of flowers on short spikes that emerge from the nodes along the stem or pseudobulb. After the flowers fade, you can clip the spikes with scissors or shears. Dip the blades of your cutting tool in rubbing alcohol between cuts to help prevent the spread of infection.

Stem Cutting

After the flowers die back, select one or more stems of up to one foot long. Snip them off the parent plant and cut into sections with three to four nodes each. Set the cuttings aside.

Rooting Tray

Prepare a rooting tray with a layer of pebbles, sphagnum moss or bark. Soak the moss or bark in water until completely wet; then allow the water to drain from the medium. Spread the medium in an even layer in the tray. Place the stem cuttings on top of the medium and mist with water. Cover the tray loosely with plastic wrap to keep the humidity high. Put the tray in a warm, dark location.

Cutting Care

Keep the rooting tray at a temperature of between 75 to 85°F. A seedling heat mat can help maintain a consistent temperature. Mist the cuttings regularly to keep them moist, but not waterlogged. Every two weeks for the first two months, mist with a water-soluble nitrogen fertiliser or liquid seaweed extract, followed by a light misting of water. You can also spritz the cuttings with a 6-6-8 foliar fertiliser in alternate weeks. Continue to use the foliar fertiliser every two weeks until the cuttings develop leaves and roots. Discard any cuttings that show signs of rotting.

Potting Basics

After the cuttings develop new shoots and roots, gently cut the stem between the plantlets using sterilised anvil pruners. These baby plants are also called *keikis* when they develop naturally on the pseudobulbs or stems of the parent plant.

Dendrobiums prefer small flowerpots. Pot the new plants in 2-inch pots using a loose orchid medium of bark, weathered volcanic rock or sphagnum moss. Soak the medium first to ensure it is completely moist. Plant the new plantlet with the old stem standing upright and the shoots facing to the side or upward. Gently tuck the plant into the medium and add a stake if necessary to hold it upright and in position. The new leaves will grow up, and the roots will wind their way through the potting medium.

RUTH DE JAUREGUI

[**Editor**] Certain orchids can produce adventitious growths on vegetative parts of the plant. Phalaenopsis, Vanda, Dendrobium and Catasetum are a few of the better-known orchid genera that can be easily propagated by removing "keikis" (Hawaiian word for "baby") at the right time. This video shows you how easy it is to pot one up.

http://www.aos.org/orchids/aos-video-library/potting-a-keiki.aspx

STUDY RAISES CONCERNS ABOUT PREVALENT ORCHID VIRUSES

Orchid viruses are capable of causing flower deformities and death, which can severely impact the horticultural industry and wild orchid conservation.

In a new study, scientists demonstrated the evolution of the two most prevalent orchid viruses utilizing information representing their worldwide distribution.

The study revealed that significant worldwide exchange of cultivated orchids has successfully "homogenized" the genetic diversity of the viruses. As such, the two infections have shown a couple of genetic differences since their first rise, across countries and host plants.

The findings are concerning because these patterns are suggestive of the rapid and regular international movement of orchids and their related pathogens.

The rapid global dispersal of viruses not only has the potential to impact the lucrative orchid horticultural industry, but it also threatens orchid species in the wild.

Lead author Deborah J. Fogell, of the University of Kent, in the UK, said, "Global trade has opened the doors to regular and rapid movements of both plants and their pathogens. Orchids are a highly threatened family, and without better disease screening practice and phytosanitary regulation, we may be placing wild populations at risk for unintentional spillover."

Amit Malewar

"Genetic homogenisation of two major orchid viruses through global trade-based dispersal of their hosts"

https://nph.onlinelibrary.wiley.com/doi/abs/10.1002/ppp3.46

Orchid viruses are capable of causing flower deformities and death, which can severely impact the horticultural industry and wild orchid conservation. Here we show how two of these quickly evolving viruses display few genetic differences since their first emergence, across countries and host plants. This is concerning as, despite biosecurity regulations to control the movement of orchids and their related pathogens, these patterns are suggestive of rapid and regular international movement of horticultural material. Poor biosecurity practices could threaten the orchid horticultural industry and result in the accidental translocation or reintroduction of infected plant material intended to recover wild populations.

THE BLOTCHED BUTTERFLY ORCHID - *SARCOCHILUS WEINTHALII*

Botanical name: *Sarcochilus weinthalii*
Family: *Orchidaceae*

The blotched butterfly orchid is an air plant, or epiphyte – it doesn't put down roots in the ground, but rests on a host and draws water out of the air.

They are mostly found on rainforest tree branches in southern Queesland and northern New South Wales.

