

# For Nature preservation



COLTS NECK TOWNSHIP  
MIDMOUTH COUNTY

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## RULES CONTROLLING THE USE OF FREER NATURE PRESERVE

1. The preserve is open every day between one hour after sunrise and one hour before sunset.
2. Enter and leave the tract *only* at the Creamery Road gate.
3. No alcoholic beverages, firearms, bows and arrows, axes, hatchets, saws, penknives, smoking, fires, picnicking, camping, littering, horses, bicycles or other vehicles (except wheel chairs) allowed.
4. No food or beverages in throw-away containers.
5. Use only marked trails and unobstructed paths as shown on centerfold map.
6. Stay off all steep slopes and embankments.
7. Do not climb or sit on fences, including those bordered the tract as well as those protecting the slopes.
8. Children under fourteen years of age must be accompanied by a responsible adult.
9. Dogs and other pets are allowed only if kept under the complete control of a responsible adult.
10. Those who willfully damage, destroy, alter or remove any trees, shrubs, wildflowers, ground-covers, fungi fruiting bodies, including any portions of dead and decaying trees or other vegetation either standing or fallen, shall be subject to prosecution.
11. Those who willfully deface, destroy, alter or remove any fencing, signs, trail markers, log seats, gates, or any other structures or objects placed here to serve a functional purpose shall be subject to prosecution.
12. Educational groups shall not exceed fifteen students per adult guide with no more than two such groups in the park at the same time.
13. All organized groups are required to register and make advance reservations in person at the municipal offices.
14. Fishermen are asked to enter and leave the stream area at: (1-The north bridge aboutment on Highway #34. (2- The bridge on Creamery Road. (3-The Creamery Road gate, and are subject to all other rules as outlined above.

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MAP OF FREER NATURE PRESERVE ..... Centerfold

## INTRODUCTION

We Americans hear and read more and more about energy waste, air and water pollution, littering, vandalism, depletion of our natural resources, etc. Because we have allowed our environment to reach the point where our very lives are threatened, steps are being taken toward correcting our past mistakes and shortcomings. This rather costly movement must be supported and sustained for the generations to come. The people themselves must be convinced of its importance, through education. It must be directed to our youth, both at home and in our schools.

Our forests, streams, and woodlands are an important part of our natural resources. Without them, man could not survive. If today's teachers and parents can teach our children the value of these natural resources, *they* will become the protectors of their environment tomorrow.

From 1938 to 1964 this beautiful property was owned, maintained, protected and loved by the Freer family. They willingly sold it to the township to preserve its beauty and uniqueness as a public park. In 1976 the Environmental Commission recognized the tract's potential as a perfect outdoor classroom to serve this important educational and recreational need. It was formally dedicated for that purpose on June 25th, 1977. Those who come here merely for a walk will certainly enjoy its beauty and pleasant atmosphere, but those who first use it as a place to learn will discover their walks becoming more enjoyable, whether they be here or in any natural area.

When this preserve is completed, its visitors will be introduced through the use of guide pamphlets to as many major points of interest as can be conveniently observed in the tract. At this time, only a rather small portion has been developed. However, this part happens to be the section containing the greatest variety of interesting things to be observed and studied, since its trails take one not only through a representative section of the upland hardwoods, but also down along portions of the Yellow Brook flood plains.

This pamphlet will provide some basic information to assist you in the learning process. However, the real key to the amount of knowledge gained will depend upon the keenness of your own observations. The bark, branching habit, leaves, twigs, buds, flowers and fruits are all features of trees and shrubs which should be studied carefully as aids toward their identification.

As you know, there are many books available to aid in the identification of anything you may see here, from the trees and other vegetation, the wildlife, to the lowly fungi fruiting bodies sprouting from the rotted trunk or springing through the carpet of leaves. But regardless of where your interests lie, it is only by moving slowly and remaining alert will you see the male flowers in the form of catkins in the Ironwoods, or hear the resounding tattoo of the Flicker chiseling its nesting hole in a tree!

It is sincerely hoped that every visitor will recognize and understand the importance of abiding by the rules of Freer Nature Preserve as printed on the inside front cover. They **MUST** be obeyed, — or this beautiful preserve along with its dedicated purpose will be destroyed.

## SECTION I BASIC BACKGROUND INFORMATION to provide a better understanding of the DESCRIPTIVE TRAIL GUIDE, SECTION IV.

### A — CLASSIFICATION OF PLANTS

Freer Nature Preserve contains about thirty varieties of woody plants and shrubs, plus an undetermined number of herbaceous perennials and ground-cover plants. All of these, plus the thousands growing throughout the temperate world each have a distinctive habit of growth, — and leaves, flowers and fruits unique to itself. All of these plants are classified in Latin with their botanical names, i.e.:

GENUS is the family of many groups.

SPECIES is a group within a family that resemble each other closely.

VARIETY is a sub-group within a species, having definite individual characteristics.

EXAMPLE: *Quercus alba*, of the genus *Cupulifera*

A White Oak would be classified within the *Family* or *Genus* CUPULIFERA which includes the Beech, Oak, and the Chestnut, or all woody trees and shrubs which bear their male and female flowers in the same manner, with their fruit or seed as a nut incased in a cup or burr.

*Species* — *Quercus* (Oak group)

*Variety* — *Alba* (white or light grey bark)

For our purposes here, we will use the common names but include the botanical names for those "botanists" who want to look them up in reference books. We will omit the Family names, however, as being unimportant to this pamphlet.

*Woody plants* are trees and shrubs which produce stems which become hardened and persist for years, and sometimes for centuries. *Trees* develop generally with a single stem called a "trunk" and with supporting branches called the "head" or "crown". A *shrub*, on the other hand, rises from its roots with a group of stems, the number of stems making it impossible for the shrub to grow very big. Generally, if a plant with two or more stems grows over 15 feet high, it is classified as a tree.

Woody trees and shrubs are either:

*Evergreen* — Hold their leaves throughout the winter.

*Deciduous* (de-sid-ju-us) — Drop their leaves each winter.

They can be classified into two groups:

1. The Conifers, or Softwoods

The Conifers are mainly needle-type evergreen trees with a straight, erect branch and small lateral branches. They are fast growing and have straight-grained timber which is easily worked. Many of our houses are framed with this kind of lumber. The Hemlock, Pine and Spruce in this park are conifers, their leaves are *needle-type*, and bear their seeds in cones.

2. The Broadleaves, or Hardwoods

This group is more varied, being mostly deciduous with broad, flat leaves. Some are slow growing like the White Oak, and thereby produce the hardest and most durable lumber. Some are fast growing, such as the sassafras, producing softer wood. The Mountain Laurel in this preserve would be classified as a *broadleaved evergreen shrub*.

The taller trees in this or any other woodland which forms the canopy is called the *upper story*. The shrubs and small trees are referred to as the *under story*. The last category would also include the low growing *herbaceous perennials* (any plant growing from and dying back to the ground each year) plus creeping plants that cover the ground, and ferns, mosses, vines, etc. These will be referred to as *ground covers*.

### B — DETERMINING THE AGE OF A TREE.

"No living thing is older than a tree!" is indeed a fact.

There are only three ways of telling how old a tree is:

1. Knowing the year it started growing from a seed.
2. Counting the annual growth rings at ground level after sawing it down.
3. By the use of an *increment borer*. This is an instrument that is screwed into the tree trunk, and upon removal, extracts a thin core 6 to 8 inches long from which the annual growth rings can be counted. By measuring the trunk circumference to calculate its radius, and multiplying by the average annual rings per inch of the core would give us a reasonably accurate age of the tree. The age of trees mentioned in this pamphlet were determined by this method.

### C — HOW DO TREES GROW?

#### 1. Natural reproduction:

All trees and woody shrubs of the forest have *flowers*. Many are very showy like the American Dogwood. Others are quite hard to see, as they have *no petals*. Some bloom in early spring before the leaves appear, some after the leaves open, and still others during the summer.

The flowers of trees have both male (*staminate*) and female (*pistillate*) parts. Their purpose is to produce *seeds*. A seed starts to grow when the pollen dust from the male flower lights on the sticky part of the female flower of the same kind of tree. This is called *fertilization*. From that moment on during the summer the seed develops the parts of a tree — consisting of — a tiny white thread with a bud on one end; a root tip on the other, plus two tiny leaves and a good supply of food. It is covered with a weatherproof coat. When the seed is ripe, it leaves the parent tree and goes traveling. Many seeds have wings or blades which help them fly with the wind to a place where they can grow. Maple trees have winged seeds. Other trees have roundish seeds in a shell like the acorns of the oak tree, or the nuts of the hickory, walnut, pecan, etc. Many of this type are eaten by birds, animals, and man. Squirrels bury many acorns to hide them for future food. Many are forgotten, and later germinate to become a tree. Other trees and shrubs have fleshy-coated seeds which birds like to eat and they too are helpful in spreading the seeds.

If the seed has enough moisture to soften its shell or coat, the tiny white thread expands and grows longer. The end with the root tip turns downward into the soil while the tip with the bud and leaves turns upward as though pulled by the light of the sun. The two leaves open and the bud starts to develop a stem which is destined to become the trunk of a tree.

#### 2. From Buds to Twigs to Branches

Trees always grow from their upper *buds*, each year adding to their height.

trunk thickness and side branches. During each summer, at the base of each leaf and at the tip of each branch, a bud or cluster of buds is formed for the next spring's growth. They are protected by downy or waxy scales during the winter. With the first warmth of spring, the buds start to grow into new *twigs* and *branches*, unfolding leaves as they lengthen. The flower buds burst into bloom, the female flowers are fertilized and the seeds for new trees (or food for the animals and birds) start to develop.

Twigs and buds are *never the same on any two varieties* of deciduous trees or shrubs. For this reason, they are considered very helpful in making an accurate identification. In addition, the arrangement of buds, leaves, or twigs on the branches is important. They are found either opposite each other, or alternating from side to side along the twig or branch depending on the species. In most every case, all varieties of trees or shrubs within a group (species) have the same leaf arrangement (*opposite* or *alternate*).

### 3. Leaves — Nature's "sun machines"

Most all living plants grow leaves in countless numbers. The work done by leaves is so important that every living thing on earth depends on it. Each leaf is a small "factory" which uses air, water, and sunlight to make food for the plant. Without this food, no plant could live. Animals that eat plants would starve, and without plants and animals, man could not live.

Leaves take in simple inorganic materials such as carbon dioxide and oxygen from the air, and water from the soil. With energy received from the sun, they manufacture carbohydrates. This process is called "photosynthesis."

Leaves are composed of cells and veins enclosed between a transparent top surface, and a lower surface containing thousands of tiny air holes or pores. The pores have valves which open and close as necessary to let in air or give off moisture. The leaf stem not only supports the leaf of the twig, but serves as a "pipe-line" for water and nutrients coming up from the roots and sugars being sent downward for growth and energy.

With all its equipment and supplies of raw materials, a leaf could not make food without a magic chemical we call *chlorophyll*. This important growth element is inside the cells under the transparent upper leaf surface in the form of tiny green specks. It provides the green color in the leaves. But more important, when light strikes the chlorophyll specks, the food making process begins. The pores open on the underside of the leaf to take in air for its raw materials. Water with chemical elements are pulled up from the roots. As all needed elements are extracted and converted, the air and moisture are discharged through the pores while the liquid sugars are sent downward through the inner bark to nourish new cells throughout the woody portions of the tree.

