

How to Know and Grow
GESNERIADS



A PUBLICATION OF THE GESNERIAD SOCIETY, INC.

How to Know and Grow Gesneriads

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How to Know and Grow Gesneriads is dedicated to the memory
of Maryjane Evans who taught and inspired so many people
around the world to know and grow these beautiful plants.

COVER

Saintpaulia ionantha

Columnnea 'Snake Charmer'

Sinningia speciosa 'Purple Queen'

Aeschynanthus lobbianus

Streptocarpus 'Texas Komachi'

Episcia 'Suomi'

Photographs courtesy of Marlene Beam, Leslie Brothers, John L. Clark, Ray Drew, Jonathan Ertelt, John Evans, Christian Feuillet, Jeanne Katzenstein, Alan LaVergne, Charles Lawn, Dale Martens, Julie Mavity-Hudson, Marty Mines, Ron Myhr, Toshijiro Okuto, Michael Riley, Vern Sawyer, Stan Schwartz, Bob Stewart, Margaret Stone, Hans Wiehler, Bev Williams, and other members of The Gesneriad Society who have generously donated their photographs over the years. We thank the photographers, and the many growers, for making it possible to picture so many beautiful plants in this manual.

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Introduction and Acknowledgments

Welcome to the world of gesneriads, a wonderful and diverse plant family. And welcome to the global community of people who enjoy growing, hybridizing, and studying these beautiful and fascinating plants.

The gesneriad family has something for everyone. Gesneriads have an incredible variety of form, color, attractiveness, and ease of growth. A person can start out by trying a few easy-to-grow, showy gesneriads with very little in the way of expertise or technical support and then quickly get hooked and want to grow many more of these plants.

Fortunately, it is impossible to get bored in this hobby. After mastering some cultural basics, the gesneriad grower can seek more challenges and new experiences, perhaps attempting one of the harder-to-grow species or one that isn't quite as showy but just as lovable. There are always more species and hybrids to explore, new methods of growing and propagating to try, and new adventures such as hybridizing, tissue culture, and collecting in the wild.

In the following pages you will find an overview of the gesneriad family from a botanical point of view. The next section contains genus-by-genus descriptions and photographs of some of the most popular gesneriad genera. Finally there are in-depth instructions on gesneriad culture so you will be able to grow these plants yourself.

Despite the popularity and botanical and horticultural importance of the gesneriad family, there have been few books devoted to it (and none currently in print). This manual begins to fill that void. It is the result of the hard work and valuable contributions of many gesneriad enthusiasts and scholars.

The original, long-out-of-print pamphlet *How to Know and Grow Gesneriads*, first published many years ago by the American Gloxinia and Gesneriad Society, provided the inspiration and the starting point for this current effort. We are indebted to the authors of that work, especially Frances N. Batcheller. We are also indebted to Susan Grose, past President of the American Gloxinia and Gesneriad Society (now The Gesneriad Society), for encouraging the creation of this namesake publication.

How to Know and Grow Gesneriads is a group effort. John Boggan, Larry Skog, Alain Chautems, and Mauro Peixoto contributed and reviewed much of the botanical and scientific content, ensuring that this material is up to date at the time of publication. Monte Watler's articles on gesneriad culture, "The Basics", originally published in *THE GLOXINIAN*, are the source of the general cultural information. Bob Stewart provided additional information on several genera. Debra LaVergne, Alan LaVergne, Larry Skog, Susan Grose, Bob Clark, and Allison Brigham reviewed a draft of the manuscript and contributed many useful suggestions and additions.

Jeanne Katzenstein, editor of *GESNERIADS*, provided invaluable editorial guidance and feedback on the organization and content of this publication. Both Jeanne Katzenstein and Julie Mavity-Hudson are responsible for gathering the many beautiful photographs, bringing the plants to life on these pages.

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— Peter Shalit, Editor

How to Know Gesneriads

It is mostly for the flowers that we grow them, and it is mostly by the flowers that we know them. Gesneriads are members of a large group of flowering plants (order Lamiales) whose petals are fused into a tube. Other families in this group include the snapdragon and foxglove family (Scrophulariaceae) and the mint family (Lamiaceae, which includes salvias). Like many plants in the mint and snapdragon families, gesneriads have flowers with mirror-image symmetry, the right side being a mirror image of the left. Such flowers are called *zygomorphic*.

Family Characteristics

There are approximately 3,300 known species of gesneriads worldwide found on all continents except Antarctica. Gesneriads are tropical to subtropical (rarely temperate or alpine) herbs, lianas (vines), shrubs, and rarely small trees. They can be terrestrial, epiphytic (growing on trees), or lithophytic (growing on rocks). Their leaves are often hairy and usually opposite, but in some species are alternate or arranged spirally in a tight rosette. The flowers are usually zygomorphic and are found in an enormous range of colors and patterns, and they are nearly always showy. The seeds are extremely tiny and numerous.

Position Within the Plant Kingdom

The closest relatives of Gesneriaceae are the other families within the group known as Lamiales, most of which have zygomorphic flowers. This group includes some familiar plants such as penstemons, snapdragons, calceolarias, mulleins, and foxgloves, members of what used to be the large family Scrophulariaceae (which has now been broken up into smaller ones). Other plants in the Lamiales include the trumpet vines (Bignoniaceae), verbenas and lantanas (Verbenaceae), sesames (Pedaliaceae), and the carnivorous bladderworts and butterworts (Lentibulariaceae). Most of them are characterized by particular specializations that gesneriads lack, but gesneriads have several specializations of their own. Gesneriaceae is now thought to be one of the oldest families within this group.

Kinds of Gesneriads

There are various ways of dividing up the gesneriad family. Botanists refer to "Old World" gesneriads (native to Europe, Asia, Africa, and Oceania), and to "New World" gesneriads (native to the Americas). Horticulturists often refer to gesneriads by the various habits of growth to be found in this large family. For example, gesneriads have been divided into the kinds with tubers, those with rhizomes, and those with only fibrous roots. Of course, all gesneriads have fibrous roots (both rhizomes and tubers are actually modified stems rather than roots). Still, the tuberous/rhizomatous/fibrous division is horticulturally useful. One other group of cultivated gesneriads is discussed later: those that are hardy, or semi-hardy, in freezing temperatures. Botanists go much further in classifying gesneriads by taxonomically significant characters such as chromosome numbers, types of nectaries, numbers of stamens, how flowers are arranged on the stems, and other characteristics, which have little effect on their desirability as house plants.

Taxonomic Divisions

The family Gesneriaceae is divided geographically and taxonomically into two major groups. Gesneriads of the Old World (found in Europe, Asia, Africa, Australasia and most of the major islands of the Pacific) are classified in subfamily Cyrtandroideae. Gesneriads of the New World (found in Mexico, Central and South America and the West Indies) are classified in subfamily Gesnerioideae. (A third group from southeastern Australia, New Zealand, New Caledonia, Lord Howe Island, and the southern tip of South America has been classified as subfamily Coronantheroideae, but appears to be more closely related to the New World subfamily Gesnerioideae.) These two major geographic divisions correlate well with major differences in form and structure.

For example, Old World gesneriads have *cotyledons* (the first leaves that appear from a germinating seed) that develop unequally, in some cases dramatically so. New World gesneriads have equal cotyledons and are also distinguished by their unusual pigments. Recent molecular studies show that the New World and Old World subfamilies reflect an ancient evolutionary split in the family. Additional characters are used to separate each subfamily into taxonomic divisions called "tribes". A few odd genera, like *Sanango* and *Titanotrichum*, don't have any close relatives and don't seem to fit well into any tribe, or even subfamily. Recent research suggests that *Titanotrichum*, while native to Asia, belongs in the New World subfamily Gesnerioideae.

Gesneriads with Tubers



Anyone who has grown a *Sinningia speciosa* (Florist Gloxinia) is familiar with the large tuber by which horticulturists and botanists recognize this genus. The tuber is actually the base of the stem, swollen and modified to store food. It remains alive during periods of the year unfavorable for growth in the wild. Under cultivation, Sinningias respond to the general culture for gesneriads and, after flowering, generally become dormant for a few weeks or months until new growth starts again. Tubers may be stored away from light in their

original pots, or in vermiculite, at a temperature of about 55° – 60°F (13-16°C). They should be watered sparingly, just enough so the tubers do not dry out completely. By cutting back the old growth after flowering, new shoots often will appear and continue to grow if the plant is watered and fertilized.

Gesneriads in cultivation with tubers include:

Chrysothemis

Nautilocalyx

Sinningia

These are all New World genera. Many of the species in the genus *Sinningia* form large tubers and often can be treated as caudiciform (having a

thickened woody base) succulents. Most tuberous gesneriads are adapted to marginal or difficult habitats. They generally require a well-drained mix, are fairly tolerant of both underpotting and drying out (which makes them good for beginners), and often have a dormant period.

Gesneriads with Scaly Rhizomes



Achimenes is the best known genus of gesneriads producing scaly rhizomes. The rhizomes grow underground at the base of the stem, or occasionally in the leaf axils on some species. Rhizomes remain alive during the dry season in the wild and serve as a means of propagation. Gesneriads that produce scaly rhizomes are usually terrestrial plants growing in humus on steep slopes and cliffs or in crevices

of rocks. Their requirements for soil and moisture are like those of other gesneriads, but they withstand wider extremes of temperature and light. Most require a period of dormancy that is brought on by short days, and especially by drying of the soil. When plants become dry and dormant, the rhizomes may be left in their pots and stored in a cool place, about 45°F (7°C). They should be repotted and brought into warmth, humidity and light in early spring. Some (for example, *Achimenes* and *Smithiantha*) require this dormancy period and have one growth/bloom cycle per year. Others, like *Kohleria*, will continue to grow and bloom year round under the right conditions. With the exception of *Titanotrichum*, all scaly-rhizomatous gesneriads are native to the New World. Several Old World genera, including *Lysionotus*, *Hemiboea*, *Anna*, and *Raphiocarpus*, make smooth creeping rhizomes or runners that are different from the scaly rhizomes found in New World genera.

Gesneriads in cultivation with scaly rhizomes include:

<i>Achimenes</i>	<i>Heppiella</i>	<i>Phinaea</i>
<i>Amalophyllon</i>	<i>Kohleria</i>	<i>Seemannia</i>
<i>Diastema</i>	<i>Mandirola</i>	<i>Smithiantha</i>
<i>Eucodonia</i>	<i>Monopyle</i>	<i>Sphaerorrhiza</i>
<i>Gloxinia</i>	<i>Niphaea</i>	<i>Titanotrichum</i>
<i>Gloxinella</i>	<i>Nomopyle</i>	
<i>Gloxiniopsis</i>	<i>Pearcea</i>	

Intergeneric gesneriads (hybrids between two genera) with scaly rhizomes in cultivation include:

× <i>Achicodonia</i>	× <i>Gloxinantha</i>	× <i>Phinastema</i>
× <i>Achimenantha</i>	× <i>Gloxinistema</i>	× <i>Seemakohleria</i>
× <i>Glokohleria</i>	× <i>Heppimenes</i>	× <i>Smithicodonia</i>
× <i>Gloximannia</i>	× <i>Niphimenes</i>	

Gesneriads with Fibrous Roots Only

Lacking either tubers or rhizomes, by far the greatest number of gesneriads do not have any underground storage structures. In the wild they may be terrestrial or may grow in crevices of the bark of trees (epiphytic) or in rocks (lithophytic). They may be annuals or herbaceous or woody perennials. Most familiar is the African violet (*Saintpaulia*), usually grown from leaf cuttings. All can be raised from seed, and their culture is similar to other gesneriads. Growth habit varies from rosette, such as some *Chirita*s and most *Saintpaulia*s, to the vining (or shrubby) *Columneas*, *Aeschynanthus*, or *Episcias*, and to woody plants like *Cyrtandras*. Fibrous-rooted gesneriads (not forming tubers or scaly rhizomes) better known in cultivation include:

<i>Aeschynanthus</i>	<i>Drymonia</i>	<i>Pentadenia</i>
<i>Alloplectus</i>	<i>Episcia</i>	(= <i>Columnea</i>)
<i>Alsobia</i>	<i>Gasteranthus</i>	<i>Petrocosmea</i>
<i>Chirita</i>	<i>Gesneria</i>	<i>Rhytidophyllum</i>
<i>Chiritopsis</i>	<i>Mitraria</i>	<i>Rufodorsia</i>
<i>Cobananthus</i>	<i>Moussonia</i>	<i>Saintpaulia</i>
<i>Codonanthe</i>	<i>Napeanthus</i>	<i>Sarmienta</i>
<i>Columnea</i>	<i>Nematanthus</i>	<i>Streptocarpus</i>
<i>Corytoplectus</i>	<i>Neomortonia</i>	<i>Trichantha</i>
<i>Cremosperma</i>	<i>Paliavana</i>	(= <i>Columnea</i>)
<i>Dalbergaria</i>	<i>Paradrymonia</i>	× <i>Codonatanthus</i>
(= <i>Columnea</i>)		× <i>Rhytidoneria</i>

Hardy Gesneriads

Unlike their tropical counterparts, a few genera of alpine gesneriads from the mountains of Europe and Asia are semihardy in below-freezing temperatures, or may be grown in pots in an alpine house (very cool greenhouse). They have tough woody roots and usually form tight rosettes of more-or-less hairy leaves. Under natural conditions they thrive in rock crevices where underground moisture is available during the growing season and a covering of snow protects them during their winter dormancy. Since plants can seldom be purchased, they are usually grown from seed. They require very cool temperatures, quick drainage in coarse gritty soil, and ample moisture. When their special requirements are met, the dainty, violet-like white, pink, or lavender blossoms appear in spring or early summer.