We don't know how they're pollinated! A related species (shown right) is pollinated by the hover fly, which might give us a clue for who helps out the blotched butterfly orchid.

The blotched butterfly orchid (*Sarcochilus weinthalii*) looks fairly unremarkable when it's not flowering, generally resembling the far more common orange blossom orchid. But when it flowers, it is exquisite. Dark purple blotches stand out on cream petals, resembling a flock of butterflies come to rest on rainforest trees.

Like the most of its genus, the blotched butterfly orchid is epiphytic, or an air plant: without roots, they absorb water from the air. The leaves are leathery and curved, and appear in groups of three to seven. They usually grow on the horizontal branches of tree hosts in dry rainforests in southern Queensland and northern NSW.

Australia has 18 unique butterfly orchids, a number of which are under threat. As they are easily grown by orchid fanciers, they are often removed from natural locations and are becoming harder to see in their natural habitat, high up on rainforest trees in hilly terrain.

We observed a number of insects visiting flowers of the blotched butterfly orchid, but most of these were small and unlikely to be capable of pollinating the species. Previous research suggests Sarcochilus orchids are pollinated by native bees. ■

THE CONVERSATION
JOHN DEARLARNEY

CYPRIPEDIUM TIBETICUM
A HIGHLY VARIABLE CHINESE LADY SLIPPER ORCHID

One of the most startling of the Chinese lady slipper orchids is the highly variable *Cypripedium tibeticum*. Superficially it is similar to the more widespread *C. macranthos*, and indeed some forms of that species, especially those known as *hoteiatsumorisou* in Japan, are near dead ringers for the more spectacular large flowered forms of *C. tibeticum* from Sichuan, China.

In a similar way *C. tibeticum* is as variable as the North American *C. parviflorum*, making its taxonomy problematic. As a result it has been given any number of names – the bulk of those considered invalid by most authorities. Hopefully in this article I will at least help clarify what plants have been found in nature.

Cypripedium tibeticum is a herbaceous, perennial, terrestrial orchid of high mountain meadows, scrub forests, and forest margins. Its thick, glabrous stem can reach a height of 35 cm, but it is not uncommon to find flowering stems half that high, especially in exposed habitats. Each bears up to four pubescent elliptic to nearly ovate leaves, but more commonly just three are present. While single stemmed plants are frequent, in more favorable environments they can form large clumps with 10 or more growing points.

Generalizing about the flower is quite a bit more tricky since variation in form and color is extreme. The flower's natural spread can range from a mere 3 cm to as much as 12 cm depending on the form. More consistent features include a highly corrugated lip surface that is richly flushed with maroon brown to purple pigment, boldly striated sepals and petals, conspicuous hairs on the petals towards their point of attachment, and a mostly glabrous ovary. Flowers are typically born one per stem, however rarely they can be double flowered. Beyond that, it is difficult to talk about similar floral characteristics. Even the often mentioned white ring around the lip orifice is hardly a consistent trait. The various forms I've seen or heard about and their characteristics are detailed below.

This is one of the more widespread and common Cypripedium species in western China, indeed extending beyond that country's borders into adjacent areas of northern India (Sikkim) and Bhutan. Within China it has been found from southwestern Xizang (Tibet), northern Yunnan, much of northern and western Sichuan, southern Gansu, and perhaps even parts of Guizhou (according to **eFloras.org**). Considering its native range is in such close proximity to Arunachal Pradesh (India) and extreme northern Myanmar, there is likely habitat in those areas as well. It is with satisfaction that I can say this species is not in immediate danger in its native range, despite being continuously subjected to collecting pressure from plant diggers.

This is a plant of high mountains, having been reported from 2,300-4,200 meters elevation. It can be found on grassy to scrubby slopes and meadows (often occupied by yaks), rocky thin woods, forest margins, on travertine formations, perched on scree slopes, and growing out of cliff faces. It is not found in dense woodlands, but rather is a denizen of open environments. In northern Sichuan I have had the great fortune of seeing it growing in all the above situations from ~3,000-3,500 meters elevation, often accompanied by *C. flavum*, *C. calcicola*, and *C. bardolphianum*, and more rarely *C. guttatum*, *C. shanxiense*, and *C. farreri*. It can form sizable colonies, with many dozens of flowering plants in view, or simply grow here and there in small groups.

[*C. tibeticum* is often rather short in stature, but as you can see their flowers can be large and showy.]

