Month by Month With the Trees

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SOME years ago a story was written about a leaf. It seems from the story, that in the early autumn the leaf heard a rumor. The substance of the rumor was that a little later the wind, with the help of the frost, would tear the leaf from the tree and whirl it away to some unknown disaster. The leaf was greatly perturbed and told the story to the tree. The tree was worried not at all and assured the leaf that if it only would hold on tightly there could be no danger. With this assurance the leaf was satisfied and went happily about her work.

In a few weeks all the companions of the little leaf began putting on their brightly colored dresses. Immediately the leaf was interested and asked the tree why all the preparations were being made. In answer the tree said that the leaves were putting on their gala dresses in preparation for a long ride with the wind. The leaf was puzzled. What would she do? In another day or two first one and then another of her companions let go and went dancing and whirling away with the wind.

Soon only a few faint-hearted individuals clung tightly to the tree. The little leaf had finally reached a decision. She would not be the last to start. Feverishly she rushed her preparations and in a surprisingly short time breathlessly awaited the arrival of the wind. With a rush, a shout of joy and laughter, he came. She hesitated, murmured good bye, let go and danced away on her last long ride.

Each autumn this little drama is enacted many times. People are interested in it. They ask questions. They wonder about this phenomenon of Nature.

Leaf Coloring Elements

During the summer or working season the leaves are green. The green of the leaf is the color of an oily material which is known as chlorophyll. Of course, the chorophyll is made up of several materials, two of which predominate with a third one fairly common especially in some leaves. The yellowish to orange part has the name xanthophyll. The blue pigment is known as cyanophyll and the red one is carrotin.

The oil permeates the whole living tissue of the leaf. So long as the tree remains actively engaged in manufacturing and storing food materials the leaves retain their verdant color. In the autumn, however, the work of the leaf is completed. The tree is ready to rest. During the rest period the leaves are of no use and since Mother Nature is quite thrifty the leaves must be discarded.

By throwing away the leaves completely, much useful material would be lost. Such waste is unpardonable. To prevent it the chlorophyll is broken up into its component parts, namely xanthophyll, cyanophyll, and carrotin. Then the tree gradually takes the materials out of the leaf, back through the stem into the twigs and branches. There it is stored to be used again when the tree needs it.

What Determines Varied Fall Coloring

With these facts in mind it is evident that if the xanthophyll and cyanophyll are removed while the carrotin is allowed to remain in the leaf the autumn colorings of that particular leaf will be red. If on the other hand the xanthophyll remains the leaf will be yellow or slightly orange in color. We never find blue leaves in the autumn but it is not at all uncommon to find leaves with bluish tints. When one imagines the various combinations possible with the three colors it is not at all surprising that our autumn woods take on such gorgeous colors.

Occasionally all the coloring materials are removed from the leaves. This is especially true in the case of many of the oaks. When the colors are all removed from the leaf nothing bright remains. It is then that the various shades of brown appear. Sometimes the frost comes suddenly. It is then that the leaves are frozen to death with no opportunity for saving the

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valuable coloring materials. This often happens, especially with Norway maples, and then the leaves remain green and fall without changing their color.

Causes of Falling of Green Leaves

It is not always necessary that it be autumn for the tree to discard at least some of its leaves. An example will well illustrate one of the causes. During the spring and early summer of 1927 there was a heavy rainfall in many sections of the country. The trees had great quantities of water to use. They were more or less wasteful. Later in the season the rains ceased. There was little water to be had. Then the tree, like an economical business man discharging men, dispensed with the services of the excess leaves. Usually such leaves turn yellow before falling.

Sometimes there is not enough food material to supply all the leaves that a tree has. In such cases it is a practical catastrophe for the tree. Considerable energy and materials have been used up in producing the leaves. When there is not enough food materials for the leaves to manufacture replacement materials for those used, the tree suffers a total loss. A few such losses prove fatal.

Still one other cause is responsible for the defoliation of a tree. Unfortunately many diseases successfully attack the leaves of trees. Sometimes only a part of the leaf is incapacitated. The remaining part continues to function just as actively and effectively as ever. But when the disease affects the whole leaf or a vital part of it so that the entire organ is seriously handicapped, it is discarded.

How Trees Store Material for Spring Leaf Crops

The methods used by most trees in discarding leaves is quite unique and interesting. The leaf is cut off and the little wound is healed at the same time. As the tree starts drawing the valuable materials out of the leaf it also starts forming a layer of cork between the leaf tissues and the twig tissues. When the usable substances have been removed from the leaf the corky layer is completed. The leaf is completely severed from the twig. Sometimes a breath of wind removes the leaf. Again it may fall from its own weight. When the weight of the water from rain or dew is added to that of the leaf the tree is soon bare of foliage.

A few trees, like some of the oaks and the beeches do not form a corky layer between the leaf and the twig. As a result many oak leaves and most beech leaves remain on the trees throughout the winter. Such leaves always are brown because all the color pigments have been removed.

The intensely interesting processes attending the autumn coloring of our trees and the shedding of leaves makes a ride through the country or a stroll about the golf course take on an added meaning. One more fully realizes the workings of a great universal plan conceived and executed by infinite universal power.

IT is sometimes easy enough to reach the top, but to stay there,—that's the real battle.

JOE VALENTINE of the Merion Cricket Club informs us that his entire district are members of our association. We trust that other districts will follow their example.

DON'T forget to boost the NATIONAL GREENKEEPER whenever you have an opportunity, for it is one of the biggest assets we have.

CHARLIE NUTTALL of the Fox Chapel Golf Club, Sharpsburgh, Penn., is trying hard to invent something that will keep airplanes from falling down and destroying his golf course.

WHATEVER we aim to do in the near future we may be sure of this,—we shall never be able to make any program without work.

JIM McELROY of the Country Club of Allegheny County, Pennsylvania, is the captain of the horseshoe pitchers of the Greenkeepers' Club of Western Pennsylvania. Jim should have been at the meeting at Washington to take part in the discussion of his two favorite subjects, brown-patch and poa annua.

IF you are satisfied with the good work we are doing for the benefit of greenkeepers will you kindly help us to increase our membership.

EVERY time a man stops work he throws that much extra burden on others.

WHILE attending the Washington meeting I had the pleasure of meeting for the first time Captain David L. Rees of the Progress Country Club, Purchase, New York.

JOHN PRESSLER, Sewickley Country Club—President of the Greenkeepers Club of Western Pennsylvania has never missed a Monday meeting in nearly two