In early fall, a ring of cells at the base of the leaf stems starts to expand, slowly cutting off the circulation of water and nutrients. By early October, the process has stopped and the chlorophyll disappears. The colors replacing the chlorophyll are the natural pigments caused by the chemicals remaining in the leaf:

**Crown** — leaves on branches and twigs make food for the tree.

**Outer Bark** — protects the tree.

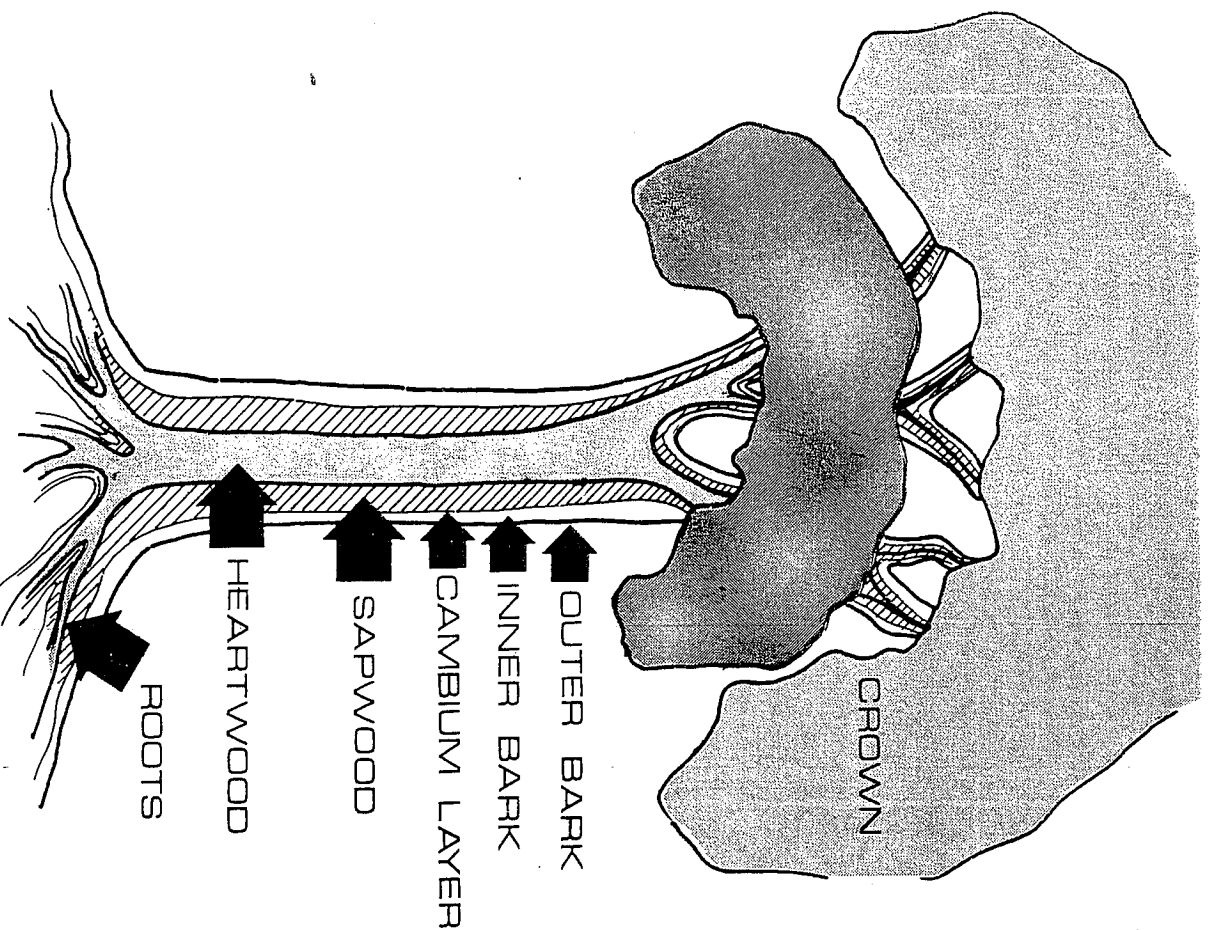
**Inner Bark** — carries liquid food to cambium layer.

**Cambium Layer** — grows new wood and bark.

**Sapwood** — is the youngest, softest wood in the trunk. It carries water to the leaves.

**Heartwood** — is the oldest, hardest wood in the trunk.

**Roots** — absorb water and food from the soil through tiny root hairs. Roots also anchor the tree in the ground.



## D — THE OAK GROUP (*Quercus*)

Throughout the temperate hemispheres, the Oak is considered to be the most majestic of forest trees. It holds the same rank among plant life that the lion does among the four-footed animals and the eagle among birds; that is to say it is the emblem of grandeur, strength and durability.

This group belongs to the long-lived trees. The age of some species is believed to reach nearly one thousand years in Europe. There are oaks in England which were believed to have been old trees in the period of William the Conqueror. A few Oaks in Colts Neck are known to be nearly two hundred years old. Some in this park may very well be over 150 years of age.

Because of their strength and durability, Oaks are highly valued for their lumber. In fact the Oak Family represents about 50% of the total harvested timber in the United States.

The Oaks in this park are divided into two groups, determined by the shape of their leaves and the time needed to ripen their fruit.

1. White Oak Group: (White Oak and Chestnut Oak)
  1. Leaves having rounded lobes or wavy edges (not pointed).
  - Acorns mature the same year they flower, having white kernels, not bitter (relished by birds and animals).
- II. Black Oak Group: (Scarlet Oak, Pin Oak, Northern Red Oak, Black Oak)
  1. Leaves having sharply pointed lobes.
  2. Acorns maturing the year after they flower having white or yellow kernels being very bitter (not eaten by birds and animals).

Of the two groups, the varieties within the White Oak Group are the easiest to identify, not only because of their leaves and acorns as described above, but because they each have distinctive bark. The Black Oak Group, however, is more difficult for these reasons:

1. The bark is somewhat the same color and texture.
2. The lower leaves will often differ somewhat from the upper mature leaves.
3. Since the branches are so high, it is nearly impossible to examine the twig-buds, the mature leaves, acorns, or other features at close range to make positive identification.

Therefore, as you come upon these varieties along the trails, a great deal of patience and careful study will be required to become an "expert" in identifying those varieties within the Black Oak Group. Therefore, beginners should be content to merely identify them as belonging to that group and call them "Black Oaks."

## E — LICHENS (L*i* kins)

Have you noticed some greenish-gray patches on the tree trunks? Look for them as you walk along the trails.

What is it? This is "Togetherness" with a capital "T" — a fungus and an algae living and growing together to make up the strange lichens. Lichens grow in an amazing number of shapes with this type being the most common. They are flowerless plants which need only water and minerals to survive. These are supplied by the fungus which in turn use the carbohydrates (energy) produced by the algae. This living together for mutual benefit is called "symbiosis." Since lichens are green plants (having chlorophyll), animals sometimes use it

for their food, especially reindeer in the far north where other plants are not available.

## F — FUNGI (plural) FUNGUS (singular)

During the late summer and fall months, a new group of plants makes its presence known throughout the forest, called fungi. They make up the lowest division of plants within the plant kingdom — having no leaves, stems, or flowers. They also contain no chlorophyll — that magic green coloring matter which is so necessary for plants to make their own food. Unable to produce their own energy, fungi must depend on other sources of energy for their food.

**Harmful Fungi** — Some fungi live off living plants or animals. They are called *parasitic fungi*. Parasitic plant fungi are the rusts, mildews, and bacteria which destroy our roses, fruit trees, grain crops, and lawns if not controlled by spraying. Other parasitic fungi cause disease in man and animals.

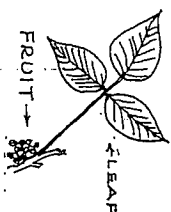
**Beneficial Fungi** — Many fungi feed on dead or decaying plant or animal matter. They are called *saprophytic fungi*. A few of these are harmful to man, such as the molds. Most, however, are beneficial to man. The yeasts are used in making bread. Mushrooms are grown commercially for food. Still others are used in medicine.

The fungi which concern us in this forest are those which feed off the stored energy in the cells of dead plants. This process causes the decay and decomposition of all such organic materials. In doing so, the nutrients are returned back to the soil for future plant growth.

There are many kinds of such fungi at work in this forest. They themselves cannot be seen. Only the sex cells which unite to form various structures for reproduction purposes become visible on the dead and decaying tree trunks, logs, limbs, or springing from the forest floor. These structures are called *fruiting bodies*. They produce *spores* which are scattered by the wind, and soon develop into new fungus plants to carry on the recycling processes. Can one imagine what our woodlands would be like without this simple group of beneficial fungi? Our forests could not survive.

## WARNING — Park rules regarding FUNGI:

1. Most fungi are *poisonous* — some are very deadly.
2. Commercial supermarket mushrooms are the *only* fungi safe to eat.
3. Examine, observe, photograph and enjoy their uniqueness, but please do not damage or destroy them.



## G — POISON IVY (*Rhus toxicodendron*)

This poisonous, trailing-type plant is widely distributed throughout the Northeast. Its leaves, fruits, sap from its limbs, or smoke from its burning branches are extremely toxic, causing a serious skin rash to many people. Therefore, it is important to be able to recognize it both while in leaf and when dormant and bare.

At the time this pamphlet was printed, Poison Ivy was only found in one spot on the Firelane Trail. It prefers much more sunlight than most of this woodland provides. However, it is quite certain to be growing in the more

exposed areas of this seventeen acre tract.

Being a vine, it is very content just trailing along the ground. If it is offered the opportunity, it will climb a fence, wall, a tree trunk, or the side of a building. It fastens its branches to such structures with rootlets which sprout from its stems. It is most easily identified by recognizing its leaves. Its compound leaves have three leaflets of varying sizes and with margins either entire, toothed or lobed. The upper leaf surface is usually glossy during the early growth stages, becoming somewhat dull as they mature. The flowers are greenish-white in early spring. They develop into waxy, white fruits which hang on into winter. This fruit happens to be a favorite food of a large bird which you will learn about on the Overlook Trail!

## SECTION II — GEOLOGY

This Preserve is located at the northern end of the Atlantic Coastal Plain which extends south to Florida. Locally it is on the north flank of the South Jersey High in the Raritan Basin which is drained by the Navesink and Shrewsbury Rivers. Yellow Brook, which winds through the preserve, enters the Swimming River Reservoir at Muhlenbrink Road which, in turn, enters the Navesink River.

The surface is underlain by thick unconsolidated loam and sandy loam. This soil is so distinctive that the Soil Conservation Service named it "Colts Neck". Although it absorbs moisture readily it is also easily eroded. Ravines form and extend rapidly if the soil is disturbed along the steep unstable slopes. It is for this reason that a fence has been built along them and warnings posted.

The topography of the Preserve area can be considered as *in early maturity*; that is, gently rolling with some steep slopes in the vicinity of Yellow Brook. A low ridge extends east-west through the southern portion of the tract while the northern portion is primarily occupied by Yellow Brook and its flood plain. Elevation of the surface is approximately 60 feet above sea level.

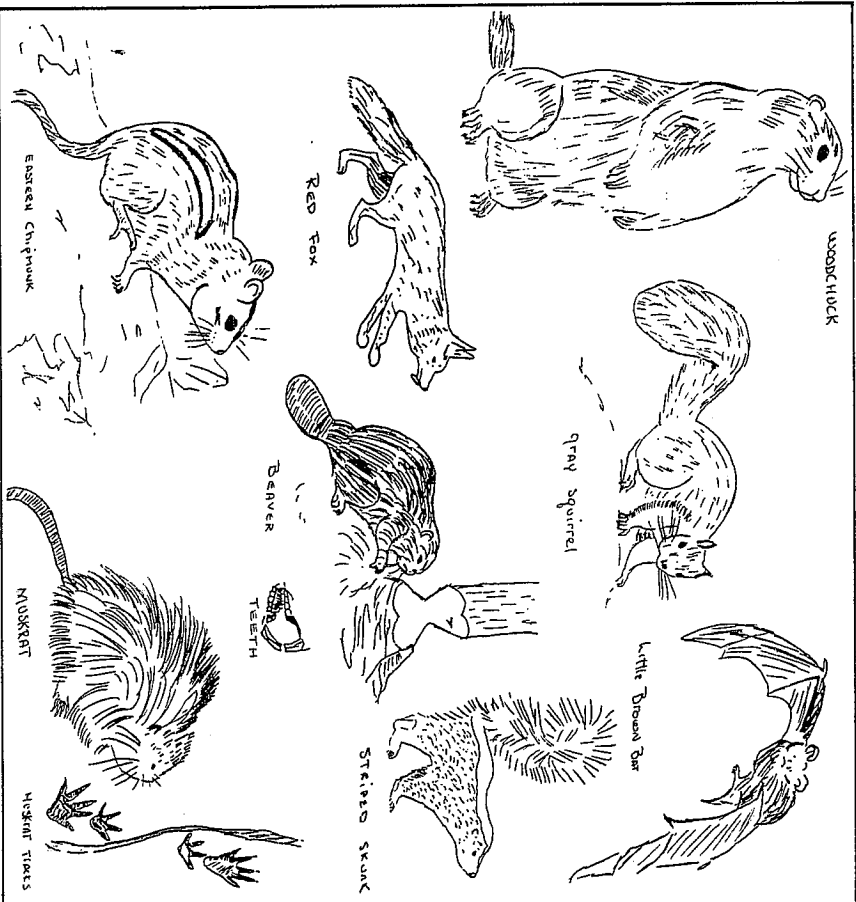
The flood plain of Yellow Brook is an interesting study in erosion and siltation. Since the bed rock underlying the soil dips to the southeast, the tendency of the stream is to erode and migrate to the south; the path of least resistance, except where an abrupt turn is made. The latter condition can be seen on both sides of the Creamery Road Bridge where Yellow Brook makes a U-shaped turn to the north. This may, in part, be due to the position of the bridge approach and supports. The flat area between the steeper banks is the flood plain. It is composed of sand, silt and gravel which has been brought downstream during heavy rainfall and deposited as the stream level and speed of the water decreased. Some 75% to 90% of erosion and material movement in streams occurs during floods. Thus do streams continue their relentless effort to bring higher elevations to a base level where erosion and siltation reaches equilibrium and the area is described as *being in old age*.

