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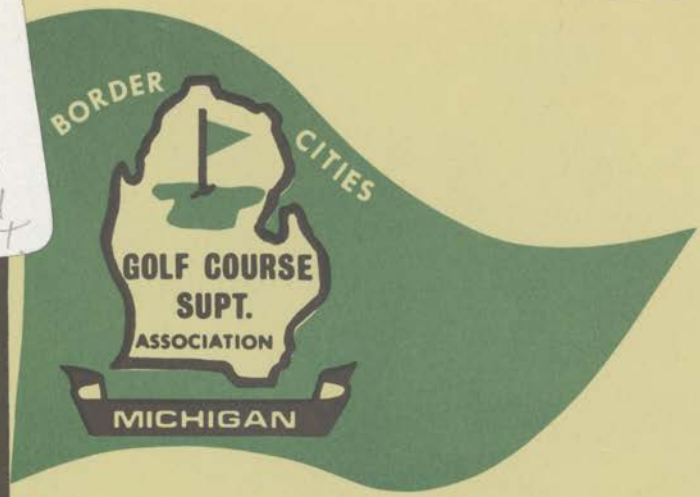

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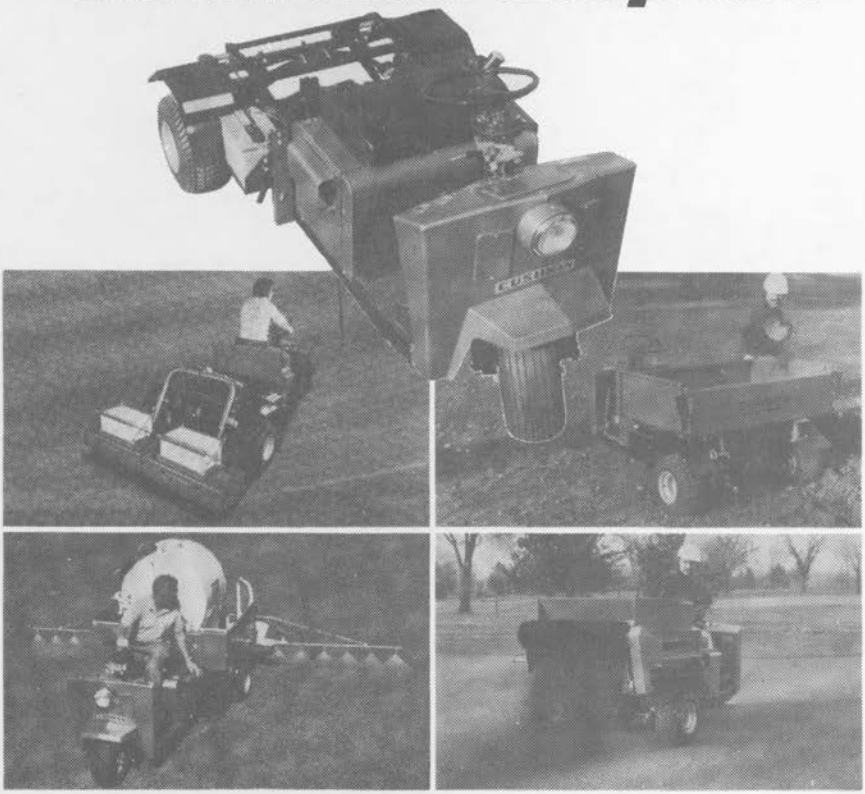

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GCSAA to Conduct Fall Insect, Disease Seminars

Four fall seminars scheduled by the Golf Course Superintendents Association of America in the Northeastern United States will focus on insects and diseases which infest golf courses. Fhe four seminars, which will be presented in October and November, are aimed at golf course superintendents and others in charge of maintaining fine turf areas.

Two Insect Identification and Control Seminars are scheduled for Oct. 20-21 in the Sheraton Tara Hotel in Framingham, Mass., and Nov. 4-5 in the Quality Inn West in Catonsville, Md. The seminar will concentrate on the descriptions and life cycles of golf course insects as well as the advantages and disadvantages of various control methods. Both insect seminars will be conducted by Dr. Harry Niemczyk, professor of turfgrass entomolgy at the Ohio Agricultural Research and Development Center, Wooster. Niemczyk, a member of GCSAA's Educational Advisory Council, has conducted turf insect research at the Ohio State facility since 1964.

