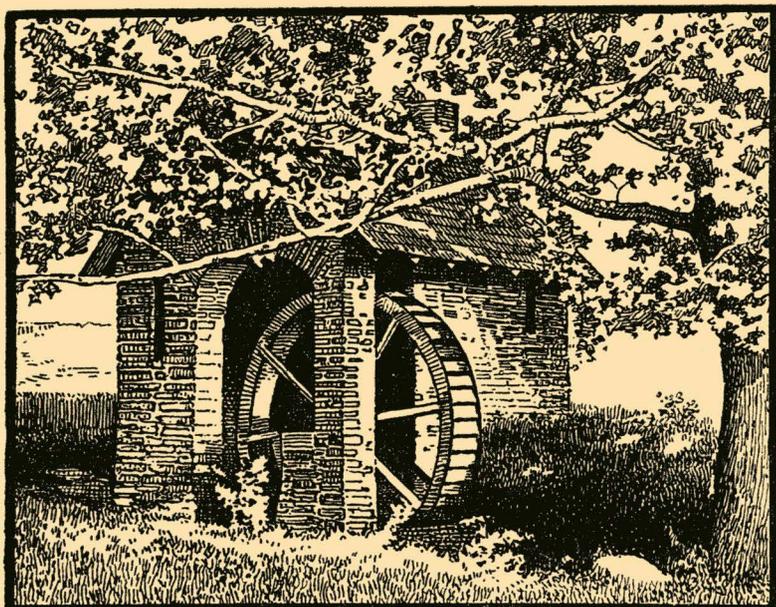


ARBORETUM BULLETIN  
OF THE  
ASSOCIATES

OCTOBER, 1939



THE  
MORRIS ARBORETUM  
OF THE  
UNIVERSITY OF PENNSYLVANIA

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THE  
MORRIS ARBORETUM  
OF THE  
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American Holly  
*Ilex opaca* Ait.

ARBORETUM BULLETIN — OCTOBER, 1939

The fine specimen of American Holly, *Ilex opaca* Aiton, shown on the frontispiece, may be found in the Arboretum's Ilex group, about midway between the Mansion and the Swan Pond. In the wild this species is native from Massachusetts to Florida, and west to Missouri and Texas.

It is made prominent in the winter by its spiny and somewhat glossy evergreen leaves, the female tree being brightened by the shining, red, berry-like fruits. Since the sexes are on separate plants, a male tree must grow within reasonable proximity in order that the female may produce the fruits.

Great quantities of the "berry-bearing" branches are shipped to cities and towns for Christmas decorations. This seasonal use makes this species one of the best known and loved of all our native trees.

The cover design represents the Wheel Pump beside the brook flowing through the meadow.

The cover design and the photograph were made by Gustave Liebscher.

## "AMERICANS DISCOVERING NATIVE AMERICA"

**A**MERICA'S TREES are being discovered by the average citizen of America. For long, long years the matter of introducing American trees was attended by a definite indifference to anything native in America. Just see what has been planted on the grounds, campuses and public parks, and you will find exotic trees in greater numbers than native Americans.

To begin with, not long ago I was invited to see the grounds surrounding a very big, new school building. The Committee pointed out to me the spacious lawns, driveways, and walks all finished and the green lawn in full color. And now for the trees, we have made a start said the Chairman, and would I make any suggestion? Yes, said I, but what is the use when already you have started to plant and already you have selected the species of trees. According to your plan, you will have the place outlined with Norway Maples, when right over in yonder woods stand some of the finest trees in this wide world, and they are native to your own state. There, see those wonderful White Oaks now at their height in autumn tints, and there, see that cluster of Magnolias (Sweetbays). Its leaves of silver and emerald color, trees that bloom a long season giving beautiful white and elegantly scented flowers. And close by were several fine Sweet Gum trees in all their many colors, and we could see clusters of Birches and highly colored lower growing trees I could not easily distinguish. Then I saw some real, majestic-sized Holly trees (yes, this place is some distance to the south of Philadelphia and it is no fairy island of the imagination). Now then after seeing this much almost in one breath, I stopped for a moment and then said to the Committee. Would it not be good policy to plant all of these grounds with trees native of your state, so that your children attending school might learn of the real treasures you have in trees. Trees incomparably finer, better and more colorful than any tree that is introduced from any country no matter where. Then, too, these native trees are part of America designated when time began to be part of this America. Before we ended our little conference I saw a most spectacular group of Dogwood in its richest autumn color. I said, it were better that instead of using so many Norway Maples you would use Dogwoods, and you would have in season enough color to have a spring festival when they are in bloom. And you can have another festival in fall when the leaves have turned, and the berries are red and ready for a farewell feast for our migrating songbirds. My! what a story could be told to the children if they were introduced to at least some of our gorgeously beautiful trees. The climax of this meeting?

