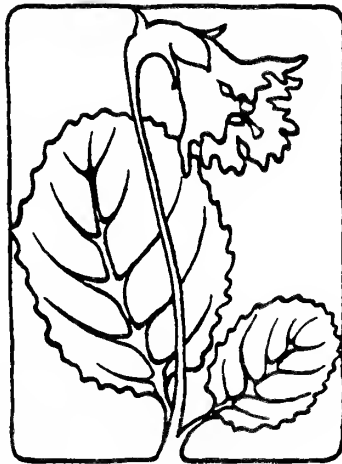


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# SHORTIA

NEWSLETTER OF THE  
WESTERN CAROLINA BOTANICAL CLUB

SPRING 1992



BUD PEARSON, Editor



FROM THE PRESIDENT.....Bessie Sinish

A new year is before us! Many exciting programs and field trips have been planned for your experience into the world of beauty and the mysteries of nature.

As I am writing, I, also, am thinking of the weather of this winter. Warm for the most part. Dandelions and violets have been seen in every month. Green plants have been more noticeable. Now in the first days of February, pussy willows are breaking out from their cases and the buds of the maples are showing pink against the blue sky. Are we to be thrown off by these early signs? No!

In the words of George Dana Boardman, "The ignorant....marvels at the exceptional; the wise....marvels at the common; the greatest wonder of all is the regularity of nature." At one time or another, each one is ignorant, each one is wise, and at all times, if each one is full of wonderment, how rich each of us will become.

\* \* \*

Many accolades go to John Saby, our treasurer of the past three years. He has served us well. John, enjoy your well earned vacation. Your loyalty is not taken for granted. Thank you for your time and effort spent in the interest of the club.

\* \* \*

DO YOU HAVE A NAME? To help us all, both new and old members, PLEASE wear your name tag. These may be purchased at Bud's Barber Shop, 1420 Asheville Highway, across the street from Opportunity House. Bud (No relation to Editor) will make one for you at his SIGN SHOP, right next door.

\* \* \*

WE WELCOME TO OUR CLUB:

- Ed and Barbara Butenof, 201 Red Oak Drive, Hendersonville, NC
- Malcom M. and Frances McGawn, Givens Estate, Wesley Drive, Asheville, NC
- Julia Miles, Givens Estate, Wesley Drive, Asheville, NC
- Ed and Mary Collins, Finley Cove Road, Hendersonville, NC
- Evelyn Bellows, 2 Cedar Drive, Hendersonville, NC

\* \* \*

RESIGNATIONS:

We regret the resignations of Sanford and Elizabeth Atwood, and Elizabeth Greiner. They have been contributing members in many different ways.

\* \* \*

ANTICIPATING SPRING.....the Editor

While this is labeled the Spring issue of Shortia, it is published at a time that should be mid-winter. This year, while there have been many cold mornings, most mid-day temperatures have been as pleasant as early spring. The creeping phlox, some daffodils, and forsythia haven't seemed to recognize that winter is still upon us. And violets seem to pop up year round. Indeed the cultivated creeping phlox (thrift) may be undergoing a genetic change that provides for year round flowering.

Spring is the beginning of the most rewarding times for the botany club members. Each succeeding field trip is a competition with prior trips to identify a greater number of species. Spring has been acknowledged as the beginning of new life by poets and philosophers. It's a time of new life

Cont'd

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for the botany club, too. Time to leave the indoor programs and take to the woods. For a time WCBC becomes the "wildflower club".

Generally spring is considered to start with the vernal equinox, about March 21st, but plants and the weather do not necessarily follow this time table, and we all recognize that spring comes earlier in the lower elevations. For the planners who schedule field trips, about the earliest flowers can be expected is mid March, but within a matter of days, early flowers can be found in profusion at lower elevations. In the lower elevations of Pisgah Forest we find *Epigea repens*, (trailing arbutus), on banks with a southern exposure, one of the earliest plants to bloom. A few *Houstonia serpyllifolia*, (bluets), *Potentilla canadensis*, (dwarf cinquefoil) and *Viola hastata*, (halbard-leaf violet) might be found.

At lower elevations, such as Pearson's Woods and Pearson's Falls, late March may be the time to view a variety of early wildflowers. Among them might be a species, *Sanguinaria canadensis*, (bloodroot), or; *Mertensia virginica*, (bluebells), *Hepatica acutiloba*, (sharp-leaved hepatica), *Erythronium americanum*, (trout lily), *Cardamine concatenata*, (toothwort), and *Claytonia virginica*, (spring beauty). Also, *Trillium cuneatum*, (Little sweet Betsy), among the earliest trillium, may be found.

It is time to dust off your Wildflower Guide, find your magnifying glass and join fellow members in the fields and woods. For some of us it is a repeat process of relearning species names forgotten over the winter. Checking the glossary in your Wildflower Guide is a good refresher of memory that helps with identification. In fact leafing through the book is a great way to prepare for plant identification. The more you know when you take the field, the more rewarding the experience. Spring is full of wonder!

\* \* \*

PHOTOPERIODISM.....the Editor

How do the Spring flowers know when to bloom? The season changes, of course. That is true, but, why don't all the flowering plants bloom when the season changes? Or, another question, with warm winter days and sometimes cold spring weather, how does the plant know which season is at hand? The answer is that it measures the day length, the day length being the period that the sun is above the horizons. Every species is regulated by a specific day length, so different species bloom as the day length changes. This regulation by day length is known as Photoperiodism.

This presents another question. Since there are days of equal length in the spring and fall, how does the plant know whether it is a spring flower or a fall "bloomer"? The plant distinguishes by the sequence of events. In spring the sequence is of lengthening days after a period of dormancy. In the fall the days grow shorter after a period of growth.

The regulatory mechanism within the plant is controlled by a protein called Phytochrome, a pigment found mostly in the leaves. The phytochrome has two forms that absorb red light and far-red light and enable the plant to "measure" the night length and thus the day length. On the basis of these measurements, it will send hormonal signals that will trigger genetically programmed responses,....such as producing flowers. Experiments demonstrate that artificial light will interrupt the night length with the result that genetic responses may be untimely. Maybe the porch light causes those dandelions to bloom during a warm January?



In December Aline and I saw a dandelion in full bloom but a couple of days later it had faded. I thought no more about the incident until about a week later I passed the same location and lo, a miracle. The dandelion stem had grown straight and taller than before, and was crowned by fully developed seeds waiting for the wind to blow them away. How soon do you suppose they will grow and bloom and how far away?

This is what recording for the WCBC is all about--seeing the usual and unusual, calling attention to interesting items on field trips and recording them for future use by our club.

How did 1991 reveal the truths of botany to us? Each one found his or her own excitement, learned a few things and enjoyed our common experiences and friendships. The 1991 WCBC program was outstanding.

The great deal of work required in 1991 to maintain and improve our "Recorder" system required a committee which consisted of Elton Hansens, Chr., Erica Parmi, Bud and Laverne Pearson, Anne Ulinski and Bill Verduin. We thank the Committee and other members who helped them from time to time. In 1991 nearly 100 pages of reports and lists were added to our files. For many field trips in 1991 we provided a list of flowers likely to be found to each hiker. These lists were taken from previous records of hikes in the same month or from lists prepared by the trip leader or recorder on a scouting trip beforehand. These lists were well received and helped enable all hikers to recognize the flowers and associate scientific and common names with them. This also seemed to increase curiosity concerning plant communities and environments. The lists are neither difficult to prepare nor costly. Should we continue to prepare and distribute these lists on most field trips? Please inform the officers or recorders of your desires.

The 1991 Schedule listed 59 events. Lists of plants in bloom were prepared for 28 field trips. These data have been studied through the year. We can show the great diversity of flowering plants in our area by citing a few statistics. The lists of flowering plants prepared on field trips from March through October 25 were alphabetized into a single list. This list contained 450 species names which belong to 77 families and 240 genera. Of course, the largest family was the Asteraceae (composites) with species in 29 genera followed by Liliaceae (lilies) in 18 genera and Rosaceae (roses, etc.) and Lamiaceae (mints) each with 13 genera. Forty families were represented by only a single genus. One should remember that we only recorded plants actually in flower. Also, we see and recognize many trees and other plants which often have small flowers which we do not notice. Generally we ignore the grasses, sedges, and rushes with their tiny flowers which are difficult to identify. Even so the 450 species make an impressive and diverse list.

Why do we see so many kinds of flowers? That is easy---because we visit many kinds of habitats over an observation period of many months. We no doubt see many other flowers which we cannot name and we don't make the effort to find out. So what! We have a great time!





# LOOK AGAIN !

Among our early spring-flowering plants there are a number of paired species that offer good opportunities for dusting off the field guides and sharpening our powers of observation.

Take the Spring Beauties, for example. The only obvious difference between our two species lies in the leaves, and although there seem to be endless variations in their shapes they usually can be separated if one keeps in mind that in Claytonia virginica they are narrow ( $3/8$ " would be exceptionally wide) and essentially uniform in width along most of their length, tapering gradually toward the base with no evident distinction between leaf-stalk (petiole) and blade. In C. caroliniana, the blades are wider at some point (which may be below, above, or at the middle) but in any case they are clearly differentiated from the petioles.



The foliage of Hepatica consists of 3-lobed basal leaves, and in H. acutiloba these lobes are pointed, while in H. americana they are rounded. (The sepal-like bracts beneath the flowers also are pointed and blunt, respectively). The flowers, which are composed of petaloid sepals, generally are white in the first species but more likely to be blue, violet or pink in the second.



