

THE SUNDEWS

(DROSERA)

“Evil little things they are, with their carnivorous habit. One wonders what crime the past lives of Drosera can have held, that now their race should be compelled to draw so ominous and unpleasant a [career] of murder and fraud. When will Sundews be free of the burden, through some self-sacrificing individual plant who shall starve to death rather than take life, and so redeem his race into happier paths of peace and virtue?”

—REGINALD FARRAR, *Alpine and Bog Plants*, 1908

IF AN INSECT EVER EVOLVED the brains to write a horror novel, the monster in that novel would probably be a sundew.

Sundews are innocent-looking and pretty, their delicate leaves sparkling with the promise of sweet nectar, but the foolish insect curious enough to give a sundew the slightest touch will suddenly find itself caught in a living nightmare. Doomed to a horrible death, the insect may struggle for a blessed few minutes or suffer for untold hours as it tries to break free of ensnaring, suffocating glue, grasping tentacles, and burning acids and enzymes; meanwhile, its precious bodily fluids are slowly sucked dry. Mother Nature hopefully had psychiatric care after she designed the sundews.

The *Drosera* are probably the most diverse genus of carnivorous



Drosera brevifolia

plants in the world. There are somewhere around 130 species found on almost every continent of earth. Sundews can be found in Canada, Alaska, and Siberia. They are denizens of bogs and swamps in much of Europe and North America. They lurk in tropical places such as Brazil and Queensland. And they haunt the southernmost regions of New Zealand and South America.

Sundews can be as tiny as a penny or as large as a small bush. Their tentacle-covered leaves come in a wide and imaginative variety of design: circular leaves, wedge-shaped leaves, leaves that are peltate or linear or as filiform as a thin blade of grass. Their leaves may be strapped-shaped, oval, or forked and branching like a dewy fern or lethal spiderweb.

Their adaptation to diverse climates is also rather inventive. While all sundews need wet, low-nutrient soils to grow, some have adapted to survive hot, dry summers and only grow during the cool winter rains. Others are found in bogs that are frozen much of the year. Still others grow in Mediterranean-like climates where temperatures may drop to near freezing at night and rise dramatically during the day.

A pleasant fact about sundews is that they often enjoy the same hunting grounds as many other carnivorous plants. Visit flytraps and American pitcher plants in North Carolina and you'll no doubt step on sundews in the process. Go to the tepui mountains in Venezuela to photograph the sun pitchers and *Brocchinia* and sundews will probably be in the picture. Sundews grow with *Cephalotus* in Australia, *Darlingtonia* in Oregon, and *Nepenthes* in Borneo. In fact, whenever you find wet, low-nutrient, acidic soils, chances are sundews will be there, the ubiquitous carnivorous plant.

Sundews caught the attention of European naturalists early on. Henry Lyte, an early British botanist, wrote of the peculiar nature of the plants in his "New Herbal" in 1578. Commenting (in Old English) on how the plants appeared to increase their dew the hotter the sun

became, rather than the opposite, he mentions their Latin name to be *ros solis*, “which is to say in English, the Dewe of the Sonne, or Sonnedew.” The word *Drosera* in Greek means “dewy.”

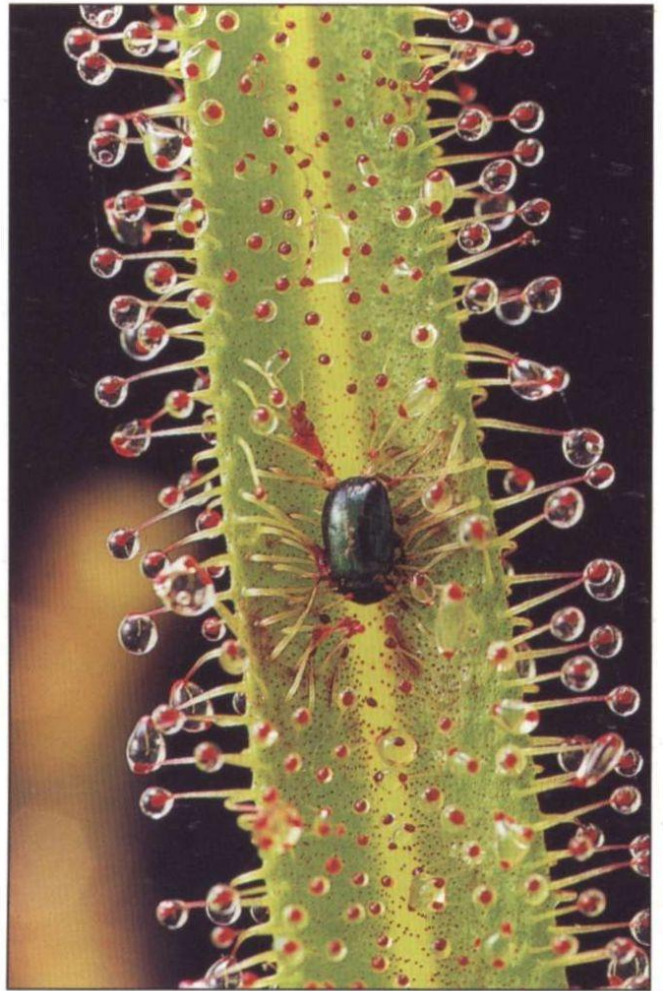
In 1791, Charles Darwin’s grandfather, Erasmus, thought the dew produced by the plants protected them from predators. That same year, William Bartram concluded insects were purposely caught, but for reasons he could not surmise. A German botanist, Dr. W. A. Roth, was the first to notice that the tentacles of sundews actually closed around prey.

But it wasn’t until Charles Darwin himself took up the study of sundews that they were ultimately proven to be carnivorous. Darwin conducted countless experiments on the plants for many years, and published the findings in his 1875 *Insectivorous Plants*. The bulk of the book was on his studies of the common round-leafed sundew, *Drosera rotundifolia*. At one point, Darwin wrote to his botanist friend, Asa Gray, that he cared more about sundews than the origin of all the species of life on earth. He also described them as being like animals in disguise. He found that the plants were more sensitive to taste and touch than any animal species he had studied.

Although the size and shape of *Drosera* leaves greatly vary, their insidious design and function are similar among all the species.

The leaves are generally flat, and their uppermost surface is covered with hundreds of stalked glands, or tentacles. The tentacles are hairlike filaments, at the end of which sits a small, usually reddish, gland. Most of these glands produce a tiny drop of dew, a clear, gluey mucilage that is extremely sticky and viscid. On some species of sundews, the glands on the outer edge of the leaf do not produce glue, and are instead called retentive glands, for reasons we shall see.

A small flying insect may catch sight of the glistening droplets and



There’s no escape for this beetle on a leaf of *Drosera regia*.

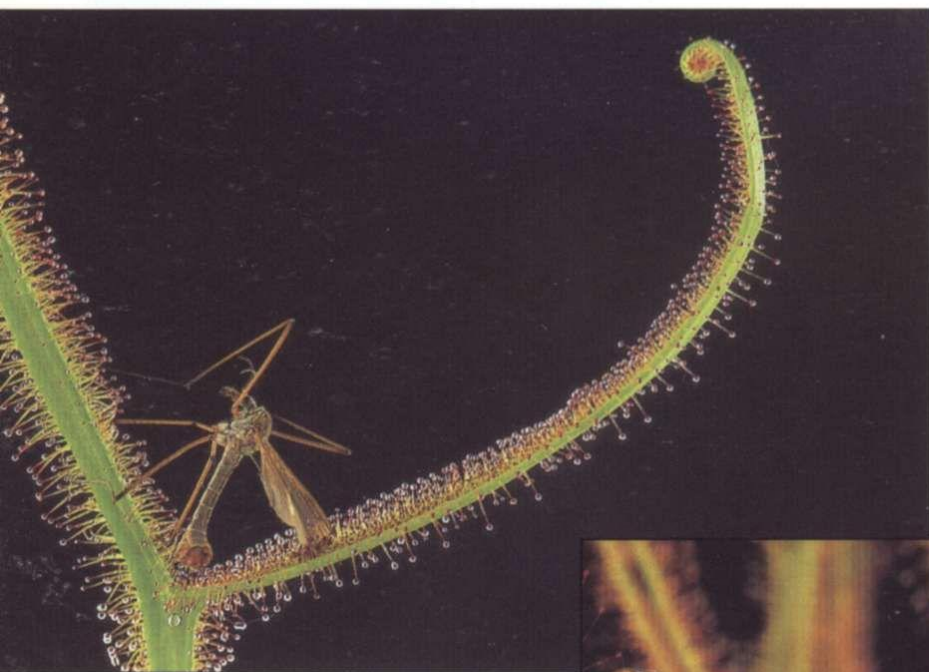
mistake them for a flower's sweet nectar. It alights upon the leaf and immediately panics. The "nectar" is glue, and the insect struggles to free itself. Instead, its legs and wings come into contact with more of the sticky drops, and the more it thrashes the further mired it becomes. It may lose a leg or a wing in the fight, or may pull partly free of one leaf of the sundew only to be caught by the tentacles of another.

Then a second lethal action comes into play. Within moments, some of the tentacles begin to move. If the insect struggles toward the edge of the leaf, the retentive glands along the edge begin to curl inwards, blocking the panicking insect's escape. If the insect happens to have been caught by some outermost glands, those tentacles quickly begin to move, carrying the victim toward the center of the leaf where dozens more glands await it.

Usually the prey of sundews suffocate when the breathing holes along their abdomens are covered in glue. But larger insects, such as crane flies, are sometimes caught by their long, thin legs, their bodies dangling help-

lessly below the leaf. These victims usually die of exhaustion or starvation while the plant feeds on only the body parts it has caught.

Occasionally, larger insects escape—minus a few legs—only to die later. Sometimes they are finished



A crane fly realizes its mistake in landing on a staghorn sundew.

Tentacles have seized the crane fly's abdomen, and digestion begins.



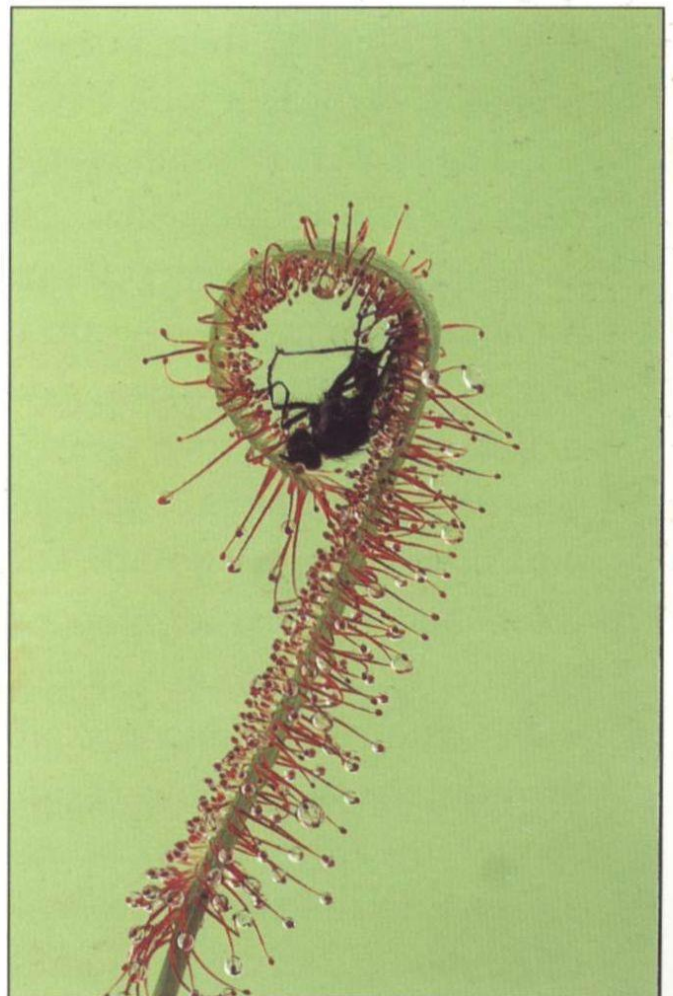
off by spiders, who enjoy spinning webs around sundew plants. Spiders, too, are often caught, usually the consequence of their own greed, as they attempt to snatch a meal rightfully belonging to the sundew that trapped it.

Further movement in some *Drosera* species can be rather dramatic, although this movement typically enhances digestion rather than capture. Many sundews have the capacity to enfold their leaves around their prey. Varieties of sundews with thin, filiform leaves, or leaves that fork or branch, rarely have this ability, and rely strictly on the movement of tentacles for feeding. Others, with circular or strap-shaped leaves, may close around their meal like a clenched fist or jelly roll. Still others, like *Drosera regia*, may tie their leaves into knots around a larger meal.

The reason for this is apparently to get as many glands as possible into contact with their prey. For once an insect is caught, the highly developed glands begin to secrete a complex juice of enzymes and acids that rapidly cover the insect's body. This fluid, at times, can be rather copious and literally drip down the leaf. In a matter of hours or days, the digestive juices liquefy the softer parts of the insect. The glands then begin to reabsorb this nutritious, mineral-laden soup.

The movement of sundew tentacles and leaves is caused by a process similar to that of Venus flytraps, their relative. It is an amazing growth process. Cells along one side of a tentacle will grow and stretch, and the unequal length of the cells cause the tentacle to bend. Exactly how this occurs and how electrical signals notify nearby glands to start moving, even when an insect is some distance away, is still not clearly understood.

The speed at which sundews move is also variable, and differs depending upon factors such as tem-



The movement of cape sundews can be rather dramatic, as seen around this helpless fly.

perature, age of the leaf, species of plant, how much the insect struggles, and its nutrient worth. The tentacles won't react to a pine needle falling upon them, but will slowly begin to move if they're repeatedly teased with a toothpick. If you place a bit of cheese or chocolate upon a leaf, initial movement may be slow but within a day or two the leaf may be curled dramatically and literally drooling digestive juices. Typically, in about twenty minutes a number of tentacles may pin an insect to the center of the leaf, while it may take twenty-four hours for a leaf to completely curl around its prey.

Several sundews have retentive glands that move so rapidly the results are startling. Species such as *Drosera pauciflora*, *D. burmanni*, and *D. scorpiodes* can move 180 degrees within one minute, quickly securing an insect before it knows what has happened.

After digestion, the tentacles usually dry up and return to their normal upright position. The shriveled carcass falls from the leaf, is washed off by rain, or simply remains as what should be a dire warning to future prey. Dew drops reappear, and the leaf is ready for another meal. Sometimes older leaves remain curled up even as the leaf turns brown and dies. During their active growth cycle, most sundews continually replace older leaves with new ones.

The flowers of sundews can be as varied as their leaves, and in some cases are rather spectacular. Almost all *Drosera* flowers are five-petaled, circular, and more or less flat-faced, with the female stigma surrounded by male anthers. As a result, many self-pollinate and produce numerous seed. Others, however, never produce seed because they need cross-pollination, and some varieties in cultivation are almost all of one genetic clone. The predominant petal colors of sundews are whites and pinks, but in some groups, such as pygmy and tuberous sundews, the colors may range from orange to red to yellow to violet. Also, the inflorescence of sundews is very variable, and while most produce tall flower stalks with rows of blooms, others may be clustered or branching. Further, the size of the flowers can be rather dramatic, and in some unusual species, the flowers may be as large or larger than the plant itself.

