

Fall Fertilization

By ALEX BINNIE, *Greenkeeper*

Shoreacres Golf Club, Lake Bluff, Ill., and Chairman of the Editorial Council of the National Greenkeeper



ALEX BINNIE
One of America's foremost greenkeepers.

IN MY opinion, any budget that fails to provide for an annual appropriation for fairway fertilization is incomplete. It is essential for the proper maintenance of any golf course. The plan which we have adopted, our reasons and methods for the application of fertilizers, and the results which we have obtained are outlined below.

In the first place, I am a firm believer in fall fertilization. It has many advantages over spring fertilization or haphazard methods. I might enumerate a few:

FIRST—Maintenance work is at its lowest in the fall as compared with the spring or summer months and fertilizing can be done with labor that would otherwise represent idle time. From an economical standpoint the plan is ideal.

SECOND—More hardy growth is developed. Fall fertilizers will, as a rule, stimulate the root system without promoting abnormal growth, to the extent that there is less winter kill. The real benefit, however, comes when the frost and the rain dissolve the fertilizers and work them deeper into the soil, thereby encouraging a deeper and more hardy root system rather than a shallow turf which is an inevitable result when fertilizers are on top of the soil rather than in it.

THIRD—And last, bad spots on the fairways are apparent and are sure to receive attention in the



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fall, whereas, some are apt to be forgotten in the spring.

As I mentioned before, our plan contemplates an annual appropriation for fairway fertilization. We do not attempt to fertilize all fairways in any one year, but rather to cover a few each year, never overlooking any spot on the entire course that is not up to standard even though it is necessary to treat it each season.

And also we do not broadcast fertilizers with a prayer on our lips. The fairways are disced and re-disced and the fertilizers worked well into the soil.

The results which we have obtained have been very satisfactory. We have good fairways—no winter kill—our turf has a splendid root system—and our grasses are hardy. Our fairways are cut three times each week. Why shouldn't I believe in fall fertilization?

Fall in the Fertilizer Program

By M. E. FARNHAM, *Secretary and Greenkeeper*
Philadelphia Country Club

TO THE relief of most of us concerned with the maintenance of turf at present-day golf course standards, Summer with its excesses will soon be past. The advent of Fall offers the opportunity to repair the ravages of the Summer and, perhaps to start a program which may help to minimize the probability of past troubles recurring.

It is becoming universally recognized that, on

existing turf, reseeding is of doubtful value. The difficulty of preparing any suitable seed-bed and the fact that it is seldom practical to put golf turf out of play are factors which reseeded turf has to contend with. Logically then, practically the entire problem of turf improvement resolves itself into one of fertilization.

It is my opinion that the entire problem of turf fertilization is an open question at present. In fact it may and probably will continue as such. Each year sees more controlled experimental work being carried on. Some bemoan the seeming duplication of much of this work. However, we will never see the day when such work is being carried on under as diverse conditions of soil and climate as those represented by the golf courses of the country.

Nevertheless, it is essential to have some basic fertilizer program to insure the maintenance or improvement of turf as the case may be. This program may be varied as conditions, experience, or additional knowledge warrant.

At the Pennsylvania State College there are pasture fertilizer plots which are the oldest in the country. These plots were originally planted to a mixture of grasses and clovers including red top, Kentucky blue grass, and white clover. The fertilizer treatments have been the same during the life of the plots.

While it is granted that the conditions on these plots do not duplicate golf turf the results are very valuable. At this location, the plots which have received ground limestone, nitrogen, and an abundance of phosphoric acid now have fine stands of blue grass. As soon as potash is used, even in small



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amounts, the clovers become prominent. It is recognized, however, that even in some parts of Pennsylvania, some soils are deficient in potash and require the use of it.

Based on the above-mentioned plots, the Pennsylvania State College recommends as follows:

GREENS: Nitrogen, 2 lbs. per year in five applications per 1000 sq. ft. Phosphoric Acid, 32 lbs. per acre, early in Spring. Ground Limestone, 1½ tons per acre once in five years.