Well, it has had a good effect; for obvious reasons, I cannot give names of persons nor places.

Last spring I started a number of different times to find early flowering trees that are native (no, I am not prejudiced against exotic trees, but I do want to respect our own as much). It was in April, near the middle of the month, and I looked in particular for a very large Amelanchier tree I knew twenty-five or more years ago. I found the place but the tree was gone, so I just kept on prospecting along any and all little-used country roads when suddenly and to my utter surprise, I saw the most magnificent specimen of a tree just bursting into bloom a little more than a mile off. Excited, yes sure, I got to the tree in short order, and found, I believe, the largest and most perfect Amelanchier tree in all America. The buds just before they open are of a purplish-pink color, snow-white when fully open. I came to see the tree a number of times and have some excellent colored pictures, both in stills and in movies. Now here is its size—the trunk near the ground is two feet in diameter, straight as a die, up to eight or nine feet where the branches all seem to start out like a fountain reaching up to a height of forty feet, forming a perfectly rounded top with a diameter of fifty feet. Yes, this is a true story and my hat's off if you beat it or equal it. The tree is located about three or four miles north of Collegeville, Pa.

Speaking of colored pictures of trees. I never realized how beautifully colored are the leaves of Oaks in early spring, especially of the White Oak. When they first come out they vary from fawn colors to pink and blend in beautifully with the spectacular volumes of the white color of Dogwoods when they happen to be close by.

Coming back once more to the Amelanchiers. Up till last spring the most impressive pictures I have or, I should say remember, are trees I saw grow up rather tall and slender among a grove of Hemlocks, and for many years I looked to see these graceful sprays of white associated with equally graceful sprays of green of the Hemlock. The places where I first saw them is in the Pocono Mountains, the others in our southwestern Counties near or in Indiana County. Some day we shall be required by public opinion to plant bits of Pennsylvania on our public grounds.

There is the case of the American Holly, probably the longest lived tree east of the Redwood trees. At any rate, I saw some stumps of decaying Holly trees, perhaps twenty miles from Cape Charles, that were a full one thousand years old before they ended their career. Then I saw trees in various places I believe to be more than five hundred years old, in perfect condition and bearing each year a full

crop of berries. And again in parts of Jersey, I saw Holly trees more than seventy-five feet tall with trunks straight and of even girth, as though it is not to be classed as a garden shrub, but instead to rank among stately trees of our forests. Of all trees native in America none receives more of the attention and affection for a short period at Xmas, than does the Holly. There is not a home in America that does not have a real sprig of Holly, or an imitation Holly or Holly painted on many and sundry articles at Xmas. Then the fashion or the occasion demands Holly wreaths and Holly branches, and the demand is so great that this annual take-off has definitely decreased the Holly population, and for some reasons few Hollies are ever planted, partly because of a big amount of misinformation that goes around by word of mouth, by stories unfair to the Holly that usually appear before Xmas time. Our American Holly can be planted and successfully raised in most parts of the United States. Some writers say American Holly is inferior to the English Holly. My answer, to that statement, is about three years ago I went to the Morris Arboretum, Chestnut Hill, to try out my new Retina Camera on a fine big American Holly. It was nearly springtime. The Holly tree must have been more than twenty feet in height, branched solid to the ground, its leaves perfect and of an even green, and every branch loaded down with berries. A most brilliant sight when all else was without foliage and the grass a rusty brown. Near by were some English Holly trees that at one time were as tall as the American Holly, but the rigors of our American winters cut down the English Holly to stumps only two feet high, defeated by the same climate so acceptable to the American Holly. There is this difference between the English Holly and the American Holly—and that is, the English Holly does well in any and all parts of our mild American Climate, but it cannot stand our colder parts (I ought to know, I lost many of them trying it out), but the American Holly will do well in all parts where the English can stand it. And more it will live and thrive and grow into a large tree where an English Holly cannot live through real rigorous cold winter.