Pachysandra terminalis is familiar to many as an ornamental ground-cover which often persists after cultivation. We should be aware, however, that there is a related native species in southern woodlands. It is P. procumbens, known as Allegheny Spurge, and differs in that its spikes of little white flowers grow laterally from the lower, not upper, stem. Also, the foliage is mottled with light green early in the year.

Dick Smith



## LET'S LOOK AT TRILLIUMS

Trilliums are among our showiest spring wild flowers. With their parts so plainly in 3's, it is difficult to mistake a trillium for any other flower. Trilliums are members of the Lily family. Unlike other members which have parallel-veined leaves, trilliums have net-veined leaves.

Trilliums fall into two groups: Flowers on a stalk; and flowers which are sessile (no stalk). Trilliums which may be found growing in western North Carolina, along with some characteristic features which may be helpful in their identification are these:

1. Flowers on a STALK. Leaves NOT MOTTLED.

Flowers usually on an UPRIGHT stalk.

*Trillium erectum* var. *erectum* - Wake robin; Stinking willie

Flowers maroon or white; pink, yellow, green colors are infrequent.

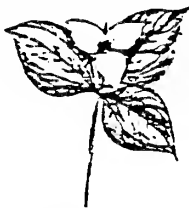
Stamens same color as petals. Anthers whitish. Flowers ill-scented. Radford shows as growing in 22 counties to high elevations.



*T. grandiflorum* - Great white trillium

Wavy-edged white petals form a tube like an old-fashioned Victrola horn. Anthers yellow. Flowers turn pink with age.

Western part, to high elevations.



*T. undulatum* - Painted trillium

White petals with red, or magenta, inverted "v" at the base, near the throat. Grows in acid soil, typically above 3,000 feet, with rhododendron and hemlock.



Flowers usually on a NODDING stalk. Leaves not mottled.

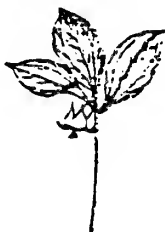
*T. catesbaei* - Catesby's trillium (INFREQUENT)

Petals white to deep pink. Pink-edged sepals are sickle-shaped. Does not grow at high elevations.



*T. cernuum* - (also *T. rugelii*) - Nodding trillium (RARE)

Flowers usually white. Anthers lavender to purple. Filaments white. In *T. rugelii*, the throat is deep red. Radford shows as growing in Henderson, Polk, Mitchell, Mecklenberg, Yatin, and Guildford counties.





Flowers usually on a NODDING stalk. Leaves not mottled. (continued)

T. erectum var. vaseyi (T. vaseyi) - Vasey's trillium

Deep red overlapping petals. Flowers sweet-scented, hang beneath large leaves. 13 counties. Not at high elevations.



2. Flowers SESSILE. Leaves usually MOTTLED.

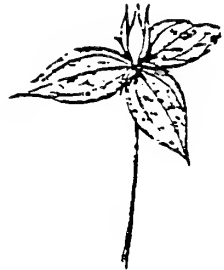
T. cuneatum var. cuneatum - Little sweet Betsy

Flowers scented. Flowers maroon, or varying shades, to brownish maroon. Stamens colored like petals. Frequent in s.w. mountains.



T. cuneatum var. luteum (T. luteum) - Yellow trillium

Petals, stamens, and ovary usually lemon-yellow. Lemon fragrance. Radford shows as growing in Graham, Madison, Swain counties.



T. discolor - Pale yellow trillium

Petals spade-shaped, cream to pale yellow. Stamens purple. Not tall growing. Radford shows as growing in Jacson County, NC; Oconee, Abbeville, Aiken, Mc Cormick, SC.



Illustrations adapted from Recognizing Flowering Wild Plants - Grimm

Millie Blaha







S H O R T I A

Vol. XIV, No. 1

Spring 1992

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A quarterly publication of the Western Carolina Botanical Club

Editor: Bud Pearson

Distribution: Frances Gadd

Please submit contributions for the next issue by May 10, 1992 to:

Bud Pearson, 2514 Kanuga Road, Hendersonville, NC 28739

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SHORTIA

c/o Frances Gadd

218 Pheasant Run

Hendersonville, NC 28739

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FIRST CLASS

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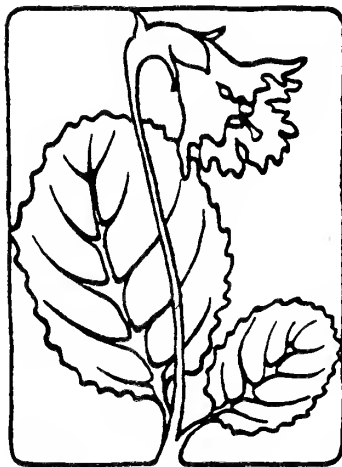


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# SHORTIA

NEWSLETTER OF THE  
WESTERN CAROLINA BOTANICAL CLUB

SUMMER 1992



BUD PEARSON, Editor



When you receive this issue of Shortia, most of the spring flowers will have set seeds, which contain the embryo for next year's plants. Thus the seed is both the beginning and the end. Summer flowers will bloom, ready for pollination. The seed is fertilized. The cycle is complete once again.

This is one of many, many cycles of nature. To me another cycle of fascination is called in botanical terms, phyllotaxy, meaning the placement of leaves on a stem or axis. Many times the question has been asked, are the leaves opposite or alternate. True, an important tool in identifying a plant, but, more important is the reason for such an arrangement. The position of the leaves is generally governed chiefly by their relation to light. Scientists have worked this out by a mathematical formula. Be aware of other cycles as our field trips take us to different ecological environments. How is our environment shaped and changed by the natural elements of bacteria, toxins, and viruses. There are always new cycles. New species replace old ones by competitive exclusion. Our woods and forests are forever changing. The process of changes are seen everywhere. Look for them.

In closing, I know you would want me to express our sympathy and understanding to Erica in the loss of her mother who lived a full 97 years.

And congratulations to Frank Bell, a valuable and an enthusiastic member - one who is always looking ahead - on the celebration of his 95th Birthday.

Have a great summer. We look forward to seeing many new faces. Name tags are helpful to members - old and new.....Bessie Sinish

#### NEW MEMBERS AND ADDRESS CHANGES:

New members: Perry, Pat H. & Lois W.  
32 Dvdardi Court  
Brevard, NC 28712

French, Price & Alice  
216 Haywood Knoll Drive  
Hendersonville, NC 28739

Address change: Camenzind, Erno & Peggy  
116 Lambs Creek Road  
Brevard, NC 28712

#### INVITATION TO MEMBERS

Frank and Calla Bell asked that an invitation be extended to Western Carolina Botanical Club members to visit their Camp Green Cove and enjoy the beauty of the woods and trails. The woods and hiking trail of this beautiful location offer an abundance of botanical specimen natural to the Southern Appalachians. In past years the club has scheduled many field trips to the Bell's property. Current scheduling has not included these trips because the committee has made an effort to find new and varied environments and to avoid repetition. However, individuals and small groups who would take advantage of the Bell's invitation will have an enjoyable and rewarding experience. It would be best to phone Frank Bell at 692 3241 in advance.

#### SUGGESTIONS AND CRITICISM INVITED

The editor invites any suggestions members might wish to make as to the material or format of SHORTIA. You are also invited to present any criticism or correction of any material printed. Suggestions are accepted in any form, criticism and corrections should be in writing.



The last issue of SHORTIA contained Elton Hansens' last report as Recorder. In it he thanked the members of his committee for their help, but I want to thank Elton for the superb job of organizing many years of back files and pioneering the new system of listing flowering plants. It will make my job easier.

Thanks are in order for two other members of the Club - Millie Blaha and Anne Ulinski - who were most instrumental in securing the wetlands of Jackson Park and Mud Creek for future generations. The Club as a whole and as individuals already have enjoyed the flora and fauna of the Park. Please add my "Bouquet" to that of the Times News and the Transylvania Times to Anne and Millie.

After a winter of fascinating indoor programs we plunged into the spring season of field trips. It was inaugurated by a "Hardy Souls" hike in the Pink Beds on February 21st. Although the calendar said it was winter, the trip turned into a "spring romp" on a delightfully warm, sunny day. The weatherman, however, had some surprises in store for us.

After an unusually warm winter, spring arrived with a month of cold weather. This effectively halted the advance of the spring flower season. As a result, flowers were scarce on many of our field trips. Jones Gap, Bat Cave and Pearson Falls, however, did not disappoint us. The biggest disappointment came when the three day Smokies trip was cancelled due to rainy weather. The recorder did not miss the trip, because I was fortunate enough to be taking Millie Blaha's Wild Flower Class which included three days at Snowbird Mt. Lodge. After driving over in the rain we had several beautiful days of searching for wildflowers. The loop trail at the Joyce Kilmer Wilderness area was as fantastic as ever - perhaps slightly beyond the peak bloom on April 21st. The Stewart Ridge Road was a highlight, as well as a section of the AT Trail at Stecoah Gap. Here the white and yellow trillium, *Trillium grandiflorum* and *T. cuneatum* var. *lutem*, were prolific and at their peak. Underneath the trillium the forest floor was white with Rue anemone, *Thalictrum thalictroides*, interspersed with lush violet plants, *Viola palmata*, var. *palmata*. Sad to say that we witnessed a senseless act here. A family from Georgia pulled up specimens of plants and carried them back to their van. Somehow I doubt that the plants will live, even if they survive the trip back to Georgia. We all should remember that the flowers belong to all of us and that they should be left to bring pleasure to all who walk among them.