If Sulphate of Ammonia is used as the source of Nitrogen, every 100 lbs. used requires the use of 75 lbs. of ground limestone to neutralize the effects.

FAIRWAYS: Nitrogen, 60 lbs. per acre in two applications. Phosphoric Acid, 32 lbs. per acre in Spring. Ground Limestone, 1 ton per acre once in five years.

These recommendations are an excellent basis for a fertilizer program for similar conditions. They are not by any means the final solution of the problem. That is up to each individual to develop for his own conditions and perhaps to vary for different portions of a course, or in view of past treatments.

The seasonal nature of any fertilizer program may well vary under different conditions. Spring fertilization is undoubtedly important. However, I feel that where Summer conditions are severe and crab grass is a problem that Fall fertilization takes on added significance.

My program is to use inorganic materials mainly in the Spring cutting down amounts decidedly as July approaches. In this way the turf goes into the trying Summer season in a fairly hardy condition and is less susceptible to various ills. Also, there is no abundance of food available for weed food. As September approaches looks can again receive attention. I venture the opinion that too much concern about color of turf often results disastrously during trying Summers.

I shall not attempt to argue the question of organic vs. inorganic fertilizers for use in the Fall. I feel there is a place in the program for each. Consider how much of each food element is needed and make applications accordingly. Do not use "X" fertilizer and consider it cheap because only 200 pounds are recommended per acre when actually you should use 1000 pounds to get enough nitrogen.

It is probable that Calcium, Phosphorus, and any necessary Potash can well be applied in early Spring. That resolves the Fall fertilizer program to one largely of Nitrogen unless the other elements have been deficient in the earlier program.

Relatively few greens suffer from starvation. This can not be said of fairways. Having decided as to requirements by all means get to work on the Fall fertilization and do not forget the fairways, especially at this season.



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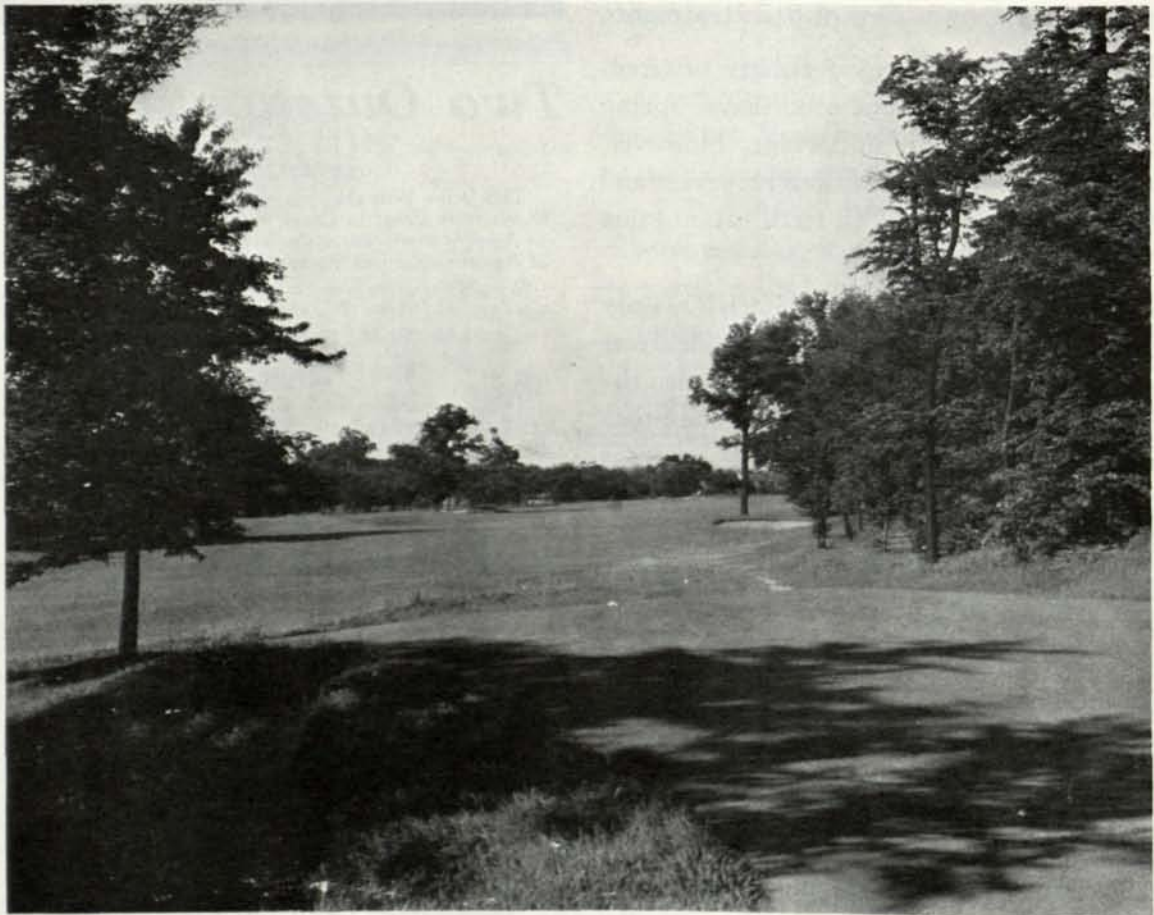
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No. 11—390 yards—view shows second shot across deep gully with carry of about 150 yards from the edge.