The American Holly deserves a good reputation. I could talk Holly for a hundred pages. Just outside of my window is a tree nine to ten feet high. It came up from a stray seed off of a Holly wreath one Christmas. Its roots are in an almost impossible place, right at the base of the trunk of a forty foot Larch tree, an excellent place to starve to death, but this volunteer Holly has had berries ever since it was four feet high, and in the summer, of course, we give it water. Some day I am going to cut down the Larch and let the Holly have a better chance to grow. We have Hollies growing from seeds two inches to six inches high and on up to eight feet. When transplanting a Holly remember but one thing. Dig it up

with enough roots and soil that is held by the fibrous roots and after planting, water it. And a year or more after planting feed the tree aplenty, with most any kind of manure and keep watering the tree, and it will grow and bear the berries too.

Now, of course, the berry bearing part of the Holly story is a long one. My claim is no one has the indisputable answer, and we will not have, till some Institution will assign a competent plantsman to the study of the sexual habits of the Holly to once and for all to establish all facts. The practical propagators have a dependable solution now. They propagate berry bearing trees, they do it either by grafting or from cuttings. Both methods are certain to produce for you a tree, that will bear without having another for company. I saw a most beautiful grove of wild Holly trees, just two years ago, sixty or seventy miles southeast of Philadelphia, and they were in full berry in March, a sight I shall always remember. With my guide I tried to find strictly non-berry bearing trees (Male trees). My findings were that in these woods covering many acres there is less than one per cent. of trees without berries.

I wish we could for once welcome to our gardens, our parks, and our campuses native American trees not for sentimental reasons, but for their fine qualities, and for qualities that are not found in exotic trees. Our American trees are distinctly superior, and our institutions of learning should plant native American trees, so the people, the average American, may have a chance to learn to know them. But, as I said before, the average American is finding out about trees through the experience of inspiration, not by college education, no, not at all. Many college bred people still prefer exotic trees to native Americans. Yes, this is no figure of speech, it is a pity, but it is so. Perhaps soon our scientific friends and educational leaders will join one or two of the many pilgrimages to see American trees, just for the love of it or for the fun of it. Yes, most Americans have definitely turned to love and to cherish our own good things, our own native trees, and all this has come about because of the appeal, and the inspiration our people have got from our own trees. But I want to appeal to our leaders engaged in the field of education to join Mr. and Mrs. Average American in recognizing our fine excellent native American trees. No other country can furnish us better trees than our native Hemlock, native White Pine, Sweet Gum, Sour Gum, our great Oaks, our Sweet Bay, our magnificent Amelanchiers, Birches, Hollies, and, can the world beat our eastern and western Dogwoods, *florida* and *nuttallii*? A long list of native trees cannot be made here. I beg of you, approve some of them and maybe in time you will be willing to find some good in any and all native American trees.

ADOLF MÜLLER.

## GROUND COVERS FOR SHADY PLACES

THE PROBLEM OF A GROUND COVER is very efficiently and satisfactorily solved for open spaces providing usual soil conditions by the use of various types of grasses. They are beautiful to look at, they prevent or reduce erosion of the soil by wind and weather, and can be kept in order with an ordinary amount of attention.