On April 26th I lost my Mother who knew that special joy and contentment that comes from walking amidst the beauty of the natural world. Some of you may remember her from the Smokies trip of April 1991 where, at the age of 96, she inspired us all. I shall miss telling her about, and often showing her, the beauty that we experience on our field trips.....Erica

THE BELGIUM DENDROLOGISTS

BESSIE SINISH

The past months have been very busy and rewarding to a few of your botanical club members. A group of Belgium dendrologists - nineteen in number - visited our area. Those of us who had contact with them found them to be quite overwhelmed with the area in its beauty and resources. Bill Verduin, Elizabeth Feil and Lowell Orbison gave of their time and knowledge. Thank you. We also are grateful for leadership from the North Carolina Arboretum, the Biltmore Estates, Dr. E. Buckner of the University of Tennessee, and Dr. John Creech.

Was there trouble in communication with these Belgiums? Not in the FIELD. They knew the BOTANICAL NAMES.....Bessie

PAYMENT OF DUES: 1992 Annual dues are now long past due. Any member who has overlooked payment of their \$8.00 annual dues and wishes to remain a member, is urged to send their payment to the treasurer, Ken Sinish, at once. The rolls and address list will be purged of all names of former members who have not paid dues for this year, 1992. If you have any doubts about whether you have paid or not, you may contact Ken at (704) 693 1573. His address is; 230 Echo Drive, Laurel Park, NC 28739.



Reflecting on all the wonderful diversity of the plant life on earth, I have become a firm believer that every plant, no matter how insignificant it may seem to us, has a purpose and a use. Take the stinging nettle, *Urtica dioica*, for instance. It stimulates the growth of all other plants in its neighborhood and helps to hasten the decomposing of the compost heap by excreting nitrogen, silica, iron, protein, phosphates, formic acid and other mineral salts. Also, it makes a tasty and healthful dish when lightly boiled.

The poke berry, *Phytolacca americana*, has roots, leaves and berries that are toxic to humans, but, if picked early when the shoots are just coming out of the ground, it makes a delicious dish. The "old folks" always prepared them with eggs to counteract the toxins. They also say, "If you eat a big "mess" of 'poke salat' in the spring you will not be sick for a year." The birds grow fat on the berries all the fall and winter. The Indians used the berries for a lovely shade of red dye.

The leaves of pipsissewa, *Chimaphila umbellata*, or Prince's Pine, with its delicate waxy petals contrasting beautifully with its variegated pistil and stamens and its glossy leaves, make it one of the prettiest of woodland flowers. "Leaves of this plant, moistened with brandy, assuage the rheumatism." -- (Vegetable Materia Medica, published 1825)

Then there is the poison ivy, *Rhus radicans*, surely not here just to plague us? Even though we may not know of what use it is - it, too, has its place in the interdependence of plant and animal life on this mysterious and wonderful planet on which we are privileged to live. . . . . Millie Pearson

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 ASPLENIUM PLATYNEURON
 

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by BILL VERDUIN

For many, many years I have been taking special note of the locations in which we find Ebony Spleenwort, *asplenium platyneuron*. A very large proportion of these ferns were growing in transitional forest... "old fields" abandoned and reverting to forest. A much smaller number of sightings have been on road cuts, slopes of exposed subsoil and rock. Occasionally, but only very seldom, have I found ebony spleenwort in undisturbed woods. Why such limited distribution? Why those specific areas? This puzzle has haunted me for years and no one I have asked has been able to give me any explanation.

At last, a solution! Santa Claus brought me a new fern book, "Ferns of the Coastal Plain", by Lin Dunbar. She writes, "*Asplenium platyneuron* can be grown in a fern garden or on a window sill, though a soil rich in nutrients will kill the plant." So that's it! Like birdfoot violet, it just can't stand prosperity! Old abandoned fields have generally lost their topsoil to erosion... they are abandoned just because the soil has lost its nutrients, And road cuts where the surface is only subsoil would certainly be low on nutrients. Dunbar's statement is clearly substantiated by my observations. But..., but why are these two species (and perhaps others) actually killed by good rich loam in which most plant would thrive? So another puzzle replaces the first. Does anyone have comments or suggestions?

\* \* \* \* \*

NOTE: Both Millie and Bill have posed questions. Your answers or comments are invited. If you read on, there is question and curiosity about leaf color which begs your comments. Please send your comments to SHORTIA in care of the editor.



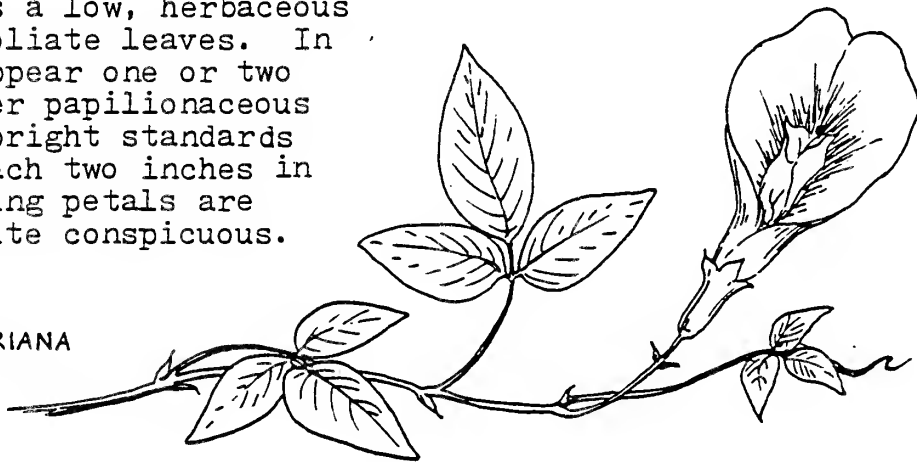


# LOOK AGAIN !

We tend to think of plants in the Bean Family (Fabaceae) as having smallish flowers aggregated into heads, spikes or racemes. A notable exception in our area is the Butterfly Pea (Clitoria mariana), which bears solitary (or very few) flowers of relatively large size.

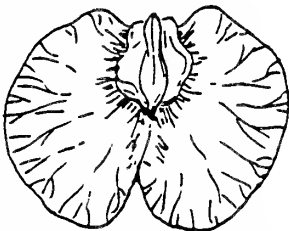
It is a low, herbaceous vine with trifoliate leaves. In summer there appear one or two pinkish lavender papilionaceous flowers with upright standards that may approach two inches in height. The wing petals are smaller but quite conspicuous.

CLITORIA MARIANA



Sometimes confused with this is the closely related Centrosema virginianum, which is known as Spurred Butterfly Pea. This is also a vine, sometimes climbing as well as trailing.

The flowers are flatter, more circular, and only about an inch long. It owes its common name to the presence of a small spur at the base of the standard, but certainly more evident is the fact that the flowers appear upside-down, with the keel and wings uppermost. Also, the calyx (which is partially hidden by bractlets) has a short tube and longer lobes, whereas the reverse is true in Clitoria.



CENTROSEMA VIRGINIANUM

Butterfly Pea is fairly common in some of our mountains; Spurred Butterfly Pea is more likely to be found as we explore farther into the adjacent piedmont.

*Dick Smith*



The function and importance of photosynthesis is well known, at least by people with the slightest interest in botany. There is a great deal known about the process, but, apparently a great deal more to be discovered. While trying learn something about leaf color, a library book contained a preface to more detailed information that was apparently written to impart a perspective that developed the importance of the subject. The following was "extracted" from those paragraphs.

The most important colour in plants, and indeed in the whole world, is the green of chlorophyll. It is this pigment that harnesses sunlight and channels its energy into producing the chemicals and oxygen that provide for all life on earth.

In the sun, 148 million kilometers away, a continuous nuclear explosion is going on. The enormous energy this produces is radiated as electromagnetic waves in all directions across space. A tiny fraction (equivalent nonetheless to the energy produced by one million atom bombs) reaches the outer part of the earth's atmosphere every day. Over a third of this is reflected back into space by clouds, snow, and ice. Most of the remainder warms up the oceans and the land and drives the great heat engine of the earth which we recognize as weather. A small amount of the energy, light mainly in the red and blue region of the visible spectrum, is absorbed by the chlorophyll of green plants. (Green light is the least absorbed by green plants; we see their transmitted or reflected light.) By the process called photosynthesis some of this light is converted into the chemical energy of the plants substance. The earth's plants trap in this way on average about 0.2% of the energy of the sun's radiation that reaches the earth's surface.

