

flow required by the head will cause excessive loss if swing-joint is the same size as the head inlet. In this case, joints are sized one to three sizes larger, as required. Material may be schedule 40 galvanized steel or schedule 80 PVC. The latter is preferred because it is non-corrosive.

Impact rotary heads should never be installed without a gravel sump as shown. This sump will keep water drained which accumulates in the sprinkler housing during operation. If not drained, this water will fill the housing and cause dirt and debris to enter the housing, which will effect the operation of the head, cause premature wiper seal failure, and can make the head stick in the operating position after use. In sandy soils the sump should be protected in a manner (tar paper, plastic, etc.) that will prevent sand from washing into the sump both top and sides. In dense soils this pit (sump) may need to be extended in depth to insure proper drainage during operation.

Precipitation rates of sprinkler heads that are valved together should be the same or as close as possible. For example: A 180° arc should apply only one-half as much water as that of a 360° arc. And a 90° arc should apply one-quarter of the GPM than that of a 360° arc. This ratio should not be exceeded by more than 15%. Many impact rotary heads and gear-drive heads must be valved separately to achieve matched precipitation rates because of pressure, flow, and spacing requirements.

Avoid system designs which use sprinkler equipment from many different manufacturers. This will only increase the cost of installation and maintenance. Most sprinkler manufacturers offer all the equipment required for a proper system. This statement will undoubtedly be disputed by many design consultants. Selection of sprinkler equipment for a particular project should be discussed fully by the owner and consultant, with consideration of parts and service availability in years to come.

Landscaping is one of the most important factors in a proper irrigation design. Many systems perform poorly because the landscape was not considered during the irrigation planning. Or, the irrigation was not considered during the landscape planning. The irrigation consultant and landscape architect should work together on a project in regards to: 1. Shrub and tree plantings 2. Shaded and sunny areas (should be valved separate) 3. Topography 4. Soil types 5. Water requirements.

In many instances, alternate planting locations will not change the overall aesthetic effect planned by the landscape architect, nor will it increase the cost of landscaping. Additional sprinkler head locations to accommodate the landscape will increase system cost.

There are many other items that are keys to proper irrigation systems which are too numerous to list. It is hoped that the items listed will help many people to become aware of certain standards. This in turn, will insure that the irrigation system performs to a high level of satisfaction.

WTT



**"My Lakos Separators
save me over \$3,500
every year in labor costs."**

*Julian Serno, Golf Course Supt.
Albuquerque CC, New Mexico*

"I had one and sometimes two guys working nearly full-time every day, cleaning sand out of my sprinklers. My control valves wouldn't work at all 'cause of the sand. We had settling tanks, but they didn't work worth a damn. So we got Lakos Separators. Installed 'em ourselves. They really work good."



How much time and money do you waste on sand-caused problems?

Expensive repairs and replacements? Unexpected breakdowns? Excessive labor? Eliminate sand with Lakos Separators. Models from 4-6200 gpm remove up to 98% of all sand and grit as small as 200 mesh. Turbine and Submersible units even protect your pumps. No screens or filter elements to clean or replace. No moving parts to wear out. Low pressure loss. And they really work. Ask for free literature and the name of our distributor nearest you.

Claude Laval Corporation

Not connected with
The DeLaval Separator Company

1911 N. Helm • Dept. N-1 • Box 6119 • Fresno, CA 93703
(209) 255-1601

PARK MAINTENANCE IN DALLAS— CONTRACT VERSUS FORCE ACCOUNT

By Philip Huey, Assistant Director, Park and Recreation Dept., Dallas, TX

Philip Huey presented this paper at last January's Park and Recreation Maintenance-Management School held at Oglebay Park, Wheeling, WV. Both the National Recreation and Park Association and North Carolina State University sponsor the week-long program each January.

The spring and summer of 1978 marked the second year of a program utilizing contracts to accomplish certain phases of park maintenance.

The objective of this program was to provide contractual maintenance for park areas at less budget impact than as incurred by park forces. The group of contracts included neighborhood parks, library sites, and medians at 37 locations.

