NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

6 Louise Drive
Chagrin Falls, Ohio 44022
(216) 338-6622

On the Fringe

Volume ~~3~~ Change 85 January, 1985 No.1

JANUARY PROGRAMS AND EVENTS:

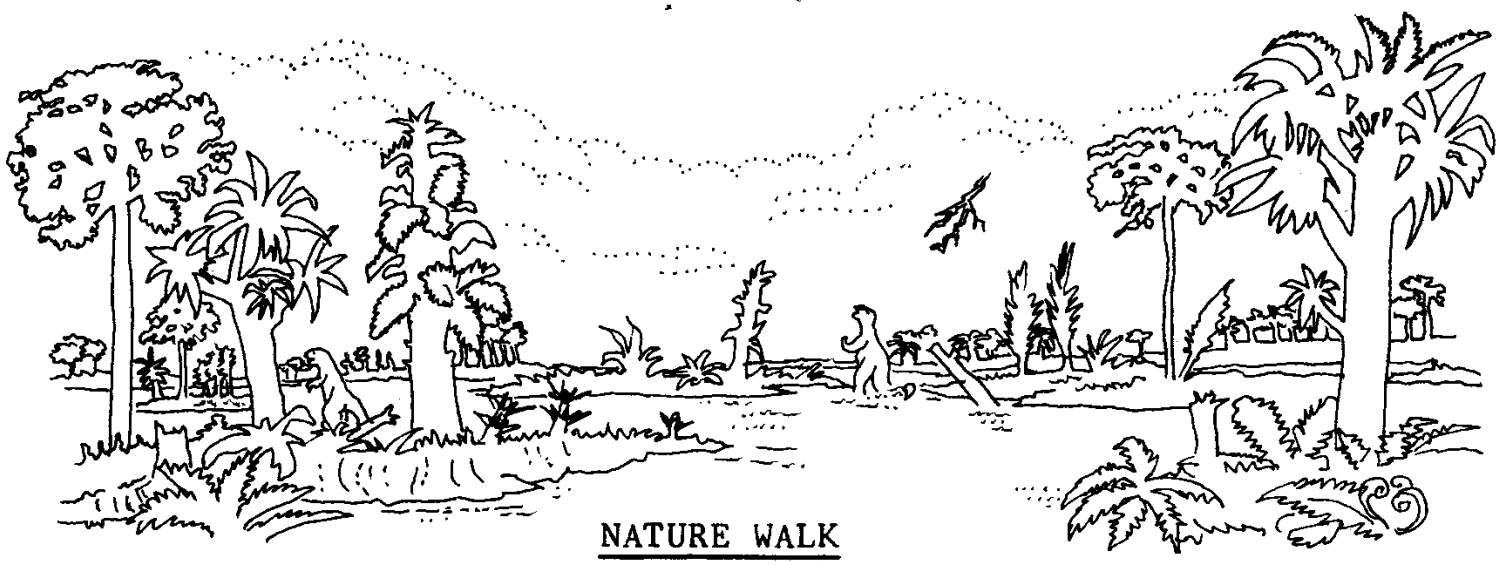
26th - (Saturday) - 1:00 p.m. Cleveland Museum of Natural History. Dr. Shya Chitaley, the Museum's paleobotanist will present a slide lecture with focus on Ohio paleobotany. The group will also be taken on a tour of the paleobotany department. The program schedule that you received as a separate mailing was incorrect as to the day of this lecture. Please note that it is Saturday, the 26th of January.

3/23 to 3/30
5/15 " 5/11
10/6 " 10/5

FEBRUARY PROGRAMS AND EVENTS:

15th - (Thursday) - 7:30 p.m. The Holden Arboretum. Norman Alldridge will speak to us on the subject of lower plants.

