

May  
1931  
Volume V  
Number V

# The NATIONAL GREENKEEPER

Official Organ of The  
National Association  
of Greenkeepers of  
America

## The Care Of Trees

By MARTIN L. DAVEY

Read at the 5th Annual Educational Conference of the National Association of Greenkeepers of America, held at Columbus, Ohio, February 3-6.

I UNDERSTAND that golf is a Scotch game. I can't claim to be much of a golf fan, because all I have is membership in two golf clubs and the tools and implements and the clothes—everything but the habit. I don't know anything about it. I confess my weakness. However, I heard a very interesting story about a Scotchman.

This particular man was sitting in a hotel lobby one evening, feeling rather blue. It looked like the weight of the world was on his shoulders and that nothing would console him. A stranger saw him and said:

"What's the trouble?"

"Oh, nothing you can do," said the man.

The stranger said, "Tell me what the trouble is and if I can't help you, I can at least sympathize with you."

"Well, if you must know, I am on my honeymoon and I couldn't afford to bring my wife."

Now this subject about the care of trees I should approach from the assumption that you believe trees are desirable things to have on the golf course and elsewhere. If you believe they are not good things and have no place on a golf course, then we have no common ground on which to meet. If you think that trees are desirable as a matter of beauty, and if you think trees represent interesting hazards,



MARTIN L. DAVEY

*Mr. Davey is a nationally known expert on trees and is the head of the Davey Institute of Tree Surgery. His address is worthy the attention of every greenkeeper.*

then the subject is a proper one to bring before a group of this kind.

If you have trees on the golf course and believe that they are of value, then it goes without saying that they are worth preserving. If you have none, it probably would pay to have some moved in. No, it can't be done for a song. It is a matter running into several hundred dollars per tree for large ones.

It seems to me, that the best way to determine the value of a tree is to try to figure out what you would take for it and let some one cut it down. That represents the value from your standpoint. Assuming that a tree has a value of several hundred dollars, then it seems to me a fair proportion of that amount to save it is a good investment.

### TREES ARE LIVING THINGS

WE HAVE proceeded, for a great many years, on the solid theory that trees are living things and cannot be patched like barn doors or brick walls. A tree is as much as living thing as you and I. It breathes, it has a circulation, it digests its food, it has sex processes, and all the other elemental processes of life. It responds definitely to curative treatment, if that treatment is administered by men who know their business and have scientific knowledge as well as practical skill.

It is for this reason that the Davey company

maintains the Davey Institute of Tree Surgery in order to teach its employees the related sciences of botany, which is the study of life and growth of trees; pathology, which is the diseases of trees and the means of control; entomology, which deals with insect enemies and their remedies; the chemistry of soils and practical application of tree food; the theory and practice of tree surgery and various other things related to the professional care of trees.

It seems to me that if you start with the understanding that a tree is a living thing, it goes without saying that you cannot operate on a tree unless you recognize the laws of tree life. The sap flows up in the sapwood and comes down in the inner cells of the bark. The opening of every cavity, so far as possible, must conform to the natural downward flow of the sap, which makes possible the healing process. Otherwise you cannot get perfect healing all around. The sides of the cavity must be as nearly parallel as you can make them, in order that you may get the full benefit of the downward flow of the sap. The ends of every cavity must be pointed for the same reason.

Those are things that have been demonstrated over and over again. Untrained operators might very easily make a cavity round, with the result that the bark would die across the top and the bottom. Some amateurs make cavities square and get the same result. Those who don't know, defy the laws of nature. So, it goes without saying, in order to be successful you have to know how a tree lives, grows and functions. There is no more excuse for undertaking the treatment of a tree without the proper knowledge of the practical methods required and the scientific reason for those methods, than to have a blacksmith operate on your teeth.

#### PROPER PRUNING IS CAREFUL OPERATION

**O**F COURSE the care of trees naturally includes a lot of things aside from the treatment of cavities, but that is probably one of the most interesting phases. Sometimes we are inclined to talk about cavity work more than other things, but the science of tree surgery takes in a pretty broad scope of activity. It includes proper pruning in order to remove dangerous dead limbs, and also to eliminate a source of infection, for exactly the same reason that if a bone in a finger had gangrene in it, the surgeon would cut it off and stop the spread of the

infection. But oh, such terrible things are done in the name of pruning.