These sites were in all sections of the city and involved our three more intense classifications of maintenance. These are Class A, which is basically irrigated and with horticultural development mowed with a reel mower on a seven day schedule. Class B is irrigated without horticultural development, except for trees, mowed with a reel mower on a 7-10 day schedule. Class C is usually un-irrigated, mowed with rotary type mowers, and is mowed on a 12-18 day schedule depending on rain-fall intensity.

The contracted areas included 20.25 miles of medians, 1,468.39 acres of parksites and 6.75 acres of library sites. Our estimated contract cost was \$100,000 and the bids came in at \$99,223 with fourteen contractors being selected out of 25 who bid. Eleven of the fourteen were minority contractors.

Because we wanted to give bidding opportunity to the widest possible number of individuals, the contracts were broadly written and bonding, which is usually mandatory on all our contracts. Insurance requirements were also waived on park and library contracts, but remained on median contracts for reasons of high risk in traffic injuries.

Individual performance was made a special provision on all park and library site contracts. This meant the person signing the contract must be the person who actually performed the work. Contractors working under this special provision were not authorized to hire employees for assistance in the landscape maintenance. There was a limit of two properties per contractor, and equipment (1 mower and 1 edger) was provided for each contractor involved in park caretaker maintenance.

From the management standpoint, the amount of time required to put together the contracts was minimized since format was taken from the previous year's contracts, which had been developed by the City Attorney's Office.

Because we were trying to write the contract loosely to get the maximum number of bids, particularly from individuals and small contractors, the attorney had spent a lot of time working out special provisions so the City would be reasonably protected while still meeting the requirements of a small business contract.

Before proceeding with the actual experience in this project, let me enumerate our goals. They were to:

1. Provide private contract maintenance at park areas of equal quality but at less cost than the park department maintenance forces.

2. Improve maintenance at all contracted locations to include (a) better litter control, (b) better turf maintenance, and (c) more closely manicured ground cover, shrubbery, and flower beds.

3. Reduce maintenance costs at least by 10 percent to include supervisory and administrative costs in administering the contracts.

4. Make greater availability of remaining permanent park department personnel for more meticulous less easily contracted responsibilities.

5. Provide more efficient use of the dollars allocated because of reduced employee carrying costs in retirement, vacation, holidays, injury, worker's compensation, etc., and

6. Give more participation by small and minority contractors in the City of Dallas bidding process.

There is an Office of Minority Business Opportunity within our Purchasing Department whose sole responsibility is to seek out and encourage minority contractors to bid on City of Dallas contract, material, and construction requests. This division worked diligently to locate such contractors, and we feel they did all that is reasonably possible to find competent contractors.

In addition, we placed advertisements in 15 daily

Continues on page 24



Good maintenance occurred with a family/team approach.

Singlehanded, you can whip fuel and labor costs with **EXCEL HUSTLER** *pure motion* at your fingertips.



To groundskeeping pros, EXCEL HUSTLER means Mower—and More—every season.

Two hydrostatic pumps transmit direct to drive wheels instantly in response to fingertip touch on twin hand levers. Dual pumps work only half as hard, last many seasons longer for added value and less downtime. But there's More: *Instant pure motion* moves the big mowers easily around trees, park benches, markers, and other mowing headaches. EXCEL HUSTLER owners mow More acres per hour, More grass per gallon, More years per mower!

The Mower delivers a super cut on fine turf or rough. Choose air-cooled 275 or 285; liquid cooled

295. Standard or heavy duty 72" rotary, 54" rotary, or 60" flail.

More turf and grounds attachments: Cultivator, Catcher/Compactor, Edger, Dozer Blade, Rotary Broom, amazingly efficient Snow Thrower. Add ROPS; enclose cab for winter comfort; Tilt-Deck Trailer for transporting.

And More! Factory trained service and parts through your EXCEL HUSTLER Distributor. Write or call for his name and free literature, or watch for a field demo.

GSA: GS-07S-04916 HUD: OPH (CO)m-2930



Mower and More, the choice of the pros.

