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Toro Manufacturing Company, Minneapolis, Minnesota

Gentlemen:-

During the past three (3) months I have had on trial at The Olympic Club at Lakeside a Toro Power Gang Putting Mower. This machine has been given an extensive trial and has been used under all conditions, both normal and wot greens, and have found it to be perfectly satisfactory and certainly a great savings in green cutting expense, - and example of this is as follows. Our No. 18 Green on the Ocean Course has an approximate area of 8500 square feet and this was cut in fifteen minutes, whereas, it would have oridinarily taken one hour cutting it by a hand green mower.

Personally, I am more than grateful to Mr. Bishop for the time and interest shown to prove the amount of time and labor that it would save. In fact, its performance has been so good that I am making arrangements to purchase three (3) more in the near future and by doing this I will save approximately \$200.00 per month in labor on the twin courses.

Also, I have discussed with several of the Clubs in the Bay area the possibility of their installing this equipment, and have advised Mr. Bishop that I will be more than pleased to cooperate with any of the Greens Committees at the other Clubs in giving a demonstration at any time.

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> Toro Manufacturing Company 3042-3160 Snelling Ave. Minneapolis, Minn.

FEBRUARY, 1933 VOLUME VII-NO. 2

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AN EDITORIAL

By L. J. FESER

Chairman of the Committee on the National Greenkeeper Wayzata, Minn.

 $T_{\rm HE}$ Greenkeepers' convention is fundamentally different than a political convention. Political conventions consist of a body of *delegates* representing a political party. Our convention is not a body of appointed delegates; every member of our Association is welcome to a voice in Association affairs. Every member is expected to work for the good of the Association, and he can work to best advantage when on an equal footing with each and every member of the Association.

Chicago has been host to two great political conventions during the past year. Delegates to the political conventions provided the platforms and nominated the men of their particular party. The voters of this great nation then proceeded to select one man and one party platform. It is safe to assume that thousands of American citizens belonging to either political party, disagreed with the ideas of their own delegates.

Chicago is now host to the convention of the N. A. G. A. Our convention is not political. Nor is it simply fraternal. It is also educational. It is education that will lead us out of the labyrinth of these perplexing times. Not necessarily schooling. Education is the development of natural powers.

Where can a greenkeeper find a more perfect environment for the development of his natural powers than at our conventions? If he seeks knowledge, he will have ample opportunity to learn. If he seeks advice, many are here who are competent to advise. If he seeks understanding, men are present who will listen to questions, and answer them fairly.

No greenkeeper here is represented by a delegate. He is his own spokesman because he is here. To gain the most for himself and his club, he must not be shy or backward. Let every man at this convention speak his mind and express his opinions. Let every man endeavor to become acquainted with his fellow members present, and freely discuss the best of greenkeeping practices. This convention is no place for any man to hide himself.

The question that your committeemen have in mind regarding this meeting and your attendance is—"how will our club benefit by your being present?"

He who attends this convention with the proper spirit will have a definite answer in mind. It will not be an answer covering any specific phase of greenkeeping. The answer may be in the thought of a resolution rather than a direct reply. He who leaves Chicago with the resolution to become *indispensable* to his club, and yet will *never believe that he is indispensable*, will be able to face his superior officer with a knowledge that the Chicago convention paid dividends to the *n*th degree. FEBRUARY 1933 Volume VII Number 2

The NATIONAL GREENKEEPER

Official Organ of The National Association of Greenkeepers of America

Horton Smith Talks Sense

One of America's sensational young golfers with international experience, discusses without fear or favor what a golf course should be. Greenkeepers stand by.

I AM writing this article with the hope that the opinions of my golfing experience will be of benefit to the greenkeepers of America, and the further continuance of their splendid progressive work which has been a substantial contribution to the development of golf to its present state of enjoyment, popularity and greatness.

I congratulate the greenkeepers for this service. To me, condition is very important in the selection of an enjoyable golf course; I am happy to say therefore that I am pleased with the high standard of maintenance that exists at the many golf courses I have played.

