



It Can Be a Sun Tan Room A Conservatory or a Greenhouse

AS a Sun Tan Room it means larger club attendance during the Winter of Discontent. Has a particular appeal to women members. As a conservatory, it has its attractions for social occasions. As a Greenhouse, it means a place for the decorative plants and flowers used about the club.

The Winged Foot Golf Club, at Mamaroneck, N. Y., has one of our recently built greenhouses.

To our 175 page catalog you are most welcome. You and any members who are the least interested.

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the grass takes on a new lease of life even though the grubs are present.

The moral of this tale consists in the fact that a sick grub is virtually as harmless to grass roots as a dead grub as far as injury to turf is concerned. Grubs sickened by arsenate in this way ultimately die although death may be delayed for two weeks. The older and larger the grub the more resistant it is to the arsenic and the longer it lingers on in this sickened condition.

If you wish to ascertain whether the lead arsenate you have applied is acting on the grubs it is suggested that you carry out the following simple procedure: First dig into a piece of turf that has *not* been treated with lead arsenate and unearth a few grubs. These grubs are of course normal, healthy specimens and if you examine them closely you will note that they are tightly curled with the head and tail held close together. On squeezing them gently you will find that their flesh is firm to the touch like a rubber ball. The skin of the grub is bright and lustrous. Now go to the turf treated with lead arsenate and unearth a few grubs. If the lead arsenate has begun to do its work you will find that these grubs are not so tightly curled, that the flesh is flabby when squeezed and that the skin of the grub has a gray, dull, unhealthy appearance. Remember it is always best to examine some normal grubs before examining those in the arsenate turf, otherwise, unless you are fully experienced, you are apt to take too much for granted.

During the past few years I have taken jobs entailing the cleaning up of hundreds of acres of fairways where the grubs were chewing up the grass roots and where you could roll up the sod like a carpet, not for just a few square feet but acres in extent. In fact it always seems to me that the average club never takes the trouble to ascertain where I live until the course is in danger of being washed bodily into the nearest creek.

Last Ditch Battle

The first job of this inch-from-the-precipice sort that I undertook was the Ashbourne club of Philadelphia in the fall of 1927. At this date the fairways were completely shot. Due to the precipitancy of this grub attack plus the end-of-the-year flatness of the club treasury I was beseeched to give them temporary relief at the lowest cost until the grub-fighting budget could be enhanced by an assessment party.

Consequently, being notoriously soft-hearted in my dealings with the rich and taking pity on this club full of millionaires I took a long chance on losing my reputation for reliability and sound mentality to say nothing of the possibility of being lynched by the gentlemen of Ashbourne in the event of my failing to kill the grubs, and recommended a dosage of 125 pounds per acre, just exactly one-half of the quantity which should really have been applied.

Lo and behold! The grub-feeding was checked and the turf came back with a bang in the spring as a result of an ample application of milorganite and manure. I visited the club in July and the fairways were really looking good considering the hoe-harrowing they had undergone the previous fall. There were plenty of Japanese beetles flying around and going down into the sod to lay eggs for another crop of grubs. In August I again visited Ashbourne and spent the day making diggings here and there all over the fairways looking for grubs.

After walking about 26 miles and digging in 342 places without finding a single lousy grub I finally came, late in the afternoon, to the far side of the 17th fairway. By this time I was entirely fed up on golf courses, fairways, turf and grubs and would cheerfully have given a five dollar bill for a bottle of real beer and a Swiss cheese sandwich. Making a perfunctory jab into the turf with my trusty toadstaber, a square foot of turf came away in my hand, exposing sixteen steely-eyed grubs to the gaze of the cruel world.

I believe that I swooned dead away. At any rate when I came to with beads of cold sweat on my clammy brow, my head reclined on a patch of chickweed whose shy and retiring flowers were caressing my pallid lips.

Can't Miss Any Bets

Streaking across the course like a scared gazelle I finally found the greenkeeper at work in the tool shed.

"Tony," says I, "do you know that the far side of 17 is lousy with grubs?"

"Oh, yeah?" says he in a very perfunctory manner. "What do you care?"

"Oh, yeah? Hell!" says me in a very irate manner. "What kind of an answer do you call that?"

Realizing that I was on the verge of an apopleptic seizure Tony thereupon explained that the far side of 17 was outside

Flooded Fairways and Frantic Golfers

Jupiter Pluvius has it in for golfers in the spring, when he opens wide the flood gates and waters pour upon the earth, soaking the already sodden fields and fairways and making still madder the golfer who for months has been held under restraint. You can't stop the rainfall so there is only one thing to do—get rid of the water, quick!

