Tomorrow’s Turfgrass Manager
new ideas, new practices, new equipment

Innovations in Turf Pest Control
Ohio Turf Show Highlights
Pennfine Perennial Ryegrass.

If it's got a weakness, nobody's found it. But we have heard about some new strengths.

The Pennfine story gets better as it goes along.

Four years ago, the agronomists at Pennsylvania State University finished their work on Pennfine. And the professional turf community put this remarkable fine-leafed perennial ryegrass to work on golf courses, athletic fields, sod farms, parks, cemeteries and public grounds across the country.

Clean-cutting Pennfine Other fine-leaved ryegrasses

The ultimate test.

Now, after thousands of grounds maintenance pros have used Pennfine, nobody's reported a real weakness. All the characteristics the Penn State agronomists selected for—unsurpassed mowability, excellent disease resistance, exceptional decumbency, persistence under diverse management conditions, fine texture and compatibility with Kentucky Bluegrass—have proven out in the real world. That's the ultimate test.

In fact, Pennfine has performed even better in some areas than anticipated. It's proven to be more tolerant to both shade and heat. It's shown excellent rust resistance on the West Coast. And, although Pennfine showed good to excellent disease tolerance in university trials, its disease tolerance appears to be even stronger in actual use.

Pennfine production fields in the Pacific Northwest where a major effort is underway to meet growing demand for seed.

Increased production.

From the very beginning, there's been only one problem with Pennfine: not enough seed to meet demand. And that problem is just about solved with substantially increased production. We can't make you a flat promise. But, if you order fairly soon, you should be able to get Pennfine seed in the quantity you want.

On the other hand, maybe you're still not convinced. In that case, we'll send you a test kit with enough Pennfine seed for you to develop a 100 sq. ft. test plot. And you can try to find a weakness on your own turf.

Either way, whether you seed Pennfine this year or just test it, we think you'll be impressed by the results.

- Let me know how I can order Pennfine Perennial Ryegrass.
- I'm still not convinced. Send me a Pennfine Test Kit.

Name ____________________________
Title ____________________________
Club or Company ____________________
Address ____________________________
City __________________ State ______ Zip ______

Please Note: The test kit offer is restricted to turf professionals, people whose livelihood depends on the establishment and maintenance of quality turf.

Mail to: Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, Mn 55440.
Sometimes a Rain Bird sprinkler isn’t what you need.

For 42 years we’ve been telling you to use Rain Bird sprinklers. Now we’re telling you not to. Because for some applications, there’s something even better.

It’s our new Horticultural Trickle Irrigation System. Designed to perform effectively and economically where other systems can’t.

In remote planting beds, for instance. In shopping malls and on median strips. In hanging baskets and even on bridges. Anywhere aesthetics are important and economics are critical.

**The root of the matter.** Slow, continual watering of root zones is what our Trickle System is all about. It assures positive plant response and the most efficient use of water with no erosion or run-off. In addition, by minimizing wetness of soil surfaces and plant foliage, many insect, disease, weed and fungus problems are reduced. All without spraying walkways or otherwise interrupting the look of your landscape.

To find out what our new Trickle Irrigation Systems can do for you, call your Rain Bird distributor or write Rain Bird, 7045 North Grand Avenue, Glendora, CA 91740.

Do it today. And keep your landscaping ideas alive.
THE 44-INSECT INSECTICIDE.
For trees, ornamentals, and turf.
One solution versus 44 problems. Those are pretty good odds.
Especially since you can't always be sure which insects will threaten the valuable trees, turf and ornamentals you protect. And people enjoy.
This broad-spectrum control with SEVIN® carbaryl insecticide takes some of the chance out of your job.
Its versatility also lets you cut down on the need for a large chemical inventory.
Why use an array of different brands with different instructions, if you can do the job effectively with a single product? You'll enjoy less nozzle changing, chemical switching and tank flushing. All good reasons to rely on dependable SEVIN.
Use it in any of its available forms to suit your needs—choose from wettable powders, flowables and liquid SEVIMOL® 4.
And SEVIN is compatible with many commonly used fungicides, miticides and other insecticides.

With the increased awareness and concern for protecting the environment, it's nice to know that SEVIN is biodegradable.
And, when compared with many other insecticides, SEVIN ranks low in toxicity to people, animals, birds and fish.

PLANTS | INSECTS CONTROLLED
--- | ---
HERBACEOUS PLANTS | blister beetle, boxelder bug, flea beetle, Japanese beetle, June beetle, lace bug, leafhopper, leafroller, mealy bug, plant bug, psyllid, rose aphid, thrips
SHRUBS, TREES AND WOODY PLANTS | apple aphid, bagworm, birch leaf miner, boxelder bug, boxwood leaf miner, cankerworms, catalpa sphinx, Cooley, Eastern spruce gall aphid, elm leaf aphid, elm leaf beetle, elm spanworm, eriophyid mites, gypsy moth, Japanese beetle, June beetle, lace bugs, leafhopper, leafroller, mealy bug, oak leaf miner, orange tortrix, periodical cicada, pine sawfly, puss caterpillar, plant bug, rose aphid, roseslug, scale, spruce gall aphid
LAWNS, TURF | ants, chinch bugs, cutworms, earwigs, fall armyworm, fleas, leathoppers, millipedes, mosquitoes, sod webworms

NOTE: SEVIN will injure Boston Ivy, Virginia Creeper, and Maidenhair fern.
Make a quick check of the plants and insects for which SEVIN carbaryl is registered. See how many problems it can solve for you.
Then ask your chemicals supplier about SEVIN—the insecticide with over 18 years' experience in effective pest control.
16 TURF PEST CONTROL — EPA has created some rules and regulations concerning the use of specific chemicals that are being questioned by many Green Industry experts. Clemson University entomologist D. K. Pollet reviews the effects of EPA action on the turfgrass manager and his use of pest controlling chemicals.

22 Big Business in Ohio — Here's a report on December's Ohio Turfgrass Conference and Show. It was the largest and possibly the best showing ever for the Ohio Turfgrass Foundation as some 1,170 persons registered for the event.

26 Future Superintendent — The modern turfgrass manager faces a technical revolution. Turfgrass culture is becoming less of an art and more of a science as equipment becomes more sophisticated and chemicals more specific. J. D. Butler, associate professor, Colorado State University, takes a philosophical approach to the future and makes some interesting predictions.


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THE COVER — 1976 isn’t the only thing new this time of year. Many new products are being tested in preparation for marketing like this new tow-behind sod harvester.
Today’s most popular variety of creeping bentgrass is found on golf courses around the world. Penncross can take the heat in warm climates and stays green longer in the fall up north. Penncross is more genetically uniform, resists disease better and establishes quicker than conventional bents. What does this mean to Pat Fitzsimons? "Consistent greens are important to me and Penncross greens have the uniformity that gives me greater confidence in putting."

"The Grass Designed For Golfers"

Write for free pamphlet on planting and maintaining Penncross greens.
"Time is money in my book, so I feed trees with Jobe's."

Jack Fannin
Superintendent
Congress Lake Club
Hartsville (Cleveland), Ohio

"Jobe's Spikes are clean and easy to use. They're a great time saver, so they're a money saver, too. Even inexperienced help can feed trees fast with Jobe's. There are no bags to lift or ingredients to mix. No drilling.

"We used them on Crimson King maples and Snow Drift crabapples. The trees had shown inconsistent growth for the past five years, so we applied 5 spikes to each tree the first week in November. By spring, we could measure the difference.

"Another advantage of Jobe's Spikes is very little loss through leaching. There's little if any run off in heavy rains. The fertilizer stays on target. Best of all, with Spikes we can keep exact records of how much fertilizer each tree receives over a given period of time, eliminating 'by gosh and by golly' methods."

Jobe's Tree and Shrub Spikes are easy, economical and effective. One spike per inch of trunk diameter feeds a tree for a full year. All you do is drive the Spikes into the ground. Tests at Purdue University have proven Jobe's as effective as drilled fertilizer. Write for the complete report.

Save time and money. Order Jobe's Spikes through your jobber or order direct. $30 per case (105 spikes) prepaid. Minimum order, 5 cases. $25 per case for 15 or more cases.
Four.

New turf maintenance sprayers from Myers... make possible Four custom fit units for Cushman, E-Z-Go, Otis and Toro utility carts. Get the facts now!

Myers TurfLine

To: Myers TurfLine
c/o F. E. Myers Co.
401 Orange St.
Ashland, Ohio 44805

Yes, I'm interested in getting the facts on new Myers TurfLine sprayers.
( ) Send catalog.
( ) Have sales representative call.

Name
Address
City/State/Zip

F. E. Myers Co.
Division of McNeil Corporation
Fylking Kentucky bluegrass is a superior, elite bluegrass that burst like a star on the scene in the sixties!

Since then Fylking has established records making it the perfect choice for the official grass at the environmental World's Fair, Expo '74. Fylking has proven to have superior resistance to disease and drought; withstands traffic. Its thickly woven rhizome root system develops dense sod so quickly Fylking can be lifted in 90 days. Fylking can be mowed at 3/4 inch (even 1/2 inch) and thrive. It absorbs carbon dioxide pollutants, gives off oxygen, cools air by releasing water vapor.

A superior mixer, Fylking greens up earlier in spring, stays greener in summer heat, remains green longer into fall.

Choose Fylking and your customers are getting a grass good enough for a World's Fair!