The bed rock beneath the soil is the Red Bank sand of Cretaceous age — about 75 million years old. Beneath it are other sand, clay, and glauconite beds to a depth of about 700 feet where an abrupt change occurs and very hard Pre-Cambrian gneiss and schist is found and estimated at 570 million years old. These rocks were undoubtedly the roots of ancient mountains that once stood in this area and were subsequently eroded into a flat plain over a period of hundreds of millions of years. The general dip of all these beds, including the surface of the Pre-Cambrian, is to the southeast.

## SECTION III: WILDLIFE

### INTRODUCTION

This section of the pamphlet includes all the various kinds of wildlife which one may observe within the entire seventeen acres of the tract. Many of them would be more apt to be seen in the lower flood plain area which is not developed for use at this time. Meanwhile, this section on wildlife will help our young people get acquainted with the many creatures which inhabit our natural areas. Many of these may be observed around our homes or nearby streams, fields and woodlands.



### A — MAMMALS:

#### Eastern Cottontail

This commonly seen rabbit is busy from early evening till morning. He lives under low, dense undergrowth that conceals his network of little paths. The doe may have several litters a year, with 6-7 babies per litter. In two weeks time the babies have grown from the size your thumb to the size of your fist. Did you know that they leave their nest at two weeks and are on their own? Vegetable gardeners know of his favorite diet only too well!

Identification: Powder puff rumps, brown coats, 15-18 inches long.

### **Muskrat**

This guy looks like an overgrown field mouse. He is 16-24 inches long and weighs only 1½-3½ pounds. His coat is a rich brown overlaid with coarse guard hairs; his stomach is silvery and his tail is long, naked, scaly and black. The character of his tail alone is enough to distinguish him from all other mammals. His webbed hind feet act a oars, and his flattened tail acts as a rudder. Look for them near water where they build dome shaped houses of rushes. An underwater entrance will lead to a spacious room where up to 11 babies will be born. The muskrat eats woody plants, pondweeds, fish, mussels, and even his own house!

### **Beaver**

Though the beaver is primarily nocturnal, you can find him abroad in daylight. You can certainly see the evidence of his work if you look at the trees near the water's edge. He is indeed nature's "lumberjack." With wrenching bites he tapers the tree trunk until it snaps. This work keeps his large front teeth worn down, otherwise these teeth would grow so long they would prop his mouth open. To guard against lean winters he fells trees, gnaws them into portable lengths and floats them to his homestead in the pond. His underwater food pile may grow 25 feet long! Even in the coldest weather the beaver keeps warm. Oil secreted from two large glands under his tail waterproofs his coat. The largest of the North American rodents, the beaver has short legs with webbed hind feet, and a flat scaly tail that serves as a rudder when he swims and a brace when he stands. He slaps his tail on the water to signal danger. Weighing up to a pound or more, a baby beaver (kit) comes into the world cloaked in a soft, brown fur with his eyes open. At year's end he is half grown. At two years of age he mates and establishes a lodge of his own.

Length: 3-4 ft. Weight: 30-70 lbs.

(Note: In 1977 a beaver was seen near here that was nearly the size of a cocker spaniel dog!)

### **Field Mouse or Meadow Vole**

A busy ant comes across a nice path roofed by arching grass. As soon as he starts across, a stocky mammal larger than a house mouse bows the ant over. This is the common field mouse which builds inchwide highways through the grasses in undisturbed, natural areas. The food he eats each day equals his own weight and he is on the move day and night. In turn, he becomes the prey of other mammals, reptiles, and carnivorous birds. As a result, he is lucky to survive a year. However, a field mouse can have 17 litters a year, and these babies are on their own at three weeks! Besides being so prolific, they are extremely tough. One is known to have resumed breathing after ½ hour underwater! In winter they live under snow where they eat the berries, bulbs, roots and seeds they have stored.

Length: 5½-7½ inches Weight: 1-1½ oz. Stocky, short tail, small ears, beady eyes.

### **Eastern Gray Squirrel**

As you walk through the park today, from high in a tree their bright eyes follow your every move. As you look for a squirrel, he hides behind a tree-trunk or branch! Early in the spring, a litter of 5 babies is born in a nest of leaves and twigs high in a tree or in a hollow trunk. Babies leave the nest at 6 weeks. If your home is near woods and you feed the birds in the winter, you have certainly seen, and no doubt "blessed" many gray squirrels raiding the feeder.

They eat acorns, nuts, and seeds.

Length: 16-21 inches. Weight: 1-1½ lbs. Bush, whitelaced tail.

### **Eastern Chipmunk**

This little fellow is a fur-ball of vigor. He is a compulsive provider and often stores as much as 10 times more than he can eat! He can even carry a large tablespoon of seeds or 4 acorns in each cheek! He can climb trees and even swim if he has to. He likes company and makes friends with humans. His diet includes insects, cones, berries, seeds, and he has been known to raid bird's nests for eggs.

Length: 9-11 inches. Weight: 3-5 ounces. He has 4 light stripes, 5 dark, and a chestnut body.

### **Woodchuck**

February 2nd is the day the ground hog arises from his burrow and looks around. If he sees his shadow — down he goes for 6 more weeks of winter. If he doesn't see his shadow, spring is "just around the corner". Of course, this is a legend and the woodchuck is usually wrong! Farmers and vegetable gardeners do not enjoy this mammal because he plunders gardens and hay fields. He digs holes that cows and horses may step into with resulting injury. He eats all summer near his burrow which has several entrances and tunnels that may total 40 feet. If he senses danger, he will whistle through his teeth. By September, he is fat and lazy. He turns in and rarely wakes till February.

Length: 18-26 inches. Weight: 4-10 lbs. Heavy set, white on nose.

### **Red Fox**

The sly red fox has led many a merry chase. Once a hundred men went out to round up the foxes that were killing their chickens. The result: Foxes — no casualties, men — two killed! When hard pressed, one fox is known to have hid in a chimney. Another ran into a church during worship! He can double back, slide track, slip over fences, circle, and pull many other tricks to outsmart his enemies.

The Red Fox serves a dual purpose for the farmer. His main source of food is the wild rabbit. However, foxes do raid chicken houses. They also eat young lambs, newborn calves, young pigs and geese.

The fox will borrow a deserted den from the woodchuck and raise 4-10 pups per year. The male helps with the young and will risk death to divert the enemy. They prefer farmland to woodland. They have red rust coats, white tipped tails, black ears, and black noses.

There are quite a few red fox in Colts Neck. The apple orchards are good places to see them since the fox finds lots of food there.

Shoulder height: 15-16 inches. Weight 6-15 lbs.

### **Raccoon**

This is a wonderful spot to look for raccoons because they love woodland and water. They are most apt to be seen at twilight and evening when they are searching for food along the stream.

They are furred "Robin Hoods" with their silly get-up of black and brown tail rings, grizzled coats, and black masks. Their talented paws can twist door knobs, open refrigerators, and easily lift tops off trash cans. They are very intelligent and can make wonderful pets.

Length: 30-36 inches. Weight: 5-30 lbs.



### Striped Skunk

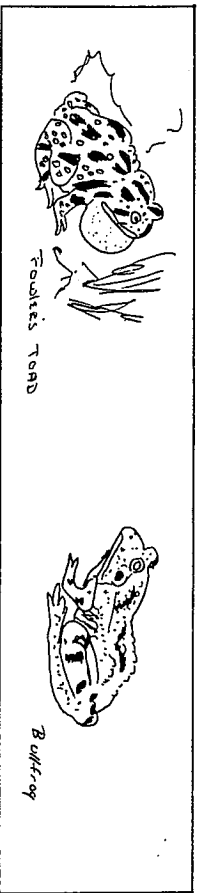
Almost from birth this guy is "loaded for bear." Each mature skunk's gas gun can fire 4-6 successive discharges up to 15 feet. As a child, I learned just how aggressive a skunk can be. My friend and I jumped over a wall one evening and just about landed on a family of skunks. We should have stood still but in our panic we ran screaming into each other. The mother and babies aimed fire and covered us with their offensive odor. The skunk can't imagine why anyone would attack him so he ambles along without fear. This is why so many are hit by cars. They are chiefly nocturnal and don't start hunting until after sundown. They eat berries, mice, grubs, and insects. They do not hibernate, and stay fairly active all winter.

Length: 24-30 inches. Weight: 4-10 lbs. Black with white stripe down back.

### The Little Brown Bat

This bat which is common in our area has a body approximately two inches long, with a wingspan of 10 to 12 inches. They are very clumsy on the ground, but few birds can fly as expertly as the bat. Bats are warm-blooded, mouse-like furry animals which fly by means of wings of thin skin. Being a mammal, their young feed on the milk from the mother. They are the only mammal that can fly. Bats prepare no nest, but hang by wing-hooks in the dark, quiet seclusion of hollow trees, caves, or buildings. The female curls up her tail to form an apron in which she delivers her baby. She can even nurse her young while flying! Bats usually sleep hanging by their hind feet with their wings folded around their bodies.

Most kinds of bats are very useful to mankind because they eat vast quantities of harmful insects. They feed on the fly, and only at night. They fly by "echo-location", picking up echoes of their own high-frequency sounds which we humans cannot hear. When blindfolded, they can fly full-speed without hitting anything. However, if you secured their jaws and sealed their mouths, they would flounder about helplessly. Look for them on a moonlight night as they dart about the sky feeding on flying insects.



### B — REPTILES and AMPHIBIANS:

#### Bullfrog:

You will have to look for the largest of all the frogs near a large body of water. They prefer ponds and lakes over streams. They are plain or nearly plain green on their backs, or may have a network pattern of gray and brown on a green background. The males have large ears behind the eyes. In the north, the large tadpole does not turn into a frog until its second year.

#### Fowler's Toad:

Contrary to the popular legend, toads do not cause warts. However, the Fowler's toad does have 3 or more warts in each of his dark spots, and a white line down his back. He has an unspotted chest and belly.

They protect themselves by burrowing, playing dead, inflating their bodies and extruding a white fluid, which if in contact with eyes and mouth, can be poisonous. You can usually see a lot of them when rain follows a dry spell. They tame easily and make unusual pets. Feed them mealworms.

#### Spring Peeper:

The spring peeper is the best known Eastern tree frog. However, it's very hard to see one, except in the breeding season. In general, these small singers tend to form their groups where trees or shrubs are standing in water.

They vary in color from shades of brown gray or olive, but do have a dark diagonal cross on their back.

#### Northern Leopard or Meadow Frog:

Leopard frogs are common, attractive, and sometimes confusing. This is because their markings are so similar to the pickerel frog. The leopard frog is brown or green with 2-3 rows of irregularly placed dark spots, and also has a pair of light lines running from the eye back along the sides. He is slender and smooth skinned. They live near moist grassy meadows.

#### Eastern Garter Snake

The Garter Snake is the most familiar of all harmless snakes living in the United States. There are nine native species within that family. Every state has at least one species.

The Eastern Garter Snake is easily recognized by the three light stripes which run along its brownish body. One stripe is down the middle, with the others along each side of the belly.

