

Golf game a little rusty? ... kinks in your swing?



If so, then right now while you're settling down to your season form is the time to get your swing smoothed out . . . get rid of the kinks before they develop into chronic hard-to-cure bad habits.

And here's the best tip I can ever give you: Make a date with your club pro right now to golfanalyze you . . . put your swing in the groove. There's no other way to get all the pleasure out of the game you're entitled to. You can't see your own swing, so you can't diagnose your golfing ailments. Even the greatest of the tournament playing pros go to their fellow pros for check-ups when they develop kinks in their swing. It pays out for them . . . it will pay out for you.

Walter Hagen



... and here's an in-
of your swing—
or any other
construction
makes it
center
Isotro
featu
amaz
ball

WALT
Division
GRAND

in
ads like this in
TIME • NEWSWEEK • FORTUNE
TOWN & COUNTRY • NEW YORKER
and other national quality maga-
zines, Walter Hagen is advising
club members everywhere to
get more enjoyment out of
golf by consulting their
pro—and by play-
ing Hagen clubs
and balls.



To be sure you have the advan-
tages of equipment exactly fitted
to you and your game, all
golf equipment bearing my name
is sold thru Pro Shops only
Walter Hagen

Developing Fine Turf with Aid of Fertilizers and Chemicals

By O. J. NOER

(The second article of a series on fairway turf.)

Top-dressing fairways not necessary: Extensive top-dressing of fairways with soil is expensive and rarely justified. There is the added danger of introducing clover and objectionable weed seeds, especially crab grass. It is impossible to obtain weed-free soil in quantity.

Turf is thin and usually in scattered patches on bad fairways. Players object to the uneven surfaces and suggest top-dressing to make them true. They are uneven because of the depressed spaces between the clumps of grass, and not because of inequalities at the soil level. The sole of turf above ground level makes the fairway seem rough. The objectionable "cuppy" depressions will disappear after a uniform turf coverage is obtained. Fertilization rather than top-dressing is the most effective and least expensive way to improve poor fairways.

Even on sandy soil, top-dressing is seldom justified. Increased waterholding capacity is not effectively improved by several inches of heavier soil. Irrigation is a more satisfactory answer and usually cheaper in the long run. However, supple-

mentary fertilization every year is imperative; otherwise clover and weeds take possession.

Lime: At one time lime was blamed as the principal and often as the sole cause for clover and weeds. It came back into favor following the disastrous summer of 1928. Turf authorities now concede that soil can become too acid—even for the acid tolerant bent grasses and fescue.

Modern practice is to express soil reaction in terms of pH. Figures on the scale go from 0 to 14. The mid-figure 7 represents a neutral soil. Lower figures denote increasing acidity, and differ by multiples of 10. Thus 6 is ten times, 5 is one hundred, and 4 is one thousand times more acid than neutral.

Definite need for lime is indicated when soils are moderate to strongly acid. With borderline soils in the range of pH 5.8 to 6.0, no serious harm will result from delay until definite need is established by test strips across one or more fairways. The best plan is to establish two plots measuring 10' x 100' each. Lime applications of



These two adjoining fairways were Milarsenited and reseeded. Kentucky bluegrass was used on the one on the left at 125 lbs. per acre. It did not make a tight turf. Crabgrass came back. On the adjoining fairway at the right, 10% Astoria bent was used with bluegrass. The seeding rate was 125 lbs. per acre. Note the greater turf density and absence of crabgrass.



Corrugations in a watered fairway caused by excessive mowing speed. Crabgrass and clover become bad in the depressions. Tractor speed should be reduced and fairways should be cross mowed every other time to correct the conditions.

50 and 100 pounds, respectively are equivalent to 1 and 2 tons per acre.

Magnesium may be deficient on acid soil: Soils needing lime should be tested for available magnesium. When it is low by a dependable method, a finely ground limestone of high magnesium content should be used to eliminate the possibility of magnesium deficiency as a plant nutrient. The magnesium content of the limestone should be 20 to 30 per cent, reported as magnesium oxide. High magnesium limestones are called dolomite, or dolomitic limestone.

