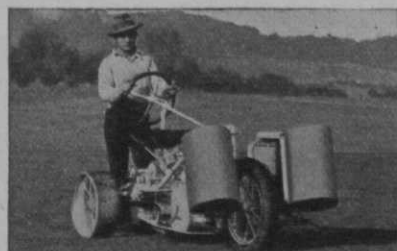


The NEW Toro 3-Unit Power Greensmower



Rear mower raises clear and 2 front mowers fold up for quick, easy transportation.

HERE is the latest and by far the most improved high-grade power putting green mower. Cuts a swath fifty inches in width. Greens can be mowed in one-fourth the time formerly required . . . without loss in quality of smooth cutting.

The three wheel feature is highly important because the two front mowers are connected to the front wheel frame and are steered by the same action which guides the machine. This permits accurate control, together with the ability to make short turns. The two front mowers being placed ahead and in direct line of vision of the operator enable him to follow the cutting swath easily. The mowers are mounted so as to provide full floating action instantly, yielding to the undulations of the ground. There is no possible chance of scalping the turf.

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By simply removing the handle, your old Toro Hand Putting Green Mowers will fit the frame of the new Power Unit without any alterations whatsoever. Here is a substantial saving that makes it worth while for every user of Toro Greensmowers to convert their present single units into one large capacity outfit.

In simplicity, ease of operation, and with very definite cost saving advantages, the Toro Three-Unit Power Greensmower meets every requirement of present day conditions.

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Toro Manufacturing Co.
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copy of this address

The Olympic Club
of Lakeside
San Francisco

December 28th, 1932

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 wet 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. 16 Green on the Omaha Course has an approximate area of 8500 square feet and this was cut in fifteen minutes, whereas, it would have originally 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 \$300.00 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.

Yours very truly,
W. N. Tier, Manager,
The Olympic Club at Lakeside

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Iowa's Second Short Course Has Bigger Enrollment

SECOND ANNUAL short course in green-keeping at the Iowa State College, Feb. 27 and 28, had an enrollment of 86, about a 30 per cent increase over the first course. The course was under the direction of Prof. B. S. Pickett, head of the department of agriculture, assisted by Prof. Vernon Stoutemyer, who has done much work among Iowa greenkeepers.

Jack Welch, president of the Iowa Greenkeepers' Assn., C. G. Yarn of the Woodside G. C. and Leo Feser of the Woodhill C. C., at Wayzata, Minn., were active in the program. Dr. John Monteith, Jr., of the USGA Green Section, K. N. MacDonald of the Des Moines G. and C. C. and H. A. Munn of the Ames G. and C. C., both green-chairmen, and V. K. Voorhees of Cedar Falls and Paul Sandahl, both park commission executives, together with members of the Iowa State College, also figured prominently.

St. Paul's \$5,000 Open at Keller Course, June 2, 3, 4

ST. PAUL'S lively Junior Chamber of Commerce will conduct its fourth annual major golf event June 2, 3, 4, at the Keller course. This year's event is to have a \$5,000 purse; \$1,500 first money and 15 cash prizes in all. St. Paul Opens for 1930 and 1931 were \$10,000 affairs and in 1932 the Junior C. of C. put up \$10,000 for the PGA championship.

There is a probability of a national driving championship event being added to the St. Paul affair as the entry list for St. Paul will include practically all of the big timers who will shoot it out at the National Open at Chicago June 8, 9, 10.

Ryland J. Rothschild, who has been prominent in former St. Paul Opens, is president of the St. Paul Junior C. of C. this year. Wallace L. Boss, chairman of the finance committee of the Junior C. of C. for the PGA championship, is general chairman for the \$5,000 Open this year.

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BENT GRASS SEED

direct from the farms where it is grown.

A. N. PECKHAM KINGSTON, R. I.

Also Fairway Mixtures

Outstanding Maintenance Practices of the 1932 Season

By O. J. NOER*

In the years immediately preceding 1932, turf excellence was stressed without close attention to cost. In this respect, clubs did not differ from the average individual or business establishment. But last spring, faced with the certain prospect of reduced income, clubs endeavored to adjust expenses in keeping with probable revenue.

Some clubs in smaller cities reduced the course to 9 holes, and a few of the larger clubs with several courses, restricted play to one 18-hole course. The actual saving was not proportional to the reduction in playing area, because some semblance of maintenance was necessary on the abandoned holes to permit resumption of play with the return of better times.