When the lawn passes into the woodland, the grass cover becomes inadequate largely because of the lack of light. The question of something that can supply the place of grasses then comes to the front. It is advisable that such a cover should be hardy and perennial; it should prevent erosion as effectively as possible; it should be able to live in a more or less reduced light, and if it be an evergreen, it will be the more appreciated for that fact.

In attempting to secure a ground cover for shady places, one may try to obtain such by planting a single species. This seems to be required in cases where formality rules. Among the plants that are used under such conditions we have a rather limited chance in our climate.

English Ivy (*Hedera Helix*) comes to mind as one of the most successful plants for this use. In the first place, it furnishes a genuine ground cover because of its creeping habit and frequent root formation from the stem. It is not likely to take to tree climbing, and it is easily removed when it leaves the ground. Thus, it forms an excellent protection against water erosion, especially on steep slopes. By its close growth it successfully suppresses competition. Moreover, it is evergreen.

Running Myrtle or periwinkle (*Vinca minor*) is an old favorite in half-shade, where it may appear at the edges of woods and along shady roadsides. It again clings closely to the ground, and by its matting habit protects the soil from water erosion and discourages competing plants. The deep, almost bluish-green color of the evergreen leaves, from among which the solitary blue flowers appear, makes a cover of *Vinca* very attractive. It is an Old World plant much grown in gardens and in cemeteries.

Among the more recent introductions is another shade lover from Japan now being much planted. *Pachysandra terminalis*, when young is a stiffly erect dwarf shrub of none too good a green, but interesting partly through its white flowers developed early in the season. It is planted often for its tolerance of shade. It does not cover the soil in the same sense as the plants previously mentioned. Its more

erect habit, with less intimate contact with the earth gives it less control over the washing action of water than they.

Of some horticultural interest as a plant of shady situations is our native Box Huckleberry (*Gaylussacia brachycera*). This rare plant is a low evergreen shrub found in a few places from Pennsylvania to Virginia in the woods, forming close patches of dark green somewhat procumbent growth. It forms extensive beds in the shade in deciduous woods. Its successful growth in deep shade and its rarity gave it greater interest to plant lovers soon after its discovery, and its use commercially was actively developed for a time in spite of the rarity of the plant. Since it has had some legal protection, and now appears to be less rare than was formerly supposed to be the case, interest in this plant as a horticultural object seems to have abated.

For developing a ground cover in shady places, the low sweet Blueberry (*Vaccinium pennsylvanicum*) has many of the good points of the box huckleberry and is more easily obtained. This dwarf blueberry of the higher lands of the Eastern United States, as far south as Virginia, is a low, upright shrub that forms dense patches of light green foliage, with small, bell-shaped early flowers, followed by small, bluish-black berries. The bright green warty stems give a lively color to the bush after the leaves have fallen off. The shrub forms a close bed that sometimes comes to the edge of the woods along roadsides, or creeps out into the more open edges of rock ledges. Its habit of growth and its tendency to monopolize the site make it a good soil protector, as well as an attractive woodland plant. It grows readily, is easily multiplied and can be successfully transplanted. When set in close order in mildly acid soils, it is likely to be a real acquisition in shady woods and on banks.

Another native shrub seems to deserve consideration in this connection. Our only American yew (*Taxus canadensis*), ground hemlock, or to the Indians in Wisconsin, "shin tangle," grows in the acid leaf mold of woods, where its decumbent habit of growth and rather irregular branching give it the distinctive characters suggested by the Indian name. This green plant will be found in the deep woods, from which it breaks out at woodsides or into other well-lighted areas. It forms a rough and irregular cover that sometimes competes with other more erect shrubbery.

It would be inadvisable to omit the Japanese Honeysuckle (*Lonicera japonica*) from the list of plants available for the purpose here under discussion, but when

one sees what a pest it becomes when not subject to strict control, it is a question whether it should not be condemned at the start. This potentially beautiful and fragrant plant will cover the ground with a net of thready stems that root firmly into the soil. It lives in sunshine and in shade, and it climbs trees and chokes the young trunks in its tight grip. When controlled and trained, it will produce its delightful flowers. It is much used in planting roadside banks, where it will be helpful as long as it is kept under control. One shudders at what it may do later after seeing it take possession of fields and woods in the sandy lands of Maryland and elsewhere.