23rd - (Saturday) - 9:30 a.m. to 3:30 p.m. Lunch break 12-1:00. Garden Center of Greater Cleveland. Dr. Donald Dean, plant identification class. Dr. Dean prides himself on effectively teaching botany to the amateur, and last year's class proved that point. It was well attended and everyone felt that is was the best we had ever offered. This year's class will be similar, using provided microscopes and hand lenses to take us to a magical, magnified world of plant parts. We will use Weishaupt's "Vascular Plants of Ohio". Copies may be used or purchased at the class. Dr. Dean will lead a follow-up field trip in May. Members: $ 5.00. Non-members: $7.50. We must limit this class to 50, so reserve now by sending your check to The Native Plant Society, 6 Louise Drive, Chagrin Falls, Ohio 44022 or call Laurel Giblock, daytime 341-8833, evenings 272-5852 for more information.



NATURE WALK

by Perry K. Peskin

Care to join me for a short walk through an equatorial rain forest and mangrove swamp? Wear light, loose clothing, for the cool breeze off the ocean unfortunately does not penetrate very far inland, especially through this thick curtain of tree trunks, vines, and shrubs. Also, wear a hat because the lacy foliage of the canopy trees lets through a lot of sun. In fact, you can see the blue tropical sky most of the time--when it isn't raining, that is.

Good sturdy boots are a must. The path is muddy in places, and also you don't want to stub your toes on all the roots sticking out. Forget about insect repellent. There are no mosquitoes or black flies here. That yellow dust in the air? Only spores or pollen drifting down from the trees.

Actually, except for the damp odor of decaying vegetation, it's quite pleasant here. The gurgle of the tidal rivers, hidden behind the mangroves, combines with the sleepy drone of crickets and the occasional booming of froglike croaks from creatures hidden deep in the undergrowth. No screams of parrots or raucous calls of monkeys disturb the quiet atmosphere. The eye is soothed by the countless shades of green. Since there are no flowers on the forest floor, the only colors are in the yellows of the fallen leaves and the metallic reds and blues glinting off the bodies of dragonflies.

The undergrowth seems to consist largely of young trees. Here, around a giant tree-fern, Psaronius, is growing a colony of young ferns, each with a buttress of adventitious roots to shore up the weak, spongy stem. The many half-buried roots which make such hard walking on the path all seem to come from the scale trees, Lepidodendron, with their hard, diamond-patterned bark and crown of needlelike leaves 100 feet above our heads. Golden clouds of

spores descend from their many cones hanging down from short branches among the leaves. The lack of lower branches gives the scale trees a palmlike appearance. Despite the great reproductive potential of the spore cones, most of the young scale trees sprout from the roots, which are really underground stems or runners.

Many of the other trees in the forest have adopted this habit. Bizarre-looking seal trees (Sigillaria) with a bark pattern in vertical parallel lines and a ridiculously undersized tuft of leaves at the very top alternate with the graceful giant horsetails, or Calamites, with their jointed, bamboolike stems. From every joint arises a whorl, or ring, of leaves, from which arises a whorl of branches. The branches then put out whorls of leaves and branchlets in the same manner, giving the whole tree a bushy effect, almost like that of a willow.

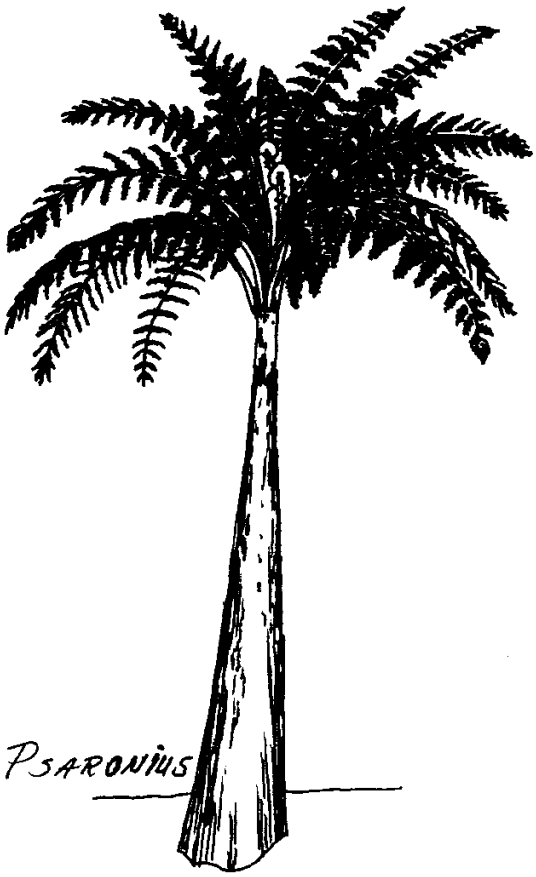
Our walk is interrupted by a sudden gust of wind followed by the crash of small, heavy objects from the top of a nearby tree-fern. Luckily they miss our heads and land in the path. We pick them up--hard, round, heavy-bodied seeds resembling hickory nuts. Since a true tree-fern does not produce seeds, the nuts must have been produced by the Medullosa, or seed-fern, growing close by. As we look up at its graceful fronds rustling in the wind, we can see how closely it resembles a fern with the main difference being the presence of large seeds dangling here and there from the ends of the leaflets.