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In this industry, there is one unchangeable tradition: the annual International Turfgrass Conference and Show of the Golf Course Superintendents Association of America is always big. And for evidence to this fact, we quote the following from a report of the second conference held in Detroit in February 1928:

"About 350 greenkeepers were present throughout the week and the big auditorium of the Hotel Fort Shelby was crowded continuously during the convention sessions on Thursday and Friday." There were 27 exhibits at the 1928 show, and by 1929, at the Statler in Buffalo, this support had grown to 38 exhibits covering 10,000 square feet of convention floor.

Last year in New Orleans, 1,384 superintendents attended and some 150 exhibits covered 100,000 square feet of floor space in Rivergate exhibit hall. Attendance for a single day, including members, ladies, non-members, guests, one-day admissions and exhibitors hit a whopping 4,899. That's big.

Again this year the annual show promises to be a large success. It will be February 8-13, at the Auditorium and Convention Hall in Minneapolis, Minn.

We congratulate the GCSAA on its excellent program presentations and success with its convention and show through the years. We are a strong supporter of highlevel communication programs and any opportunity members of our industry have to exchange ideas. These are the foundations for progress and the GCSAA show has them in abundance.

Jack Quaill of Pittsburg, reporting on the 1936 convention, described these foundations well: "Where can you get such nationally known and prominent men together at one time to tell you of the problems and answers to modern golf course maintenance? Where can you get a bunch of greenkeepers together to discuss and exchange ideas with you on your particular problems?"

The '76 show has quite a lineup. There will be 68 speakers at the educational sessions, including 23 university instructors, 29 member superintendents and 16 industry representatives. And the program... everything from dry spot to leadership. See page 37 for details. DDM

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In over 20 countries throughout the world, Vicon spreaders are recognized as the most accurate built.

The reason is Vicon's exclusive pendulum action. Seed, chemicals, fertilizer, or lime are evenly broadcast in a wide rectangular pattern. "Hot" spots are eliminated. Overlapping is cut way down. You save on time and materials. At the price of fertilizer today, saving a little means a lot in dollars.

Spreader rates vary from 10 to 2500 pounds per acre. Hopper capacities range from 600 pounds to 6 tons. Years of low maintenance are assured by the use of non-corrosive polyester and heavy duty stainless steel for all parts in contact with chemicals.

In the exacting business of grounds maintenance, accuracy is critical. Around the world, that means Vicon. Write for complete details.

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The #1 Weed control with

TRIMEC kills virtually all broadleaf weeds with one application, with the possible exception of some Veronica species and we’re working on them.

Safety and Economy

TRIMEC, properly applied, is harmless to grasses, trees, flowers and ornamentals because root chemical absorption is minimal. All components are biodegradable.

TRIMEC’s cost-per-acre of weed control is less than any other broadleaf herbicide for two reasons: First, a single application usually does the job, saving labor, and (2) the light chemical dosage required reduces the material cost proportionately.

TRIMEC’s efficiency results from the synergistic (more-than-additive) power of its 2,4-D, MCPB and dicamba ingredients, balanced in our exclusive, patented formulation. NOTE: For sensitive grasses, a Bentgrass formula is available.

Kills all these weeds:

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... and many more
Broadleaf Herbicide...
unequalled efficiency, safety and economy

No other herbicide has every TRIMEC benefit

- Controls the widest range of broadleaf weeds.
- Gets "hard-to-kill" species without repeated applications.
- Wives wide margin of safety to lawn grasses.
- Minimum hazard from root absorption to flowers and ornamentals, deciduous and coniferous.
- No vapor action after application.
- Effective weed control at wide range of temperatures.
- Sequestered to overcome water-hardness problems.
- Treated areas may be seeded within two weeks.
- Non-flammable and non-corrosive in use.
- Product stable for several years but subject to freezing at temperatures below 32°F.

Can you name another with every feature?

We used to use separate herbicides to control Nut Grass, Clover, and broadleaf weeds. Now Trimec does the entire job and, in addition, gets such tough weeds as Filaree and Mallow. Trimec saves us money and does an outstanding job ... our turf has to be excellent — we supply it to the Camelia Bowl.

H. B. Michelson, owner
Michelson's Turf Grass Nursery
Elk Grove, California

We've been using Trimec on over 800 residential lawns for three years, and I'd rather take a beating than switch.

Ron Zwiebel, President
Chem-Care Lawn Service of Alabama, Inc.
Birmingham, Alabama

TRIMEC has been thoroughly field tested and proved in all parts of the United States, in all kinds of weather. Its effectiveness in cool 50°-range temperatures is firmly established, allowing early-spring and early-winter use. TRIMEC is the best available weed control for golf courses, lawns, cemeteries, along highways, on sod farms, in public parks — wherever immaculate turf must be maintained.

Now, the one best way to be convinced is to test it yourself. TRIMEC ... the king of broadleaf herbicides.

This year shouldn't you at least give TRIMEC a trial?

For further information and prices, see your local authorized TRIMEC distributor.

GORDON'S
PROFESSIONAL TURF PRODUCTS

TRIMEC is a registered trademark of PBI-GORDON Corporation, U.S. Patent No. 3,284,186.
President Ford signed a law allocating $71.5 million through March 1977 to EPA for its pesticides program. The act also contains the following provisions:

Delay through October 21, 1977 the deadlines for full registration of pesticides and applicator certification.

Require EPA to notify USDA and the public 60 days in advance of taking actions affecting pesticides.

Prevent EPA from requiring private pesticide applicators to take a test before certifying themselves as competent to use the chemicals. States could require them to pass tests, however.

Provide that educational information on integrated pest control be provided through EPA state agencies and the Extension Service.

Require EPA to assess the impact on commodities prices and production, retail food prices and other segments of the agricultural economy in changing pesticide classifications or cancellations.

D. B. Smith Company, Utica, New York, consolidated three of its manufacturing operations into new headquarters in Chadwicks, N. Y.

EPA's proposed Pesticide Policy Advisory Committee (re. Nov. WTT) was put in writing after a number of groups and individuals testified at the House Committee on Agriculture's Oversight Hearings. They testified that EPA was not considering the impact on the agricultural community to a sufficient degree as regulations governing the use of pesticides were being drawn up. The function of Train's committee when formed will be: 'to advise, consult with, and make recommendations (to Train) on matters of policy relating to his activities and functions under FIFRA. The Committee provides practical and independent advice to the Agency on matters and policies relating to pesticides and maintains an awareness of developing issues and problems in the pesticides area. It reviews and advises (Train) on regulations and guidelines that are required by FIFRA; makes recommendations concerning necessary special studies; recommends policies with respect to the promulgation of pesticide standards and regulations; and assists in identifying emergency problems relating to the use and control of pesticides. It proposes actions to encourage cooperation and communication between the Agency and other Federal governmental agencies, State agencies, user groups, the chemical industry, the research community and the general public.'

Agricultural Laboratory of United States Testing Company, Inc., recently moved its headquarters. The new facility is especially designed for processing large volumes of soil, plant tissue samples and other related work.

Ransomes, Sims and Jefferies, Ipswich, England, appointed Pen-Gro Corp. as exclusive master distributor of its grass machinery and replacement parts in California, Nevada and Arizona.
Here's the one tractor you need to do almost any grounds maintenance job and do it right... the Gravely Convertible tractor. Rugged attachments convert it from a mower that handles both rough areas and smooth lawns to almost a dozen different pieces of equipment.

It'll plow and cultivate gardens and plantings... spray shrubbery and trees... grind leaves and branches for mulch or compost... haul heavy loads... do light dozer work and roll snow off drives and sidewalks... powersweep parking lots of dirt or light snow... blow snow up to 60 feet away... and more. Then, Gravely's steering sulky and dual wheels let you ride behind for the big grounds.

Choose 8, 10 or 12 HP models with Gravely's proven all-gear four-speed transmission, instant reversing action, and key-electric starting. Eight HP manual-start, two or four-speed models also available. Nobody else makes anything else that does so many jobs so well. Look in the Yellow Pages for your nearest dealer or write for our free catalog. Gravely Division of Clarke-Gravely Corporation, 3501 Gravely Lane, Clemmons, North Carolina 27012.

NEW! Economical 12 HP model with manual start and remote heavy-duty air cleaner.

ALL YOU NEED IS THIS...GRAVELY.

GRAVELY
LIKE NOBODY ELSE.

JANUARY 1976

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TURF PEST CONTROL

THERE ARE FOUR categories of insects and other related pests often found in turf, according to Clemson University entomologist Professor D. K. Pollet. The four categories are: soil inhabiting or root feeding, leaf and stem feeding, "juice sucking" and secondary insects and nuisances.

To control any insect pest positive identification is essential, Pollet told WEEDS, TREES & TURF. "Application of the correct material the proper way to control the pest is necessary to prevent injury to the turf," he said. There are also other problems in control of pests, he said, many of them relating to Washington.

"Turf pests, like other pests, occur year after year," he said. "Effective control is getting harder. The EPA rules and regulations concerning use of chemicals affect controlling measures used by the chemical industry, grounds maintenance workers, commercial applicators, universities and golf course superintendents."

Pollet feels the EPA has made some rules and regulations concerning the use of chemicals about which there is considerable question. "They have created a situation where turf people have to use more toxic, more specific and more costly materials to control the same pests which were controlled with less toxic and less expensive materials only a few years ago.

"The EPA has taken upon itself to be judge, jury and arbitrator when it comes to determining whether a pesticide will be used or not," he said. "We have to sit up and take note and help to make the decisions more unbiased. It is necessary to be alert to what is happening and actively support a safe and effective program to help each other to assure that when pesticides are removed from the market, that they are justifiably removed."