Harvesting of sunlight only takes place in chlorophyll containing plant cells (there are minor exceptions.). In photosynthesis, the chlorophyll captures the energy of sunlight and uses it to split water into its constituents, hydrogen and oxygen, and to form energy rich compounds. The hydrogen is combined with other chemicals in the plant, but the oxygen is liberated into the air because the plant does not use all of it. The plant uses the chemicals it has formed to help convert carbon dioxide into carbohydrates and other organic matter. These spread throughout the plant to be used for growth, seed and fruit production. Given sunlight, green plants are thus able to form all the chemical compounds they need from the carbon dioxide in the atmosphere, water and small quantities of mineral salts from the soil. The main by-product of photosynthesis, oxygen, is of overwhelming importance to all other living things and has made life on land possible. Plants, virtually alone, have produced the oxygen which now forms a large proportion of our atmosphere. Green plants in the sea were making oxygen over 3 billion years ago. Very slowly the oxygen content of the atmosphere increased and after millions of years, perhaps 450 million years ago, life moved from the sea and began on the land. The reason for the long period of life in the sea before life on land evolved is closely connected with oxygen. When it reaches the upper layer of the atmosphere, some of the oxygen is converted to ozone, which blocks the ultra-violet radiation sent out by the sun and prevents it from reaching the earth's surface. Until sufficient oxygen and its product ozone had been produced by the green plants in the sea, the lethal radiation reaching the earth would have killed any living organisms on land. Ultra-violet radiation does not penetrate water, so plants and animals were able to evolve safely in the depths of the ocean, gradually emerging to colonize the land when there was enough oxygen and ozone to reduce ultra-violet radiation to an acceptable level.

Plant chemical energy in the form of green plants is therefore the very thread of life on earth. The rest of the living world, including animals and fungi, cannot use light to manufacture their own substances. Instead they obtain plant chemical energy, which we call food, in a great variety of ways. Herbivores feed on green plants directly. Carnivores feed on herbivores and other carnivores. Omnivores, including man, feed on both green plants and other animals.

Even after they have died, plants continue to be useful. They are the storehouse of



the sun's energy. Together with decaying animal matter they provide food for a whole battery of decomposer organisms, including small animals, fungi and bacteria. Since plant substances that are eaten can only be used efficiently if they are combined with oxygen in the body, we are double dependent on plants: they provide both the raw materials and the oxygen for releasing their energy to maintain the living world.

Oil, coal and peat are products of ancient photosynthesis and by burning them we release energy captured by green chlorophyll from sunlight millions of years ago. This is the principle of fossil fuel burning on which we depend for much of our industrial and domestic energy requirements.

The study of botany, the continuing evolutionary process, and environmental responsibility are inseparable subjects.

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## LEAF COLOR

BUD PEARSON

Why aren't all leaves uniformly green? For the most part we expect leaves to green, and most are. There are some that are not all uniformly green, though, such as the Trout Lily, with spotted leaves that suggest the markings of the fish.

A year or two ago one of our members reported on several years of observation of a patch of Galax, with the result that no conclusion could be reached as to why some leaves were a shiny green and others were a deep, liver shade of red. Since then I have somewhat casually observed that the Galax in our woods is sometimes green and sometimes the deep dark color. A few months ago, two patches were the dark color. Yesterday there were new green leaves and old leaves that were green with traces of the dark color, but none with uniform dark color. Admittedly my observations have been too casual.

A little library search has turned up several reasons for variations in plant leaf color. The most interesting is the mechanical and chemical adjustments to available light according to the needs of the plant. A plant in the diffuse light of the forest floor may be solid green with chlorophyll to adapt to the limited light for the process of photosynthesis. Conversely, an unsheltered plant exposed to intense sun, may reduce its use of the sunlight by withdrawing a portion of chlorophyll in its leaves, usually leaving white or pale green edges or lines along the leaf veins.

Another reason for different colors may be that the leaf is able to use different wave lengths of the color spectrum. Green chlorophyll uses the red light rays of the sun, reflecting the green color which humans can see.

Among the various chemicals that leaves contain besides Chlorophyll, which reflects green color, are Carotene, that reflects yellow, and Anthocyanin that reflects red and blue. Different chemical reactions from soil and environment are thought to influence variegation by chemical action. (In the fall, when trees are preparing for their dormant stage, the tree withdraws the chlorophyll from the leaves, thus leaving the carotene and anthocyanin to produce the colorful spectacle of the forest in autumn.)

Some plants are thought to have colorful leaves to attract pollinators. The Indian Paint Brush, with the tips of its leaves that could have been dipped in red paint and its non-showy flower that is almost obscure, is an example.

Another reason suggested for varied color is to warn predatory insect away by having colors that suggest poison or bad taste.

Still another author stated that viruses altered color traits that were sustained through reproduction, generation after generation.

Most of the above information was taken from a couple of library books. Both happen to be mostly picture books with limited text in big print. One is entitled "Leaves" with photos by Kjell B. Sandved and text by Ghilleen Tolmie Prance (Non-fiction, 582.01). The other is "Color in Plants and Flowers" by John and Susan Proctor (Non-fiction 582.13)





S H O R T I A

Vol. XIV, No. 2.

Summer 1992

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A quarterly publication of the Western Carolina Botanical Club

Editor: Bud Pearson

Distribution: Frances Gadd

Please submit contributions for the next issue by August 10, 1992 to:

Bud Pearson, 2514 Kanuga Road, Hendersonville, NC 28739

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NEW  
BOTANICAL  
GARDEN

SHORTIA  
c/o Frances Gadd  
218 Pheasant Run  
Hendersonville, NC 28739

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FIRST CLASS

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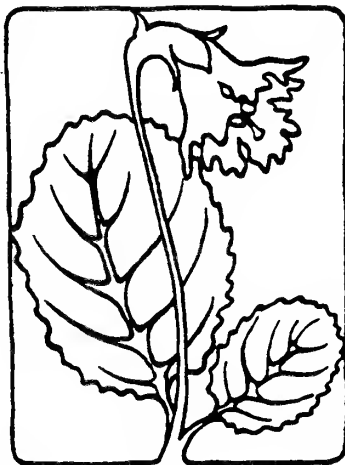


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# SHORTIA

NEWSLETTER OF THE  
WESTERN CAROLINA BOTANICAL CLUB

AUTUMN 1992



BUD PEARSON, Editor



Late summer has arrived with reds, golds, and browns of fall. Notice the deeper blue of the sky. Yes, we are surrounded by a world of beauty and live in a world of wonder.

The hot muggy days of July gave Ken and me an opportunity to read. Many new thoughts and approaches to the world about us gave new understanding and hope. Perhaps you, too, have read CHAOS, by John Gleick. From the San Francisco Chronicle, "Chaos records the birth of a new science. This science offers a way of seeing order and pattern where formerly only the random, the erratic, the unpredictable, in short, the chaotic, had been observed. Although highly mathematical in origin, chaos is a science of the everyday world, addressing questions every child has wondered about; how clouds form, how smoke rises, how water eddies in a stream, CHAOS is a history of discovery."

A book as provocative as THE SEA AROUND US, Rachel Carson's book of the fifties, is a recent book by Thomas Berry, THE DREAM OF THE EARTH. His theme is that, for most people, "...the emerging view of nature remains in a realm separate from the emotions and textures of daily experiences." He covers all aspects of our culture, the evolution of life, of education, religion, economics, patriarchy and of the healing of the earth, of the re-inhabiting of the earth, of the peace of the earth, and the hopefulness of the earth.

We must "...understand that the earth is a single community composed of all its geological, biological, and human components. Creativity is ever present. Without renewal in all life's functions. there would be no progress. "Hopefulness is found in the sequence of crisis moments through which the universe and, especially the planet Earth have passed from the beginning until now." Mr. Berry questions and gives thought provoking answers. I leave you with this thought; we must again learn to communicate with earth in an intimate manner by learning to live with the earth and becoming a part of it, for we are an integral part of it.

Bessie Sinish

Congratulations to Millie Blaha and Ann Ulinski, who were recognized by the National Heritage Foundation for their extensive work gaining state recognition of the Mud Creek Wetlands. This biologically diverse area contains rare plants and is a refuge for birds and animals.

We, members of the WCBC, are proud of your work and recognition.

Bessie Sinish

MEETING NOTICE: MUSHROOMS AND LICHENS

9:30 A.M., Friday September 11, 1992: The meeting will be at the PISGAH RANGER STATION - Presented by Dick Smith (704) 885 2530  
Meet at Laurel Park Shopping Mall at 9:00 A.M. and join others at the Ranger Station.

WE WELCOME NEW MEMBERS:

Rosalie B. Kilgore  
104 Finlay Brook Road  
Hendersonville, NC 28739  
Ph: 697 8081

Gerald and Lois McDonald  
795 Crooked Creek Road  
Hendersonville, NC 28739  
Ph: 697 9572



It is interesting to note the many trees, shrubs and plants not native to our area, which have been brought here from other places. One of these being the Ailanthus tree, Ailanthus altissima, or Tree of Heaven, a native of China, brought into this country in the late eighteenth century, now naturalized over much of the east. The Chinese name, Tree of Heaven, refers to the short time it takes for this tree to reach the sky and not to any Heavenly attributes it has. Far from it, it has become a nuisance tree, growing fast, spreading and crowding out more desirable trees. An ordinance passed in the District of Columbia in 1875 declared Ailanthus ownership a crime, and states that, "Ailanthus trees, the flowers of which produce offensive and noxious odors, are hereby declared injurious to health and any person maintaining such nuisance, who shall fail to abate same, shall be fined not less than five not more than ten dollars for every such offense." This ordinance is still on the books.

## RECORDER'S REPORT

by Erika S. Parmi

The weather has continued to be uncooperative causing several cancellation of field trips, - Big Butt, Soco Gap, and Bee Tree Gap. Craggy Gardens was substituted for Mt. Mitchell and we were treated to a nice display of rhododendron. It was good to see that the Rhododendron catawbiense at Craggy had recovered after several poor years.