Due to the wide-ranging growth habits and habitats of sundews, this chapter is arranged somewhat differently than the others. First, I will discuss cultivation techniques in the most general of terms. I will then review the grouping of plants by their characteristics and habitats, including descriptions of representative species and particulars

about their cultivation. This will be followed by information on their propagation.

CULTIVATION

(See Parts One and Two for further details)

Soil recipes Almost all species thrive in a mixture of roughly half peat to half sand. Some will require a sandier mix than others. A few do best in long-fibered sphagnum.

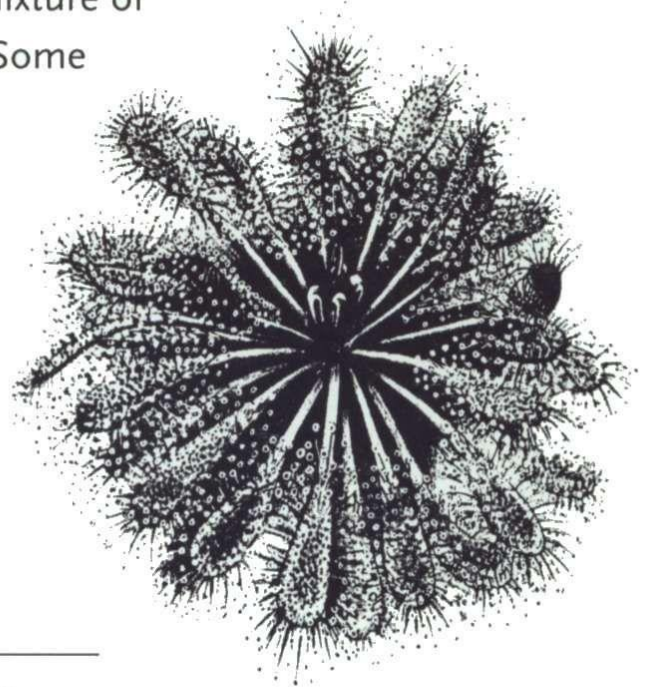
Containers Plastic containers with drainage holes are most suitable. Many species do well in undrained containers of plastic, glass, or glazed ceramic.

Watering Most sundews thrive on the tray method, which keeps the soil permanently wet. A few prefer to be waterlogged. Winter-growing species require periods of complete summer dormancy, at which time the soil has to be dried out.

Light Almost all sundews require sunny to partly sunny conditions. Very few prefer full shade.

Climate As sundews grow worldwide, they come from varied climates: cold-temperate, temperate, warm-temperate, subtropical, tropical, and Mediterranean. Their preferred climates will be indicated under the species descriptions beginning on page 128.

Dormancy Many sundews grow year round with no dormancy requirements. Others require cold winter dormancy or dry summer dormancy.



Drosera intermedia x brevifolia

Feeding	Sundews readily accept gnats, fruit flies, or small ants.
	Larger sundews will feed on houseflies, spiders, moths, etc.
	Strong insects such as crickets are generally unsuitable.
	Dried insects and pinhead-sized bits of hard-boiled egg,
	cheese, chocolate, and powdered milk are also accepted.
Fertilizers	Not necessary if the plants catch many insects, but most
	species benefit from monthly foliar-feeding with an acid or
	epiphytic fertilizer diluted to about a quarter of its normal
	strength. Never apply fertilizer to <i>Drosera schizandra</i> ,
	<i>D. prolifera</i> , or <i>D. adela</i> .
Greenhouses	Different greenhouse types will suit different types of
	sundews. Almost all thrive in warm houses and cool
	houses, where perhaps 80 percent of all <i>Drosera</i> species
	will be happy.
Terrariums / Grow-lights	Most sundews thrive in well-lighted tanks, but due to their
	preference for sun, they may need to be placed within
	inches of fluorescent bulbs. The closer to the lights, the
	more colorful and robust the plants will be.
Windowsills	Many sundews, such as cape sundews and rosetted sub-
	tropical species, thrive on sunny and humid windowsills.
	Your house's conditions will best determine suitable
	varieties. Surprisingly, even spectacular giants such as
	<i>Drosera regia</i> and <i>D. multifida</i> can be happy on windowsills
	if provided with cool, humid air and morning sunlight.
Outdoors	Sundews thrive outdoors in climates similar to their native
	habitats. The widest variety can be grown outdoors in
	warm-temperate, subtropical, and Mediterranean-like
	climates.
Bog gardens	Many sundews are ideal for bog gardens. Choose those
	suitable for your climate. Avoid most species requiring a
	dry summer dormancy.
Transplanting	Sundews can be happy in a container for many years. They
	are best transplanted when in a dormant state or in early
	seasonal growth.

Pests and diseases

Aphids are the primary pest. Wettable powder insecticides are safest. Flea collars in small enclosures work well. Some sundews can be attacked by fungus during winterlike conditions of low light and cool, dank temperatures. Apply fungicide. Never use soap-based insecticides on sundews.

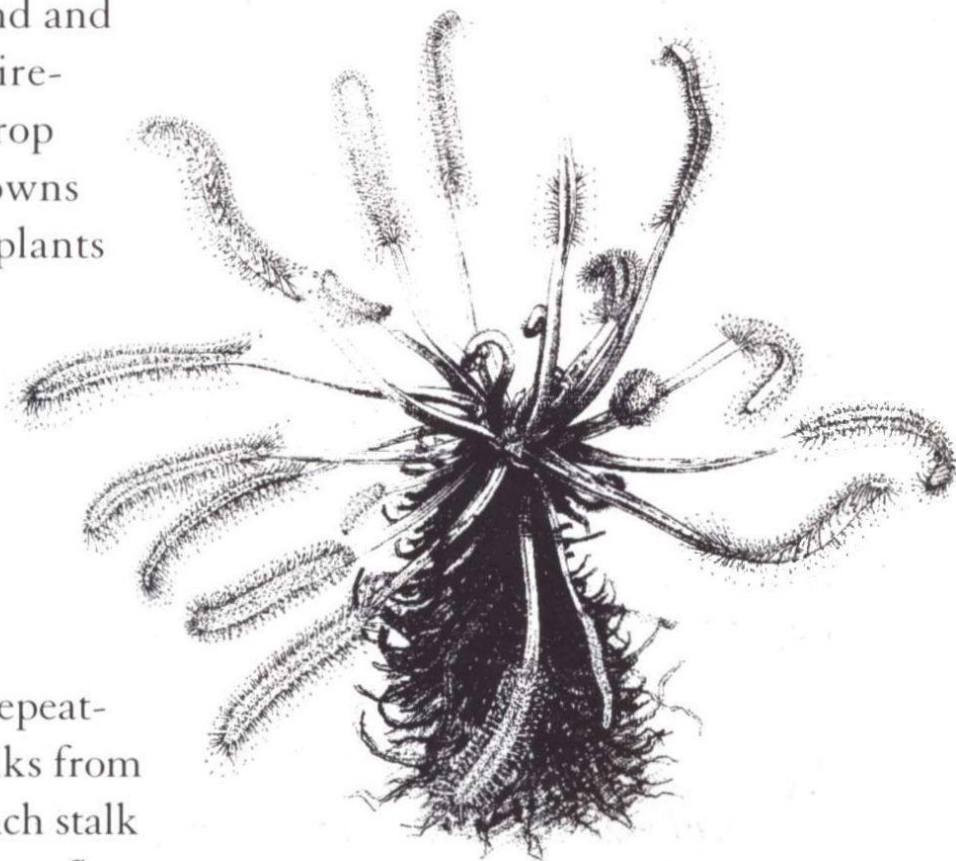
CAPE SUNDEWS

From the cape of South Africa comes this marvelous sundew, a variable species that offers everything the plant lover could wish for. Cape sundews are large and handsome plants that are very easy to grow. They produce scores of showy flowers on tall stems and are so simple to propagate they often become a weed in collections. Their leaves move rather dramatically, and they are tolerant of a wide range of growing conditions. These are by far the most entertaining and popular of the *Drosera*, and a perfect beginner's plant.

Cape sundews grow best in a temperature range of forty to eighty degrees. They are very tolerant of extremes from freezing to a hundred degrees, but only for brief periods.

The plants grow year round and have no dormancy requirements. If temperatures drop below freezing, the crowns will die away but the plants return from their roots and stems when conditions improve. Roots have been known to survive brief temperature drops to fifteen degrees.

Cape sundews will repeatedly send up tall flower stalks from spring through autumn. Each stalk can hold up to several dozen flowers, one bloom opening every day or so. The



Drosera capensis, a stem-forming variety



Cape Sundews (from left to right): *D. capensis* "Typical," "Alba," "Red" and "Narrow" form

flowers, up to three-quarters of an inch in diameter, usually self-pollinate and can produce copious quantities of seed that will readily germinate on any damp, peaty soil. The plants are also easy to reproduce via leaf and root cuttings. Continuous flowering can have an exhausting effect on the plants, resulting in smaller crowns by late summer, but the plants recuperate fully

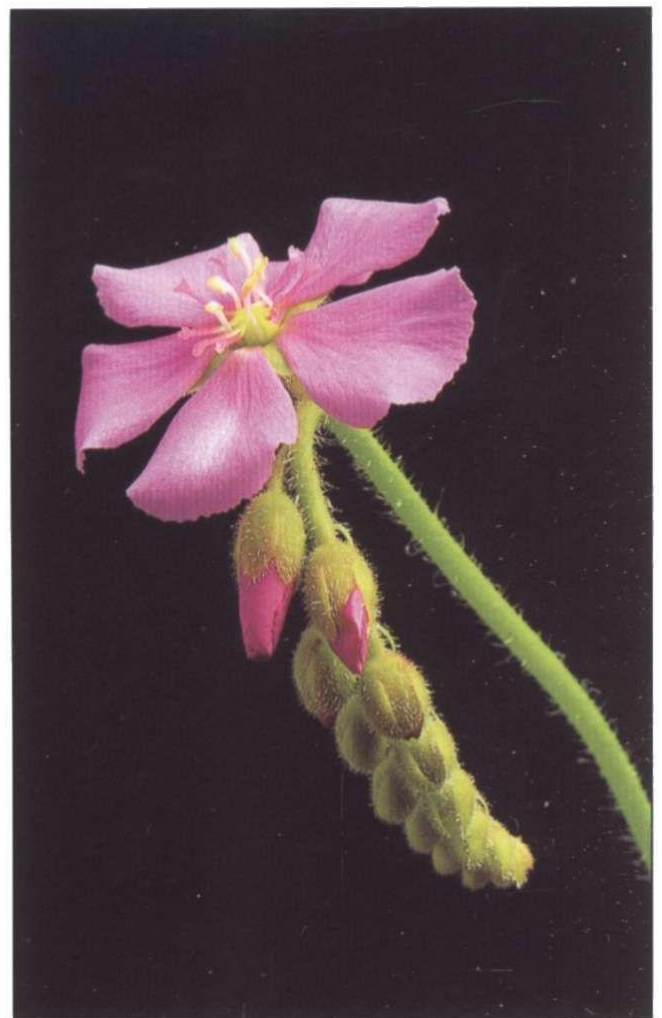
when blooming stops. For larger crowns, remove the scape as it develops; this will also prevent rampant seedling growth.

Cape sundews thrive in cold houses, cool houses, and warm houses; terrariums under grow-lights; sunny and humid windowsills; and outdoors as potted plants or in bog gardens in warm-temperate, subtropical, and Mediterranean-like climates.

***Drosera capensis* "Typical"**

This variety is also known as "stem-forming" and "wide-leafed". The plant gradually forms scrambling stems several inches long with a cluster of leaves at the apex. The green leaves are strapped-shaped at the end of wide, lengthy petioles, and are covered with bright red tentacles. Individual leaves are three to six inches long or larger, resulting in crowns that can reach over a foot across.

This form can be pruned back by cutting off the crown of leaves in late winter or spring. Shoots will develop from the remaining stem, eventually producing large, multiheaded, bushy plants.



The flower of *Drosera capensis*

The flowers are bright pink on stalks one to two feet tall, and produce enormous quantities of seed.

***Drosera capensis* "Narrow"**

Similar to the above in almost all respects, except that tall stems are rarely produced, resulting in neater, more compact plants. The leaves and petioles are rather narrow, about a quarter inch in diameter.

***Drosera capensis* "Alba"**

This very pretty form is similar to the narrow-leafed variety, except that the flowers are white and the tentacles transparent with pale pink glands, giving the plants a ghostly appearance. Stems may gradually form over time.

***Drosera capensis* "Red"**

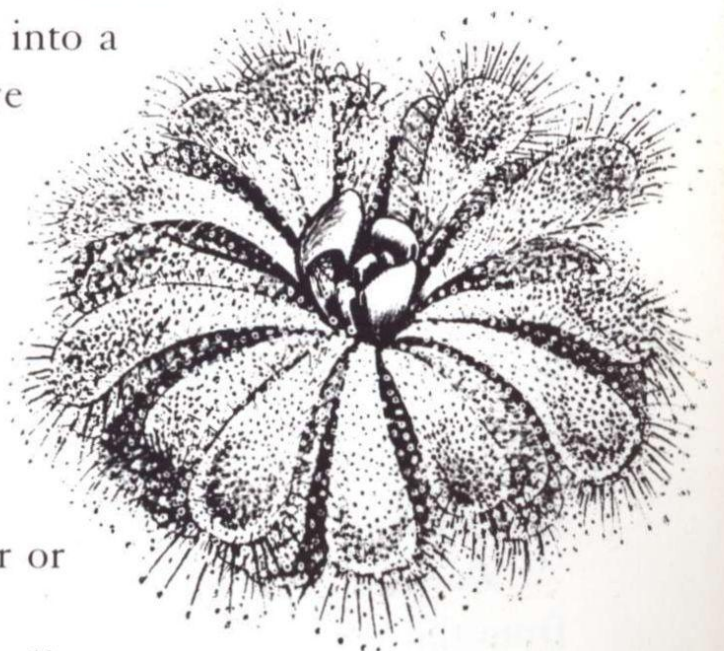
This stunning variety is entirely reddish maroon in color, with deep pink flowers. In all other respects, it is similar to the narrow-leafed form. This variety requires lots of sun or very high light levels to maintain its rich coloration, which may fade in winter or when the plants are grown too far from grow-lights.

ROSETTED SUBTROPICAL SUNDEWS

Many sundews from various parts of the world fall into this category, which for the sake of convenience I will call "subtropical," although they can also be found in warm-temperate, Mediterranean-like, and tropical climates.

The basic form of most of these *Drosera* are low-growing plants with leaves that fan out into a rosette-like pattern. They typically have leaves that are pressed flat to the ground, although some may hold their foliage in a more upright fashion, or even form a short stem, with old, dead leaves forming a skirt around their base. Usually these rosetted species average one to three inches in diameter, although a few may be smaller or larger.

Rosetted subtropical sundews are all pretty plants, while a few are spectacular.