The large conifer Cordaites also produces seeds which are hidden in the tufts of narrow swordlike leaves. When we find a fungus-riddled stump of a Cordaites that was blown down in a hurricane, we stop to calculate its age from the growth rings, but we are disappointed: due to the uniformly warm climate year-round, tropical trees do not put out annual growth rings.

Our footing becomes very precarious now as the path enters a mud flat and skirts a mangrove swamp. (A mangrove is any tree that tolerates salt water and sends down aerial roots). Stilt roots from the Cordaites arch into the mud flats and the water of the estuary beyond. As in all tropical lowlands, the mangrove roots collect soil and eventually make new land. In the estuary, the shallow water around the mangrove roots serve as a nursery for aquatic animals. Climbing cautiously over the maze of roots, we can see that the tidal rivers swarm with young fish--mostly sharks, lampreys, and coelecanths--and many forms of invertebrates, such as snails, brachiopods, and jellyfish. Immature horseshoe crabs like to crawl out of the water and perch on the stilt roots of the mangroves, as if to sun themselves, but most likely to pro-

tect themselves from predators.....

If you are wondering why the pages of this publication should be devoted to a habitat so different from those found in northern Ohio, rest assured that the locale of the rain forest just described is Ohio...of 300 million years ago, in the later part of the Carboniferous Period, or Coal Age, known as the Pennsylvanian. And, yes, this rain forest was equatorial in the literal sense because the equator ran right through the Midwest back in those days. North America was then connected with all the other continents in a giant land mass called Pangaea. Thirty million years later, during an Ice Age known as the Permian Period, the giant continent began to break up, and North America drifted to its present position in the Northern Hemisphere. The drastic change in climate caused large-scale extinctions among the plants and animals just described. Thanks to the science of paleobotany this particular kind of forest and swamp can be reconstructed in fine detail from the many fossils left behind when the decayed plants in the swamps turned into coal. From all the fossilized marine animals left behind, we know that there was a shallow inland sea covering a great part of what is now the Mississippi drainage basin. However, at that time there was no Mississippi River, nor Great Lakes, nor any of the familiar Midwest landmarks.



In the last 200 years one of the unexpected byproducts of the coal industry has been thousands of fossils, many of which preserve parts of the ancient plants described above. These fossils come in two major forms. In the compressions, a plant part (seldom a whole plant) is caught between two layers of mud or sand and under pressure turns to coal. The external parts of the plant retain their structure down to the very cell walls, but the interior structure disappears. In petrifactions, the interior structure of the plant is replaced by minerals from water, usually molecule for molecule, often preserving the contents of the cells themselves. The exterior of the plant usually disappears.

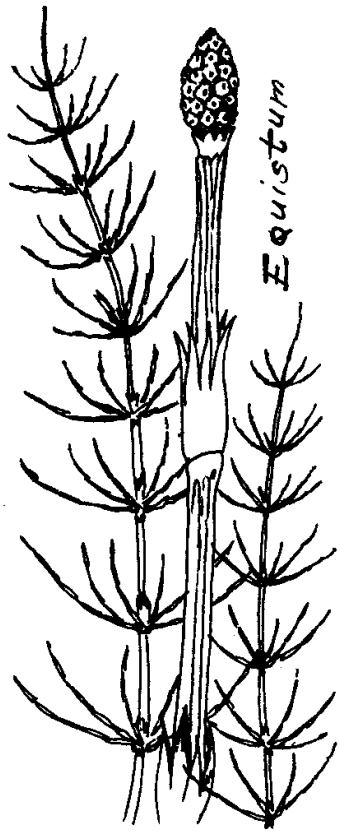
Except in the case of huge tree trunks, such as the Petrified Forest of Arizona, most petrifactions are a hodgepodge of stems, leaves, cones, seeds, and roots, from different individual plants