The Disease Indentification and Control Seminars will be Oct. 28-29 at the Tappan Zee Townhouse in Nyack, N.Y., and Nov. 10-11 in the Albany, N.Y., Hilton Hotel. Both seminars will concentrate on disease-causing organisms which damage golf courses.

The disease seminars will be taught by Dr. Houston Couch, professor of plant pathology at Virginia Polytechnic Institute, Blacksburg. Couch, a frequent contributor to GCSAA educational programs, is coordinator of an extensive research project into the causes of C-15 bentgrass decline.

Successful completion of each two-day seminar will count for two of the six points necessary for GCSAA Certification renewal. In addition, several states have agreed to accept these two GCSAA seminars for credit toward their pesticide applicators certification renewal requirements.

GCSAA is a professional association of golf course superintendents founded in 1926 to promote the art and science of golf course management. Its 5,100 members are located in the United States, Canada, Mexico and 17 other countries. The association's headquarters is in Lawrence, Kan.

Aeration-Past, Present, and Future

By Roger J. Thomas, Vice President, Turf Equipment, Jacobsen Manufacturing Co.

Aeration is any cultivation of the soil which permits more oxygen in the growing area of turf. Soil porosity has become a very important factor in the development of fine turf. Large pores are important for air and water movement in the soil, while smaller pores are important for retention of water. The respiration of plant roots requires oxygen and produces carbon dioxide; therefore, it is important to have an exchange of air between the soil and the atmosphere. In this presentation, we will speak solely of aeration by mechanical methods.

In the beginning, many terms were presented that caused general confusion. Such expressions as dethatching, aerifying, aerating, spiking, and cultivating were used to basically describe mechanical methods of aerating.

We have drilled holes, sliced in deep cuts, cultivated, spiked, intermittently slotted, brushed, dethatched, dragged with deep pronged objects, and even

Continued on Page 14

6 ANSWERS TO QUESTIONS WE NEVER THOUGHT YOU'D ASK

(BUT DECIDED TO ANSWER ANYWAY)

1 **Yes, GCSAA can help you become a better superintendent.** One way it does this is through educational seminars and conference sessions it sponsors each year to help you become better informed about turfgrass diseases, pesticides, landscaping and management practices.

2 **Yes, GCSAA is helping to further the advancement of the turfgrass industry.** Through the GCSAA Scholarship & Research Fund, Inc., GCSAA provided more than $13,500 last year in research grants to leading turfgrass programs. GCSAA also provides educational opportunities to turfgrass students through annual turfgrass scholarships.

3 **Yes, GCSAA provides a meeting ground for superintendents.** Each year, GCSAA sponsors an annual conference and show for its members. Last year more than 6,500 educators, industry representatives and members from all over the world attended. GCSAA's executive committee decided at its last board meeting that the conference experience is so valuable that first-year members should be encouraged to attend by being given free admission.

4 **Yes, GCSAA offers recognition for superintendents.** Through its public relations efforts, its magazine, and its award programs, GCSAA helps promote the image and the professionalism of the superintendent. GCSAA also provides information to superintendents about how they can use public relations to promote their own image to their course, their community and their association.

5 **Yes, GCSAA provides each member with a life insurance program.** Supplemental insurance, disability and pension programs also are available.

6 **No, GCSAA can't help you with your golf handicap.** You'll have to work on that yourself.

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by **Patrick M. O'Brien**

Fairways Comprise the largest acreage that require maintenance at golf courses. In many areas of the transition and cool, humid zone of the United States, creeping bentgrass (agrostis palustris Huds.) and Colonial bentgrass (Agrostis tenuis Sibth.) could be maintained as the principal fairway grass species. However, other turfgrasses in this area, including Kentucky bluegrass, perennial ryegrass, especially Poa annua, predominate. Without doubt, bentgrass, where managed correctly, provides some of the best fairways in its area of adaptation. Many of the most famous clubs in the Northeast, such as Baltusro Golf Club, Springfield, N.J., Winged Foot Golf Club, Mamaroneck, N.Y., and Merion Golf Club, Ardmore, Pa., have chosen bentgrass for their fairways. Our technology and ability to grow bentgrass is certainly not lacking, so what are the problems?