GREENS SHOULD NOT BE MUSHY SOFT

ON REGULATION size greens I prefer greens that are not mushy soft. Many greens are watered so much that absolutely no skill is required to stop a ball on them. Mushy greens are also detrimental to ideal putting conditions, a half-topped mashie or iron will stop on many greens that I have played. This is wrong as the player who is off the proper line can play to the hole equally as well as the player who is perfectly placed from the tee.

The plan of the hole, the trapping and the size of the green should be considered in watering. Naturally, small, tightly trapped greens should



HORTON SMITH

be kept softer than large, open ones. I like a green that is turfy and medium soft, but I would condemn a green that is so mushy that a pitched ball would displace the turf entirely and form a divot hole that is over onehalf inch deep. Of course, the green should be soft enough for the ball to make a noticeable impression.

I prefer seeded greens as, from my experience, it produces a softer, more upright and even growth of grass. For ideal putting surface upright growing grass is far superior to a grainy growth.

SMITH LIKES FAST GREENS

I LIKE a green on the fast side, as I feel it places a much greater premium on skill and a fine putting touch. I dislike a green where a ball will gain momentum of its own accord. Slick greens are not a fair test of putting skill, but fast ones are. On sharply contoured greens I prefer a higher cutting of the grass. This to be regulated according to the degree of the slope.

From a playing standpoint it makes absolutely no difference to me whether the same type of grass is on all the greens so long as the different types are good putting surfaces. I would not necessarily favor uniform speed of greens. I would consider contour, as previously mentioned.

MOST TEES ARE TOO SOFT

Most tees I play on during my travels are too soft, or too spongy. I like a firm tee, soft enough to allow spikes to enter easily, with the grass cut medium short. Long grass on a tee is bad, as the juice of the grass between the club and ball causes slipping or skidding. I like bent tees, and have played on some very good ones that seem to endure best of all types.

I do not think it essential to have tees set at right angles to the line of the hole. I think that we will see the time when there will be tee construction variation as a hazard to make the game more difficult. That is, have the tees contoured instead of level. My friend, Donald Ross, has advocated this for ten years. I look forward to such, at least for championship purposes.

I do not prefer either extreme width or narrowness in fairways. I would base this judgment on the type of the hole and the contour of the fairway. Medium type fairways are best. Not so soft that any ball will land dead, but soft enough to prevent extreme roll. I think a well hit low shot should be rewarded with a reasonable bounce and roll.

EXTREME WATERING OF FAIRWAYS IS BAD

1 THINK extreme watering of fairways is bad, as excessive moisture causes the ball to slip or skid, instead of grip as it should when properly struck with the face of a club. After a good, strong turf foundation is established, a slight watering keeps it in ideal playing condition.

I am very strong for clean and bright flags and flag poles, and very much like to see the yardage clearly marked on each tee. Personally, I see no real purpose for yardage markers along the fairway.

Rough grass should never be allowed to grow higher than six inches; this height constitutes hazard enough, and allows the ball to be found easily. It also is much better for the general appearance of the course.

I am strongly against rock piles, unkept bushes, trees or ditches. A player with skill should be able to play from any position on the course. In other words, under normal conditions there should be no impossible lie within the reasonable playing zone of the golf course. All water hazards and special hazards should be definitely outlined, as should all boundary lines. Prominent stakes with a connecting wire or cord form the best boundary line; the cord or wire should be on the ground. Of course, a fence serves the purpose also.

I like very much to have water and clean towels on the course. Personally, I play a clean ball each hole.

SETTING OF THE CUPS DESERVES CONSIDERATION

A POINT that deserves consideration is the setting of the cups. I notice all the difference in the world in this and all that is required is careful, conscientious work. I hate to see the edges of the cup irregular or broken. Cups should be changed frequently enough to prevent the edges from becoming rounded. When proper care is not taken, I have seen cups that "telescope," that is the edges bulge higher than the surface level. This makes putting extremely difficult and should be avoided.







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Effects of Organic Matter In Soil

By PROFESSOR M. H. CUBBON Massachusetts State College, Amherst, Mass.