No. 13—535 yards—Dogleg to right to elevated green.



GREENKEEPING— TODAY *and* TOMORROW

By PROFESSOR LAWRENCE S. DICKINSON
Assistant Professor of Horticulture, Massachusetts State College;
Professor in charge of Greenkeepers' School, Massachusetts State
College; Honorary Member of the National Association of Greenkeepers
of America.

CHAPTER VII—THE PROBLEM OF FACTORY ALTERATIONS

IN COMMERCIAL manufacturing, factory alterations are made with the express purpose of reducing operating and manufacturing costs. The manufacturer figures very carefully before ordering the alterations to be made; he knows the cost and net saving to be expected. The alterations are made for two purposes: one, to increase profits, and two, to more successfully meet competition.

The golf course (factory) alters its course or introduces devices, in order that the course may be a more severe test of golf, be sportier, and "more like other courses" to more successfully meet competition. The effect upon the game of golf is the prime motive for the alterations, and seldom is proper consideration given to the quality of the playing grounds. Later, however, it is realized that the quality of the playing grounds is more important than the sportiness of the course. An automobile with a beautifully lined body, appeals to the buyer, but it is the quality of the chassis and power plant that make for comfort and low operating cost.

When planning factory alterations, definite specifications can be made, carried out, and previously determined results obtained. The shoe will be manufactured for 27c less while its quality remains the same. When planning for golf course alterations definite specifications can be made, they can be reasonably well carried out, but the results cannot be guaranteed, for the materials used in the alterations (except chemicals) deal with nature, contain living organisms. Also there is an opportunity for differences in opinion as to the interpretation of specifications. Oak is oak, but sandy loam,

while it has specifications set down by agronomists, may be sandy loam to you and not to me. Furthermore the agronomist's specification leaves considerable chance for variation.

COST OF COURSE ALTERATIONS UNCERTAIN

CONTRACTORS bidding for factory alterations do not estimate, they bid—bid on reasonable definteness and take their chances on profit or loss. They even have an inspector over them at all times. Golf course architects and contractors, have learned better than to bid; they estimate. In many instances if there is a chance that a competitor is going to get the job, the estimate is lowered, lowered to a ridiculously low figure to one who is familiar with golf course construction.

Green committees not having had practical experience in landscape construction, accept the low estimate. Result! Work two-thirds to three-quarters done, at a stage where it would be unwise not to complete the project. The estimated cost is reached and the appropriation has been entirely used.

The Green committee, or executive committee is left with two choices, either "finish it off as cheaply as possible, and get to playing on the new greens," or procure additional funds and complete the job correctly. Are there many executive committees that have the nerve to face a club and admit that they were "sucked in." No!! The job is usually finished off as cheaply as possible and frequently the additional money comes from the greenkeeper's budget. Furthermore it is unethical to have an inspector over golf course alterations.