Three things make Garter Snakes different from other American snakes: 1) They like to live in parks, back-yards, and gardens. 2) They catch and feed on other cold-blooded creatures such as frogs, salamanders, fish, snails, earth-worms, grubs, and crickets. 3) They bear their young alive, 18 being an average litter. One brood of eighty is recorded (which perhaps accounts for them being so familiar to us!).

It is rare to find an Eastern Garter Snake more than 2½ feet long. They are fairly docile, doing well in captivity. As with all snakes of central New Jersey, they are non-poisonous and harmless. Due to a snake's body form and method of movement they are generally unpopular with many people. In reality, they are just as anxious to avoid us as is any other wild creature, but they will attempt to defend themselves and their young when it becomes necessary to continue their role in the chain of life.

#### Northern Water Snake:

This is the only large water snake found in most of our northern states. They are harmless. It's very hard to find two alike as they have many variations. They all usually have dark cross bands on their necks and forepart of their bodies. Their colors range from pale gray to dark brown. Sometimes they look plain black or dark brown until they go into the water, and only then you may see a pattern. They are fine surface and underwater swimmers. They seek water when molested, and it is there that they find their food consisting of mainly fish and frogs. They are usually vicious and do not make good pets. Length: 24-42 inches (record 53 inches).

#### Painted Turtle

These are the most common and widespread of turtles. They are found in

ponds, swamps, lakes, and streams. In summer, you can see them sunning themselves on logs. You can spot them by their broad dark flattened smooth shell. The edge of the shell is marked with red; so is the yellow streaked skin, especially near the head.

They are shy, hard to catch, but do make good pets.

#### Common Snapper

These turtles do not make good pets. If pestered, he'll snap at you and if he manages to latch on, you'd wish you'd stayed home.

Snappers are aquatic, — happy living in quiet waters.

Adult snappers are about 14 inches long and can weigh up to 30 lbs. Their shells are dark brown with three knobby keels. The long saw-toothed tail resembles that of an alligator.

#### Box Turtle

If you see a turtle strolling across a road or your lawn (especially on a rainy day) chances are it's a box turtle. They are probably the most familiar turtle in the U.S.

You can tell this fellow by the way he pulls in his head and legs and closes up like a box when started.

Their shells are highly domed and the coloring usually consists of yellow or orange markings on a dark brown background.

They make good long-lived pets if given the same good care you'd give a valued pet.

#### C — BIRDS

The birds listed here are those species which are most apt to be found in the Freer Nature Preserve tract.

KEY: S-summer W-winter Y-year round

Woodcock	Y	House Sparrow	Y
Pheasant	Y	Meadow Lark	S
Bobwhite	Y	Red-winged Blackbird	Y
Turkey Vulture	S	Grackle	Y
Mourning Dove	Y	Cowbird	Y
Flicker	S	Cardinal	Y
Hairy Woodpecker	Y	House Finch	Y
Downy Woodpecker	Y	Gold Finch	Y
Eastern Kingbird	S	Towhee	S
Blue Jay	Y	Junco	W
Crow	Y	Chipping Sparrow	S
Carolina Chickadee	Y	Field Sparrow	S
Tufted Titmouse	Y	Fox Sparrow	W
White-breasted Nuthatch	Y	White-throated Sparrow	W
Mockingbird	Y	Song Sparrow	Y
Catbird	S	Swallows, in variety	S
Brown Thrasher	S	Warblers, in variety	S
Robin	S	Caroling Wren	S
Starling	Y	House Wren	S
Ovenbird	S	Snipe	S
		Mallard Duck	Y

## SECTION IV — DESCRIPTIVE TRAIL GUIDES:

**NORTHEAST TRAIL (Code CA)** — (PLEASE NOTE: Since this is a "nature preserve" in which you can enjoy learning about the natural life-and-death processes continually taking place here, we would ask that you help keep it as nature has left it by walking *only* on the open areas and marked trails. Thank you.)

#### CA1 — CANADIAN HEMLOCK (*Tsuga canadensis*)

This evergreen tree (conifer) is a native of Nova Scotia to Minnesota, Illinois, south on the mountain ranges to northern Georgia, and northern Alabama. This area of the park containing Hemlock with hardwoods is a "pocket" very rarely found east of the mountain ranges in the coastal area. Since its wood is quite soft, it is not considered a valuable timber tree. Its bark, however, is a good source of tannic acid which is used for tanning leather. Hemlock is also used as pulpwood for the paper industry. As you will soon discover as you study this woodland, you will find trees of each variety in many different sizes and ages. This particular one is approximately 130-140 years old. The old one across the firelane trail of which only a rotted stump and log remains, was nearly the same age when it died. Was its death caused by lightning, a wind storm, a disease, or just plain old age? It is impossible to tell with this one, but you will observe more recent casualties from such causes as you move along the trails.

The thick groups of small Hemlocks growing here each side of the Firelane Trail all sprouted from seed about thirty five years ago soon after the area was cleared to build the iron gate and entranceway. How many will still survive 30 to 50 years from now, having to grow so close together? Will you return to find out?

#### CA2 — MOUNTAIN LAUREL — (*Kalmia latifolia*)

The Mountain Laurel is truly one of the loveliest of all broadleaf evergreen shrubs and is found by the millions in the eastern hills and mountains from New Brunswick (Canada) to Florida and west to Ohio and Tennessee. They bloom from May to late June. Fortunately, they are generously distributed throughout Freer Nature Preserve. They are often planted as ornamental shrubs around homes and parks. Like all ericaceous shrubs they require an acid, or "sour" soil such as exists here, with a generous blanket of leaf mulch over the soil surface to keep their roots cool and moist. They do not like strong wind or much direct sunlight. The leaves of the Mountain Laurel can be poisonous to animals if eaten in large quantities.

#### CA3 — AMERICAN CHESTNUT (*Castanea dentata*)

Immediately behind this Laurel is a small American chestnut. If you are viewing this young tree during its growing season, you will find its leaves to be unlike any other trees in the park. The reason for this is that it is the only one that has been found thus far in this woods.

For hundreds of years, the Chestnut grew in abundance from Maine to Michigan, and south to Alabama and Mississippi. Its timber was extensively used by the early settlers for post and rail fences as it was very durable and could be easily split with an ax. Abe Lincoln was a famous rail splitter in his earlier life before he became President. The delicious nuts of the Chestnut were an important source of food for not only man, but for many wild creatures

of the forest as well.

During the early part of the nineteenth century, Chestnut trees from Asia were introduced into this country to be displayed in New York gardens. Those trees were found to contain a disease which proved to be very damaging to our American Chestnut. It is called "Chestnut Blight." This disease has since spread throughout the eastern part of our country, and by 1940, it had killed almost all of our natural American Chestnut trees. As you travel through the park, you may see a few dead stumps. Some of these are what remain of Chestnut trees. Occasionally we will find that the roots of these tree stumps have remained alive and will continue to develop new shoots to grow into new trees such as this one which will no doubt be again attacked by the blight. It is hoped that this process will continue, and that eventually our Chestnut trees will develop an immunity to the blight, making it possible for them to once again flourish in our forests.

#### CA4 — A LIVE STUMP

At the base of this Hemlock is a hollow stump composed of live wood called a "living" stump. Because it is still alive, it tells us two things. First, the tree was alive when it was sawed down many years ago. Had it been dead, the cells which now form this outer ring or callous would have rotted away and disappeared, along with the inside of the stump. The second fact to be learned is how it remains alive. The reason is that the roots from the same species of tree which cross each other underground will grow together in what is known as a "natural graft." Therefore, when this live Hemlock tree was sawed down, the other nearby Hemlocks took over supplying its stump with nutrients through the root graft, which kept the outer "Cambian" layer of cells alive all this time. You will see more of these living stumps throughout the preserve.

Continue north 80 feet to the next point of interest.

#### CA5

Before you pass by these four smaller Hemlocks, pause for a few moments to think about how fast or how slow a tree grows. Can we tell the age of a live tree by its trunk diameter? No — not really. The growth rate of every individual tree in this forest depends upon how much light it gets and the amount of water and nutrients it has been able to take up through its roots from the soil. Therefore, these trees growing close together will have a slower growth rate than trees standing far apart, due to their competition for growth elements. The large Hemlock you saw entering the park with an estimated age of 140 years has a trunk diameter of 30 inches. This 18" one which appears much younger is approximately 95 to 100 years old, as are the others near it! And, their growth rate will slow down even more in the next fifty years unless some of them are destroyed by wind, lightning, or disease. If this happens, those remaining will grow faster with more light, water and nutrients available to them.

#### CA6

Now, just walk a little farther along the trail and off to the right toward Creamery Road to meet what is very likely the "grandfather" of all the hemlocks in the preserve. Its trunk (4½ feet above the ground) is 37 inches in diameter, and it is approximately 215 years old! This means it was probably a 20 foot high sapling when our nation was born in 1776! Notice, it hasn't been too crowded during the past 50 years. This has provided it with enough sunlight and nutrients to remain reasonably healthy. The fairly recent death of the nearby

oak has given it more light and food. We hope it will last many more years. Please return to the main trail and continue down the slope to the lower level.

#### CA7 — NATURAL "RECYCLING"

NOTE: Please stay on the trail to avoid destroying this pure example of nature's life and death processes constantly taking place in this preserve.

As we have already learned, some trees are capable of living to a very old age. But they too, like us, can fall prey to death by accidental means (fire, lightning, windstorms) or die from diseases (Chestnut blight), or from just plain "old age."

In this area, two large Hemlocks and an Oak have fallen. Many such casualties will be found in the park. It is important that the trees remain where they fall to finish their contribution toward the "ecosystem" that they had drawn from while alive. Shortly after death occurs to plant life, its cells are attacked by fungi (described earlier in this pamphlet). Fungi make the wood cells decompose and slowly return them to the soil in the form of nutrients, which nourishes the new seedlings that have sprouted as the soil was exposed to the sunlight. We already find young Sassafras, Oak, Hemlock, Dogwood. Others will be soon added to the chain of plant succession. However, if we could return in 100 years, we would very likely once again find only large Oaks and Hemlocks occupying this sunny opening in the forest.

#### CA8 — WHITE OAK (Quercus alba)

Off to the right you will see a fairly large tree with rough, light-gray bark. This Oak variety is the slowest growing of all the Oaks in our area. Because of its great strength and rugged character, it seems the noblest of all our hardwoods. Timbers from its massive trunks formed the framing of the sailing ships used by explorers, sea merchants, natives, pirates, etc. for centuries. Today, it is used for flooring, furniture, shipways, barrels, tool handles, etc. Its light gray bark and leaves with five to nine rounded lobes make it easily recognized. Its acorns mature in one year and their white kernels are not bitter. They once served as an important source of food for Indians and colonists.

It is felt that unless the White Oak (and Black Walnut) are replanted by man, they will someday disappear entirely. There are two causes which bring this about. First, they are highly prized for their valuable timber. Second, their sweet acorns and nuts are chosen first as food by animals and birds, while the more bitter acorns from other oaks are allowed to germinate undisturbed.