Some folks think pruning is a simple matter, but for exactly the same reason that a surgeon will remove a finger and dress the wound and care for it so it will heal over, the tree surgeon will have to do the same thing in a different way. Every limb removed, alive or dead, must be cut parallel with the parent stem; not too close, because it makes too large a wound; and not too far away, because it leaves a stub. It is impossible to get any healing over a stub of any size.

I have seen, for instance, in some oaks where the stub healed over, when it was two or three inches long; but as a general rule, the cut must be reasonably close to the parent stem and parallel with it, in order that the downward flow of the sap may have an opportunity to heal over the wound.

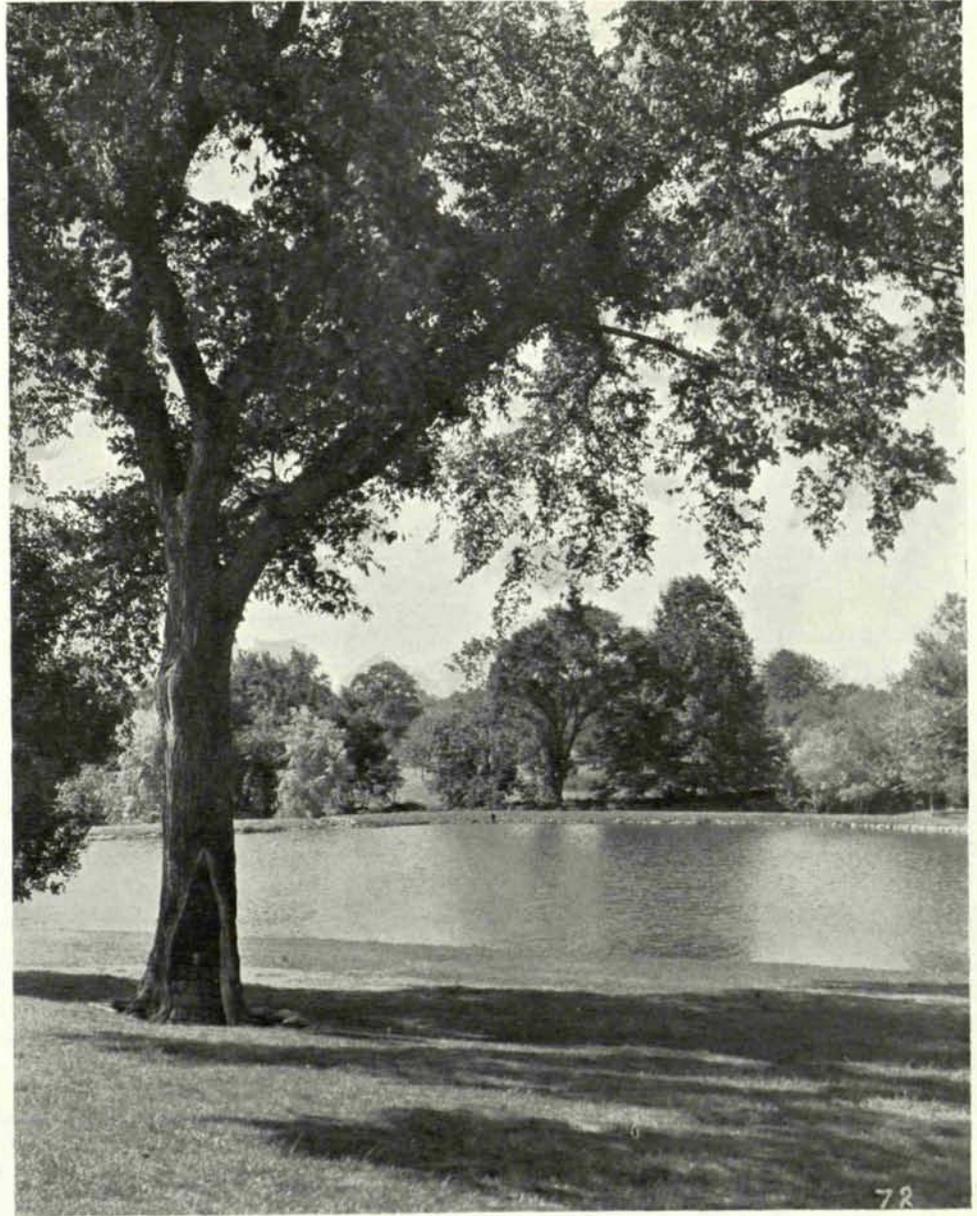
It is impossible to get any healing in a stub of any size, because there is no circulation in it. You cut the end of a limb off and you automatically destroy the circulation, because you remove the leaves. While the stub is dying, nature likely forces out the latent buds along the sides of the stub, and so you get a bushy effect growing out from the sides. Or if it is at the top of the tree, you get a bushy effect at the top and cover up a stub that is bound to decay.