Professor Pollet said soil infesting insects which feed on the roots include white grubs, wireworms, mole crickets and ground pearls.

The immature or larval stage of several species of beetles which include June beetles, Japanese beetles, green June beetles, the Asiatic gar-

(continued on page 20)
Keep your turf in top playing condition.

Trust it to Chemagro.

*NEMACUR 15% Granular is a fast-acting nematicide that provides months of residual control of major genera of turf nematodes. Requires no injection—apply with a granular applicator and water in.

*DYRENE fungicide. DYRENE controls dollar spot, plus all Helminthosporium diseases—melting out, leaf blight, leaf spot. Also controls copper spot, stem rust and brown patch. Its small cost offsets the big cost of repairing after disease gets started.

*DEXON fungicide. Stops Pythium. This non-mercurial fungicide is also extremely effective in preventive programs to control cottony blight. It’s compatible with other turf pesticides.

*DASANIT nematicide. Broadcast DASANIT 15% Granular for control of microscopic “eel-worm” nematodes that destroy turf root systems, cause grass seedlings to wither and die. Requires no injection that makes turf unplayable for weeks during spring and summer. Easily applied with any conventional granular insecticide applicator. Thorough watering leaches it into the root zone for maximum control.

*DYLOX insecticide. This fast-acting selective insecticide gives quick cleanup of sod webworms. Dissolves readily in water for application with any type of spray equipment.

*BAYGON insecticide. This carbamate controls turf insects, including many species resistant to chlorinated hydrocarbon and organophosphate insecticides. May be used as directed on Bermuda, zoysia, rye, clover, colonial bentgrass and other common varieties.

For great turf that gives your golfers great shooting, order these Chemagro turf pesticides from your chemical distributor.

Chemagro Agricultural Division of Mobay Chemical Corporation, Box 4913, Kansas City, Missouri 64120.

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Chemagro RESPONSEability to you and nature
JOHN DEERE MAKES TRACTORS FOR JOBS OF ALL SIZES.
BECAUSE YOU CAN MAKE MONEY ON JOBS OF ALL SIZES.

There's no such thing as a tractor that's right for any size job. If it's big enough for golf course maintenance, it's probably too big for most residential work.

That's why John Deere Tractors come in a wide range of sizes. So you can have John Deere performance and dependability going for you on any job.

Take the new John Deere 2040. It has a 40*-hp diesel engine, 8-speed constant-mesh transmission, and plenty of hydraulic power to handle any attachment you might need. Including a 6-foot, center-mounted rotary mower. The 2040 was designed to do the big jobs faster and easier.

For work that doesn't require a tractor as big as the 2040, there's the hydrostatic-drive John Deere 400. It's powered by a twin-cylinder, 19.9-hp engine. And there's a 5-foot, center-mounted rotary mower that's designed to match the 400.

To do small jobs economically and efficiently, John Deere offers you the 200 Series lawn and garden tractors. You can choose from 8-, 10-, 12-, and 14-hp models, all with variable-speed drive to change ground speed without stopping or shifting gears. Rotary mowers are available in either 38- or 46-inch widths.

With any size John Deere Tractor, you also get the John Deere tradition of expert service, parts availability and flexible financing.

For any job that comes along —big, small or in-between—John Deere has a way to do it. Profitably.

*Maximum PTO horsepower measured at 2,500 engine rpm (factory observed).

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NOW—You Can Have Large Beautiful Trees In A Paved Area...

Revolutionary NEW W.A.N.E. Tree System Makes It Possible!

As you are reading this, thousands of trees surrounded by paving are slowly dying of malnutrition. Big beautiful trees that can be saved by using the W.A.N.E. tree system.

It costs much less to save trees surrounded by paving than to remove the trees within months after the paving project is completed. The W.A.N.E. tree system works! This system provides permanent feeding and watering stations for trees surrounded by paving. It provides a Water, Air, Nutrition Exchange for roots below the surface and stops root extension and protrusion through the paving.

The W.A.N.E. unit is made of PVC plastic, 13” in length, 4” in diameter, with a 6” collar. The surface of the unit is skid resistant and the lid locks firmly in place to make it theft proof.

Once installed, the W.A.N.E. unit provides a natural way for rainfall to get to the tree roots. Concentrated fertilizer pellets in the filter of the unit will last up to one year. The filter is an easy-to-remove heavy duty plastic screen which can be cleaned yearly as you replace the fertilizer pellets. (Note: All types of soluble or concentrated fertilizers or soil conditioners can be used through the unit.)

The W.A.N.E. unit has been purchased for use in the Capitol Mall, Washington, D.C. for the bicentennial celebration. It is in use today in many major cities throughout the U.S.

SPECIAL OFFER: Please accept our introductory offer of one W.A.N.E. unit for only $14.95! Includes information and specifications for its use.

Send for the W.A.N.E. Tree Unit today! Try it yourself!

Please send us:

☐ Free brochure with added information.
☐ One W.A.N.E. unit for only $14.95. ☐ Check enclosed

Name ____________________________

Address ____________________________

City ____________________________ State __________ Zip __________

Signature ____________________________

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JANUARY 1976

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den beetle and masked and rose chafer constitute the white grubs. “These C-shaped white larvae remain as little as 10 months or as long as three years in the soil,” he said. “They burrow in the soil around the roots and feed there about an inch or two below the soil surface. Irregular brown patches in the turf, presence of moles and large numbers of birds feeding in the sod are good indications of an infestation of grubs.”

Wireworms are primarily yellowish to dark brown, smooth and slender. They bore into the underground parts of the stems and feed on roots causing the grass to wither and die. Mole crickets are light brown in color and are adapted for digging. The stout and shovel-like forelegs allow them to dig rapidly. Beside feeding on the roots, their injury is twofold — burrowing of the soil uproots seedlings and the soil dries out faster. A single cricket can damage several yards of newly seeded lawn in a single night.

Pollet said ground pearls are scale insects which secrete a white waxy sac about their bodies giving them the appearance of small pearls. These pests cause irregular dead patches in the turf and are very difficult to control. Billbug larvae are similar to white grubs, but are legless and the adults are weevils or snout beetles. “The weevils lay eggs in the stems of grasses and the grub bores or feeds in the grass stems,” he said. “Small dead patches of grass easily lifted from the soil is usually observed in late summer. The dead stems contain a sawdust-like material from the boring of the grub.”

He said insect pests which feed on the leaves and stems of grasses include sod webworms, cutworms and armyworms. All are caterpillars of small moths.

Sod webworms are small grayish or whitish moths which rest during the day and fly about at night over the lawn with the females scattering eggs. The caterpillars or worms which hatch feed only at night and live in a silken tunnel in the soil during the day. They feed, line and reinforce the tunnel walls with small pieces of blades of grass. Infested

(continued on page 32)
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ANYONE who has attended industry shows for a number of years has their favorites. And at the top of most lists is a regional turfgrass meeting that consistently draws over a thousand people; all interested in promoting the Midwest turfgrass industry. Once again the Ohio Turfgrass Conference and Show reached an all-time high attendance for both the equipment exhibits and educational portions of the show.

Some 1,170 turfgrass managers, golf course superintendents, contract applicators, and commercial representatives filed into the Cincinnati Convention and Exposition Center to witness one of the largest and most comprehensive equipment and supply displays ever assembled at the Ohio show. But the show is much more than a buyers and sellers market.

"We try to assemble a complete educational program, drawing experts from Ohio as well as many speakers from outside the state," said John Laake, in-coming president of the Ohio Turfgrass Foundation and superintendent of Crest Hills Country Club, Cincinnati, Ohio. Each year the Ohio Turfgrass Foundation attempts to provide the latest in management techniques and research information. "The people attending this conference vary greatly in work experience and educational background," said Laake. "Our goal is to provide a well-rounded program that contains information for both the novice turfgrass manager as well as the pro."

Dr. Fred Ledeboer, director of research, Loft's Pedigreed Seed, summed up the theme of the conference saying that the modern turfgrass manager must gear his management practices to the needs and requirements of his particular turf. Also included in his talk on evaluation and recommendations of Kentucky bluegrass and perennial rye grass, Ledeboer stressed the correct
selection of turf types for acceptable cut and appearance. "Some of the new fine-leafed ryegrass varieties when used in mixtures provide tremendous competition for weeds," he said. "This allows the grass to attain sufficient maturity so herbicides may be applied to control the new and existing weeds."

Ledeboer also presented arguments for blending a particular turf species pointing out that a blend can bridge stress periods commonly found in most single varieties. "However, in a seeding mixture that contains both bluegrass and ryegrass, the percentage of ryegrass should not exceed 20 percent by weight," he added.

Continuing on with selection of turf types Lee Record, mid-continent director, USGA, discussed the cool season bentgrasses. "The four categories of bentgrass commonly used are Red Top, Creeping, Colonial, and Velvet," he said. He traced the origin of bentgrass from Europe to the East coast. Record also recommended the Creeping varieties as the most practical bentgrasses adding that the other varieties also have places in other uses such as fairway mixtures. "For the best playing surface and the healthiest plants keep the bentgrass dry, firm, and hungry," he added.

Dr. James Watson, vice president, the Toro Co., evaluated the total turfgrass management picture by examining the financial and managerial aspects of equipment selection. "It all boils down to people and machines," he said. "Seventy percent of the total budget on a turf area is consumed by labor, so it behoves us to purchase equipment that allows increased use and is the proper unit for the job." Watson stated that the reel type mower is more efficient and requires less fuel per acre of grass cut than a rotary or flail. "The number of blades also affects the quality of cut and the amount of fuel consumption," he added.