EXCEL HUSTLER
Turf & Grounds Equipment

Excel Industries, Inc. • Box 727 • Hesston, Kansas 67062 • (316) 327-4911 • (800) 835-3260

and weekly area newspapers, two of which were minority papers. We made announcements on the radio stations, one with a minority listening audience and the other a local country-western music station.

Our efforts were rewarded when minorities were successful with 79 percent of awarded contracts, representing 52 percent of total contract monies. All companies which were awarded median contracts were small businesses with five or less employees.

After close counseling with prospective bidders in a pre-bid maintenance meeting where we ac-



The fine points of a manicured maintenance program are missing in the maintenance of this crape myrtle bed. The bed is not weeded or edged and litter is not picked up.

ually told them the bid limits, the bids came in at a reasonable price and at a level where they could be accepted.

Work for most of the contractors began about April 10, 1978, which was an early date for contractors to start on the growing season. This was an advantage to both of us and a vast improvement over the previous year's late start.

We provided a separate type of maintenance contract and specifications along with the overall request for bid that went to each prospective bidder. These outline our expectations.

Following are some observations made during the course of the contract:

1. Contracts were properly executed by both the Park Department and the contractor. There were not any unnecessary delays in signing the forms and approving the median contractor's insurance.

2. Contractors were familiar with the specific locations of their job sites. This was due to close orientation received from each district supervisor in a pre-maintenance meeting held April 1, 1978.

3. Contractors presented their own schedule to follow and it was approved by the district supervisor. Most of the contractors adhered to the

approved schedule.

4. Landscape inspection was handled by the district supervisors who were familiar with the maintenance requirements of each park site. This method of inspection was not as time-consuming as the year before since the supervisors checked contracted sites along with their regular check route, thus eliminating any special trips.

5. All of the contractors had grounds maintenance experience. Our specifications did provide for rejection of their bid on the basis of "no previous experience."

6. Contact with each contractor was handled by the district supervisor concerned on an "as needed" basis and did not present a problem.

7. The contractors were adequately equipped. Median contractors had ample and efficient equipment and personnel. Other individual contractors who were provided with city-owned mowers and edgers for the most part took good care of the equipment. There was one case where equipment was not returned as specified and final payment was held by the city for reimbursement.

8. Payments were made to individual contractors on a weekly basis and to median contractors (companies) on a monthly basis. There was some problem with the time lapse between when the contractor submitted payment vouchers and when payment was actually received (approximately 1-1/2 weeks). However, the contractors were informed of the unavoidable payment delay before they entered into contract agreements.

9. City owned equipment which was loaned to individual contractors had a detrimental effect on park force maintenance. This was because the equipment was tied up for an entire season, even though it was only used every 7 days or less.

By midsummer 37 percent of the maintenance locations had been canceled and only nine contractors were still performing. At this time, before completion of our growing season and the contracts, I judged the whole project as not reaching the program goals. Even though this year's program had been by far more successful than that of the previous year, the contract results were still not meeting, let alone exceeding, those displayed by park forces.

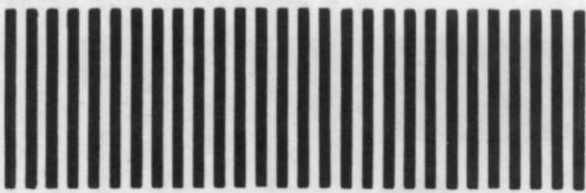
The one bright spot in the contract picture at this time is still the individual contractor, responsible for all maintenance except large area mowing on a small neighborhood park. It is still recommended that this be approached more cautiously with only pre-qualified individuals and that the individuals be required to furnish their own equipment.

We believe this aspect of contract maintenance has greater possibilities because we are dealing with one person, in a confined area, on a full or almost fulltime basis where contact is reasonably early, work expectations easily outlined, and where daily contact by supervision is about the same as with a regular park employee.

