

ANNOUNCING NEW budget-priced ball washer!

**Combines
long life with
low maintenance**

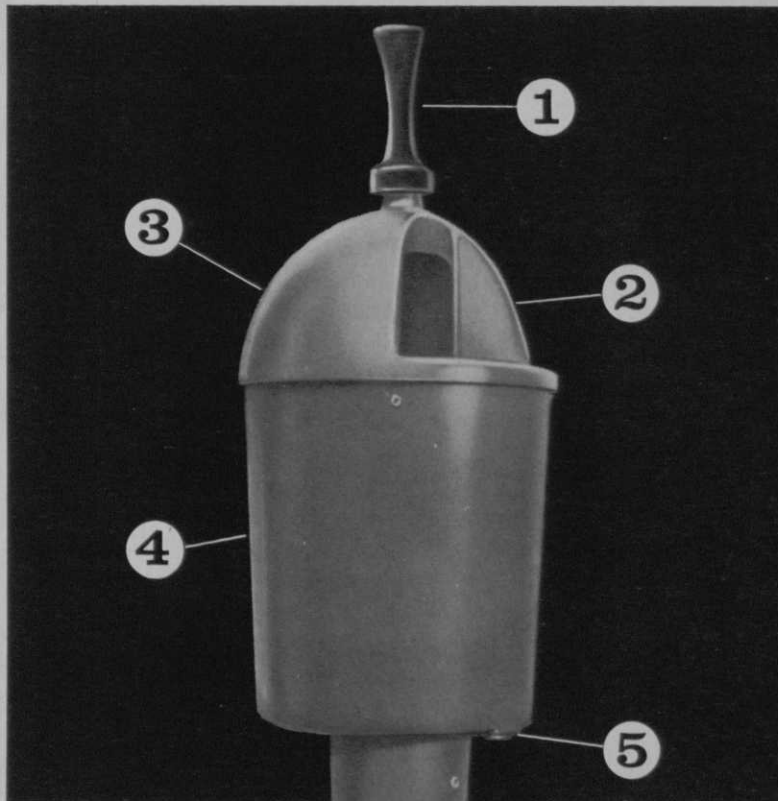
New Lewis aluminum-fiberglass housing with stainless steel, rubber and nylon fittings assures rust-free dependability and trouble-free operation.

LEWIS LEADS AGAIN! You asked for a Ball Washer combining trim design with smooth operation and minimum maintenance . . . at a modest price. Lewis engineers achieved this with the remarkable new GF-68 Washer, combining aluminum and fiberglass. Its functional design and smooth, splash-free cleaning action pleases players from the first insertion of the ball to its final automatic transfer to the holding tray.

Greens Superintendents recognize these top quality features . . .

Lewis fine quality materials assure long life and easy maintenance:

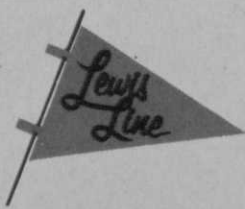
(1) Tough phenolic grip holds solid stainless steel plunger shaft firmly, permits 360° swivel. (2) Oversize opening directs ball to nylon paddle for spin-action cleaning. Exclusive design automatically ejects ball into receiving "tray". (3) Cast aluminum top is designed for rough use. Easily removed to replace brushes after 3 to 5 years of normal use. (4) Molded fiberglass base forms large water chamber. Washer can't become rusted to post. (5) Outside drain plug for easy flushing.



New Fluorescent Flagpole features high visibility . . . pinpoints cup on green from 100-150 yards out. Ken Voorhies, Columbine C.C., Denver, Colorado, shows vertical stance of pole with new chamfered ferrule and chamfered cup.



Lewis Deluxe GF-555 Tee Stations are used by Wade Flatt on all eighteen tees of his Skyline Country Club at Wichita Falls, Texas. He uses Lewis Line equipment exclusively because of its dependable service.



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by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

Balancing nitrogen- potassium nutrition in turfgrasses

Effects of nitrogen-potassium levels on the growth and chemical composition of Kentucky bluegrass.