Depending on the financial structure of your particular organization, Watson said, leasing equipment may be the best alternative to an outright purchase. But however you obtain your equipment and whatever equipment you use there
are a few rules that should be followed for the most efficient operation. Watson suggests that the engine should be operated at 75-80 percent of peak; don't use alternate fuels; avoid idling; train operators for efficient use; obtain the services of a knowledgeable mechanic; and plan your next purchase on need not impulse.

The second day of the conference opened with three split sessions. Attendees had the opportunity to attend sessions on Poa annua, general grounds, and cemetery grounds.

Dr. Charles Powell, Ohio State University, opened the general grounds session with a look at the total fungicide picture. "There's been a radical change in fungicides and insecticides in recent years," Powell said. "We no longer have general biocides, everything is now accomplished by a specific material for a specific problem." One of the most important considerations when applying fungicides is timing. And Powell suggests that knowledge of the particular disease is paramount when attempting to control it. "The first line of defense against any disease should be the use of disease-resistant varieties, the second line of defense is good maintenance practices, and the last alternative is chemical control," said Powell.

Timing is important when applying fungicides. And it is equally important in the control of crabgrass and annual grass. Dr. Robert Miller, Chem-Lawn Corp., reinforced Powell's know-all-you-can principals by saying: "When using a pre-emergent herbicide for the control of crabgrass, timing of application is critical." Second to timing, is the type of herbicide used, rate of application, and lastly its likelihood of injury to bluegrass.

Also from the Chem-Lawn Corporation was Dr. Robert Partyka. He spoke on the frequency of pesticide injury to non-target plants. "The tendency is to think that if a little chemical gives so much control than a lot of chemical will give more control," he said. "That's one principal that doesn't hold true when applying chemicals." Partyka discussed a wide range of topics including typical damage symptoms caused by phenoxy-herbicides, use of soil sterilants and the damage that can occur when the drainage pattern of the area is not known. When the wrong chemical is applied to a plant and death or distortion results, residue work must be performed to determine what chemical was applied.

"Residue work is expensive to perform but it may be necessary if the property owner is demanding payment for damages to his plants," Partyka added. And Partyka, like the two speakers before him, stressed the importance of knowing the basic requirements of a plant.

New fertilizer products currently receiving considerable market attention are IBDU and Urea Formaldehyde (UF). Dr. James Wilkinson, Ohio State University, reviewed his current tests using both types of fertilizer. Wilkinson compared and contrasted the two products using spring green-up and maintained summer quality as limiting factors. "The best IBDU tests were achieved with a spring and fall application," he added. "This combination gave good spring green-up and the turf stayed green throughout the summer." UF releases nitrogen by temperature-controlled microorganisms breaking down the particles, he said, resulting in a faster spring green-up than IBDU.

The Wednesday afternoon program was a two-way split of basic turfgrass management and a general session featuring three governmental regulation topics; FIFRA, OSHA, and pesticide labels, and a presentation on employee motivation.

University of Cincinnati's Dr. Samuel Mantel said a basic rule in employee relations is not to promise rewards to employees that you are not absolutely certain you can deliver. All of us have a hierarchy of needs, he added. Lower level needs must be satisfied before higher level needs can be fulfilled. "The unsatisfied need motivates a person to fulfill that need," he said.

New officers for 1976 are: John Laake, president, Crest Hills Country Club; Lou Greco, president-elect, Squaw Creek Country Club; John Fitzgerald, vice president, Century Toro; Merrill Frank, treasurer, Brookside Country Club; and Paul Mechling, immediate past president, Sylvania Country Club.


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JANUARY 1976
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THE TURFGRASS manager is facing a technical revolution. As a professional he realizes that turfgrass culture is becoming less an art, and more and more a science. Today, turfgrass publications are scientific; students major in turfgrass science. The future will, perhaps very shortly, see our generally agrarian occupations change into ones of a hardcore, complex scientific nature.

Many changes seem to be eminent in the turfgrass professional's future. One can foresee computer systems that will assist or control management programs. It is conceivable that a central system, located at a major university, will provide satellite systems with directions for maintenance and establishment, the correct time to mow, when and what pesticides to apply, etc.

The difficulties that the professional faces in striving to produce a perfect turf cannot be over-emphasized. Aspects of an ideal turf, such as; pure and pest-free stands, a uniform appearing turf, and continuous optimum growth are not natural. Achieving such ideals demands that the turf professional have an in-depth understanding of the cultural system and how to manipulate it.

In the past, both people and turf, primarily because of an agrarian society, were located on good land. And, many old turf areas are still excellent and easy to maintain because the soils were not inverted nor denuded during construction.

Recently much attention has been devoted to devising ways to improve the physical quality of soils for turf. Most of the research with artificial media has led to rather consistent recommendations: use a high percentage of quality sand. U.S.G.A. and Purr-Wick greens, and PAT fields are primarily sand media. The advantages of a porous media with rapid drainage and good aeration are quite evident, and may leave few alternatives on the media to use in constructing heavy use athletic turf areas. Such artificial systems are not expected to solve all turf problems. Such systems can dramatically increase the turf professional's control of the environment; however, to take full advantage of the system he must understand it and manipulate it to full advantage.

In the future more attention will be given to the preservation of existing good soils. Stringent laws will be passed to preserve and protect our valuable soils, and buildings and turf will continue to be relegated to lower and lower quality land. These trends will necessitate more in-depth research on turf soils, and the use of the more sterile soils will call for increased knowledge and more manipulation by the turf professional. As in the past, a dependence will need to be placed on a rather inexhaustible organic matter supply to improve soil quality.

In the future significant improvements will be made in conventional methods of topdressing and cultivating the soil below the turf surface. And, complex chemical and physical developments will make it possible to turn poor soils into those quite desirable for turfgrass production.

Early turfs were primarily a mixture of several perennial grasses and forbs. Mixtures of cool season grasses continued as a mainstay of the industry until recently. Recent trends have been toward the use of only one kind of grass for turfing areas. Today, warm season grasses are established primarily as single varieties. Whereas, blends of two or more varieties of the cool season grasses, especially of Kentucky bluegrass, are in vogue.

The current deluge of turf varieties seems to have caused undue concern in the turf industry. After all, turf is the most widely grown crop in the country with Kentucky bluegrass, bentgrass and bermudagrass all grown under an extremely wide range of conditions. Many other important agronomic crops have a multitude of varieties, and these have been successfully handled for years. Today, as in the past, there is little effort to regionalize the use of varieties according to their best adaptability, or to adapt turf varieties to adverse environmental situations. True, the wide choice of varieties requires that the turfgrass professional keep abreast of variety development, performance and availability.

Early literature suggested turfgrasses such as redtop, crested dog-tail and Wood meadowgrass, none of which are hardly considered for use today. And, in those days grasses such as tall fescue and bahia grass were not suggested nor available for turf use. Future work on the development of outstanding turfgrasses will continue at a rapid pace, and today's varieties, which would have been considered near perfect a generation ago, will be phased out.

In the immediate future major input will continue toward the development of turfgrasses that have outstanding qualities such as high densities, high levels of disease resistance, and a low growth habit. Drought and salt tolerance, resistance to wear and pollution, and the ability of grasses to remain green under cold conditions will become more important considerations. In addition to the development and introduction of grasses for the South, the arid West and the extreme North, one might foresee the use of bentsgrasses with extensive rhizome systems, and turfgrasses with a wide range of color.

Present and future turf quality is often dictated by practices implemented at the time of establishment. The importance of an ability to properly water turfgrass during establishment cannot be overstressed. In cool, humid regions the preferred time to seed has long been late summer or early fall; however, in the past an inability to properly irrigate and natural spring precipitation often caused seeding to be done in the spring. In the not-too-

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distant past factors that often contributed to establishment difficulties were poor seed and seeding equipment, non-use of starter fertilizers, and lack of pesticides to use at the time of establishment.

Presently, there seems to be little research and industrial development directed toward the improvement of establishment techniques. Today, starter and post-establishment fertilization and pest control, seed and vegetative material quality and handling are continuously stressed. But, too often these and other important establishment factors are afterthoughts, and they are not plugged into turf management systems.

Significant and rapid developments in turf propagation procedures seem less likely than for improvements in maintenance. Answers to basic and current questions, such as what are the best seeding (or sprigging) rates for various conditions for the most rapid development of a mature sod or usable turf, need to be more precisely worked out. Once the best depth and placement for various plantings are known, equipment will need to be developed to do the job. Development and selection of varieties that germinate and establish rapidly should become added performance criteria for new turfgrasses. Pre-plant treatment of seed to speed germination and enhance seedling vigor should become common practice. Also, even more sod will be used and development of more efficient sod laying and handling techniques are eminent.

As the demands for better quality turf have evolved, more and more effort has gone into maintenance. These demands have caused the development of sophisticated turf maintenance equipment, and practices such as vertical mowing, aerification, etc. All of which are included in virtually every maintenance program. Recent work by Dr. John Madison and others in California has combined several turfgrass maintenance practices. The procedure is essentially one of making frequent, light topdressing applications of sand (less than 1.0 mm), with seed, fertilizer (and when appropriate, an insecticide and/or fungicide) to golf greens. And as we move ahead, this technique and others like it may become deeply instilled into turf maintenance programs.

In recent years tremendous strides have been made in developing turf irrigation equipment. In part, these advancements have resulted from the demands for the ultimate in turf. Also, the turfgrass economy has generally been quite good, and unlike many other segments of agriculture, results were of primary consideration and costs were secondary.