The alpine gesneriads are *Haberlea*, *Jancaea*, and *Ramonda*. Other semihardy gesneriads include *Briggsia*, *Conandron*, *Corallodiscus* and *Opithandra*, and the intergenerics ×*Brigandra*, ×*Jancaemonda*, and ×*Ramberlea*.

The genera *Asteranthera*, *Mitraria*, and *Sarmienta* come from cool wet forests in southern Chile and Argentina. While they are fairly hardy, they do not take a hard freeze. They do well outdoors in the Cascadia region, the northern Pacific Coast of North America (Oregon, Washington, British Columbia, Alaska panhandle).

Another group of gesneriads includes several subtropical genera with some species that can be surprisingly hardy. Most of these genera have underground rhizomes or tubers that allow them to survive winters colder than they would ever experience in their native habitats. These include some species of *Achimenes*, *Gloxinia*, *Hemiboea*, *Lysionotus*, *Raphiocarpus*, *Sinningia*, and *Titanotrichum*.

Gesneriad Genera: Comprehensive List

(genera in **bold** are more commonly known and/or grown)

<i>Acanthonema</i>	Drymonia	Ornithoboea
Achimenes	<i>Emarhendia</i>	Paliavana
Aeschynanthus	Episcia	Paraboea
Agalmyla	Epithema	Paradrymonia
<i>Allocheilos</i>	Eucodonia	Parakohleria (=Pearcea)
Alloplectus	Fieldia	<i>Paralagarosolen</i>
<i>Allostigma</i>	Gasteranthus	Pearcea
Alsobia	Gesneria	<i>Peltanthera</i>
Amalophyllon	<i>Glossoloma</i>	Pentadenia (=Columnea)
<i>Ancyclostemon</i>	Gloxinella	<i>Petrocodon</i>
<i>Anetanthus</i>	Gloxinia	Petrocosmea
Anna	Gloxiniopsis	<i>Pheidonocarpa</i>
<i>Asteranthera</i>	<i>Goyazia</i>	Phinaea
<i>Beccarinda</i>	<i>Gyrocheilos</i>	<i>Phylloboea</i>
Bellonia	<i>Gyrogyna</i>	<i>Platystemma</i>
Besleria	Haberlea	Primulina
Boea	Hemiboea	<i>Pseudochirita</i>
<i>Boeica</i>	<i>Hemiboeopsis</i>	Ramonda
<i>Bournea</i>	Henckelia	Raphiocarpus
Briggsia	Heppiella	Reldia
<i>Briggsiopsis</i>	<i>Hexatheca</i>	<i>Resia</i>
<i>Bucinellina</i> (=Columnea)	<i>Hovanella</i>	<i>Rhabdothamnopsis</i>
Calcareoboea	<i>Isometrum</i>	Rhabdothamnus
Capanea (=Kohleria)	Jancaea	<i>Rhoogeton</i>
<i>Cathayanthe</i>	<i>Kaisupeea</i>	Rhynchoglossum
<i>Championia</i>	Koellikeria (=Gloxinia)	<i>Rhynchotechum</i>
Chirita	Kohleria	Rhytidophyllum
Chiritopsis	<i>Lagarosolen</i>	<i>Ridleyandra</i>
Chrysothemis	<i>Lampadaria</i>	Rufodorsia
Cobananthus	Lembocarpus	Saintpaulia
Codonanthe	<i>Leptoboea</i>	<i>Sanango</i>
Codonanthopsis	<i>Linnaeopsis</i>	Sarmienta
<i>Colpogyne</i>	<i>Loxonia</i>	<i>Schizoboea</i>
Columnea	<i>Loxostigma</i>	Seemannia
Conandron	Lysionotus	<i>Senyumia</i>
Corallo-discus	Mandirola	<i>Sepikaea</i>
<i>Coronanthera</i>	<i>Metabriggsia</i>	Sinningia
Corytoplectus	<i>Metapetrocosmea</i>	Smithiantha
<i>Crantzia</i>	<i>Micraeschynanthus</i>	Solenophora
<i>Cremersia</i>	Mitraria	<i>Spelaeanthus</i>
Cremosperma	Monophyllaea	Sphaerorrhiza
<i>Cremospermopsis</i>	Monopyle	<i>Stauranthera</i>
<i>Cubitanthus</i>	Moussonia	Streptocarpus
<i>Cyrtandra</i>	Napeanthus	<i>Tengia</i>
<i>Cyrtandropsis</i>	Nautilocalyx	<i>Tetraphyllum</i>
Dalbergaria (=Columnea)	Negria	<i>Thamnocharis</i>
<i>Dayaoshania</i>	Nematanthus	Titanotrichum
<i>Deinocheilos</i>	Neomortonia	<i>Trachystigma</i>
<i>Deinostigma</i>	Niphaea	<i>Tremacron</i>
<i>Depanthus</i>	<i>Nodonema</i>	Trichantha (=Columnea)
Diastema	Nomopyle	<i>Trisepalum</i>
Didissandra	<i>Oerstedina</i>	<i>Tylopsacas</i>
Didymocarpus	Opithandra	Vanhouttea
<i>Didymostigma</i>	<i>Orchadocarpa</i>	<i>Wentsaiboea</i>
<i>Dolicholoma</i>	<i>Oreocharis</i>	<i>Whytockia</i>

Popular Gesneriad Genera

Achimenes (a KIM en eez)

Now mostly sold as simply "Achimenes", past common names include Widow's Tears, Magic Flowers, Cupid's Bower, Hot Water Plants, etc. The genus *Achimenes* includes 26 summer-flowering species found in the wild from Jamaica and northwestern Mexico to Panama and Ecuador. They are widely cultivated in the tropics, sometimes escaping from cultivation outside their native range. Many are trailing and thus suitable for hanging baskets. They have rather high light requirements and therefore grow well outdoors in a sheltered location, under lath or in a shaded greenhouse. Achimenes are among the few gesneriads commonly grown as bedding plants outdoors, especially in the American Southeast. They also do well on a sun porch.

Achimenes prefer a loose, fibrous, well-drained potting mix. Plant three to five of the scaly rhizomes in a five-inch pot, more in larger containers, in early spring. Barely cover the rhizomes, keep in a warm place (around 75°F or 24°C), and water sparingly until growth is well underway. Pinch each shoot once for bushier growth. Frequent light fertilizing is beneficial. Constant attention to watering is a most important consideration as excessive dryness will prevent flowering and induce premature dormancy. Once flowering has ended, watering should be withheld to promote dormancy. Most Achimenes have a long dormant period when the rhizomes should be kept cool and dry to prevent rotting. Achimenes are easy to grow under fluorescent lights and in greenhouses. Propagation is from tip cuttings or from division of scaly rhizomes. A single scale from a rhizome will produce a new plant.



Achimenes cettoana

Species in cultivation include: *Achimenes cottoana*, *A. grandiflora*, *A. mexicana*, and *A. patens* (lavender to purple flowers); *A. antirrhina*, *A. erecta*, *A. heterophylla*, and *A. pedunculata* (red to orange flowers); *A. dulcis*, *A. candida*, *A. longiflora* var. *alba*, and *A. misera* (white flowers); and *A. flava* (yellow flowers). Hundreds of cultivars are available, in all of the above colors, and many have double flowers. Popular cultivars include *A. 'Purple King'*, *A. 'Charm'*, *A. 'Glory'*, *A. 'Desireé'*, *A. 'Camille Brozzoni'*, and *A. 'Ambroise Verschaffelt'*. *Achimenes* has also been bred with *Smithiantha* and *Eucodonia* to create popular intergeneric hybrids (\times *Achimenantha* and \times *Achicodonia*).



Aeschynanthus 'Big Apple'

Aeschynanthus (es kin ANTH us)

From southern Asia and western Pacific islands comes the genus *Aeschynanthus* noted for its brilliant red or orange or yellow tubular flowers that often appear in large terminal clusters. The interesting shape of the calyx and emerging bud has given some varieties the name "Lipstick Plant". The plants are shrubby or trailing in habit, with dark green or mottled waxy leaves. Most species of *Aeschynanthus* have an epiphytic habit in the wild.

Aeschynanthus prefer warmth (70-80°F; 20-26°C) and high humidity, but can be grown in the home or outdoors in the summer in sheltered locations. Recently, they are seen more frequently in public settings such as offices, lobbies, and shopping malls. Depending on the habit, they can be grown in a hanging pot or basket, or grown upright in a pot on a fluorescent light shelf, greenhouse bench, or windowsill. Most require a well-drained potting mix that is allowed to dry out slightly between waterings. Propagation is by tip cuttings, though leaf cuttings of *A. humilis* are also successful.

Best known are *Aeschynanthus parvifolius* (*lobbianus*) and *A. pulcher*, both with bright red flowers, and *A. speciosus* with striking orange and yellow flowers. *A. micranthus* produces smaller dark red flowers on a small plant. *A. evrardii* is an upright species with large clusters of orange flowers. *A. ellipticus* has pink-orange flowers in leaf axils along the stem. *A. obconicus* has a maroon saucer-shaped calyx and red flowers. *A. nummularius* is a delicate miniature with heart-shaped leaves and magenta flowers. *A. humilis* (until recently misidentified in cultivation as *A. hildebrandii*, which is a different species) is an unusual small species with orange flowers and woody upright growth. The cultivar *A. humilis* 'Topaz' has yellow flowers but is genetically unstable, continually reverting to the more typical orange color. *A. longicaulis* (*marmoratus*) has green and brown flowers and leaves with brown mottling. Its hybrid, *A. 'Black Pagoda'* is a free-blooming plant with mottled leaves and yellow flowers. *A. 'Bali'* has closely set rounded leaves and red flowers. *A. 'Red Cascade'* is a very floriferous cultivar. Other popular cultivars include *A. 'Hot Flash'* and *A. 'Rigel'*, both with orange flowers, and *A. 'Big Apple'*, with brick-red flowers.



Alsobia dianthiflora

Alsobia (al SO bee a)

This small genus has been split from the genus *Episcia*. *Alsobias* enjoy heat but also tolerate cooler temperatures than *Episcias*. The leaves are small and rather pale green, sometimes with darker veins. The flowers are white, with a distinctive fringe, and sometimes have green or purple spots. *Alsobia dianthiflora* is a creeping, stoloniferous plant with large, fringed white flowers. *A. punctata* is larger and coarser, with speckled flowers. A cultivar selected from the hybrid between these, *A. 'Cygnet'*, has even larger flowers with lavender markings and is more floriferous. A third, as yet unidentified species from the Mexican state of Chiapas, is a small shrubby plant with fringed, green-spotted flowers. It does not appear to form stolons. The stoloniferous species and cultivars of *Alsobia* are attractive when grown in a decorative container. They can also be used as groundcovers in a greenhouse or in climates that do not experience freezing weather.

Chirita (chuh REE ta)

Chirita is a large genus of plants native to mountainous areas of southern Asia. The species of *Chirita* are classified into four major groups with different growth habits and cultural requirements. Members of section *Gibbosaccus* are usually stemless herbs growing in a flat rosette, and are restricted to southern China and northern Vietnam. This group has increased greatly in popularity in recent years with numerous species and new hybrids recently introduced. Members of the rather heterogeneous section *Chirita* are usually perennial herbs, primarily of the Himalayan region, with a few shrubby tropical species in Sri Lanka and elsewhere. One tropical group of shrubby species from southern India and Sri Lanka, while classified in section *Chirita*, is very different from other members of the genus and requires constant moisture and warm temperatures. Examples include *C. walkerae*, *C. moonii*, and their offspring, *C. 'Moon Walker'*. Members of section *Microchirita* (*C. lavandulacea*, *C. micromusa*) are mostly annual herbs from southern China and Southeast Asia, and they require warmth and constant moisture. Members of section *Liebigia* (like *C. asperifolia*, rarely cultivated) are shrubby herbs from Java and Sumatra.

Because of their diversity, it is hard to make generalizations about the culture of *Chiritas*. Most grow best in moderate temperatures with humid atmosphere and light shade, but some members of section *Gibbosaccus* are quite cold-tolerant and may actually require a winter chill to bloom. Mature plants may be anywhere from six inches to two feet tall, depending on the species. Propagation is easy, with the exact means of propagation varying depending on the variety. The annual species, such as *Chirita micromusa*, must be propagated by seed. Other species are more easily propagated vegetatively. The stemmed species can be grown from tip or mallet cuttings. The (mostly) rosette species in section *Gibbosaccus* are propagated by rooting leaves (entire leaves or wedges of leaf tissue). Offsets, suckers, and stolons are sometimes produced, and these are the quickest way to get new, mature plants.



A variety of *Chirita* species and hybrids

Many species of *Chirita* are available. *C. sinensis* has a rosette of leaves either green or marbled with silver; flowers are lavender. Several named varieties of this species are available. *C. lutea* (formerly *C. eburnea* 'Yellow') has bright yellow flowers and large showy bracts. *C. eburnea* is similar but with light blue flowers and smaller, greener bracts. *C. flavimaculata* is a large plant that grows as an upright rosette and makes a thick "trunk". It has lavender flowers. *C. tamiana* is a dwarf species, rapidly growing, with white and purple flowers. *C. gemella* is a slow-growing, compact rosette species that unpredictably throws off stolons like a strawberry plant. *C. species* "USBRG 98-083" has lanceolate leaves and makes stolons prolifically. *C. sclerophylla* is a compact rosette species with dark leaves with contrasting pale green center markings. *C. spadiciformis* has pale, spoon-shaped leaves and lavender flowers. *C. speciosa* is a unique species with large, thin, soft leaves, sometimes with purple veining or white and purple spots, that grows from a creeping rhizome like a rhizomatous begonia. It does not tolerate drying out. *C. asperifolia*, with purple and white flowers, is a shrubby species that requires copious watering to prevent wilting. *C. lavandulacea*, an annual or short-lived perennial with light blue flowers, is a tall erect plant that prefers cooler growing conditions. *C. micromusa* (often called "Little Banana", describing the seed pods) is an easy-to-grow annual from seed. It is a small plant with bright yellow flowers. *C. elphinstonia* is very similar, distinguished by brown spots on the flower. Both of the latter do well in larger terrariums.