So every limb that is removed, intelligently, must be done with regard to the healing possibility. The wood must be protected while it is healing, and the cut must be made so it can heal. It is not a simple thing that requires no skill. Either a lack of skill or lack of care leaves a condition that is open to disease and decay.

The interior of a tree is largely dormant. If you will look at the cross section of a tree under a microscope, it looks very much like a sponge, with a myriad of open cells standing up ready to receive the spores of fungus disease that are floating through the air. And you must bear in mind that the dormant and the semi-dormant interior of a tree has no means of protecting itself when it is exposed.

#### LIFE PROCESSES ARE NEAR THE OUTSIDE

**A**LL the life processes of a tree are near the outside. Just imagine that you are looking at the cross section of a tree. In the center you see the pith, which was there when it was a baby tree.



*This charming spot on a mid-Western golf course would lose much of its beauty without this stately elm. Some time ago it began to be badly decayed. Tree surgeons were called in time, the cavities were scientifically treated, and the tree was saved.*

Around that is a layer of wood, which represents the first year's growth. Around that is a second layer of wood, which represents the second year's growth. Around that is a third layer of wood, which represents the third year's growth, and so on out to the bark.

In the beginning when a tree was young and small, the central cells were active sap-carrying tissues, in addition to being structural support. As the tree grew in size, the central cells became less



*It can be safely said that fully half of the major tree troubles are due to improper pruning. When this tree was pruned a number of years ago, the operation was performed improperly. Spores of rot fungi lodged upon the exposed end of the projecting stub. The decay spread rapidly and in time the trunk of the tree became infected. Now the tree is rotted from the crotch to about the base of the trunk and is beyond saving.*

active and became dormant. So as you go outward toward the bark, you find the outside layers of wood are the active sap-carrying tissues.

Around everything is the bark, which serves a two-fold purpose. It provides the inner cells through which the digested food comes down and feeds the entire body of the tree. In between the bark and the wood is the Cambium layer, the new tender growth of this year, which is next year's outside layer of sap-wood. So you have the life

processes entirely near the outside of the tree. The bark, Cambium layer, and outside layers of sap-wood, together with the leaves and roots, are the vital parts of the tree. The inner cells are defenseless against the invasion of diseases when they are exposed to infection.

Nature made the bark to protect the inside from infection, as she made our skin to protect our bodies from disease. If you cut the skin and leave it exposed and unprotected, the germs of disease may and probably will find entrance; and it depends upon the type of germ just how serious it is. And so medical science has taught us that the only safe thing to do is to clean and sterilize it, put some protective material on it and cover it with a cloth of some kind until it heals.

#### DISEASES THAT ATTACK TREES

**T**HE trouble that attacks the interior of trees is a group of diseases called Fungi. Fungus is a low form of vegetable life that lives by tearing down some other form of life. You have noticed on the side of certain tree trunks, things that look like toad stools? Those are the fruiting bodies of the fungus disease that is working on the inside. These fruiting bodies of the disease, at a certain time of the year, give forth a myriad of tiny spores. They float through the air and many of them fall to the ground harmless, but some of them will find lodgment in the open wounds on other trees. There in the open wounds those tiny spores, or seeds, will start to grow. The disease sends out little thread-like tentacles, called mycelium, that penetrate from cell to cell, up and down and all around. It lives by destroying the woody cells—they are its food.