Today, there seems to be an adequate choice of sprinkler equipment. And sub-irrigation (or at least partial sub-irrigation) is being utilized only to a limited extent. However, there are currently several problems that must be faced. Principal among these seems to be a general shortage of water. Also, the use of poor quality ground and surface water, and effluent water presents
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problems that need to be handled with care (constant monitoring of soil and water, etc.). In the future, in arid and semi-arid regions of the U.S., because of the influx of people and water required to develop natural resources, water used for turf will need to be justified, and little will be used on roadsides, golf course roughs, etc.

An increased use of drip irrigation for turf and the development and use of drought tolerant grasses are in the offing. Every turf manager, regardless of his location, will become more aware of the problems associated with water.

Since man first began using sheep to keep a short turf, there have been many methods employed to mow grass. Reel mowers and their continued refinement, and the relatively recent development and heavy use of rotary mowers have revolutionized the industry.

Current mowing practices have been a result of the kind of equipment available, the demands of the people, and the kind of grass grown. Several turfgrasses used in the past and at present are poorly adapted to current mowing practices. The ability of the new turfgrasses to tolerate current mowing practices has been an important consideration in determining whether or not they will be introduced. Many of the recently introduced turfgrasses may make it possible to change a mowing program. Some of these grasses, depending on your needs, may produce a satisfactory turf with less frequent or even only an occasional mowing.

Mowing equipment will continue to be refined. Larger and larger air cushioned mowers, devices that cut via wave emission, and the availability of more and more sophisticated growth retardants could greatly affect equipment and mowing procedures of the future.

Early turf fertility programs often relied upon the use of compost, manure and leachate from manure to supply nitrogen to the turf. And, the use of sewage sludge has been successfully employed for years. While more recently the ready availability of inexpensive manufactured inorganic and urea fertilizers greatly changed turfgrass management practices. For several years there seems to have been too little attention paid to developing comprehensive fertilization programs, and poor fertilization procedures (too much, imbalances, etc.) may have been more of a problem than was realized at the time.

The synthetic organic fertilizers, such as IBDU and urea-forms have offered effective means of providing slowly available nitrogen for plant growth. Another recent means of controlling nutrient availability has centered around coating fertilizer prills. The coating will allow nutrients to slowly ooze into the root zone where they are available for plant use.

Some recent fertilizer program changes have been influenced by the availability of more efficient applicators. Recently more effort has been given to controlling nutrient availability of soluble materials by making frequent fertilizer applications at light rates. Thus, a more constant growth rate, and the benefits derived from this, have been achieved.

There is a serious need for research that will lead to a better understanding of the nutritional needs of various turfgrasses and to the development of more refined fertility programs. In the past fertilizers were applied primarily to green and thicken the turf. However, recent research and observations are pointing more and more to some rather subtle turf responses effected by fertilizer practices. The effects of various nutrients on factors such as winter hardiness, disease susceptibility and mowing quality, etc. will become more important in developing future fertility programs.

In the future high priority will be given to the selection of grasses that will do well at low soil fertility levels. Development of varieties for specific regions could make it possible to greatly reduce or eliminate the need to apply specific nutrients. For example, the need for application of iron-containing fertilizers on turfgrass grown on the alkaline soils of the West might be greatly reduced or eliminated.

The future for the development and utilization of fertilizers designed specifically for turf use is bright. In the near future, if turf is tending to grow too rapidly, it may be possible to "turn it off" by applying a chemi-

(continued on page 34)
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JANUARY 1976

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areas usually turn brown and enlarge rapidly if uncontrolled. The worms may be found by separating dry sod.

Armyworms are named because of their habits, Pollet said. They move across the lawn or turf in large numbers and eat everything. The two common armyworms are the fall and true armyworms, both of which can do serious damage to turf. Infestations noted early may appear as a small webbed area in the turf. As they develop the turf may be eaten to the soil.

Cutworms are another of the night feeding caterpillars. “They cut off and eat blades of grass, some species cut off plants near the soil line,” Pollet said. “They usually burrow into the soil during the day leaving small holes in the turf around areas where they have fed. When found or disturbed, they curl up and play possum as a defense mechanism.”

The most varied group of turf insect pests are those that suck the life from the grass. These include chinch bugs, aphids, leafhoppers, spittlebugs and scales.

Chinch bugs and aphids cause similar damage to turf leaving large circular patches of yellowing or dying grass. Chinch bugs feeding in the turf may cause extensive damage and never be observed. To determine if chinch bugs are causing damage, it is often necessary to flood them out of their feeding sites. Aphids may be found on the outer edge of the damage area, massed on the grass leaves. Aphid damage is usually more common in shaded areas, like under trees.

Leafhoppers cause a mottling of light and dark green areas where feeding has occurred. They usually appear in high numbers in turf and within a few days are gone. Control is usually unnecessary except where high numbers are feeding in newly seeded areas. This feeding can kill new stands of grass. Spittlebugs, although similar in structure to leafhoppers, are slightly larger and produce a frothy spittle about the nymphs as they feed on the plant sap. Infestation of turf by spittlebugs is easily recognized by these frothy masses. Although they appear to be causing injury to the lawn or turf, control is seldom necessary except to remove the unsightly masses.

Rhodesgrass scale attacks the crown of the grass plants, causing them to wither and die. High infestations can cause large dead areas and are very damaging on greens. Scales are hard to detect because of their ability to camouflage themselves and the fact that they are not very active on the crowns of the plants. Heavy infestations can be mistaken for over fertilization or caked fertilizer on the grass plants, particularly in the areas where the grass blades join the stems.

The final group of turf pests include those that burrow into the soil indirectly damaging the turf and other anthropods which may be considered nuisances. The former includes ants, bees, wasps and periodical cicadas.

“These insects live in the soil,” Pollet said. “The damage they cause is the result of them setting up housekeeping. Their digging and tunneling causes the soil to become soft, spongy and to dry out quickly.” The nuisance turf pest includes sowbugs, millipedes, centipedes, earwigs, cutworms, fleas, ticks, chiggers, thrips and spiders. Some of these cause no problem except for their occasional high populations. Fleas, ticks, chiggers and thrips can be a nuisance and a problem. Their bites can cause irritation, itching and rashes. Occasionally, fleas and ticks can be associated with the transmission of disease organisms.

Clemson University entomologist Professor D. K. Pollet said many turf pests are held in check by other insects. Predators and parasites may be found wherever pest populations occur. Endemic populations of bacteria and fungi are also effective in controlling or helping to control these pests. Where these natural controls cannot maintain the pests below damaging population, the following table shows the chemicals which have been found effective against these pests:

<table>
<thead>
<tr>
<th>Pest</th>
<th>Diazinon</th>
<th>Malathion</th>
<th>Sevin</th>
<th>Baygon</th>
<th>Proxol</th>
<th>Chlorone</th>
<th>Durban</th>
<th>Aspon</th>
<th>Dyoex</th>
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<td>White Grubs</td>
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Cut the cost of expensive horsepower and expensive manpower.

Bolens® HT-20 Tractor.
Jobs too small for big specialized equipment can add up to a punishing expense in manpower. Hauling, Mowing, Tilling, Grading, Loading, Trenching, Backfilling.
The intermediate size Bolens HT-20 Tractor can cut that expense by quickly adapting to over a dozen custom matched attachments including mower, tiller, bucket loader, backhoe, rakes, blades and brooms.
The foot operated hydrostatic transmission goes from forward to reverse without clutching or changing gears. Perfect for close-quarters work. Allows optimum power/speed combinations with hands free to operate hydraulics.
More than just a lawn and garden tractor, the HT-20 is powered by a 19.5 hp twin cylinder Kohler engine. The channeled steel frame, massive rear axle/differential and heavy duty front axle give a full day's work. Day after day.
Get more value from your big horsepower and expensive manpower. With the rugged HT-20, it fits right in-between. To save money on both ends.

Bolens Mulching Mowers.
They cut the grass and the workload. In one pass. When a Bolens Mulching Mower cuts the grass, it also cuts and recuts the clippings into tiny particles that are blown down into the turf. There, they disappear and quickly decompose. No clippings. No clean-up. No thatch build-up. The fine mulch actually feeds the turf while the crew moves on to other jobs.*
3, 4 and 5 hp models are specially built for commercial and institutional use. Straight-thru steel axles, rugged all-steel deck, tough one-piece handle and positive cutting height adjustment. Bolens Mulching Mowers. Tough, economical answers to your continuing turf maintenance program.
*For a free copy of a University study on nitrogen return, contact FMC Corporation, Port Washington, Wisconsin 53074.

See the complete line of Bolens commercial power equipment at your nearest dealer. For his name and address, call 800-447-4700 toll-free anytime (in Illinois, call 800-322-4400). FMC Corporation, Port Washington, Wis. 53074.
In the future legumes such as improved white and strawberry clover, because of their nitrogen fixing abilities, may again become widely used for turf. More and more attention will be given to the use of organic wastes as nutrient sources. And, fertilizer use will be well planned, with major consideration given to long term effects, and not just to tomorrow.

Highly selective chemicals are now available for the control of virtually any turf pest problem. Only a few years ago there was no satisfactory selective chemical control for annual grasses in new seedings of Kentucky bluegrass, nor Pythium blight in bentgrass. Today, however, because of available pesticides, grasses are grown well beyond their accepted range of a few years ago.

The effects that certain pesticides may have on the turfgrass system have been and are currently under investigation. Research findings to date indicate that certain pesticides may materially reduce root systems, increase thatch, etc. Also, research and observations have indicated a wide variability in varietal tolerance to specific herbicides and to fungicide-resistant strains of fungi. Thus, future pesticides will be subjected to even more rigorous testing. And, the turf manager will be concerned with much more than immediate pesticide effects.