As more *Chirita* species have entered cultivation, an explosion of *Chirita* cultivars has followed. To cite just a few: *Chirita* 'Aiko' is a large plant with showy bracts and bright yellow flowers. *C.* 'Kitaguni' is superficially similar, but the flowers are paler and the leaves have silver netting. *C.* 'Keiko' has soft leaves and very large blue flowers. *C.* 'Blue Moon' and *C.* 'Silver Surfer' have blue flowers and mottled/netted leaf markings. *C.* 'Vertigo' and *C.* 'Piccolo' have blue flowers, and leaves with contrasting pale green central markings.

Chrysothemis (cry so THEE miss)

These gesneriads are tuberous-rooted natives of the American tropics. Plants are upright to 18 inches tall and have large, thin, green or dark-reddish leaves, with flowers in axillary clusters. Although the flowers are small and short-lived, the calyces are often brightly colored and ornamental. They persist for several weeks, prolonging the show after the flowers are finished. The tuber requires a period of dormancy after blooming. Mature plants require a six-inch or larger pot and loose soil kept constantly moist. The leaves turn brown at the edges if the soil is allowed to dry out. Humidity must be high. Tip cuttings will root easily, and some species produce aerial tubercles. *Chrysothemis pulchella* has shiny leaves, either green or reddish, with orange calyces and yellow or red corollas. *C. villosa* is similar, with soft hairy leaves. *C. friedrichsthaliana* has yellow-green calyces and light yellow blooms.



Chrysothemis pulchella 'Black Flamingo'



Codonanthe carnosa 'Frances Batcheller'

Codonanthe (ko doe NAN thee)

This is a vining, fibrous-rooted genus from Central and South America and the West Indies. The plants are almost exclusively epiphytic. In the wild they are often cultivated by ants and found in association with their nests. It follows then that in cultivation, this genus appreciates a very light, well-aerated growing medium. As the leaves of most species are thick and succulent, overwatering should be avoided. The fruit is sometimes a fleshy capsule but more commonly a berry that can be orange, pink, red, or purple. *Codonanthe crassifolia* and *C. macradenia*, two similar species, have white flowers (larger in the latter) with pink or yellow throats. There are red dots on new growth. *C. uleana* has larger reddish leaves, particularly on new growth. *C. luteola* has pale yellow flowers. There are several small species with oval leaves and white flowers in profusion that are so similar there has been confusion on the correct identity. *C. devosiana* is the most popular and easy to grow. Among its variants are the former species *C. digna* and *C. paula*. *C. carnosa* has a larger flower with a distinct and pleasant spicy fragrance. Several attractive cultivars derived from intergeneric hybrids between *Codonanthe* and *Nematanthus* (\times *Codonatanthus*) are in cultivation.

Columnnea (ko LUM nee a)

Some botanists have divided this large genus, forming four additional genera: *Bucinellina*, *Dalbergaria*, *Pentadenia*, and *Trichantha*. Here we refer to the genus *Columnnea* in the broad sense, including these four genera. Species of *Columnnea* are native to a variety of habitats in Central and South America and the West Indies. They are almost exclusively epiphytic, which means they require a well-drained medium that dries out slightly between waterings. In general, Columnneas enjoy warmth, high humidity, and strong light.

Most Columnneas have a characteristic "hooded" flower, held horizontally with the upper two petals forming a "hood", two petals spreading to the sides, and the lower petal hanging down as a "tongue". Described below are several different growth habits within the genus.

Many of the species grow as "miniature shrubs". *Columnnea glicensteinii* is a medium-sized plant, a good bloomer with large red-and-yellow flowers. *C. linearis* (and the popular cultivar *C. 'Mary Ann'*) is a tiny shrub with small straight leaves and lots of pink flowers. *C. erythrophaea* (with large red flowers) and *C. schiedeana* (with yellow flowers striped with red) have a spreading growth habit, and are both hardy to 32-35°F (0-2°C).

Another group of species has "fern-like" growth. These have large soft green leaves on arching, semi-upright stems. They are adapted to lower light levels than the other species. Some have red patterns on the leaf backs, attractive when viewed from below. Plants in this group usually have tubular yellow flowers rather than the hooded form. *Columnnea cruenta* is a favorite; other species include *C. ornata*, *C. purpurea* and *C. sanguinea*.



Columnnea purpureovittata



Columnnea ornata

There are several species with distinctly upright growth. *Columnnea raymondii* can become three feet tall if not pruned; it is an excellent bloomer with large chartreuse and translucent-red flowers.

Several species have exotic flowers covered with spiky growths and hairs, usually in shades of purple and yellow. *Columnnea minor* and *C. purpleovittata* (which also has quilted leaves) are examples.

Some *Columnneas* feature very small leaves on stems that hang straight down; examples include *C. microphylla*, *C. gloriosa*, and the cultivar *C. 'Stavanger'*. Many of these come from higher altitude cloud forest and prefer cool conditions to flower (unlike most of the rest of the species in the genus).



Columnnea 'Early Bird'

Corytoplectus (ko ree tow PLEK tus)

This South American genus has several species with erect growth habit, bearing a few pairs of large leaves that are usually colorfully marked. The small yellow or yellow-orange flowers with colorful red or orange calyxes are clustered lightly in the upper axils. The fruit is a transparent berry with black seeds inside. The species most often grown are *Corytoplectus cutucuensis*, *C. capitatus*, *C. speciosus*, and *C. congestus*. The plants tend to develop bare stems with age, so they should be pinched early. High humidity encourages lush foliage.



Corytoplectus cutucuensis

Diastema (dye uh STEEM uh; dye AST e ma)

This genus of small rhizomatous plants comes from Central and South America. Some species have attractive quilted foliage. *Diastema vexans*, *D. quinquevulnerum*, and *D. racemiferum* have white flowers with purple dots, while *D. comiferum* has orange-red flowers. The flowers of *D. vexans* come from the leaf axils, while those of most other species are borne on a terminal raceme (flowerstalk on which the bottom flowers open first). Diastemas may be grown in the open or in an enclosed container such as a terrarium to provide additional humidity. Many growers recommend overpotting Diastemas in a light mix in order to provide constant moisture and encourage rhizome production.



Diastema vexans



Drymonia serrulata

Drymonia (dry MO nee a)

Translated, *Drymonia* means "Plant of the Woods", in this instance the woods of the American tropics. Most *Drymonias* are large vines or shrubs with fibrous roots and large waxy, white or yellow flowers that are sometimes fragrant. Some are shy bloomers. Most will outgrow a light garden unless they are periodically restarted from tip cuttings. The following are all good horticultural subjects. *D. semicordata* is a compact plant, readily producing bright yellow flowers that emerge from a bright red calyx. *D. rhodoloma* is a medium-sized plant, easy to grow and bloom, with red-purple flowers. *D. strigosa* is easy to grow and is an excellent bloomer. It has hairy leaves, pink leafy calyces, pale yellow corollas, and curious orange fruit. Another readily flowering species, *D. chiribogana*, has mottled green and bronze leaves, sometimes with silver veins. Flower color is in the blue to purplish to white range; the calyces are large and may be colored. *D. ecuadorensis* is a robust plant and a good bloomer. *D. serrulata* is probably the most widely distributed gesneriad in the American tropics. It is an enthusiastic vine with large flowers. The colors vary from pale tan through yellow shades to one form with shiny dark-chocolate flowers.

Episcia (ep ISS ee a; ep ISH a)

From Mexico to Brazil come the delightful *Episcias*. Common names include "Flame Violet" and "Peacock Plant". These fibrous-rooted gesneriads are especially suited to hanging basket culture because of the numerous stolons, or runners they typically bear. They are also frequently grown in wide pans or flying-saucer-shaped clear plastic enclosures.

Episcias typically boast beautifully patterned foliage in various shades of green, copper, and mahogany. The veins are often pale green or silver providing interesting contrasts. Less commonly the leaves may be plain green. Flowers may be red, orange-red, yellow, white, pink, or lilac. Episcias demand warmth and will be damaged or killed if the temperature falls below 55°F (13°C). Extra humidity encourages bloom. Although they require constant moisture, perfect drainage is essential.

There are eight species and many excellent cultivars. Those with orange and red flowers tend to be the best flowering. *Episcia cupreata* and *E. reptans* both have orange flowers and come in a number of foliar varieties, their leaves often marked with shiny metallic colors. *E. lilacina* has large lavender flowers. *E. fimbriata* has pale lavender or white flowers. *E. xantha* has yellow flowers. Among the many desirable *Episcia* cultivars are *E.* 'Acajou', *E.* 'Chocolate Soldier', *E.* 'Moss Agate', *E.* 'Silver Skies', and *E.* 'Tricolor', all with red or red-orange flowers. *E.* 'Pinkiscia' has large pink flowers; *E.* 'Tropical Topaz' has bright green leaves and yellow blooms; *E.* 'Suomi' has bronze foliage and bright yellow flowers. *E.* 'Cleopatra' and *E.* 'Pink Brocade' have red flowers and distinctive white, pink and green foliage. *E.* 'Pink Dreams' has similar foliage but pink flowers. The Episcias with pink foliar variegation tend to be more delicate and usually do better in an enclosed container.



A variety of *Episcia* hybrids

Eucodonia (u ko DOE nee a)

Two species have been separated from *Achimenes* to form this genus of Mexican gesneriads. One characteristic of these plants is a heavy coating of hairs on stems, and in some cases, the underside of the leaves. The hairs may be white or colored. Like *Achimenes*, these plants have an annual cycle of vegetative growth and flowering followed by a period of dormancy. They appreciate warmth and good light but do well in a fluorescent light garden. *Eucondonias* are easily propagated by their scaly rhizomes. *Eucondonia verticillata* has a white woolly appearance and fairly large purple flowers. *E. andrieuxii* is a very variable species with smaller flowers. Some of the named cultivars are 'Tinctacoma', 'Naomi' and 'Frances'. The latter cultivar has a rosette form of growth resembling a small *Sinningia*. *Eucondonia* has been bred with *Achimenes* to create the hybrid genus \times *Achicodonia* and with *Smithiantha* to create \times *Smithicodonia*.



Eucondonia verticillata 'Frances'

Gasteranthus (gas ter AN thus)

This Central and South American genus is closely allied to the genus *Besleria*. It is distinguished by the presence of a fleshy capsule rather than a berry fruit. A few species are now in cultivation. The plants are small to large herbs, usually with brilliant orange-red, pink-red or yellow flowers. They often have attractive foliage as well. Plants can be difficult to grow well as they require low light, warmth, high humidity, and constant moisture. *Gasteranthus acropodus* is less demanding and is perhaps the easiest to grow. *Gasteranthus atratus* has puckered, nearly black foliage with a symmetrical growth pattern. The flower is lemon yellow and fragrant.



Gesnerianthus acropodus

Gesneria (gez NAIR ee a; jez NEER ee a)

The "type genus" or namesake of the gesneriad family, Gesnerias are mostly native to the Caribbean region. They range from low-growing rosette-type plants to tall shrubs. Soil should be well drained, with a little ground limestone added, and should not be allowed to dry out or the plant will die. Gesnerias require very high humidity and do best in a terrarium or greenhouse at a temperature of 65-70°F (18-20°C). They are best propagated by seed, or by tip cuttings or division of mature plants. The smaller varieties are



Gesneria cuneifolia

best suited for indoor growing. The most common species in cultivation is *Gesneria cuneifolia*, with medium-green shiny leaves and bright red flowers like small firecrackers. Various species have been introduced through the Seed Fund of The Gesneriad Society. These include *G. acaulis*, larger than *G. cuneifolia* with rough-textured leaves, *G. christii* with narrow arching leaves, and *G. rupincola* with a shrubby habit. All of these have red to orange flowers. *G. citrina* has yellow flowers; *G. pumila* has white flowers. The cultivar *G. 'Lemon Drop'* (derived from a cross of *G. cuneifolia* × *G. citrina*) is more tolerant of indoor conditions than most species and flowers well.



Gloxinia perennis

Gloxinia (glock SIN ee a)

The true Gloxinias are rhizomatous plants, quite distinct from the tuberous Florist Gloxinia (*Sinningia speciosa*). The genus has recently been restricted to just three species native to Central and South America. Two are in common cultivation. *Gloxinia perennis* is a substantial plant with reddish leaves, an erect stem and a terminal shoot of fragrant lavender flowers. *G. erinoides* (formerly *Koellikeria erinoides*) is a delicate, small gesneriad with silver-spotted green leaves growing in a rosette two to four inches across.

The small, mildly coconut-scented flowers are white with deep red markings. It does best in warm temperatures with high humidity and plenty of light. *G. erinoides* may be grown in a terrarium and will thrive under fluorescent lights. Cultivars from hybrids with the genus *Kohleria* (\times *Glokohleria rosea* and \times *G. 'Pink Heaven'*) are larger and quite attractive. All of the above are typical scaly-rhizomatous plants that prefer a light, well-drained soil; require a definite dormancy period; and readily propagate by the rhizomes being broken into pieces as small as individual scales.

Kohleria (co LAIR ee a; co LEER ee a)

Kohleria is a genus with about 20 species ranging from compact herbs to large shrubs that grow in the mountains of tropical America. Tubular flowers appear along the stems singly or in clusters. They are very showy, frequently speckled or marked with a deeper or contrasting color. The hairy leaves are often interestingly patterned. *Kohlerias* may be grown as trailing or upright plants. Many make unusual and distinctive houseplants.