We have a lot of polishing to do on this approach to maintenance, but if what has to be done to make the contracts work adds up to a higher cost than doing it with our own personnel then it is not worth it and we have spent money unnecessarily. **WTT**



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS

PERMIT NO. 2675

CLEVELAND, OHIO

POSTAGE WILL BE PAID BY ADDRESSEE

WEDS TRIS & JUNE

9800 Detroit Ave.
Cleveland, Ohio 44102

WEEDS TREES & TURF

TURF MANAGEMENT SERIES/PART 4



Turfgrass Maintenance

Turfgrass Maintenance

Turf first boomed in the late 1920's. Much of the progress made prior to the Depression is the basis for today's methods. In this part of the Turf Management Series, we trace chemicals, equipment, and practices back to their origin in the United States.

The next two parts of the series cover turf disease and insects. For that reason some of the material on these subjects is missing in this part. Furthermore, this section had to be abbreviated to fit the magazine format. As you know, the six parts of this series will be published as a book in 1981.

I hope that you will pass on your historical knowledge to us for inclusion in the book. Please don't hesitate to write to us about your days in turf maintenance, whatever field. Already I've received dozens of letters telling of important events in turf which I had overlooked.

This project has been a labor of love. It has made me tired but fulfilled. Please join me in trying to record our historical legend for the turf managers of the present and future.

Bruce F. Shank

Bruce F. Shank, Editor

CONTENTS

The Early Years	28
Maintenance Practices Today	38



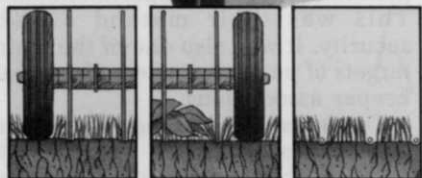
Beautified lawns. Satisfied customers.



RYAN
REN-O-THIN

RYAN LAWNAIRE III

RYAN THIN-N-THATCH



Thins . . . weeds . . . opens soil for seeds.

That's results from Ryan.

Whether you use your aerators and power rakes in your turf maintenance business, or you rent them to first-time users, you're looking for the same day-in, day-out performance.

You get it with quality Ryan® Turf-Care Equipment. Because every piece of Ryan equipment has its roots in the golf course industry, where the name Ryan has stood for quality since 1948. And we build the same precision and accuracy into our lawn aerators and power rakes.

The self-propelled **Lawnaire® III**, for example, makes it easy to aerate like a pro. Just fill the ballast drum with water to add up to 50 pounds of weight, and get up to 2½" of penetration. The 19-inch width of the Lawnaire III Aerator helps you make quick work of big lawns, with 30 spoon tines penetrating the turf every 7 inches. Transporting the Lawnaire III is quick and easy, too, with the optional Tote Trailer.

The gutsy 7-hp Ryan **Ren-O-Thin® IV** and economical 5-hp **Ren-O-Thin III** Power Rakes handle those big dethatching jobs with a wide 18" swath.

Both feature a floating front axle and micro-screw height adjustment for setting the proper dethatching depth you need. And a choice of three optional blade reels let you, or your customers, dethatch according to turf conditions.

The easy-to-operate 3-hp Ryan **Thin-N-Thatch™** makes dethatching less of a chore. It has a 15" cutting width and fold-down handle for easy transportation. Combine that with easily adjustable cutting heights and durable carbon steel flail blades and you've got a great rental machine.

With Ryan lawn care equipment, you get more for your money—and your customers do, too. To discover how easy it is to get professional results with Ryan, contact your local Ryan dealer.

81-CUR-4

RYAN® Day-In, Day-Out
Turf-Care Performance
Equipment
2020 Cushman, P.O. Box 82409
Lincoln, NE 68501
Call: 402-435-7208

THE EARLY YEARS

"At first sight, the growing of a piece of fine turf seems to be a simple matter, and this has misled many persons to underestimate woefully the difficulties to be overcome." These remarks were made in 1917 when growing a piece of fine turf may not have been simple, but certainly simpler than today. They are the words of Piper and Oakley, USDA turf scientists in Arlington, Virginia, in their book *Turf for Golf Courses*, now out of print.

