

MORE THAN JUST A FLOWER

by Frederick B. Essig

Flowers are among nature's fanciest artwork. Humans have always enjoyed their bright colors and fragrances, but from a biological point of view, flowers have only one purpose - to get pollinated so that seeds can be produced. First they have to get the attention of an appropriate pollinating animal, usually with color or fragrance, and lure it into the flower. Second, they have to carry out the reproductive process using pollen deposited by the visitors. Conventional flowers manage to do both by themselves, but in many flowering plants the true flowers are small and inconspicuous and the job of attracting attention is carried out by specialized organs that are not part of the flower at all. A complex of small flowers with accessory attractive organs sometimes comes to resemble quite remarkably a single flower,

and may be called "false" or "compound" flowers.

A flower consists of 4 distinct organs arranged in circular series. The outer series is the sepals, most often green, leaf-like structures that cover the flower in bud. The second series is the petals, which are usually large and colorful. Inside the petals are the stamens, the male organs that produce pollen, and in the very center is the pistil, the female organ that contains the eggs waiting to be fertilized. Many plants have large,



photo by Frederick B. Essig

Composites such as Echinacea are staples of gardening everywhere.



photo by Frederick B. Essig

The flowers of Bougainvillea may be "false," but they put on quite a show.

more-or-less isolated flowers with petals that put on a show sufficiently spectacular to get the attention of suitable pollen couriers. Cacti, hibiscus, lilies, magnolias, camellias, roses, and many others fit this category.

Another approach is to

produce relatively small flowers, but lots of them. This cluster of flowers, or inflorescence, provides a splash of color, or emits a cloud of fragrance that equals, or often exceeds, the display produced by large, solitary flowers. There are several advantages to this approach. Less energy and material is invested in each flower, so if some are damaged or fail to get pollinated, it is a much smaller loss to the plant. Also, the flowers generally open up in succession over many days. This longer-lasting display encourages pollinators to visit the

same plant day after day, achieving more consistent pollinating success and higher overall yields.

A compound flower can be defined as a highly compact inflorescence, surrounded by a ring of colored bracts, or sometimes by a ring of specialized sterile flowers, so that the whole superficially resembles an ordinary flower. The small flowers generally open up just one or a few at a time, while the display structures around the edge last for weeks. This is a more efficient arrangement than producing display structures with each flower.

An older term for compound flowers is “composite” flowers. The Asteraceae (formerly the Compositae) is a huge family of plants with compound flowers. The flower head of a composite consists of a few to over a thousand tiny flowers. The

disk flowers, in the central disk of the head, are the sexually-functional ones, although drab and inconspicuous. If pollinated, each disk flower produces a single seed. The outer ring of flowers are usually sterile, but each has a prolonged, petal-like extension that spreads outward. These ray

flowers provide the attractive display, leaving the disk flowers to focus on the business of fertilization and seed production. Familiar members of the Asteraceae include many of

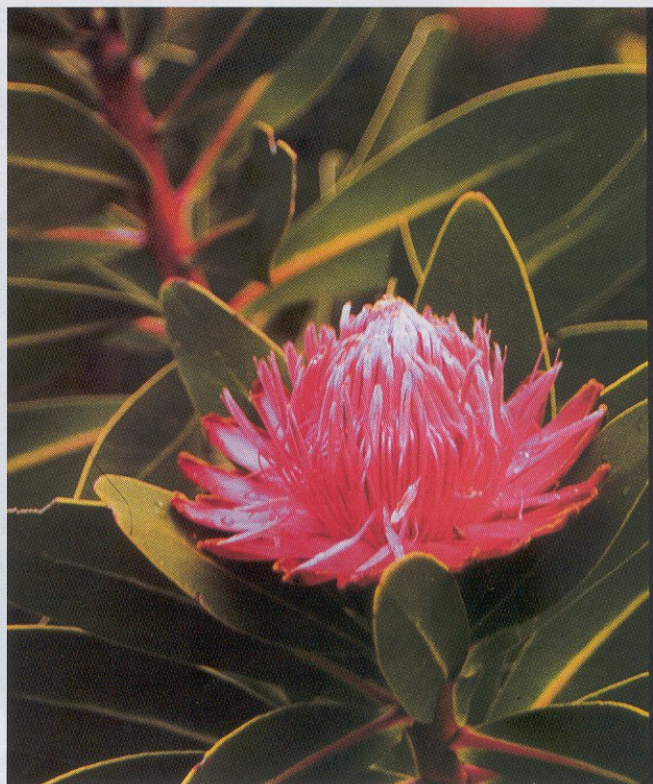


photo by Frederick B. Essig

This Protea “flower” has a mass of small flowers encircled by petal-like bracts.