C.A. Monroe, G.D. Coorts and C.R. Skogley. 1969. *Agronomy Journal*. 61:294-296. (from the Department of Agronomy and Mechanized Agriculture, University of Rhode Island, Kingston, R.I. 02881).

The interrelationship of nitrogen and potassium on the growth and development of Kentucky bluegrass was investigated. The growth and development responses determined included shoot growth, weight of roots and rhizomes, tiller number, blade width and rhizome length. In terms of the various growth and development responses, a balance between nitrogen and potassium nutrition was the most important factor. Higher potassium levels stimulated tillering, root and rhizome growth. Higher nitrogen levels restricted root and rhizome growth. Higher potassium levels

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The Greens Committee reviews the pipe specifications for the new irrigation system.

Harry Turner, with the cigar, is sales manager of Wilson Textiles. Sam Donovan, on his left, runs a printing business. Herb Marks owns a dress store and Jack Byrnes, on the far side, has a big car dealership.

What they know about water pipe consists entirely of this:

They've got to get water, once and for all, to those scorched fairways and brown greens.

The swimming pool loan isn't paid off yet, and the membership is watching them like hawks.

They don't want to have to do this more than once a century.

So when they finally agreed to buy a permanent irrigation system, they did what smart, prudent men always do—they started asking around. A builder, some contractors, a couple of engineers, an architect, two other clubs.

They found a surprising degree of consistency:
Be sure of your contractor.

Get good pipe—from somebody big enough to know all the new technology. And with a quality reputation.

Use a combination system: asbestos/cement for the big diameters, PVC (polyvinylchloride) for the smaller lines. More economical to install and better service over the long haul.

Choose white PVC—it lays easier and works better. And it hooks up better—either with special deep-socket joints or a unique gasketed coupling.

Get the whole system from one maker. Then everything arrives and works together.

While the Committee was finding all this out, one name kept coming up: Certain-teed. Big. Technically advanced. Quality. Complete A/C and PVC capacity. White PVC—with the special sockets and gaskets. Fast delivery, good service.

The bids were pretty close on price. One contractor specified a complete Certain-teed piping system. That did it.

The Committee, of course, continues to keep an eye on the piping. Unless they're rained out. Cheers, gentlemen.

Certain-teed Products Corporation, Pipe Division, 540 Pennsylvania Ave., Fort Washington, Pa. 19034.



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BEARD

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increased leaf blade width, while higher nitrogen levels reduced the leaf blade width.

Comments: There is a tendency in modern turfgrass culture to use higher rates of nitrogen fertilization without comparable increases in the other two major elements, particularly potassium. The data reported in this study is further evidence in support of several previous investigations which stress the importance of maintaining a balance in nitrogen-potassium nutrition of turfgrasses.

Effect of time of thatch removal on survival and earliness of growth of three turf-type bermudagrasses.

W. W. Huffine. 1969. *Turfgrass Production and Management Research, 1968. Oklahoma State University Progress Report P-610. pp. 7-9. (from the Department of Agronomy, Oklahoma State University, Stillwater, Okla. 74075).*

The primary objective of this study was to determine the proper timing of thatch removal for rapid spring greenup of three bermudagrass varieties. Sunturf, Tifgreen and U-3 bermudagrass varieties were dethatched at four dates: (a) February 3, (b) February 15, (c) March 1 and (d) March 14. Dethatching was accomplished with a vertical mower which was passed over the area 10 times. The blades of the mower were set as near as possible to the soil surface. A vacuum machine was then used to remove the chopped vegetative material from the area. The rate and degree of spring greenup were evaluated on April 1.