In the past 63 years the turf industry, largely propelled by the needs of golf and sod production, has solved many of the conditions once considered Mother Nature's ire. In some cases our solutions have created new problems. Some suggest the amount of new knowledge is too much to expect a turf manager to know, inferring the value of the turf does not warrant the effort.

A few authors have estimated the value of the turf industry to dramatize the need for research and the importance of the science. Nutter and Watson estimated a 1965 value for turf expenditures at nearly \$4.5 billion in the American Society of Agronomy publication *Turfgrass Science*.

Money is not the only reason to pursue answers to questions raised by practicing turf specialties. The main reason should be to provide a complete set of facts on turf biology to develop logical, scientific answers to problems encountered in the field. We still can't claim to have enough information to solve such problems as disease, weeds such as nutsedge and *Poa annua*, and insects such as *Aetenius spretulus* and the Greenbug aphid. We are playing with less than a full deck much of the time.

With needed support, there is little reason why many of these still unsolved problems can't be tackled



Tom Mascaro

Founder of West Point Products, the company that introduced the aerifier, verticutter and three-wheel turf vehicle.

during the 1980's.

Consider what turf management problem solving was like 60 years ago. Actually, what superintendents noticed back then is the backbone of today's knowledge. Piper and Oakley reported in 1917 that alkaline soil encourages weed growth. In 1917, following a severe epidemic of *Rhizoctonia* brown patch on turf (as identified by Piper) an agricultural fungicide developed in the late 1800's called Bordeaux mixture was used on turf. Reel mowers pulled by teams of horses mowed golf courses until the first gasoline tractors were developed and applied to mowing in the early 20's. The reel was a British invention dating back to 1830.

The compost pile was a major source of fertilizer for early golf superintendents, then called greenskeepers. In addition to topsoil, manure and compost, turf managers used bonemeal, cottonseed meal, dried blood, hoof meal, nitrate of soda, sulfate of ammonia, acid phosphate, rock phosphate, and muriate and sulfate of potash.

Herbicides were virtually nonexistent. Sulfate of ammonia was said to help control white clover, arsenite of soda was used for chickweed control, and even sulfuric acid and gasoline were injected or brushed on the crowns of weeds. Arsenicals were used for worm and insect control.

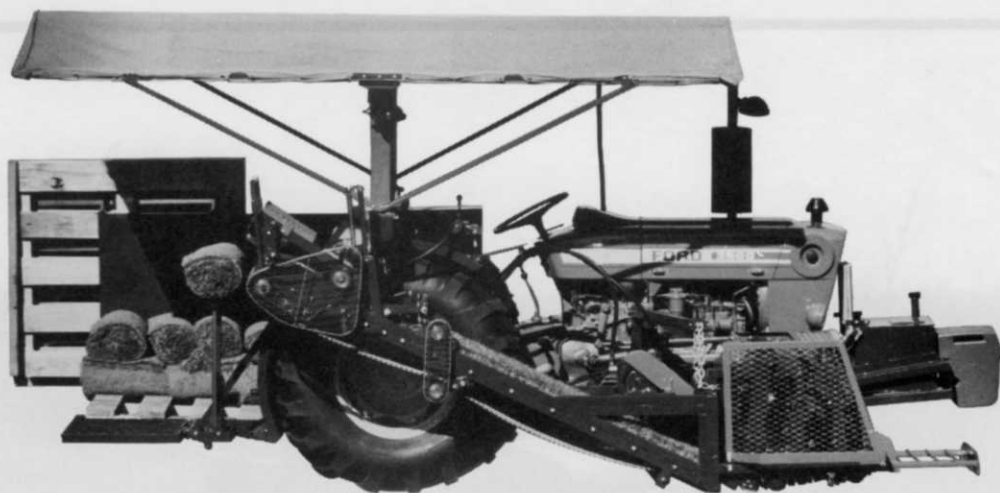
Weed control, grass cutting, and installation were performed totally by hand. Labor was cheap. Scythes, aerifying forks, sod spades, and numerous other hand tools preceded the mechanical versions of today. Many superintendents held their maintenance tricks secret from golfers and other superintendents. This was their method of job security. It was also one of the main targets of early organizers of greenskeeper associations.