The Key to the Situation

Leave it to Nature, if you want to; in her own sweet time she will dissipate the floods and dry up the soil. But that doesn't help the impatient golfer. Beat Nature at her own game—everybody's doing it!—compel that surplus water to run off at record breaking rates by employing

Engineered Drainage

This is nothing more or less than a practical application of scientific principles whereby surface and soil water is removed extra expeditiously, leaving the turf with that springiness that delights the golfer's heart and makes him say, "Ah! Our green-keeper certainly knows his business!"

Play Weeks Earlier

Life is too short to waste even a single day of golfing. Get on your course weeks earlier than you thought you could—engineered drainage will help you do it. It is being done on other courses everywhere—don't let yourself be a back number. Get our booklet—it's free—it gives the whole story. Just say "Drainage" on a post card addressed to us, and see how quick you'll get the facts.

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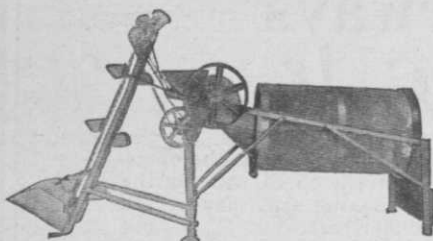
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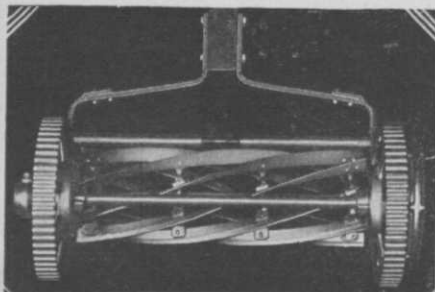
Toro Compost Machine



Toro Junior Tractor with Dump Wagon



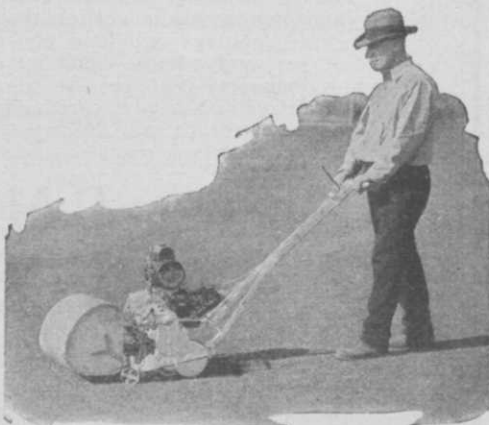
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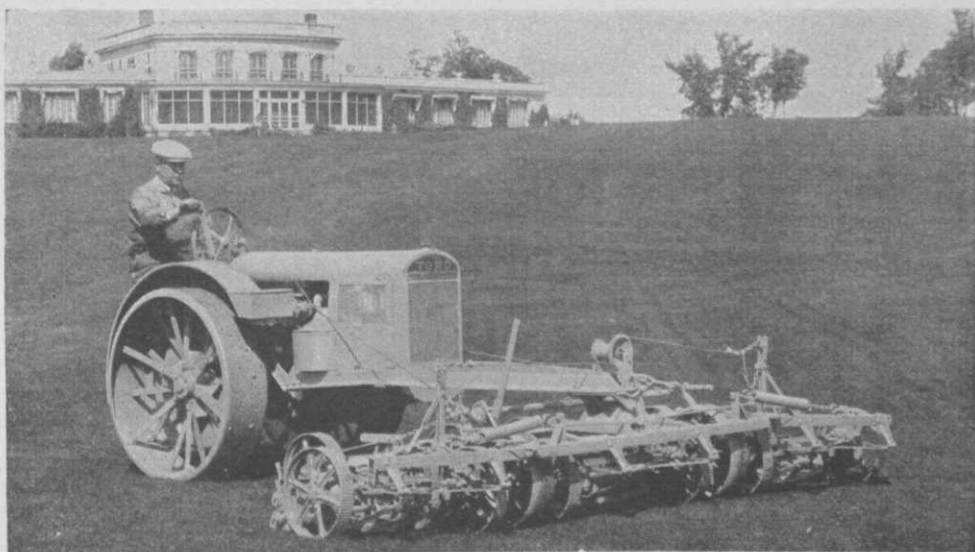
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Toro Power Putting Green Mower

Maintenance Equipment



The Toro Golf Machine

THE Toro Standard Golf Machine is the only tractor that has been built specifically for mowing large areas of grass. Cutting a twelve foot swath, it will cut an average 6500-yard, eighteen-hole golf course in sixteen hours or less. It has ample power to carry five mowers over any hill where golf can be played satisfactorily.