Species and cultivars appreciate strong light and are not difficult to grow in the home or greenhouse. Like most other gesneriads, they do well in a light, well-drained soil mix but should not be permitted to dry out completely. *Kohlerias* grow from scaly rhizomes, but most do not have a required dormancy period. If pruned back to the soil level after flowering, they usu-



Kohleria 'Peridots Kitlope'

ally will sprout again immediately. In this way they frequently can be kept growing throughout the year. This is in contrast to some other scaly-rhizomatous gesneriads, such as *Achimenes*, *Smithiantha*, and *Gloxinia*, that die back to the ground after blooming and do not resprout for several months. Another method of yielding compact-blooming *Kohlerias* is to root tip cuttings. This is an easy method of propagation although division of rhizomes is also very easy and yields an almost unlimited supply of new plants.

Kohleria amabilis has pink flowers with reddish purple dots and black-veined, silvery leaves and is rather dwarf. *K. amabilis* var. *bogotensis* has more slender stems, dark leaves and yellow and orange flowers. Some of the cultivars derived from *K. amabilis* hybrids, such as *K.* 'Rongo' and *K.* 'Connecticut Belle' may be almost everblooming. *K. eriantha* (a species now included in *K. hirsuta*) has orange-red flowers with deeper markings and makes a good windowsill subject for winter bloom. *K. hirsuta* has tubular orange corollas and has contributed to many modern compact hybrids. *K. warszewiczii* has stunning flowers with a pink tube and a green face with purple spots. It is a tall grower. *K. hondensis*, *K. hirsuta*, and *K. tubiflora* have tubular orange flowers and form a group of similar species. *K. peruviana*, *K. allenii*, and *K. spicata* are all tall-growing species best suited for greenhouse or outdoor growing.

Many appealing new cultivars have been developed in recent years by hybridizers in the US, Canada, Europe, and Southeast Asia. These hybrid plants tend to be more compact and floriferous and often have showier flowers and/or foliage than the original species.



Kohleria amabilis



Kohleria spicata



Nautilocalyx pemphidius

Nautilocalyx (naw till o KAY lix)

This seemingly difficult name refers to the bracts that enfold the flowers, which are thought to resemble the shell of the nautilus. Some *Nautilocalyx* species form small (rarely large) tubers. Culture is relatively simple with typical well-drained gesneriad growing medium and moderate light. Fluorescent lights work well. There are several species in cultivation: *Nautilocalyx bullatus* with dark green pebbly leaves, *N. forgetii* with shiny green leaves with red veining, and *N. lynchii* with smooth reddish-brown leaves. They are frequently grown as foliage plants. All are erect and shrubby in habit and have pale yellow flowers clustered in the upper leaf axils. *N. melittifolius* (formerly *Episcia melittifolia*) is shrubby with magenta flowers in small clusters. *N. villosus* has pale-green hairy leaves and white flowers with purple throats. *N. picturatus* is a smaller plant with a rosette of olive-green strap-shaped leaves with lighter midveins and white flowers. *N. porphyrotrichus* has bright green leaves and bright red flowers. *N. pemphidius* has dark pebbly leaves and ephemeral white flowers. An elegant, but fastidious species, it is best grown enclosed.



Nematanthus 'Christmas Holly'

Nematanthus (nem a TAN thus; neem a TAN thus)

The name (meaning "thread-flower") derives from the long, slender flower stems found in some species. Most of the species formerly listed as *Hypocyrtia* (a name meaning "swollen-below" in reference to the pouched corolla) have been transferred to this genus. All are stemmy plants, epiphytic in the wild, with habits ranging from hanging, to arching, to upright/shrubby. In cultivation they are usually at their best when grown in a hanging basket. *Nematanthus* are tolerant of cool temperatures. Propagation can be done easily with stem cuttings, placing several cuttings in a pot to give the best display.

Large shrubby species are *Nematanthus fritschii* with pink flowers and leaves marked on the reverse side with red; *N. longipes* with red flowers; *N. fluminensis* with yellow flowers on long slender pedicels; and *N. tessmannii* with pouched yellow flowers striped with maroon. *N. australis*, *N. gregarius*, *N. nervosus*, *N. strigillosus*, and *N. wettsteinii* are plants with smaller leaves and less woody stems. All respond well to frequent pruning when grown in pots. *N. australis* blooms in winter and is hardy to at least 23°F (-5°C). Although the classic *Nematanthus* has flowers in the red-orange-yellow color range, several newly collected and named species (*N. albus*, *N. wiehleri*, *N. punctatus*) have white flowers, sometimes spotted, and sometimes fragrant.

Many hybrids are available. *Nematanthus* 'Stoplight' is a large woody-stemmed plant with numerous dangling flowers and attractive red-marked foliage. Several cultivars introduced by Bill Saylor are excellent plants: *N.* 'Tropicana' has dark reddish foliage and striped flowers; *N.* 'Castanet', with foliage strikingly marked with red on the reverse, has peach-colored dangling flowers; *N.* 'Bambino' is a dwarf cultivar. Two variegated forms of *N. gregarius*, 'Golden West' and 'Dibley's Gold', have attractively marked foliage. *Nematanthus* has also been crossbred with the related genus *Codonanthe* to form \times *Codonatanthus*. Several cultivars commercially available include \times *Codonatanthus* 'Aurora', \times C. 'Barsoom', and \times C. 'Vista'.

Pearcea (PEERS ee a; pierce EE a)

This rhizome-forming South American genus consists of almost twenty species, including all the ones formerly classified in the genus *Parakohleria*. Culture is similar to that of *Kohleria*; like *Kohlerias*, *Pearceas* often have no definite dormancy period. *Pearcea hypocyrtiflora* is a small, low-growing plant with dark-green leaves marked with a bright-green or pink central vein. Its curious red-orange ball-shaped flowers are not produced readily, but the species is worth growing for its decorative foliage alone. *P. abunda* is adorned with red hairs covering its stems and the backs of its leaves. There are no hybrids yet between *Pearcea* species, but a recent *Pearcea* \times *Kohleria* hybrid gives a promise of exciting new cultivars to come.



Pearcea hypocyrtiflora

Petrocosmea (peh tro KOZ mee a)

These are small, fibrous-rooted plants with leaves growing in a rosette resembling *Saintpaulia*. The name means "Ornament of the Rocks" referring to their beauty and their habitat. Most form elegant, delicate rosettes, attractive even when out of bloom.

Petrocosmeas like cooler temperatures and drier conditions than most other cultivated gesneriads. Some growers allow them to dry out completely between waterings though others have great success wicking them to provide constant moisture. The plants tend to be rather difficult to bring into bloom. A period of semi-dormancy in winter is sometimes helpful. They may be propagated by leaf cuttings or offsets.

Some twenty species of *Petrocosmea* come from the mountains of Southern China, as well as Burma, Thailand, and Vietnam. The roster is expanding as new material arrives from Asia. Gesneriad flower shows frequently have a good display of *Petrocosmeas*, both in and out of bloom.

Petrocosmea kerrii has white and yellow flowers that hide beneath the hairy leaves; *P. parryorum* has pebbled leaves and purple flowers; and *P. nervosa* has leaves in an exceptionally flat rosette, also with purple flowers. Other species recently introduced include *P. minor*, *P. forrestii*, *P. duclouxii*, *P. barbata*, *P. begoniifolia*, *P. formosa*, and *P. rosettifolia*. Some material imported from Asia appears to be intermediate between the known species, and many plants have been difficult to identify.



Petrocosmea parryorum



Variety of *Saintpaulia* hybrids

Saintpaulia (saint PAUL ee a)

There are about twenty quite-similar species of this popular gesneriad from East Africa, all with flowers in the purple-blue-white range. Commonly known as "African violets", the numerous showy cultivars available provide larger flowers, greater color range, and more unusual foliage types than the species. Cultivated plants now range in size from miniatures, comfortable in a two-inch pot, to standards whose leaf span would cover a large dinner plate. Habit can be a flat rosette or trailing. Leaves may be plain green, red-backed, or with many types of variegation. Flowers may be single or double, violet- or star-shaped or even bell-shaped, with a color range that has expanded from the original "every shade of blue" to include pink, red, coral, green, and now even yellow. African violets are certainly the most widely cultivated gesneriad, and arguably the most popular flowering houseplant worldwide. They are ideal, ever-blooming houseplants. They enjoy the warm temperatures found in most households and do best with indirect sun or fluorescent light. They are easy to propagate from a leaf or a crown (sucker or offset).

Most *Saintpaulia* species are in cultivation. Additional recent collections of geographic variants have provided new material for the devotee of species. The usual growth habit is a flat rosette, but there are also trailing forms. In the wild, plants tend to grow on rock faces or tree trunks. In cultivation, the species tend to be more fastidious than the fancy cultivars, requiring cooler temperatures, higher humidity, and a grower with a greener thumb. *S. ionantha*, a rosette type with violet-blue flowers, is not challenging to grow. It is

the original species from which the first cultivars were bred. A white-flowered variant of this species is available. *S. grandifolia* is another less-demanding species, a large rosette type with light green leaves and many blue-violet flowers. *S. grotei* is a large sprawling trailer from which the original trailing cultivars were bred. *S. pendula* var. *kizarae* is a more graceful trailing species with lavender flowers. *S. shumensis*, a shy producer of pale-blue blooms, is a miniature species that forms a rosette that tends to sucker and clump. *S. velutina* has elegant round, black-green flexible leaves with red-purple reverse. Hybridizers are employing this species to transfer these striking traits to fancy cultivars.

Seemannia (see MAN ee a)

Species of this scaly rhizomatous genus from the Andes were included in the genus *Gloxinia* for the past few decades, but recent taxonomic research supports *Seemannia* as a separate genus. The plants are easy to grow and bloom. The flowers are brightly colored red, magenta, or purple (rarely yellow). In addition to underground scaly rhizomes, *Seemannias* may also produce stringy aerial propagules (see photo, page 48). Culture is similar to that for other scaly rhizomatous gesneriads such as *Achimenes* and *Smithianthas*, although *Seemannias* may not have as prolonged a dormancy. Propagation is from seed, tip cuttings, or pieces of rhizomes. The most commonly cultivated species is *Seemannia sylvatica*, known also by its former names *Gloxinia sylvatica* and *Seemannia latifolia*. It has narrow leaves, a rosette growth habit, and long-lasting bright red or yellow flowers. Commercially distributed, it has been labeled as "Bolivian Sunset". *Seemannia purpurascens* has pink flowers with a striking green limb. *S. gymnostoma* is a tall weak-stemmed plant with pale green leaves and many magenta-spotted flowers. The hybrid *S.* 'Chic' is a popular cultivar.



Seemannia sylvatica



Sinningia speciosa Charles Lawn hybrids

Sinningia (sin IN jee a)

These are tuber-forming plants from Central and South America. The genera *Rechsteineria* and *Lietzia* are now included in *Sinningia*. As proof there are exceptions to every rule, a few species of *Sinningia* (e.g., *S. schiffneri*) are shrubby and lack tubers, and at least two species (*S. incarnata* and *S. richii*) are found in Mexico, extending the range of this genus to North America. Many of the tuberous species have an obligate dormancy period, but others never truly go dormant despite the presence of a tuber.

Sinningia speciosa, commonly known as the Florist Gloxinia, is the most popular *Sinningia*. It has large velvety leaves in a rosette pattern. The large showy flowers may be nodding or upright, single or double, in a wide range of colors: white, pink, red, purple, often zoned or spotted. This species is one of the small number of gesneriads that have been successful in the commercial floral trade, always sold as "Gloxinia", and it is the plant for which our Society was originally named.

Sinningia eumorpha has nodding white flowers, shinier, reddish leaves and a longer blooming season. It has been much used as a parent for hybrids. A recent collection, *S. eumorpha* 'Saltao', is larger and more vigorous than the previously cultivated types with lavender-flushed flowers and red-backed leaves. *S. conspicua* is superficially similar to *S. eumorpha* but has fragrant, pale-yellow flowers and apple-green leaves. *S. richii* produces multiple prostrate shoots with large light-green, hairy leaves and nodding white flowers. *S. barbata* has strongly pouched, white flowers and elongated, shiny, reddish leaves with an upright rather than rosette growth pattern. It does not flower

readily. *S. lindleyi* is related, but has pale yellow flowers and can grow quite tall. These two species may make only a rudimentary tuber. *S. guttata*, another related species, forms a large tuber. It has large white flowers spotted with purple and is easy to grow.

Sinningia douglasii has an erect stem with whorls of pointed leaves and pink-lavender flowers. Species with a similar whorled (verticillate) habit include *S. nivalis*, *S. rupicola*, and *S. piresiana*. A species that generally does not produce a tuber is *S. schiffneri*. It is an erect shrubby plant with small white flowers. *S. hirsuta* has very hairy leaves in a compact rosette form and multitudes of small purple and white flowers. *S. lineata* produces two or three pairs of large leaves and clusters of tubular red flowers with darker spots. *S. macropoda* is smaller and has orange flowers. *S. leucotricha* and the similar species *S. canescens* are characterized by narrow orange flowers and leaves that appear silvery-white from the dense covering of hairs. *S. cardinalis* has leaves in an upright rosette and larger tubular orange-red flowers. *S. iarae* is similar, but larger, with crimson flowers. See photo on page 52.

Sinningia aggregata is a long-stemmed species with small aromatic leaves and small tubular red-orange flowers. A yellow-flowered form is now in cultivation. *S. incarnata*, *S. warmingii*, *S. sceptrum*, and *S. sellovii* are tall species with erect stems. They require high light conditions and are best grown in a greenhouse or outdoors in full sun. *S. tubiflora* is unusual in having highly scented white flowers on a tall stem. The leaves are small, and it requires strong light for a compact growth habit. It produces numerous tubers in a manner similar to the potato. The miniature species, *S. pusilla*, *S. concinna*, and the unpublished species *S. sp.* "Rio das Pedras" rarely exceed an overall plant size of 2 inches (5 cm) in any direction. Perhaps the smallest flowering plants in cultivation, they are best grown in a terrarium where they may bloom throughout the year. See photo, page 52.

