

from the standpoint of one of the operators of a pioneer fairway watering system in the middle west. Mac has made an extensive and practical study of the fairway watering problem as it hits the average well-maintained course in the central and eastern states, and knows his stuff to the degree that he won't go to bat stating his own, particular system is the world's last word. This always is a program novelty.

Joe Williamson of Scoto is slated for an address on "Practical Greenskeeping," which has the keynote of aligning effectively the lessons of actual work on the course and the discoveries and suggestions of the laboratory turf scientists. Ed Dearie, another prominent greenkeeper, is ticketed for summarizing his observations on practical drainage of golf courses. With the budget calling for exact figuring by the greenkeepers the remarks of Edward W. Doty, treasurer of the Cleveland District Golf Association, are bound to prove illuminating to the greenkeepers. Doty has been a close student of golf club bookkeeping for some years and the pitfalls of maintenance bookkeeping that trap the unwary greenkeeper are old stuff to him.

A very interesting and practical phase of the program will be the competition in green construction between teams representing the eastern seaboard, the Pennsylvania sector, the mid-west and Canada. Each team will be given the details of a par four hole requiring a green.

On the technical side of the program the association has picked such stars as Prof. Lawrence Dickinson of Massachusetts Agricultural college, Prof. J. W. White of Penn State college, R. H. J. DeLoach, research expert of Armour Fertilizer works, Dr. Howard Sprague of New Jersey Agricultural college, B. R. Leach, Martin A. Davey, of Davey Tree Expert Co., and T. E. Odland of the Kingston (N. J.) Agricultural Experiment station.

Each Worker A Greenkeeper Is Basic Policy

By A. E. ARNOLD

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share of construction and maintenance labor problems.

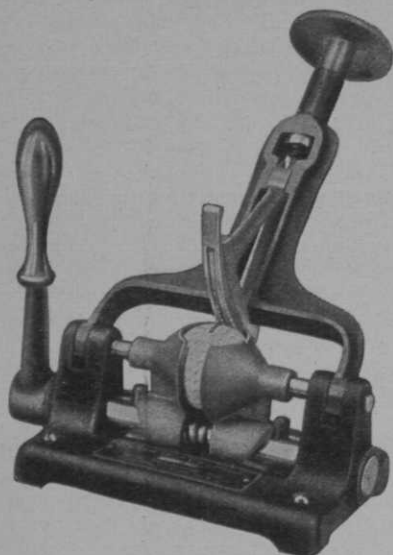
The first few years of its development and activities, the maintenance labor was to a large extent shifted about from maintenance to construction work and vice

versa. We did not allot any particular area or job to any one man, as our equipment was limited and the work was new. Our greens were watered by a night crew and were whipped and mowed the first thing each morning, the cups being re-set and the grounds in general dolled up by the maintenance crew—this work usually completed at noon, leaving the grounds in the afternoon as free from interference by working men as possible. The crew would be detailed to other work, preparing top-dressing materials, etc., but largely to construction work. Greens were topdressed regularly, weeded and fertilized by a part of this crew but always on a detailed plan, which at that time, seemed to be a conservative way.

As time went on and the construction work nearing an end, the demand began to grow for a higher state of perfection on our golf grounds in general. Together with this desire, the fungus diseases became prevalent, the desirability for a better strain of grass for the greens, the need for a greater and more efficient water supply, and a demand for more efficient service in general, together with the adoption of a budget system, all of which have necessitated a keen study of both labor management and turf culture.

The whole thing has boiled down to a well-established fact in my mind—that the nearer a greenkeeper one can make each man of our golf ground crew and the more interested he be kept in his work, the better one is able to maintain that high state of perfection on the grounds at the least possible cost.