There will always be a need for better pesticides. However, the current availability of outstanding products will likely restrict efforts for and the introduction of new pesticides. For several years activated charcoal has been used to inactivate specific pesticides. Future significant developments in inactivation of pesticides would open a new era for pesticide use in turf management. Pesticides of the future are likely to become much more specific, and the turf manager will have to become more knowledgeable about pests and pesticides.

In the future pest problems will be greatly restricted through the introduction and use of improved varieties. The future turfgrasses will have combined resistance to most common insect and disease pests.

Turfgrass management practices are continually changing, and many factors will influence turfgrass management decisions. Successful management programs are developed through an in-depth understanding of the turfgrass system and its many complexities. The future of the turfgrass industry depends upon the professional's ability to supply and utilize technical information. The turfgrass manager's job is not going to get any easier.
Davey is ready to give you a "fifth season" head start on 1976 tree service.

The fifth season is "Davey Season." It's going on now, and it runs into the first budding of spring. Right now is the low-cost season for you to get needed tree work done promptly, efficiently, and a jump ahead of busy spring and summer months.

Our carefully trained crews are ready to put their knowledge, experience, and specialized equipment to work for you now. To prune deadwood, open up vistas, remove dangerous trees, and schedule new plantings. To grind stumps and clear away unwanted brush. And give you a head start on 1976.

We'll survey your tree needs, provide cost estimates, and set up a tree maintenance program for you with no obligation. And if you wish, we'll do what work is needed immediately to preserve the beauty and value of your trees, to ensure public safety, and to help you avoid emergencies and costly overtime later.

For estimates without obligation on fifth-season work, check the Yellow Pages for the Davey representative nearest you. He's fully equipped and ready to consult with you—or go to work for you right now.

DAVEY TREE
KENT, OHIO 44240
Coast to Coast and Canada
The Stately Elm Returns

Stately elm trees that once adorned America’s streets, parks and lawns in large numbers from the Great Plains to the Atlantic coast may be on their way to making a comeback. A hybrid, named “urban elm” will be available in limited supply in about three years. It is resistant to Dutch elm disease which has spread throughout the American elm’s natural range since the 1930s.

Scientists from the Shade Trees and Ornamental Plants Laboratory, Delaware, Ohio, developed urban elm from a cross between an elm from the Netherlands and a Siberian elm. The new tree is expected to grow to moderate size making it more suitable for urban planting than the American elm, according to plant pathologist Dr. Charles L. Wilson. Wilson told WEEDS, TREES & TURF that like the American elm, the new hybrid grows fast in various soil types, has dark green foliage, and is tolerant to drought, pollution, soil compaction and restricted root space.

In the fall, urban elm offers the promise of a striking appearance, because in locations where it is adapted, the tree retains its foliage and dark green color longer than other trees. The new hybrid has a profuse upright branching habit and its dense foliage produces a compact crown.

The team began developing urban elm in 1956, crossing parent trees to obtain seedlings that proved capable of withstanding inoculations of the fungus, Ceratocystis ulmi, which causes Dutch elm disease. Then came years of propagation and seasonal susceptibility trials in which plants grown from cuttings were inoculated with strains of fungi at various times of the year. For the past two years wholesale nurserymen have been testing the tree further for adaptability to various climatic conditions. An agreement has prescribed that the nurserymen propagate the elms in sufficient numbers to insure they will be available to other nurserymen before commercial trade begins. Plant scientists at the Delaware laboratory are developing more hybrid elms that may be released within a few years. About six different elm selections including two American elms have moderate to high resistance to Dutch elm disease, according to plant pathologist Dr. Lawrence R. Schreiber.

Plant geneticist Dr. Alden M. Townsend claims physical characteristics vary substantially among elms in the breeding program. Some could be made into shrubs. Others may grow from seed to heights of 15 feet within three years. A Chinese elm, with a deep red coloration, and a columnar shape elm have been developed. This tree might be used to replace Lombardi poplar which is susceptible to cankers.

Buyers, Selling Standards Suggested for Nurseries

A joint committee of selected representatives from the Wholesale Nursery Growers of America, National Landscape Association and Garden Centers of America has recently adopted operating standards of practice between buyers and sellers of nursery stock.

The standards, judged by the committee to be fair and ethical agreements between two parties, were developed to encourage greater cooperation between all phases of the nursery industry and to aid in achieving common industry goals.

The committee is presenting the standards to the industry as a suggestion. They are not intended to be binding upon any firm of persons, nor to constitute an agreement on the part of any member firm to adhere to the suggested standards.

For buyers:

• All buyers should specify the date order is expected to be delivered or picked up, with the understanding of a week’s tolerance, including circumstances of unusual weather conditions or crop failure. Then the seller should notify the buyer immediately upon becoming aware of his inability to comply with the above, at which time the two parties should determine substitutions or other alternate causes of action.

• The buyers of plant materials will be responsible for notifying seller of discrepancies in the order. This notification should be made within 10 days of receipt of the order and failure to do so will constitute acceptance of order as received.

• Length of time for payment of order will be determined by parties involved.

For sellers:

• All stock sent to the buyer shall be true to name as ordered to the best of seller’s knowledge; except that a buyer may be notified of necessary substitutions upon seller’s acceptance of order a month prior to shipping date requested.

• All stock shipped, or delivered, shall be of the size, grade, quality and quantity specified in the order unless buyers are advised of the unavailability of the exact item or items ordered and agree to accept a different size, grade or quality with proper price adjustments, when notified at time of ordering or a month before shipping date.

Exceptions are unforeseen circumstances and/or acts of God within the 30-day notification period. Minimum ball size will be that set forth in the most current issue of the American Standards for Nursery Stock.

• All stock sent to buyer will be correctly labeled or adequately identified to the best of the seller’s knowledge. All labeling will be agreed on by buyer and seller at the time of purchase.

• Sellers, upon request, will provide information to buyer on plant material which requires special care to maintain saleable quality.

• Payment of shipping charges accrued through errors in orders should be determined by the parties involved. Errors as to kind, quantity and quality of plant material tagged by buyers in the field should be assumed by the buyers.

Sellers should assume responsibility for shipping and reasonable handling charges accrued as a result of errors in the shipment by the seller, which includes substitution of kind and/or quality of plant material ordered without prior notification and agreement by the buyer.
GCSAA Set for Minneapolis

Back in 1936, superintendents belonged to what was called the National Association of Greenkeepers of America.

The annual show and conference was held in Cleveland that year — it had about 40 exhibitors and over 400 attendees including visitors. But some things have not changed much. In the magazine of the association one of the editors expressed concern that only 150 members of the association bothered to attend the conference at all.

Golf courses. Many firms will introduce additions to their product lines. The show is held in conjunction with the GCSAA's week-long educational conference, which this year will offer more than 45 hours of educational programs, featuring 65 speakers.

Four preconference seminars will also be offered this year, beginning Feb. 7. The two-day courses, specifically designed for golf course superintendents, will cover landscape design, personnel management, pesticide usage and turf nutrition.

"Bad Green Syndrome" Cause Cited

It seems every golf course has a bad green that has to have custom care. Causes of the loss of greens are complex and can seldom be ascribed to a single factor. However, the most frequent factor that predisposes a green to death is poor construction, according to University of Maryland turf specialist John R. Hall.

The loss of a green can often be ascribed to disease, scaled or drying out, but these are only the harbingers of death that strike when the stage has been set and more often than not, the necessary conditions are created by improper golf green construction," Hall said.

Hall said the bad green always exhibits high bulk density, heat conductivity and mechanical resistance to root penetration. It is the green that retains more moisture than is necessary and has low air porosity, slow water infiltration and percolation rates. The solutions available to the golf course superintendent are: (1) reconstruct the green removing the existing topsoil; (2) attempt gradual soil modification in conjunction with management practices such as aerification and topdressing; (3) radically modify the existing soil by incorporating massive amounts of soil amendments; (4) keep nursing the bad green. "The last alternative puts the superintendent into the 'bad green syndrome,'" Hall said.

Hall said if the choice is to reconstruct the green that United States Golf Association Green Section specifications should be obtained and used. He also said Texas A & M provides a soil testing service to find out what combinations meet USGA specifications.

Gradual soil modification in conjunction with aeration and topdressing is most often the first approach to improving a bad green. This approach involves frequent aeration with large-diameter tines to as great a depth as possible. The cores must be removed from the green and then topdressing is applied and dragged into the holes. This procedure would have to be repeated several times over several years to achieve extensive soil modification.

Radical soil modification is an alternative that would involve trying to modify the existing soil structure and texture by incorporating the amendment into the existing soil with plows and discs. This procedure obviously takes the green out of play for about four months. In situations where the existing bentgrass is good it should be removed as sod before soil modification and replaced after the amendments have been incorporated. This considerably reduces the time the green is out of play.

Several amendments are available. The type of amendment selected should depend on what corrective result is desired. If improved soil permeability is desired, sand and calcined clay have been shown to be very effective.

If increased water retention is desired, amendments such as soil, peat and calcined clay will be needed. The amounts of any of these amendments needed to achieve a given level of water permeability or water retention is difficult to determine but this service can be provided if the existing soil and amendments are sent to a laboratory, Hall said. Massive additions are generally required. If a superintendent is attempting to modify a clay soil, it is likely that 85 to 90 percent sand will be needed to achieve adequate modification.
Pine Needle Scale Control Covered with Supracide

"Supracide 2E" has received label acceptance from the federal Environmental Protection Agency for control of pine needle scale on Scotch, Mugho and red pines in the northeast section of the United States.