Among the plants forming a dense floor cover in spring is the Japanese anemone (*Anemone nemorosa*, L.). It spreads by slender rhizomes that occupy the woods soil rather closely, and forms light green solid mats that show a wealth of pale rose to white flowers in late April at the Arboretum. They look like large, half-closed nodding wind flowers, perhaps an inch across. Soon after the short, flowering season is over in early May, it dies to the ground. This plant, obviously, is not a good ground cover by itself, although it holds its own and with time spreads gradually among the English Ivy that seems to give ground before it.

The problem of the ground cover thus far has been considered as one related to that of the lawn, in which uniformity of growth brings an air of formality. This note is seen in the use of pure culture plantings with uniformity in the depth of growth produced.

The ground cover may be of quite another type, in which formality is given up for variety by using plants of diverse height, habit of flowering and place in the succession of mixed plantings. This type of cover introduces paths, roads and other features of convenience or of ornament. The plot then thickens, and the almost infinite variety of available plants makes all things possible. Even the perfection of wild nature may be approached.

RODNEY H. TRUE.



## THE ANNUAL BUS TRIP

THE SIXTH ANNUAL SPRING BOTANIZING TRIP of the Department of Botany and the Morris Arboretum took place from June 20 to 24, 1939. These expeditions, which were inaugurated in 1934 by Dr. Rodney H. True, have as their objective

the intensive exploration of a section of Pennsylvania not heretofore visited by botanists from the University of Pennsylvania. Although Dr. True was unable to accompany the party this year, he generously provided the use of the Arboretum bus, which has transported the members of all the previous expeditions. As in the past, the personnel was composed of members of the staff and graduate students of the Department of Botany.

The area selected for exploration this year was a tier of six counties (Perry, Juniata, Snyder, Union, Lycoming and Tioga) lying west of the Susquehanna River and extending from just above Harrisburg to the northern boundary of the state. As the two lower counties have received some attention from the botanists at the State Museum in Harrisburg, only one stop was made in each, the bulk of the collecting being done in the four northern ones.

The bus, with ten members in the party, got under way early on Tuesday, June 20, and proceeded without stopping to Harrisburg. The first break in the trip was made a few miles north of Harrisburg, where we stopped to eat lunch and collect along the river shore. Many of the characteristic plants of the Susquehanna drainage were in evidence here and as the party scoured the broad sand and gravel beach most of the species seen were recognized as ones which we had found over and over again in 1938, when the expedition had concentrated its efforts on the flora on the East Fork of the Susquehanna many miles farther north. Here, for example, the sandbar willow (*Salix longifolia*) formed dense low growths covering many square yards. This plant follows both the Susquehanna and the Delaware Rivers all the way from the southern to the northern boundary of the state. Another familiar species abounding here, and in full flower on this date, was the water willow (*Dianthera americana*). This interesting plant is in no way related to the true willows, although it resembles some of them in the shape of its leaves, but belongs rather to the Acanthus family. The water willow likewise fringes the shores of the Susquehanna but, strangely enough, is almost entirely absent from the Delaware River drainage.

After making a representative collection of the plants occurring at this locality, the party continued northward to a point a few miles above Liverpool, in Perry County, where two still different types of habitats were explored: rich, wooded cliffs on one side of the road and an abandoned desiccated canal bed on the other. Here the party was divided into two units in order to save time. One group ascended the steep slope and returned to the bus an hour later with a fine variety of rich woodland and rock-inhabiting forms. The other group followed the grassy

canal bottom which supported an amazingly varied flora of interesting grasses and sedges. The outstanding discovery at this locality was a species of sedge (*Carex caroliniana*) hitherto known in Pennsylvania only from the extreme southeastern counties.