Most clubs met the necessity for economy by a general reduction in maintenance expense. Exact figures are not available, but

*Digest of Greens Convention address.

in most districts the reductions were nominal, in keeping with lower material costs and slightly lowered wages. Increased labor efficiency enabled some greenkeepers to dispense with a portion of the former maintenance crew. Greens and fairways received major attention, and where labor shortage compelled partial neglect, this was rightly confined to areas of lesser importance.

In a very few instances, new officers intent upon making a favorable financial showing during their term attempted to force suicidal cuts in the maintenance budget, over the vigorous protest of the thinking chairman and greenkeeper. If permitted and allowed to continue, the very existence of the club as a golfing establishment is endangered. Clubs faced with the necessity of curtailing expenses should consider carefully before reducing maintenance expenses below the absolute mini-

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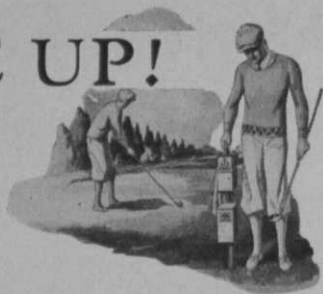
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num required to maintain acceptable and playable turf. Such procedure is false economy, because the supposed savings will be more than offset by the future cost of turf renovation.

Progress of Fairway Watering

Due to limited rainfall, fairways were brown and hard throughout the most important part of the 1932 playing season. The St. Louis district was a notable exception, for there rains were general during August. On some of the courses, fairways were ruined, for abundant moisture encouraged crab grass to form a solid mat, and thus smother and crowd out the bluegrass. Fear of this fairway pest dampened the ardor for fairway irrigation in that district.

Lack of green fairways aroused keen interest in water systems in most of the other metropolitan sections. The marked contrast with nearby watered courses made the unwatered fairways look pitiful, and golfers clamored for water systems, often pointing to heavier play on the neighboring watered course, but gave no thought to the added burden of expense. It is certain that golfers on a number of courses will be greeted with watered fairways next summer, and all indications point to more general watering in time to come to appease the player.

It's Easy to Over-Water

Fairway irrigation is not necessarily the panacea claimed by its most ardent supporters. True, it will provide a green turf and softer fairways throughout the playing season, but it necessarily complicates fairway management. The solution to some of the problems appear simple, but others will be more difficult.

Clover invariably spreads and becomes objectionable on watered fairways, unless steps are taken to check its invasion. Golfers rightfully object to clover because good lies are never obtained when the ball rests in a patch of solid clover. Clover control is largely a matter of nitrogen feeding. On bluegrass and fescue fairways the problem is simple, but where *poa annua* prevails there is always danger of encouraging such soft weak growth by heavy nitrogen feeding that the grass will succumb during excessively hot weather. *Poa annua* reappears in the fall even though the area be reseeded with other grasses. Nobody yet knows just what the answer is to clover control on *poa annua* fairways. It may be a matter of changing the kind of fertilizer or time of application so the effects of the nitrogen will be minimized or dissipated before the next summer season, or it may be a matter of changing water or cutting practices. These are mere conjectures, and the answer must await detailed and careful investigation.

The effect of water on crab grass has

been mentioned. Its control with fairway watering is a matter of considerable moment in districts where this is a serious pest. There is some evidence for the belief that crab grass can be mastered, but as yet there is no basis for recommending a sure procedure.

Watered Fairways Need Food

When water systems were first installed it was believed that fertilization was unnecessary. The fallacy of this belief is now generally recognized. On greens fertilization and irrigation supplement each other, and in this respect fairways are no different. Constant watering actually accentuates plant food losses by encouraging more abundant growth, and also enhances losses in the drainage water. Unless these losses are made good, gradual turf deterioration is inevitable. On the other hand, fertilizers can be applied on watered fairways with positive assurance that there will be sufficient moisture to obtain full benefits. Where water costs are high, proper feeding will slightly reduce the amount of water needed to maintain green turf, and thus effect a partial saving.

Fairway feeding was not neglected during 1932, and there is reason to believe that the practice was more general than in any preceding year. Opinions still differ as to what constitutes good practice. Need for nitrogen is generally conceded, but opinions vary regarding supplementary use of phosphoric acid and potash. A few believe a complete fertilizer should be used, others think nitrogen and phosphoric acid sufficient, and some claim nitrogen only is needed. From the standpoint of cost, this becomes a matter of importance on the fairways. These different views can be settled only by careful, controlled trials, and until that is done, the only safe procedure is to follow practices which have been found to give satisfactory results.