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Having "finished it off as cheaply as possible" the club now has on its hand a factory alteration that because of poor construction will greatly increase the cost of producing good golfing turf. The increased cost is very likely forced upon the greenkeeper with no budget increase, "because the alterations cost so much we cannot afford to increase the budget." The result is bound to be a lower maintenance standard, or a fired greenkeeper, which is worse.

EPIDEMIC OF LOW ESTIMATES

I HAVE spent considerable time discussing the comparison between factory alterations and golf course alterations, because at the present time there is a *serious epidemic* of low estimating golf course architects. The attack is general throughout the country and the resultant disease appears to be contagious. The cost of such type of construction to golf courses is far greater than the cost to combat brown patch, Jap beetle, sod webworm, and zonate, eye spot combined.

Of course, all golf architects do not under-estimate the cost of course alterations. Let us consider the effect of course (factory) alterations on an actual course, the alterations being made within the estimate and well done. Six greens were involved, new ones were constructed or old ones enlarged. The facts are as follows:

Maintenance budget, \$18,000.

6 greens enlarged from 5500 sq. ft. to 7500 sq. ft. or 36%.

6 greens is 33 1/3% of 18 greens.

Net increase in green size $33 \times 36\%$ or 12% approximately.

Net increase in cost of fertilizer for greens, 12%.

Net increase in cost of chemicals for greens, 12%.

Net increase in cost of top dressing for greens, 12%.

Etc., Etc., Etc., Etc., 12%.

Labor on above operations will not be increased 12%, a fair estimate is 8%. Combining the two, materials and labor, it is conservative to say the total net increase to greens maintenance cost would be 10%. This is arrived at after a careful checking of costs.

RECENT SURVEYS SHOW COST OF MAINTENANCE

FROM surveys recently conducted, we learn that the average 18-hole golf course spends 37% of the total budget on the greens. To maintain the previous standard the course under consideration should spend in 1931, 37% plus (10% of 37%) or 40.7% of its budget on the greens.

37% of \$18,000=\$6660.00 amount expended in 1930.

40.7% of \$18,000=\$7326.00, amount that should be expended in 1931.

Difference, \$566.00.

Therefore, \$566.00 represents the annual additional maintenance cost that the factory alterations effected. This argument is not based upon theory, but hard cold figures and facts. It is doubtful if committeemen think of course alterations in such an unenthusiastic way.

The simplest way to take care of this \$566.00 item is to employ less labor or use labor-saving machinery. The latter involves an additional cost, for if the labor-saving machinery was present before the alterations the increased cost would still be \$566.00. There is a big question whether "labor-

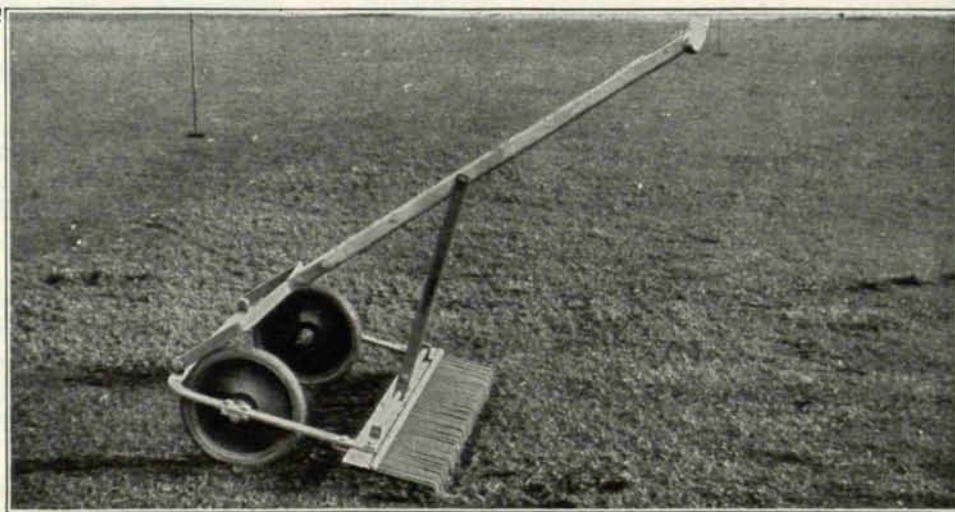
saving" machinery can really save that much. Less labor means lower standards.