Over-Irrigation

Perhaps no grass has been so mismanaged by irrigation practices as bentgrass. It ranks favorably but

slightly behind Kentucky bluegrass and the fine fescues in drought tolerance. Bentgrasses are widely used in Scotland, where there is no artificial irrigation. The bentgrasses have also been found growing in desert areas. Yet somehow bentgrasses have the reputation of needing much more water than other permanent turfgrasses.

Before irrigating, it is good practice to use a soil probe to examine the moisture status of the soil. There should always be moisture enough in the rootzone to supply the plant's needs. When water is needed, only enough should be applied to restore the supply to the rootzone. Care must be taken not to irrigate to the point where macropores become saturated, since this interferes with oxygen supply, and grass roots will not function without oxygen. Wilting of the turf occurs when air is cut off from the plant. Unfortunately, the natural tendency is to put on a little more rather than a little less. We have learned the

Continued on Page 11

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concept that turf roots require water, but we have a more difficult time learning that overwatering greatly reduces soil air and causes grasses to wilt.

Poa Annua Problem

The major criticism of bentgrass fairways is related to the Poa annua problem. Is this criticism justified? Fairway irrigation has contributed to the problem along with increased soil compaction and turfgrass wear injury caused by golf carts. Forgotten is the fact that many fairways were originally dominated by common Kentucky bluegrass and the fine-leaved fescues. These unirrigated grasses produced a good lie but not the tight lie preferred now by golfers. When the bluegrasses and fescues were irrigated, golfers demanded that the golf course superintendent lower the cut. With the lower cutting height and irrigation, Poa annua quickly invaded the Kentucky bluegrass and red fescue. This is the primary cause of the high predominance of annual bluegrass fairways. It should be noted that the annual bluegrass had much more difficulty invading the bentgrass. The bentgrasses are able to withstand the lower cut and, so long as it was applied at reasonable rates, the extra water.

Presently, the increased soil compaction and traffic injury from maintenance equipment, golfers, and particularly with golf carts have greatly encouraged Poa annua in our present bentgrass fairways. Frequent overirrigation also contributes to soil compaction and the extra moisture necessary for Poa annua germination. The bentgrasses are not as competitive with Poa annua on compacted soils.

Also important to a bentgrass program is the judicious use of fertilizer. Bentgrass fairways require minimal amounts of nitrogen, and the preferred program is to fertilize lightly but more frequently. This provides a slow, steady growth of the bentgrasses. High rates of nitrogen, particularly in late winter and early spring, encourage Poa annua. Higher nitrogen levels also increase the water requirements of the grasses. Applications of phosphorus to bentgrass fairways should be carefully

Continued on Next Page

considered because high soil phosphorus also encourages Poa annua. Most soils in the United States contain adequate soil phosphorus levels, except areas in the southeastern states where weathering intensity is relatively high.

Sulfur fertilization has recently proven to be very beneficial to bentgrass turf. Dr. Roy Goss of Washington State University has been working with a Poa annua control program using sulfur as the key element to the program. Several clubs in the Mid-Atlantic Region have been applying sulfur to bentgrass fairways with good results. Sulfur materials available are elemental sulfur, ammonium sulfate, potassium sulfate, gypsum, and ferrous sulfate. Bentgrass fairways must receive proper cultural and mechanical maintenance practices to compete successfully with Poa annua. Soil tests should be taken periodically on bentgrass fairways to determine nutritional needs. Bentgrasses prefer a soil pH around 5.5. A higher pH in the fairway soils will favor Poa annua.

Too Expensive

Many people do not consider bentgrass for a fairway turf because they feel maintenance will be more expensive than for a Kentucky bluegrass or perennial ryegrass turf. Others equate the high cost of maintaining a bentgrass putting green with a bentgrass fairway. In reality, bentgrasses will provide an excellent fairway playing surface at only slightly higher maintenance standards than Kentucky bluegrass or perennial ryegrass. A comparison of management practices will help demontrate the differences in bentgrass and Kentucky bluegrass/perennial ryegrass fairways.