Secondary effect of lime: The direct effect of lime on growth is only one reason for using it. The turf on acid soil shows the effect of drought several weeks earlier than when the soil is above pH 6.0 in reaction. The development of localized dry spots in summer, especially on watered fairways is aggravated by excessive soil acidity. The use of lime will help grass resist drought and reduce the dry spots in amount and intensity.

Strong soil acidity checks the decay of clippings, dead stems, leaves, and roots. They accumulate at the surface as a peat-like layer, sometimes several inches thick. When this occurs it is impossible to keep good turf during hot weather. Cross-discing, renovation with a rotary hoe, or better yet, with an Aerifier, followed by an application of finely ground limestone eventually corrects the condition. The use of nitrogen to encourage development of the soil organisms responsible for decay of plant residues is sometimes necessary.

Phosphorous is fixed in difficultly soluble forms when the soil is strongly acid. A reaction of pH 6.2 to 6.5 is most favorable for the mobility of phosphorus.

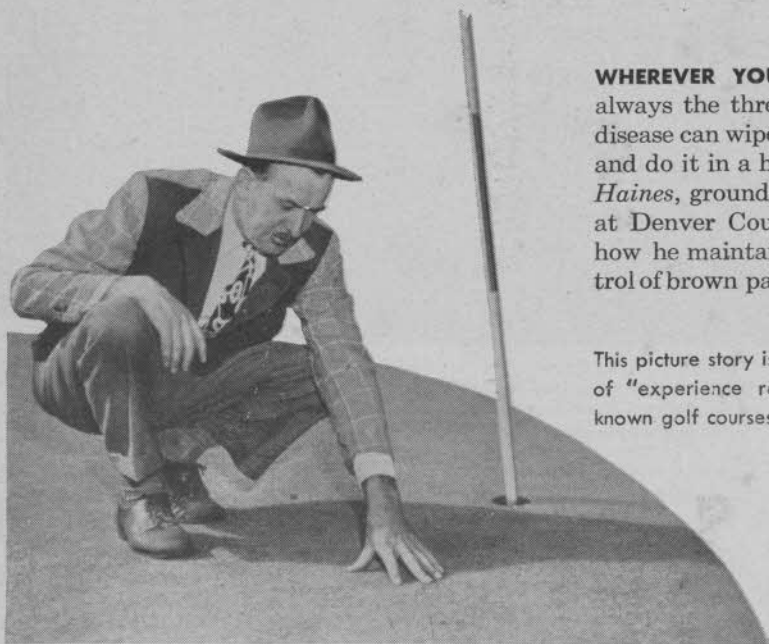
Fertilization of established fairways: Fertilization is the clue to increased turf density, provided other unfavorable factors have been corrected.

Phosphate and potash are needed by every plant, but play a secondary role on established fairways because clippings are not removed. Nevertheless, the first step in formulating a fertilizer program is to decide whether the soil supply of these elements is adequate. If not, they should be applied so nitrogen can do its work and produce a dense uniform coverage of turf.

Potash rarely needed: Fairways seldom need potash fertilizer because most soils contain an abundance of it. The soil supply is replenished when the clippings decay. The use of potash without adequate amounts of nitrogen encourages clover. Poor sandy soil and the peats are the only ones that may need potash occasionally. An application of 60 per cent grade muriate of potash at 100 to 200 pounds per acre is ample.

Phosphate overemphasized: The need for phosphate on established fairways has been overemphasized by some. It should be used liberally only on soils known to be deficient, or where reseeding is necessary. The initial application should furnish 80 to 100 pounds per acre of actual phosphoric acid. This amount is contained in 400 to 500 pounds superphosphate, 20 per cent

Keeping the greens green at



WHEREVER YOU ARE, there is always the threat that fungous disease can wipe out your greens and do it in a hurry. Here *J. L. Haines*, grounds superintendent at Denver Country Club, tells how he maintains effective control of brown patch.

This picture story is another in a series of "experience reports" from well-known golf courses, coast to coast.