Can increased efficiency on the greenkeeper's part be expected to save on the greens alone more than 20% of the \$566.00? No! Can devices such as a new bridge, new path or gasoline go-cart, be expected to save another 20%. No!! The club should increase the maintenance budget by at least \$450.00 and preferably \$500.00 and expect the greenkeeper to keep the standard of maintenance or improve it.

OH! I neglected to state that because of the course (factory) alterations, greensmen are obliged to walk approximately 1000 feet further between greens each day. Let's see how much that figures. Average for the various operations (very conservative) 10 times a week for 32 weeks, April-October inclusive, $1000 \times 10 \times 32 \div 5280 = 66 \frac{2}{3}$ miles. Three miles per hour equals 22 hours plus. This item is one of the few that make up the cost of golf course maintenance. It is included in the 10% additional cost required by course alterations.

The example cited is one of many that could be demonstrated. The matter of fairway water system

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increases the mowing costs, and increasing the number of traps is a decided added financial burden to the maintenance budget.

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Seriously, if the alterations are justifiable they are worthy of being maintained. Make them, and enjoy them, but realize that golf course alterations are seldom made to decrease the cost of golfing; so give the greenkeeper sufficient additional funds for proper maintenance.

Next month—Chapter VIII—Understanding and interpretation of costs.

Compost

By COLONEL JOHN MORLEY

COMPOST as it is generally known contains a liberal amount of organic matter, especially when it is made of sods and other vegetable matter as well as a fair supply of stable manures (free from wood shavings), and a couple of layers of sharp sand.

Compost is made for two principal reasons. First, to breed into the soils nitroifying bacteria. These bacteria take the organic materials which the compost contains, helps to decompose them and releases the various fertilizing elements, so that when they are applied to the soil intended to be topdressed they become immediately available as plant food for the grass.

Second, to create a good porous soil. In order to hasten nitrification a small quantity of lime or sulphate of ammonia should be used. This produces heat that helps to hasten fermentation. In order to check nitrogen from escaping or leaching out of a compost pile both sides and both ends should be well protected with sods. The top of the pile should consist of a layer of sharp sand so that water can enter and penetrate more freely into the soil.

In making compost we should remember that the productiveness of any soils for grasses is determined in a very large degree by the amount of water it can hold, and by the manner in which it is held. And also by the facility and completeness with which the grass plants growing in it are able to withdraw that water for their use as it is needed.

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The Beech — One of the Noblest Trees

By L. C. BREED

AMONG the trees that are utilized for ornamental purposes is the beech. There are several reasons why this tree has been selected for use in this way, and the principal ones will be mentioned.

The beech is widely distributed and grows well in a variety of soils. It is a massive tree, often reaching a height of over one hundred feet, with a girth of upwards of twenty feet. It thrives in extremely cold weather, and fairly challenges the snow on its limbs by the frosty white of its smaller branches and twigs. It does well when subjected to intense heat if it has plenty of light. Its vitality is very high and it sometimes attains an age exceeding eight hundred years.

In the high forest it has a long, clean stem, but in the open it branches out near the base, and its spreading, broadly conical crown and deep shade renders it a splendid ornamental tree. In winter the branch-work is practically elegant; the limbs rise steeply, the branches sweep up and out, and from them rise the twigs in regular combs. The bark is fine and smooth and changes from iron to silver grey in color.

The leaves are oval, pointed, smooth, dark and lustrous. The freshness of their spring green and silky texture in youth are unrivalled. In autumn they change to a fine russet with tints of purple when wet. In young trees and hedges the withered leaves cling to the twigs through the winter. In the bud the leaf is folded fan-wise, and the folds run parallel with the nerves. They expand into an oval, smooth-faced leaf, with slightly scooped edges, and a most delicate fringe of short gossamer which falls off later.