1. The biggest difference in management will be the height of cut. Bentgrass fairways are cut between ½ and ⅝ inch, while Kentucky bluegrass/perennial ryegrass fairways are cut between ¾ and 1 inch. Best playing conditions are obtained on cool-season fairways by frequent mowing. However, Kentucky bluegrasses require more frequent mowing than the bentgrasses. The lower cutting height of the bentgrasses not only can produce bet-

ter playing conditions, but also deters Poa annua. Poa annua is most competitive at ¾ to 1 inch.

2. The bentgrasses require more water during the summer months because they become very short-rooted during July and August. Frequent light waterings may be necessary during these months. Kentucky bluegrass and perennial ryegrass are more deeply rooted; therefore, light, frequent waterings to these species during the summer may reduce the root systems and produce a more tender plant.

3. Disease control programs are needed for all grasses. The best disease control program, however, is a sound cultural program using minimal fertilizer and water, proper mowing and thatch control. The peak disease period for bentgrasses, bluegrasses, and ryegrasses will be during July and August when heat and humidity are high. Normally, depending on weather conditions and the fungicide selected, a 7- to 21-day spray interval is followed in fairways in the late spring, summer and early fall.

4. The bentgrasses are also surprisingly heat tolerant. This is a characteristic usually overlooked. Bentgrass greens are present in areas of the deep south, and bentgrass tees are common in the southern limit of the transition zone on modified soil mixes. It is possible to grow bentgrass fairways further south than is currently practiced, if soils are well-drained.

5. The wear tolerance of bentgrass is poor compared to Kentucky bluegrass and perennial ryegrass. Perennial ryegrass is the most wear tolerant of the cool-season grasses. Traffic control, particularly if golf carts are present, is mandatory to reduce wear on bentgrass fairways.

6. The bentgrasses are the most weed free of the cool-season turfgrasses. However, they are more susceptible to injury from herbicides, particularly pre-emergent and hormone-type chemicals. Clover, particularly on imperfectly drained, fine-textured soils, is the biggest problem. Kentucky bluegrass and perennial ryegrass have a higher tolerance to most

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The Future

Hopefully, the criticisms that bentgrass fairways are too expensive to maintain and are too subject to Poa annua invasion will be less in the future. Additionally, many managers may select bentgrass for areas previously considered too risky during the summer.

Intensive breeding work will one day produce bentgrasses with greater heat- and drought-tolerance. Wouldn't it be wonderful to have a bentgrass with the rooting characteristics of Kentucky bluegrass? Through breeding, we may one day have rhizomatous Colonial bentgrasses. This feature together with greater wear tolerance would significantly increase bentgrass use on golf courses throughout the country. The future for better bentgrass fairways through research now appears more promising than ever before.

JULY/AUGUST 1981
USGA GREEN SECTION RECORD

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cultivated at sub-surface levels. Initially, pitch forks or some other homemade devices were rammed into the dry soil areas to permit better moisture and air penetration.

Another theory appeared which said that the lower you mow, the more chance air has to get at the fine cracks in the soil. It was later proven that all grass would not hold up during stress periods mowed at low heights of cut. After the subject of mowing was refuted, the next step that came along was deep-pronged mechanical devices that merely dragged through the soil, drawing up some good and bad turf, generally leaving a mess in the area. Sweepers were developed, or the areas were raked to remove these materials. Play areas were disrupted, and recovery took a long time.

SPIKING

Spiking in some mechanical way was perhaps the first real effort at aeration. Even early tractors had spikes on the wheels to provide aeration, as well as traction, and many simple devices were made to attach to mowers that

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would break up compaction at the top surface of the soil. Later, special spikers came out for that singular purpose and penetrated the soil anywhere from ½-inch to 1½ inches.

CORING

The first real efforts at changing the soil make-up came through the aeration method of plugging or pulling out cores. The size of these cores ranged from ¼ inch to as large as 1 inch in diameter. The tines were hollow, and merely pulled out a three to four inch plug of soil. While this method disrupts the soil surface and interrupts play, it remains today as the most popular method of aerating. We moved then from the position of removing just a few cores from the soil to removing very many plugs. Some of this was done for the purpose of changing the soil structure by adding sand or soil amendments. Other users found it was one way that they could get water below the soil surface, as compaction really became a problem in heavy traffic areas.