There is a very wide range of *Sinningia* cultivars available in addition to the *S. speciosa* (Florist Gloxinia) cultivars mentioned above. Hybrids between *S. eumorpha* and some of the tubular red-flowered species have produced plants with a more compact habit and longer blooming season. *S.* 'Coral Belle' and *S.* 'Alfred K' are early examples of this type. *S.* 'Bewitched' and *S.* 'Playful Porpoise' are more recent introductions. Hybrids with the smaller species are very popular. *S.* 'Cindy' or the tetraploid version *S.* 'Cindy-ella' have large purple and white flowers. *S.* 'Dollbaby' has lavender flowers. *S.* 'Amizade' is a floriferous compact cultivar recently introduced. *S.* 'Cherry Chips' led to a whole generation of semi-miniature cultivars with red-spotted flowers. *S.* 'Treva's Treasure' was the first double-flowered semi-mini. *S.* 'Freckles', *S.* 'Snowflake', *S.* 'Bright Eyes', *S.* 'White Sprite', and *S.* 'Wood Nymph' are even smaller plants, comparable in size to the miniature species.

Smithiantha (smith ee AN tha)

One of the few gesneriad genera named for a woman, the name *Smithiantha* honors Mathilda Smith, a botanical illustrator of the 19th Century. This striking Mexican genus of six species boasts handsome, red or green or mottled, velvety foliage topped with a spike of nodding, bell-like flowers. In cultivation, both species and hybrids need high humidity, warm temperatures, and strong light. The foliage is easily damaged by cold water so plants must be watered carefully. *Smithianthas* grow from scaly rhizomes,

usually bloom in fall or early winter, and have an obligate dormancy period from late winter through spring. In this sense, culture for *Smithiantha* is similar to that of its sister genus, *Achimenes*. Propagation is by rhizome scales, or by leaf or stem cuttings taken from young plants.

Smithiantha cinnabarina has red stems and leaves that are densely hairy; the flowers are red. *S. aurantiaca*, true to its name, has golden-yellow flowers. *S. zebrina* bears heavily spotted red and yellow flowers above dark-green mottled leaves. *S. multiflora* has white flowers, *S. laui* lavender, and *S. canarina* bright yellow.

Many *Smithiantha* hybrids are available. The Cornell hybrids were the first series introduced in an attempt to popularize the genus with the public and the nursery trade. However, they are tall plants best suited for greenhouse growing. Recent hybrids tend to be more compact, thus suitable for the hobby grower with a light stand or windowsill. Hybridizers in the United States and Japan have produced a large number of attractive new cultivars in the past decade, utilizing the range of flower and leaf coloration found in the original species to create exciting new recombinations. Hybrids with *Achimenes* (\times *Achimenantha*) and with *Eucodonia* (\times *Smithicodonia*) are also compact, showy, and easy to grow.



Smithiantha cinnabarina



Variety of *Streptocarpus* hybrids

Streptocarpus (strep toe KAR puss)

The name means "twisted fruit" and refers to the seed pod which opens spirally to release the seeds. See photo, page 48. Native primarily to Africa, they are sometimes called "Cape Primroses". There are two subgenera that have very different habits and are not closely related. Subgenus *Streptocarpus* consists of plants that are stemless (or nearly so) and have straplike leaves. Members of the subgenus *Streptocarpella* are upright growing, shrubby plants. In both subgenera, numerous hybrids have been created and this genus is becoming more and more popular in horticulture.

The most widely grown kind of *Streptocarpus* is the rosette type with straplike leaves. These plants can be grown at a cooler temperature than most tropical gesneriads. Rosette species of *Streptocarpus* are numerous. Most have flowers in the blue to white range. These include *S. rexii*, *S. johannis*, *S. candidus* (with fragrant, white flowers), *S. formosus*, *S. parviflorus*, and *S. primulifolius*. The "Wiesmoor Hybrids" with trumpet-shaped flowers are available in a wide color range. *S.* 'Constant Nymph' has smaller flowers, with a flatter face, but more on a stem. This cultivar and many similar ones such as *S.* 'Maassen's White' have proven to be very suitable for home growing. Recently, several hybridizers, mostly in Great Britain and North America, have produced an abundance of new, showy, floriferous hybrids. These are very popular in Great Britain where they are often grown in cool greenhouses.

Several species of *Streptocarpus* are unifoliate, meaning they have only a single leaf that ranges from a few inches to several feet in length, depending on the species. The miniatures, *S. rimicola*, *S. cyanandrus*, and *S. erubescens*, and the hybrid strain 'Cape Beauties', are best grown in a terrarium. They do not persist after flowering and must be grown anew from the abundant seed they tend to set. *S. polyanthus* and *S. silvaticus* are species with one or several leaves and are a good size for a light stand or windowsill. *S. porphyrostachys* is a moderate-sized unifoliate with attractive, dark-purple flowers. *S. cooperi* and *S. dunnii* are large-growing unifoliate, the latter with brick-red flowers, unique to the genus. Unifoliate have been crossed with rosulates to broaden the gene pool of hybrids. *Streptocarpus variabilis* is distinct from other cultivated species in having a flat rosette of wide leaves, more nearly resembling *Saintpaulia*. It comes from Madagascar, home of many atypical *Streptocarpus* species that have not yet been introduced into cultivation.

Another type is the stemmed *Streptocarpus*, often referred to by the sub-genus name *Streptocarpella*. Recent DNA studies suggest that these plants are actually more closely related to the genus *Saintpaulia* than to subgenus *Streptocarpus*, but as yet, the taxonomic classifications have not been changed. *S. caulescens* and *S. holstii* have fleshy swollen stems, small heart-shaped leaves, and many small purple flowers. *S. saxorum* has fleshy leaves like a sedum and larger blue-lavender flowers. It requires high light intensity to flower. *S. stomandrus* is characterized by flowers with dark stripes. All these species make good basket plants. *S. kirkii* has short erect stems, bushy growth habit, and blue flowers. *S. 'Good Hope'* is a good choice for home growing. *Streptocarpella* cultivars are often found in the U.S. nursery trade as hanging basket plants.



Streptocarpus 'Good Hope'
(*Streptocarpella*)



Streptocarpus vandeleurii
(unifoliate)

How to Grow Gesneriads

Introduction to Gesneriad Culture

Gesneriads, like people, have basic requirements: light, temperature, humidity, water, a container, nutrients, and a growing medium. If you are a novice grower, it's a good idea to start off with a few plants and learn how to grow them well. Easy plants for beginning gesneriad growers include: *Aeschynanthus* 'Black Pagoda'; *Alsobia* 'Cygnet'; various Columneas; *Chirita sinensis*; *Chrysothemis pulchella*; various *Episcias*; *Nautilocalyx forgetii*; *Nematanthus* 'Tropicana'; *Saintpaulia* cultivars; and *Sinningia pusilla*.

Try gesneriads in different conditions, whatever is available to you: various windowsill exposures, under fluorescent lights if you have them, outdoors if it is warm enough. Discover the microclimates in your living areas.

Learn more about gesneriads. This manual is a great start. Look for a houseplant or gesneriad group where people are willing to share information and exchange plants. Go to www.gesneriadsociety.org on the Web where you will find a wealth of information as well as a discussion board, notices of local events and chapters, links to mail order vendors, and many other resources.

Light

Light is a very important facet of indoor gardening. It is essential to the growth and development of healthy plants. During the process known as photosynthesis, light allows the plant to incorporate carbon dioxide from the air with water and nutrients to produce carbohydrates on which the plant feeds. Oxygen, on which we thrive, is then released from the plant. This stockpiling of food takes place only when there is adequate light, and the plant uses the carbohydrates during darkness.

Most of the houseplants that we grow today were derived from areas all around the world and have evolved under diverse conditions. Many are low-light plants originating in the underbrush of the tropical rain forest while others are accustomed to direct sunlight. Plants, however, are adaptable and can be grown quite successfully on the windowsill or under fluorescent lights, our best substitute for sunlight indoors.

If grown on the windowsill, plants should be placed in such a position that they will not scorch in the summertime nor freeze in the winter months. If the windowsill is not deep enough, consider placing a table in front of the window at the same height. Giving a plant a half turn once or twice a week will keep it balanced and maintain symmetry.

You should always provide your plants with the best light possible, and this may be a reason for people living in the northern climes to switch their plants from the north- and east-facing (less sunny) windows in the summer to the south- and west-facing (more sunny) windows in the winter months. Direct sun may harm some of your houseplants while being beneficial to others. Read all that you can find on your plants' requirements, and do not fail to ask your friends for advice. Join a plant group and take advantage of its resources.

For those who wish to grow under fluorescent lights, the most popular size is a 48" fluorescent fixture equipped with a reflector and two 40 watt cool white fluorescent tubes. This will provide adequate spectrum for an area of 24" x 48", and the outer perimeters may be used for low-light plants or for propagating. A cool white and a warm white tube will increase the spectrum and improve the growing conditions. There are also other "grow" bulbs on the market that are very efficient but more expensive.

Plants should be placed about 8" to 12" (20 to 30 cm) from the light, keeping in mind that the highest intensity of light is at the center of the tube. As you move away from the center, the intensity decreases. Plants requiring more light should be placed in the center while those with a lesser demand can be placed at the two ends.



Gesneriads growing on wick-watering reservoirs
in trays on a light stand

A plant in a smaller pot can be adjusted to the correct level by placing it on top of an inverted pot or other pedestal, being careful to keep the plant far enough from the lights to avoid scorched foliage. Lights should be on for at least 10 to 12 hours per day and may be increased to 14 hours to induce blooming. Timers should be installed to ensure adequate periods of light and darkness.

Reflectors and tubes should be kept clean, keeping in mind that light output weakens with age of the tube. Compensate for the lower light of older tubes by replacing the tubes or increasing the duration of light to 14 hours per day. If you pay attention, your plants will tell you if they are receiving the correct measure of light. For instance, if the leaves are inclined to grow towards the light, it is a sign of insufficient light. On the other hand, a plant whose leaves are pointing down and hugging the sides of the pot is receiving more than an adequate supply of light. Lack of bloom and pale or yellowing leaves may also act as an indicator of low light.

Pots

Plant pots are typically made of either plastic or clay. In recent years plastic pots have been more popular than those made of clay and for many good reasons. Plastic pots are less expensive, much easier to clean, easier to store and not so easily broken. Another good reason is that clay pots are porous and dry out much more rapidly than plastic pots; therefore more frequent watering is necessary.

Before re-using pots, make sure they are clean and sterilized to avoid transmission of pests and diseases. This is easily done by placing the pots in a pail into which you have placed water and vinegar at a ratio of 10 ounces of vinegar to two or three gallons of water. Pots may be left to soak for several days but should be ready after an overnight soaking. The vinegar will soften the salt build-up so that it may be removed easily. Any difficult spots may be removed with a scouring pad. Once pots are cleaned, they should be sterilized by putting them in a 1% solution of bleach for about 24 hours, after which they should be rinsed in clear water.

Soil and Soilless Mixes

To grow gesneriads successfully, there are certain rules that must be followed to create the ideal conditions. This strongly applies to the growing media we use. Here are the essentials to be provided in a good soil mix:

- (1) Soil pH is important. pH is the measure of the acidity or alkalinity of the soil, on a scale from 0 (very acid) to 14 (very alkaline). Gesneriads perform best in soil with a pH in the range of 6.4 to 7.
- (2) Soil must be pasteurized and free of insects and diseases that are detrimental to plants.
- (3) Soil should be light and loose, not heavy or compacted. This condition provides good circulation for water and air, both of which are necessary to the health of your plants.
- (4) The mix should contain some organic material. This helps maintain moisture and nutrients.

Many enthusiasts mix various proportions of peat moss, vermiculite, perlite, and lime. Others purchase pre-mixed commercial potting soil. There

are many variations on this theme. A common mixture is a 1:1:1 mix of peat, vermiculite, and perlite, with some dolomitic lime added to adjust the pH to the proper range of 6.4-7. The proportions may vary depending on your growing and watering practices. Here are the components of a good growing medium and a detailed explanation of each element.

Sphagnum moss is gathered from bogs and marshes and is a wonderful source of organic matter. It comes in two forms, *i.e.*, milled and long fiber. The milled type is normally used in mixing soils. It retains moisture and takes a long time to decompose. Acidity in the soil will increase as it decomposes.

Perlite is a white, globular, gritty volcanic glass product. It is customarily found in coarse and fine grades. The coarse grade is best for soil mixes. It is inert, and its function is to provide porosity to the soil. It resists compacting, aerates the soil, and improves drainage.

Vermiculite is mica that has been "puffed" or exfoliated by exposure to heat. It is water retentive.

Dolomitic lime is limestone that contains 30% or more of magnesium carbonate. It is used to control the pH of the soil by helping neutralize the acidity of the peat moss. Dolomite chips in small fine particles, which are not always easily available, are preferable to horticultural powdered lime. Ground eggshells, which are quite effective, are sometimes used as a substitute.

Acquiring New Plants Safely

It is common for a new grower to become very enthusiastic about gesneriads and acquire a large number of plants in a short period of time. Unfortunately, often one or more of these new acquisitions brings some unwelcome guests – plant pests – into the growing area. Pest infestations, like social diseases, are often the unintended consequence of an innocent, pleasurable transaction.

Pests can come from any source. We all try to keep our plants pest free. Even if your plants only come from your best friend, local chapter sales, or the most reputable commercial growers, they may have pests on them. It is very important to inspect any plants before you take them home. Reject them if they appear to have bugs. Any plant material except for seeds can carry pests. If you grow only from seed, then it is less likely that you will introduce pests or diseases into your plant collection. But this is not a realistic solution for most growers. We all enjoy adding cuttings or established plants to our collections. Also, most hybrids or cultivars do not reproduce true from seed.