C. tibeticum *is a plant of open habitats. On the left is a open field of limestone scree inhabited by only small trees and shrubs, a perfect area for many Cypripedium to grow, including this species. The middle photo is of Huanglong Valley's travertine formations, another good growing area for Cyps. The* C. tibeticum *on the left is growing on the verge of a large travertine pool, just centimeters from the water. One should not be fooled into thinking that this plant likes wet roots however.*

As a side note, all of Sichuan's Cypripediums favor travertine limestone areas. Travertine is limestone produced by the precipitation of carbonate minerals out of mineral springs, in particular hot springs. Western China is a seismically active region overlaid in many places with limestone rock. Where fissures carrying geothermally heated water to the surface come in contact with limestone, travertine formations can form around flowing hot spring areas.

In Huanglong valley, there is a 3.5 km long travertine formation with multiple pools, and interconnecting streams and waterfalls. The limestone keeps the valley from being densely forested due to the high pH, so much of the area is lightly wooded or has short, scrubby vegetation – a perfect area for Cyps and a host of other terrestrial orchids to grow, notably species of Amitostigma, Galearis, Ponerorchis, Oreorchis, and *Phaius delavayi*. The shear number of orchids in such sites is shocking, as is the rare beauty of the travertine formations and their deep aquamarine pools.

My experience with this plant in the field is as varied as it is enjoyable. Many people say that *C. reginae*, or perhaps *C. macranthos*, is the most beautiful of all Cyps, but after having seen hundreds of *C. tibeticum* in the wild, this species gets my vote for the most spectacular, at least in Asia. The range of flower types and colors alone make it an intriguing plant. I cannot explain the shear joy of seeing a flowering colony growing on the edge of a travertine pool, the sound of water falling all around, and bold, gray craggy peaks standing in the distance.

What's even more remarkable is the range of situations I have witnessed this plant growing – in immense meadows full of alpine flowers and dwarf rhododendrons, to plants half buried in falling limestone scree slopes, others perched on impossibly steep limestone cliffs growing out of tufts of grass, on tiny islands of scrubby vegetation in the middle of a travertine water course – the variation was breath-taking. What a joy it was to see them all in their native homes – I wanted to photograph every one of them, or just sit there and stare on for an eternity…

Here are the forms I've seen in the wild, starting with the more common ones, and ending with a few odd-balls. Though these are representative of many forms reported in the wild, remarkably they still do not capture the full range for this species! All of these were taken during a botanical tour in late June, 2013 lead by Dr. Holger Perner and his wife, Wenqing.

This form of *Cypripedium tibeticum* is very common in northern Sichuan, it bears the largest flowers of any type, and is the most lovely in my opinion.

The most commonly seen form in Sichuan during the trip was this large flowered plant with a white base color to the flower. The petals and sepals are very broad in this type (especially the dorsal sepal), and the lip tends to be rather round and inflated. In some specimens it is more laterally compressed. This was the only type seen at Huanglong Valley, but grew in mixed colonies with other forms of *C. tibeticum* at other sites. Some of the best clones remind me of the Japanese form of *C. macranthos* known in the west as *hoteiatsumorianum*, with flowers up to 12 cm in natural spread. Virtually all the specimens I saw lacked a white ring around the lip orifice – a trait commonly cited for this species. To my eyes, these are the true queens of all *C. tibeticum* varieties.

This form has a yellow base color to the flower such that the purple pigments show up as a dark, maroon brown. This type is often known as v. *corrugatum* in the horticultural trade.
The next most commonly seen form is a flower that has a yellow base color. Due to the yellow color the anthocyanin is expressed as a dark maroon to nearly chocolate brown rather than the pure purple-pink of the previous type. Many also had the commonly reported light colored ring around the lip orifice. These plants seemed to have smaller flowers in general, perhaps averaging only 7-9 cm in natural spread. At the sites we visited they grew in small groups, but this type is one that is known to form large clumps. In the trade it is often called v. *corrugatum,* though most authorities do not consider that a valid name. Plants of this form are the original type specimens that are the basis of the species, collected over a hundred years ago in northern Sichuan. At the time this region was considered a part of Tibet, ergo the species' name.

A more uncommon plant was this flower with more clear yellow at the center. These were uncommon in the area we were in, but in parts of Yunnan and Xizang flowers with strongly yellow colored sepals and petals are quite frequent.

At one site we found a number of plants with decidedly more yellow showing around the base of all the lower parts where they connect to the ovary, including the lip. The lip in these plants was a bit odd looking as well – perhaps more in line with *C. calcicola*, often with significant dentation on the lip orifice. In parts of Yunnan and Tibet plants with golden color dominating the sepals and petals are more common, and constitute yet another color form of this species. The plant shown here is representative of what we saw, yet there were others with more inflated lips as well – again, it is hard to generalize.

At one site in Sichuan some plants were intermediate between *C. tibeticum* and *C. calcicola*. What are these plants?