The Alice Sundew, *Drosera aliciae*

They are usually as easy to grow as cape sundews, and many will also spread like weeds from ample seed production. A few are short-lived perennials, meaning that older rosettes die off after a couple of years and the plant reproduces by seed. Almost all can easily be propagated by leaf cuttings. Some have thick roots also useful for propagation.

With a very few exceptions, this class of *Drosera* grows throughout the year without any dormancy requirements. While most grow in frost-free climates, many are tolerant of brief freezes into the twenties. The rosettes will die during these light frosts, but usually new plants come up from the thick, protected roots. For best results, grow them in frost-free environments.

Rosetted sundews produce flower stalks throughout much of the warmer months of the year. The stalks may be a few inches tall, but in some plants may rise to one or two feet, quite tall for such small plants. In some, a scape of flowers open, one at a time, over several weeks. Typically, these flowers are small, barely a quarter inch across, but in some can be quite showy and large. A few exceptional species have very large blooms almost as big as the plant itself. While many self-pollinate and produce seed, others never do and must be propagated from leaves or roots. Invariably, the flowers of rosetted subtropicals are colored pinks or whites.

As a group, these sundews perform extremely well in cool and warm greenhouses. Many are exceptional plants for a humid and sunny windowsill. They are also great for the terrarium under grow-lights, but for best results should be no more than several inches from fluorescent bulbs. They are great outdoor plants if you live in an almost frost-free climate.

Some of these species look so similar to each other that even long-time growers have difficulty telling them apart. Also, new varieties are still being found in countries such as South Africa, and these plants may be circulated under nicknames for many years. For many growers, pedigree is not quite as important as simply having a handsome rosetted sundew to look at!

Drosera aliciae

Possibly the most popular rosetted species, the Alice sundew comes from the Cape Province of South Africa. The handsome rosettes are up to three inches across, producing a mound of pale green, wedge-shaped leaves with crimson tentacles. The leaves curl dramatically around larger

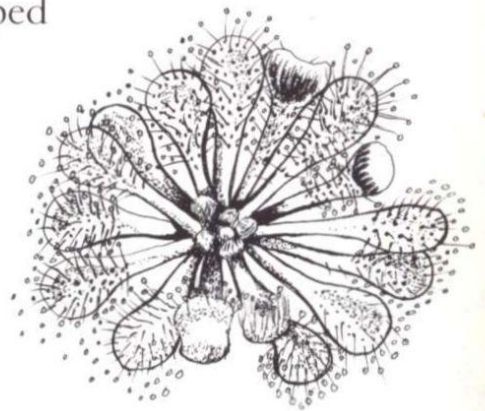
prey. The substantial flowers are deep pink, around a half inch in diameter, and on stalks over a foot high. This species often produces offshoots from its roots, eventually producing attractive clumps of plants. It also returns well from light frosts. Easily propagated from abundant seed, or leaf and root cuttings.



One of the most popular rosetted sundews, *Drosera aliciae*

Drosera spatulata

This widespread and variable species is found from southern Japan to Australia and New Zealand. Many forms are grown, which are usually known by their location. The rosettes are flat, with spoon- to wedge-shaped leaves typically one to two inches across. In good light the entire plant can be flushed red. The small flowers are pink or white, and usually self-seed. The “Kansai” form from Japan is most popular, with spoon-shaped leaves and pink flowers. “Kanto,” also from Japan, is very attractive with narrow, wedge-shaped leaves. “Hong Kong” forms have rosettes about one inch across, with pink or white blooms. The form from the eastern coast of Australia is virtually indistinguishable from “Kansai,” but may have either white or deep pink flowers. New Zealand forms also have small rosettes with leaves that are almost circular.



D. spatulata “Kansai”

Drosera capillaris

The pink sundew is very common in the southeastern United States from Virginia to Florida to Texas. Forms are also known from Central and South America. The rosettes are usually one to two inches across with almost circular to sometimes spoon-shaped leaves, often reddish in color. Flowers are usually pink. An “alba” form is all green with white flowers. This species usually performs as an annual or short-lived perennial, returning from seed after hard frosts. It is very commonly seen growing with other carnivores in the southeast, such as *Sarracenia*, *Dionaea*, and *Pinguicula*.

Drosera brevifolia

Uncommon in collections, this tiny sundew has a range similar to *Drosera capillaris*. It looks like a miniature *Drosera spatulata* "Kanto," with bright red, wedge-shaped leaves. The whole plant is barely one-half inch across, and very pretty in dense colonies. Short lived, the plants often die away in winter, returning from seed.

A story I've enjoyed is how this diminutive sundew has sometimes been found growing in the damp cracks of sidewalks in Houston, Texas during the wetter parts of the year!

Drosera slackii

This magnificent *Drosera* was discovered in the early 1980s in the coastal mountains of the cape of South Africa and named for Adrian Slack,



One of the finest of recent discoveries, *Drosera slackii*. Discovered by Frank Woodvine, it was named by Martin Cheek after Adrian Slack, who introduced it into cultivation.

who introduced it to cultivation. The beautiful rosettes can be large, from two to four inches across, and can form a short stem draped in dead leaves. Deep crimson in color, the leaf blades are almost circular with broad petioles, and they move dramatically over prey. The flowers are more than one inch in diameter, a deep pinkish violet, but rarely produce seed. However, it is easily propagated from roots and leaves, and is slowly clump forming. Although

they will grow in peat, I find it is easier to establish the plants in long-fibered sphagnum. They can do very well on windowsills.

Drosera cuneifolia

Another handsome South African sundew that, with its wide petioles, reminds me of *Drosera slackii*. But the leaf blade is even wider and with rounded corners. The leaves are bright green with pink tentacles.

Drosera dielsiana

A small sundew from South Africa, this plant was named after Diels, who wrote the first monograph on sundews early in the twentieth century. The roundish leaf blades have a fairly wide petiole, and the flowers are pink.

Drosera montana

The “Mountain Sundew” comes from South America. For many years, plants were grown under this name that actually appear to be a form of *Drosera spatulata*. *Drosera montana* is variable but usually has wedge-shaped, reddish leaves with blunt ends.

Drosera hamiltonii

This peculiar sundew grows with *Cephalotus* in southwestern Australia. The flat rosettes have pale, olive brown leaves that are shaped like rounded paddles and sparsely covered in red tentacles. Although it flowers infrequently, the blooms are purplish and over one and a half inches across, almost as large as the rosette itself. The flowers put on quite a show, but do not seed; the plant propagates from its roots and leaves.

Drosera collinsiae

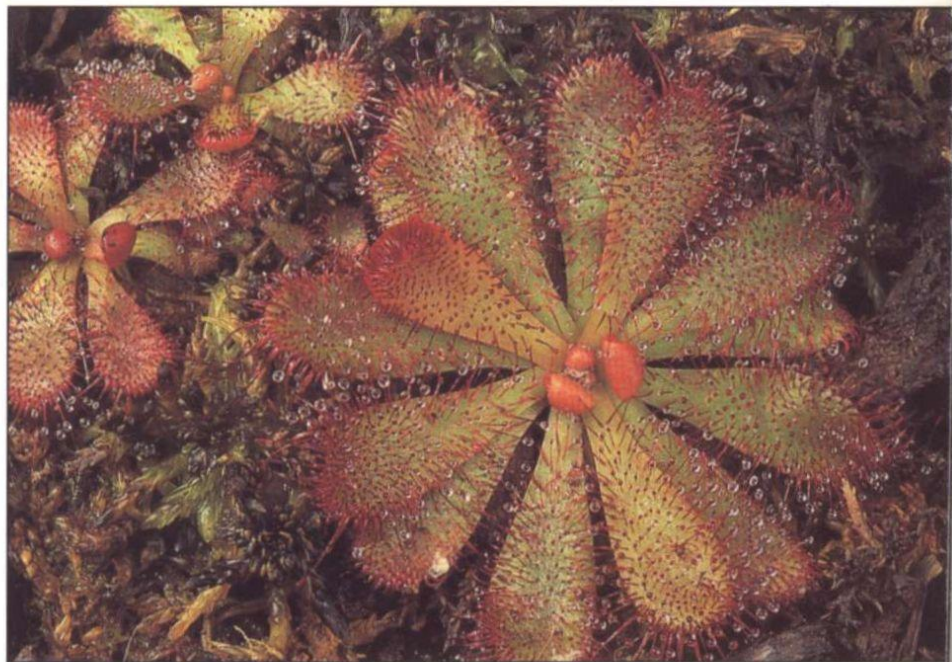
A very pretty sundew, this South African species has upright, spoon-shaped leaves on long, thin petioles. The leaves are bright green with red tentacles. This species has a brief winter dormancy and the pink flowers usually self-seed.

Drosera burmanni

This curious species is a tropical annual that grows in northern Australia and Southeast Asia. It lives only for a few months during the warm rainy season, seeds prolifically, then dies off when the soil dries out, returning from seed when the rains return. In cultivation, it is easy to grow during any stretch of warm weather. The plants are about one inch across, with deeply dished, wedge-shaped leaves, usually green or pinkish, and small white flowers. After flowering, the plant dies, so be sure to collect the tiny seed. The seed will also tolerate a light frost. Most amazing are the long retentive glands, which can close around prey in less than one minute.

Drosera villosa

This South American species is variable, but typically has attractive rosettes two to five inches across with arching, strapped-shaped,



Drosera hamiltonii



Rosetted Sundews (clockwise from top corner): *Drosera venusta*, *D. hamiltonii*, *D. capillaris* "Alba," *D. spatulata* "Kansai," *D. cuneifolia*, *D. intermedia* x *brevifolia*, *D. spatulata* "Kanto," *D. intermedia* "Cuba." *D. aliciae* in the center.

hairy leaves, often reddish in color. I have never been able to maintain this plant through winters in my greenhouse, and suspect it may do better in more tropical conditions.

Drosera intermedia* x *brevifolia

Hybrids are rare among sundews, but a colony of this plant was discovered in the 1980s in North Carolina. A very attractive plant, the leaves are golden bronze and shaped like elongated spoons. It does not go dormant, as does its parent, *Drosera intermedia*. Propagate by leaf cuttings.

Drosera* x *henryana

A hybrid between *Drosera capensis* and *D. aliciae*, this good-looking plant has upright, strapped-shaped leaves. However, I have never been able to maintain them for more than a year, which is puzzling since the parents are both easy.

Drosera roraimae

From Venezuela, this species is often found growing with *Heliamphora* and *Brocchinia*. A reddish sundew with spoon-shaped leaves, it is notable for its tall stems, usually cloaked with dead leaves.

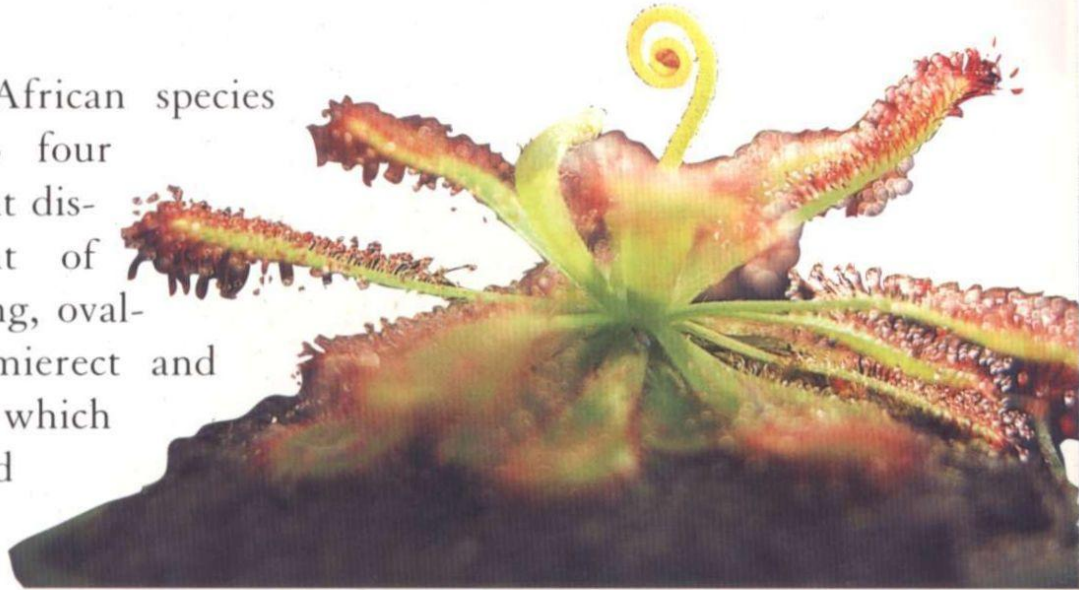
Drosera glabripes

From South Africa, this sundew can form long, scrambling stems, with

the rosette of green, spoon-shaped leaves at the apex. The rosette averages three inches across. I have found it difficult to maintain long-term.

Drosera venusta

A robust South African species with rosettes two to four inches across, this recent discovery is reminiscent of *Drosera aliciae*. The long, oval-shaped leaves are semierect and golden green in color, which sets off the bright red tentacles rather well. The flowers are pink on tall wiry stems.



A flower stalk emerges from *Drosera venusta*

TEMPERATE SUNDEWS

Sundews that grow in climates that experience various amounts of cold weather in winter survive frost and snow by dying down to buds called hibernacula (from the word “hibernate”). Some of these species have wide natural ranges and their length of dormancy and cold tolerance is based on where the plant or seed originated. You should therefore pay attention to location data, if available, when considering which forms of these species you wish to grow.

For example, one species, *Drosera intermedia*, is actually pan-climatic, growing from Canada south all the way into South America. Plants originating from Wisconsin are cold-temperate, may experience a dormancy lasting six or seven months, and can survive temperatures well below zero degrees. Representatives of *D. intermedia* from Louisiana would be considered warm-temperate, being dormant perhaps three to four months and surviving only light frost and brief freezes. *D. intermedia* from Cuba are tropical, having no dormancy and an inability to withstand freezing temperatures.

Most of these species are easy to grow if you allow them the dormancy they require. If you live in a warmer climate, you can always remove the hibernaculum once the plant dies down, and refrigerate it over winter in an air-tight plastic bag with a few strands of damp sphagnum moss. When dormant, these plants usually lose their roots as

well as leaves, and this is the best time to transplant them. They are easy to propagate from leaf cuttings and seed. Most do best outdoors, or in cold and cool greenhouses.

Drosera rotundifolia

This is the plant made famous by Charles Darwin's tireless and hideous experiments upon it. The round-leafed sundew is a common inhabitant of almost every sphagnum bog found in the northern latitudes. Its range is from Alaska through much of North America as well as

Europe and Asia. The rosettes average three inches in diameter, with dished oval leaves at the end of long, thin petioles. The flowers are white. Specimens from Northern California, Oregon, and the New Jersey pine barrens can have rosettes up to five inches across with dime-sized leaves. In cultivation, the species grows best in long-fibered sphagnum.

Drosera anglica

The "English Sundew" grows in bog habitats in Japan, North America, (including Alaska), and Europe. Similar to *Drosera rotundifolia* and often growing side by side with it, *D. anglica* has long, paddle-shaped leaves held more upright. An unusual colony is found in Hawaii on the island of Kauai. These plants are tropical, smaller in stature, and do not go dormant, making them ideal for terrariums.