URGANIC matter is the most important material in soil. Several properties (factors) are due directly to organic matter. The favorable properties are as follows:

1. Organic matter increases water-holding capacity of soil.

2. Organic matter improves physical condition in soil.

3. Organic matter allows more soluble plant food to be held by the soil.

4. Organic matter furnishes energy for bacteria.

The harmful influence of organic matter in soil includes: low nitrogen-high carbon content which causes a temporary shortage of nitrate nitrogen in the soil.

organic matter and water-holding capacity T here is no doubt about organic matter increas-

ing the water-holding capacity of soil. Soils without organic matter, or with the average 5%, never hold more than 40%, or 2/5 of their weight, of water. Twenty-five per cent or one-quarter of the weight, is more nearly the desirable water content than is 40%.

Organic soils (muck and peat) hold from 200 to 350%, or 2 to $3\frac{1}{2}$ times their weight of water. A muck soil with 250% water does not appear to be as wet as a mineral soil which has only 25%water, by weight. Therefore mineral soils with plenty of organic matter will hold more water without seeming wet than will soils without much organic matter.

The difficulty with this situation is that it is extremely hard to increase the organic matter content of soil enough to show much increase in waterholding capacity. A test made with field soil in Iowa indicated that any practical application of manure increases the water-holding capacity of soil only moderately. A twenty-ton per acre application of manure is considered large for general purposes. Of this twenty tons, only about five are dry organic matter, the remainder being water.

Counting only the dry matter, 5 tons per acre are equal to 206 pounds per thousand square feet. Anyone who has had experience adding peat moss to greens will realize how difficult it is to work 200 pounds of peat into a thousand square feet of surface. In order to get that much organic matter into the soil many applications must be made. This is a slow process on established greens.

ORGANIC MATTER IMPROVES PHYSICAL CONDITION OF SOIL

 $\mathcal{P}_{\mathrm{HYSICAL}}$ condition of the soil is probably as important as anything else about a green. A poor physical condition does not allow air to enter the soil, or plant roots to elongate, and usually water stands in or on the soil. The "mud-pie" effect means a poor sanitary condition, just the opposite from good growing conditions. The soil is said to be puddled and such a soil when dry is extremely hard. In fact, puddled soil behaves more like concrete than like soil, especially since it does not allow water to enter or leave easily, and when dry does not absorb water.

What are the things needed for a good mudpie? Soil and water, of course. The soil must be fine enough to be sticky or plastery. Then when the soil is mixed with water it makes a good paste that can be molded into various shapes. You know how it works. When this mixture dries, the soil remains set, almost the same as cement. Such soils are often the driest of all because water cannot soak into them. Water runs off just as it would from a roof. Walking and tramping on a soil when wet is the best way to puddle that soil. Clays are special offenders.

Organic matter helps to improve the physical condition by making it more difficult for clay to bake and pack. Because organic matter is so light and airy it helps air to get into the soil and prevents water from standing and becoming stale.

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February, 1933

Sandy soils have too few fine particles in them to make the soils sticky or inclined to bake. That is why sands are so much in demand. But sandy soils wash badly, holds little water, and even less plant food. Organic matter helps to remedy all three of these conditions. The common saying is that organic matter gives body to sandy soils.

ORGANIC MATTER ALLOWS MORE SOLUBLE PLANT FOOD TO BE HELD IN SOIL

PRACTICALLY all of the nitrogen, and also a large amount of the phosphorus, are held in the organic matter in the soil. Whether nitrogen is put on in the form of inorganic or organic fertilizers, the part that stays in the soil is tied up with the organic matter. This nitrogen becomes available to plants, sometimes slowly and sometimes rapidly.

Recent findings have shown that soluble phosphorus is practically controlled by the amount of organic matter in the soil. In the southern states no shortage of phosphorus exists if the owners see to it that plenty of organic matter is put into the soil. This is a very important matter, especially in acid soils where phosphorus is very insoluble.

One thing we can be absolutely certain of, the plant food that is in the organic matter can be made soluble by bacteria much more quickly than the plant food in the soil minerals becomes available. When chemical plant food is added to a soil containing plenty of organic matter, more of the plant food is held by the soil against washing than is the case where little or no organic matter is present.