They raise more questions than they answer.

The same site also boasted some odd "in-between" forms – looking something like the closely related *C. calcicola*, but having *C. tibeticum* characteristics as well. Dr. Perner said that such plants make him wonder if *C. calcicola* is truly a distinct taxon, rather than just another form of the highly varied *C. tibeticum.*

To see these plants in the wilds of Sichuan, watch this video:

https://bit.ly/33s802e

INTERNATIONAL CODE OF NOMENCLATURE FOR CULTIVATED PLANTS

The International Code of Nomenclature for Cultivated Plants (ICNCP), also known as the Cultivated Plant Code, is a guide to the rules and regulations for naming cultigens, plants whose origin or selection is primarily due to intentional human activity.Cultigens under the purview of the ICNCP include cultivars, Groups (cultivar groups), and grexes. All organisms traditionally considered to be plants (including algae and fungi) are included.[2] Taxa that receive a name under the ICNCP will also be included within taxa named under the International Code of Nomenclature for algae, fungi, and plants, for example, a cultivar is a member of a species.

William Stearn has outlined the origins of ICNCP, tracing it back to the International Horticultural Congress of Brussels in 1864, when a letter from Alphonse de Candolle to Edouard Morren was tabled. This set out de Candolle's view that Latin names should be reserved for species and varieties found in the wild, with non-Latin or "fancy" names used for garden forms. Karl Koch supported this position at the 1865 International Botanical and Horticultural Congress and at the 1866 International Botanical Congress, where he suggested that future congresses should deal with nomenclatural matters. De Candolle, who had a legal background, drew up the Lois de la Nomenclature botanique (rules of botanical nomenclature). When adopted by the International Botanical Congress of Paris in 1867, this became the first version of today's International Code of Nomenclature for algae, fungi, and plants (ICN).

Name examples
The ICNCP operates within the framework of the International Code of Nomenclature for algae, fungi, and plants which regulates the scientific names of plants. The following are some examples of names governed by the ICNCP:

Clematis alpina 'Ruby': a cultivar within a species; the cultivar epithet is in single quotes and capitalized.
Magnolia 'Elizabeth': a cultivar within a hybrid between two or more species.
Rhododendron boothii Mishmiense Group: a cultivar group name; both the name of the cultivar group and the word "Group" are capitalized and not enclosed in quotes.
Paphiopedilum Sorel grex: a grex name; the name of the grex is capitalized but the word "grex" (or abbreviation "gx") is not, and quotes are not used.
Apple 'Jonathan': permitted use of an unambiguous common name with a cultivar epithet.
+Crataegomespilus: a graft-chimera of *Crataegus* and *Mespilus*
Note that the ICNCP does not regulate trademarks for plants: trademarks are regulated by the law of the land involved. Nor does the ICNCP regulate the naming of plant varieties in the legal sense of that term.

Trade designations
Many plants have "selling names" or "marketing names" as well as a cultivar name; the ICNCP refers to these as "trade designations". Only the cultivar name is governed by the ICNCP. It is required to be unique; in accordance with the principle of priority, it will be the first name that is published or that is registered by the discoverer or breeder of the cultivar.[11] Trade designations are not regulated by the ICNCP;[12] they may be different in different countries. Thus the German rose breeder Reimer Kordes registered a white rose in 1958 as the cultivar 'KORbin'. This is sold in the United Kingdom under the selling name "Iceberg", in France as "*Fée des Neiges*" and in Germany as "*Schneewittchen*".

Trade designations are not enclosed in single quotes. The ICNCP states that "trade designations must always be distinguished typographically from cultivar, Group and grex epithets." It uses small capitals for this purpose, thus *Syringa vulgaris* Ludwig Spaeth (trade designation) is distinguished from *S. vulgaris* 'Andenken an Ludwig Späth' (cultivar name). Other sources, including the Royal Horticultural Society, instead use a different font for selling names, e.g. *Rosa* Iceberg 'KORbin'.

Website: https://www.ishs.org/scripta-horticulturae/international-code-nomenclature-cultivated-plants-ninth-edition

SLIPPER ORCHIDS

Anyone who grew up in the northern part of the USA is familiar with lady slipper orchids. As a child I was introduced to this group of plants when I came upon the moccasin flower, *Cypripedium acaule*, growing in the local woods of southern New York. Little did I know at the time that this species was just one member of a much larger group of plants known as the slipper orchids, subfamily Cypripedioideae. Nor did I realize they are some of the most primitive of the orchid family, so much so that some authorities have considered them a separate family of plants altogether.