Mud Creek at Patton Park was substituted for Jackson Park. There Millie Blaha introduced us to some unusual plants growing in the area; Ampelopsis cordata, a disjunct from the Piedmont, bittersweet nightshade Solanum dulcamara, a rare woody vine which Radford shows as growing only in Ashe, Watauga, Buncombe, Henderson and Jackson Counties. Other plants identified were Discorea batatas, cinnamon vine, a wild yam vine which grows in scattered localities throughout North Carolina. Radford does not show it in Henderson County. A rare species of bittersweet found there was Celastrus orbiculatus, and Berberis thunbergii, or barberry.

Along the Mud Creek boardwalk and path we saw some of the unusual trees in Henderson County, such as the butternut, Jugulans cinerea, silver maple, Acer saccharum, Tree of Heaven, Ailanthus altissima and catalpa, Catalpa bignonioides. We also saw lots of button bush, Cephalanthus occidentalis, which we are more accustomed to seeing in the Piedmont and coastal areas of North Carolina. There were several other plants which are rare, disjuncts or infrequent in our area.

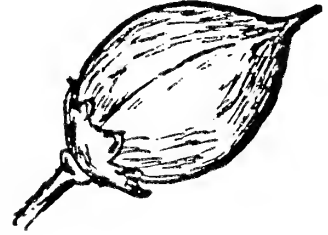
On July 10th Roan Mountain put on a good show for us, plant wise and weather wise. We even saw an "over-the-hill" display of Catawba rhododendrons at the gardens area. It is seldom that we find them still in blossom at this late date. We saw nice specimens in bloom, of the rare Gray's lily, Lilium grayii, Roan Mountain bluets, Hedyotis pappurea var. montana and Robbin's ragwort, Senecio robbinsii.

Last, but not least, we puzzled over the disappearance of the bunchflower, Melanthium hybridum and featherbells, Stenanthium gramineum on the Haywood Gap and Frying Pan Gap trails. Was it the weather or some other natural or human interference? Their absence did not detract from the beauty of the fly poison, Amianthium muscaetoxicum covered slope of Haywood Gap. ....Erika S. Parmi, Recorder



A Chinese riding on Interstate 40 through the Pigeon River gorge in late April might think he was in the Yangtze River valley. On both sides spectacular flowering trees abound.

The Royal Paulownia, fittingly called the Princess Tree or the Empress Tree, is indigenous to China and Japan. The botanical name is Paulownia tomentosa. Relatively late in plant evolution, it was originally in the Bignoniaceae family but recent studies show the small embryo in the seed to be surrounded by copious albumin as is true throughout the Scrophulariaceae family. Paulownia is the only tree in a family that includes the monkey flower, mimulus, penstemon mullein, castilleja, turtlehead, fox glove, gerardia, and figwort. The signature use of the figworts knotty roots to treat the scrofulous nodules of tuberculosis gave the name to this family, from the latin, scrofulae.



The blossoms of the Paulownia occur in the spring before the leaves. The flower buds were formed the previous summer and lay dormant, but prominent, during the winter. The leaves are opposite on a long stem, 6 to 12 inches wide, entire or 3-lobed, green with densely wooly hair (tomentosa). They remain green until shed in the fall. The imperfect flowers are in axillary cymes or panicles one foot long. The individual flowers are 1.5 to 2 inches long, of vanilla fragrance, hairy on the outside, and of a blue-violet purple to almost white hue with darker spots and yellow lines inside; rare colors for a flowering tree. The calyx is 5-cleft. The corolla is funnelform with 5 spreading lobes, slightly curved, and



2-lipped. Stamens are four. The fruit is a 2-valved capsule one to two inches long, egg shaped, brown, and persists a long time. The seed pod has four compartments and contains about 2000 winged seeds. The rattling of the dry seed pods by winter winds gave Paulownia one of it's common names, "Rattle Box". The young tree has green relatively smooth bark becoming grayish brown with age. The pith is chambered. The wood is very light. Paulownia grows rapidly even in poor soil, and has few diseases. The mature tree may be 30 to 60 feet tall with a round crown producing a dense shade in the summer. Other native species and one mono-clonal variety exist, differing in height and floral and leaf coloring.

The Chinese name for Paulownia is "Tung"; the Japanese, "Kiri". Long venerated in China, the wood was used in Buddhist monasteries to make dishes, utensils, coffins, ridge poles, beams, and pillars of houses. Until this day all parts of the tree are used in folk medicine to treat bruises, fever, delirium, liver ailments, and greying hair. Some uses of the tree have become traditional. Because the wood is light, easily covered and decorated, and relatively fire proof, the father planted an Empress tree on the birth of a daughter and harvested it for a bridal chest on her marriage.

The shoes put on upon entering a Japanese home are made from Paulownia wood. Thin slices of the wood are applied to paper for fine envelopes and valuable book binders. The wood is also used in crates and jewelry boxes. Denser trees (five growth rings per inch and of wheat or beige color) are





used to make harps (kotos) and furniture. Only 1 or 2 percent of American Paulownia tree fit this category, yet, overall the Princess tree is the most valuable tree in our forests.

We owe the name and origin of the Princess tree to a remarkable plant collector, Philip Franz Siebold. He was a Bavarian ophthalmologist attached to the Dutch East India Company on the Japanese Island of Deshima from 1823 to 1830. He was a man of commanding presence, culture, strong political views, and a zeal for discovering plants. His ocular skills made the notably myopic Japanese relax their aversion to foreigners and allow him unrestricted rights to collect plants in their islands. Eventually he cajoled a nearsighted astronomer to give him a map of Nippon, a military secret at that time. This aided his collecting but unfortunately, on a



return voyage to Deshima, a storm wrecked the ship. The map was discovered and Japanese heads rolled. Due to Siebold's prestige he was only confined to the island for two years and then banished home in 1830. He took 458 plants to Holland. By 1859 the political situation had change and Siebold was sent back to Japan. Japan forgave and revered him as a Sensi or teacher. He lived in such splendor that the company finally recalled him. Political and social agitation, inflammatory writings, and imperious living antagonized the Dutch and Siebold haughtily retired to Bavaria for his remaining years. He, with his co-physician and writer, J.C. Zuccarini, named the Princess tree after Anna Paulovna Romanov, wife of Prince Willem of the Netherlands. She was the daughter of the ill-fated Czar, Paul I of Russia and, at least nominally, the granddaughter of Catherine the Great.

It is of interest here to compare the Princess tree to a native tree in the Bignonia family that has obvious similarities. The Catalpa tree blooms later and with the leaves. The flower have slightly smaller panicles and are chiefly white with yellow lines and purple spots. The leaves are darker green, less coarse, and have only five hairs. The seed capsule is like a cigar; not an egg. Only 2 fertile stamens are present. The pith is continuous.

In spite of its imperial beauty, the Paulownia tomentosa is not a tree for everyone. The litter of its messy leaves and twigs and the persistence of its overwhelming brown seed pods are definitely in the minus column. Yet who can mind such high entertainment bills when one has consorted with such a regal Russian or Oriental lady?

NOTE: Royal Paulownia was first discovered growing in Western North Carolina in the late 1800's along the Pacolet River gorge in Polk County by Giles William Pearson, father of member Millie Pearson.

#### LETTER TO THE EDITOR

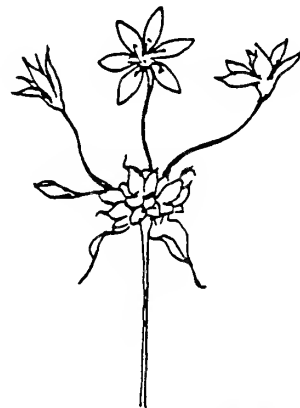
In your last issue a writer asked if Poison Ivy, Rhus radicans, had any worthwhile purpose? It does, or, it did. Back in the 18th Century, British and French doctors heard about poison ivy from the colonists, who reported that the Indians used it as a medicine. They used it to keep wounds open and to cure ring worm. The European doctors used it to treat dermatitis, "Paralytic Affections and other Diseases of great Debility". While the allergic reaction was somewhat debilitating, it did cure the ailment for which it was intended. It has apparently fallen out of use, replaced by more expensive modern cures. .... Louis Pasteure



# LOOK AGAIN !

Of all the herbaceous plants in the Lily Family, only the wild Onions (Alliums) seem to have earned our disapproval. But even this is attributable to a single species--the alien Allium vineale, or Field Garlic, which has become an obnoxious lawn weed.

The hollow cylindric (rather than flat) leaves of Field Garlic serve to separate it from our native species, which while sharing the distinctive onion odor are interesting, useful, and--like many other family members--have pretty flowers when seen at close range. Take the true Wild Onion (A. canadense) for example: Its umbels may contain only bulblets, but more often these are mixed with delicate, long-stalked pink or white flowers with widely spreading tepals, measuring one-half inch across. It will be found in open woods and fields, blooming in spring and early summer.



A. CANADENSE

This is followed by Nodding Onion, A. cernuum. In this the umbel consists wholly of flowers, which usually are an attractive purplish pink, with conspicuously protruding stamens. A curious crook in the flower stalk just below the inflorescence causes it to hang downward.



A. CERNUUM



A. TRICOCCUM

In spring, the broad strap-shaped leaves of A. tricoccum tell us where Ramps, or Wild Leeks, can be dug, but the flowers do not appear until summer, when the foliage has disappeared. The narrowly bell-shaped flowers are white or cream-colored, and are crowded into a rounded umbel atop a naked stalk.