Left to right: *Drosera anglica*, *D. rotundifolia*, and *D. linearis*, which was once called *D. longifolia*

Strangely enough, evidence suggests *Drosera anglica* is a fertile hybrid between *Drosera rotundifolia* and *Drosera linearis* (below). The mystery is why *Drosera anglica* is so widespread while *Drosera linearis* is presently restricted in its range.

Drosera x obovata

The natural hybrid between *Drosera rotundifolia* and *D. anglica* can be

rather robust and handsome, looking intermediary between the two. Sterile, it must be propagated by leaf cuttings.

Drosera intermedia

The temperate forms of this beautiful sundew are found in Europe, eastern Canada, and the United States. The tropical forms that do not go dormant occur from central Florida south into the West Indies and South America. The temperate forms of this species most often grow semiaquatically around lakes in pure peat covered in a few inches of water. The plants will form stems several inches high with small, spoon-shaped leaves on narrow petioles with white flowers. The whole plant is often a lovely maroon color. Tropical forms, such as those from Cuba, have smaller compact rosettes perfect for the terrarium. Very large forms are often found in New Jersey, the Carolinas, and the Gulf states. I like to grow these in undrained bowls of waterlogged peat moss. Propagate from seed or leaf cuttings.

Drosera x beleziana

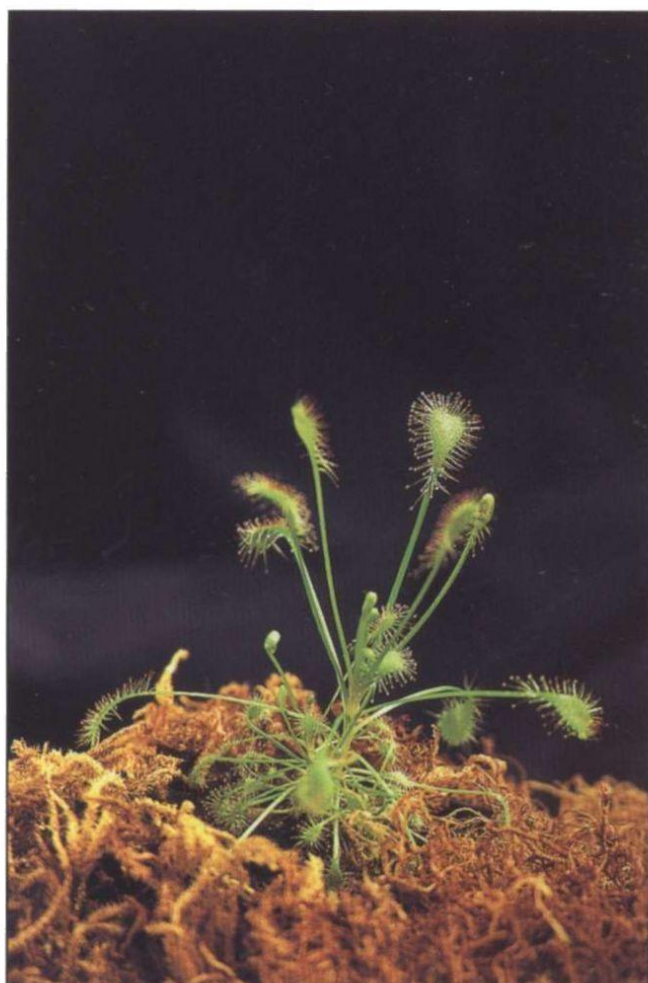
The natural hybrid between *Drosera rotundifolia* and *D. intermedia* is another vigorous plant with large, upright, spoon-shaped leaves. Sterile, it must be propagated by leaf cuttings.

Drosera linearis

This strange sundew grows primarily in alkaline marl bogs around the Great Lakes area, often with *Sarracenia purpurea*. It has three- to four-inch linear leaves on long, upright petioles, and white flowers. Difficult to grow without a sustained, frozen winter, I have had limited success using a medium of one part sand to one part vermiculite, refrigerating the plants for a full six or seven months dormancy. Folks in cold winter climates would probably find it easier to grow outdoors. The plants reportedly can adjust to acidic peat soils.

Drosera filiformis

This very unusual and pretty sundew from North America is also controversial, for there is confusion about



Drosera x beleziana

its status in taxonomy. Is it one species with two forms, or two species, or two subspecies? Here I will follow the latter interpretation.

Thread-leaved sundews make nice additions to bog gardens, and the larger forms look beautiful in hanging pots in a greenhouse. Their dormant buds are large, blackish, and hairy. They can be propagated by seed or leaf cuttings, with the exception of the cultivar 'California Sunset', noted below. They also gradually form large clumps that can be divided.

Drosera filiformis* ssp. *filiformis

This is found in scattered locations from New England to North Carolina, with one peculiar colony, sometimes called "Florida giant", in northern Florida. In its typical habitat, such as the New Jersey pine barrens where it is most common, the plants have long, thin, threadlike leaves from six to ten inches tall, covered in red tentacles. The flowers are pink and almost one inch across. The "Florida giant" form has leaves twice as tall. Very recently a colony in Florida was discovered with solid maroon leaves.

Drosera filiformis* ssp. *tracyi

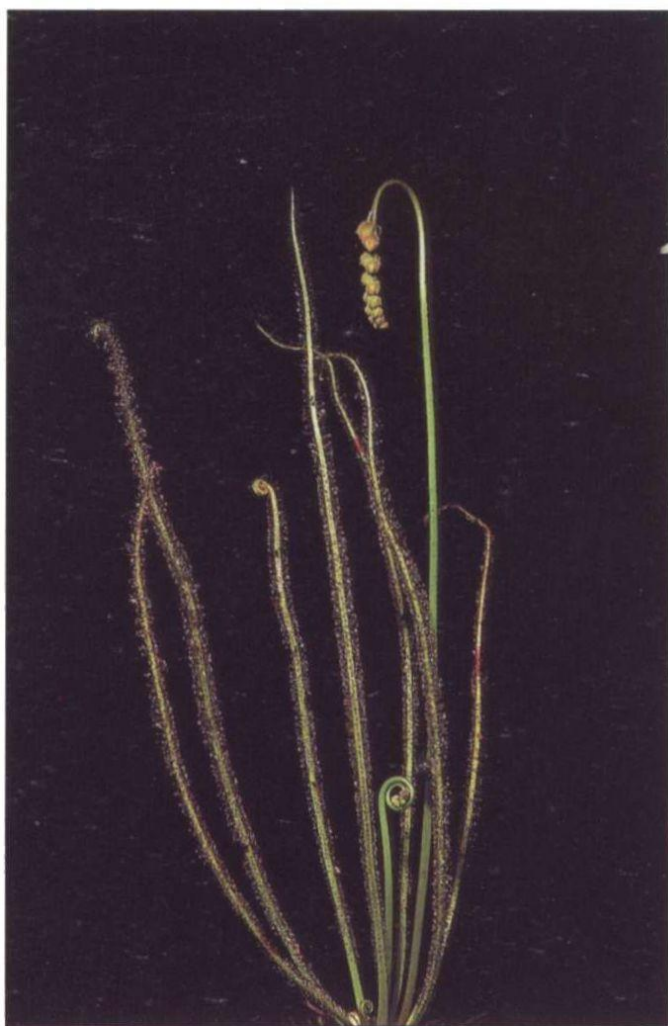
This plant is found along the Gulf states, and is very similar to the above except the tentacles are green and the leaves reach twenty inches in length. A large, showy, warm-temperate sundew.

***Drosera filiformis* x 'California Sunset'**

This is a beautiful hybrid between the two subspecies produced by Joe Mazrimas and published in 1981. Vigorous and clump forming, it resembles both ssp. *tracyi* with reddish glands and ssp. *filiformis* "Florida giant." Since *Drosera* x 'California Sunset' is a cultivar, it should only be reproduced through leaf cuttings and the seed should be destroyed.

Drosera* x *hybrida

This rare sundew is a hybrid between *Drosera intermedia* and *Drosera filiformis* ssp. *filiformis*. Found occasionally in the New Jersey pine barrens, it is sterile and can be reproduced



Drosera filiformis ssp. *filiformis* "Florida giant"

through leaf cuttings. Clump forming, it produces narrow, tapered thin leaves a few inches long on short, upright petioles. It needs a few months of fairly cold winter weather, or the dormant buds may rot.

Drosera arcturi

This rare cold-temperate species grows in alpine regions of New Zealand and Australia, where its mountain habitat is often snow covered in winter. The plants prefer sphagnum moss, and they die down to their roots rather than form hibernacula. The peculiar, strapped-shaped leaves are three to four inches long and an odd purplish brown color. My own attempt with this plant failed, as my winters are too warm to sustain its dormancy.



The flower of *Drosera filiformis* x 'California Sunset'.

The plants prefer sphagnum moss, and they die down to their roots rather than form hibernacula. The peculiar, strapped-shaped leaves are three to four inches long and an odd purplish brown color. My own attempt with this plant failed, as my winters are too warm to sustain its dormancy.

THE FORK-LEAFED SUNDEWS

This group of sundews is restricted to the east coast of Australia, with one species found also in New Zealand. Usually referred to as varieties of one species, *Drosera binata*, their taxonomy is still doubtful. Current research will hopefully clarify the matter, and thus the names of some forms may change. Most of the names have been used for convenience, and have no legitimate value.

Forked sundews are all magnificent and showy species. They grow from tropical to warm-temperate climates, in wet swamps and on dripping cliffs that may experience frost in winter.

The plants have thick black roots, from which long petioles arise. The leaves themselves branch into two or many points, depending on the species. Often, the branching, tentacle-covered leaves resemble large, ferny spider webs. The flowers also are large, usually white but sometimes pink, in clusters on tall stems. As they rarely produce seed in cultivation (they need to be crossed with other clones and most plants in cultivation originated from single individuals), growers usually remove them due to their exhausting effect on the plant.

Forked sundews have been popular plants since Victorian times.

The larger forms look best in large, hanging pots that are watered daily, or in pots that sit in hanging bowls of water. They also do well on the tray system, but the drooping leaves of most forms will have their beauty masked. Forked sundews succeed quite well planted in undrained containers too, such as oversized brandy snifters or tall flower vases, which give ample room for their leaves to hang luxuriously.

In suitable climates, they are unbeatable for the bog garden, but avoid windy areas. They make attractive flycatchers for very sunny porches and patios. Most are too large for the average terrarium, but can succeed if dormancy is respected and the light levels are high enough. Sometimes they do well on windowsills—but only with several hours of sun and in humid conditions. In cool and warm greenhouses, they are unsurpassed.

These *Drosera* do equally well in peat and sand mixes or long-fibered sphagnum. They are easy to propagate from root and leaf cuttings. Young plants, and the first leaves of the season on older ones, usually fork once, such as *Drosera binata*, but will rapidly attain their full form in time.

Drosera binata

Considered by many to be the ancestor of all forked sundews, this species is actually uncommon in its native Australian swamps. It is also found in New Zealand. More upright and compact than its sisters, *Drosera binata* has leaves up to a foot tall that fork once. Often called “T-form,” the leaves are actually Y-shaped, and are green with intensely red tentacles or entirely red. The plant spreads into massive clumps. Dormant in winter, it is tolerant of brief freezes to fifteen degrees, but if the roots freeze completely, you may lose the plant. The flowers are white.

***Drosera dichotoma* “Giant”**

A personal favorite of mine, this is one of the most massive of *Drosera*. The leaves are olive to bronzy yellow, with nearly transparent tentacles and pink glands. The wiry petioles can be a foot in length, and the leaves branch from four to



Drosera binata in an undrained, glazed ceramic pot

twelve points, sometimes two feet in diameter. (Visitors to my nursery have involuntarily screamed when they've accidentally backed into my four-foot-diameter specimens!) A superb flycatcher, this species has a brief winter dormancy and is as cold-tolerant as *Drosera binata*. Outdoors in full sun, the leaves are colorful, smaller, and held erect. The flowers are white and best removed. The larger the pot, the more massive the plants become.



Drosera dichotoma "Giant"

***Drosera dichotoma* "T-form"**

A smaller, handsome version of the above, the leaves on this form fork only once.

***Drosera dichotoma* "Small Red Form"**

This plant has yet to be truly identified, but is more similar to the *multifida* varieties below than to *dichotoma*. It is a low-growing species, with fine, branching leaves up to a foot across, deep red in color. A striking difference in this forked sundew is that mature plants set seed after flowering, and then go dormant in late summer, while the viable seed sprout everywhere and can spread like a weedy cape sundew. The mother plants return the following year.

Drosera multifida

More tropical in nature, this large sundew can survive light frost but is best kept warmer, as it will not go dormant. The large, olive-colored, drooping leaves branch a dozen or more times and have crimson tentacles. A pink-flowered variety has a brief dormancy.



The flowers of *Drosera multifida*.

***Drosera multifida* "Extrema"**

Perhaps the most beautiful of the forked *Drosera*, this form was found on Stradbroke Island off southern Queensland, where it may now be extinct due to mining activity. A lovely plant with pendulous leaves over a foot long, they branch enormously, forming globose webs with forty to seventy points! In strong light the whole plant is a rich maroon color. The white flowers are best removed. Keep over forty degrees to avoid dormancy. The plants will return from brief, hard freezes.



A branching leaf of *Drosera multifida* "Extrema" acts like a spider web to catch its prey.

***Drosera* x**

'Marston Dragon'

Adrian Slack created this attractive, large hybrid between *Drosera dichotoma* "Giant" and *Drosera multifida* "Extrema". The leaves are unusual in that the forked tendrils are hooked, reminding Slack of the taloned feet of a Chinese dragon. The leaves are dark green with red tentacles, and fork to eight or so points. No dormancy required.

SOME TROPICAL SUNDEWS

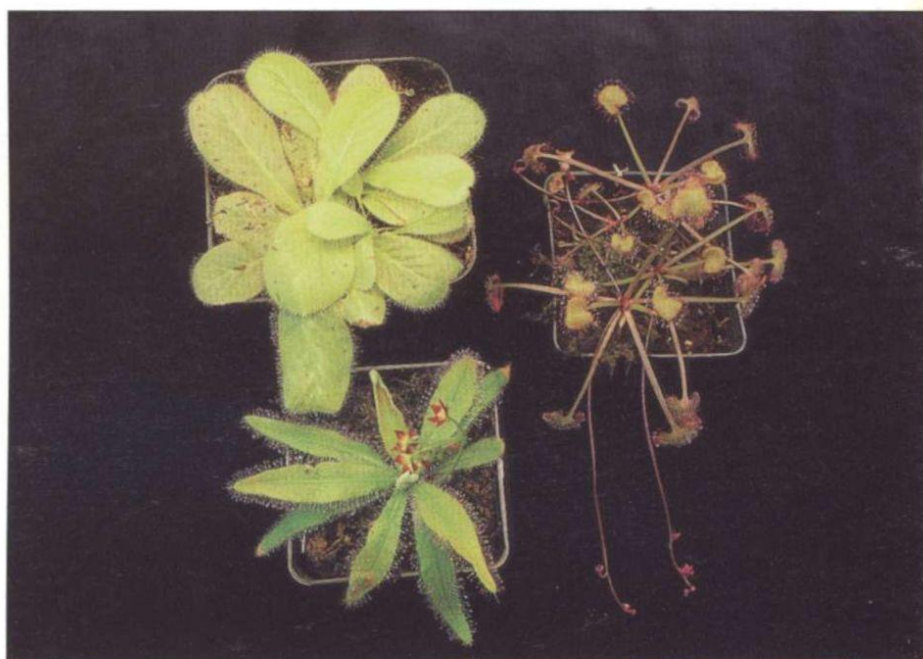
Sundews from truly tropical places are not as common as one might think, in spite of their exotic appearance. I have already discussed some of these in the previous sections. Many forms of *Drosera spatulata* come from tropical climates, as do *Drosera burmanni*, *D. villosa*, *D. anglica* "Hawaii", *D. multifida* "Extrema", and forms of *Drosera intermedia*. But even some of these sundews are also tolerant of occasional chilly temperatures or even frost, and *Drosera burmanni*, an annual, can be grown as a summer plant in temperate climates.