True putting surfaces, as on this 18th green at the Denver Club, require close control of fungous diseases. "I find that regular use of 'Tersan' . . . at least once a week . . . is the surest and easiest way to prevent disease," Mr. Haines says. "'Tersan' does the best job of all the fungicides I've tried, and what's more, it doesn't burn the green."

Denver Country Club



"Safety in handling 'Tersan' is another big reason why we like it . . . why my staff prefers to work with it. 'Tersan' gives perfect results, and yet it never shocks, yellows or retards grass," says Mr. Haines. Louis J. Keller, above, applies a dry mixture of "Tersan," a method Mr. Haines devised for his own use at the Denver Club.



TERSAN, SEMESAN, and Special SEMESAN are registered trademarks of E. I. du Pont de Nemours & Co., (Inc.)

Left: A spray of "Tersan" and water is the usual method for mechanical application. "Tersan" saves time and labor because it mixes easily with water . . . needs no wetting in. In fact, many greens superintendents now find the use of "Tersan" gives their staffs more time for other maintenance tasks.

For Dollar Spot—Use Du Pont F-531, a highly effective cadmium fungicide. Also controls green scum (Algae) and pink patch. Safe, economical, easy to use.

"Semesan" and Special "Semesan" are also available for those who prefer mercurial fungicides.

DU PONT
REG. U. S. PAT. OFF.

Turf Fungicides



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY
Listen to Du Pont "CAVALCADE OF AMERICA"—Monday Nights, NBC Network
May, 1949

grade. After that, a fertilizer containing one-third to one-half as much phosphoric acid as nitrogen will supply all the phosphorus fairway grass requires. Phosphate alone, or without enough nitrogen, encourages clover also.

Nitrogen is the key to good fairway turf: On established fairways, nitrogen fertilization is the thing that causes grass to spread and form a dense turf. When used in adequate amount, it helps discourage clover and weeds. There were good fairways before the days of sodium arsenite and 2,4-D, both in the North and



Weeds are mostly plantain and grass is Kentucky bluegrass with a little bent. Good turf can be secured by using 2, 4-D and fertilizer.

in the South. The problem of crowding out clover and weeds was simpler with Bermuda, but it was not too difficult on Northern bent fairways.

Nitrogen imparts deep green color, and is responsible for active growth more than any other element. It is the sales promoter among plant food elements. When phosphate and potash are applied alone or in combination, the effect is seldom noticeable to the eye. But put nitrogen with them, or apply a little ammonium sulphate, nitrate of soda, etc., and the effect is startling and like magic. The grass becomes a beautiful dark green, and starts to grow at an accelerated rate. Because of this marked effect on top growth, many conclude that nitrogen is the cause of shallow roots. This is not true. Nitrogen is an essential constituent of protein, which is in turn a vital part of every plant cell. Roots are made up of cells and need nitrogen just as well as leaves and stems. The root system will be restricted when nitrogen is deficient. Only when the use of nitrogen is grossly overdone does it tend to produce shallow roots.

On starved grass heavy rates of nitrogen are justified spring and fall until turf of

desired density is obtained. After that, the rate can be reduced to bare maintenance requirements and possibly to only one application a year. In crab grass regions, major nitrogen fertilization should be in the fall with smaller doses in the spring in order not to encourage crab grass. Farther north heavy spring feeding is feasible and desirable.

Summer use of nitrogen on watered fairways: Lack of moisture need never be a growth-limiting factor on watered fairways, so fertilizer can be used at any time from the moisture standpoint. Some of the courses in northern regions apply little or no nitrogen at the start of the growing season in spring. They wait for the first flush of growth to subside and fertilize in May or June. More nitrogen is applied each month during the summer, but in limited amount, and is followed by a generous application in September. This plan has been eminently successful where bent grass predominates. Withholding nitrogen in early spring is believed by some to help discourage poa annua.