*Dick Smith*



Chicory blue is a bold and distinctive blue color. It isn't delicate and it doesn't match the color of the sky as someone poetically wrote. But it is a beautiful flower found decorating our highways throughout the summer. If you have driven around the northeastern United States much in the summer time, you must be impressed by the chicory along the shoulders and banks of the highways.

One of Susan Tyler Hitchcock's essays, in her book *GATHER YE WILD THINGS*, is about chicory, *Chichorium intybus*. She tells about the plant and its uses.

In Europe, chicory is cultivated, both for greens and hardy roots.



Here, in the United States, one occasionally finds cultivated chicory in a grocery, or chicory seeds for sale in a catalog. The seeds will produce a plumper plant than those growing in the fields and on roadsides, but will be similar in taste and nutrients to its wild relation. Several coffee companies enrich their morning beverage with ground roasted chicory root. Ironically, much if not all of the chicory now added to American coffee brands has been imported from European chicory growers. With all the blue that lines our highways in the summer, you would think we could harvest our own.

A relative of the dandelion (both in the Composite family), chicory sends down a similarly long, thick root to tap minerals from deep within the soil. It sends up a flower stalk perennially. Greens should be gathered early in the growing season, before any stalk appears, and can be cooked or eaten raw

for salad. Roots should be gathered late, after the flowers have died.

When you gather chicory roots, go prepared for serious digging. They often grow in rocky soil and have roots a foot or more deep. To roast the roots, they should be cut into pieces 1 or 2 inches long and roasted in an oven that is no more than 300 degrees F. The roasting should be watched so that the roots brown but do not char. The roasted root sections can be ground in a blender or coffee grinder, if you have one.

The book, *GATHER YE WILD THINGS*, would make a nice gift. It has 52 essays about plants and their uses. The essays are arranged in seasonal sequence, one for each week of the year. Illustrations by G.B. McIntosh are commendable. Nice book for the coffee table or "short interval" reading.





S H O R T I A

Vol. XIV, No. 3.

Fall 1992

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A quarterly publication of the Western Carolina Botanical Club

Editor: Bud Pearson

Distribution: Frances Gadd

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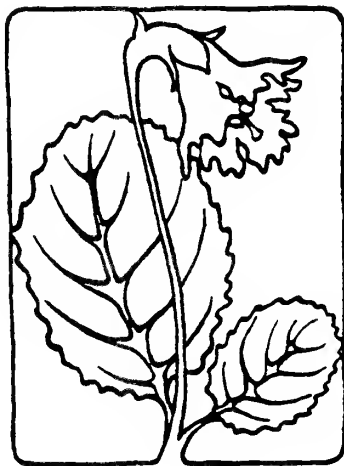


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# SHORTIA

NEWSLETTER OF THE  
WESTERN CAROLINA BOTANICAL CLUB

WINTER 1992 - 93



BUD PEARSON, Editor



JANUARY 1993 MEETING SCHEDULE

Jan. 8, 1993 - At the Hendersonville Library, 2:00 PM. Edward Engle, engineer for the Department of Transportation, will speak on the landscaping of our roadsides.

Jan. 15, 1993 - At First Citizens Bank, 2:00 PM. Patricia Tolbert, Director of Annual Giving for the Nature Conservancy, will introduce us to some of the newer preserves as well as those already established in western North Carolina.

Jan. 22, 1993 - The ANNUAL MEETING, 11:00 AM, at St. John in The Wilderness, Flat Rock. The business meeting will be followed by a covered dish luncheon. Please bring a covered dish to share and your own table service. Coffee and tea will be furnished.

Jan. 30, 1993 - 2:00 PM - At the Carolina Room, Carolina Village. A LEARN AND SHARE meeting conducted by Bill Verduin. Ph. 697 7316. (There is a new parking lot at Carolina Village that is convenient to the outside door to the Carolina Room. It is opposite the pond, off the right hand drive from the main entrance. A walkway from the parking lot passes the pond and takes you directly to the Carolina Room door.)

THE PRESIDENT'S MESSAGE

by Bessie Sinish

Now is the season of green. Lycopodium of dark rich green with their candle like spores spread on the forest floor. The light colored buds of leaf and flower stand above the green leaves of the rhododendron. The delicate buds of *Leucothoe* hang from the axil of stem and green leaf. The green fronds of Christmas fern along with the green bronze fronds of the grape fern can be seen on hill and dale.

Now is the season to see the red color of partridge and holly berries, the yellow bracts of Witch Hazel, dark reds of Oak, the yellow of grasses, the light coppery browns of Beech leaves, and colorful mosses and lichens found on logs, stones and trees.

Then, too, it is the season to see the color and texture of tree trunks and to see how branches seem to reach upward to the blue and gray of the winter sky. If, truly, we are to enjoy the one Earth from which we all receive our many blessings, we then must engage all our senses through careful observation of nature. Are you ready to observe, to smell the earth, to feel the breeze and to listen to the sound of the great outdoors?.....Bessie Sinish

WITH SYMPATHY

On behalf of the Botanical Club, I wish to express our deep sympathy and love to Miles Peelle in the loss of his lovely wife, Eleanor. Her beautiful smile and enthusiasm for the world about her endeared her to us. We are richer for having known Eleanor Peelle.....Bessie Sinish

GREETINGS TO NEW MEMBERS

- Walker, Peter B. and Cynthia, PO Box 189, Fairview, NC 28730
- Thomas, William R. and Shirley A., PO Box 272, Cedar Mountain, NC 28718
- Harris, Mary Helen, Rte. 1, Box 650, Sylva, NC (April to Nov.)  
6112 Archerwood Ct., Orlando, FL 32808 (Nov. to Mar.)
- Scott, Lee, 188 Cardinal Road, Brevard, NC 28712
- Gertz, Jean, 615 Biltmore Ave., Asheville, NC 28803
- Updike, Connie, 45 Grouse Lane, Brevard, NC 28712



The early plant collectors in the U.S.A. give us an appreciation of the plants that still intrigue us when we encounter them as rare or infrequent.

It may be a surprise that other plants than *Shortia*, found largely in Georgia and Northern Florida, have an interesting history. The most beautiful "lost" plant that is found in abundance in Western North Carolina and in the eastern states, is the horticultural *Franklinia alatamaha*, which has just finished blooming in mid-October at College Walk in Brevard, NC.

In 1765 the Bartram's encountered, in their travels, a cluster of 30 or 40 small spreading trees on the flood plain along the Altamaha River about 60 miles inland from the coast of southeast Georgia. The records are not clear as to whether the seeds were taken back to the Bartram's Garden in Philadelphia then or in 1775. In any case the success in raising the species occurred and soon other growers had success in keeping the species alive.

Other visitors and travelers reported in following years a few trees were still alive but in reduced numbers and by 1780 only 2 or 3 trees were alive.

From Charleston, SC, a well known botanist, E.A. Marsh reported in 1803 no tree could be found in Georgia or any other southeastern area. He wrote, at that time, the final botanical description and gave the tree its scientific name, naming it after John Bartram's close friend, Benjamin Franklin - hence the generic name *Franklinia*.

Success in propagation by various means continues to this day. A recent survey in and around Western North Carolina indicates the *Franklinia* is planted in large numbers here and north of North Carolina. It does well in Massachusetts. With protection it will do fairly well in southern Michigan but will not survive extreme cold winters. Strangely it will not grow today in southeast Georgia where the Bartrams found it in 1765. Of the three specimens bought by College Walk residents in 1987, two have survived. One had 128 flowers between July 26th and October 21st this year. One other plant belonging to Mrs. Helen McKelvey had 38 flowers.

In botanical relationships, it resembles the southern *Gordonia*, but differs in that it is deciduous with maroon colored leaves in the Fall color period, whereas *Gordonia*, of north Florida, has evergreen leaves.

In this area *Franklinia* is the only large shrub or tree with conspicuous white-gold flowers to bloom from late summer to frost in October, thus attracting attention by the floral loving public. ....by Miles Peelle

Editor's note. A specimen of the *Franklinia alatamaha* still grows in Bartram's garden in Philadelphia along the Schuylkill River. Personnel at the garden believe it is a descendant of trees grown from seeds collected on the Bartram's second trip to the place of their original discovery.

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#### IN MEMORY OF BENJAMIN FRANKLIN TULLAR

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We have lost a good friend and a respected member with the unfortunate passing of Ben Tullar. Ben was the capable leader of many field trips and always a pleasant addition to any of the clubs activities. He will be well remembered by all of us for his love of nature and the pleasure he gained from the forest and woods. Ben will also be remembered for his humor and good disposition - and his determination to eat lunch at twelve noon sharp.