Here I will discuss *Drosera* that are best grown warmer year round. Some of these, too, may tolerate chillier temperatures, and as growers experiment with them we may learn more of their tolerance extremes. But suffice it to say, the following sundews generally do best when tem-

peratures remain above fifty to sixty degrees, as in a terrarium under grow-lights or in warm and hot greenhouses.

Three Sisters from Queensland

I call these “the three sisters” because not only are they related, but they also grow in similar conditions: humid, shaded, tropical rain forest with little temperature extremes. All come from Queensland, Australia, usually along the damp, mossy edges of slow-moving streams. Although rare in nature, they are very popular in cultivation, not only for their unusual appearance but because they are ideal for the potted terrarium under grow-lights. They despise strong, direct sunlight. They prefer being grown in long-fibered sphagnum. They are easy to propagate from leaf and root cuttings, rarely producing seed. They are happiest with high humidity and a temperature range of fifty-five to eighty degrees. These three sundews also do well on sunless, north-facing windows if placed under a bell jar or in a small tank. Warning: Fertilizer will fry the leaves of these plants and must never be applied.



Three sisters from Queensland. Clockwise from upper left: *Drosera schizandra*, *D. prolifera*, and *D. adelae*

Drosera schizandra

Commonly called the notched sundew, this odd plant produces a flat rosette of leaves that are broad and nearly oval. But as it grows older the leaves may elongate and develop a notch at the end, achieving a heart-shaped form. The tentacles are sparse and weak, catching mostly gnat-sized insects. The beautiful and delicate rosettes are typically four to six inches in diameter. The plants commonly form clumps that develop from their roots. A short scape produces unusual, small, red-petaled flowers.

Drosera prolifera

The “hen and chicks” sundew has oval to kidney-shaped leaves up to three-quarters of an inch across, held semierect on long, thin petioles. Most peculiar are the flower stalks, which run along the ground carrying a few



The flowers of *Drosera adelae* are like miniature red stars.

small red flowers, ending in a small baby plant if the tip touches the ground. Over time, with frequent flowering, many new plants take root around the "mother," and sometimes the flowers produce seed. The dime-sized leaves will fold around prey like a sandwich.

Drosera adelae

The lanced-leafed sundew is the errant sister, for she can take somewhat brighter light, less humidity, and cooler temperatures. A lovely sundew for the terrarium, she can also occasionally thrive on bright, humid windowsills (for example, a bright bathroom). The leaves are arching, long and pointed. In lower light, the plants are green and can reach a foot across. Brighter conditions will develop

stiffer, shorter, bronzy leaves. The stunning flowers look like bright red stars, and many dozens can appear on stalks a few inches tall. *Drosera adelae* is a spreader: older plants may die away and be replaced by many offspring that come up from the roots. A curious fact is that originally only plants with dull, yellow white flowers were known. After the introduction of the red-flowered form (which some believed was a new species because the flower structure also seemed different), the pale-flowered form seemed to disappear, or turn red. On several occasions I have been given fresh material of the older variety, but these in time also turn red!

THE WOOLLY SUNDEWS

An exciting development in the past two decades has been the discovery of many new sundews in the remote, vast areas of northern Australia. For a long time one species, *Drosera petiolaris*, the woolly sundew, was the only type formally described. But now, thanks to the enthusiastic work of people like Allen Lowrie and Katsuhiko Kondo, a whole group of related *Drosera* known as the petiolaris complex is beginning to enter cultivation.

Many of these plants are still mysterious and rare, and are only now

beginning to be identified and named. Some of them currently are known by location names only, but this is rapidly changing as the plants are formally described. Cultivation techniques are also being explored.

Many of these sundews are notable for their unusual petioles, and leaf blades densely packed with long, fine tentacles.

Northern Australia has a warm, tropical climate marked by six months of rain and six months of drought. These sundews grow in sandy areas that are wet to waterlogged during the rainy season. When the soils dry out during the annual drought, most of these plants die down to their thick, often hairy, bulblike stems for several months of dormancy. However, in cultivation the plants remain in growth if they are kept wet.

To grow these types, I recommend a soil recipe of two parts sand to one part peat. Peat pellets also work well. Use the tray system in brightly lit terrariums or sunny greenhouses. Temperatures are best between sixty and ninety degrees. Propagation is by leaf cuttings, division, and sometimes seed. They can be grown outdoors in warm climates.

All of the following sundews are beautiful and unique, and vigorous hybrids are common. Here are some of the more popular forms.

Drosera petiolaris

The original species, this plant was discovered by J. Banks in Queensland during Cook's voyage around 1770. Fond of waterlogged conditions, the rosettes are a few inches across with many erect leaves that have long, narrow petioles and small, spade-shaped traps with very long retentive glands. The flowers are dark pink.

Drosera dilatato-petiolaris

Although recognized by L. Diels in 1906, Kondo formally described this species in the 1980s. Common in damp areas around Darwin (on the coast of Northern Territory), this clump-producing species has medium-broad green petioles and



Drosera petiolaris x *dilatato petiolaris*



Drosera falconeri growing in peat pellets

small, circular red traps, most of which lie flat along the ground. Clumps can be over a foot across. The flowers are white.

Drosera falconeri

Discovered around 1980, this desirable species has short, broad petioles with immense, oblong traps over an inch wide. The leaves are pressed flat to the ground and the whole plant is a deep maroon color. It is now known to be common in the coastal areas of the Northern Territory.

Drosera lanata

A pretty species with clusters of low-growing leaves that have long, thin petioles and small, circular leaf-blades. The leaves and center of the rosette are covered with dense, silvery, woolly hairs.

Drosera ordensis

This stunning sundew was discovered by Allen Lowrie and was called *petiolaris* 'Kununurra'. The rosettes are three to six inches in diameter and can form clumps over a foot across. The leaves are erect with long, wide petioles so densely covered in silvery hairs that they appear white. The small, circular traps are golden green. Large flowers can be pink or white.

Drosera paradoxa

This unusual form is very similar in appearance to *Drosera petiolaris* except the leaves are hairy, like those of *Drosera lanata*. In the sun the plants grow in pincushion-like rosettes on the ground. When shaded by bushes, they can grow to a foot tall, leaning among other plants.

Two other tropical species from northern Australia deserve mention. Both behave as annuals, renewing themselves from seed during the wet season, but may grow longer when kept wet. Follow the cultivation techniques for the woolly sundews, above.

Drosera indica

This species is also found in other tropical countries such as Africa and India. The plants look surprisingly like *Byblis liniflora* and are often mistaken for them. *Drosera indica* produce a scrambling stem several inches in length. Long, linear leaves covered with tentacles radiate out from this

stem in all directions. The flowers can be white, pink, or even orange. A pretty and delicate species for the hothouse or terrarium.

Drosera banksii

This curious-looking, small species appears similar to the climbing tuberous *Drosera* discussed earlier. However, these plants produce no drought-resisting tubers and instead die away during the dry season. The plants are erect and a few inches tall. They produce a few cup-shaped, peltate leaves on thin petioles. Propagate from seed.

THE PYGMY SUNDEWS

Pygmy sundews, almost all of which originate in southwestern Western Australia, are a fascinating and complex group of plants. Most of these plants are true miniatures, rarely larger than a penny, although a few can be somewhat larger in size. All are beautiful, diminutive jewels, best seen in colonies with the aid of magnifying glasses. There are probably around forty or so species, including a few hybrids.

The climate of Western Australia is considered warm-temperate to subtropical and Mediterranean-like. This means the summers are very hot and very dry. Winters are cool, with night temperatures in the thirties and forties and day temperatures between fifty and sixty-five degrees. Most of the rain falls during the winter months, and it is then that the flora of the region does its most vigorous growing. This is also true of the carnivores from this region of the world. As the hot days of summer approach, most of the plant life goes dormant while desertlike conditions prevail. The soil is predominantly sand.

Pygmy sundews are typically small rosetted plants rarely over an inch in diameter. The leaves radiate outward on short petioles with small, tentacle-covered traps that are circular to spoon-shaped. The tentacles can be very long around the edge of the leaf, and move quickly when small prey are trapped. The center of the plants usually have a



Now you know why they're called pygmy sundews. This one is *Drosera nitidula* x *pulchella*.

cone-shaped structure of shiny, dense hairs called stipules. In summer, when pygmies are dormant, the plants fold up to these heat-reflecting tufts of hair.

A most curious fact of pygmy sundews is their ability to produce gemmae, or brood bodies, an asexual method of reproduction. Each



In autumn, gemmae arise from pygmies like a crown.

gemma is pinhead sized or smaller, and may be similar in shape to the scales of a fish or small beads.

Clusters of gemmae arise out of the stipules, forming crowns of these brood bodies in the center of the plant. This occurs in autumn as the days get cooler and shorter and the winter rains begin. Each gemma is held by a tensely coiled hair, and when struck by a rain-

drop, the gemmae explode outward—sometimes shooting many feet from the mother plant! Each gemma quickly takes root and rapidly grows into a new plant, genetically identical to its parent. The production of gemmae makes pygmy sundews easy plants to propagate.

The flowers of the pygmies are also interesting. While some flowers are small, many are large, showy, and in a wide range of colors. Some flowers are larger than the plants themselves. However, in cultivation they rarely produce seed so most growers rely on the dependable production of gemma for propagation. To the delight of growers, many of the flowers are also highly fragrant, a pleasant bonus for such tiny plants.

The typical life cycle for pygmies in the wild is as follows. After their summer dormancy, as the rains begin in autumn, a few leaves are produced, followed by gemmae. By early winter the gemmae is scattered and the plants grow vigorously in their wet, sandy soil. Winter and spring are their most active growing season. By late spring the plants flower and are cross-pollinated by insects. By early summer, seed is set, the soil dries out, and the plants go dormant. Seed germinates the following wet season. In some low-lying areas, pygmies may be flooded

and killed in springtime after heavy rains. But a few plants always survive on higher ground, and the following winter they rapidly replenish their colonies through massive gemmae production, only to be killed off again the following spring.

Most pygmy sundews are easy to grow in cultivation. Fortunately, when kept wet year round, most species don't require a dry summer dormancy. Therefore they can be enjoyed year round and more or less grown like typical subtropical rosetted sundews.

Pygmy *Drosera* grow well in a half-sand to half-peat mixture. Even better is a mix of two parts sand to one part peat. Grow them on the tray system unless I indicate otherwise below. A sunny position is required. All thrive in cool and warm greenhouses. They also do well in terrariums grown close to the lights, but shorten the photoperiod in autumn for gemmae production. They are superb outdoors in pots and bog gardens in warm-temperate, subtropical, and Mediterranean-like climates, and will spread in bogs to form glittering, beautiful colonies. They are generally tolerant of brief, light frosts into the mid twenties but perform even better in frost-free climates. On windowsills they require very sunny conditions.

Although pygmy *Drosera* primarily catch small, gnat-sized insects, very large prey such as crane flies, moths, and houseflies are also caught. Sometimes, dense colonies of the plants act in a group effort to overpower prey. Struggling insects leave behind legs and wings in their attempt to escape the long and rapidly moving tentacles. The individual plants feast on whatever insect parts they can grab.

The following are some of the most popular varieties.

Drosera callistos

A handsome pygmy up to one inch in diameter with elliptic leaf blades and large, shiny, orange flowers. If this species goes dormant in hot summers, keep the soil just barely damp.

Drosera closterostigma

Bright red rosettes up to two-thirds of an inch in diameter. The large flowers are white with red centers.

Drosera dichrosepala

This species has half-inch rosettes of spoon-shaped leaves clustered atop a slow-growing stem. The white flowers are sweetly perfumed. Keep them almost dry if they go dormant.

Drosera eneabba

Bright red rosettes up to one inch, with pretty pinkish white flowers with scalloped edges.

Drosera ericksonae

Named after Rica Erickson, whose beautifully illustrated *Plants of Prey* was a popular book on Australian CPs. Large, golden rosettes over one inch across, with circular pink flowers that occasionally produce seed.

Drosera leucoblata

Small reddish rosettes of circular leaves less than one inch in diameter. Bright orange flowers are as large as the plant. This species may go dormant in summer.

Drosera mannii

A beautiful, vigorous pygmy with broad petioles and elliptic red traps. The large flowers are a pearly pink or white.

Drosera occidentalis ssp. occidentalis

One of the tiniest, and a favorite of mine (under a powerful magnifier!). Minute, fine, sparse leaves deep red in color, with pink flowers.

Drosera paleacea ssp. paleacea

Rosettes a half inch across with many small, white, perfumed flowers.

Drosera pulchella

Robust rosettes up to over one inch in diameter, with flowers ranging from white to pink to orange. The broad petioles and reddish orange, circular leaves are very attractive.

Drosera pygmaea

The only pygmy found outside Western Australia, this tiny species is also found in southeastern Australia, Tasmania, and New Zealand. Fascinating for its small, bright red to green rosettes, and minute, four-petaled white flowers.

Drosera rechingeri

This species has stunning white flowers with yellow borders.

Drosera scorpiodes

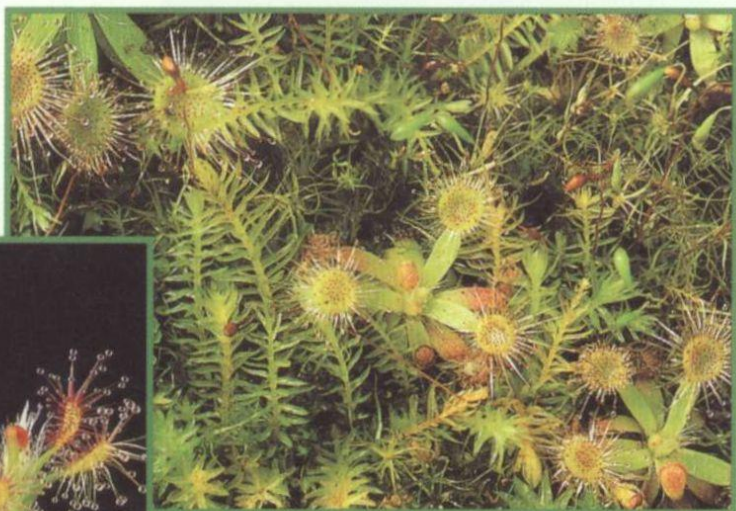
This is a "giant" pygmy, exceptional for its large rosettes that measure almost two inches across, and its tall, rootlike stems. The dished, lancelet leaves have exceptionally long tentacles. I grow two forms. The larger form, with white flowers, grows rapidly but is short lived, dying away af-

Pygmy Sundews



The flowers of *Drosera manni*.