The next stop was along the West Branch of the Mahantango Creek, which separates Juniata and Snyder Counties. Here again teams were organized and assigned to opposite banks of the creek with the idea of tapping all available habitats. The flora was characteristically that of rich river bottoms, the real surprise being provided by the finding of golden club (*Orontium aquaticum*). This plant, which is dominant in wet habitats on the Coastal Plain, enjoys but a scattered distribution inland and its discovery in Pennsylvania is always a matter for rejoicing.

By this time we had collected over three hundred numbers (and those on a day designed primarily for covering ground) and it was imperative that we push on to our destination. Arrangements for the night had been made for us by Mr. and Mrs. Douglas E. Wade of Beavertown in Snyder County. Mr. Wade is a member of the Pennsylvania Game Commission and during the time that he has been stationed at Beavertown, has been doing a fine job of collecting plants in all corners of the county and sending his specimens to the University Herbarium. He and Mrs. Wade, herself no mean botanist, had agreed to act as our guides the following day.

The Wades called for us at our cabins west of Beavertown on Wednesday morning and took us first to some interesting woods near McClure at the southwestern corner of the county. The hour or so devoted to sampling this region yielded a varied series, one of the noteworthy features of which was a fine stand of cancer root (*Conopholis americana*). The next stop was along Middle Creek, three miles east of Beavertown. Two parties were detailed to explore the woods along the creek, a third essayed the ascent of a wooded calcareous ridge which parallels the creek for several miles. This last-named habitat furnished considerable excitement for those who never before had botanized on limestone crests and ledges, for here were many of the members of that limited but interesting assemblage of calciphiles usually found associated in such situations. One of the characteristic trees, for example, was the yellow oak or chinquapin oak (*Quercus Muhlenbergii*), seldom found off limestone. Here, too, was the fragrant sumac (*Rhus aromatica*) so often occurring with the oak, and differing from its unpopular relative, poison ivy, in its hairy under leaves and velvety red berries. On the bare rock ledges was purple cliff brake (*Pellaea atropurpurea*) and on the wooded crests flourished fine

stands of hoary puccoon (*Lithospermum canescens*) and Seneca snakeroot (*Polygala senega*).

After lunch another section of Middle Creek, lying near Paxtonville, was made the center of activities. A rich swale yielded a diversified series of grasses and sedges, among them the rather uncommon *Carex Frankii*. A combing of the alluvial thickets along the stream brought to light a still different lot of species, including a second station for *Orontium aquaticum*. But the real prize of the occasion was the discovery by one group of a colony of the rare green dragon (*Arisaema Dracontium*), with some of the plants fully three feet high. The bus then headed north to Penns Creek, where a large tract of open rocky woodland was scrutinized. Here it was each man for himself, as individual members of the party radiated out from the bus to return upon a signal from the driver. In cases like this we made it a practice on reassembling carefully to compare our finds before putting them in press, in order to avoid duplication.

The Wades had several other places to show us, but the day was already far advanced and our field presses were filled to overflowing, so we were forced to return to our cabins where it took us until midnight to put out material into driers.

The following morning, Thursday, June 22, the Wades guided us in their car over a network of country roads to the top of the ridge which separates Snyder from Union County. Here we parted, they to return to Beavertown, we to push northward to the conquest of Union County. Compared to Snyder County, with its rich variety of habitats and miles of wild country, Union seemed a pretty tame affair. It is highly agriculturalized and rather uniform as to soil types. We spent the entire morning in the routine task of raking the sterile woods near Laurelton. Our prime objective on these trips is to collect each species at least once in every county visited. So we now set about collecting everything in sight, even though many of them had already been taken in the counties just traversed. This is termed "putting the plant on the map" for a given county, and it is literally that, for these collections are later used as the basis for dotting in on outline maps of the state the known distribution of each of the approximately 3000 species of higher plants which occur in Pennsylvania, and the ultimate goal of this work is to have a record of each species from each county in which it grows.