The beech flowers in April and May. The blossoms are rather more conspicuous than is the case with the oak. In early summer, whilst the leaves are still pellucid, the shade of a large beech is particularly inviting. Later, the leaves become opaque, and their glossy surfaces throw back the heat rays. Then, the play of light upon the great mass of foliage is very fine; but in autumn when the leaves have turned from deep green to orange and warm

ruddy brown and they catch the red rays of the westering sun, the tree appears to be turned into a blazing fire.

The drip of the beech destroys most of the soil-exhausting weeds, its shade protects the soil from over-evaporation, and the heavy crops of leaves enriches it by their decomposition. The leaves are rich in potash and as they readily decay they produce an admirable humus.

Since our trees are leafless nearly one-half the year, the beech has a great appeal owing to its winter beauty which is only equalled, though not surpassed, by that of the elm. Then, the sinewy strength of its trunk is most evident, the white of its bark is the clearest, the structure of its noble head is most apparent, and the fine spray of its delicate branches stands clear-cut in exquisite tracery against the sky.

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Canadian News

By J. H. EVANS, *Golf Editor, Toronto Globe*

BROWN patch, a disease which the Canadian greenkeeper has seldom encountered in his work, has attacked the expensive greens of the Royal York Golf course in Toronto, and according to reports from greenkeepers in different parts of Ontario and Quebec it has made its appearance elsewhere.

* * *

Brown patch has been uncommon in Canada. It made its appearance this summer for the first time in many years. The rarity of the condition has caused the greenkeeper and course superintendent to boast of freedom from the affliction whenever he had the occasion to visit neighboring portions of the United States.

* * *

When the growth appeared, courses were coincidentally scalded and presented another problem. Scalds due to excessive heat followed by drenching thunder showers and then by more heat caused those greenkeepers who were called on to treat brown patch to form the opinion that the appearance of the fungus was due entirely to the climatic conditions existing in eastern Canada this summer, just now showing some signs of abating.

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Four greens on the Royal York course were attacked by brown patch just prior to an important tournament during which the contestants struggled over the course under a blazing sun. Frank Hamm, the course superintendent, was able to catch some of it in time and to restore the surface by the use of chemicals. On another green, however, the brown patch could not be eradicated with chemicals, and as a consequence he was compelled to replace the ruined turf.

* * *

"It is uncommon in Canada. We haven't seen it for some years and must be entirely due to the abnormal weather which has been experienced this summer," said Hamm. "During July and the early part of August, there was no change in temperature night and day. At the same time we suffered from sun scalds, which has been unknown for a long time. It was impossible to cope with the situation. Heat, thunderstorms and more heat did the damage. However, with a return to normal conditions, we can repair the damage."

* * *

The conditions which have existed at the Royal York course are similar to those to be found elsewhere. While some courses with their watering systems and with constant attention were able to escape serious damage, others were not so fortunate.

* * *

The brown patch and the scalds which have concerned club officials and secretaries was a subject of discussion at the last regular meeting of the Ontario Greenkeepers' Association held at the Scarboro Golf and Country Club recently. Several secretaries attended the meeting and frankly confessed that while the conditions were of consequence, criticism could not be directed toward those who were in charge of courses and that nothing could be done but to go to work and repair the damaged putting surfaces in time for fall tournaments.

* * *

Eighteen greenkeepers from different parts of the Province attended the meeting at the Scarboro club along with Secretaries Tulloch, Cameron, Annis and Fenning.

The party went over the course to observe the damage done by the abnormal conditions which commenced early in June and continued for five weeks. The putting surfaces suffered severely and are just commencing to recover.

Two more meetings are to be held by the association before the fall. One of these meetings will take place at the St. Andrew's club, Toronto, early in September and then another meeting at the Royal York course later in the month. No club has adopted a more progressive attitude toward the greenkeeper than the Royal York club which plans to do something of a special character for the association.

* * *

It is of interest to note that while recognized associations in the golfing world of the Dominion, particularly