and plants of different species, all rolled together in a roughly globular shape called a coal ball. Coal balls, dug out of strata above coal seams, usually contained very little coal and so were dumped on slag heaps, to be later retrieved by paleobotanists, once their scientific value was realized. At one time coal balls were ground down mechanically by abrasives to produce thin sections suitable for study under a microscope. Nowadays these thin sections, called peels, can be produced much more easily by treating a sawed-off surface of a coal ball with acids to dissolve the mineral portion. Then the coal ball is rubbed with organic solvents to loosen the cell walls, and a thin section can be peeled off in one piece. The whole process takes only about twenty minutes. By preparing a series of peels, the paleobotanist can analyze the complete internal structure of a seed, a cone, or a woody stem, almost as easily as one can look at a living plant.

The big difficulty in studying peels is in assigning plant parts to species. It's a little like imagining a tossed salad turned to stone and slicing through carrot stalks, olives, tomatoes, and lettuce leaves all at different angles. Does leaf A go with stem B and fruit C, or are they all from different plants? Does stem A differ from stem B, or are they both forms of the same plant at different stages of maturity? For this reason, each part is assigned a different scientific name, called a form genus. This can be confusing. The seed of the seed-fern Medullosa is called Pachytesta, and the leaf is called Neuropteris. Only by applying statistical studies of plant remains found together in the same stratum, or by getting a lucky break (like finding a seed attached to a leafy branch) can the paleobotanist figure out what structure goes with what.

"Assembling" a tree from its separate parts is only the first step in reconstructing the Carboniferous landscape. Next comes the hard part: determining which plants grew together and in what sort of habitat. One technique is to dissolve fossil-bearing rock with acid to recover microscopic spores and pollen grains, which are distinctly different for each plant species, much as fingerprints are different for each individual person. Luckily spores and pollen grains are virtually indestructible, and studying them carefully through the science of palynology will indicate what plants were living nearby even if the rest of the plant parts are not preserved in the fossil record.

Now that we have the plant community, with different species living together, we must call upon another science, still in its infancy---paleoecology--to supply the animals (called herbivores) that ate the plants, and other animals (called carnivores) that preyed upon the plant eaters. It has not yet been demonstrated whether living plant tissue during the Carboniferous was eaten by the primary



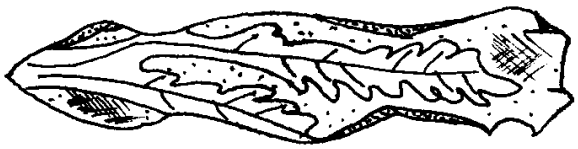
herbivores (mainly insects and giant millipedes). For one thing, very few fossil leaves or stems seem to have suffered obvious damage, such as having pieces bitten out of them. However, we do find great numbers of fungus spores, which may indicate that only after the death of the plant and the start of the decay process did the insects get their jaws around plant material. Then the giant cockroaches performed their function as scavengers (much as their descendants do today) and crickets and grasshoppers found their niche, to be preyed on in turn by spiders, mantises, and the giant dragonflies with their two-foot wingspan. Apparently huge amphibians, looking like bulky, muscular salamanders, stood at the top of the food chain.

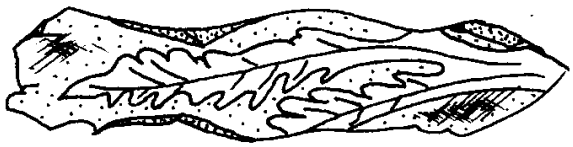
Only recently have paleoecologists found a fossil of a cockroach with a body pattern similar to the shape and veining of a Neuropteris leaflet--evidently one of the first cases of plant mimicry. Did this pattern camouflage the cockroach as it went about scavenging the remains of a seed fern? And what were its specific enemies? And what animal preyed upon these enemies? All of these questions may some day be answered by paleoecologists, as they painstakingly reconstruct the total communities within the estuaries, the mangrove swamps, and the forests further inland.