Every device known to modern engineering practice has been built into the Toro Standard Golf Machine at the factory. Its successful performance in every section of the United States and a number of foreign countries over a long period of years is the best evidence as to its inherent reliability and value.

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the line of play and had consequently received no lead arsenate.

The next root-hog-or-die job of grub killing I undertook was with the Cedarbrook club of Philadelphia in the fall of 1928. They were in the same boat as Ashbourne the year previously. Grubs all over the place and the turf so loose that every time a stock-broker made an iron shot he hooked up a divot big enough for a door mat.

I have it on good authority that no member of Cedarbrook is worth less than \$500,000 (due allowance being made for the recent stock market crash). And yet they gave me the same old song and dance with regard to going easy on the cost of cleaning up the grubs. Again, against my better judgment we applied 125 pounds of lead arsenate per acre with a liberal shot of milorganite and within two weeks the grass was firming up, that is what grass there was left.

Early next spring we examined the turf, which was coming back strong. There were plenty of grubs still present in the sod but these were in a subnormal condition due to the arsenic they had eaten and were doing little feeding on the roots. Considering the dosage of lead arsenate applied I personally was very well satisfied with conditions.

In the meantime, however, the club had worked up a grub-killing budget and had ample funds on hand. Consequently another application of 125 pounds of lead arsenate plus 500 pounds of milorganite was made late in April. In other words the club had had one bad dose of grubs and were determined to have no more.

I again visited the course in August and the fairways were really good and virtually free from grubs. However, the rough, which had not been grubproofed, was undermined with grubs and I understand that this portion of the course was grubproofed that fall.

In closing this article it is enough to say that anyone carrying on large scale operations of this sort with golf clubs learns a great many valuable things if he keeps his eyes and ears open.

In the preliminary stage of taking on jobs I perforce do considerable wining and dining with the green committee, give them a bit of bull and patiently listen to ten times as much in return. But when all this preliminary diplomacy was done with and out of the way the greenkeeper and myself went town to the tool shed, sat on a couple of upturned boxes and got down to

business. From that point on things began to move.

The manner in which Lew Evans, greenkeeper at Cedarbrook and Tony Sante, greenkeeper at Ashbourne, can arrange, plan, organize and go through with such a job as treating 80 or 100 acres of fairways in a few days' time, without a ripple stirring the smooth current of routine course management is truly amazing. Believe me the administrative ability of the average greenkeeper is vastly under-rated. Whenever I do a job with a club I invariably have three or four green-committeemen fluttering around like a bunch of hens that have just been dipped in a rain barrel and getting in everybody's way while the greenkeeper goes ahead and saws wood.

Firm for 250-lb. Dosage

Another point I have learned consists in standing firm for the 250-pound dosage of lead arsenate per acre. No more listening to the cries of poverty and depleted treasury as an excuse for cutting the dosage. The 125 pound dosage has done and will do lusty service but is just a little too near the ragged edge to suit me. Some day some pugnacious club member is going to find the sick grubs in turf treated with the 125 pounds dose and yours truly will be in a sweet mess. There's only one kind of a grub to show such a guy and that's a dead grub. He can't give you much of an argument then but I have something else to do besides try to convince a 200 pound bond salesman that the grub he is holding in his hand is so sick it cannot eat. He's apt to jump to the erroneous conclusion that I'm spoofing him and poke me one in the nose.

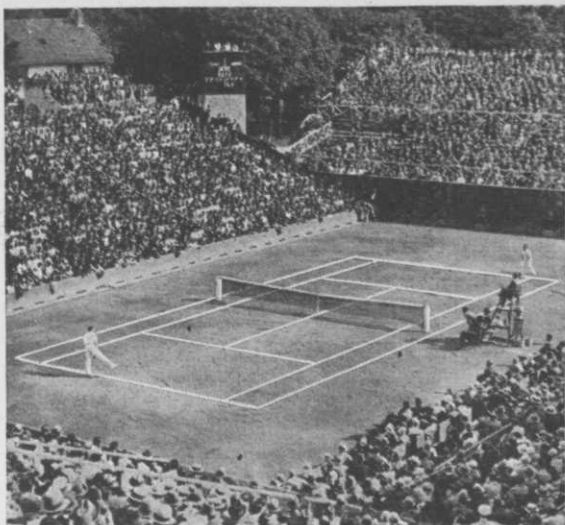
Clapper Kid Is Genius at Birth

SAMUEL MARSTON CLAPPER, writing from Bay State hospital Jan. 28, 4:30 A. M., advises the golf mob via GOLFDOM that he has been born to Mr. and Mrs. Orville Clapper of Newton, Mass., Orville being the New England Toro man as the greenkeepers and chairmen in that part of the country well know.