ORGANIC MATTER FURNISHES ENERGY FOR BACTERIA

 $T_{\rm HE}$ carbon and oxygen carried by organic matter provide energy for most of the organisms in the soil. Since it is the job of bacteria to make plant food available, they must have something to live on while doing the work. Thus it is that bacteria break down organic matter, use the carbon and oxygen for strength and life, and turn the nitrogen and other plant food into forms usable by plants.

True, this is a wasteful process, so far as total organic matter is concerned. But if organic matter were not worked on by bacteria none of it would reach the point where plants could use it, and what would be the use of having organic matter in the soil? The bacteria give in return for this energy available plant food and soil conditions favorable for plant growth. Carefully worked experiments show that bacteria are not very wasteful of organic



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matter, considering all the returns from their activity.

 $T_{\rm He}$ addition of organic matter to soil where plants are growing often causes the plants to turn yellow and look sickly. Yellowing in plants is due to lack of nitrogen, ordinarily. That is what happens when certain kinds of organic matter are put on the soil. If there is less than one part nitrogen to twelve parts of carbon in the organic matter, the bacteria that work on the organic matter take nitrogen from the soil, thus causing a shortage for plants.

Addition of peat moss to soil will usually have this effect. Extra nitrogen must be added if the grass is to have plenty. If, however, the added organic matter has as much as, or more than, one part nitrogen to twelve parts carbon, no nitrogen shortage occurs.

Most soils reach a balance of about 1 part nitrogen to 12 parts of carbon. The affect of straw or shavings on soil is not a poisoning one, but rather a shortage of nitrogen. The point is that bacteria must have a balanced diet, and if forced to they are able to take nitrogen away from the soil even to the extent of robbing the plants.

If organic matter is mixed with soil and no water added, it quite often happens that the soil suffers from a lack of moisture. The organic matter under such conditions does not allow water to come to the surface from lower depths in the soil. Very few greens would have this difficulty to face because the organic matter cannot be worked deeply into the soil, and water is almost always available.

HOW TO INCREASE ORGANIC MATTER IN SOIL MATURE always intended the soil to be covered with plants. That is her way of keeping up organic

How's Yuh Gramma'?

yuh wanna make th' greens smooth 'n slik, so the ball won't bounce off 'n the players don't kik? It's a trik that's almost simple-ther's reely little to it wherevva they use

CLEVE-BRAND CHARCOAL jus 'nquire-or ask the leading greenkeepers how they do it.

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matter. Certain investigators have found that soils recover organic matter and fertility if weeds are allowed to grow unhindered. Many have shown that the best way to increase (or maintain) organic matter is to allow grass to grow continually. It should be easy to keep up organic matter in greens soils if the above is true. If only the clippings could be left on the greens what an increase of organic matter there would be!

Since clippings cannot be left on the greens what can be done to increase organic matter? Adding organic matter of course helps some. The average soil to a depth of six inches on an area of one thousand square feet contains about 2000 pounds of organic matter. Surely the addition of 25 pounds of organic fertilizer per thousand square feet will scarcely be noticed by the increase in organic matter. This just isn't a practical way to increase organic matter.

Of course if frequent applications are made some increase may be expected. But the applications must be very often indeed. Under greens conditions with considerable fertility present the bacteria are going to work on new organic matter in whirl-wind fashion.

There are certain bacteria which can produce organic matter instead of breaking it to pieces. All these bacteria need to keep going is plant foodnitrogen, phosphorus, potash, calcium, sulphur, etc. Add chemical fertilizers therefore, and let the bacteria (brownies if you like) do the work and build up organic matter. Thus it is that the addition of chemicals has often increased organic matter. The increase is of course greater when grass is kept growing continually on the soil. The importance of these bacteria in helping to maintain organic matter must not be overlooked, especially if the soil is not too acid.

LOOKS OF SOILS ARE DECEIVING

Sometimes soils appear to have much organic matter when in reality looks are deceiving. In an experiment in Ohio an area of soil that was limed was darker in color than adjoining soil not limed. The limed soil produced larger crops too.

Analyses of these two soils for organic matter showed that the unlimed soil contained more organic matter than did the limed soil. The active organic matter was of course greater in the limed soil. Why worry, then, about increasing the total amount of organic matter? Better have the organic