Paleobotany also answers the question "What happened next?" by charting evolutionary patterns over a long period of time. By comparing the fossils of the Carboniferous with those of the Cretaceous (of a mere 65 to 140 million years ago), we find that the giant scale-trees and seal-trees disappeared, leaving only the tiny club-mosses (Lycopodium), which we still find in Northern Ohio, to carry on their line. The giant horsetails were similarly succeeded only by our diminutive scouring-rushes, Equisetum. Tree ferns still survive in tropical forests, but not the genus Psaronius. Our Ohio ferns descend from different ancestors. Seed-ferns like Medullosa completely disappeared. Perhaps the gingko tree is one of their remote descendants, with its fernlike foliage and heavy seeds. Cordaites faded out of the picture when conifers with needles and scalelike leaves took over. These were the ancestors of our present-day pines, cedars, and tamaracks. By the Cretaceous Period all of these relatively primitive plants were dominated by the flowering plants: the oaks, sycamores, magnolias, birches, legumes, cat-tails and the thousands of other plants that brighten up our world.

Where did they come from? What plants were their ancestors?

Why were they so successful? Did it have something to do with their insect pollinators--the beetles, butterflies, and bees that originated around the same time? These questions are also being attacked by paleobotanists in many institutions the world over. In the cavernous subbasement of the Cleveland Museum of Natural History, truckloads of plant fossils, coal balls, peels, and microscope slides from all periods of geological history may provide future scholars with an answer.





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PRESIDENT'S COLUMN

What a wonderful party that was on November 30th!! So many of you turned out for the dinner (150) and for the lecture (approx. 400) and there was such a congenial feeling about the whole evening that I think we can call it an unqualified success. The speaker went on a little long, but what he had to say was most certainly worthwhile and right up our alley. Sears Exhibition Hall lent an aura of unexpected prestige to the candlelight dinner. I have sent our profuse thanks to the Museum for helping to make it all possible.

We also received very nice letters of thanks from Donald Dean and from Jim Bissell for his award. Jim is going to buy a much needed file chest for his herbarium specimens that he could not otherwise have had.

Your 1985 program has been mailed to you and you should have it by now. Enclosed in it is the 1985 renewal form. It is essential that you answer the questionnaire on the renewal page. Our degree of cooperation with the institutions named depends somewhat on how many of our members are also their members.

We have a wonderful program for you this year, but it is disheartening to the speakers who put in hours of preparation and to the people who got the program together when so few turn out. Let's all try to get to more lectures this year. I have learned something new at every one we have had, and in some cases it opens up new vistas of exploration I hadn't even thought of. In addition, by next Fall you are going to have to have new leadership ready to take over. Those of you who are interested really ought to come forward and make yourselves known so that you can learn the ropes as we go thru the year. We have so many good and capable members that I feel sure the change-over can be easy.

Ann Malmquist

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Please enroll me as a member of the NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO.

☐ ACTIVE.....$ 7.50 ☐ SUSTAINING ...$25.00
☐ FAMILY .....$15.00 ☐ PATRON.....$50.00

Membership runs from January through December and is not pro-rated.

Make checks payable to: NATIVE PLANT SOCIETY
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WHAT'S IN A NAME? PLENTY. by Donald S. Dean

"A rose by any other name would smell as sweet..." Well, maybe. Young Romeo might well have had a harder time selling himself to Juliet if his name had been Bozo Slackjaw. The name does not change the biology of a flower, but it often adds to the charm. Like everything else in nature, the names have become so overfamiliar that we forget how winsome some of them are. Try these:

merry-bells	missey-moosey
jewel-weed	Johnny-jump-up
harebells	love-in-a-mist
wakerobin	forget-me-not
Quaker-ladies	daisy (day's eye)
lady's-slipper	enchanter's-nightshade

kiss-me-over-the-garden gate

We like many common names because they are so descriptive that it is no great problem to remember them. What else would you call a pitcher-plant, pussy willow (with its catkins), or butter-and-eggs (O.K., you could call it toadflax. Have it your own way). How about Indian paintbrush, milkweed, twin-leaf, sundew, ninebark, or Queen Anne's lace? I think "bottle-brush grass" is wonderfully descriptive and I always chuckle over the aptness of "foxglove". Certainly, a walking fern walks and trailing arbutus trails. I was going to mention nits-and-lice and old-man's-beard in the same sentence, but that is a bad combination.