The tiny rosettes of *Drosera occidentalis* ssp. *occidentalis* are barely a quarter of an inch across.



Drosera pulchella



A giant among pygmies—*Drosera scorpiodes*

ter two to three seasons. By contrast, my plants from the smaller form with dark pink flowers have grown for over seven years, and have stems several inches tall.



Although probably extinct in the wild, *Drosera nitidula x occidentalis* is one of the most popular in cultivation.



The pearly pink flowers of *Drosera nitidula x pulchella* appear for months at a time.

The following two pygmies are probably the most popular in cultivation. Both are vigorous hybrids.

Drosera nitidula x occidentalis

Bright reddish rosettes up to a half inch in diameter. The flowers are white with bright red stigmas. Now believed to be extinct in the wild due to habitat destruction, this may be the most widespread pygmy in cultivation.

Drosera nitidula x pulchella

My favorite of all the pygmies. The deeply colored rosettes are very robust, up to one inch across, and similar to its parent, *Drosera pulchella*. It grows as easily as any cape sundew, and the lovely flowers are a showy, pearly pink.

THE TUBEROUS SUNDEWS

Western Australia is home to another large group of sundews that share the same wet winter–dry summer habitat as the pygmies. These are the tuberous *Drosera*. Instead of dying down to

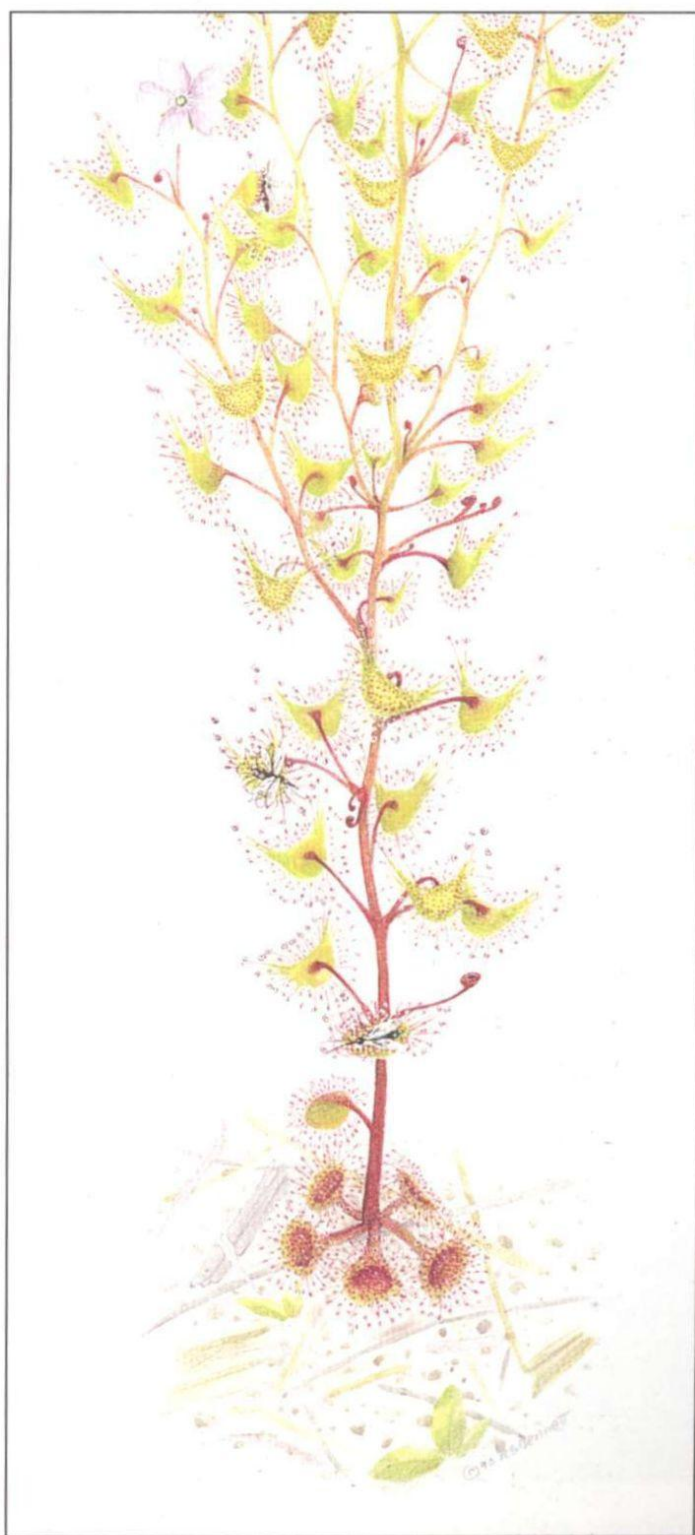
protective cones of stipule hairs to survive the dry heat of summer, these plants have adapted to a dormancy underground, where they hibernate as small tubers.

The tuberous *Drosera* are about as strange and as beautiful as sundews get. The fifty or more species come in a wide range of growth habits: Erect sundews have self-supporting stems with small, tentacle-covered leaves scattered along their length, sometimes reminiscent of little trees. Climbing sundews grasp and loop over bushes and other plants as though they were vines. Fan-leafed sundews can be so elaborate in their design they can appear like several different sundew species all glued together. Tuberous sundews can also be rosetted, often covering the sandy soils with dense mats of carnivorous leaves, a lethal landing platform from which few insects can escape.

The tubers of these plants may be pea- to walnut-sized. They can extend underground at a depth of a few inches to a couple of feet. The tubers can be brightly colored in oranges and reds. They are often covered with insulating papery sheaths, each layer marking a year's growth. It is in the tuber that the plant stores its energy reserves.

On the top of the tuber is a small "eye," not unlike that of a potato's. As autumn approaches, a vertical stolon grows from this eye to the soil surface, even when the soil is still dry. Usually along this stolon are the plant's roots. Sometimes the root mass is so thick it forms a "chimney" through which the tuber grows and recedes each season. Energy from the tuber gives the plant its resources to develop above ground during the cool, wet winter. For five or six months the tuberous sundews catch insects and flower and do all the things happy carnivorous plants do. Then summer approaches, and the days get longer, hotter, and drier. The plants turn brown and die back, and all the minerals and energy of the plant return down the withering stolon into the old tuber. Usually the tubers get larger each year. Often the plants produce more food than one tuber can store. In this case, new stolons develop horizontally from the mother tuber, and new tubers are grown. Some species don't return to their old tuber but create a new one each season adjacent to the dried shell of the older.

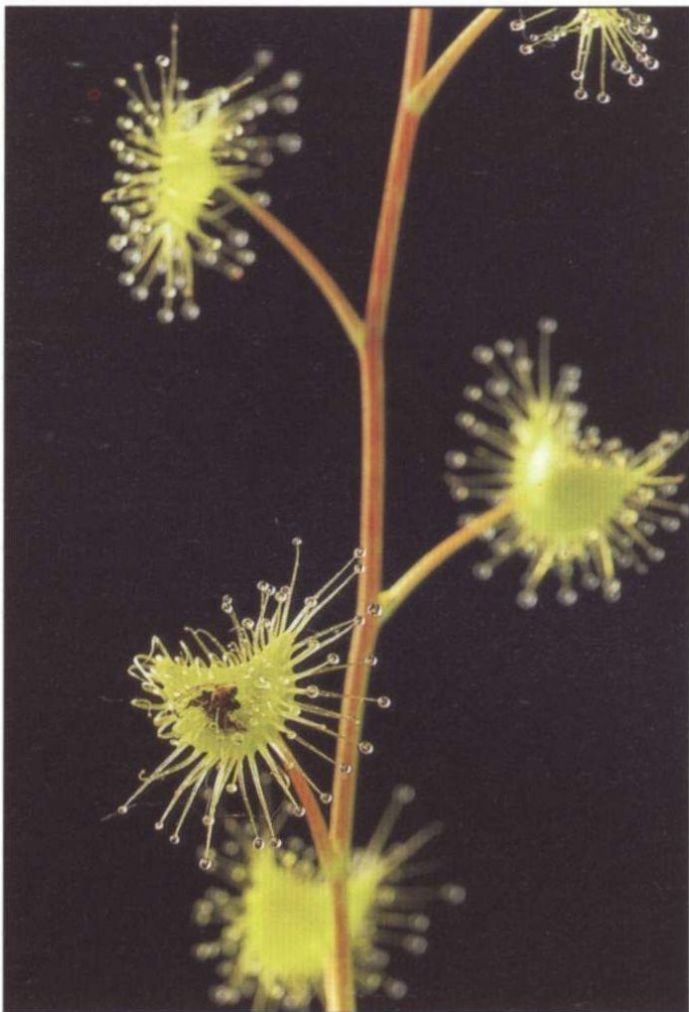
Tuberous sundews are still uncommon plants in cultivation, but they are growing in popularity as more plants are propagated and



Drosera peltata

as growers become less intimidated by their unfair reputation of being difficult. I have found this group to be challenging but fairly easy to grow. The most problematic obstacle is obtaining plant material. Currently, most plants in cultivation are grown from seed or tubers imported from Australia. Propagation can be difficult because most of the species don't produce seed in cultivation and are difficult to grow from leaf cuttings. Production of additional tubers is a common but slow affair.

If you obtain a potted, established tuberous sundew, consider yourself lucky. If you receive tubers imported from Australia and you live in the northern hemisphere, remember that the seasons are reversed so most likely you will receive your dormant plants during Australia's summer (December to March), which is the northern hemisphere's winter growing season for these plants. Therefore, due to the plant's biological clock, the tuber begins to grow as summer starts. This first crucial year of seasonal adaptation is the most challenging aspect of establishing the plants.



Drosera peltata with prey. The tentacles pull the victim into the cup-shaped leaves.

When you receive your tubers, store them in airtight plastic bags with a few strands of barely damp sphagnum moss and keep them at room temperature in a dark place such as a drawer. Check them weekly until you notice the stolon's growth beginning from the eye of the tuber.

Pot them using five- to eight-inch drained, plastic containers in a mix of pre-wetted two parts sand to one part peat. With your finger, make a hole in the center of the soil about two to four inches deep. (Some large tubers may need bigger pots and deeper holes.) Using forceps, lower the tuber into the hole so the eye is facing upwards. (Remember, the eye is where the stolon is emerging.) Then fill the

hole with pure sand, but don't pack it tightly. Set the pot on the tray system, maintaining the water level around one inch.

Within a few weeks, the plant should emerge and develop quickly into its full size. Most tuberous *Drosera* do not continually grow new leaves all season long. The plants produce all their leaf growth rapidly and retain those leaves for the duration of the season.

The objective is to sustain the plant during a shortened summer growing season. Keep the plants as cool as possible, for example, near swamp coolers in the greenhouse or in a cool terrarium under grow-lights. Usually, during this first season of adjustment they grow for around three months, from around April or June until July or August. Feed the plants insects during this time. When the plants turn brown and die back, remove the pot from the water tray. Set the pot in a shady place in moderate temperatures—for example, under a greenhouse bench. The soil must now dry out completely.

Usually the plants remain dormant through autumn and return to growth in wintertime. Do not set the pot back in the water tray until you see the stolon emerge from the soil. Sprinkle water overhead so the soil returns to a wet condition. Allow the plants to grow normally until another cycle of dormancy sets in.

When adjusted to the northern hemisphere, tuberous sundews begin to grow (usually) between October and December. They go dormant between April and June. The plants enjoy sunny conditions in cool and warm greenhouses during the winter months, in temperatures best kept on the cool side: forty to fifty degrees at minimum, sixty to seventy-five degrees maximum. I imagine they would thrive in the cooler, potted terrarium on a winter photoperiod (but I have not yet tried this). Remove the pots during summer dormancy and dry them out. Tuberous sundews make nice winter replacement plants if you remove dormant temperate species from your tank, such as Venus fly-traps or winter-dormant sundews.

Some growers prefer to remove the dormant tubers from their pots every summer, storing them dry in airtight plastic bags. I prefer to leave them potted, but I transplant them every three years or so. This is usually necessary to separate additional tubers that have been produced.

You might be able to grow tuberous *Drosera* as outdoor potted plants if you live in a frost-free Mediterranean-like or subtropical climate such as the immediate California coast or central Florida. Protect

the plants if temperatures drop below freezing. Never leave pots of dried, dormant plants in direct sunlight, as the heat will desiccate the tuber. Cool, sunny, humid, south-facing windowsills may also be a place to try these plants in winter.

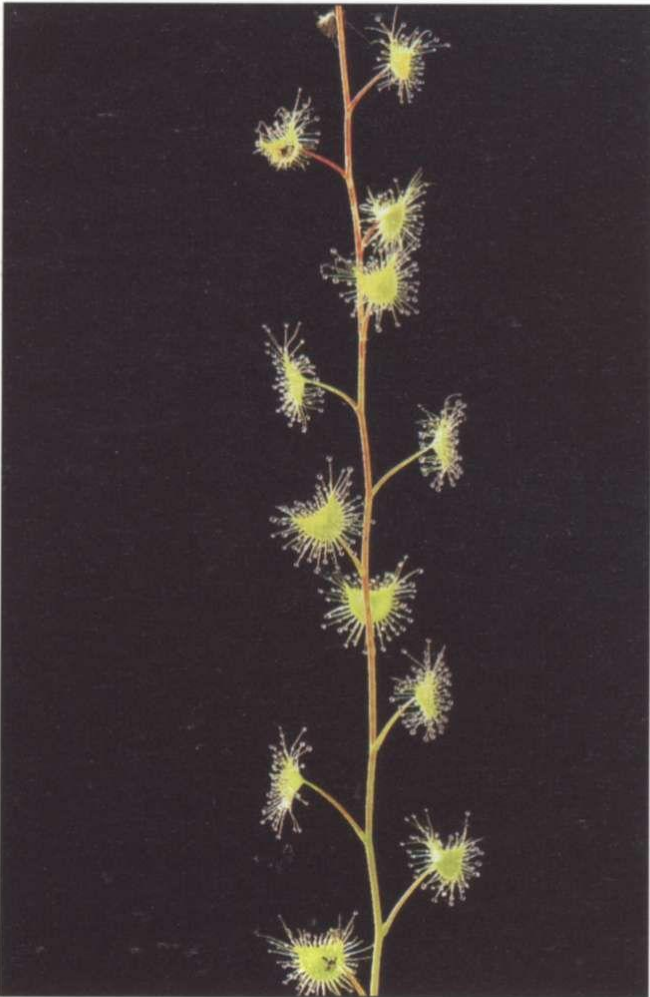
The flowers of tuberous sundews are usually very pretty, often large, and very sweetly fragrant. Some species flower early in their growth cycle, while others late—just prior to dormancy.