Many a collection of indoor plants has been dispatched to the garbage bin because an infested plant was placed among healthy ones. The answer to this problem is: ISOLATION.

Whenever and from whomever you receive a new plant, make certain that it is washed and repotted, placed in an area away from your healthy plants, and kept in this locality until you are certain that it is completely free of any insects or disease. Eight to ten weeks should be the minimum time to keep a new plant in isolation. A spare windowsill is a good place. Growing conditions need not be optimal as the plant will not be there permanently. Move the plant to your growing area once it passes quarantine. If you have absolutely no separate area for isolation, then keep new acquisitions in a clear plastic bag or plastic storage box for a period of time.

Once you are satisfied that your new plant is pest- and disease-free, it is time for repotting. Unpot the plant and remove as much of the soil as possible from its roots. Then wash the roots under a gentle flow of warm water while examining them for any abnormal swelling of the root structures. If this is present, it could be a sign of root nematodes. Similarly, white fluff in the soil (not perlite, which is gritty rather than fluffy) is a sign of soil mealybugs. If you discover such root infestations, the plant should be discarded. You may attempt to salvage the plant by taking cuttings from it and discarding the base of the plant and its roots.

If the roots do appear clean, then repot the plant in a clean pot with fresh soil (but keep a close eye on it for possible re-infestation). To prevent contamination of existing clean plants, the whole operation should take place in an area well away from the growing area or plant room. Once repotted, the plant may again be treated with an insecticide or biological control that you would normally use. It is now ready to be placed on the plant stand. It is advisable to let the plant become established before fertilizing. If the root structure is frail, however, a weak solution of root-stimulating fertilizer may be applied.

Many experienced growers avoid importing soil from other growers into their collection by taking only cuttings, rhizomes, and tubers that can be scrubbed thoroughly before being potted up. This not only avoids soil-borne pests, but ensures that the plant material is clean.

Temperature and Humidity

Whether a beginner or an expert, learn as much as possible about your plants in order to afford them the necessary environmental requirements. Since the majority of our indoor plants are indigenous to the tropics, it is natural that we should try to provide them with an environment as close to their natural habitat as practicable. This is not always possible with the gesneriad family. They have been acquired from varied climatic areas of the globe and require diverse conditions for growing.

The ideal temperature for growing most gesneriads is 65-80°F (18-27°C). Most plants will tolerate, and some plants actually benefit from, a sudden change in temperature. However, it is advisable to try to maintain an even temperature even though it is normal for the temperature to be somewhat cooler at night than during the day. A sudden change in temperature, hot or cold, can have a dramatic and sometimes detrimental effect on many plants.

Sometimes, for comfort or economic reasons, it may be necessary to reduce your thermostat at night to a setting that may result in an unacceptable temperature for your plants. It may help to keep your plant lights on at night instead of during the day, and to enclose your plant stands in clear plastic sheeting, to take advantage of the heat generated by the fixtures. Alternatively, you could focus your collection on more cold-tolerant plants such as *Streptocarpus* or *Chiritas*.

Adequate humidity, or the amount of moisture in the air, is imperative for most indoor plants. Quite often it is one of the more difficult conditions to provide. In the temperate areas, our central heating systems produce dry air in the winter, and our air conditioning extracts the moisture from the air in the summer. For comfort in the winter, our houses average 40% humidity

while the acceptable level for plants is closer to 60%. Most gesneriads dislike dry air and will not hesitate to show their displeasure. Leaves will turn yellow and fall; leaf tips will dry out and become parched; development of growth and blossoms will be retarded; and buds will blast (fail to open).

To increase the humidity in your growing area, set plants on trays or individual saucers filled with pebbles, keeping the water level below the top of the pebbles. Alternatively, place egg crating (the plastic grid used to diffuse ceiling fluorescent lighting) in trays and set the plants on the egg crating. Fill the trays with water which will gradually evaporate and increase the humidity. Some growers cover their plant stands with clear plastic sheeting to increase the humidity around the plants. Finally, some gesneriads do best with 95-100% humidity, and these should be grown in an enclosed container such as a terrarium.

Water

One of the first questions a beginner will ask is "How often do I water?" The answer depends on many things: the level of humidity, air conditioning, heating, retentiveness of soil, over or under potting, clay versus plastic pots, etc. Here are some pointers that may help with your watering program:

- Do not let your plants dry out completely.
- Do not let your plants stand in water more than one half hour.
- Overwatering is generally more harmful than underwatering.
- Ensure that the soil is entirely moistened but not saturated.
- Avoid getting water on the foliage of your plants.
- If water is chlorinated, it may help to let it stand overnight.

Water should be tepid or at room temperature and leaving it overnight can accomplish this. Water may or may not include added fertilizer (see Fertilizer section for further details).

Your watering can should be of a manageable size and easy to control. It should have a long spout that can reach your plants without any difficulty. Plants can easily be ruined by the wrong type of watering can.

Top watering is probably the most widely used method, but not necessarily the most practical. There is a chance of spilling water and fertilizer on the leaves, which in turn can cause water marks and burning. Water should be poured around the plant, avoiding the center, and as near the rim of the pot as possible. It is advisable to use a small watering can with a long spout or a basting or battery bulb for this purpose. These will lessen the chance of damaging the leaves as a cumbersome watering can would. It is imperative that plants should not be left standing in water more than one half hour. Most plants, and especially Saintpaulias, are very susceptible to root rot from wet feet.

Some people prefer to water from the bottom. With each pot placed in an oversized saucer, fill the saucer with water or a fertilizer solution and let it stand for no longer than one-half hour. In this time the soil will have absorbed its capacity. Discard any water that remains in the saucer. Less damage is likely to be done to the leaves with bottom watering, as the saucers are easily accessible. The one disadvantage is that the fertilizer salts are transmitted to the top of the pot. This can easily be remedied by giving your pots a flush from the top with clear water every 4-6 weeks to leach accumulated salts from the medium.

Wick watering is done by placing a three- to four-inch long synthetic wick through one of the bottom holes of your pot. Use another container, such as a margarine tub, and cut a slit in its cover. Fill this container with water and place the plant on top while suspending the wick in the water. You can do this on a larger scale by filling a tray with water and covering it with egg crating, cut to size. Wicking should be synthetic, or else it will rot. Strips of nylon stocking, synthetic string or yarn, or strips of capillary matting may be used for this purpose. The thickness and number of wicks depends on the size of the pot.

Capillary matting is not always easily available. It is normally purchased in a roll and can be cut to your desired specifications. Synthetic blankets may also be substituted for this purpose and are normally much less expensive. Cut to the required size and placed in the bottom of a tray, it is kept saturated. Plants placed on it will absorb the desired amount of water. It is recommended that the pots be equipped with a short wick to make the contact with the matting. To decrease the frequency of watering, a reservoir may be installed. This can also be done by placing egg crating covered with matting in the tray and filling the tray with water. A small portion of the matting must be submerged in the water. Mildew and algae, which may be unsightly and malodorous, are potential problems with capillary matting. Frequent laundering with bleach is necessary to keep this problem under control. Some growers add an algicide to the water for this purpose as well. Soil-borne pests may be spread from one pot to another by capillary matting so isolation of new plants is essential.

Fertilizer

Your plants should be fed only when the soil is moist. If used when the soil is dry, the fertilizer can burn and destroy the root hairs of the plant.

With this in mind, we recommend what is known as continuous fertilizing. This means that you fertilize every time you water, only with a lesser amount of fertilizer. Instructions with most fertilizers suggest you feed plants once a month with 1 tablespoon to a gallon of water. Instead, we recommend you use 1/4 teaspoon per gallon of water every time you water. Some well-known companies are now recommending this continuous fertilizing formula.

Plants require a variety of chemical nutrients to provide good growth. These are carbon, oxygen, nitrogen, phosphorus, potassium, sulfur, calcium, magnesium, copper, zinc, iron, chlorine, manganese, boron, and molybdenum. All but the first two must be taken up by the plant through its root system. Some are major requirements while others play a minor part in plant development. The three most important elements in plant food are Nitrogen (N), Phosphorus (P), and Potassium (K). You will find these listed on the container of your fertilizer as an N-P-K formula. For example, 15-30-15 means 15% nitrogen, 30% phosphorus, and 15% potassium. Growers use fertilizers with various proportions to encourage bloom or vegetative growth; many rotate several fertilizers.

Nitrogen will support the vegetative development of the plant and result in a lush green color in the leaves. A nitrogen deficiency results in pale leaf color and a slowing of the process of photosynthesis. Phosphorus encourages the development of a good root system as well as flower production. Phosphorus deficiency results in poor root development and lack of bloom. Potassium helps the plant utilize other nutrients and also seems to help in

building up a resistance to disease. A potassium deficiency causes puny development of the plant, yellowing and downward curling of the leaves, and abnormal flower formation.

Continuous fertilizing sometimes will cause a build-up of fertilizer salts on top of the soil as well as on the rims of the pots. To control this, simply drench your plants 2-3 times with clear water leaching every six weeks or so by omitting the fertilizer and watering until the water runs out clear from the bottom of the pot. This will wash away the surplus salts from the soil.

Grooming and Housekeeping

Like housework, plant grooming is necessary. Unlike housework (or not, depending on your house), plant grooming can be both rewarding and informative. Not only will your plants look better, you will often discover something about your plants you otherwise might not have noticed, from flower buds to a unique feature to (ugh) a pest. So keep your growing area tidy and free of spent leaves and blossoms. This can be done on a regular basis, and the best time is probably when you are watering. As you check each plant for watering needs, you can also scan it for dried leaves and faded blooms. Have a pair of scissors handy when watering and snip away as you inspect each plant.

You should also set aside a specific time occasionally for a general inspection of the growing area. Remove everything, including pots, saucers, and trays, from the shelves. The shelves and the trays should be washed with a mild detergent to which a small amount of bleach has been added. Prior to replacing the pots, examine each one carefully for "unwanted tenants" and assess whether the plant needs pinching back, pruning, repotting, or topping up with soil. This is also a perfect opportunity to take cuttings for propagation.

Before replacing the trays, the entire area can be sprayed with disinfectant spray such as Lysol. This not only gives the plant room a pleasant odor, but it also inhibits mildew. It is very satisfying to "clean house" this way. The growing area looks better; the plants are happier; and any infestations can be dealt with before they spread too far.

Propagation

Once you are growing gesneriads, you will have a strong urge to propagate them. A form of giving, this is one of the more rewarding aspects of gardening. There are many ways to propagate gesneriads and many reasons to do it. You can increase your plant collection, share your plants with friends, and supply plants for a sale at your local chapter, plant club, or even an international convention. Later if you lose a plant that you'd like to grow again, you can get a piece back from the friend you gave it to last year.

Your propagating area should include these tools and materials: starter mixes, rooting hormones (optional), propagation boxes, scissors, a knife or razor blade, rubbing alcohol, a small watering can and a misting bottle. Many different types of rooting media are used for the purpose of propagating. Some people use vermiculite; others use pure New Zealand sphagnum moss; still others use a commercial starter mix (which is normally a very light soil-less mixture).

Many different items may be used as propagating boxes. These include commercial propagating boxes as well as any clear plastic containers such as sweater or shoe boxes. Food containers from the deli are also useful, and a pot enclosed in a plastic bag will be just as effective. A seed tray with a plas-

tic dome may be used for seeds or for leaves and smaller cuttings. Various sizes of plastic drinking glasses may also be utilized. A clear plastic drinking cup inverted on top of the pot makes a good mini-propagation container. Plants and seedlings should be well established before transplanting, and it is advisable to gradually remove the covering to acclimate them to life without a protective dome.

Only minimum lighting is required for propagation. Prop boxes may be placed in areas of less intense light at the outer edges of the light stand, on the floor next to a light stand, or on a table beside a window, making sure the plants do not receive any direct sunlight.

Here are some of the most popular ways of increasing your stock.

Single Leaf: Most gesneriads can easily be propagated from a strong healthy leaf. With larger leaves (such as those of Saintpaulias, Streptocarpus, and Chiritas), use a clean razor or other sharp blade at a 45-degree angle to cut the petiole (leafstalk) to about one inch in length. Plant it firmly in dampened starter mix, enclose it in the propagation box, and place the box near the end of your light stand.

Leaf Wedges: This method is more suitable for larger leaves that can be easily cut into sections. The Florist Gloxinia, *Sinningia speciosa*, is an example. Streptocarpus and Chiritas can also be propagated this way. Place a leaf on a flat surface and cut it into wedges starting at the midrib and following



Petrocosmea leaves sprouting in a group prop box

the contour of the secondary ribs that run at an angle on both sides of the main rib. You should end up with three or four V-sections. Alternatively, the leaf can be cut in half lengthwise, from petiole to the tip, removing the midrib. Plant these halves with the cut surface in the growing medium.

Twin-Bud Cuttings: Take a plant that has opposite leaves attached to a stem (such as a Columnea, Aeschynanthus, or Codonanthe), and cut it just above each pair of leaves, keeping the longer part of the stem at the bottom of the leaves. Place each section in your starter mix ensuring that the leaves are barely resting on the medium. Roots will form at the node, and new growth will emerge from the top.



Streptocarpus leaf sections



Columnnea tip cutting

Tip Cuttings: Take a stem and cut it into a tip plus twin-bud cuttings. Remove the leaves from the lowest node. (This will encourage root formation at that node.) Place the cutting in starter mix. Ensure that the lowest node of each cutting is placed in the soil. As the plant develops, it is best to pinch out the tip of the cutting. This will encourage branching, and a fuller, more compact plant will result. Some growers recommend pinching out the tip when the cutting is planted. This enables you to "see into the soil"; that is, when the cutting starts new top growth, it has rooted.