Fungus is a part of economy of nature. It is exactly that thing, in one form or another, which makes it possible for wood to decay. A log or a trunk falls to the ground. If it were not for Fungus, it could not disintegrate and return the elements to the earth. And so the man who operates as a tree surgeon must recognize the enemies and diseases that threaten tree life, and he must know the scientific reasons for his various practices and methods.

This question of pruning trees is not a simple thing that can be thrown aside carelessly. I would not be afraid to risk the assertion that half of the work of treating cavities in trees has been made

necessary by improper pruning. So I think good pruning may be considered an ounce of prevention that is worth a pound of cure.

#### BRACING TREES THAT ARE WEAK

**T**HERE is the question of bracing trees that are weak. Nature made cripples in the tree family as she did in the human family. There are various kinds of cripples. One of the most common is the weak crotch. In other words, the attachment between the two limbs is weak. In the course of time it will split a little. Water gets into the crack and carries with it spores of Fungus disease, and then it starts to decay. Nature tries to heal over that crack; but the water and disease are inside and it is weaker than before. Then a wind storm comes along, splits it a little bit farther and more water and disease get in it. Then nature tries to heal it again, and the process is repeated until the weak crotch splits to pieces.

I have seen a great many trees that have been split so badly and have healed so often that there is a bulge in either side. In many of those cases you can bore in and take out several gallons of water. I have seen it done many times. The water on the inside means decay, and decay means increased weakness, and finally one-half crashes down.

I will never forget 23 years ago, we were doing some work on a famous estate and there was one valuable tree with a badly splitting crotch. I pointed it out to the owner. It was a beautiful elm. I called his attention to the danger, telling him that I didn't know how soon it would happen, but it would surely split to pieces if it wasn't taken care of. Two weeks later a heavy storm came along and tore off half of it and ruined it. Probably he wouldn't have taken five hundred or a thousand dollars for it, but the reason he did not take care of it at the time the danger was pointed out to him, was the fact that he had so many other trees that needed attention, he thought he would have that particular one taken care of later; but after that storm it was too late.

#### THE QUESTION OF FEEDING TREES

**T**HEN there is the important question of feeding trees. I would like to call your attention to the fact that trees must have food just as you and I. If you

want a good sod, I imagine you would put fertilizer in the soil. Well, trees are just big plants, and they require some attention, under semi-artificial conditions, just as other plants. I don't care whether it is corn, grass, flowers, shrubs or trees, they must have food and if nature can't provide the food, man has to do so.

Out in the native woods nature takes care of it in her own way and does a beautiful job. The dead leaves, the discarded branches and trunks, the bushes and grass and weeds fall to the ground and decay and return to earth the food elements that came from the earth. Those things provide the food for the trees and other growing things in the woodlands. But if you have a tree under lawn conditions, it is pumping out of the soil all the exhaustible food elements. Nature can't put anything back. We cut the grass and take it away. We rake up the leaves and take them away. So trees under semi-artificial conditions must have care.

One thing trees require is systematic and proper feeding. The three exhaustible food elements are nitrogen, potash, and phosphate. A good tree food is the combination of those three elements in the right proportion for the healthy growth of trees. It is necessary to distinguish between a foliage plant and one that produces flowers or fruit. You must use a different proportion for foliage plants, like trees, than you would for flowers or fruit.

Much more might be said, but this is enough to indicate clearly that the correct care of trees is not a laborer's job, and it can not be undertaken carelessly. It requires trained skill and scientific knowledge, and it must have also a professional attitude on the part of the trustworthy practitioner.



**CUTS TRUE STANDARDIZE on**  
**Standard Golf Course Equipment**

It's a certain sign of good greenkeeping and greatly adds to the proper maintenance of the course.

**CUTS-TRUE HOLE CUTTER**

An entirely new hole cutter that combines every possible advantage—yet is low in cost. Operates perfectly for years—stays sharp longer.  
Price, Complete, \$7.00

**The Complete STANDARD Line**

Steel Flag Poles—Aluminum One-Piece Hole Rim—Tee Markers—Fairway Signs—Bag Racks—Parking Signs. Special Signs. Write today for complete information.

**STANDARD MFG. CO. Cedar Falls, Iowa**