Kind of Nitrogen Fertilizer to Use: There are two types of nitrogenous fertilizer. One kind is water soluble and exemplified by ammonium sulphate, urea, ammonium nitrate, cyanamid, etc. They



A watered fairway of poa annua. The Kentucky bluegrass is gone because of close cutting and heavy watering. The footprints are bad because grass is wilting and about to die. Then clover will become worse. Renovation and reseeding with colonial bent is needed on this course.

are inorganic chemicals which act quickly and burn if used at heavy rates. Effects are of short duration, when compared with the other group of natural organic fertilizers exemplified by cottonseed and soybean meal, tankage, and Milorganite. The nitrogen in them is mostly water insoluble and is converted into usable form by soil



with a real **HILL-CLIMBING TRACTOR**

ALL MOWING IS EASIER



WORTHINGTON
model F
CHIEF
TRACTOR

Steep hills, rough ground, tight quarters, wide open spaces — the revolutionary Worthington Model F Chief Tractor is at home in any kind of terrain.

With traction wheels in front under the engine, 75 percent of the Model F's weight is on the drive wheels. That's why this new Chief handles big gang mower loads on steep grades.

Front mounted gang mowers on the new Model F cut grass before the tractor wheels touch it — no more streaking due to compacted grass. Driver sees what he's doing without turning around. He gauges distance better, can cut down size of overlap.

For the full story on this smooth-working, cost-cutting tractor, write us or see your dealer today.

WORTHINGTON MOWER COMPANY
Stroudsburg, Pennsylvania

Subsidiary of JACOBSEN MANUFACTURING COMPANY • RACINE, WISCONSIN

organisms at a variable rate. Organics act slower than chemical fertilizer, but effects last longer.

Both kinds of nitrogen have their place in turf fertilizer programs, but the trend is toward organics for fairways. Some use organics only, others a combination of both, and a few prefer chemical sources only. Split applications are necessary with soluble fertilizer on starved turf to provide enough nitrogen. Serious burning of the grass is bound to occur when the total quantity is applied at one time. True organics are safe to use in a single appli-



White grub damage on a fairway caused by the *Phyllophaga* grub. Weeds and clover get a start in the injured spots. It costs less to prevent, rather than repair, damage.

cation, even at the heavy rate needed in impoverished soil without danger of scorching the turf. Organics are safe for summertime use and are definitely superior for fall, because any nitrogen not taken up and utilized that season will not leach away during winter. Cool weather in spring retards decomposition of organics, so the use of soluble fertilizer at that time will start earlier growth when that is desirable.

Water requirements are lessened by an adequate supply of nitrogen: No amount of water will produce green grass on nitrogen depleted soil. When nitrogen is adequate, much less water is needed to keep the grass green and turf dense. On watered fairways, the cost of fertilizer is offset in large part by the reduced expense for water.

Turf on unwatered fertilized fairways stays green longer after drought starts, and comes back quicker after rains. Less water is needed to revive the brown turf. Grass recovers on fertilized fairways after a light rain but there is little or no visible effect on unfertilized fairways.

The startling effect produced by 2,4-D has made everybody more conscious of weeds, and has focused attention on chemical weed killers. Some results on broad leaf weeds have been so striking that the other factors in weed control have been overlooked. Unless dense turf is developed after killing the weeds, there will be another and a bigger crop of the same kind, or new weeds will appear. Some clubs used 2,4-D in the spring to kill broadleaf weeds and made crab grass worse. Farther north, where crab grass is less active, but clover a more serious pest, it replaced the weeds on the unfertilized turf.

The simplest weed problem is on courses where turf is thin but the grasses are the right kind and weeds are dandelion, plantain, and buckhorn. On these fairways, 2,4-D along with generous fertilization—and lime if needed—will do a miraculous job, usually in one season. Before the discovery of 2,4-D, it took several years to crowd and eliminate the weeds by fertilization alone.

The next simplest case is on courses where existing grass is pure bluegrass, but watering is contemplated. The broadleaf weeds can be killed with 2,4-D, then nitrogen and phosphate fertilizer applied generously, and good quality colonial bent seed introduced. Within a few years after starting to water and cut bluegrass turf short, poa annua and clover usually take over. Then it is a tough job to get a satisfactory stand of bent grass with a single seeding.