The preferred time for thatch removal varied with the particular bermudagrass variety. Under the conditions of this study (central Oklahoma during the 1968 season) thatch removal on or about

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3 7/8"

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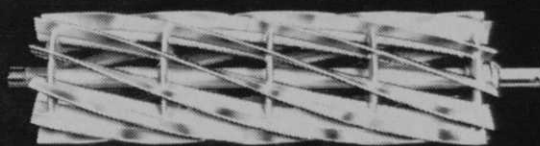
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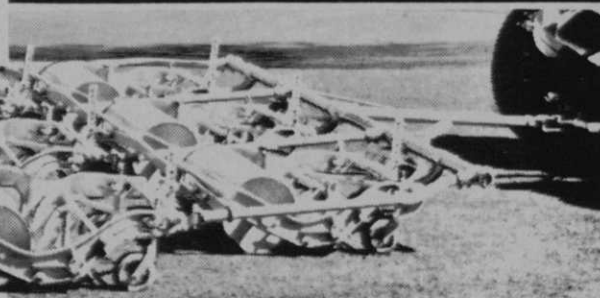
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BEARD

continued from page 34

March 1 was preferred for rapid spring greenup of Sunturf, while the interval between February 15 and March 1 was preferable for Tifgreen and U-3. Thatch removal dates, which were either earlier or later than this, resulted in a slower rate of spring greenup of the bermudagrass varieties. However, the rate of spring greenup was more rapid at all dates of thatch removal in comparison to a bermudagrass turf which received no thatch removal.

Comments: This study indicates that (a) thatch removal from bermudagrass turfs in the spring will assist in spring greenup and (b) that the timing of thatch removal can be critical in achieving the maximum rate of spring greenup. The specific date will vary with region. The optimum dethatching dates presented in this paper apply only to climatic conditions comparable to those found in central Oklahoma. In other locations having different climatic patterns, in terms of spring temperatures, an adjustment in the time of thatch removal will be required.

Evaluating turfgrass for shade tolerance.

G. W. Wood. 1969. *Agronomy Journal*. 61(3):347-352. (from the *Department of Plant and Soil Sciences, University of Vermont, Burlington, Vt. 05401*).

In this study the shade adaptation of a number of turfgrass varieties and species was evaluated under controlled climate and field shade conditions. Eight Kentucky bluegrass and eight red fescue varieties were evaluated in controlled climate chambers. Four light intensity levels were used in the growth chambers: 3,000, 1,500, 500, 230 foot candles. In the field shade study 57 varieties of Kentucky bluegrass, 18 varieties of red fescue, 1 hard fescue,

5 colonial bentgrasses and 2 creeping bentgrasses were evaluated. The field shade conditions consisted of a tree canopy which permitted approximately 5 per cent of the incident sunlight to penetrate to the turf. The tree canopy consisted of red maple, white birch and red oak. Total shoot and root growth were evaluated eight weeks after planting.

As a group, the red fescues were superior to the Kentucky bluegrasses in adapting to the shade, during the initial eight weeks of growth from seed. Among the red fescue varieties, Golfrood and Ruby were outstanding in shoot growth in both the controlled climate chamber and field shade studies. Rough bluegrass was also superior to the Kentucky bluegrasses in shoot growth during the initial eight weeks following planting. Shoot growth of creeping and colonial bentgrass varieties was inferior to that of the Kentucky bluegrasses and red fescues.

Comments: This study gives an indication of the relative establishment rate and initial seedling vigor of a large number of red fescue and Kentucky bluegrass varieties under intense shade conditions. Establishment of an adequate turf is one of the first requisites of the culture of turfs under shaded conditions. However, this type of study should not be used as a basis for determining the overall adaptation of turfgrass varieties to shaded environments. A much longer term study is required to evaluate the overall shade adaptation. Effects such as disease will frequently become an additional factor in turfgrass shade adaptation in long term studies.

The number of varieties evaluated in this study is much too great to report in this brief summary. For those interested in a particular variety, it is suggested that they review the original paper cited above. □

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For more information on how J-M pipe systems keep down the cost of irrigation, ask for booklet 359A. Write Johns-Manville, Box 290-PG, New York, N. Y. 10016. Available in Canada and overseas. Cable: Johnmanvil. **JM**