Variation within this subfamily is broad in many regards. They can be found growing in a wide range of habitats, from grasslands, to temperate forests, tropical and subtropical forests, and wetlands such as bogs or seepage slopes. Some are completely terrestrial, while others are epiphytic. Both life cycle and habit too are highly varied. Most are evergreen with the exception of the genus Cypripedium which is deciduous, however, as if to prove the variation of these plants, one species, *C. subtropicum*, is evergreen. The habit of the leaves and the flower scape as well ranges far and wide, though all are sympodial plants, throwing new growths along a trailing rhizome.

So what makes them all slipper orchids? Mostly the characteristics of the flower. The most obvious common feature is the sac shaped lip, giving these plants their common name. Few other orchids have this feature, and none so developed. Moreover, the flower is graced with a staminode – a sterile, shield shaped stamen that covers the two fertile anthers as well as the stigmatic surface. The lip acts as a temporary trap for insects designed such that escape puts them in contact with the staminode, thus increasing the chance of pollination. A few species of Cypripedium are autogamous – self fertilizing.

Another feature common to most species is that the two lower sepals are fused into a single unit called the synsepal. Occasionally, these sepals are not fused, but that is the exception rather than the norm. The remaining sepal is known as the dorsal sepal and often is rather large. The petals are usually held laterally in most species, and in many are the longest flower parts. They frequently hang down, particularly in the genera Phragmipedium and Cypripedium, though certain sections within Paphiopedium have this feature as well.

Five genera are currently recognized. They are as follows:

Cypripedium – this terrestrial genus composed of around 45-47 species is mostly found throughout the northern temperate regions of the world, but outlying species in Central America and southern China fall within subtropical or even tropical climates. They are deciduous in habit and largely woodland plants. Their cultivation is somewhat problematic. As fate would have it, they also are my favorite slipper orchids.

Mexipedium – a single dwarf species is known from Oaxaca, Mexico, *M. xerophyticum*. This lithophytic plant likes a bit more water in cultivation than its name implies.

Phragmipedium – this tropical American genus numbering around 15-20 species is known for its love of water. Species range from epiphytic, to lithophytic, to terrestrial in habit. It is composed of six sections. The most astounding species to be found recently, *P. kovachii,* is in a section all its own.

Paphiopedilum – this is by far the most varied group of slipper orchids, containing 80 or so known species, and is found only in southeast Asia and the East Indies. Five subgenera, 15 sections, and 4 subsections can be found within this diverse genus. They range from true epiphytes, to lithophytes, to terrestrial in habit. Most are found within the bounds of truly tropical areas, but some members of the subgenus Parvisepalum venture into distinctly temperate climes. This genus is the most widely grown and hybridized of all slipper orchids.

Selenipedium – an odd group of highly primitive plants, numbering only six species in all, and all confined to northern South America and Panama. Little is known about their culture outside their native lands. Most are quite tall, leafy plants, with relatively small flowers. Curiosities, but never likely to be important in the horticultural trade.

FAIRY SLIPPER ORCHID
CALYPSO BULBOSA

Despite being quite small, the flowers are startlingly beautiful, though you'll have to get on your belly to really appreciate them. Five of the flower parts are nearly identical in size and shape, two petals and three sepals, splayed out in a star-like pattern. The lip is slipper-like, similar to a lady slipper (genus Cypripedium), but more elongated with a frilled front plate with upward curling margins. At the front of the mouth of the lip are a number of hairy bristles. At the base of the lip, sometimes extending a fairly long distance beyond the lip proper (especially in v. *speciosa*) are two horn-like projections. Overall flower color is pink-purple. The column is held horizontal to the ground, is relatively long and has a broad hood.

The lip is striated with white and various shades of darker purple, or purple brown veins and spots. Variety *americana* is known for a bright yellow patch in around the area where the bristles protrude, making it perhaps the most attractive of the four known varieties. Pure white alba flowers, as well as pale "semi-alba" types are also known. Occasionally, two flowers can be found on one stalk. Seed pods develop in an upward standing position.

HOW I DISCOVERED ORCHIDS ARE AMONG THE EASIEST OF PLANTS

Ray Creek of Ray Creek Orchids based in Scunthorpe, North Lincolnshire, UK, .
Lecture - September 2nd

Ray was always into plants, even in school he had a love of growing. In the early days he grew bedding plants to supplement his income until one day a call from a friend changed his life. Ray's friend was going bankrupt and asked him to take all his orchids for £100. So he said 'why not?'

Up to that point his 25ft x 11ft glasshouse was for summer bedding production, now orchids festooned the benches and any other available space.

Sometime around 1994 - 1995 Ray established an orchid nursery supplying plants to the people of Scunthorpe and eventually world-wide, Ray retired from nursery production circa 2018.