Supracide is Ciba-Geigy Corp. methidathion insecticide-miticide that controls certain insects of alfalfa, cotton, tobacco, grapefruit, lemons, oranges and nursery stock.

For pine needle scale control, application should be made once a season after scale crawlers have hatched in early spring for spring-generation crawlers or in summer for second-generation summer crawlers.

The summer spray will also control pine tortoise scale.

Whose Responsibility Is It To Enforce Course Rules?
Are common-sense rules on the golf course made to be broken? Unfortunately for many superintendents, this is the case.

“What’s the use?” one superintendent told Gerry Finn, contributing editor of the newsletter of the Golf Course Superintendents Association of New England. “I take time and money to see that rules signs are made up and set up in certain spots on the course. So, what happens? Some member in a cart knocks one down. Another sees that it is in the way of his swing. So, he pulls it up and tosses it into the woods. That’s why I don’t bother with the rules signs anymore.”

Many superintendents feel the same old golf car rules are being ignored. Most flagrant of these are driving too close to the green, driving over and through tees, straying off the golf car path and making spinout turns. The same goes for ball marks not being repaired in many cases. Add to this the inconsiderate member who takes target practice on par three holes and the problem becomes compounded, Finn writes. But who should enforce the rules?

One counter to those breaking golf and course rules would be a combination of the superintendent and the professional. Since the pro has the opportunity to “socialize” with members in the form of playing a round or two together, perhaps he might be better-versed in reporting violations. And the superintendent in his daily inspection tours could supplement this with reports of his own.

Another superintendent suggested, “I think that the grounds and green committee should be those responsible for enforcing the rules. It is something else for a member to be reminded of rules by the pro or superintendent. He could resent it. It must be his peers who do the enforcing.”

Japanese Beetle Parasite Found In Northeast U.S.

A new nematode parasite of the Japanese beetle has been discovered in the northeastern United States. The parasite is being studied as another possible natural method to control the insect.

How to “bank” or transplant trees more profitably

The answer is simple... Vermeer Tree Spades. Ask anyone who owns a Vermeer, and he’ll probably tell you he bought it for two reasons. First, because of the tremendous demand for “instant shade”. More and more nurseries, landscapers, tree farms and developers are using Vermeer machines to fill orders on large trees, or to “bank ‘em” for peak demands. Secondly, since Vermeer Tree Spades require less labor, you actually save money. With any of five, patented Vermeer models, you can “bank” or transplant trees up to 6” in diameter in minutes. Hydraulically-operated steel “spades” do all the work gently and neatly. Find out why more trees are transplanted by Vermeer Tree Spades than all other machines combined. Write, or better yet, call “The Diggin’ Dutchman” for complete information and a FREE demonstration. There’s a Vermeer machine to fit your operation.

Japanese Beetle Parasite Found In Northeast U.S.

A new nematode parasite of the Japanese beetle has been discovered in the northeastern United States. The parasite is being studied as another possible natural method to control the insect.
M. G. Klein, entomologist at the Agriculture Department's Japanese Beetle Research Laboratory at the Ohio Agricultural Research and Development Center says that Japanese beetle grubs parasitized with this nematode or mermithid (a cylindrical parasite worm) were collected from areas in New York and Vermont.

Identification of the nematode was made by William R. Nickle, nematologist at the Agriculture Department's Beltsville, Md., Agriculture Research Center. Nickle says this worm was previously not known to occur in North America and was thought to be native only to the Soviet Union.

Apparently, Japanese beetle larvae become infected by the mermithids in late summer. Klein told WEEDS TREES & TURF that mermithids emerged in March from larvae collected in October and held in cold storage until January. Parasites emerged in mid-May from larvae collected in April.

The thread-like mermithids, about nine inches long, could be observed coiled inside the collected larvae. At the time of emergence, individual Japanese beetle grubs showed little sign of life except for feeble movement of the mouthparts. A single mermithid normally emerged from each grub, although as many as three parasites were recovered from one host. Most of the host larvae had completed their third moult when the mermithids emerged. Klein says the discovery of this parasitic worm may prove to be an important biological control of populations of Japanese beetle grubs in the northeast.

Tree Protection Needed Before Heavy Snows Fall

Waiting until heavy snow or ice has damaged landscape plants before trying to save them is like closing the barn door after the horse is out, according to Harold Davidson, Michigan State University horticulturist.

"Preventing damage to ornamentals is likely to be much more successful than a salvage effort after the damage is done," Davidson told WEEDS TREES & TURF. He said remove dead, diseased or weak branches from trees. These are likely to break and fall when loaded with ice. Pay particular attention to limbs overhanging utility lines, buildings or parking areas. These branches should be removed by a trained arborist.

Much of the potential for injury can be eliminated by pruning young trees to take out sharp V-shaped crotches. A broad U-shaped or angle crotch is much stronger, he said. Propping up willows and birches and other flexible trees to keep ice from bowing them down may do more harm than good, he said. The trees tend to bend over and break off at the support point. Injuries to trees can sometime be repaired, depending on the severity of the injury and the importance of the plant.

If ice causes a tree branch to split off but a substantial amount of wood and bark still connects the branch to the tree, quick action may save it.

Now! A nylon cord weed trimmer that converts to six different tools!

Meet the Green Machine—the heavy-duty nylon cord weed and grass trimmer made for professionals. It zips through heavy grass and weeds like no other cutter. Nylon filaments spinning at over 5000 rpm cut neat swaths in seconds, even into nooks and crannies. And—here's news—the Green Machine's rugged 22.5cc gas engine can be used with five optional attachments...

BRUSH CUTTER
Tackle tough brush and ground cover with this Green Machine brush-blade attachment. Cut vines up to ½" in diameter—do it effortlessly!

TREE PRUNER
Trim, thin or prune with ease! Zip through saplings up to 2" in diameter. Cut in any position, even overhead—and do it safely—with the Green Machine saw-blade attachment.

HEDGE TRIMMER
The Green Machine converts in seconds to a husky 30" hedge trimmer. High performance blades cut stems to 1" diameter, yet sculpts hedges precisely.

TWO SPEED DRILL/AUGER
Drill holes 1" to 6" in diameter for tree fertilization, post holes, whatever. Save on costly rentals. Converts in moments to a powerful wood, steel or concrete drill!

SEE THE GREEN MACHINE NOW!
The Green Machine can be bought in any combination of engine and accessories. See them at your dealer or write for our fact-filled brochure.

HMC, Inc., 22133 S. Vermont, Torrance, California 90502

Circle 129 on free information card
NEWS (from page 39)

Balan Application Easier With New Formulation

Indiana golf course superintendents and distributors to the turf industry gathered recently at the Country Club of Indianapolis to get a first-hand look at Elanco Products Co.’s new formulation of Balan 2.5G for turf.

The new formulation’s larger, coarser granule results in several advantages to the user, officials of the Indianapolis company told WEEDS TREES & TURF. Since the larger granule moves more readily through rotary spreaders, the application is easier. At the field demonstration, it was observed it can be spread as conveniently as fertilizer with less dust and with less likelihood of drift.

The change in particle size does not affect the weed control results, company officials said. Tests indicate this new formulation effectively controls crabgrass, foxtail, goosegrass and Poa annua and is not affected by heavy rain or irrigation.

New Disease Control Unit Started by Forest Service

The Forest Service, U.S. Dept. of Agriculture, has established a new national team of forest insect and disease specialists to provide Forest Service administrative regions and areas with specialized assistance in survey technology aimed at assessing impacts on forest resources caused by destructive insects and diseases.

The new Methods Application Group (MAG), headquartered at Davis, Calif., will also provide help in the application of new and improved techniques and strategies for reducing insect and disease losses.

The MAG will operate on a national scale under the direction of the agency’s staff director or Forest and Disease Management in Washington, D.C.

Forest insect and disease-caused losses of forest resources have reached their highest levels ever during the last four years, a spokesman for the Forest Service told WEEDS TREES & TURF.

Outbreaks of the Douglas fir tussock moth, spruce budworm, southern pine and mountain pine bark beetles, gypsy moth and various diseases are making unprecedented assaults on forest resources.

The MAG will assist field units by strengthening survey efforts to reduce the time required in the detection of these outbreaks and to improve the reliability of insect and disease outbreak evaluations.

This will provide land managers with better information for control decisions.

As its first objective, the MAG will provide leadership and coordination in obtaining forest insect and disease impact information.

Research needs identified by the MAG will be promptly relayed to the appropriate research units.

The fringe fighter!

No grass cutting job is really complete until all the “fringy” edges are gone. Put the finishing touches on any size job with Goodall full-width cut, trimmer-edgers...the best ‘fringe fighters’ available. Unusually easy to handle. Designed for those “hard to get” places. Edger-guards of heavy-gauge steel, interchangeable and replaceable, prevent the blade from marking or chipping and direct grass away from monuments, shrubs, trees, fences and walls.

GOODALL LAWN-TURF EQUIPMENT IS DESIGNED AND BUILT TO DO THE JOB BETTER...LONGER!

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10 Week Winter Turfgrass Course, Cook College Campus, New Brunswick, New Jersey, Jan. 6-Mar. 13

Maryland Turfgrass Council, Landscape Maintenance Workshop, Interstate Inn, College Park, Md., Jan. 15.


Chemicals for Turfgrass Usage Seminar, Purdue University, West Lafayette, Indiana, Jan. 19-23.