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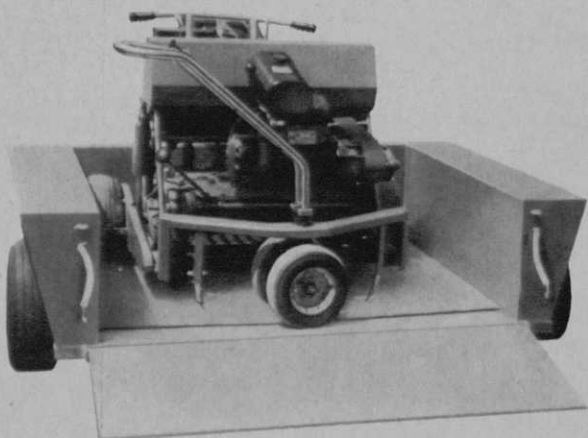
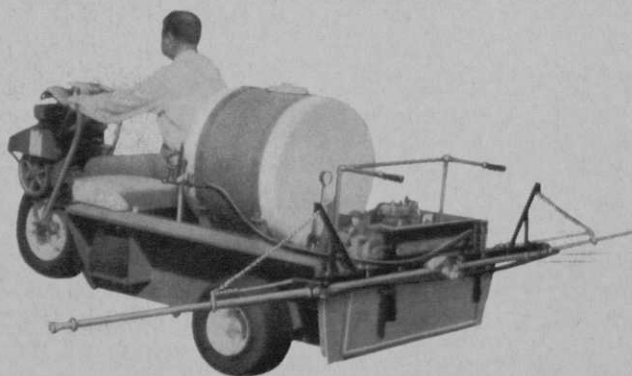
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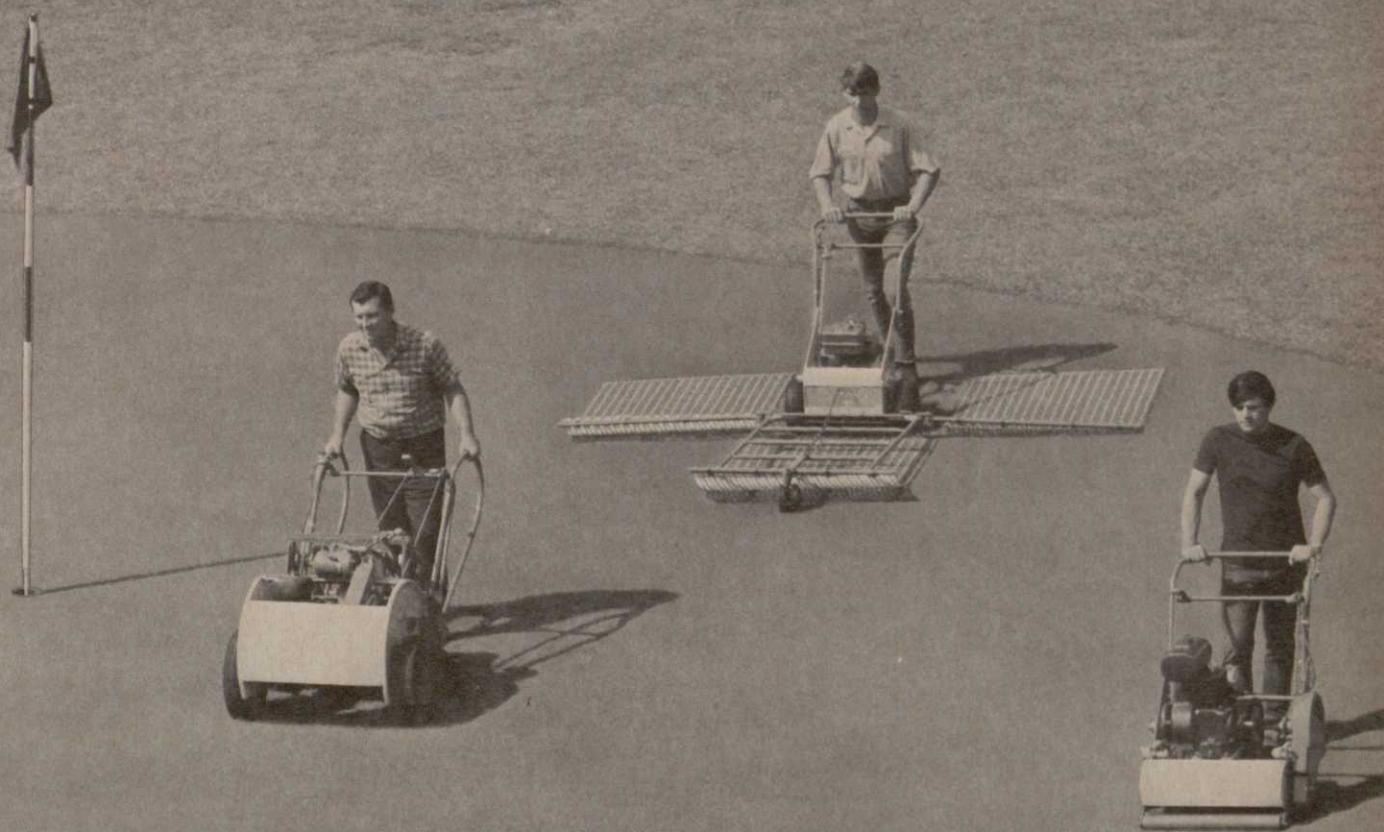
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■ The West Point VC-5 Verti-Cut® (right) is a precision vertical mowing machine developed by West Point as the ultimate solution to "grain" and thatch development. Thirty razor-sharp vertical blades (60 cutting tips) revolving at high speed slice flattened, grain-producing grass blades in 19" swaths. And, this popular ma-