White Oak  
1/3 Actual Size

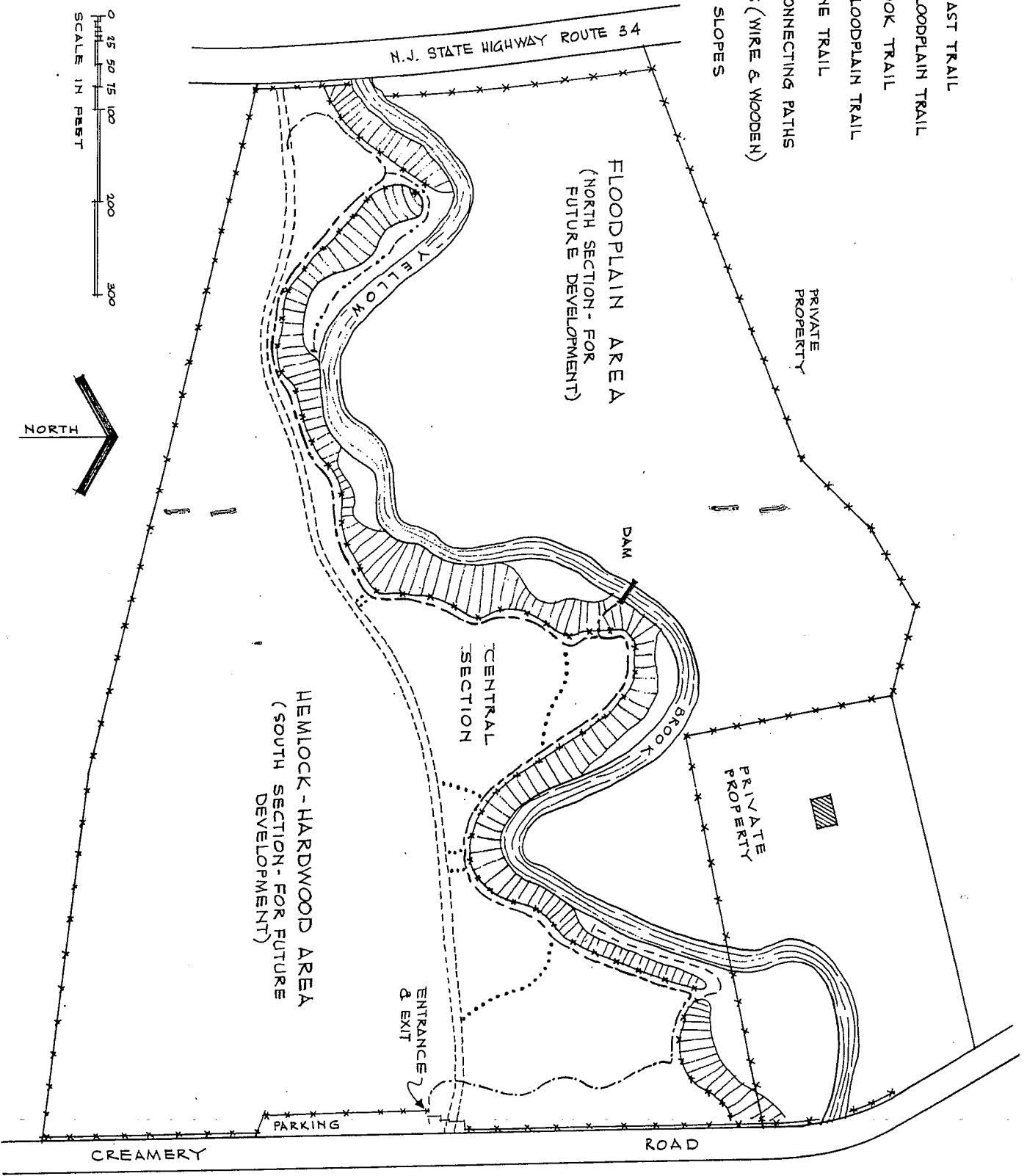


Dogwood  
1/3 Actual Size

#### CA9 — FLOWERING DOGWOOD (Cornus florida)

These small trees are without a doubt the most popular native flowering tree in our country. It is a native of the woods from Massachusetts to Florida, west to Ontario and Texas. Its tiny yellow clustered flowers, which are borne in May, are surrounded by four large white "bracts." Most people mistake these

- KEY**
- NORTHEAST TRAIL
  - EAST FLOODPLAIN TRAIL
  - OVERLOOK TRAIL
  - WEST FLOODPLAIN TRAIL
  - FIRELANE TRAIL
  - ..... OPEN CONNECTING PATHS
  - \*-\*-\* FENCES (WIRE & WOODEN)
  - ▨ STEEP SLOPES



bracts for flowers, when actually they are the developed bud-scales which protected the flower buds during the winter. The darkened, notched tips are the result of the bud-scales being partly frozen during the previous winter. The small red fruits are usually eaten by birds. The dense, fine-grained wood is unequaled for the making of shuttles used in weaving. It is also used for wood engraving blocks, tool handles, and golf club heads. Its bark becomes checkered, not unlike the hide of an alligator. During the Civil War, a substance was extracted from the bark which served as a substitute for quinine. It is also believed to have been used to cure a skin disease called "mange" in dogs, thereby getting its name "dogwood".

As you can see these dogwood trees, like so many of the trees in the park, are growing tall and skinny from constantly "reaching" for the limited sunlight. Look for Dogwoods around the homes in your area to see how much differently they grow where they are not crowded by other trees.

#### CA10 — STORM DAMAGE

Notice the young Red Maple in this area which is bent over in a rather low arch. It was rather small when the wind storms blew over the larger trees protecting it several years ago. However, those storms may have left it leaning somewhat. It is quite likely that the severe ice storm of December 1974 caused it to bend even lower without breaking its strong, flexible trunk. Its numerous branches growing straight upward represent its growth since that time. It may continue to grow in its distorted, abnormal form for many years. The preserve contains many such "invalids" which continue the struggle of survival. See if you can determine the cause.

#### CA11

Pause here for a few moments and observe the remains of this old dead Hemlock. It was probably 150 years old when it died, judging from a growth-ring count taken from the log beyond the fence. It doesn't appear to have been killed by lightning or there would be evidence of the typical "explosion" of the upper trunk and bark. It is more likely that it was broken over during a severe windstorm. It may have been in a weakened condition as a result of a severe attack of the Hemlock "scale". This is a tiny insect which sucks juices from the underside of the needles, which causes them to turn yellowish and weakens the tree. Watch for this scale damage in Hemlocks as you walk through the park.

Observe the limbs broken off the side of the nearby White Oak when the large hemlock blew over. Had the Hemlock been dead several years before it blew over into the White Oak? Did it break up immediately into the sections you now see, or did it lean against the oak several years before falling?

How long will it take for its remains to completely rot away? Will it be during your lifetime?

#### CA12

From this point on the trail, one can observe another characteristic of forest trees. We know that most trees need at least some sunlight to grow. Notice that the trees at the bottom of this slope (and along the stream) have most of their branches on just one side. The branches that grew on the uphill side were growing in the shade of the large trees that have died and fallen. The branches on the far side were growing in the open sunlight, and therefore grew the fastest.

Study the bark on the trunks of the two large oaks growing with the

hemlocks at the bottom of the slope. One is a Black Oak and one is a Northern Red Oak. Can you tell which is which by their bark? You will learn how to identify one of them on the East Floodplain Trail.

#### EAST FLOOD PLAIN TRAIL (CODE CB)

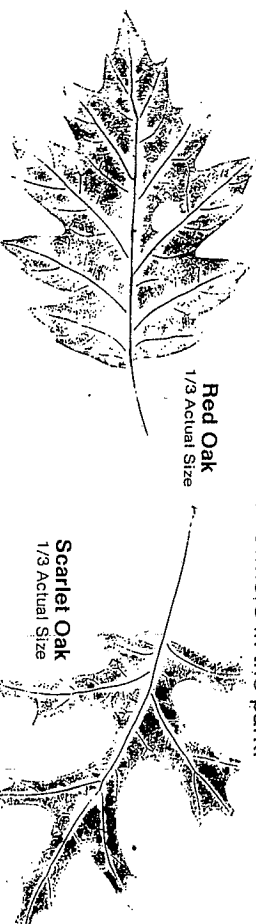
As we walk down through the fence opening toward the stream, our trail will follow a flat area over which the stream overflows during periods of heavy rain, called the *flood plain*. This area is usually quite moist and sometimes muddy. For this reason, most of the trees, shrubs and herbaceous plants found in this area will not be found in the drier, better drained areas of the park. Some will only grow in wet areas, and some prefer such areas but will tolerate higher ground. Others, like the Hemlock, may die before maturity if the water level in the stream continues to rise as it has in recent years. The cause of this back up of water seems to be a combination of natural blockage of the stream from logs and brush aided by the activity of beavers in an area considerably downstream from Creamery Road.

#### CB1

As you pass this old dead Hemlock, on your left you will see a small woody shrub with yellowish-green twigs and egg-shaped leaves. It is a Highbush Blueberry (*Vaccinium Corymbosum*) and requires very moist, cool soils. It flowers in the spring and produces delicious blue-black berries which ripen in July. The plants used in New Jersey to produce blueberries commercially are hybrids of this native variety. Its cousin (Lowbush Blueberry) which prefers drier soil can be found in the upper wooded areas of Freer Preserve. Another cousin (American Cranberry) having red fruit and growing in bogs is a favorite addition to our holiday dinners.

This lone Mountain Laurel on the edge of the brook seems out of place here, since it is not known to care for wet conditions. Perhaps it was planted here originally by man, and has developed a shallow root-system to survive.

The low, creeping, evergreen ground cover in this area is "Periwinkle" (*Vinca Minor*). Since it is not a native plant, it has no doubt been planted here by a former owner. Look for more of this elsewhere in the park.



#### CB2 — Northern Red Oak (*Quercus borealis* — Black Oak Group)

This variety is less plentiful in Freer Preserve than its close cousins, the Scarlet Oak and Black Oak. It is found mostly along the slopes near the stream, as is this one. Look at its trunk carefully. Study the rather smooth, slate-gray vertical streaks of the bark, becoming lighter as it gets higher. Its large rounded acorns have very shallow cups and white kernels. The kernel is bitter like all oaks in the Black Oak group. Its timber is the most valuable of this group, being used for flooring, interior finishing, and furniture. It is planted extensively for shade trees because of its fast growth rate, durability, and ease of transplanting.

There are other oaks up the slope, including two White Oaks. Do you see them?

### CB3 — Alder (Alnus)

These shrubs growing along the very edge of the bank are obviously fond of the water. There are many of them in the preserve scattered along both sides of the stream. Their root systems are very valuable in preventing soil erosion caused by the moving water along the banks.

The male blossoms of the Alder are long drooping catkins which form in late summer. They hang upon the shrub stiff and rigid all through the winter, then come to life in early spring.

Observe the old dead log and stump decaying here on the flood plain. Do the remains of the limbs along its trunk tell you what variety it was? Was it an evergreen, or a deciduous tree? Comparing it with living trees close by should provide the answer.

### CB4

Observe the steep slope above this trail to understand the importance of not attempting to climb them. The soil is being held there mostly by the roots of the trees. A few scattered clumps of Partridge Berry (ground cover) are struggling to stay there to help control erosion. If dead branches, twigs, and leaves which fall and remain *undisturbed* on the slope should trap an acorn or a hemlock cone, more seedlings will grow to aid in stabilizing the soil on the slope. This would help prevent siltation of the stream, and keep the ridge up near the fence from collapsing.

### CB5

It is not known what kind of an animal dug this hole originally, or what kind uses it now. It quite possibly may have first been dug by a woodchuck (ground hog) as a winter home in which to hibernate. It may now be used by any one of various animals such as the skunk, possum, eastern cottontail, weasel, etc. Obviously, it is too small an opening for a fox or raccoon. It is quite common for the woodchuck to dig both a summer home near its food supply, plus a winter home such as this. It is also common for other animals to take over or share these burrows to satisfy their particular needs. This mode of living becomes a means of "integration" within the animal kingdom. The ambitious woodchuck seems to provide the incentive toward that end.

PLEASE RETRACE YOUR STEPS along the Flood Plain Trail and continue west on the OVERLOOK TRAIL along the protective fence.

Swamp Maple  
1/3 Actual Size



### OVERLOOK TRAIL (CODE CC)

#### CC1 Red Maple, or Swamp Maple (Acer rubrum)

This tree is at home in flood plains, along the borders of streams and moist slopes. The two larger trees close together on the other side of the stream are also Swamp Maples. Notice how they love the water! You will find them somewhat scattered throughout the area — even at the top of the bank. They grow quite rapidly in open areas.

The red maple is well named. Its early blossom flushes red in the April sunlight, its winged seeds (called keys) ripen red in May, its leaves hang on reddish stems through the summer, its young twigs are also red, and during the fall, its leaves turn from reddish orange to scarlet.

The wood from this tree is used for boxes, woodenware, and novelties. Certain old trees produce the "bird's-eye" lumber famous for paneling and furniture. You will find one on the West Floodplain Trail.

### CC2 — FRAGILITY OF A SLOPE

If you look carefully ahead of you along the top of the slope, you will see some clumps of evergreen fern, various mosses, tufts of fescue grass, and scattered hemlock seedlings. They are all desperately struggling to do their part in controlling soil erosion. The soil is very low in nutrients on steep slopes because most leaves and other litter which fall from the trees soon wind up along the bottom of the slope or in the brook. This deprives the slope soils of nutrients from the natural decomposing processes taking place throughout the forest on level and mildly sloped areas. Many trees seen growing on the ridge and upper slopes are also struggling under the same low nutrient conditions. Their growth rate is no doubt much slower than others which enjoy a carpet of natural litter over their roots.