In over 25 years of growing orchids he has discovered that, on the whole, orchids are totally misunderstood. This realisation did not happen overnight; it began with a lot of trial and error. At the beginning, Ray decided to use capillary matting and greenhouse guttering to water his orchid collection but it wasn't long before the losses began to show. Fungus disease set in and travelled the benches….too much water. He then moved to slatted benches and still was over watering. It took a lot of research and time to get watering correct, but he did. He installed an anthracite boiler and used lorry radiators with fans for air circulation.

Ray learned early on that it is important to look at all orchid species as individual plants. It is vital to learn the individual needs and adapt the basic rules of growing to each. Ray continued to discuss all the usual topics and how he deals with watering etc.

Watering, whether you dunk them, or water from the bottom up, it doesn't matter; it's the amount that counts.
Some are sensitive to hard water and some must have hard water, e.g. Paphiopedilum. On the whole it really doesn't matter, its how you use water not what kind of water you use that's vital. Rain water runs a risk of disease, it is after all, the wash off your roof. Water left on leaves is a big problem in greenhouses

Compost, Ray only uses coconut coir. It has a longer life than bark and environmentally friendly. Lignin is a fungicide naturally occurring in coir which controls any fungus. Its holds nutrients similar to soil via ionic exchange. In production, coir is washed, heat treated and gets a nutrient boost.

Sourcing is a problem with coir. It is widely used in Sri Lanka and the Philippines. Many tomato, cucumber and strawberry growers use coir.

Feeding weekly weakly?
Keep to basic horticulture rules, Nitrogen, Phosphorus, and Potassium (NPK)
and traces elements. There is no necessity to spend much money on feed. Just buy good quality and use properly.
Feed every 3rd or 4th watering. It is important to remember that when watering from the bottom salt will build up at the bottom of the pot.

Feed all year round. Seaweed works well but only use it as a supplement.

Light
Winter sun is great, summer sun will burn them to a crisp. Tolerances wary, e.g., Masdevallia will not tolerate any direct sun.

Plants were the earth first solar panels, little factories to produce seeds except orchids produce flowers.
When flower buds go yellow and fall off = no energy for plant to open them = not enough light.
Rays Tips:

- Use a wooden tea stirring stick in a pot to gauge water levels for epiphytic orchids.
- They behave more like cacti and succulents than ferns especially Phalaenopsis; some have actually been known to grow on Cacti.
- Don't think it's going to die before you start.
- They don't need insane humidity, it's not as humid in a jungle canopy as you think.
- There is a world of difference between growing in a house and a greenhouse.
- You can't make a plant flower you can give it what it needs to help it produce flowers.
- Take the plant you care least about and try and kill it with a drought.

Since retirement Ray now keeps chickens in the glasshouse, minds three orchids at home and gives lots of talks to societies and clubs on how: ***Orchids are the easiest plants to grow!***

"How I Discovered Orchids Are Among The Easiest Of Plants"
Ray Creek of Ray Creek Orchids based in Scunthorpe, North Lincolnshire, UK, will talk about his orchid experiences and why he thinks orchids are easy to grow.
September 2nd 7.30pm

MARIE HOURIGAN

Photo credit: Eszter Bogolin

HOW SEED-FEEDING FLIES ARE THREATENING FIVE ORCHID SPECIES

How seed-feeding flies are threatening five orchid species

A species of seed-feeding fly is critically damaging the seed production of multiple orchid species, as revealed by a group of Japanese researchers. If the damage caused by this fly is occurring long-term and across Japan, these already-endangered orchid species could become unable to reproduce using seeds, and their dwindling numbers will take a large hit.

These survey was carried out by Project Associate Professor Kenji Suetsugu (Kobe University Graduate School of Science), Shigeki Fukushima (Head of the Chiba Prefectural Agriculture and Forestry Research Center) and Masahiro Sueyoshi (Principal Investigator at the Forestry and Forest Products Research Institute). The findings were published on September 21st in the online edition of Ecology.

With over 30,000 species classified, orchids are one of the most diverse groups of flowering plants, and the unique shape of their flowers has entranced people for many years. Unfortunately this popularity has led to orchid overharvesting. Combined with loss of habitat caused by development, this means that over 70% of Japan's native orchid species are classified as endangered by the Ministry of the Environment.

From the perspective of genetic diversity, it is better for endangered species to reproduce via seeds rather than cloning. This means that to save these orchids, we should identify the insects that pollinate these plants and the parasites that prevent seed-based reproduction. Therefore, Professor Suetsugu's research team has been collecting information on organisms related to orchid reproduction.