Some names describe some not very nice traits:

tearthumb	wet-dog trillium
skunkbrush	stinking Benjamin
locoweed	poison ivy (poison oak, hemlock, etc.)

Kudzu, that terrible pest that was deliberately introduced into our south, grows up to 12 inches per day and swallows up everything in sight. It is known as the foot-a-night plant, the mile-a-minute vine, just "the vine" and several names the editors have asked me not to use.

Even such a matter as when the flower opens is celebrated in the name of some plants: four o'clock, flower-of-an-hour, mother-of-the-evening, nap-at-noon, and day lily. John Gerard wrote in 1636 of the plant we know as goat's-beard, "...for it shutteth it selfe at twelve of the clock, and sheweth not his face open untill the next daies Sunne doth make it floure anew, whereupon it was called go-to-bed-at-noon."

Some names had religious significance: passion flower, be-

cause of the allegory attached to the structures in the flower, marigold (Mary's gold), virgin's-bower, Star-of-Bethlehem.

There are good reasons for the names of these plants: fireweed, gumweed, catnip, duckweed, ground-nut, poverty grass, resurrection fern, sneezeweed, snow-on-the-mountain, dandelion (dent de lion), saltwort and cheeses.

At the time when botanists and physicians maintained physics gardens, the chief perceived value of plants was their medicinal utility (See the last issue of "On the Fringe.") Some of the names of plants valued for their medicinal qualities persist today: heal-all, boneset, self-heal, feverfew, birthwort†, fleabane, pilewort†, Roman wormwood and (wort-plant)†.

Common names do have a place, but charming as some of these names are, they are not adequate for precise description of our flora required by science. Think how many plants are called stinkweed or bluebells. Think how many plants are named without regard for their true relationship: dogtooth violet, poison oak, or ground cedar. How many plants are given different names by different people. There are over 245 names for the European white lily.

Scientific names can be tongue-twisters, but many are no more formidable than Rhododendron, Iris, Aster, Narcissus or other names that come trippingly off our tongues. Some even have a nice ring to them: Chrysantheum leucantheum (ox-eye daisy) for example.

See how colorful and descriptive some of the scientific names are:

Iris (rainbow)
Aster (star)
Gladiolus (sword-like leaves)
Symplocarpus foetidus (foul-smelling)
Achillea millefolia (thousand leaves)
Theobroma (genus of cacao, food of the gods)
Sanguinaria (bleeding, as in bloodroot)
Tiarella cordifolia (little tiara/heart shaped)

One of the ways a botanist could curry favor or honor a distinguished person was to name a plant species or genus after him. Think of having your name used in perpetuity, especially attached to some lovely thing like Jeffersonia diphylla (Thomas Jefferson), Lobelia cardinalis (l'Obel), Fuchsia (Leonhardus Fuchs), or Tradescantia ohiensis (John Tradescant, gardener to Charles I.)

Linnaeus named some 18,000 plants and honored himself only once. Note that in the name Linnaea borealis L., the L. stands for the person who assigned the name and described the species: Linnaeus, himself. It is bad form to honor yourself, but when he did this he certainly chose a jewel of a flower and said fine things in praise of himself.

Once malice crept in; he chose a mean, weedy species to bear forever the name of a man he disliked intensely, Johann Siegesbeck Siegesbeckia). According to Tippo and Stern (in Humanistic Botany,

a delightful book), Spanish botanists named Galinsoga, a tiny-flowered weed, after Mariano Galinsoga, "a doctor of Madrid whose botanical accomplishments were said to match the smallness of the flower".