Offsets: These are extra growths that may start at the base of some plants like Saintpaulias or Petrocosmeas. These can be removed carefully with a sharp pointed tool and planted in starter mix. Often, as in the case of Petrocosmeas, they are formed so close to the soil that they may have already rooted. These may be planted directly in your potting mix.

Stolons: These are rosettes of leaves at the terminus of a threadlike runner. Commonly found on Episcias and Alsobias, as well as a few Chiritas, these appendages can be removed and potted up separately. Or while still attached, the stolons can be pinned down to the soil in another pot placed adjacent to the mother plant. They may then be detached when rooted.

Rhizomes: These are more or less elongated underground stems, usually with specially modified storage leaves called scales. Rhizomes are produced during the growing season of the plant, but production will speed up when the plant starts to go into dormancy. They may be broken into several pieces for purposes of propagation. Even a single rhizome scale will produce a new plant.

Aerial Propagules: These are rhizome-like attachments that form on the plant above ground. On Achimenes these will look exactly like the underground rhizomes except they are smaller and of a greenish color. On Seemannias they are threadlike appendages that sometimes appear knotted. Aerial propagules can be detached and planted directly into the soil.

Tubers: Sinningias form tubers and can easily be multiplied by taking the crown from the tuber. Remove the bottom leaves and place the stem in the starter mix. After a tuber has formed at the base of the stem, the top will eventually die back and may be discarded. New growth will sprout from the tuber. The leaves from tuber-forming plants may be rooted as described in the leaf propagation section, but leaves will take a longer time to produce tubers. Once a leaf has started to form a tuber, it will normally increase in size and will stay quite green and healthy. As soon as the tuber is well established and can start feeding on its own, the leaf will begin to deteriorate. It is then time to remove the leaf and replant the tuber. Occasionally a plant will produce a tuber above the main tuber. This is often brought on by the tuber being planted too deeply. Tiny tubers may form around the crest of the main tuber. These can be removed and used for starting new plants.

Seeds: Gesneriads are quite easy to grow from seeds. Don't be afraid of the tiny size of these seeds. Fill individual pots with dampened growing mix, making sure it is not too wet. You can moisten the surface with a fine mist if you like. Using a separate pot for each lot of seeds, distribute the seeds on top of the growing medium. An easy way to do this is to have the seeds on a creased piece of paper, and then tap the paper to drop the seeds onto the soil. Place the pots in a propagation box and place it in a well-lit area, but away from direct sun. A light stand with bottom heat from the lights below is ideal. Gesneriad seeds can take anywhere from a week to several months to germinate. Don't give up.

Once the seedlings are big enough to handle, transplant them into their own pots. You may want to keep them enclosed, or at least water them from the bottom or water with a misting bottle or baster, until they are big enough not to be washed away by the stream of water from the watering can. If you are interested in growing plants from seeds, you should take advantage of The Gesneriad Society Seed Fund, a member benefit. It offers a vast variety of seeds at low cost.



Stringy aerial propagules growing on a *Seemannia* hybrid



Twisted seed pod and tiny seeds of *Streptocarpus rimicola*

Pests and Diseases

Like all houseplants, gesneriads are subject to various infestations of unwelcome "visitors" that attack and feed on our plants. Pests can be more of a problem in the artificial environments we create for our plants than is the case in more natural environments. In our homes and greenhouses, beneficial predatory organisms are often not present so pests can multiply relatively unimpeded.

Pests can spoil the enjoyment of growing gesneriads and can destroy a collection of plants. The best treatment is prevention. This means keeping your growing area clean and avoiding introducing pests from elsewhere. All new plant acquisitions should be isolated until they prove to be pest-free. Many growers repot or make cuttings when adding a plant to their collections, to avoid introducing soil-borne pests. Use only pasteurized soil mix, and use rubbing alcohol to sterilize tools such as scissors and forceps.

Despite the best precautions, pests may pop up in the cleanest houseplant collection. Inspect your plants frequently and remove and discard any that become infested. Sticky cards are useful for monitoring pest populations. Local Master Gardeners or the U.S. Department of Agriculture Cooperative Extension Service are an excellent resource for diagnosing a disease or identifying a pest and suggesting treatment.

Chemical pesticides are of questionable safety in the home. More and more of them are being removed from the market because of toxicity concerns. If you do use chemical pesticides, never use a chemical without researching it. That means obtaining a copy of the specimen label and the Material Safety Data Sheet (MSDS) to understand its proper application, toxicity, disposal, and any personal protective equipment required. Biological controls, in the form of beneficial organisms, are now available from many vendors. These are a safer way to keep many types of pest populations at bay.

Whiteflies are aptly named. They are white, they do fly, and they increase very rapidly. Whiteflies are a common indoor pest. They can be brought in by the introduction of new plants or cut flowers, or they may find their way in through open doors and windows. Because they are so mobile, the isolation of a plant with an infestation of white flies is not the answer to controlling these pests.

Once established, whiteflies reproduce very rapidly and soon spread themselves throughout the entire plant room. They attack the plant by sucking the sap from the underside of the leaves. Leaves turning yellow and falling off are sometimes the evidence of their presence. However, quite often they are not discovered until they have multiplied, rising as clouds of white whenever you approach or disturb a plant.

Pyrethrins are useful against whiteflies, but the best solution for a heavy infestation is to discard the involved plants.

Aphids are small, soft-bodied sucking insects, often pale green, sometimes black or other colors. Ubiquitous outdoors, they frequently find their way into the plant room where they attach to plants, suck their juices, and secrete honeydew. They are very prolific and, in fact, are a wonder of nature because they are able to reproduce asexually and can be born pregnant. They are very susceptible to household insecticides containing pyrethrins, but they can be hard to eradicate because they multiply so fast and hide under the leaves.

Nematodes are not easily detected and are difficult to exterminate. They are minute worms that attack and live on the main root system of the plants. As they feed, the roots may become distorted and form knots. The plants begin to lack vigor and will soon wilt and eventually die.

As in most cases of pests, prevention is your best defense against nematodes. Whenever you acquire a new plant unpot it and remove as much soil as possible. If it has a strong root system, the balance of the soil may be removed by placing the plant under warm running water and gently washing it clean. Examine for nematodes (bulging knotty abnormalities) and, if healthy, repot the plant in new soil. If you unfortunately discover an infestation in your plant room, you may want to discard the entire collection and start over again. Before you begin to re-establish your collection, make certain that you sterilize your entire growing area, including light stands, trays, pots, and tools. Discard any unused soil that may be in the area.

Springtails are "little kangaroos". They dart around the soil and the growing area of the plants, and are usually detected after watering. They exist on decomposed organic matter (mostly unpasteurized soil). While they are not considered harmful, they can be most annoying to anyone who hates "creepy-crawlies" or in this case, "jumpies". Pasteurized soil should be free of these creatures. If your plants should get an infestation of springtails, you can eliminate them by using any one of the granular insecticides that have been formulated for soil.

Fungus Gnats are tiny dark flies, that invade the growing area. They are harmless but can become a nuisance to anyone who hates having unwanted inhabitants in the plant room. They live on decaying organic matter. Sphagnum and peat moss are their favorite breeding grounds.

Blossom or Flower Thrips, or "dusters", are noticed when pollen is being spilled or dusted over the blossoms and on the underlying leaves and when some of the pollen sacs show damage. Thrips attack the center of the bloom, and this is especially visible in Saintpaulias.

Thrips are often detected in motion when the blossom is disturbed. This may be done by gently rubbing your finger along the pollen sac or blowing gently into the blossom. Tiny dark insects, which can be seen quite readily with the naked eye, scurry in the flower.

Like other pests, thrips can be introduced by various means, but mostly by infected plants that have been placed in your collection without having been isolated or examined. They spread rapidly and are very difficult to eradicate.

Spraying is not effective against thrips unless direct contact is made. Yellow and blue sticky cards are somewhat effective in trapping some of the pests, and they help in monitoring and identifying the type of infestation. Blue cards are used for thrips and yellow cards for all other flying insects (gnats, white flies). Three cards per 1000 square feet is considered effective coverage, but placement is important. Remember, the cards are a means of control and monitoring, not elimination.

Thrips are also the vectors of **Impatiens Necrotic Spot Virus (INSV)**. This can wipe out an entire collection. The only known treatment is complete elimination of all infected plant material as infected plants cannot be cured. Do not attempt to propagate plants from what may seem to be a healthy leaf or branch of an infected plant. If Western Flower Thrips are absent, then veg-

etative propagation is the only other way of spreading INSV. Sterilizing tools such as razor blades and forceps is good practice to keep from spreading diseases during vegetative propagation.

Cyclamen Mites manifest as distortion of the center or crown of new leaves. The leaves become greyish in color, hairy-looking, and rather brittle. The center leaves will eventually die, and the plant will produce multiple crowns. Mites are not visible to the naked eye and feed on young leaves from which they extract the juices. Infestations are caused by introduction of infected plants. The best advice is to destroy all plants and start a new collection.

Broad Mites are similar to cyclamen mites and suck the juices from the more mature leaves causing the leaves to droop or curl downwards.

Spider Mites are visible and are a reddish brown color. They leave silky webs around the plant. Red spider mites can be eliminated by using a pyrethrin-containing garden spray such as Raid.

Foliar Mealybugs, also known as soft scales, are very visible and look like little bits of cotton. They are sucking insects and can suck a plant dry in a short time. They are covered in a protective waxy coating. Each individual is approximately 3 mm (1/8 inch) long. Mealybugs multiply rapidly and usually lay their eggs in leaf axils and around the blossoms. They produce an abundant amount of sticky wet honeydew upon which an unsightly black mold may grow.

Mealybugs are difficult to eradicate because of the cottony mass that surrounds them and seems impenetrable to insecticides. Isolation of new plant material and destruction of infected specimens is the safest strategy. Alcohol seems to be the most deadly enemy of mealy bugs. Rubbing (isopropyl) alcohol dabbed directly on them will penetrate the waxy mass. If the infestation is severe, alcohol can be used as a spray by diluting with water at a ratio of 50:50.

Soil Mealybugs are more difficult to detect and are usually discovered when the plant has started to wilt despite being watered. Batches of soil mealy bugs resemble perlite and for this reason are often unnoticed. Discarding of the infected plants is your best bet.

Powdery Mildew appears as a white-grey powdery substance on flower stems, blossoms, leaves, and sometimes even the soil surface. Mildew is one of the many fungi that exist in our environment and is not only detrimental to plants but to clothing and other items. It is airborne and develops when there is high humidity, poor air circulation, and when night temperatures drop to a "too cool" temperature in your growing area.

To treat this fungus, remove the infected plants immediately. Otherwise the spores, being airborne, may waft to other areas of the plant room and proliferate. Once the plants have been isolated, it is best to do a complete cleanup of the area. Wash your growing area (light stands, trays, etc.) with a mild solution of bleach. Then spray the entire area (including walls, floors, and ceiling), with Lysol deodorizer and disinfectant spray. Avoid having the spray fall on your plants by spraying it away from the plant stands. If ventilation is your problem, consider installing a fan. This will provide good air circulation for your plants, but be careful not to place the fan in such a way that it blows directly on your plants or you will have created another problem.

Microminiature and miniature *Sinningias* are some of the tiny gesneriads that grow well in small enclosed containers



Sinningia concinna



Sinningia 'Augusta S.'



Many gesneriads can be grown artistically like this *Chirita longgangensis* shown in a bonsai dish



A variety of gesneriads grown for their beautiful foliage

About The Gesneriad Society

The Gesneriad Society is an international organization, chartered as a nonprofit corporation by the State of Missouri. We are a group of over 1000 people who share an interest in the culture and botany of gesneriads. Originally founded in 1951 as The American Gloxinia Society, an association devoted to the growing and propagation of Florist Gloxinias (*Sinningia speciosa*) and other gesneriads, our name was changed in 1966 to The American Gloxinia and Gesneriad Society. In 2006 our name was simplified to The Gesneriad Society to best reflect who we are. Our journal, founded in 1951 as THE GLOXINIAN, is now called GESNERIADS.

Benefits of Membership

All members of The Gesneriad Society receive our quarterly publication, GESNERIADS, *The Journal for Gesneriad Growers*. The journal, illustrated with numerous color photos, contains a mixture of botanical articles by scientific experts and horticultural articles by enthusiasts who grow these plants in their homes, gardens, and greenhouses all over the world. The journal also publishes reports on local and international activities such as annual conventions, symposia on gesneriads, and other meetings; reports on gesneriad-related research, some of which is funded by the Society; and articles about gesneriads growing in the wild written by plant explorers and/or members who live in areas where gesneriads grow natively. Special issues on a single genus (for example, *Petrocosmea*, *Nematanthus*) or topic (for example, alpine and cool-growing gesneriads) appear at intervals.

In its role as the International Registration Authority for gesneriads (excluding *Saintpaulia*), The Gesneriad Society publishes listings, descriptions, and illustrations of newly registered gesneriad cultivars in our journal shortly after they are released. Gesneriad Registers, or listings of all the named varieties within a genus, are published separately at intervals and are available as downloadable files to Society members at no additional charge.

The Society supports gesneriad research via the Elvin McDonald Research Endowment Fund and provides scholarships to interested and deserving students of botany or horticulture via the Nellie D. Sleeth Scholarship Endowment Fund.

The Society produces educational CD's for purchase and 35 mm slide programs for rental. These cover a range of topics on the growing, showing, and botany of gesneriads. They are useful for local chapter programs, garden club programs, horticulture classes, and libraries.

The Society's Website, www.gesneriadsociety.org, is the place to go for information on gesneriads and their culture, photo albums of recent conventions and flower shows, a gesneriad FAQ and message board, online ordering of publications and memberships, links to other gesneriad sites, and a special "members-only" section providing additional benefits.