With this belief in mind I am following that plan whereby each man of our maintenance crew is allotted a certain area of ground containing a certain number of greens, tees, traps, trees, etc., of which he has complete care, except, of course, the fairway mowing and the general watering which is done by a night-watering crew. He is equipped with all the tools that he needs, such as mowers, rake, shovel and shears. This system seems to promote a better condition, because it tends to create a spirit of competition between the men to produce the best greens and general appearance of his section. The size of the area and the number of greens and tees allotted to each man depends on the size of the budget which in turn is regulated by the income of the club. Of course, the fatter the budget, the more and better service can be given. But with a reason-



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able budget, this system does seem to prove out as the most satisfactory way to manage the maintenance labor.

During a part of our 1930 working season my budget allowed for one man for every three holes, including greens, tees, traps and any trees that were included in the area. Including a practice green and a bowling green (which is equivalent in area to two putting greens), we have the equivalent to 30 greens, which were divided into ten districts. Each district had one man for its care. In addition we employ two tractor operators, a night-watering man, an extra man for miscellaneous work and a foreman. I was well pleased with the results obtained with that crew. The season was very dry and it required a great amount of extra watering during the day.

Early night watering of the greens I think is by far the best time, but owing to the inability of the workmen in the dark to see as well where all the water is falling, especially when the wind changes, it is impossible always to get a good job; therefore the day man follows up and finishes that work each morning.

Topdressing materials heretofore have been a large labor item with us; however, last year I changed to a better plan for making compost which not only cut the labor cost of the material but produced a very much better grade of compost. We covered a quarter acre of sandy loam ground four inches thick with decomposed barnyard manure, plowed it about seven inches deep, covered again with two or three inches of the same kind of manure and disced in several times until it was well cut into the soil and followed up with a good discing each week until about the middle of August when we harvested it by scraping the soil to the depth of the plowing into huge windrows. Large piles or windrows tend to keep the material dry and available at all times to screen out and apply to the greens; also the soil bacteria (which have grown to the highest state) are kept dormant until the compost is applied to the greens. This change in method of preparing topdressing material I think is very much worth while, particularly because of the quality of the material it produces.

Chairman Lauds MacGregor's Greenkeeping Plan

(Continued from Page 32)

application of the method was that of a capable greenkeeper.

This is rather a long preamble. The net results are what will interest you. Bear in mind, please, that we are dealing with greenkeeping, excluding course changes and new construction.

Chicago Golf Club's greenkeeping costs always closely paralleled those of similar

clubs in the Chicago District. Our standard of course maintenance has always been very high — with a small, well informed and rather critical membership watching conditions closely.

Take the year 1929. Total greenkeeping costs (labor and upkeep) were \$26,263.20. The budget, made under



John MacGregor, greenkeeper at course Rob Jones pronounced best conditioned course he'd ever played.

the MacGregor system, at the beginning of 1930 was (labor and upkeep) \$22,430.00. This substantial saving was to be accomplished without reducing wages and without skimping the course—neither of which were even considered.

Now as a matter of fact, in spite of the drought which necessitated materially more watering than was planned (we water our fairways) and a serious attack of grubs under the fairway turf, the close of our year showed on the club books a total (labor and upkeep) expense of just \$19,652.75. *Nearly \$3,000.00 under the budget—over \$6,500.00 reduced from the previous year!*

Our members commented on the good condition of the course—and in some respects we did even more work than in previous years. For example, traps were raked daily instead of once a week.

Now as to how this was accomplished—the detail of the working of the MacGregor system.

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The green-committee talked with MacGregor and he reduced his ideas to paper. The experiment was approved. Course changes, equipment, etc., as variables from year to year were separated from labor and upkeep, which are the continuous charges. The green-committee acted as a unit. The greenkeeper dealt with the body as one man instead of receiving separate orders from three individuals.

A careful analysis was made by months of the year as to the work entailed in the various months. A working calendar dividing the work into eleven divisions was made.

The greatest problem in greenkeeping is admittedly the supervision of labor. Articles have been repeatedly written about it—the subject is under continual discussion by interested parties.