### CC3 — "Lightning shows its strength by the fury of its stroke, — and the acorn by its oak."

In or near the year 1845, a Hemlock seedling sprang up from this spot, — destined to endure about 130 years of the rigors of forest life while making its contributions to the environment. During a violent storm just a few years ago, its usefulness was abruptly ended by a shattering bolt of lightning. The thrust of the massive charge of electrical energy downward through its sapwood and into the ground shattered its entire trunk, blowing loose its thick bark which had protected its life line (cambium) all those years. Its 130 year life was ended in one second!

As you walk through Freer Preserve, you will see other trees which have also been struck by lightning. Some are completely dead like this one, some are slowly dying, others are damaged but have lower limbs which will continue to grow for many years.

If you look closely at the loose bark of this one, you will see the fruiting bodies of the fungus which is feeding on the energy within the bark cells to bring about the natural "recycling" processes. It will be several more years before this trunk is rotted enough to be in danger of falling.

Please do not touch the loose bark, but rather let it fall by natural processes so that all may learn by their observations in the years to come.

### CC4 — WINTERGREEN, OR TEABERRY (Gaultheria procumbens)

Within a few feet of this dead hemlock is a small area protected by dead branches. Within this area are patches of a low, creeping evergreen plant, called Wintergreen. It is one of the better known of our native evergreen ground covers. New thick shiny leaves develop from red shoots in the spring. Its summer blooming, bell-shaped flowers are followed by mealy, reddish berries that last through the winter unless eaten by birds. Its leaves have been occasionally brewed for tea in years gone by.

### CC5 — AMERICAN BEECH (Fagus americana)

The American Beech ranks very high in popularity among our native trees,

— perhaps side by side with the mighty White Oak. Its smooth, light gray bark and its graceful form have endeared it to the American public. Even our youth (as "Jeff" has here) find its bark a convenient place to permanently record their visit, or ones fondness for another. \* Its distinctive beauty is most apparent on a sunny winter day, when the sinewy strength of its trunk, the white of its bark, the structure of its noble head, and the fine spray of its delicate frosty-white branches can all be viewed together, unobstructed by its summer leaves. \* (We now come to *learn*, — *not* to "leave our mark!")

The buds of the Beech are very distinctive, being extra long and narrow, quite unlike other trees in the preserve. Its leaves resemble those of the Chestnut and Ironwood. Since the Beech is in the same family (Genus) as the Oak and Chestnut, they also bear their seeds (beechnuts) enclosed in a prickly case. The meat is sweet, — therefore relished by many birds, animals, and rodents of the forest. Its hard tough wood is used for furniture, panel veneering, tool handles, etc.

Now that you know this tree, you shall have little trouble spotting them at a distance throughout Freer Preserve. Be careful the Swamp Maple doesn't fool you!

#### CC6

Just beyond this young Oak down at the bottom of the slope near the stream you can see two large Hemlocks with their tops broken out. This may have been caused by a violent windstorm, and/or a bolt of lightning. The shock of such a loss caused the lower portion of the larger tree to die. It was not left with enough branches to continue the growth processes necessary to support its life. The smaller one seems to have survived the shock with enough strength to continue supporting its lower branches. The length of its remaining life is questionable.

Study the large dead Hemlock nearer the trail on the bank. Can you tell what killed it?



#### CC7 — SASSAFRAS (Mittenleaf)

This tree was called "green stick" by the Indians. Its greatest asset is its fine fall color when growing in sandy loam in full sun. Its wood is quite brittle and its twisted branches break easily in storms. Its mitten shaped leaves, cinnamon-gray furrowed bark, and the aromatic leaves and twigs make it an easy tree to identify. Years ago, people made teas and tonics from its roots. Since its dark blue berries are eaten by birds, it is found growing in abandoned fields, fence rows, or most anywhere it can reach sunlight. Though some of its leaves are mitten shaped, it often bears three different shaped leaves on the same branch.

This Sassafras, along with its close companion the Swamp Maple, are not really contented here because they are losing the battle for sunlight to the larger, older trees. Look for other healthier ones along the Firelane Trail where they get more sun. Under more open conditions, the Sassafras will constantly

throw up sprouts from its roots, similar to the Locust and Beech trees.

#### CC8 — BLACK OAK (Quercus velutina)

This fine Black Oak is one of the largest of its kind in the preserve. It is plentiful here in the level upland part of the forest, along with its cousin, the Scarlet Oak. Its dark, deeply furrowed bark on its lower trunk makes it quite easy to identify. Study it carefully, noting the more or less square segments along the ridges similar to that of the Dogwood.

Like all Oaks of the Black Oak Group, it bears its acorns the year after they flower. They are 1/2 to 3/4 inches long, approximately half encased in a bowl-shaped cup with loose fitting scales along its edge. The kernel is yellow and very bitter. Its large leaves are lobed and sharply pointed. Both the size and shape of its leaves varies somewhat on each tree. Its wood is passed off as "red oak" for flooring, interior finishing, and furniture. Its bark is high in tannin content. Before the era of modern dyes, its yellow inner bark was used to make a dye called quercitron.

Several of the largest oaks in Colts Neck are of this variety.

#### CC9 — SHADBUSH (Amelanchier canadensis)

Near this Black Oak you will find a few small trees with smooth textured trunks having light and dark vertical stripes. Can you find them? They are quite scarce in our woodlands. They are most often regarded as a woody shrub, as they often have more than one stem from their base and seldom grow twenty feet high. Its sprays of delicate white flowers suddenly appear unexpectedly in April, being one of the earliest of our native shrubs to bloom. Because it blooms about the same time that Shad swim up our tidal rivers to spawn, they were named "Shadbush" by the early settlers. Its small reddish-purple berries are relished by birds when they ripen in June.

(Please return to the Overlook Trail.)

#### CC10

You were introduced to this variety of oak on the East Flood Plain Trail. Do you remember its name?

Notice the wind damage to the fairly large Red Maple down in the flood plain.

#### CC11 — SWIFTWATER BRIDGE

This opening in the fence provides access to the dam in Yellow Brook which was built many years ago by Mr. Freer. He also built a foot-bridge below the dam which was later removed.

The present plans for the park would include the construction of another foot-bridge here to provide access to the meadow flood-plain area. Subsequently, that section of the tract, consisting of approximately 40% of the entire park tract, will eventually be developed somewhat like Section C (central) which is now in use. The same applies to the south section between the Fireland Trail and the south boundary fence. (Refer to map in centerfold)

In the meantime, please feel free to visit and enjoy the dam area. However, please refrain from walking along the steep banks, and RETURN TO THE OVERLOOK TRAIL ONLY THROUGH THIS OPENING.

#### CC12 — CANKER

About 20 feet down the slope you can see two or three rather small Beech trees with knobby growths on their trunks. Two of them are dead, the third is

still alive. The growths are the result of woody tissue within the trunk being destroyed by a disease. Little is known about such diseases. They are frequently called "cankers." Obviously, this one is very destructive. Fortunately, it is very rarely found affecting our beeches in our woodlands!

Hickory  
1/7 Actual Size



#### CC13 — HICKORY (Carya or Hickoria)

There are several species of Hickory growing in our New Jersey woodlands, such as Pignut, Bitternut, Mockernut, and Shagbark. This one is probably Mockernut. Many of them have hybridized together, making it very difficult to tell them apart. However, they all have the following general characteristics:

1. Alternate, compound leaves, with 5 to 9 leaflets. The three terminal leaflets are large.
2. Their fruits are a hard-shelled nut,  $\frac{3}{4}$  inch in diameter, encased in a greenish four-sectioned "husk" and borne in clusters. The Shagbark bears sweet, edible nuts which are relished by squirrels and sometimes used by humans as flavoring in baked goods.
3. The dark grayish bark is always furrowed in varying degrees of roughness. The Shagbark Hickory, as the name implies, has "shaggy" outer bark which appears to be flaking off.
4. Hickory wood is noted for its strength and elasticity. It is also excellent fire wood. For centuries its wood has been used to smoke hams and other meats for the "hickory flavor."

#### CC14

You were recently introduced to the American Beech on the Overlook Trail. Here on this point overlooking Yellow Brook, we see another feature of the Beech presented here. In their struggle to control soil erosion to stay alive, the larger Beech trees have sprouted many smaller ones from their exposed roots. Since Beeches are very tolerant of shade, they will continue to grow quite slowly here until the larger trees die. At that time, they will take over the space occupied by the large trees.

#### CC15

Down the slope on the other side of the stream, you can see a rather large tree standing near the streams edge. It is a Black Walnut, noted for its delicious nuts and its valuable wood. You'll learn more about this tree farther along this trail.

As you walk slowly along this portion of the trail, look closely down the steep slope to observe another vivid example of the limitless value of live trees and creeping plants as stabilizers of soils. See how they cling tenaciously to the steep embankment to remain upright in their struggle for survival!

#### CC16 — HUDDY'S HIDEOUT

This bowl-shaped hole on the upper part of the bank may have played a part in Monmouth County's history two hundred years ago. As recently as fifty years ago, it was a cave. Its ceiling was supported by a network of tree roots. Some of the remains of those trees may still be visible. The entrance to the

cave was part way down the bank. It was no doubt hollowed out by man, but when or by whom is not known. Word has been passed down that at one time this bank was covered by vines and dense undergrowth. This made it possible for a person to enter the cave from the stream by climbing up the bank through a tunnel under the heavy vegetation undetected, and leaving no foot-prints!

Most of you have heard of Joshua Huddy, Monmouth County's famous patriot-hero during the Revolutionary War, who lived in Colts Neck village. The British Loyalists and Pine Robbers hated him for leading many daring attacks on their forces. As a result, they put a high price on his head for his capture. It is said that he used a cave along Yellow Brook as a hide-out. No one knows for sure — but it is certainly possible that he may have used this one!

Please follow the fence to the next point of interest.

#### CC17

Just beyond this Oak you can see two holes near the top of the remaining trunk of a dead Hemlock. At its base is another such hole in the butt of the fallen trunk. Examine this hole carefully. They were at one time hollowed out for a nesting hole by a large bird in the Woodpecker family, — probably a Yellowshafted Flicker. As with all woodpeckers, its stiff tail feathers and specially designed feet allow it to cling upright on a tree trunk. With its powerful bill it is able to chisel out these nesting holes. During the spring you may hear one of these strange birds beating a loud tattoo as they bore into the trunk of a dead tree. (The wood of a live tree would be too hard.)

During the time that they are hatching and raising their young, they use their special talent to bore into trees for wood-boring insects (borers) which make up their main diet. Their long, sticky tongue coiled up in their skull can be shot out two inches beyond their bill to retrieve the insects from their tunnels. Flickers also eat ants and berries, — those of the Poison Ivy plant being one of their favorites!

After the Flicker family have moved on, their nesting holes are taken over by various other creatures, such as Screech Owls, various other birds, squirrels, etc.

Please continue following the fence to remain on the Overlook Trail.

#### CC18

We know that it is only possible to get one plant to sprout from one seed. However, throughout most wooded areas one may observe an occasional double or triple-trunked tree such as this one. There are two possible causes for this unusual plant development. In this case (as in most) it is the result of damage by man, fire, or animal. As a normal, young sapling, its single trunk was cut off or broken over near the ground. Such severe damage to the trunk would cause new "shoots" to develop from the remaining live stump. In this case, three such shoots developed into separate trunks, all being supported from the same root system.

Occasionally we may find two trunks of approximate equal dimensions growing so close to each other that the trunks become fused together as they age. In such cases we may have two individual trees sprouting from their own seeds at about the same time, and "growing up together" like twins in a family. The seed from which they sprouted may well have fallen from the same "parent" tree.



**CC19**

At several points along Overlook Trail, you have had opportunities to observe how well nature is able to control most erosion without help from man. However, from this point on the trail, we can see an example of her failure. If you look carefully over the fence, you can see some of the bare, reddish soil down the steep bank resulting from this failure.