Topdressing with sand and organic soil was practiced in the first 20 years of the Twentieth Century. In some cases greens were topdressed weekly and fairways at least annually. Greens were sliced prior to topdressing with crude carts dragged across the green which had many small blades on the bottom to cut the surface.

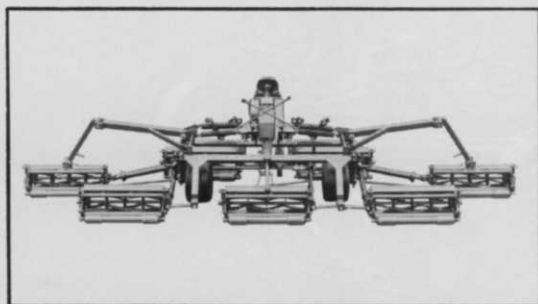
Large drop-type seeders were available and pulled across golf courses by horses. Horses provided the muscle on many courses into the 30's. They wore special steel or leather boots to prevent damage to the turf. Greenskeepers were very careful to keep heavy horses and later machinery off their greens.

Spot sodding was the solution to weed infestation and disease. One foot squares of bentgrass were cut from areas in good condition, trimmed to the proper thickness, and carefully placed where poor turf had been removed.

Irrigation was either by flooding or surface hosing. Irrigation was by



Brouwer Sod Harvesters—Cut, Roll, Slab, Fold, all grasses, all seasons, all conditions in 15, 16, 18 and 24 inch widths and choice of pallet sizes.



Brouwer 7 gang P.T.O. mowers—cuts up to 7 acres per hour at normal speed with 30 HP Tractor. Unique Positive P.T.O. Drive uses less horsepower, successfully operates in varying grass conditions.



Brouwer 5 gang hydraulic lift P.T.O. mowers offer all standard Brouwer mower features plus hydraulic lift.

With an all Brouwer package, you can improve your bottom line.

Brouwer Harvesters give you a more uniform cut, less down time, less top soil removal and a harvester that operates off the uncut turf. Over 1000 Top Turf men around the world use Brouwer Harvesters to assure themselves top profit.

Brouwer Mowers give a smoother cut at lower cost. The lightweight high-stress steel frame combined with the simple, "no-wheel and gear" P.T.O. drive minimize flattening and avoid wheel tracks. The new Brouwer hydraulic lift mowers add another time saving innovation at a very low cost.

The Brouwer Package is easy to buy, easy to maintain, and fuel efficient. That means money in your pocket—a better return on your investment.

Write for our free Brouwer Harvester and Mower brochures.