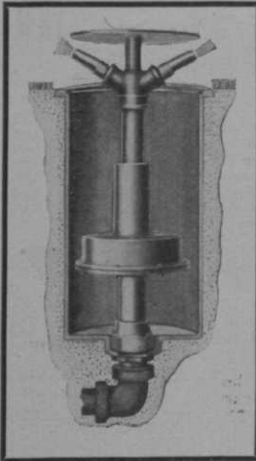
Where a crew is working together, control of work is simple—the sluggard—and the slipshod are under observation. With from fifteen to twenty men scattered out over a hundred acres or so, individual supervision is impossible—even with a car—a horse or field glasses. Effectively dealing with this condition will naturally bring about a substantial labor saving.

To meet it, MacGregor made a complete

change—a revolutionary change in accepted greenkeeping organization and supervision plans. Under the old method, the problem was one of watching the men to see that the work was done. He discarded this entirely.

Under the MacGregor system, golf course work is divided into eleven broad divisions—then subdivided into daily tasks for individual workmen. Each workman has a reasonable and fair daily task to perform. The greenkeeper inspects the work and its quality. Whether the laborer is fast or slow makes no difference. Whether he can or cannot deliver a good average day's work of good quality is not a question. The story is written in his results. This does not mean an abandoning of superintendence—but it does mean a simplification of it.

With this new plan, the year's calendar of seasonable work was analyzed and reduced to individual day's labor. Men were allotted work as efficiently as possible and probable costs forecast. A monthly budget was made—with some question, which was evidenced by the fact that a thousand dollar reserve was established to play safe. Still—the total project was substantially under the preceding year.



Here is the ROBIN POP-UP in action. Far-throwing nozzle covers the outer part of a circle 80 to 100 feet in diameter. Other nozzle covers inner circle. When not in use, the sprinkler drops down into its casing, completely out of the way.

For FAIRWAY SPRINKLING the *NELSON* ROBIN POP-UP

THE ROBIN POP-UP

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The ROBIN POP-UP is best used in series. When the water is turned on, all sprinklers controlled by that valve automatically rise above the ground and rotate as they sprinkle.

Shutting off the water causes them to drop down again, completely out of the way. The gearless, positive action of this sprinkler is simplicity itself. Proven satisfactory in every respect by two years of testing. Unconditionally guaranteed.

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See our advertisement on the Lark Sprinkler on page 10.

L. R. NELSON MFG. CO., Inc. 1740 S. WASHINGTON ST.
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When you mention GOLFDOM the advertiser knows you mean business.

The MacGregor system was launched—with the agreement that changes would be quickly made where weaknesses developed.

But no weaknesses developed! The plan, founded on many years of experience, solved the problem it was aimed at. Costs ran far below the budget estimates. But don't think it ran itself. On the contrary.

Various forms available for greenkeeping cost records were examined, but discarded because they were all designed for office accounting, and what MacGregor wanted was daily field records. So he worked out a series of forms to control his labor costs according to his own ideas. They are simple and comprehensive, not requiring a bookkeeper to run them, but they tell far more than most existing club greens records.

These forms were divided into the major divisions of labor and upkeep costs. From his time books and purchases he posted continuously. Each month's totals were taken off and records made of "over" or "under" the budget for that particular month, as well as the standing against the budget for the year to date.

In looking over these records at the end of the year, it is really a case of the greenkeeper keeping books to know where he stands every day, and it was well worth while. There was no waiting for the accountants; the greenkeeper was in closer touch with his costs from day to day than could possibly be the case through normal channels of accounting. And control of costs can not be fully accomplished unless the man in charge of expenditures knows where he is at every moment of the time.

If the question were asked: "What are the basics of the MacGregor system?" the following would be a good answer—assuming to start with, that the club has a greenkeeper who knows grasses and his work:

1. *The handling of labor largely, the inspection of assigned tasks instead of the supervision of men to see that they do their work.*
2. *A fair and honest budgeting of labor and upkeep by month and division of work.*
3. *A system of records kept by the greenkeeper showing him daily where his money goes.*
4. *Prompt and immediate action by the greenkeeper to eliminate waste—to control his costs.*

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How to Protect Pruned Trees from Infection

By
MARTIN A.
DAVEY

This tree is being pruned properly—clean cuts close to the trunk to facilitate healing. Waterproof coating is being applied to the wounds.



tree troubles can be traced directly to improper pruning at some time in the past.