Many different types of tines were then developed, such as hollow closed tines, open tines, "L" shaped blades that merely lifted the turf; four, five, six and eight inch slicing knives were also developed. Today, a popular method of aerating large areas is to place blades into the soil anywhere from four to six inches, which leaves intermittent slits for water and air to penetrate the soil.

DETHATCHING

Along came the subject of what to do about the accumulation of grasses at the soil surface. The build-up prevents water from getting down to the roots of the soil. The term mat or thatch has been a difficult one to define, but for our purpose here, we refer to it as a surface organic accumulation which limits water and fertilizer, as well as prevents good grass growth. Thatch accumulation builds a spongy rough putting surface on a green, and can contribute to the cause of disease in some grasses.

Dethatching machines were developed to cut the strands of stems and leaf sheaves which failed to decay over a period of years. The purpose of the machine was to slice the runners of

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vascular strands and accumulate them on the surface so that they could be removed.

Several machines were developed to do this, and from this concept was developed a machine that dethatches and seeds at the same time. Dethatching and seeding has become very popular in many areas and the results have been favorable.

Aeration and dethatching by a slitting method disrupts play less because less soil is brought to the surface than in the coring method. It also has a cultivating effect in that the whirling blades cause a cracking action in the soil, permitting water to penetrate it. Cultivation or aeration by this method, however, while growing in favor, has still not achieved the popularity of the hollow-tined cultivator.

Machines for larger areas were developed to both dethatch and sweep, and many of these units have been sold throughout the world. Since the results of dethatching began to appear, some users of equipment felt it would be undesirable to pull plugs or cores of soil from the surface, as this method brought up some of their weed problems. Under the circumstances, these users prefer the blading method of aeration, and realize that thatch can be a real deterrent to fine turf. Recently, more and more superintendents have reached the conclusion that the severity of the cultivation method to turf does not necessarily insure fine turf growing conditions. Vertical mowing, as it was formerly thought out, involved running the slicing blades through the thatch, into the soil. It was considered desirable to bring up some small amounts of soil. There seems to be a current trend toward considering vertical mowing, where the blades are set merely to "tick the tops." With the advent of the Triplex Greens Mowers, coupled with the concept that the players become upset because the playing conditions are not the same each time they go out, necessitated a device that would reduce thatch, nap, and graining without disrupting the playing surface.

Properly adjusted, vertical mowers that merely "tick the tops" leave the playing surface in good condition; and over a period of time, thatch will be removed in this manner. Deep slicing may not be required, and the playing surface, for all purposes, is equivalent to what it was before the procedure. The trend also might be affected by the fact that the Triplex Greens Mowers are 60 inches wide, and can do the job far quicker because the clippings are collected at the same time the vertical mowing is being done.

Recently, I had the chance to observe vertical mowing being done with ½-inch spaces between the blades instead of the normal ¾-inch spaces. Again, let me stress the point that the vertical mowers are just "ticking the tops" and doing very little slicing of the runners. The fact that the time and effort required to do the job permits golf course operators to do what they now term "vertical mowing" and dethatching more often without severely upsetting the green has to be one of the prime reasons for this trend.

SUB-AIRING

Compaction, a real problem to most turf maintenance people. On high-use areas such as football fields, golf courses, and playgrounds, there is a consistent problem of keeping compaction at a minimum. For this reason, the tined Aerators have been used. More recently, an apparent trend to the four-to-six-inch blades for loosening the turf has been incorporated. Introduced within the last few years is another new method of relieving compaction which could be termed subsoil aeration. The unit has an oscillating blade which goes fore and aft, and performs at a depth of four to seven inches below the surface. The ascillation of the blades causes tremendous vibration, and shakes the soil from two to three feet around the slits. The process permits heavier and deeper penetration of water and air into the soil, and if calcined clays or other soil amendments are placed on the surface prior to the operation of the machine, penetration of these clays can be found from four to five inches below the level of the turf. If some top dressing and fertilizing is done following sub-airing, recovery is quite quick, but the job must be done at a time during the best growing portion of the

Continued on Page 18

Kenneth G. Hodas has been appointed Vice President, and Scott Foerstner as Treasurer and Controller announced Ernie Hodas, President, Century Rain-Aid, distibutor of Underground sprinkler supplies and agricultural irrigation equipment.