During a survey to identify the pollinators of orchid species, the team found that in pollinated fruit which should be able to produce seeds under normal circumstances, a seed-feeding fly known as *Japanagromyza tokunagai* was destroying the seeds of multiple orchid species (see figure 1).

When orchids bloom, *J. tokunagai* lays its eggs in the young fruit, and the insect young grow up eating the seeds in the fruit. They become pupae inside the fruit, and when they hatch into their winged forms they make a hole in the fruit in order to make their exit. Fruit that is parasitized by these flies grows to the same size as normal fruit, so at a glance it looks healthy. This means that we have probably underestimated the damage caused by these flies. In many cases, fruit parasitized by the flies produces no seeds at all (see figure 2). Humans have known about the damage caused by seed-feeding flies since the 1980s, but we do not know the impact on seed production in concrete terms.

In this study, after artificially pollinating five species of orchids in Japan's Kanto region, the team covered some specimens with bags to prevent the *J. tokunagai* from entering, and left others uncovered. Afterwards they compared the quality and amount of the seeds produced by each plant. This is the first study to precisely quantify the reduction to orchid seed production caused by *J. tokunagai*. Results showed that in all five species, damage caused by *J. tokunagai* reduced seed production by over 95%. It is not yet clear whether this is occurring across Japan or over an extended time period. However, if this situation continues, the affected orchid species will become unable to reproduce via seed production, threatening their already dwindling numbers.

It is also possible that damage caused by *J. tokunagai* may be intensifying in recent years. This could be for two reasons: firstly, the flies are non-native species that have been introduced into areas where they lack natural enemies, and secondly, because the orchid populations have become fragmented, also reducing the population size of natural enemies.

This photo shows the Golden Orchid blooms (left) and *J. tokunagai* on the flower (top right).

Professor Suetsugu comments, "Going forward, we want to shed more light on the damage caused by *J. tokunagai.* We plan to do this by quantifying the damage in other areas of Japan, and by testing the theory that J. tokunagai is a non-native species through genetic analysis".

EUREKALERT.ORG

PHOTO: Takuto Shitara

19TH-CENTURY ARTIST WAS KNOWN FOR HIS ORCHID PAINTINGS

Last month, while attending an orchid meeting, I was fortunate to win a raffle prize of fancy note cards depicting cattleyas in old time jungle scenes. The images were familiar as they are regularly found in art museums and botanical gift shops but the artist is largely unknown. The material dates back 150 years and was avant garde in its day.

Martin Johnson Heade was not famous during his lifetime (1819 – 1904) but was "rediscovered" in the mid-20th century. His early work was landscapes in New England but, after he traveled to South America in the 1860s, his subjects changed to plants and birds of the Amazon. From a single oil sketch in Brazil, Heade returned home and made dozens of paintings showing orchids and hummingbirds in dense cloud forests.

To capture the intricate detail of each orchid, Heade visited private collections and commercial nurseries in the Northeast. "I've painted nothing but orchids this summer and Summit (New Jersey) is the best place in the country for that," he wrote to a friend. Summit is the town where famed grower Frederick Sander, of Britain, had a range of greenhouses.

A typical Heade painting features the lavender form of *Cattleya labiata* in amazing detail. This Brazilian species is shown at the peak of freshness and without a single blemish. The flowers are unusually large and are cast in a light that reveals the delicate feathering and ruffled edges of the petals.

Right behind them are puffy buds waiting to open. They seem to be moving because there is visible color between the cracks. Heade's illusion is aided by his use of artistic liberty in the exaggerated foot-long curvy flower stems that resemble a serpent about to strike. Viewers can't help but think that if they watch long enough, one of those buds will actually unfurl.

The cattleya foliage is just as precise as the flowers but the subjects are weathered and ratty as one would expect in the wild. The pseudo-bulbs are wrinkled and some have sunburned or missing leaves. Clearly, the plants have gone through the wet and dry seasons of the jungle and have managed to rally in time for the blooming season.

The juxtaposition of awe-inspiring and glistening blossoms emerging from half-dead plants that are shrouded in heavy fog evokes a feeling that something magical is happening. Here, in this remote part of the world, at this very moment, we are witnessing one of nature's great secrets — the blooming of a cattleya.

For enthusiasts hoping to see Heade's originals, they can be found at major public institutions around the country, including the Museum of Fine Arts — Boston, The New York Historical Society, National Gallery of Art and Philadelphia Museum of Art.Notable titles include "Orchids in a Jungle" (1871-1874), and "Study of an Orchid" (1872). Reynolda House Museum of American Art has one, too: "Orchid With Two Hummingbirds" (1871). Reproductions are available in a wide variety of formats, including my new favorite, note cards. www.martin-johnson-heade.org.