ERECT TUBEROUS SUNDEWS

These sundews produce stems that are usually self-supporting, but may occasionally lean on other plants. The leaf traps are often small, barely a quarter of an inch across, yet are often strong enough to catch a housefly of equal size.

Drosera peltata

This is one of the easiest to grow and most popular of the tuberous sundews, and the only species found outside Western Australia, growing also on the east coast of that country, New Zealand, India, and much of Southeast Asia. The two outstanding attributes of this plant are that it



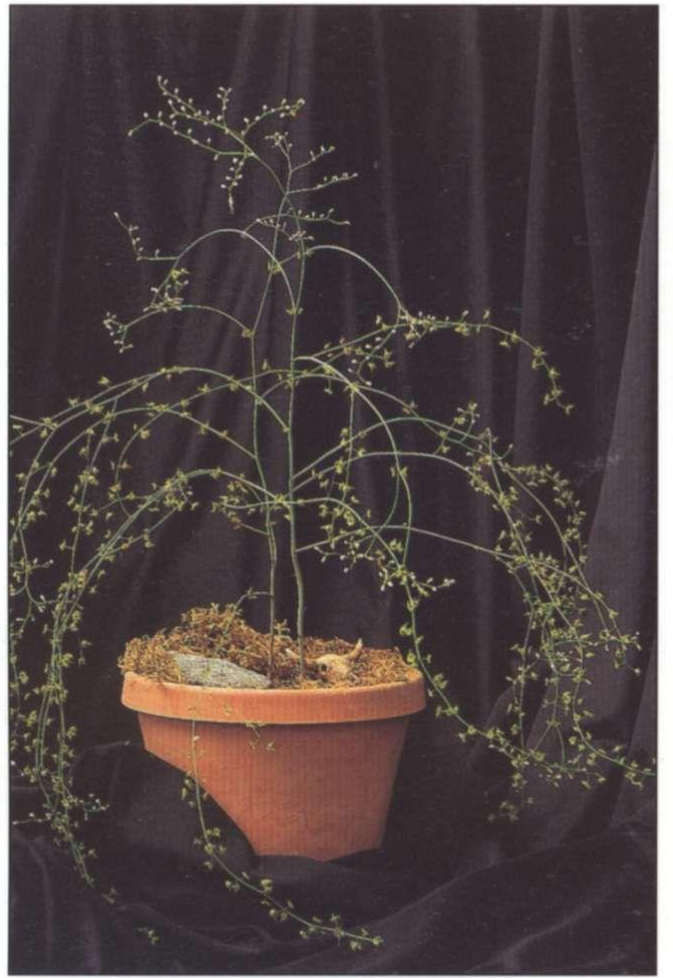
Drosera peltata

often produces seed in cultivation, and the tubers usually survive damp to wet conditions during dormancy. The typical forms of *Drosera peltata* usually produce a basal rosette of nearly oval leaves early in the season, not unlike a normal rosetted sundew. Then the climbing stem emerges, carrying several shield-shaped, peltate leaves along its length. The stems average six to ten inches tall. At the top of this stem, the plants have a few small pink or white flowers. Often the stem continues to grow after blooming. I prefer to briefly dry out the pots during dormancy, but have also grown them in bog gardens in my greenhouse. *Drosera auriculata*, an almost identical plant, is now considered a subspecies. In Australia, *Drosera peltata* often comes up in winter-wet

lawns around homes in the suburbs, often succumbing to the lawn mower!

Drosera gigantea

This is the king of tuberous sundews, and one of the largest of all *Drosera*. Fortunately it is also simple to grow, and is my favorite in this group. It also survives damp dormant conditions. The red tubers can approach 1½ inches across, and larger plants are best grown in five-gallon pots. This incredible sundew grows in the form of a small tree, with lateral branches from the stem holding many small, shieldlike leaves. The clustered white flowers come early and the foliage is golden green to bronze. Mature plants are nearly three feet in height.



Drosera gigantea, an easy tuberous sundew that grows like a small tree. This specimen is nearly three feet tall.

Drosera andersoniana

A small, lovely species that forms a basal rosette similar to that of *Drosera peltata*. The stem reaches up to ten inches tall, with circular, peltate leaves. The whole plant can achieve a rich red color in good light, with white to pinkish flowers topping the stem.

Drosera huegelli

A charming plant usually under a foot tall with a few cupshaped leaves hanging bell-like on the upper half of the stem. The flowers are large and white.

Drosera marchantii

There are two subspecies of this plant, one with pink flowers (ssp. *marchantii*), another with white (ssp. *prophylla*). The stems are rather stiff with circular, peltate leaves.

Drosera menziesii* ssp. *menziesii

A handsome plant with an undulating stem, circular leaves and pink flowers. This often reddish variety can approach a foot in height.

Drosera microphylla

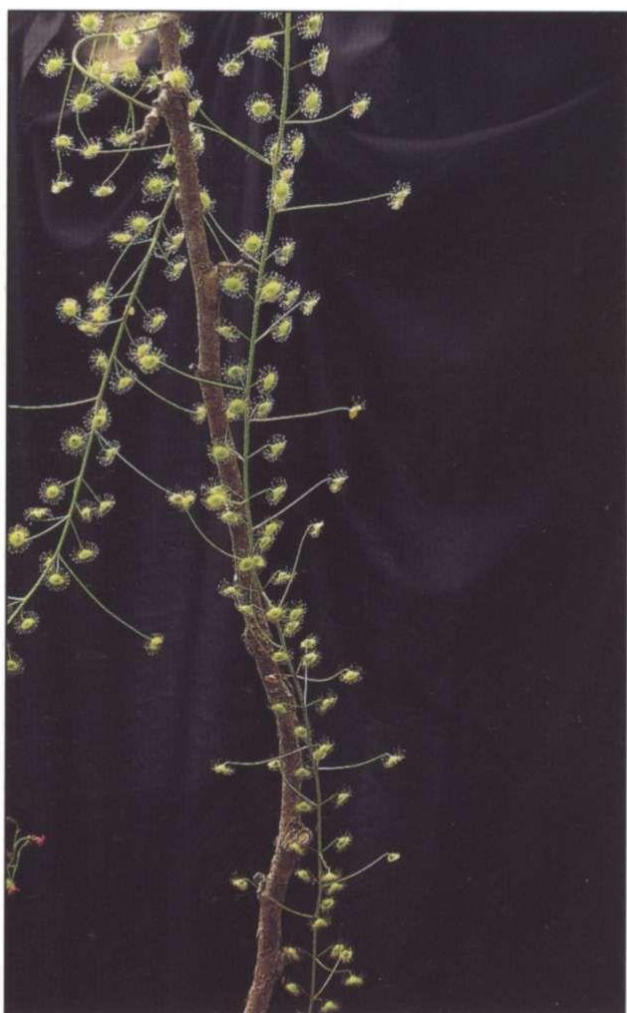
A typical erect sundew with circular, peltate leaves, but the startling flowers have large golden sepals and red petals.

CLIMBING TUBEROUS DROSERAS

These plants scramble over surrounding vegetation with wiry, flexible stems sometimes many feet in length. Some of their tiny leaves cement themselves to other plants with their tentacles, and these leaves usually have longer petioles than the others.

Drosera macrantha

Another of my favorites, this species is easy to grow. Its seed germinates easily, although cultivated plants have yet to produce seed on their own. Ultimately reaching four or five feet in length, the small leaves are cup-shaped and the one-inch flowers are white or pink. Seedlings remain in a small rosette the first year of growth, forming short stems by the second year. One specimen of mine has remained in the same gallon-sized pot for over seven years, and puts on quite a show each winter and spring.



Drosera macrantha ssp. *macrantha* can scramble and climb for many feet. Some of its leaves have cemented themselves to the branch for support.

One specimen of mine has remained in the same gallon-sized pot for over seven years, and puts on quite a show each winter and spring.

Drosera modesta

This greenish climber, almost three feet tall, has shield-shaped leaves with extra long tentacles and white flowers.

Drosera subhirtella

Rather fine, reddish plants with circular peltate leaves and lovely yellow flowers. The ssp. *subhirtella* reaches fifteen inches in length, while the ssp. *moorei* remains under ten inches.

FAN-LEAFED TUBEROUS DROSERAS

These are some of the most highly developed *Drosera* in the world, and some are quite robust and unusual.

Most produce basal rosettes of rather flat oval to elliptic leaves, from which one to several stems grow, often with whorls of folded, fan-shaped leaves along its length.

Drosera stolonifera

There are several subspecies of this plant, all of which are magnificent and easy to grow. *D. stolonifera* ssp. *stolonifera* is my favorite,

a thick-stemmed, robust species with whorls of reinform leaves that are somewhat cupped or folded. Several stems may appear, each around six inches long, with leaves in several groups of three to five scattered along the stem's length. The large flowers are white. *D. stolonifera* ssp. *compacta* is rather smaller, deep red, with compact stems and nearly funnel-shaped leaves. *Drosera stolonifera* ssp. *humilis* is a delicate, reddish plant whose stems are semierect, the small leaves on thin petioles. *Drosera stolonifera* ssp. *prostrata* has interesting stems that trail along the ground, and whorls of nearly oval leaves. Another handsome variety is ssp. *rupicola*, with coarse stems and large leaves that fold over prey like a sandwich.

Drosera ramellosa

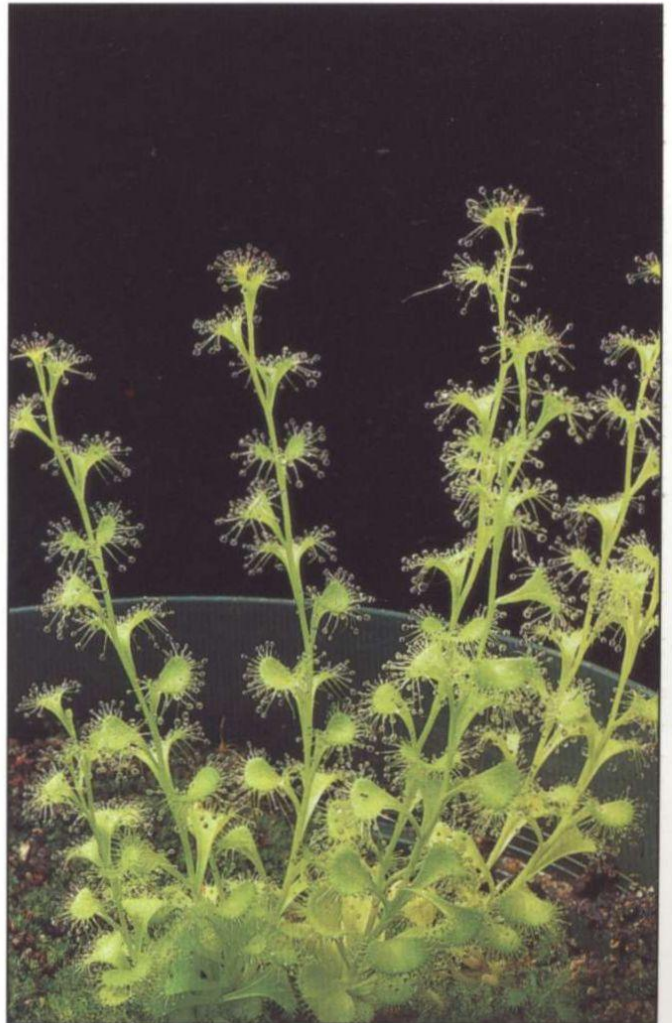
This small golden green plant is like a miniature version of *Drosera stolonifera* ssp. *stolonifera*. From a leafy rosette arise two four-inch stems of folded, fan-shaped leaves.

Drosera platypoda

A fan-leafed species I have longed to grow but have never tried, the plants are erect, up to eight inches tall, and



Drosera stolonifera ssp. *stolonifera*



Drosera ramellosa

golden green in color with red folded leaves held close to the stem. The flowers are white.

ROSETTED TUBEROUS SUNDEWS

Like many of their cousins around the world, many tuberous sundews grow as rosettes of flat leaves pressed to the ground. The differences are that the leaves of rosetted tuberous *Drosera* are all produced early in the season and they are often large and nearly circular, often with short petioles.



Drosera macrophylla, a rosetted tuberous sundew



Drosera rosulata

The leaves of rosetted tuberous sundews are incapable of movement. Fragrant flowers usually appear after the leaves are formed. As a rule, the blossoms are white, and may appear clustered or as multiple single blooms.

Drosera macrophylla

An easy and handsome plant for cultivation, the large leaves are teardrop-shaped and the rosettes are four to six inches across. Multiple, sweetly perfumed flowers appear before the rosette is fully developed.

Drosera rosulata

Neat rosettes of obovate leaves around two inches across make this an attractive sundew, particularly when the single, short-stemmed flowers are open in the rosette's center. The leaves have a pronounced, depressed, reddish midrib.

Drosera tubaestylus

This species is also easy to cultivate. The rosettes are barely one and a half inches across, and the teardrop-shaped leaves are bronzy red in color. Interestingly, this plant sometimes sends out stolons from the center of the leaves toward the end of its growing season. These stolons anchor into the ground around the mother plant prior to dormancy, where they produce tubers that develop into new plants the following season.

Drosera zonaria

An interesting and beautiful sundew with small rosettes of twenty to thirty closely held leaves arranged like overlapping shingles. The margins of the leaves are usually reddish. The plants commonly form underground stolons and develop into compact colonies.

Drosera orbiculata

A strange tuberous species, the leaves are almost circular at the end of long red petioles. Each rosette is about two inches across with four to six leaves. This species was discovered in 1980.

Drosera lowriei

Another new species named after Allen Lowrie, who has done so much to widen our understanding of Australian CPs. Similar in leaf arrangement to *Drosera zonaria*, the leaves are reddish and spoon shaped, and are reduced in size toward the center of the rosette.

Drosera bulbosa

There are two subspecies of this pretty sundew. *D. bulbosa* ssp. *bulbosa* looks rather similar to *Drosera rosulata* but with raised midribs on golden leaves. *D. bulbosa* ssp. *major* reaches five inches across and has uncommon variants with pink flowers and maroon-tinted leaves.

Drosera erythrorhiza

There are several subspecies of this plant, all producing five to twelve oval to obovate leaves. Some of them are: *D. erythrorhiza* ssp. *erythrorhiza*, with two-inch rosettes of broadly oval leaves that often form dense colonies from underground stolons. *D. erythrorhiza* ssp. *magna* has large rosettes up to five inches across, with wide oval leaves that turn reddish with age. It rarely produces dense colonies. *D. erythrorhiza* ssp. *squamosa* is the most beautiful and rare. The two-inch rosettes have leaves with a distinctive red band along their margins.

Drosera whittakeri

This popular tuberous sundew grows not in Western Australia but further east in Victoria and South Australia. It is odd because it not only grows in woodland forest habitats but has a summer dormancy even though the soil remains damp. The two-inch rosettes have oval leaves on wide petioles, with large, fragrant white flowers. Grow as other tuberous *Drosera*, but keep soil slightly damp during its dormancy.