Our own opinion may be subject to criticism, but nevertheless may be of some interest. Nitrogen is most important and turf cannot be improved unless it is used. Potash is seldom needed on heavy soils. Its use should be considered on very poor sands, peats, and mucks only. Need for phosphate can be judged by using one of the available soil phosphorus test kits now on the market, provided fairways have not been arsenated. Where the supply of available soil phosphorus is high, phosphates are not needed, but where the soil supply is low, phosphates should be used. When phosphoric acid is required, applications every second or third year should suffice, for phosphorus is not lost in the drainage waters, and hence, interim feeding can be confined to nitrogen. Where complete fertilizers are needed, mixtures high in the nitrogen with smaller amounts of phosphoric acid and potash are usually suitable.



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There is reason to believe that fescue will grow normally in soils too low in available phosphorus to support Kentucky bluegrass. This may be one reason why fescue produces better turf in some of the northern districts where soils are acid and low in available phosphorus. If this belief is substantiated, it means that lower rates of phosphate applications can be used on fescue fairways with full assurance that satisfactory results will follow.

What About Lime?

Some striking effects produced by lime were noticed on a few test plots. This was particularly true on bluegrass, but similar effects were visible on some of the other grasses also. The limed grass was greener and appeared to withstand drought better, but the differences disappeared in the fall.

The past year witnessed an increased use of lime on acid fairway soils in the East. The present view appears to be that moderate liming of bluegrass fairways on acid soils every three to four years may be justified. Where fescue and bent predominate, lime is not so essential, and its use should be confined to more acid soils, and lighter rates of application are fully as effective.

Early in 1932 attention was called to the fact that lime tends to render applications of lead arsenate for grub and earthworm control less certain. It is thought that lime converts the arsenate into basic compound, and its effectiveness is thus lost. This may partially explain why arsenate applications have not always produced desired results.

Weather Is Uncertain Factor

Weather is a factor over which the greenkeeper has no control, yet it may simplify or complicate turf maintenance on greens. Its effects are not fully understood by golfers and club officials. They recognize the obvious need for supplementary water on fairways during dry seasons, but fail to appreciate or wilfully ignore the dangers attendant upon their insistent and often unreasonable demand for soft putting surfaces and deep green color. Until their attitude changes, serious loss of turf on putting greens during unusual seasons seems inevitable.

Losses occur during hot, humid weather, and are accentuated when heavy rains accompany the heat wave. Troubles are most likely in wet seasons, such as 1928, but they may occur even in comparatively dry years. This was the case in 1931 when serious damage occurred during a brief period of unusual weather early in July. Turf loss may also occur even though rain does not accompany hot weather, if over-watering is the rule, and the underlying soil is heavy.

Severe turf losses can be avoided only by adopting practices which will produce sturdy turf to withstand unseasonable weather. Each succeeding season since 1928 confirms the belief that this is possible, provided the underlying soil is not too heavy, and greens are not entirely *poa annua*, or planted with inferior strains of stolons. In 1932 greenkeepers paid closer attention to watering and feeding practices than ever before.

During midsummer, generous nitrogen and copious watering must be avoided, because both tend to produce weak soft leaves and stems. Such turf collapses quickly during periods of excessive heat, and the greenkeeper is helpless because there is no known quick remedy. The turf eventually recovers, but the process is necessarily slow, because new root formation must precede leaf development. It is useless to feed and water generously immediately following turf loss. Feeding is warranted only after the new root system is formed.

The tendency was to reduce nitrogen feeding to a point where the grass showed slight nitrogen hunger with the approach of summer, and then use light rates to barely hold color. In a few cases fear of producing lush turf deterred greenkeepers from applying sufficient nitrogen to prevent serious clover invasion. It may be better to err on the side of safety, but best practice is to devise feeding methods which will avoid disaster and yet maintain good putting turf. At first thought a definite schedule of greens feeding would seem to be the simple solution. There are several valid objections to such procedure. Seasonal variations in weather affect rate of growth and need for nitrogen. Grasses differ in their response to nitrogen. Velvets are very easily injured by over-feeding, and the better strains of stolon planted bents become fluffy if too much nitrogen is used. Local differences between greens on the individual course necessitates different rates of nitrogen application. Grass on greens in sheltered locations grows slower, hence less nitrogen is needed. Color, rate of growth, and sturdiness are the safe criteria for determining rate and frequency of fertilizer application.

Water practices received more deserved attention. During midsummer amount of water was stressed more than time of watering. Greens were kept moist, but slightly on the dry side. Over-wetting, so water could be squeezed from soil pressed between the thumb and forefinger, was avoided. Greens in sheltered locations received closest attention, because they seldom dry out as rapidly as greens in the open, and hence need less water. Incidentally, restricting moisture supply tends to overcome the detrimental effects of too much nitrogen by reducing rate of growth.