Scientific names of species are binomial--just like your name and mine, an exceedingly useful convention since the time of Linnaeus. One good feature of the system is that the species name shows the genus to which the plant belongs. Quercus alba (never just alba) is clearly shown to be a member of the genus Quercus that comprises oaks, just as my name shows that I am one of the Dean kids and a particular one at that.

You would never speak of the plant as alba alone for that is not the name of the species. There are dozens of species that bear the specific epithet alba and it would make a lot of difference whether you put up the childrens' swing in a Quercus alba or a Beggiatoa alba (a species of blue-green algae).

Scientific names are immensely more precise than common names, they are universal, they are timeless and unchanging unless they are found to be in error, and in many cases they are interesting and colorful as well. Let's give them a chance.

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It is tax check-off time again. Last year, our first year for a state tax check-off, Ohio was second in the U.S., an astonishing feat. $ 694,000 was raised for Natural Areas and Preserves alone. Because of the money we received, we have been able to initiate the purchase of nine new preserves. $ 158,000 went to the purchase of Kent Bog, alone. In addition to land acquisition, money is used for visitor facilities in already-owned preserves, a statewide scenic river inventory, the Ohio Bird Breeding Atlas, and state natural landmarks program, among others. We are the second line this year, Line 21, but don't miss us. Those small contributions of three and five dollars, or any amount, all add up to a very important program.

Please see the back page of this publication for one of the very important uses of your tax check-off donations.

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Tom Samplines
3390 Clayton #7A
Shaker Hts
Ohio 44120

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Founding Chapter Of
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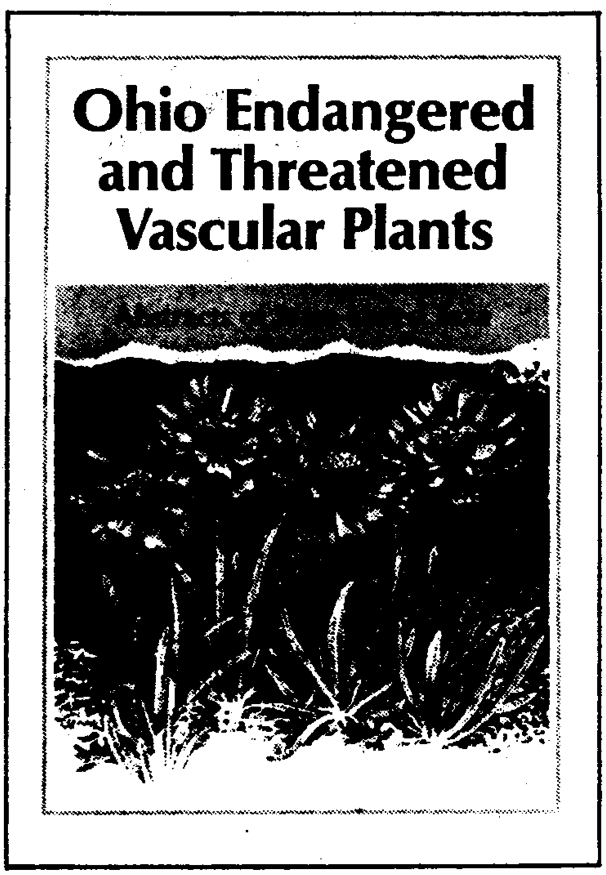

The ODNR, Division of Natural Areas and Preserves has published an extremely interesting and informative book entitled "Ohio Endangered and Threatened Vascular Plants". This Book is important, not only for its content and research, but the reaction to this publication will determine whether the ODNR will continue this vital research. If the sale of the book is well received, the ODNR will then publish a book of presumed extirpated plants of Ohio. Your support is needed.

Written by Barbara Andreas, James Burns, Allison Cusick, David Emmitt, John Marshall, and David Spooner, this 635-page book contains abstracts on 367 Ohio endangered and threatened plants. Send check payable to ODNR for total $ 18.08, and mail to: Publications Center, ODNR, Fountain Square, Columbus, Ohio 43224. If more copies or add. info, contact Bob McCance at the ODNR.