Poor Pruning May Kill

The greatest danger to which a tree is subjected by improper pruning undoubtedly is infection. Whenever a limb is cut, this danger is imminent, exactly the same as there is danger of infection when a person cuts himself or is operated on, and the wound is not properly treated. In the case of a person, blood poisoning is apt to occur; in the case of a tree, the almost inevitable aftermath of carelessness is decay.

Decay is caused by rot fungi, a low form of vegetable life which live by tearing down and consuming other forms of vegetable life. At a certain time of the year these rot fungi throw off what are called

OF all things that tend to give a golf course a down-at-the-heels appearance, probably none is quite so obvious as deadwood in the golf course trees. The dead limbs and branches, jutting skeleton-like into the sky, make the entire course look neglected and unkempt and seem to advertise the fact that the club officials care little about its appearance.

Greenkeepers who endeavor in every possible way to keep the appearance of their courses above reproach make provision for having their trees pruned at regular intervals. In this article I shall discuss the need for pruning and also why unusual care should be taken to make sure that the deadwood is removed in a scientific manner.

Pruning is the oldest form of tree care and perhaps for that reason there is a common belief that "anyone can cut a dead limb off a tree." Nothing could be farther from the truth. Investigations have proved that fully half of the major



The operator is showing the wrong way (left) and correct way to prune a branch from a tree.

fruiting bodies. They resemble toad-stools; in fact, many of them are toad-stools. These fruiting bodies give off a myriad of tiny microscopic seeds called spores which float through the air. Whenever these spores land upon the heartwood of a tree, they are likely to do serious damage.

The heartwood is always exposed when a limb or branch is cut off and unless the wound is properly treated the spores are bound to lodge upon it sooner or later. Once established in a tree, the fungous growth works relentlessly, spreading in all directions, destroying the cell walls and absorbing their contents. It eats its way insidiously into the limbs and trunks, leaving behind nothing but a porous, rotten mass which can be crumpled in the hand and powdered into dust.

Eventually the tree becomes nothing but a hollow shell doomed to collapse under the first heavy wind. It seems incredible that a splendid, healthy tree should perish because it has been improperly pruned, and yet this is exactly what has happened countless times in the past and will continue to happen as long as trees are pruned by unscientific methods.

Prune Limbs Flush with Trunk

One of the most common indications of improper pruning is the unsightly stub left when a branch or limb is removed. Not only does a stub detract from the appearance of the tree, but it also provides an ideal spot for rot fungi to get in and start their deadly work. Nature provides

no way for the end of the stub to heal over; it always remains open and exposed to infection, and after the wood dries it splits, making openings through which the rot fungi spores penetrate deep into the tree.

The tree expert never leaves stubs when removing limbs or branches. He makes the cut in such a way that the flow of sap can be carried constantly to the edges of the wound, permitting rapid healing. To do this, he cuts the branch off flush with the limb or the limb flush with the trunk. The sap, flowing downward through the inner bark, begins forming a new growth called callus which gradually grows over the wound and eventually covers it entirely, making further infection impossible.

The tree expert not only makes the cut in such a way as to facilitate callus growth, but he also takes precautions to treat the wound at once to prevent infection. He does this by covering the wound with a waterproof coating which sterilizes it and is an indispensable aid in protecting it until nature covers it with callus.

A waterproof coating must have special properties to be satisfactory. It must adhere firmly to the surface of the wound in all kinds of weather—it must not run in summer or crack in winter; it must be plastic enough to bridge over cracks and keep the wound sealed even when the wound begins to check. Years of experimentation were necessary to perfect a coating which was satisfactory in every respect.