Spiking of greens was more general last year, especially during the hot summer months. Its advocates claim greens take water better following spiking, and that they are less apt to become water-logged. The practice probably has merit on soils which tend to pack, and to facilitate drying of the surface soil if it becomes water-logged as a result of excessive rain or over-watering.

Humus Use Increased

There is some evidence of increased interest in humus materials, to replace manure as a physical soil conditioner for new seedings, and as a constituent of the topdressing mixture. These materials show promise, provided they are properly used. No difficulties arise when they are incorporated with the soil prior to seeding, but when used in topdressing mixtures, some of the lighter, coarser products float out, and the particles gather in ridges or ruffles during watering. This interferes with putting. The trouble has been overcome in several instances by preliminary treatment of the peat before incorporating it with the soil and sand topdressing. The usual procedure was to mix small amounts of nitrogen with the peat, wet the mixture thoroughly, and allow to stand for from 1

to 2 weeks. Partial breakdown produces a final product which does not ruffle when used in topdressing mixtures.

The proportion of peat which can be used safely in topdressing mixtures has never been subjected to careful test. It is doubtful if more than 20 to 25 percent of the finished topdressing should consist of these materials. Their tremendous waterholding capacity may make it difficult to prevent waterlogging of the surface soil during wet seasons, if the percentage greatly exceeds the above limit.

To date there is no evidence of general turf deterioration on golf courses, which is a tribute to greenkeepers and their committees. They cooperated with the club officials, and endeavored to maintain reasonably high standards. While it is certain the spending orgy of several years ago is at an end, this will not deter golfers from demanding high standards of maintenance. In the face of reduced revenues and the increasing complexity of turf culture, clubs who dispense with the services of competent greenkeepers are indeed pursuing a short sighted policy. What the future has in store nobody knows, but it is certain that the men who survive in their chosen life's work will be those who prove their worth.

Budgeting, from the Standpoint of a Green-Chairman

By C. W. JOHNSON*
Sunset Ridge C. C. (Chicago)

WHAT is a ground and greens budget? What purpose does it serve? And who pays any attention to it after the green-chairman's secretary has made it out? In 1928 and 1929 these were but regular and natural questions. Because who cared as long as the greens were a fine putting surface and the tees were level and inviting to a nice drive, and the fairways always offered a good lie. But how conditions and times have changed as we approach the advent of the "New Deal" and look to the former "Forgotten Man," the greenkeeper, for better results.

A 1933 greens budget is now even more essential than in the past and above all must be fair and workable.

Doping Out a Fair Budget

To compile a budget that will be fair to greenkeeper, green-chairman and member, you first must learn from your treasurer or executive chairman how much you can spend. Then call in your greenkeeper,

take him into your confidence and go to work. Determine how many men should be able to run the course and go up or down from this point depending on your particular job. Decide on a fair working wage for labor. Pay enough to demand good workmen and hold them accountable to their particular tasks. Happy contented labor make the greenkeeper's and green-chairman's duties easier and reflect many fold in the results obtained from your golf course. Don't cut the greenkeeper's salary too low, for remember he is a confidant and responsible for many purchases directly or indirectly. Keep him honest, let him pay his way and offer an often needed financial or executive hand.

Take each item separately such as equipment renewals and repairs, sand, sod, and seed, fertilizer, oil and gas, supplies, and trees and shrubs. Compare your expenses of the previous year, be mindful of the condition of the equipment, also the golf course itself. Then be fair with your figures. Provide for the actual necessities,

**Digest of Greens Convention address.*

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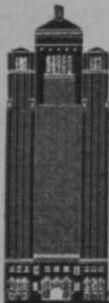
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then allow a factor of safety of at least 20%. You will find that after a couple of years you can be quite accurate in your calculations. Above all be fair. Don't make the job impossible before you even start.

Split Budget by Months

To make a budget workable is the real important job of the green-chairman. Anyone can think of a number and quite often guess right. At the outset your budget must be divided into months. Your past cost records are the best information. If none are available take two or three separated months of the year and go through the work day of each man, recording his operations and materials used for each day of the week. In this way you can get a good broadside, which will be a fair constant to use. Go up or down from this point, depending on the playing season. If your greenkeeper is apt to be off balance too often on the monthly budget, you should divide it into weeks. This is particularly effective for labor. Don't be afraid to put your findings in writing and be sure that your greenkeeper, members of your committee, club president and club manager get a copy. It is a plan and specification, and consequently should be workable for all interested parties.