Cattleya labiata is the subject of most of Martin Johnson Heade's orchid paintings. It is believed that he saw one while on a trip to South America in the 1860s. The species is native to Brazil where it produces up to four flowers annually

ARTHUR CHADWICK

Martin Johnson Heade's "Orchid Blossoms" (1873) features *Cattleya labiata* in a dense jungle with one large flower and a bud just opening.

He took considerable artistic liberty with the plant anatomy in order to evoke a sense of motion

Cleveland Museum of Art

THOUSANDS OF ORCHIDS STOLEN FROM GERMAN NATURE RESERVE

Around 3,000 plants of several orchid species have been dug up and stolen in Germany's famous Taubergiessen Nature Reserve.

Scores of flowering Early Spider, Late Spider and Bumblebee Orchids were among those vandalised by the thieves over an area spanning several hectares of the reserve, which is situated along the River Rhine close to the French-German border, north of Freiburg.

Dietmar Keil, a local biologist who was heavily involved in ensuring Taubergiessen, Rheinhausen, Baden-Württemberg, Germany was designated as a nature reserve 40 years ago, commented: "It will take at least 50 years for affected varieties to recover to some extent – if they can be saved at all."

Local police, who are now patrolling the area to ensure the remaining flowers are not also stolen, are appealing for witnesses to what they described as an "unprecedented environmental crime", which took place at some point between 1 and 5 May.

Unfortunately, this incident is not the first to have taken place on site. In 2018, some of the reserve's few Lizard Orchids were dug up while, in 2017, a number of Pyramidal Orchids disappeared from the meadow. At the time, executives went along with the theory that the damage must have been cause by Wild Boar. However, that theory has now been thrown out the window, says Keil, who has offered a €5,000 reward for identifying the perpetrators.

The orchids are likely to have been stolen for sale on the internet, where considerable demand remains – some buyers are rumoured to pay in excess of €100 for a single plant – which makes them a lucrative target for criminals. Using this value, the police estimate around €250,000 worth of damage at Taubergiessen.

This latest incident highlights the precarious situation of orchids across Europe which, because of their beauty and desirability, are regularly targeted by criminals. The localities of some particularly rare species are routinely kept secret, while others are closely guarded by volunteers – sometimes round the clock – to safeguard them.

Late Spider Orchid (*Orphys fuctiflora*) was among the species targeted by thieves at Taubergiessen, Rheinhausen, Baden-Württemberg, Germany

OrchidWire

Connecting a World of Orchids
.orchidwire.com/index.html

Swiss Orchid Foundation

The Swiss Orchid Foundation is working on a world orchid iconography (orchid.unibas.ch) and has slides, drawings and herbarium specimens from over 13,000 different orchid species, that you can find here: orchid.unibas.ch/iconography.search.php

BibliOrchidea

BibliOrchidea is with over 150,000 entries the largest orchid literature database worldwide.
orchid.unibas.ch/bibliorchidea/pages/applet.php

[Continued from page 5] Somehow, Brendan Sayers had the idea I might be suited to be the Editor of Pollinia. I agreed tto takethe office, but just temporarily, of course.

That was in 2007. I began with Volume Six, Number One. We were then doing four issues per year. I calculate that with this issue I have completed 44 regular issues and one Special Issue.

But this will be my last. The Committee will soon choose a new Editor and we may look forward to a fresh design and new approach to learning about Orchids beginning with Volume 18. I hope my tenure has been interesting, informative and fun.

I would like to thank Ika and Ulli Peiler, Martin O'Sullivan, Marie Hourigan, Brendan Sayers, Mary Bradshaw, Tom Petherbridge, Lisa Coffey and the many others who have helped with proofing, articles, news and inspiration over the past twelve years.

I am not giving up on Orchids, but I am down to only one plant now. Last month in anticipation of my upcoming 79th birthday a friend gave me the gift of a blooming Paph.

It looks like a toad on a stick. Slán agaibh.

REAR COVER: A pair of *Calypso bulbosa* v. *occidentalis* growing in a coniferous forest in East Sooke Park, Vancouver Island, Canada. *C. bulbosa* v. *occidentalis* – confined to western North America from California to Oregon, Washington, Idaho, Montana, British Columbia, and Alaska. In the south it is found exclusively in cool, "fog-belt" coastal forests, and further north (Idaho and Montana and northward) it can be seen in moister inland mid-elevation mountains as well. It is a characteristic plant of the Pacific Northwest rain forest belt often seen near sea level, and flowering earlier than most other varieties.

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