SOUTH AFRICAN WINTER-GROWING SUNDEWS

Although most South African sundews grow year round in permanently wet areas, some of the most unusual species from this Mediterranean-like climate go dormant when soils dry out, usually from mid-summer to midautumn. This dormancy period is rather similar to the tuberous Australian species I have just reviewed; however, instead of tubers, these plants die down to thick, wiry roots from which they return the following season. Further, the rest period is usually somewhat shorter than that of the tuberous varieties, averaging around three months. All are easy to grow. I use a soil medium of half sand to half peat, and otherwise grow them similarly to their tuberous cousins. However, when the plants die back I prefer to dry out the pots for about two months, then I keep the soil barely damp until new growth appears. I then return the pots to the water tray.

Drosera cistiflora

This variable species is particularly unusual and famous for its enormous flowers. When growth begins, the plant forms a two- to three-inch rosette of narrow, tapered leaves pressed flat on the soil surface. After a

couple of months, a stem eight to twelve inches tall is formed, with narrow, tapered, strap-shaped leaves along its length. When the plants are several years old, they may flower. The single, sensational blooms are large, cup-shaped, and two to three inches across, in colors ranging from purple to rose to white to deep red. My plants have never produced seed, and in my experience the plants die after flowering. However, *Drosera cistiflora* is easily propagated using the early rosetted leaves as cuttings.

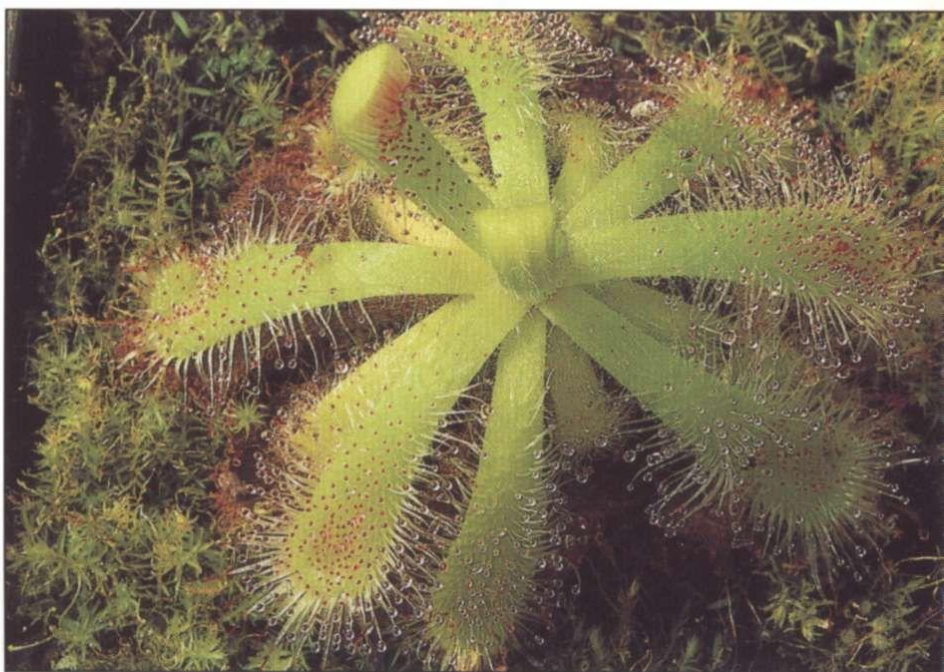
Drosera pauciflora

This is another impressive species closely related to *Drosera cistiflora*. It produces large, pale green rosettes of broad, wedge-shaped leaves up to four inches across. The translucent tentacles are among the fastest moving in the genus. Sometimes



Drosera cistiflora has the largest flowers in the genus.

the rosettes creep along the ground on wiry stems, but they never climb. The very rarely produced flowers are equally impressive as those of *Drosera cistiflora*. I have grown this plant for a dozen years, and just once (the first season I grew them!) I was treated to a mass flowering that lasted many months. It was a sight I will never forget, but strangely the plants have never repeated this performance. The flower colors are as variable as *Drosera cistiflora*, but my plants did not die off as with that species.



Drosera pauciflora

Drosera trinervia

A small species with flat rosettes of narrow, wedge-shaped leaves. The small flowers are white.

Drosera hilaris

I have never grown this species, but I have seen impressive-looking photos of it. It looks similar to a robust *Drosera capensis* but has long, oval, undulating leaves.

THE KING SUNDEW

Drosera regia, the king sundew, is in a class of its own. In nature this impressive plant is very rare—only a few colonies in South Africa are known. It is believed by some to have distant relations to the Venus fly-trap.

The plant is large, with stiff, sword-shaped leaves that arch outward in a rosette pattern. The leaves can approach two feet in length, and the plants gradually form stems and can develop offshoots from their thick roots. On younger plants the leaves are capable of moving dramatically, twisting in knots around large prey. On older plants only the tapered ends of the leaves move. The tentacles are substantial and produce thick globules of mucilage that can overcome even large and powerful insects. The flowers are deep pink, one and a half inches across, and held in a cluster on a stalk as long as the leaves. They can



The king sundew, *Drosera regia*

have an exhausting effect on the plant so I usually remove them.

Drosera regia enjoys a rather open soil, so grow it in large pots of one half long-fibered sphagnum to one half perlite. Peat can be substituted for the sphagnum. It grows best in cool, frost free climates, or in cool and warm greenhouses. Terrariums need to

be large to accommodate it. I have seen surprisingly beautiful specimens on cool, sunny windowsills near the coast in California, where they appear to have a voracious appetite for houseflies.

In winter *Drosera regia* greatly reduces the size of its leaves, and occasionally crowns die back, but the plant returns from its thick roots. Leave large plants undisturbed for several years, and grow them permanently on the tray system. Leaf cuttings fail on this species, but it takes well from root cuttings. Rather than disturb the whole plant, which can set it back, I prefer to cut roots from the base of a potted specimen and gently pull these from the soil. Plants have also been propagated in tissue culture.

PROPAGATING SUNDEWS

Propagating Drosera can be achieved through various methods—most of which are easy and fun while others can be rather challenging.

Seed

With those species that readily produce seed, this method is a rather simple affair. Some, such as cape sundews, will self-seed in such quantities that the plants can become troublesome weeds. Others may need a little coaxing. Many sundew flowers self-pollinate upon closing, but with those from which

you want good seed-set, it is wise to tease the flowers with a toothpick while they are open. The seed pods mature in several weeks.

I prefer to separate the seed from their pods and store them in small, airtight plastic bags (jewelers have supplies of these) or paper envelopes. Seeds lose their viability at room temperature, so refrigerate them.

Sowing times are simple. Almost all sundew seed is best sown in late winter or early spring. The exceptions are tuberous and other winter-growing species, which should be sown in early autumn.

Most species germinate best with a period of stratification. This means that after sowing, the seed should experience several weeks of damp and chilly conditions. Light frost is often beneficial, even for the winter-growing varieties. However, after germination protect the seedlings from frost. If damp-off occurs, use a fungicide.



Drosera adelae

Sow the seed sparsely on the medium the plants prefer. Do not cover the seed with soil. High humidity is beneficial for germination, so use covered seed trays or airtight plastic bags placed over pots. (Various take-out plastic food containers work well for this.) The medium need not be deep for germination; one to two inches is adequate.

After stratification, place the containers in bright conditions, or place them close to grow-lights. Avoid hot sun or the containers may overheat. The seed will usually germinate in four to eight weeks. Remove the covers at this time. When the plants are of manageable size, they may be pricked out using forceps and planted in their permanent pots. Try not to break the small roots.

Leaf cuttings

This is a fascinating way to reproduce sundews, and larger plants can be grown more quickly. This method works for nearly all species. *Drosera regia* and *D. burmanni* are two exceptions, and many tuberous *Drosera* produce too few leaves to be used for cuttings and have such short growing seasons they can run into problems.

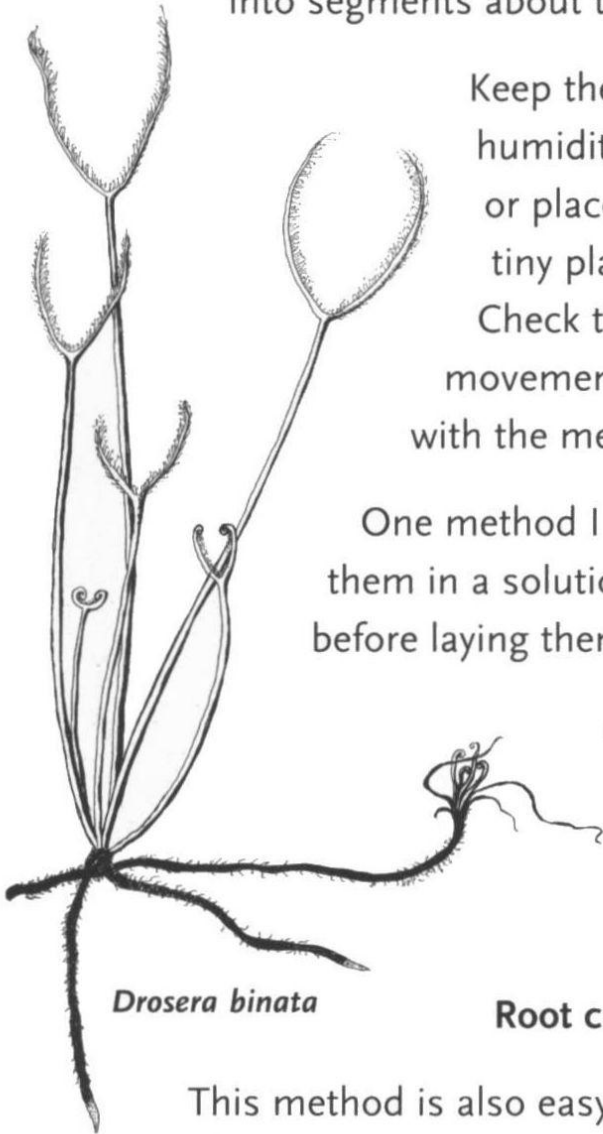
Leaf cuttings work best when taken early in the growing season. Snip off the leaves at their petioles. With the woolly sundews, I've had better success plucking the petiole from the plant with its base intact.

Lay the leaves flat, tentacle-side up, on a peat and sand mix, long-fibered sphagnum, or milled sphagnum. Using pinches of the soil, secure the leaves at their ends but do not cover the tentacles to any great extent. Long leaves, such as those of *Drosera filiformis* or the forked sundews, can be cut into segments about two inches long.

Keep the cuttings in covered containers to ensure high humidity. Place in very bright light, but not direct sun, or place them under grow-lights. After several weeks tiny plantlets will appear, usually from the tentacles. Check the cuttings frequently and resecure them if movement causes the backs of the leaves to lose contact with the medium.

One method I have used to enhance leaf cuttings is to dip them in a solution of Superthrive (one drop per cup of water) before laying them out.

Also, many leaves will bud when floated in small covered cups or petri dishes filled with pure distilled water. Change the water weekly or if algae appears.

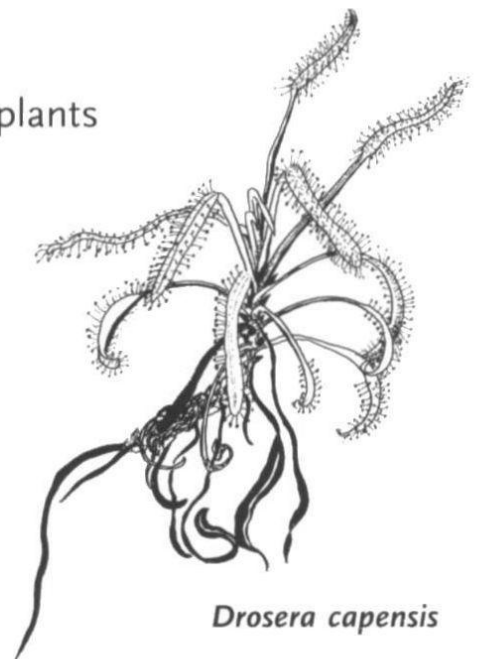


Drosera binata

Root cuttings

This method is also easy and can result in mature plants within one season. It works best with sundews that have long and thick roots, such as the cape sundews, most rosetted subtropicals, forked sundews, and *Drosera regia*. Root cuttings work best when taken early in the growing season or at the tail end of dormancy, if the plants have one.

Remove the plant from its soil and cut off healthy roots. These roots are generally black with whitish tips. The mother plant can be repotted. Cut the roots into pieces around two inches long. Using



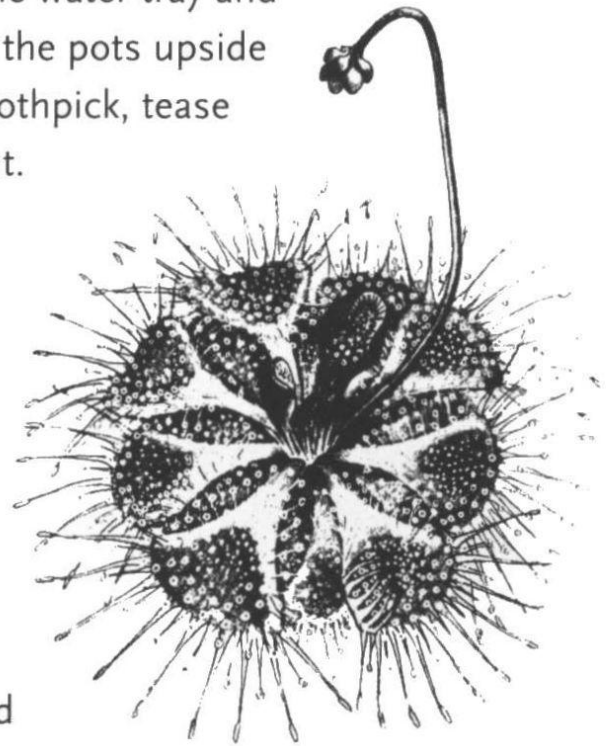
Drosera capensis

covered containers similar to those for leaf cuttings, lay these root pieces horizontally on medium about two inches deep. Cover the roots with no more than a half inch of the medium. Keep the containers covered and in very bright light. After several weeks the plantlets should appear. When a few leaves come up, remove the covers and place the plants in sunnier locations. They can usually be potted up within a few months of sprouting.

Gemmae

The most reliable way to propagate the pygmy *Drosera* is by the brood bodies they produce in autumn. The only tricky thing is removing the gemmae. If the pygmies are in pots, remove the pots from the water tray and allow them to drain for several hours. Then hold the pots upside down over a sheet of plastic or paper. Using a toothpick, tease the crowns of gemmae in the center of each plant. Mature gemmae will pop and shoot off onto the sheet. Collect them with a slightly moistened fingertip. By gently rubbing your finger and thumb together, the gemmae can be sowed like seed onto soil where you will permanently grow the plants. They will reach maturity by springtime.

In situations where the growing containers cannot be overturned, such as bog gardens, most gemmae can be removed gently with a moistened fingertip or small wet paintbrush.



Drosera burmanni

Since pygmies will grow wherever the gemmae are placed, you can be clever in growing them. One lady I know, using a large garden bowl, tediously placed individual gemma with forceps in precise positions. Months later the scores of small dime-sized rosettes spelled out the word “sundews” rather neatly!

Tissue culture

Most sundews are easy to start in vitro by the use of sterilized seed.