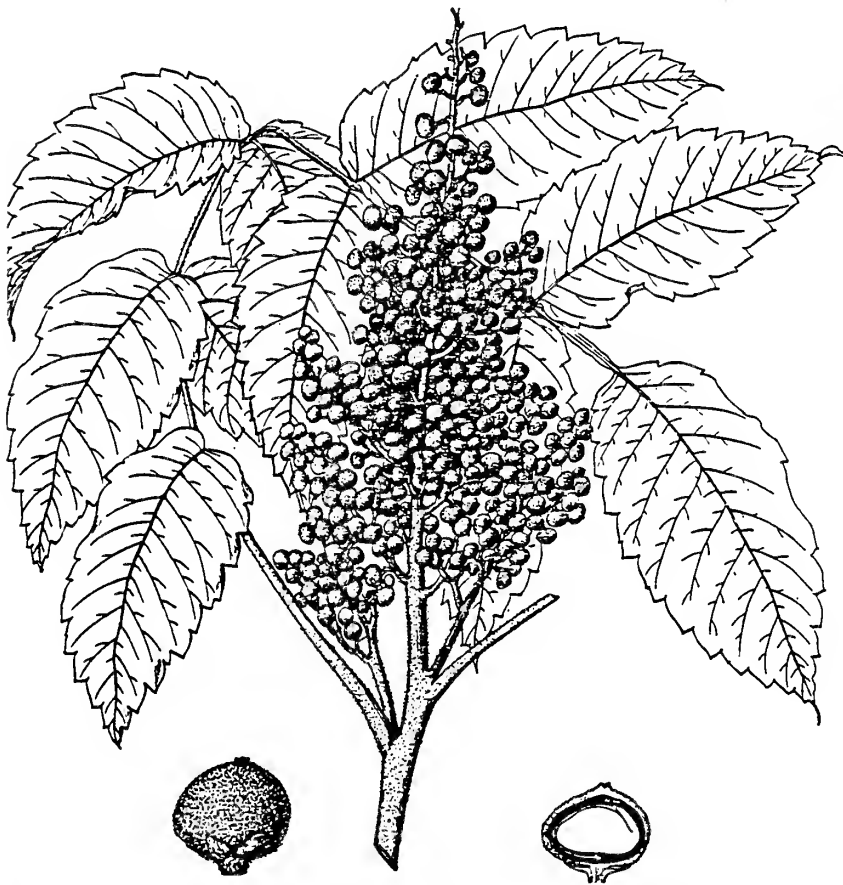
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Harry Logan has provided an article entitled, "New or Little-known Plants" from the October 9, 1895 issue of a publication named, "Garden and Forest", that was published between 1888 and 1897 in New York. The author was Charles Sprague Sargeant, of the Arnold Arboretum. It describes the *Rhus michauxii*.

Mr. Sargeant stated that the *Rhus michauxii* was an extremely rare, little known and long lost shrub in his 1895 article. It had been discovered by the French botanist Michaux in western North Carolina near the end of the 18th Century and recently (circa 1895) rediscovered by Mr. W.W. Ashe at Farmington, Davie County, North Carolina. Mr. Ashe was associated with the Geological Survey of North Carolina at that time. There had been other sightings by botanists named Lyon, LeConte and Boiken, in Georgia and North Carolina. The shrub had been introduced into the Vanderbilt Arboretum at Biltmore the previous summer, "whence it had been sent to the Arnold Arboretum."

The *Rhus michauxii* is described as a shrub with erect stems from one to three feet in height, spreading extensively by underground stolens. The entire plant is villous-pubescent. The leaves are deciduous, from twelve to fourteen inches



in length, with about eleven leaflets; these are oval or oblong, acute, gradually narrowed or rounded and slightly cordate at the base, coarsely crenately serrate, dark, dull and green on the upper surface, which is pilose along the conspicuous veins, pale on the under surface, about two and a half inches long and an inch and a half wide, sessile, or very short stalked, with the exception of the terminal leaf which is borne on a winged petiolule three quarters of an inch in length. The panicles of flowers are terminal, thyrsoid, nearly sessile, about six inches long and nearly three inches broad. The calyx is covered with cinereous tomentum and is divided into rounded pale yellow

petals. The bright scarlet fruit is globose, about an eighth of an inch in diameter, and clothed with close silky pubescence. The juices turn black in drying. Like many of the plants of this family, it is poisonous.

Sargeant writes that, five years before Michaux reported this plant as *Rhus pumila* in his, *FLORA*, the name was used by another botanist for another plant that was probably not a *Rhus*, so the author proposed the name *Rhus michauxii*, naming it for the discoverer. I find no record of a *Rhus pumila* at this date.

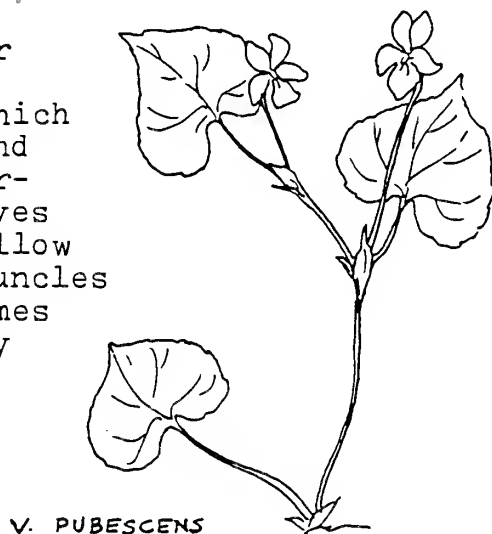




# LOOK AGAIN !

Because of their variability, to say nothing of confusing nomenclature, our leafy-stemmed Yellow Violets are often difficult to identify.

The two species that are most similar are the ones commonly referred to as the Downy and the Smooth Yellow Violets, to which we may assign the names Viola pubescens and V. eriocarpa, respectively. They are characterized by two or more heart-shaped leaves on the upper part of the stem, bearing yellow flowers with brown or purple veins on peduncles arising from the axils. As the common names indicate, the first is somewhat soft-hairy and the second essentially smooth. The cauline leaves are wider than long, those of the smooth species more noticeably so. V. eriocarpa usually has several long-stalked basal leaves as well, whereas V. pubescens normally has but one, or often none.



In Halberd-leaved Violet, V. hastata, the leaves are triangular, longer than wide, with a hastate or cordate base, and sometimes are variegated with silvery or purplish markings.

V. HASTATA



V. TRIPARTITA

Also quite distinctive is the Three-parted Yellow Violet, V. tripartita. The typical species has leaves that are deeply lobed into three narrow segments; in var. glaberrima, however, they are uncut and might be mistaken for V. hastata except for being truncate or tapered--never indented--at the base.

Dick Smith



We often overlook interesting plants because they are "common". The clovers, for instance, are a good example of this. We see White Clover, *Trifolium repens*, almost everywhere, but do we ever stop to think how it came to be so common? It is not a native of this country but hails from Europe and Asia Minor. It's introduction to the U.S. dates back to the first settlers who brought hay loft seed from Europe. It is now found growing throughout the southeastern U.S. from the mountains to Florida. It is one of the most important pasture legumes. There are three general types or forms of white clover: Large (Ladino), intermediate (Louisiana White), and small (English and New York Wild White). Common white clover (White Dutch) is of the intermediate or small type, or a mixture of the two.

Crimson clover, *T. incarnatum*, has long painted flower heads composed of 75 to 125 florets. These brilliant colored florets open in succession from the bottom to the top of the flowering head. The seed forms and the plant dies back during the summer. This clover, a native of Europe, was introduced into the U.S. in 1819. We see beautiful fields of this along the highways of South Carolina.

Red Clover, *T. pratense*, most widely grown of all true clovers. A native of Europe and Asia, it was introduced into the U.S. nearly 200 years ago. We see clover planted on the sides of most of our state roads.

Alsike Clover, *T. hybridum*, Origin of this clover is not known, but it is a native of Northern Europe. Introduced into the U.S. about 1834, it has become an important legume in the northern half of the U.S. It grows best in a cool, moist climate and seldom "Winter Kills".

Strawberry Clover, *T. fragiferum*, native of south and western Europe and Asia Minor countries. The time of introduction to the U.S. is not known, but plant specimens were collected in Pennsylvania in 1878. It spreads by creeping stems that root at the joints and nodes.

Rose Clover, *T. hirtum*, Introduced into California from Turkey in 1944. It is a native of the Mediterranean basin, Asia Minor, Syria, North Africa, Southwest France and Italy. The single, grayish hairy, rose colored terminal flower heads are borne on erect to ascending stems. Petioles of leaflets and stems are densely covered with soft hair.

Persian Clover, *T. resupinatum*, native of Persia, was first established in the Mississippi Delta area in 1928. Since then it has spread through the southern states and north to Massachusetts, Illinois and Eastern Kansas, and in coastal sections of Pacific states.

Subterranean Clover, *T. subterraneum*, was introduced into the U.S. from Australia. It is a native of west and southern Europe, north Africa, Iran and the Caucasus. In the U.S. it is found in the Pacific northwest, California, Arizona, Arkansas, Texas, Tennessee, and the Southeast Atlantic states.

Bighop Clover, *T. procumbens*, is a native of Europe, western Asia and north Africa. It grows to heights of 10 to 18 inches. The flowers, in small loose heads, are yellow and become relaxed and brownish with age. Two other species of *Trifolium*, so closely associated with bighop that all are commonly known as hop clovers, are; Small hop, *T. dubium*, and Field hop, *T. agrarium*. Some botanist call this hop clover, *T. aureum*. These clovers, probably brought to this country with White Clover seed, are widely adapted and naturalized throughout the southern half of the U.S.

Bighop Clover is sometimes mistaken for Black Medic, *Medicago lupulina*, but the clovers have straight seed pods and the *Medicago* seed pods are coiled. White Sweet Clover, *Melilotus alba*, and Yellow Sweet Clover, *M. officinalis*, (continued on next page)



are not true clovers. They, too, are naturalized from the Old World. Tall and bushy, they are identified partly by their sweet odor of new mown hay.

So, as you can see, our "common" clovers are of very "worldly" origin.