our most rugged garden flowers and a dominating proportion of our native wildflowers, including sunflowers, daisies, asters, chrysanthemums, dahlias, marigolds, zinnias, cosmos, thistles, and dandelions. Lettuce and artichokes are also members of this family.

A spectacular example of a false flower is our beloved Poinsettia. What appears at first glance to be a large red flower is really a cluster of modified leaves (bracts) that are filled with a brilliant red pigment. The real flowers are the small, inconspicuous green bloblets in the center of the bract cluster. In wild relatives of the cultivated Poinsettia, such as *P. cyathophora*, the surrounding leaves vary from partially to fully colored. Other Poinsettia relatives in the Euphorbia family, such as the crown-of-thorns, have similar false flowers.



photo by Frederick B. Essig

The working flowers of this Hydrangea macrophylla are in the center, while the sterile outer flowers are for display only.



Mussaenda's colorful bracts are long-lasting, while its small yellow flowers open one at a time.

Another surprise is Dogwood. It seems to have simple white or pink flowers, but these too are compound, with a cluster of green flowers in the center of a whorl of colored bracts.

The spectacular Bougainvillea vine also has (you guessed it) false flowers. What appear to be flowers are clusters of 3 brightly-colored bracts, each with a small white flower growing from its base. Similar to Bougainvillea, but in a different family, is Mussaenda, a large genus of tropical shrubs that produce inflorescences of inconspicuous flowers nestled among brightly-colored bracts.

Many species of Hydrangea form simple inflorescences

Aroid family. It includes the spectacular Anthuriums, Calla lilies, Philodendrons, Amorphophallus, Monstera, Alocasia, Colocasia, Caladium, and many more. These flowers are reduced to extremely tiny nubbins on an elongate, thick stalk called a spadix. In most members of the family, the spadix is enveloped by a modified leaf called a spathe, which generally serves as the flag that gets the attention of the pollinators. In some species, the spathe forms a chamber in which flies are held captive overnight while pollen is released for them to carry off the next day.

Finally, there's the Protea family, a spectacular plant family of the southern hemisphere in which compact inflorescences are the rule. Many of them qualify as compound flowers, having a ring of specialized,

petal-like bracts encircling the base of the flower cluster. Members of this family are numerous in South Africa and Australia, and can be grown readily in California and parts of Hawaii, but only a few members of the genus Grevillea are successful in Florida. Whether because of our soil or summer humidity, Proteas and their relatives remain an elusive dream



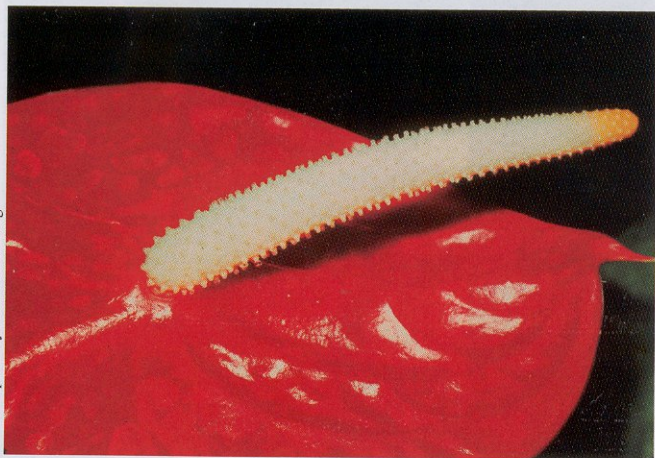
photo by Frederick B. Essig

The crown-of-thorns is a relative of the Poinsettia.

for Florida gardeners.

So a flower is not always just a flower. If you get in the habit of looking closely, you'll quickly be able to recognize what are the true flowers, with their sepals, petals, stamens and pistils, and those that are made up of many small flowers.

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A bright red spathe attracts pollinators to the tiny flowers on the spadix of Anthurium andreaeanum.