The toughest job is on watered fairways which have been cut so close that there is little or no permanent grass left. Poa annua is the principal grass and grows well in spring and fall along with chickweed. During the summer clover and knotweed are bad. The use of 2,4-D has been disappointing because it doesn't kill clover or chickweed effectively and because it is not a safe material to use before sowing grass seed. The most satisfactory renovation program has been to use sodium arsenite several times during the summer to kill the clover, chickweed, and knotweed and to check the poa annua. Then to seed with colonial bent. Such a program has been used successfully on a number of courses.

Sodium arsenite continues to be the best treatment for crab grass on a large scale, such as fairways. Light dosages will kill it at the time seedheads start to form, although two or three treatments may be needed. The soil must be moist to a depth of 4 to 6 inches in order to avoid serious injury to the grass. Clubs in Philadelphia have used sodium arsenite on crab grass infested fairways and then seeded with colonial bent.

(Continued on page 88)

IT'S NO WONDER

THEY SELL RIGHT ...

LOUISVILLE POWER-BILT GOLF CLUBS sell because they have what golfers WANT ... they *look right, feel right, play right*. What's more, the merits of Power-Bilts are being widely publicized through advertising in 5 important nationally circulated consumer magazines to tell your customers to see you about them!

**FREE
COLOR CATALOG INSERTS**

like the samples sent you are being offered to golfers across the nation—thousands have already been sent in answer to requests—and thousands more will go out before the Season is in full swing. IF MORE ARE NEEDED FOR YOUR PERSONAL DISTRIBUTION, WRITE US FOR A SUPPLY.

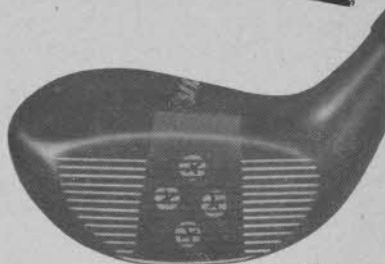
HILLERICH & BRADSBY COMPANY
LOUISVILLE 2, KENTUCKY



**SOLD ONLY BY
GOLF PROFESSIONALS**



THEY LOOK RIGHT



THEY FEEL RIGHT



THEY PLAY RIGHT





Size of classes is limited only by the physical capacity of the various Park Fieldhouses in which schools are held. New locations are selected each year to assure Chicagoans of an opportunity to attend. Park records show some students are not dismayed by distances—have traveled ten miles or more to attend.

Public Hails Chicago Park's Free Winter Golf Schools

By BEN CHLEVIN

February and March are cold windy months in Chicago and often there's snow — just enough to make any venture out into the weather a matter for deep and careful deliberation. Yet, this is the time of year when many residents of the city bundle themselves up warmly on certain evenings during the week and head for the local Park fieldhouse — with a golf club or two tucked firmly under one arm!

It is not unusual to see a group of teenagers riding the street cars, carrying golf clubs in the evening. The sight of a dignified elderly couple trudging through the snow and slush — with the gentleman carrying the clubs — arouses no comment. You might see a young father sheltering a tiny bundle from the wind — as his wife brings up the rear — carrying the inevitable golf clubs. Taxi drivers discharging businessmen at the door of a Park District fieldhouse at this time of year will automatically help their fares retrieve the steel shafted clubs from the dim interiors of their cabs.

Fantastic? Not to one thousand Chicagoans, of both sexes and of all ages and walks of life. These are the young and not so young hopefuls who annually congregate in Park Fieldhouse auditoriums and gymnasiums all over Chicago to learn the fundamentals of golf as taught by Packey Walsh, golf professional and supervisor of golf for the Chicago Park District. High-pressure promotion? Not at all. This has been going on — every winter — since Walsh returned from service, with classes getting bigger every year. Same people? Some, maybe. Mostly friends of the friends of the friends of people who attended the 1945 sessions. And they've got friends too!

How do these people get that way? What is the attraction that drags these people from hearth and home to a gymnasium for a club-swinging session at a time of year when the sane golfer is still boasting of last year's feats on the fairways? Most of them come to get information about golf that they can get nowhere else. Ordinarily,