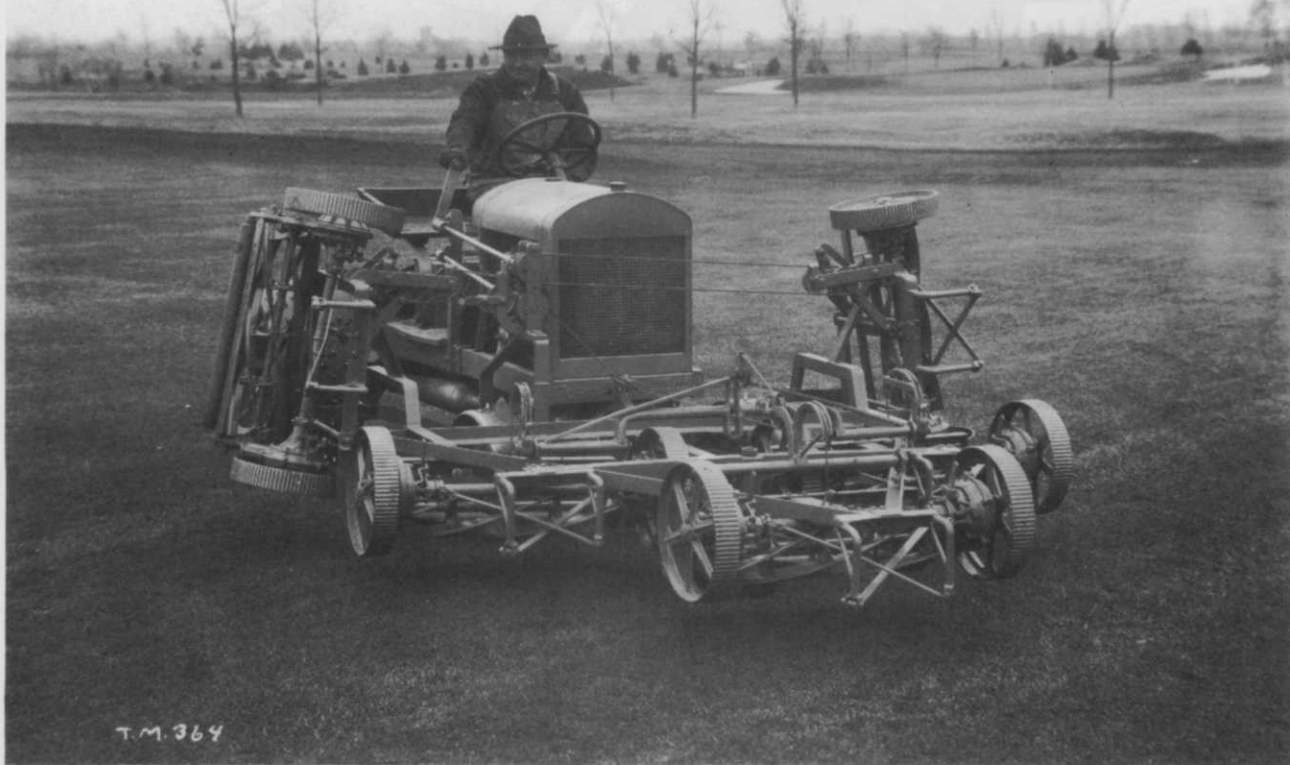


BROUWER

The Turf Equipment People

Brouwer Turf Equipment Limited, Woodbine Ave., Keswick, Ontario, Canada L4P 3E9 Tel: (416) 476-4311

Write 157 on reader service card



Toro Junior Tractor and five-unit gang mower on well-groomed golf course in 1936.

no means a new concept, dating back to Egyptian and Greek cultures. But it would be another 30 years before pressurized, quick coupling systems would take over.

The United States Golf Association Green Section was established in 1918 to solve turf problems. During the next ten years, three valuable publications were started to serve golf courses (*USGA Green Section Bulletin*, *Golfdom* magazine, and *The National Greenkeeper*). The *Bulletin* was published by The Green Section from 1921 to 1933 when the Depression forced staff cutback. 1926 was the founding year of the National Association of Greenskeepers of America, predecessor to the Golf Course Superintendents Association of America. NAGA started *The National Greenkeeper* in 1927 for its members. A third publication was launched in 1927 by Herb and Joe Graffis, *Golfdom*. It was the only private business publication and it was designed to serve all needs of the golf course, not just the turf needs.

1927 was also the year of the first educational program for turf

managers at Stockbridge Winter School, part of the University of Massachusetts. This eight-week



Lawrence Dickinson

Taught first school for greenskeepers at the University of Massachusetts in 1927.

course was taught by Professor Lawrence Dickinson during January and February. Greenskeepers from as far west as Illinois and Ohio attended this concentrated course on turf maintenance.

Between 1920 and 1931 the number of golf courses in the U.S. exploded from 500 to more than 5,000. Equipment and chemical companies quickly took note of this growth market and started designing products for it.

Consequently, companies such as Toro, Jacobsen, Worthington Mower Co., National, Roseman, and Buckner started making products for the golf maintenance market. World War I had pushed the gasoline engine into use over steam. Engineers, like National Mower Company's R.S. Kincaid, refined the tractor/mower combination into a practical tool for golf courses. Although greenskeepers had reservations about compaction with heavy mowers, they bought the gasoline tractor mowers as fast as companies could make them.

Mallinckrodt, Du Pont, and Bayer developed improvements to the Bor-