If your grounds and greens budget is fair and workable, the task of keeping within its confines should be a relatively easy one. But unfortunately this is not always true unless certain precautions are taken. First of all, all labor should keep an accurate time card on all their operations. These cards must be signed and turned in nightly in order to receive pay credit. These labor reports should be checked against monthly budget. The green-chairman should supervise all purchases over \$25 except in extreme emergency cases. Often times the buying power and experience of the chairman is invaluable. Take advantage of sales and discounts. If your club enjoys credit don't be afraid to give supply houses your yearly statement. The monthly reports with comparisons with last year costs prove invaluable. In other words if both the green-chairman and greenkeeper run their golf course as a successful business enterprise, it won't be necessary to have the too frequent changes of heads that will ruin any smooth-running machine.

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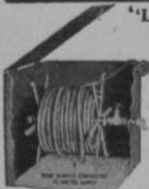
Dr. Steiner Reports Need of Municipal Courses

DR. JESSE F. STEINER, author of the chapter on "Recreation and Leisure Time Activities" in the report of the President's Research Committee on Social Trends, reports that municipal golf courses have not kept pace with the demand for such facilities.

Dr. Steiner, in analyzing data from the U. S. Census of Manufacturers and GOLF-DOM's survey of the golf market, expressed the opinion that golf was liable to remain a sport for a limited number of people. Latest of his data was obtained on the golf activities in 1930, at which time the extension of municipal golf courses by employment of welfare labor and sharp drop in club and ball prices, were not in evidence. These two factors, becoming prominent since completion of the Steiner report, already have exercised strong effect in increasing golf play among those in the lower income brackets. No special mention is made of the recent great growth in women's golf, which now figures as a highly important phase of the game.

In the report Dr. Steiner pointed out that golf's "period of most rapid growth coincided with the rise of a business cycle when plenty of money was available for recreational purposes." He mentions that it has been found necessary to curtail some of golf's extravagant expenditures.

Slowing of golf development on an opulent basis for the reasons Dr. Steiner presents already is evident in Detroit and Los Angeles especially. Newer cities whose period of greatest growth was coincident with big rise in golf, are overbuilt on courses. However, steady development of the youngsters as golfers and drastic curtailment in costs of golf promises that the situation in these communities will right itself in a reasonable time.



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Improve the appearance and safety of your course by keeping your Putting Green hose neatly rolled on a revolving metal reel in a durable steel locker below the ground at each Green, protected from theft, sun, weather and mowers. Big hose capacity. Easily installed. Pleases players. Many economy features. Write for literature.

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Eradicates Worms and Checks Brown Patch Both at the Same Time

This Spring-worming is doubly effective if you use Diworma. It will bring every last worm up and out of the greens and fortify the grass against brown patch.

Diworma is a most effective eradicator and it will save you money. No broadcasting or washing-in. Just sprinkle it on—then rake up the dead worms. Guaranteed uniform strength.

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It's not usual to see greens as fine and as large as this on a municipal course, but New Haven is the exception.

New Haven's Municipal Course Is Model Public Layout

By HAROLD V. DOHENY,

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NEW HAVEN'S 18-hole municipal golf course, situated among the most natural of settings and covering 145 acres of hill and dale with a sizable stream to provide water supply as well as mental hazard, was officially opened May 17, 1929. The designing of the course was by Robert D. Pryde, golf architect. All of the work of layout, construction, etc., was under the supervision of the Board of Park Commissioners. Due to drainage conditions, work was somewhat hampered and the course took two years to complete. An expensive water system, pump house, etc., was installed and the City of New Haven can now well boast of one of the finest municipal courses in the country.

The manager of the course has under his supervision the maintenance crew, mechanics, clubhouse attendants and all physical equipment of the course. The professional at the club gives lessons, has the sale of all golf equipment and regulates the traffic of the course, caddies, etc.

In connection with the course there is a large nursery for the growing of stolons.

Because of the vast number of users the greens are worked overtime and constant vigilance in their care is maintained. The nursery contains about 2½ acres of land and as time goes on the expansion of this experiment plot will be measurably increased. Golf in New Haven has not been proven a noble experiment; it has proven a decided necessity and a beautiful as well as profitable addition to its excellent park system.

The course has all the most modern golf equipment and conveniences. A spacious clubhouse contains a lounge room, locker-rooms for men and women, kitchen and restaurant, besides a comfortable apartment used for the manager's residence. There is a spacious garage, compost building and implement shed. All buildings are well built and synchronize with the natural beauty of the course.

Adequate Water Assured

Foreseeing the possibility of future droughts and lack of summer rains, the Park Commission under whose administration and supervision the course comes, has