Ken became Sales Manager of Century's Ag Division, Coldwater, Michigan in September, 1980 with responsibilities including branch management. After graduating from Michigan State University, East Lansing, Michigan in 1971, Ken joined Century as designer and estimator in 1972.

Scott Foerstner joined Century in 1979 as Controller based at the Madison Heights, headquarters, with duties of control procedures, financial planning and auditing. Scott is a graduate of the University of Detroit, Detroit, Michigan. He became a Certified Public Accountant in 1977, and is a member of the Michigan Association of Certified Public Accountants, the American Institute of Certified Public Accountants.

Sam Roach joined Century Rain-Aid as Engineering Sales Representative, and Art McKinlay as Credit Manager reported President Century, Ernie Hodas.

Roach will be based at Century's Elk Grove Village, Illinois branch developing and servicing Illinois turf sprinkler installer contractors, golf courses, architects, nurseries, construction contractors, municipalities, and commercial sprinkler applications.

A 1977 graduate of Michigan State University, Sam's past active involvementincludes positions with Schones Landscaping, Sprinkler Supply & Consultants, and recently with Chicago Turf & Irrigation. He has also served as President of the Chicago area Contractors Advisory Board.

Art McKinlay was degreed in Business Administration from Eastern Michigan University, Detroit Institute of Technology, Boston University. Art also was a Silver Medalist with the 1956 U.S. Olympic Rowing Team.

McKinlay, based at Century's Corporate Headquarters, Madison Heights, will have responsibilities of credit, collections, customer relations and supervision of credit personnel.

Ken Hodas

Scott Foerstner

Art McKinlay

season.

SUMMARY

If one can surmise what is taking place today and what will be produced for the future, it would appear that turf maintenance people would rather do the job with wider equipment more often with less physical damage and faster recovery of the turf in the aerating field. Also, operators would prefer to ride instead of walk behind any piece of equipment to do their aerating. Whatever method is used, we know mechanical aerating will continue to be necessary to promote the growth of better turf in our high-rise areas.

In the case of schools, institutions, and parks, new aerating methods, while they affect appearance and recovery of the turf, are equally important with relation to the time and cost of doing the work required. A whole host of new products will be produced in the years to come, basically to reduce efforts, time, and cost. The goal is minimum maintenance, with maximum results to the turf and the least amount of disruption of play or appearance.

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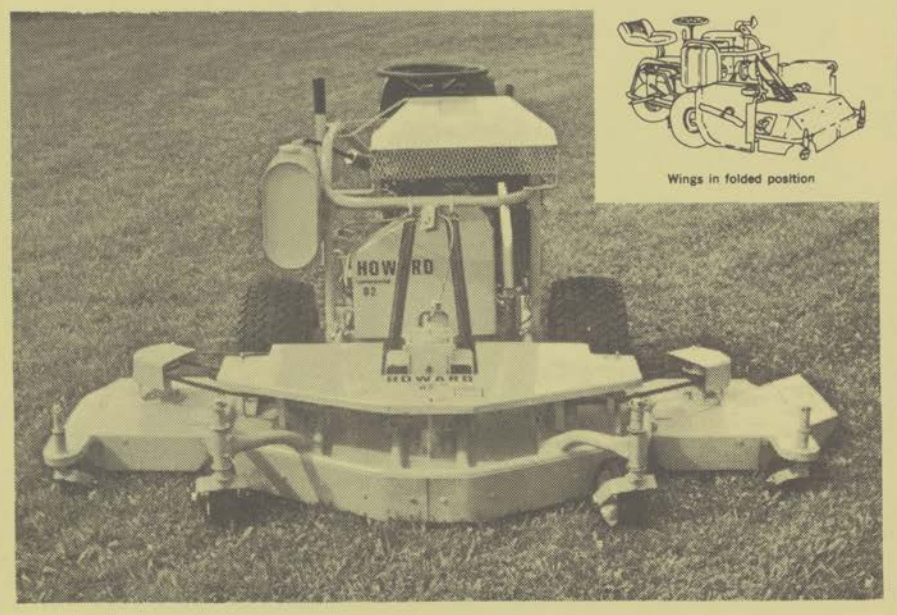

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