The Gesneriad Society Seed Fund, available only to members of the Society, is the largest source of gesneriad seed available in the world. Many species are available nowhere else, and much hybrid gesneriad seed is also offered. Seed is donated from all over the world and is shipped anywhere in the world at a very nominal cost.

The Society holds an annual convention every year, with meetings, tours, lectures, a flower show, plant sale, and the opportunity to meet other gesneriad enthusiasts from all over the globe.

Gesneriad Judging Schools, held at conventions and other times and locations, give members the opportunity to learn more about culture and grooming of gesneriad plants for flower shows. This in turn provides opportunities to judge and clerk at convention and local shows held throughout the year.

Local chapters, currently found throughout North America and in Sweden, hold regular meetings, sponsor educational projects, flower shows, plant exchanges, auctions, and raffles, and offer the opportunity to socialize with other gesneriad growers.

We hope you will consider joining The Gesneriad Society.

Application for Membership — <i>The Gesneriad Society, Inc.</i>				
<p>WELCOME – membership in our international society includes quarterly issues of <i>GESNERIADS – The Journal for Gesneriad Growers</i>, a copy of <i>How to Know and Grow Gesneriads</i>, a packet of gesneriad seeds and a wealth of information about our Chapters, Flower Shows, Publications, Research, Slide Programs and Seed Fund. Membership begins upon receipt of dues.</p>				
<input type="checkbox"/> New Member		Date _____		
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Name _____				
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<input type="checkbox"/> Individual	\$25	\$70	\$30	\$85
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Corytoplectus speciosus brightens the rain forest floor in Ecuador.
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Name Changes in *Chirita*

Since publication of the current edition of “How to Know and Grow Gesneriads”, the plants of the genus *Chirita* have been reclassified into other genera. The nomenclature in the *Chirita* article in this edition is therefore out of date.

The following pages contain an article from *Gesneriads*, Volume 62, Number 1 (1Q2012) describing the name changes.

--Peter Shalit, Editor
January 2013

GESNERIADS

The Journal for Gesneriad Growers

Vol. 62, No. 1

First Quarter 2012

Primulina

Primulina dryas



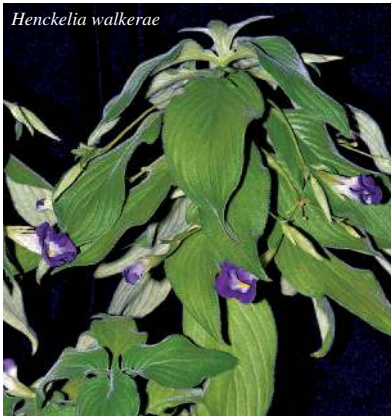
FORMER *CHIRITA* SPECIES

now placed in

Damrongia, Henckelia, Liebigia, Microchirita, Primulina

Henckelia

Henckelia walkerae



Microchirita

Microchirita micromusa



Chirita dismembered!

David J. Middleton <d.middleton@rbge.ac.uk>
Royal Botanic Garden, Edinburgh, Scotland

Chirita as traditionally delimited contains about 140 species found in Sri Lanka, the Himalayas and southern China, through continental Southeast Asia and into Malesia as far as Sumatra, Java, and Bali. In recent years more and more species have been described, particularly from southern China, and it is likely that there are large numbers of undescribed species in China, Vietnam, and other parts of Southeast Asia. The genus was first described by David Don in 1822, taking up the name first proposed by Francis Buchanan-Hamilton. The genus remained fairly small until the beginning of the 20th century when the huge number of species of *Chirita* from southern China began to become known to the outside world and the scientific and horticultural communities.

David Wood revised the genus in 1974 and recognised 77 species in three sections: *Chirita*, *Gibbosaccus*, and *Microchirita*. In the 1980s onwards the number of species being described increased rapidly, mostly from southern China and mostly in the section *Gibbosaccus*. Most of these species were included in the account of the Gesneriaceae in the *Flora of China* (Wang et al. 1998). There have also been problems in the delimitation of species, most notably when Olive Hilliard resurrected a fourth section, *Chirita* sect. *Liebigia*, and revised the species within it (Hilliard 2004). Whereas Wood had recognised only one species in this group, *Chirita asperifolia*, Hilliard divided it into 12 species! Conversely, it is likely that some of the new species described from southern China in recent years may prove to be synonyms of already known species when they are critically revised.

It has long been recognised that *Chirita* is a rather heterogeneous assemblage of species united by a single character, the shape of the stigma. In *Chirita* the upper lobe of the stigma is not developed and the lower lobe is nearly always bifid. In other characters the species range from very small herbs to subshrubs, rather fleshy annuals to woody perennials, and terrestrial plants of the forest floor to plants growing in the fissures of limestone rocks. The flowers may be only a few millimetres to several centimetres long and the corolla may be white, yellow, orange, pink, blue, purple, or sometimes combinations of these colours.

In recent years molecular sequencing and phylogenetic reconstruction techniques to hypothesise the evolution of groups of organisms have become increasingly important in the classification of plants. These techniques frequently help clarify formerly intractable classification problems and often highlight previously overlooked relationships between plants that make very good sense. Morphological characters that were previously thought not to be important sometimes turn out to be the characters that unify a particular group. Also characters that were formerly thought to unite a group of plants may be shown to have arisen many times in unrelated plants in response to particular evolutionary pressures. These techniques have now been applied to *Chirita* and the results, perhaps unsurprisingly, have led to the genus being divided into five separate genera, each one not being particularly closely related to any of the others formerly placed within *Chirita*. Inevitably the nomenclatural consequences of these changes are many but the five genera

that have emerged are all now much more morphologically homogeneous than *Chirita* used to be. This work was published by Weber et al. in 2011.

The five genera are *Damrongia*, *Henckelia*, *Liebigia*, *Microchirita*, and *Primulina*.

Damrongia

The species in this genus used to be placed in *Chirita* section *Chirita*. There are seven known species, all from Thailand with one of them also reaching into Peninsular Malaysia. They all occur only on limestone rocks and have white, blue, or purple flowers. They are hypothesised to belong to the group of Asian genera with twisted fruits even though this character has been lost in *Damrongia*. Currently, no species are known in cultivation.

Henckelia

This is the most nomenclaturally confusing of the genera to emerge from *Chirita* and the one with the most knock-on nomenclatural consequences in other groups of Asian Gesneriaceae. *Henckelia* previously comprised around 180 species in southern India, Sri Lanka, southern Thailand, and Malesia. It has now been shown that the species of *Henckelia* from southern India and Sri Lanka are closely related to the original type species of *Chirita*, *Chirita urticifolia*, and its relatives and that the southern Thai and Malesian species of *Henckelia*, by far the majority of the genus, are only distantly related to these. The classification consequences of this under the rules of botanical nomenclature are that the genera *Henckelia* and *Chirita* must be combined and that the older name has priority. The older name is *Henckelia* and, consequently, the name *Chirita* is no longer to be used. However, as noted above, very many species of *Chirita* are not in this group of species and the large majority of *Henckelia* species in Southeast Asia must be moved into other genera. As there is little current horticultural interest in the Southeast Asian species formerly in *Henckelia*, the far-reaching nomenclatural effects of these changes will have little immediate interest to growers.



Henckelia (Chirita) speciosa



Henckelia (Chirita) pumila

Henckelia
(*Chirita*)
dielsii



Henckelia with its new circumscription remains the most morphologically diverse of the genera to emerge from *Chirita* although when the molecular results led to a re-examination of the morphological characters that could unite the species to be placed therein it was discovered that the southern Indian and Sri Lankan species of *Henckelia* did share the characteristic stigma character of *Chirita* except that the lower lip is not bifid as was usual, but already not universal, in *Chirita*. There are approximately 56 species of *Henckelia* found in Sri Lanka, southern and northeastern India, Nepal, Bhutan, southern China, northern Vietnam, northern Laos, and northern Thailand. They are generally plants of the forest floor or on non-limestone rocks. Ten species are known in cultivation (see below).

Liebigia

This is the only entirely Malesian genus to emerge from *Chirita*. It occurs in Sumatra, Java, and Bali and has twelve species according to Olive Hilliard (2004). They are coarse perennial herbs of the forest floor. One species occurs in cultivation, the former *Chirita asperifolia*, now *Liebigia speciosa*. However, given that all species of this genus used to be lumped into *Chirita asperifolia* it might be that there are more species being cultivated than is currently appreciated.



Liebigia speciosa
(*Chirita asperifolia*)

Microchirita

The species in this group have long been known to be closely related and were previously classified as *Chirita* section *Microchirita*. They are mostly rather fleshy short-lived or annual plants found in the Western Ghats of India, the foothills of the Himalayas, through continental Southeast Asia to Borneo, Sumatra, and Java. They are all species of limestone rocks. There are approximately 18 species but the taxonomy of the genus is in need of review. It is likely that there are currently some undescribed species with white flowers and possible that some of the yellow-flowered species are insufficiently distinct as to deserve species' status. Many species in this genus have an unusual crest-like inflorescence that emerges from the leaf petiole with the flowers opening sequentially. Several species are known in cultivation (see below).



Microchirita (Chirita) involucrata



Microchirita (Chirita) lavandulacea



Microchirita (Chirita) elphinstonia

Primulina

This is by far the largest of the genera to emerge from *Chirita* and the one of most interest to growers. *Primulina* is already known to growers through *Primulina tabacum* and this used to be the only species in the genus. It has now been discovered that the species of *Chirita* section *Gibbosaccus* and the species of the genera *Chiritopsis* and *Wentsaiboea* are closely related to *Primulina* and that they should all be recognised within the same genus, thereby enlarging it to over 130 species. Even though it is the largest of the ex-*Chirita* genera, it is not the most widespread being found only in the limestone areas of western and southern China and northern Vietnam. Guangxi province is particularly rich in species with about half of all known species. They are perennial rhizomatous herbs and often have rather leathery leaves and attractive flowers making them ideal for cultivation. Over 20 species are currently known in cultivation (see below).



Primulina (Chirita) species (clockwise from top):
P. linearifolia, *P. tamiana*, *P. sclerophylla*, *P. lutea*, *P. liboensis*

Important literature

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The cultivated species

There are over 40 species of *Chirita* that are currently in cultivation. Many of these species were discussed in THE GLOXINIAN vol. 48, part 2 (1998), in a series of articles on the genus and won't be discussed in any detail again here. Listed below are the cultivated species along with their new names.

<i>Chirita anachoreta</i> = <i>Henckelia anachoreta</i>	<i>Chirita longgangensis</i> = <i>Primulina longgangensis</i>
<i>Chirita asperifolia</i> = <i>Liebigia speciosa</i>	<i>Chirita lutea</i> = <i>Primulina lutea</i>
<i>Chirita balansae</i> = <i>Primulina balansae</i>	<i>Chirita micromusa</i> = <i>Microchirita micromusa</i>
<i>Chirita barbata</i> = <i>Microchirita barbata</i>	<i>Chirita minutimaculata</i> = <i>Primulina minutimaculata</i>
<i>Chirita bogneriana</i> = <i>Primulina bogneriana</i>	<i>Chirita moonii</i> = <i>Henckelia moonii</i>
<i>Chirita brassicoides</i> = <i>Primulina brassicoides</i>	<i>Chirita ophiopogoides</i> = <i>Primulina ophiopogoides</i>
<i>Chirita briggsioides</i> = <i>Henckelia briggsioides</i>	<i>Chirita pteropoda</i> = <i>Primulina pteropoda</i>
<i>Chirita caliginosa</i> = <i>Microchirita caliginosa</i>	<i>Chirita pumila</i> = <i>Henckelia pumila</i>
<i>Chirita dielsii</i> = <i>Henckelia dielsii</i>	<i>Chirita sclerophylla</i> = <i>Primulina sclerophylla</i>
<i>Chirita eburnea</i> = <i>Primulina eburnea</i>	<i>Chirita sericea</i> = <i>Microchirita sericea</i>
<i>Chirita elphinstonia</i> = <i>Microchirita elphinstonia</i>	<i>Chirita sinensis</i> = <i>Primulina dryas</i>
<i>Chirita fimbrisejala</i> = <i>Primulina fimbrisejala</i>	<i>Chirita spadiceiformis</i> = <i>Primulina spadiceiformis</i>
<i>Chirita flavimaculata</i> = <i>Primulina flavimaculata</i>	<i>Chirita speciosa</i> = <i>Henckelia speciosa</i>
<i>Chirita gemella</i> = <i>Primulina gemella</i>	<i>Chirita subrhomboidea</i> = <i>Primulina subrhomboidea</i>
<i>Chirita hamosa</i> = <i>Microchirita hamosa</i>	<i>Chirita tamiana</i> = <i>Primulina tamiana</i>
<i>Chirita heterotricha</i> = <i>Primulina heterotricha</i>	<i>Chirita tribracteata</i> = <i>Primulina tribracteata</i>
<i>Chirita hookeri</i> = <i>Henckelia hookeri</i>	<i>Chirita urticifolia</i> = <i>Henckelia urticifolia</i>
<i>Chirita involucrata</i> = <i>Microchirita involucrata</i>	<i>Chirita viola</i> = <i>Microchirita viola</i>
<i>Chirita lavandulacea</i> = <i>Microchirita lavandulacea</i>	<i>Chirita walkerae</i> = <i>Henckelia walkerae</i>
<i>Chirita liboensis</i> = <i>Primulina liboensis</i>	<i>Chirita wentsaii</i> = <i>Primulina wentsaii</i>
<i>Chirita linearifolia</i> = <i>Primulina linearifolia</i>	<i>Chirita yungfuensis</i> = <i>Primulina yungfuensis</i>
	<i>Chirita zeylanica</i> = <i>Henckelia communis</i>

The Gesneriad Society follows Gesneriaceae nomenclature established on the Smithsonian Institution Taxonomy Reference Website:
<http://botany.si.edu/gesneriaceae/checklist>

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