The letter is written in youngster's handwriting so it must be Samuel Marston's sure enough. The kid not only is a wonder at being able to write so soon but because he has started at such an early date to keep convention hours.

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Soils, Drainage and their Part in Profitable Operation

By WENDELL P. MILLER

(At N. A. G. A. Convention)

PROBABLY a better idea of the greenkeeper's work and importance would prevail were he to be known as the golf course manager. Greenkeepers are the men behind the guns of one of America's greatest and most rapidly growing industries. There are scores of men in the profession who are running million dollar factories to manufacture just one single identical product—pleasure.

The dividends you greenkeepers earn for your member stockholders are totaled up at the end of the year not as so many dollars and cents, but as so many good days of perfect golf.

Let's analyze this idea of the pleasure factory and see just who is the really important man in your company on whom depends the dividends your club will pay at the end of the year.

Every manufacturing concern when it gets into the big business class with \$100,000 to a million or more dollars of invested capital, has a president, a secretary, a treasurer and a board of directors, but they do not really produce the manufactured product. They only direct the business. Out in the factory you will find the men behind the guns and the big boss here is the factory or works manager.

You greenkeepers are in identically the same relative position to your board of directors as is the works manager. You are the biggest single factor in the manufacturing of this thing called golfing pleasure.

When the works manager finds that the machinery which his board of directors have provided for him is getting obsolete, he does not wait for the board to ask him what is the trouble with his production. If he is a smart works manager, he is the one who is constantly plugging at the board to let him make improvements which will speed production, lower costs, or improve the product.

Demand Working Facilities.

The point I want to make here is that unless the greenkeeper himself demands of his club that he be provided with adequate drainage, irrigation, or maintenance equipment he is not likely to secure these benefits in time to save his job.

Economical maintenance, is entirely relative. What one club finds economical would, for another club, be a waste of resources. The perfect golf course from the standpoint of economical maintenance has never yet been built. There are always factors affecting the final cost of upkeep and consequent amount of income which can be improved. How many of these factors which affect profit and loss in the operation of your course and clubhouse can be traced back to the drainage of the grounds? Did it ever occur to you that the clubhouse manager may show a red ink figure all through the months of April, May, October and November because he has filled his ice box with perishable foods and a rainy Friday has kept his Saturday and Sunday patrons at home? If your course had the reputation for always being dry, regardless of the frequency and amount of rainfall, this loss would be largely eliminated, due to tile drainage.

Briefly stated, the following facts regarding tile under-drainage will all stand the searchlight of scientific investigation. Whether your course is flat, rolling, or hilly; of clay, loamy or sandy soil; uniform tile drainage from the tee through the green will pay dividends on the investment, both in cash and pleasure because:

Drainage reduces the cost of putting the course into condition in the spring by preventing winter kill, heaving of the grass and erosion of bunker slopes; by increasing the efficiency of labor due to good working conditions; by permitting the use of larger units of machinery without damage to the turf or soil.

Uniform drainage has lengthened the

Cut Your Greens in HALF the time at HALF the Cost

Made with 19-inch and 24-inch cutting reels.



The JACOBSEN Power Putting Green Mower ... a Time-Tested Product

Jacobsen leadership in walking power mowers dates back ten years. Jacobsen Power Putting Green mowers have progressed in keeping with changes in putting greens. Aluminum construction of major castings, enclosed gear drive, auto-type differential, separate clutch control of traction and cutting units, self-sharpening device, and motors specially built for power mower operation, are Jacobsen developments that have mastered the problem of cutting modern greens with power mowers.

Jacobsen Greens Brush attachment and a power transport cart are additional equipment which increase the value of the mowers.

Test Them On Your Own Greens Without Obligation

Trial demonstrations gladly arranged at your request. Mail the coupon for our free book: "Modern Equipment for Putting Green Upkeep."

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A careful check of comparative mowing costs with hand mowers and with Jacobsen Power Putting Green mowers reveals facts of vital interest to every Golf Club. The varying conditions in different localities affect mowing costs slightly, but the following extracts from authentic tests will give you an interesting picture.

Fort Wayne Country Club, Fort Wayne, Ind.