How or why did it happen? You can see that Yellow Brook at this point is flowing from an angle almost directly into the base of the slope. Over the years, this has caused a gradual undercutting of the base of the bank. At some point, the trees and vegetation which grew there started to lean over, eventually breaking loose and falling into the stream. As the soil from the lower slope was carried away by the stream, the soil remaining above it without support eventually followed the same course. (Refer to Geology section.)

As you can see, this erosion has now reached the very top of the bank. It is not known how long it has taken the erosion to reach this point. The exposed roots of the existing oaks show us where the surface of the soil once was. Obviously, unless it becomes stabilized by natural means combined with the help of man, it will continue to the fence, and eventually to the fire lane.

Erosion such as this could even be caused by man in his efforts to climb up or down the steep banks. This is the reason that all visitors to this preserve are required to stay off the slopes.

At this point the Overlook Trail merges briefly with the Firelane Trail. You will pick up the Overlook Trail ahead by following the fence.

**CC20**

You should know what this tree is if you studied the one like it back on the Overlook Trail (CC7). This one is not so crowded by other trees. Are some of its leaves shaped like a mitten?

You should also recognize this creeping evergreen ground cover which was introduced on the East Floodplain Trail. This also has become naturalized, having at one time been planted by man.

**CC21 — NORWAY SPRUCE (Picea abies)**

The few Spruce trees found in this area (two are near this dogwood) are not of a native species of the U.S. These were planted here by someone about thirty years ago when this end of the park was a semi-open field. Like the Hemlock, they too are evergreen conifers with needle-type leaves. Examine their twigs and leaves closely, then compare them with a Hemlock nearby. These Spruce are not doing too well here because they are being crowded by taller trees. They are more useful planted in full sun as ornaments, or for screening and windbreaks. There are a few in Colts Neck about 100 years old!

**CC22 — BLACK WALNUT (Juglans nigra)**

One of these trees was pointed out at CC15 growing on the north edge of the stream in the deep rich soil in which it was very content. This one is growing on the top of a bank — the opposite extreme of the other one. Since the nuts from the Walnut are very sweet, these trees could have started from nuts which were buried by squirrels years ago. Study its leaves and dark brownish, deeply-furrowed bark. Don't confuse it with the bark of a Sassafras, which is somewhat like it.

Black Walnut trees are native of the eastern half of the U.S. It is an extremely valuable timber tree. Its dark brown wood is in great demand for

furniture, musical instruments, gun stocks, interior finishing, veneer for interior panelling, etc. The housewives of yesteryear often had enough time and patience to crack the hard walnuts for their delicious meat which they used to flavor cakes and cookies.

Can you find two more young Walnut trees within 30 feet of this one?

**CC23 — SPICEBUSH (Lindera benzoin)**

At the base of this clump of dogwoods are several woody shrubs with very aromatic leaves (when crushed). Its dark brown, speckled bark would also smell spicy if lightly scraped. Its leaves are oval-shaped, with smooth edges. In early April the Spicebush bears tiny yellow flowers, followed by bright red fruits. Though it seems contented here in the "high" ground, it is more often found in lower, more moist areas. Once you smell its spicy aroma, you'll always remember its name! Look for more of them down along the West Floodplain Trail.

**CC24 — JACK-IN-THE-PULPIT (Arisaema triphyllum)**

WALK CAREFULLY in this area during the period that this popular native plant is growing here. All plants of this type are classified as a "herbaceous perennial". This means that its stems are not woody and it dies back to the ground each fall, emerging again from the ground each spring. As its name (triphylum) implies, the Jack-in-the-pulpit bears a compound leaf divided into three leaflets which are two to three inches long. Its flower consists of an erect "spadix" surrounded by a green and purple striped "spathe" which bends over the spadix (Jack). As the flower withers, a cluster of red berries appears. They grow best in rich, moist soils and reach a height of 12 to 18 inches. They are a member of the Arum Family.

**CC25**

It can't be determined what caused this tree to die, but notice the fruiting bodies of the fungi which are feeding on its cells energy. With their help, this dead trunk will eventually go back to the soil to help nourish other trees, understory shrubs, and herbaceous plants in this area.

Can you identify the tree?

**CC26**

This White Oak is probably about sixty-five years old. About twenty five to thirty years ago a Hemlock seed miraculously germinated and started to grow very close to the base of this oak. Thus began a phenomena of nature very seldom seen. For at least twenty five years it struggled against insurmountable odds to anchor its roots and eke out enough water and nutrients to stand upright and stay alive in competition with its huge, durable, deep-rooted adversary! Most of this unique story of the Hemlock's struggle for survival is graphically told in observing its remains. Until 1979 its top was still alive, awkwardly growing with its trunk at a 45 degree angle to the ground. During that year its life was ended when its partly rotted trunk was broken off by destructive young visitors who had to climb up and swing from its badly leaning trunk. It is unfortunate that this remarkable example of nature's life and death struggle was not allowed to end as Nature had intended. It is hoped that our young people in the future will learn to appreciate such things through the use of this Preserve as an educational facility, — not a phys-ed facility.

**CC27 — MAPLELEAF VIBURNUM (Viburnum acerifolium)**

Near the fence, about twenty feet beyond this hemlock are some rather

small woody shrubs bearing three-lobed, maple-like leaves. Its white flowers are borne in terminal corymbs in June. They are not very showy. Oval-shaped reddish fruits follow, and later turn black. It is more commonly called "Dockmackie" in other areas along our east coast.

The genus *Viburnum* contains nearly a hundred varieties, both evergreen and deciduous. Many of them are considered the choicest of woody plants used as ornamentals under cultivation today. Two other varieties found in Freer Nature Preserve are used in landscaping, — i.e. Black-haw and Arrow-wood.

#### CC28

This stout old White Oak seems to be a fine junction of the Overlook Trail and the West Floodplain Trail. The West Floodplain Trail starts here and leads you down along Yellow Brook. To return to the park entrance, take the Firelane Trail east. Before leaving, enjoy the view down the bank to the stream as you walk along the west fence toward the highway.

#### WEST FLOODPLAIN TRAIL (CODE CD)

##### CD1 — STREAM EROSION

In the geological history of this tract you read about the erosion processes constantly taking place along the stream. These Hemlocks with strangely shaped root systems show you evidence of these erosion processes. The largest of these trees are probably about 100 years old. At that period in history they were seedlings growing from the soil surface with all their roots underground. Now the soil surface is as much as three feet below the soil surface where the seedlings got their start. This erosion was caused by a combination of wind, rain, and the constant action of the water's current down where the base of the bank meets the brook.

Please walk slowly (flat-footed) down the slope to CD2. The slope's surface can be quite slippery under certain conditions. The installation of rustic steps are being considered in the future for added safety and convenience.

##### CD2 — AZALEA (Rhododendron)

All azaleas belong to the genus *Rhododendron*. Along with the Mountain Laurel (*Kalmia*) in Freer Preserve, they are members of the Heath Family.

At this point close to the trail are two native azaleas — one on each side. They could be one of two varieties, but since they were only discovered during the late fall of 1979 after their flowers and leaves were gone, it is difficult to tell which one they are. They would be either Swamp Azalea (*Rhodo-viscosum*) or Pinxter Flower (*Rhodo-nudiflorum*). Both are found growing in moist areas from Maine to South Carolina. Both have elliptical leaves from 1½ to 2½ inches long.

If they bear slightly fragrant pink flowers in May before their leaves, they are Pinxter Flowers.

If they bear spicily fragrant, nearly-white flowers after their leaves in June or July, they are Swamp Azaleas.

These are the only native azaleas found in the park thus far. Perhaps you'll be observant enough to find more.

##### CD3 — AMERICAN HORNBREAM (Carpinus caroliniana)

The Hornbeam is a member (species) of the Birch Family (genus). It is sometimes called "Bluebeech," as the smoothness of its dark, bluish-gray bark

resembles that of the beech. It is also called "Waterbeech" because, like this one, it is often found along the borders of the streams where it enjoys the deep, moist soil. It is a slow growing, bushy tree, seldom growing more than 25 feet high. Its trunks and branches are often zigzag rather than straight. Their appearance reminds one of bulging muscles and sinues of one's arm with a clenched fist. Because of this, plus the fact that its wood is very hard and strong, it would seem more appropriate to call it "musclewood." It is, however, more commonly referred to as Ironwood. The wood is used for tool handles, wedges, mallets, bows and similar utensils. It is believed that the Roman's made their chariots and oxyokes from this tree.

The 2 to 4 inch oval-ovate sharply serrated leaves often turn orange and scarlet in the autumn. Being monoecious, the hornbeam bears both its male and female flowers on one tree. The male (staminate) flowers are the most prominent, appearing as drooping, wormlike "catkins." They are conspicuous as buds during the winter, lengthening during the spring to one and one half inches at flowering. The female (pistillate) flower develops into small, nut-like fruits attached to a three lobed tract. They often remain on the trees long after the leaves have fallen.

Am. Horn Beam  
1/3 Actual Size



Arrowwood Vib.  
1/3 Actual Size



#### CD4

Examine this old tree carefully. Can you identify it? Its trunk bark is rougher than the younger one of its kind at CC1. If you look closely around its lower trunk, you will find evidence of some of man's activity here many years ago. It tells us that livestock were once grazed here, probably in the meadow across the brook. How do we know that it took place long ago? If you find the clue, please do not touch it.

#### CD5

By this old tree is a good opening to work your way out toward the stream to test yourself on some of the species you have learned to identify. You will find:

1. Several Swamp Maples.
2. Many White Dogwoods.
3. Some Alder (shrubs).
4. Spicebush (shrubs).
5. Red-twig Dogwood (shrubs).
6. A Hornbeam with a Wild Spruce vine growing up through it.
7. A large Red (Swamp) Maple on the far side of the stream illustrating the perfect example of a woody plant's ability to control stream erosion with its roots.

In addition, you may see tracks of wildlife in the mud-flats! Please return to the main trail at the old Red Maple to continue your walk downstream.

##### CD6 — SOUR GUM (Nyssa sylvatica)

Sometimes called Tupelo, this tree species is in the same family as the Dogwood. The bark pattern on its trunk is somewhat like that of the Dogwood's, except in a larger scale. (There is a Dogwood very close by to compare it with).

It too enjoys the deep, moist soil conditions found along streams, as do the red maples, hornbeams, and the woody shrubs which make up the understory of this floodplain.

The glossy leaves of the Sour Gum are the earliest to turn bright red in the fall — often in early September. They are oblong to oval, two to four inches long, edges entire (not toothed) and glossy on the upper surface. Its fleshy, dark blue fruits which develop in clusters are eaten by birds and mammals. Because its wood fibers are curiously twisted and interwoven, its wood is not useful for structural lumber, except for boxes, baskets, etc. Because it is very difficult to split, it is useful for butcher blocks and chopping bowls. It was also used for the hubs of wheels in bygone days.

Sour Gums are extremely hard to transplant, otherwise they would be planted extensively in the landscape because of their fiery late summer and fall color which is unsurpassed by any other species.

#### **CD7 — UNDERSTORY SHRUBS**

Please pick your way carefully along this part of the floodplain to avoid trampling the various herbaceous plants and many woody shrubs which you will want to identify and learn about. As you do so, look carefully for a rather upright growing shrub called *Summersweet* (*Clethra alnifolia*). If it is July, August, or September, you may smell the spicy fragrance from its white flowers in upright racemes at the tips of the branches. Its leaves are 2-3 inches long, shining and toothed. Summersweet grows from 3 to 8 feet tall. It enjoys wet, marshy bogs, and is quite commonly found in such areas from Georgia to Canada. It is also called Sweet Pepperbush.

Scattered along this part of the trail you should be able to identify another woody shrub with leaves and bark having an aromatic fragrance. It was described at CC23 above you on the Overlook Trail.

Here and there you may also see an occasional single-stem shrub with a sort of horizontal branching habit. When its leaves are in evidence, compare their shape and texture with those of the large trees nearby having a bark pattern like that of a White Dogwood. They are seedlings of that tree species.

#### **CD8 — BURLY MAPLE**

A hard, woody outgrowth on a tree is call a "burl" \*Note the strange appearance of the trunk of this Red Maple! Its burlly, knobby surface would tell the experienced lumberman that this tree would produce "curled" or "birds-eye" lumber which is so valuable as veneer for interior panelling and furniture. Due to an occasional quirk of nature still unexplained by man, the wood fibers take on an unusual arrangement throughout the lifetime of the tree, thus producing the striking grain so much in demand.