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■ The West Point MC-5A Vertifier™ (left) is the ideal aerifier for relieving green compaction. It cuts clean cores at a good clip—100 feet per minute in 16" swaths—so that you can easily cover 10,000 square feet in an hour. High speed tines cut and remove cores while special rubber "flexi-pads" prevent turf damage. The catcher attach-

ment keeps cores off the green and, to speed the job, a hydraulic lifting device permits rapid, even turning without scuffing the turf. Request Bulletin 6891 for complete details.

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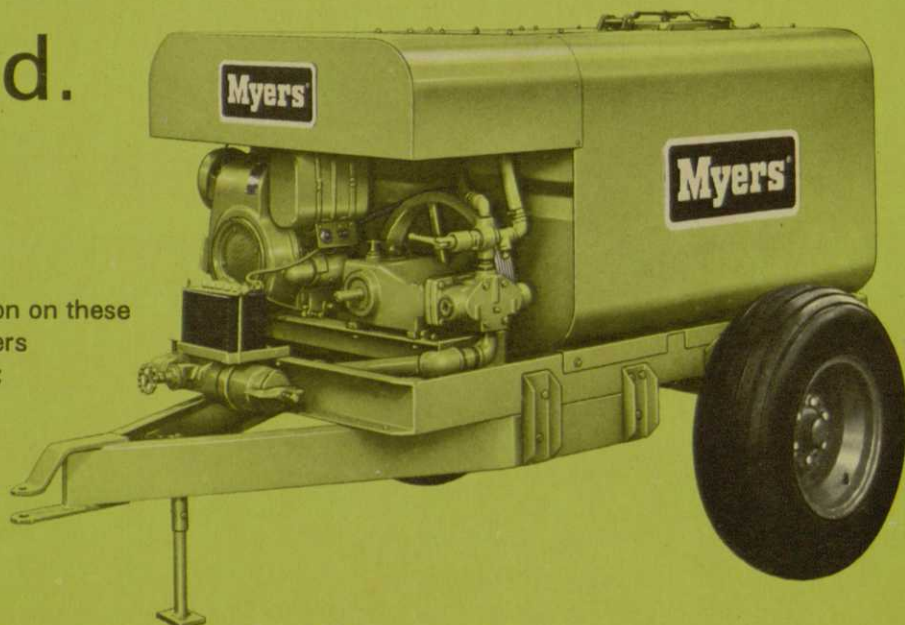
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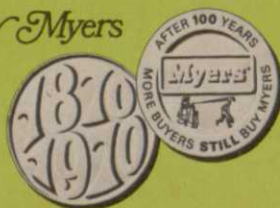
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