Cost of mowing 18 greens averaging 6188 square feet each, with two 19-inch Jacobsen Power Putting Green Mowers . . . 28 cents per green.

Saving for the season \$1890.00

Culver Military Academy, Culver, Ind.

10 greens . . . 8,000 square feet each. 1 man with 24-inch Jacobsen Power Putting Green Mower. Cost per green 30 cents.

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Evanston Golf Club, Evanston, Ill.
10 greens, 12,000 to 15,000 square feet each. 2 men with 24-inch Jacobsen Power Putting Green mowers . . . Cost per green 40 cents.

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Rockford Country Club, Rockford, Ill.

18 greens, 5,000 square feet each. 1 24-inch Jacobsen Power Putting Green Mower . . . cost per green 17 cents.

Saving per season \$675.00

All the above greens are Creeping Bent.

Compare these figures with your mowing costs. Then write for our free book of Power Putting Green Upkeep Equipment, giving complete details of the tests.

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playing season an average of two months in Chicago, Detroit, and Cleveland districts by permitting safe conditioning of courses for April first opening and December 15th closing.

The total number of rounds of golf played for the year will be greatly increased but the peaks on a curve showing daily number of players will be smoothed by increased numbers of players using the course early and late in the season and also by preventing the heavy drop in week-end attendance during mid-season caused by a wet course and the consequent jam on the following week-end. It costs little more to keep a course in condition for 200 than for 50 players.

Drainage Lowers Water Cost.

Thorough tile drainage reduces materially the amount of sprinkling water required to keep the turf in best playing condition, both as to amount of water and frequency of application. This statement is the one most likely to be doubted. Drainage, by causing a chain of physical changes to occur in the natural undrained soil, actually increases the absorption and moisture holding capacity of all types of soils. Thorough tile drainage increases the content of capillary moisture in the soil to such an extent that this factor alone is of enough value to make it a sound investment in reducing the cost of maintenance. Capillary moisture, the only form of soil moisture of value to plants, moves in all directions in the soil regardless of the force of gravity, but the rate of movement toward the surface is largely dependent upon the tilth of the surface layers of soil. Drainage keeps the soil mellow and open. In puddled soils, that is soils that have been compacted by rolling or trampling when full of free soil water, the capillary moisture supply and replacement is reduced to a minimum, hence more artificial sprinkling is required. Free soil water is absolutely detrimental. If saturation is maintained for more than a few days, air starvation will result in killing the turf.

Properly installed tile drainage produces and maintains the proper aeration of the soil. I wish I could tell the story of air in the soil. Let me tell just enough here to show its importance in economical maintenance. It is the benefit resulting from increased soil aeration which makes profitable tile drainage of sloping fairways where surface water never stands. Air and water cannot occupy the same space in the

soil at the same time, hence, when the soil is full of free water, air is entirely excluded. When the free soil water is removed by run-off through tile drains, fresh air is pulled into the pores of the soil. The rapidity and frequency of this ventilation of the soil is a most important factor in determining the cost of growing good turf.

Soil Air Vital.

There is a universal law in organic life, be it plant or animal. Life, to be maintained, must have the right kind and amount of food, air, moisture, and warmth. If any of these are taken away, there is sickness. Soil air, the element generally lacking in the combination that constitutes the vital force in plant life, can be permanently and cheaply supplied by tile drainage. Nitrogen, purchased as ammonia in the fertilizer bag, and oxygen, so essential to soil fertility and plant life, are the two principal constituents of air, totaling nearly 98 per cent of the entire volume. Plants must get their oxygen through their roots as well as through their leaves.

Drainage is designed for two purposes. First, for the removal of all surface water and run-off from roofs, roads, and other areas. Secondly, the removal and control of soil water, whether resulting from rainfall, springs, or seepage from adjacent land.

The engineering data and experience is already at hand for the accurate and economical design of the drainage facilities required for the removal of surface run-off. The second purpose of drainage, that of soil water removal and control is the subject on which very little information is available except from the few engineers that have spent a lifetime on the subject. The mechanics of drainage construction and the hydraulic formulae for calculating the movement of water through pipes are an open book, but data on how fast water will seep into the ground and how fast it will run out is a major question that must be investigated on each individual golf course.

The determination of the drainage characteristics of each soil type on each golf course and the source of the ground water are, therefore, the major problems confronting the drainage engineer in planning a system.

If one examines a freshly exposed vertical column of soil there are found various layers or horizons differing in their depth, thickness, color, texture, reaction and in other characteristics. This entire series