#### **CD9 — THE DEVASTED DOGWOODS — THE PERSISTENT OAK**

As we approach the clearing, we find signs of someone being here in recent years who did not appreciate our beautiful woodland. They were teenage boys (not Boy Scouts) who were camping here. Maybe the beautiful Dogwoods they destroyed were "in their way" — or they "had to try out their hatchet." In addition to the several Dogwoods damaged or destroyed, observe the damage to the bottom of the Hemlock trunk near the base of the bank. If you had studied the section on "How Do Trees Grow" in this pamphlet, you would understand why this Hemlock may not recover from this damage to its inner layer of bark (cambium) which is the life-line of a tree. Needless to say, had

those young men had the opportunity to visit this park as you are to gain an appreciation of our natural environment, this destruction would not have happened! This old log lying here may make a fine seat from which to study the next point of interest leaning awkwardly just ahead.

This Red Oak was obviously blown over during a storm many years ago. It suffered a severe shock as a result of the root damage, but retained enough energy to gradually adjust as it developed more roots. At some point in time a strong, new shoot erupted part way up the leaning trunk to develop into another vertical trunk. This is another interesting example of how tenacious nature can be in spite of the destructive forces encountered through both natural and man-made means.

#### **CD10 — STREAM EROSION CONTROL**

Here at the end of this flood plain we find three more species of woody shrubs which are helping to hold the soil along the streams edge, just as were the Alders on the East Floodplain Trail. (CB3).

You should recognize one of them as Spicebush.

Another is called Arrow-wood (*Viburnum dentatum*), being a variety of the same species as the Mapleleaf *Viburnum* (CC27). This variety is our most common one, being readily found growing in moist, marginal meadows and along streams. Like most *Viburnums*, their white flowers appear in June, followed by blue-black fruits. The leaves of the Arrow-wood are round or oval, coarsely toothed, lustrous above, turning to reddish and purplish tones in the fall. When growing under more ideal conditions than these, their numerous stems develop quite straight. For this reason, Indians are believed to have used them for their arrows, hence its name "Arrow-wood".

The third shrub to be observed here has greenish-yellow stems and reddish branches and twigs, which accounts for its common name, "Red-twig Dogwood" (*Cornus stolonifera*). It is one of several shrubby varieties of Dogwood growing in New Jersey. The leaves of the Red-twig are similar to those of the White Dogwood tree. It bears dull white flowers in May, followed by white fruits. It suckers much more freely at the base than most shrubs, and loves the same wet conditions as the other shrubs found here.

This is the end of the West Floodplain Trail. PLEASE RETURN SLOWLY AND CAREFULLY THE WAY YOU CAME.

#### **FIRELANE TRAIL (CODE "CE", WEST TO EAST)**

##### **CE1 — GRAY BIRCH (*Betula populifolia*)**

Just south of this Black Oak you can easily see the slender whitish trunks of a Gray Birch. This variety is the only one with white bark native to New Jersey. It is also the least common of the birches in the United States. It is mostly found in the rather dry, gravelly, barren soils of marginal areas surrounding ponds and swamps. They are short lived. Their shrubby trunks grow quite rapidly to 20-30 feet at maturity, being valued mostly for their esthetic value in the landscape. Gray Birch are very scarce in this upland section of Freer Park, and even our more common native Sweet Birch (dark brown bark) hasn't been found in this developed Central Section as a mature tree.

## CE2

Thirty five feet northwest of this Black Oak (CC8) is one of the largest Hickory trees in the preserve. Please refer to CC13 to better understand why it's so difficult to identify the Hickories by variety. The one at CC13 had rough textured bark similar to that of a Black Oak. This Hickory has rather deeply furrowed bark on its lower trunk somewhat like the American Ash. Notice it gets progressively smoother moving upward to its crown.

There are quite a few young Hickories scattered along the Firelane Trail nearby. It is quite probable that most of them sprouted from the nuts borne by this tree. If they have the sweeter kernels, squirrels and other rodents were no doubt responsible for their distribution. Remember that they have smooth grayish bark when young.

## CE3 — COMMON LOCUST (Robinia pseudoacacia)

This tree is native of North America from N.J. and Pennsylvania southwest to Missouri and Oklahoma. We find a few scattered here in this semi-open area of the preserve where it gets sunlight to grow. It is similar to our Sassafras in that it also suckers from its roots and enjoys our poorer, sandy soils. Its compound leaves are often attacked by leaf-miners, and its wood is very susceptible to borer attack as they mature. Therefore, it is not considered a desirable shade or lawn tree, but more appropriately looked upon as a weed tree along with our common Wild Cherry which are the host to the devastating tent caterpillar. If the Locust has any redeeming qualities, it would have to be in the value of its tough, dense-grained wood. It is extremely durable used as fence posts, often lasting from forty to fifty years! It also makes excellent firewood.

## CE4 — RED CEDAR (Juniperus virginiana)

This needle-type evergreen tree is commonly found from Nova Scotia south to Florida and westward to the Rockies. It is tolerant of many soils and varied locations. It grows as a conical tree for most of its lifetime, becoming irregular in old age. Its dark brown to reddish bark covers a soft, close-grained reddish wood. It is used for lining closets, and to make cabinets, chests, pencils and posts. Its small aromatic pale green fruits are used to flavor distilled spirits (gin). Few insects attack this tree, but it is the host plant of the Cedar-apple Rust (a fungi) which attacks member plants of the genus Pyrus, or Apple Family.

This particular tree is getting just enough sunlight to remain alive. As the nearby trees develop to shut out more sunlight, it will be apt to die. Look for them scattered throughout the semi-natural, unfarmed fields in your travels.

## CE5 WHITE PINE (Pinus-strobus)

This stand of White Pine was planted as seedlings by Mr. Freer thirty-five to forty years ago when this portion of the tract was a semi-open field. It appears likely that all the other trees from the pines west to the highway have seeded voluntarily during that same period. This tree is the tallest, the most stately and beautiful of all our eastern conifers. It is among the very best of ornamentals for parks, commercial and residential landscapes, as well as being the most valuable conifer economically. As you see, its trunks grow straight and tall. Its wood is soft, close-grained, very light, but durable for its weight.

No other tree has played such an important role in the history and development of our country. As the white settlers arrived here during the early

seventeenth century they found breathtaking virgin stands containing millions of White Pine trees over one hundred feet high with trunks 3 to 4 feet in diameter stretching from Newfoundland to Manitoba, south along the Alleghenies to Georgia and southwest to the Ohio Valley. For the ensuing 300 years, the White Pine was unrivaled as a timber producing tree. Certainly no other tree has played so great a role in the life and history of the American people. Fleets were built of its great stands. Railroads were built because of them. They created mushroom fortunes, mushroom cities. Certainly it was the first gold that the New England settlers struck. The exploitation and wastefulness started with the first saw-mill in 1623 and it soon became necessary to pass our first conservation laws. Within thirty years, New England was exporting her White Pine not only to England, but to five other countries as well!

Though seldom mentioned in history, the White Pine became one of the important economic and psychological factors leading up to the American Revolution. The Mother Country, having no wood for shipmasts of her own had been importing mastwood from other European countries and the American colonists. As the virgin forests continued to be ravished by the colonist exploiters, England became concerned for her future supplies of mastwood for her great navies. She had reserved by decree certain "Crown Lands" of virgin White Pine forests for her future use. The colonists however considered such wilderness as "Indian country" and theirs for the taking. Through various other methods and decrees the Mother Country continued its attempts to restrain the colonist "timber-thieves" but to no avail. When the storm of the Revolution broke, the Americans foresaw that their own White Pines might come back to them as the masts of armed ships bringing armed men. In 1774 Congress ceased exporting everything, including mastwood, to England. After the Battle of Lexington was fought in April, 75, the American lumbermen became patriots by driving all British ships out of the New England rivers as they attempted to load their White Pine masts. The last cargo of White Pine reached England shortly after Bunker Hill. From then on, the British fought on sea with ships equipped with heavy, jointed masts of Riga Fir while coasting within sight of White Pines which would have enabled them to meet the French on equal terms.

Upon winning their independence the New Englanders turned to their "pinneries" as the richest natural resource they had. The story of White Pine lumbering during the next 150 years is the greatest chapter in the history of any nation's forests. More than any other tree in the country, it built this nation, both literally and figuratively.

It is impossible to list here the great many uses of White Pine lumber today or in the past. Besides its extensive use in the construction of all frame buildings in the past, most of the covered bridges of America were built of White Pine because of its lightness in proportion to its strength. Another structure considered a miracle of its day was the aqueduct of the State Canal over the Allegheny River at Pittsburg. This aqueduct was sixteen feet wide, 1,020 feet long. With seven spans, it carried the water-course of the canal along with the commerce borne upon it!

## CE6 — SHAGBARK HICKORY (Carya ovata)

This Hickory variety is the easiest of all to identify (Re: CC13). The shaggy, untidy appearance of its trunk will become even more pronounced with age. So far, this is the only one found in Freer Preserve. The fact that its nuts are

sweet and edible accounts for its rareness, as its fruits are sought out and devoured by the squirrels as fast as they ripen. The same thing is true of the White Oak (Re: CA8) bearing sweet acorns, resulting in their being less plentiful in our woodlands than those of the Black Oak varieties bearing bitter acorns.

The compound leaves of the Shagbark usually has five leaflets. Like all hickories, its wood is very strong and durable, and its roots are tough and deep. The largest one found in Colts Neck is growing in an open field. It has a trunk diameter of over three feet and is about sixty five feet high! Do you suppose this one will ever get that big growing here in competition with so many other trees?

#### **CE7**

It is not important to know what killed this Oak. Sometime after it fell, it was sawed into sections to move it out of the service road. We do know that it was 65 to 70 years old when it died. You can check this by kneeling down and carefully counting its growth rings.

#### **CE8**

An explanation of this strange five-stemmed Oak is given at CC18. Perhaps someone will find an example of this type growth which is small enough to dig up to determine if possibly these stems come from more than one acorn. Or have these trunks all developed from the stump of a tree that has been sawed off by someone years ago?

#### **CE9 — A QUIRK OF NATURE**

Approximately 20 feet north of this Hemlock tree is a 16 inch Beech. Notice its rough-textured bark, as compared to the normally smooth bark typical of all Beeches. This is the first and only Beech ever observed by the person composing this pamphlet with such a strange kind of bark. As with the knobby appearance of the Burly Maple on the West Floodplain Trail, this too is without any documented facts explaining this phenomena of nature.

#### **CE10 — BONE UPI**

Here we have a fine opportunity to sharpen our ability to identify the two most plentiful oak varieties in the preserve. They are both in the Black Oak Group. This one is a Black Oak (CC8). Diagonally across the trail is a Northern Red Oak (CB2) of about the same age and size. Carefully study the texture and color of their bark from the ground up to their crowns. Study their general branching habit, twigs and buds when they are bare. Study their flowers and leaves when they are in evidence. Compare their acorns carefully when they have fallen, — their color, shape, size, the depth of their cup, the color and taste of their meat (don't eat too much!). Only by making such studies will you become an expert!

#### **CE 11 — MORE "NATURAL RECYCLING"**

Walk slowly along the remaining stretch of the Fireland Trail to observe another fine example of the life and death processes continually taking place in a purely natural forest. (Refer to CA7 for more description). As you can see along the south side, several large trees have been devastated through various causes, opening up the area to more sunlight and nutrients. This encourages the natural sprouting of several species of trees and understory woody shrubs which weren't growing here in this particular area before. Already we find

Sweet Birch, Sassafras, Wild Cherry, Dogwood, White Pine, Viburnum, Huckleberry, — and of course, Hemlock seedlings. As with CA7, this area will also be dominated by Hemlock and Oak in 100 years thru natural plant succession. IMPORTANT, please do not walk into the area to avoid trampling the young seedlings and ground cover plants which may develop here in the future. Only by eliminating man's destruction of such areas can we hope to observe first-hand the truly natural process constantly occurring about us in our forests.

As has been mentioned elsewhere in this pamphlet, the area south of the Fireland Trail has not been developed as yet. This means there are no official trails in that area, and visitors are asked to refrain from entering it until development takes place.