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PRONOUNCING THE TWO PART NAMES OF BOTANICAL SCIENCE

by Henry Pearson

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Most of us recognize the misleading variations in common names for wildflowers and have come to accept the genus and species name as the best available way to identify each individual specimen. While accepting this, learning the scientific names has been made a bit more difficult by the problems of pronunciation. It is hard to remember words you can't pronounce. For many of us, memorizing is fast becoming a lost art, anyway. But repeating, to ourselves, terms we hear during programs or on field trips is a good way to memorize. To some who are more gifted at learning wildflower identification, the euphonious Latin (or Greek) is almost like learning musical tunes, one syllable naturally following another.

However, left on our own to read the scientific names, most of us are without confidence and tentatively fall back on our English phonetics. This may become embarrassing. An article on the subject, in an old issue of the North Carolina Wildflower publication, offers some helpful examples, but it is obvious that there are no all inclusive rules. Only experience in the presence of experts provides accurate pronunciation. Even then it is suggested that one should listen to three experts and adopt the pronunciation of the two that sound most alike. Even the "Latinized" words become "Englishized". The genus *Pinus* in latin would be PEA-noose, whereas, Pie-nus is most frequently heard.

There are some rules that offer a little help. One is; to pronounce as many syllables as possible. Every vowel is pronounced, (well almost every vowel). Cardamine (spring cress) might appear to be CARD-amine but is properly pronounced car-DAM-in-ne. Then there are the double "i's" added to latinize personal names, such as *smallii* and *jonesii*. Both "i's" are pronounced. It is SMALL-ee-eye, (not SMALL-eye), and JONES-ee-eye, (not JONES-eye or JOAN-ess-ee). However, there is the diphthong problem; double vowels pronounced as one sound such as, "eu" in *Eupatorium*. The most frequently used double vowel is "ae", usually pronounced as the long "e" as in "bee", or, in Classical Latin it would be "i" or "eye". Every family name ends in -aceae, pronounced -A-see-ee, or, A-see-eye if you prefer the Classical Latin. The combination "ea" isn't normally a diphthong and each vowel is pronounced, as in New Jersey Tea, *Ceanothus* (see-ah-NOTH-us) and chestnut, *Castanea* (cass-TAIN-ee-ah).

Another rule deals with syllable emphasis. As a general rule the third from the last syllable is the one to emphasize; LIL-e-um, kris-ANTH-e-mum, del-FIN-ee-um, ger-AIN-ee-um, cam-PAN-you-la. Before you take too much comfort in this rule, though, remember Rho-do-DEN-dron, Cor-e-OP-sis, and Hi-BIS-cus. This raised some curiosity as to whether the rule applied to words of Greek origin as well. A quick sampling doesn't provide any confirmation, but suggests some terms are scrambled Greek and Latin. But the rule works for some scientific name that have also become the common names; such as *Crassula* and *Clematis*. Following the rule to emphasize the third from last syllable, these terms become CRASS-you-la and CLEM-a-tiss. Is this of any help?

\* \* \* \* \*

PHOTOSYNTHESIS: "Eating Light"

(A chapter heading from *The Practical Botanist*, by Rick Imes, copyright 1990. Rather new in the local library.)



VIOLENCE! Naturalist have observed that the public has accepted the Walt Disney view of a natural world inhabited with cute little creatures possessed of some of humankind's better virtues. Perhaps to correct this false image, there seems an abundance of nature film by National Geographic and various Public Broadcasting productions that show the real animal world in gory detail, with the life and death struggle of the animals who stealthily move through the vegetation, intent upon killing each other. There is a constant struggle for survival as animals fight for food and self preservation. When the television screen shows a pack of hyenas feasting on a jungle victim before death is final, this ruthless competition, which is the law of nature, is forcibly brought home.

Such behavior seems entirely lacking in the plant world. Here, we feel, is a realm where there is enough food and space for everyone, where organisms do not have to live in constant danger from natural enemies, where every bit of life may reach its fullest expression, without injuring other life. Unfortunately for the idealist this is not so. There are no howls or scream, but, underneath the placid exterior of the plant world, life is as rife with contest between species for survival as is the world of animals. Much of this struggle is invisible, all of it is silent. Yet it is a grim warfare without truce, with life as a reward to the victor and death to the luckless loser.

The struggle often centers on getting sunlight or water so essential for green plant nutrition. Where plants grow in close association with one another, the struggle is keenest. In tropical jungles, where there is plenty of water, the struggle rages for sun light, with weaker plant being overshadowed and dying. Many species of climbing plants twine about the trunks of trees and use them as ladders to reach for sunlight often killing or maiming the host tree.

In other areas of the globe the conflict involves the struggle for water where the more rapidly growing plants or plants with more efficient root systems get the water and the less advantaged competitor dies of thirst.

Much like the human experience, where one species colonizes an area, other species are driven out. The constant battle between lawn grasses and dandelions is an example. Without the intervention from a higher order, the dandelions would dominate the yards of many areas.

The most ruthless warfare is between the green plants and the colorless ones; between the chlorophyll-bearers and those plants that cannot create their own food and must steal from others to stay alive. The fungi have evolved and multiplied in type and number so well that there is one fungus for every three self-supporting flowering plants.

Wherever there is a green plant there is a host of parasites ready to assault and molest it. Every breeze brings with it legions of invisible spores ready to reproduce fungus in any plant where the wind might leave them. The spores will remain lodged on the surface of the leaf or trunk until they can find an opening and invade living tissue. There the spores germinate into mycelium of colorless filaments that grow through the plant's tissue, breaking into cells and depositing sucker filaments which feed on the living protoplasm. This incursion results in the death of leaf cells and leaves. In time, and if the invasion is extensive, the plant may lose all its leaves, causing cessation of photosynthesis and death to the host plant. Some times the assault is not deadly but will cause deformity, as cankers on tree trunks or witch's brooms,--closely packed twigs sprouting in a bushy growth on the branch of an otherwise normal tree.

The fungi do not usually bring death to the host until the mycelium is ready to produce spores. These are then produced on the surface of the plant where the invasive force is picked up by the wind to expand the war of destruction.

Nature can be monstrously cruel according to standards of conduct espoused by the higher order of creation.





SEX! Vegetables such as blue-green algae, who are thought to have invented sex long before animals existed on Earth, owe nothing to the animals in resourcefulness of lovemaking. Even though plants are less completely divided into males and females than animals, they are just as varied in shape, in their hermaphroditic and conjugal devices.

The Babylonians are the first people known to have recognized the sexual difference of plants. It was perceived that one type of date palm bore fruit, but only if a non-bearing date tree was present. The perceptive Babylonians surmised that the bearing tree must be the female, the other a male. Those early date farmers, who understood this, planted in such a way as to get the two types together. Actually, it has been since demonstrated that wind can pollinate date palms 50 miles away.

Today we know that thousands of different flowers and blossoms, male and female, are specifically shaped and adapted to fertilization by butterflies, moths, bees, beetles, birds, bats, even snails and other creatures. One bee or butterfly can attend as many as 20 flowers a minute, or a potential 20,000 on a long sunny day. Thus has the vegetable world ingeniously exploited, or even enslaved, the animal. The hermaphroditic plants usually separate themselves by time or space in order not to fertilize themselves. The primrose has a male flower on one stalk and a female flower on another at the same time, but the mallow and sage start off male and later become female. The *Aristolochia* makes the opposite shift from female to male. Others such as the buttercup, have a chemical barrier to self-fertilization.

The common dandelion has rejected sex altogether and dispenses airborne seeds that need no fertilization. Should the appalling prospect of the abolition of sex seem to have merit, consider that the specie has forfeited the possibility of change or adaptability through constantly recurring new combinations of male and female cells (the evolutionary "benefit" of sex). Some botanists are quoted as saying the dandelion is devolving and is likely to get wiped out by future environmental change it cannot adapt to!

If the wind in the willows is a poetic phrase to you, it is assuredly even more so to the willows and many other trees, to most grasses, mushrooms and a good tenth of all flowering plants. A breeze is in truth a link in life itself, for it is vital for these species to broadcast their spores and pollen to the open ocean of air around them, entrusting their descendants to the invisible rivers of wind which waft them as surely as any water current. A single ragweed plant has been measured to generate 1.6 billion grains of pollen an hour, few of which will land upon a waiting stigma.

Germination is expressed by the pollen's sprouting a kind of phallic root that in a few hours elongates to worm its way down to the surface of a papilla (hair) of the stigma, which is significantly coated with a potent chemical aphrodisiac. Once it penetrates the papilla's base, it draws further strength from the very nutritious tissue now around it, which also enfolds it snugly, seemingly to seduce it deeper and deeper until at last it bursts triumphantly into the cavity of the ovary and seizes one of the ovules, pouring its contents into it until their two substances fuse into one and she is fertilized. This is the key genetic act in vegetable reproduction.

Editor's Note: The above are copied, paraphrased, (and expurgated) from two books: one, "The World of Plant Life" by Clarence Hylander, the source for Violence, and the second book is entitled, "The Seven Mysteries of Life" by Guy Murchie, the source for Vegetal Sex.

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A quarterly publication of the WESTERN CAROLINA BOTANICAL CLUB

Editor: Bud Pearson

Distribution: Frances Gadd

Please submit contributions for the next issue by February 10, 1993 to:--

Bud Pearson, 2514 Kanuga Road, Hendersonville, NC 28739

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