When a large limb is removed improperly, the bark and wood are often badly ripped. This is the common result of removing the limb with only one cut. After the saw sinks deeper and deeper into the wood, the limb begins to sag. Finally, before the cut is completed, the limb crashes. Rarely does it break off clean. Usually, it rips the bark and wood on the lower side of the limb. The jagged wound which results is particularly susceptible to infection. Sometimes many feet of bark are torn away and the appearance of the tree is marred.

How to Saw Off Branches

To prevent such injuries, the tree expert makes three cuts with his saw. The first is made on the under side of the limb, a foot or two from the trunk. The second is made on the top side a little farther out. The result is that when the limb falls the break is clean—the ripping of wood and bark is stopped at the point where the first cut was made. After the heavy part of the limb is removed, the tree expert proceeds to remove the stub flush with the trunk.

Needless to say, spurs should never be used in climbing the trees in order to prune it. Each hole made in the trunk by the sharp points leaves an opening through which the tree can become infected. The results of such wounds are often far worse than the benefits gained by pruning out the deadwood. Tree experts get to all parts of a tree by the use of ropes which they have been trained to use with amazing dexterity.

Incidentally the ax is a tool which always should be left in the tool kit unless there are trees to be cut down. When a tree is pruned with an ax, the wounds are almost invariably jagged, and consequently will not heal rapidly. The tree expert always uses saws for pruning work, and the wounds are so cleanly made that the healing process is hastened.

Pruning is a very important and necessary phase of tree surgery. Dead branches in a tree are a serious menace—they often crash to the ground when least expected, destroying property and endangering human life. Moreover, the deadwood menaces the tree's health inasmuch as it is a favored camping ground for all kinds of bacteria, fungous spores and insects. There might well be a slogan: Remove the deadwood and save the tree.

It must be remembered, however, that pruning the deadwood out of a tree does

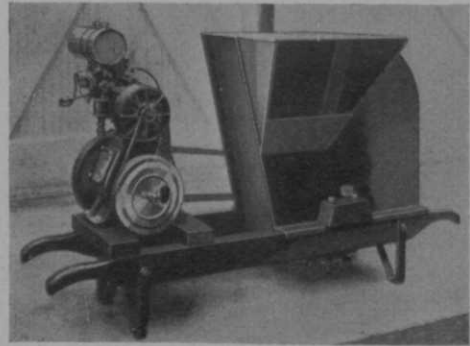
not remove the cause of that deadwood. When branches and limbs die back, there is something wrong with the tree. It may be diseased; it may be starving to death; it may have been repeatedly defoliated by insects and its vitality so lowered that it is slowly dying; it may have girdling roots which are strangling it. Any one of a great many things may be wrong.

By making a thorough diagnosis of the tree's condition, the tree expert is enabled to determine the cause of the deadwood and treat the tree accordingly. Obviously this should always be done if the tree has any particular value to the golf course.

(This is the fourth of a series of articles regarding tree care written for GOLF-DOM, by Martin L. Davey, president of the Davey Tree Expert Co.)

ANNOUNCE NEW COMPOST MIXER AND SPREADER

BEARDSLEY & PIPER COMPANY, 2543 North Keeler Ave., Chicago, have recently placed on the market a new compost mixing machine and a topsoil dresser. The manufacturer's announcement reads: "This new *Soilslinger* (illustrated here)



Soilslinger, new composter.

thoroughly cuts, breaks, mixes and aerates compost, completely pulverizes and prepares soil, sand and manure, and delivers a perfectly blended material into a fluffy pile or windrow. The unit is simply constructed, possessing a specially designed cutting cylinder to insure proper mixing and aeration of materials. It is made with pulley for tractor drive or with gasoline engine or electric motor. While the *Soilslinger* will meet every capacity requirement, it is particularly applicable, because of extremely low cost, for the smaller golf courses and the needs of estates, etc., where only one or two men are employed for turf maintenance."