After looking in vain in western and central Union County for interesting native habitats, the party turned eastward and headed for the river shore, feeling that here there might be greater variety. At the first point, New Columbia, many of the characteristic shore forms were found, including an unusual species of arrow-

head *Sagittaria heterophylla*. A few miles further up the river we paused to sample the wooded slopes of White Deer Ridge, and received our first real element of Canadian types. The best find, however, was the Alleghenian table-mountain pine (*Pinus pungens*). Although this is a somewhat common tree in the south-central counties, it has only once before been collected as far north as Union County.

Thursday night was spent near Montoursville, where the party had stopped on the 1938 trip, and the following day, June 23, was devoted almost wholly to Lycoming County. After a careful study of the topographic sheets of this area, Hall Pond had been selected as a locality which promised type of boggy-pond shore often productive of the greatest botanical excitement. In reality Hall Pond proved to be not a pond but a vast area of Rhododendron swamp, so extensive and so interesting that it engaged our attention for the entire morning. Here were many species of a northerly distribution such as *Oxalis montana*, *Tiarella cordifolia*, *Circaea alpina* and *Coptis groenlandica* along with a host of characteristic bog plants.

Two other stops were made in Lycoming County that afternoon and each yielded many good things. Late in the day we entered Tioga County and, as an opening wedge, stopped briefly along Wilson Creek, 3 miles north of Morris. The choice was a happy one, for a short half-hour of frenzied collecting revealed a rich flora, including among many other things, the acute-leaved hepatica (*Hepatica acutiloba*), red baneberry (*Actaea rubra*), twisted stalk (*Streptopus roseus*) northern waterleaf (*Hydrophyllum canadense*) and two rather uncommon grasses, *Milium effusum* and *Glyceria grandis*.

Nightfall found the expedition in cabins at the Leonard Harrison State Forest Park on the brink of Pennsylvania's "Grand Canyon." This spot had been chosen so that we might participate in a scheduled field trip of the Torrey Botanical Club held on June 24-25. About 40 members of the Torrey Club were in attendance and on Saturday morning, the 24th, our party joined them and, under the leadership of Dr. Frank D. Kern, of Penn State College, explored the rocky woods on the brink of the canyon. Here in addition to many of the plants we had collected for the county the preceding day, were countless novelties, among them being red pine (*Pinus resinosa*) and paper birch (*Betula papyrifera*).

The region is one of great scenic beauty as well as botanical interest and the temptation to spend an additional day here in such delightful company was indeed strong, but our presses were more than full, every one of the many hundreds of driers and ventilators we had brought along was already doing double duty, and for us to have lingered longer and collected more would have been to court disaster,

so far as much of our material was concerned. So early Saturday afternoon we headed for home, after four and a half days of actual field work. Despite this curtailed period, however, the total collections made fall just short of two thousand numbers, by far the largest bulk of material ever amassed on one of these excursions. The University Herbarium is enriched by specimens from a group of counties not previously well represented in its collections and the sum total of our knowledge concerning the distribution of the plants of Pennsylvania has been appreciably increased.

J. M. F., JR.



## WINTER LECTURES

**December 9, 1939**

MR. CHARLES F. JENKINS

*Hemlocks*

Long connected with the publication of the nationally known agricultural periodical "Farm Journal." Widely interested in affairs for public advancement. A great lover and student of Hemlocks.

**January 13, 1940**

MR. ADOLPH MÜLLER

*Native Dogwoods*

President of the Dogwood Association, and leader in popularizing our native dogwoods. Formerly State Game Warden of Pennsylvania.

**February 10, 1940**

MR. REGINALD D. FORBES

*Federal Forest Research  
in Pennsylvania*

Director of the Allegheny Forest Experiment Station, a Federal agency working in co-operation with the University of Pennsylvania.

**March 9, 1940**

MR. SAMUEL N. BAXTER

*Trees for Street Planting*

Arbiculturist and Landscape Gardener of the Fairmount Park Commission.

**April 13, 1940**

DR. JACOB R. SCHRAMM

*The Black Locust*

Director of the Department of Botany and of the Botanical Garden of the University of Pennsylvania; succeeding Director of the Morris Arboretum.