Michigan State University Turfgrass Conference, Kellogg Center, East Lansing, Michigan, Jan. 21-22.

Ohio Chapter, International Society of Arboriculture and Ohio Nursery Association Short Course and Trade Show, Sheraton-Columbus Hotel, Columbus, Ohio, Jan. 25-29.

Southern Weed Science Society, 29th annual meeting, Statler Hilton, Dallas, Texas, Jan. 26-29.

One Week Winter Short Course, Turfgrass Management, West Tennessee Experiment Station, Jackson, Tenn., Jan. 26-30.

Associated Landscape Contractors of America, annual meeting and trade exhibit, Jan. 26-31.

Virginia Turfgrass Conference, Sheraton Motor Inn, Fredericksburg, Virginia, Jan. 28-29.


Connecticut Tree Protective Association, annual meeting, New Haven Plaza Hotel, Jan. 29.

Turf and Landscape Conference, annual meeting, Tappan Zee Inn, Nyack, N.Y., Feb. 4.


Golf Course Superintendent's Association of America, 47th international conference and show, Auditorium and Convention Hall, Minneapolis, Minn. Feb. 8-13.

Midwestern Chapter, International Society of Arboriculture, Sheraton-O'Hare Motor Hotel, Rosemont-Chicago, Ill., Feb. 10-12.


American Society of Consulting Arborists, 10th annual meeting, Vacation Village, San Diego, California, Feb. 12-14.

Canada Chapter, International Society of Arboriculture, Chateau Frontenac Hotel, Quebec City, Quebec, Feb. 12-14.


Wisconsin Arborist Association, annual convention, Midway Motor Lodge, LaCrosse, Wisconsin, Feb. 18-19.


Southern Chapter, International Society of Arboriculture, Myrtle Beach Hilton, Myrtle Beach, S. Carolina, Feb. 22-25.

Shade Tree Short Course, 19th annual, Scheman Continuing Education Center, Iowa State University, Ames, Iowa, Feb. 25-27.

Professional Turf and Plant Conference, eighth annual, Saisbury Club, Eisenhower Park, East Meadow, L.I., N.Y., Mar. 2.

Professional Turf and Landscape Conference, sixth annual, Ramada Inn, North Haven, Conn., Mar. 3.

Canadian Golf Superintendents Association, 27th Annual turfgrass show, Inn-on-the-Park, Toronto, Ontario, Mar. 8-10.

Northeastern Forest Pest Council, winter meeting, Copley Plaza Hotel, Boston, Mass., Mar. 10-11.

Pennsylvania Parks and Recreation Society, 29th annual meeting, Seven Springs Mountain Resort, Champion, Pa., Mar. 14-17.

Western Society of Weed Science, annual meeting, Sheraton-Portland Hotel, Portland, Oregon, Mar. 16-18.

American Society of Golf Course Architects, 30th annual meeting, Del Monte Lodge, Monterey, California, Mar. 21-26.

Arizona Turfgrass Council, 2nd annual Turfgrass Materials and Equipment Show, Veterans Memorial Coliseum, Phoenix, Arizona, April 14.

Southern California Turf and Landscape Institute, annual meeting, Royal Inn, Anaheim, California, Apr. 28-29.

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Toro Says Earnings Fell, But Market Share Boosted

Although Toro Co., earnings for the fourth quarter and fiscal 1975 fell short of fiscal 1974's records, the recession has helped the company boost its market share and it expects higher profit in fiscal 1976.

For all fiscal 1975, sales of the Minneapolis company were up about 15 percent from fiscal 1974's record $125 million, David T. McLaughlin, president, said. He added, however, that the gain was entirely due to inflation. In fiscal 1974, Toro's earnings rose 15 percent to $5.3 million, or $2.15 a share, on an 18 percent sales gain.

Study Shows $7,244 A Year Is Average Golf Hole Cost

It cost $467 more last year to maintain a golf hole than it did the year before, according to a national study just completed by Harris, Kerr, Forster & Co. The company surveyed maintenance costs at 100 clubs across the United States.

In a breakdown of the $7,244 that each green cost, the survey showed payroll and related costs amounted to $4,398 and all other expenses $2,306. This amounts to an overall cost of $130,392 for an 18-hole facility. For 1973, a similar study showed per hole costs of $6,777.

International Turf Report Published With 70 Papers

The second research conference of the International Turfgrass Society held in 1973 featured more than 80 presentations concerned with turfgrass culture and use throughout the world.

The bulk of these presentations are now available in "Proceedings of the Second International Turfgrass Research Conference," published recently by the American Society of Agronomy and the Crop Science Society of America. The book is available for $17 from the American Society of Agronomy, 677 S. Segoe Rd., Madison, Wis. 53711.

Bent Greens, Battery-Power Mowers Early In Chicago

The first power mower on a golf course was used at Chicago Golf Club in 1899. It was powered by electric batteries. Dave Foulis recalled the start of power mowing in recollections he wrote in 1941 and reprinted recently in the newsletter of the Midwest Golf Course Superintendents Association.

Dave had come to Chicago in 1896 to assist his brother Jim as pro-greenkeeper. Jim had arrived in 1895. Jim played in the first U.S. Open at Newport Golf Club, Rhode Island in 1895. He tied for third at 176 with S. W. Smith, a Toronto amateur. Jim won the second Open in 1896 at Shinnecock Hills Golf Club with 152.

Dave also recalled that Charles Blair MacDonald, the first USGA national amateur champion and architect of the Chicago Golf Club course, the nation's first 18-hole course, had the fairways sown with Kentucky bluegrass and one ton of redtop. That same year McDonald also imported bent seed from Holland for the greens.
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Pat Fitzsimons

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People on the Move

Dr. Carl M. Berntsen, appointed director of Timber
Management Research for the Forest Service, U. S.
Department of Agriculture. Berntsen was formerly
deputy director of the North Central Forest Experi-
ment station, with headquarters at St. Paul, Minn. He
succeeds Dr. Warren T. Doolittle, who was recently ap-
pointed Associate Deputy Chief for Research.

Margaret Herbst, named executive secretary for the
New York State Nurserymen's Association. Herbst is
also executive secretary for the New York State Arbor-
ist Assoc., New York State Association of Cemeteries,
and the Long Island Nurserymen's Assoc.

Ralph W. Spaulding, elected president of the Lawn &
Garden Distributors Association for 1975-76. The
association is composed of 175 distributors and
manufacturers of seeds, chemicals, fertilizer, soil and
accessories for the lawn and garden market nationwide.

Richard Gray, elected president of the Central Plains
Turfgrass Foundation. Gray is superintendent of Crest-
view Country Club, Wichita, Kansas. Herman Siler, of
Siler's Shade Acres Golf Course, Springfield, Mo.,
elected vice president, and Ray A. Keen, KSU professor
of horticulture, reappointed secretary and treasurer.
Newly elected foundation directors are Ross B. May,
Wichita Parks; Cary L. Tegtmeyer, Kansas City, Mo.,
parks and recreation; Blue Eastham, El Dorado Country
Club; and Gary C. Panter, Leawood South Golf Course.

Edmond S. Bauer, elected an executive vice president
and a member of the board of directors of Monsanto
Company. Bauer will have responsibility for Monsanto
Agricultural Products Company and Monsanto
Commercial Products Company.

David G. Percy, appointed advertising manager of agri-
cultural and outdoor power products for International
Harvester. This new assignment combines all of the
company's Agricultural Equipment Division's products
in a single advertising group. Also, Raul N. Gutierrez,
named media and traffic manager.

Harvey F. Polster, named manager of product planning
for the Simplicity Manufacturing Co. Division, Allis-
Chalmers Corp. Paul A. Brow, named manager of Lawn
and Garden Equipment for the Agricultural Sales and
Marketing Division. In related moves, James Retert,
appointed the manager of merchandising Lawn and
Garden Equipment. Also, Jacques F. Trevillyan, ap-
pointed president, Simplicity Manufacturing Com-
pany.
A new natural team, Glade Kentucky bluegrass and trees! Glade performs well in moderate shade, especially when mixed with fine fescues. A selection from Rutgers University (tested as P-29), Glade is an improved, low-growing, medium to dark green grass with fine leaf texture and thick, rapid-growing rhizome and root system. Glade has good resistance to important turfgrass diseases including powdery mildew.

Like boys and trees, Glade and shade go together. Mixed with other elite bluegrasses and fine fescues in moderate shade, Glade is a natural.

Get new Glade at local wholesale seed distributors.

Another fine product of Jacklin Seed Company
FLEXIBLE: Fuerst Brothers, Inc., says this new 3-point mounted frame fits either their Hercules or Peerless model harrows. It is also said to permit operation at higher speeds, provide better control and increase ease of transport. The harrow is attached to the frame so that full flexibility is retained and frame cannot ride on the ground. Circle 701 on free information card.

LIGHT: Here's a new portable industrial light "made by mechanics for mechanics" says Rimco Industries. According to the manufacturer, the unit features: infinite light position adjustment; three grounded 110-volt outlets on the stand to reduce the need for multiple extension cords; outlet box can be adjusted vertically on the stand and contains a switch controlling the light fixture. Constructed of heavy materials throughout, the unit uses UL approved components. These include a molded ground plug and a 25 ft. SJTW-A orange cord. A 150-watt heavy duty water resistant and protected incandescent fixture if standard, with fluorescent or other type lighting on request. Standard model specifications are: height: 60 in.; reach: 60 in.; weight: 27 lbs.; Cord: 25 ft. Circle 702 on free information card.

HIGH WHEELS: Sarlo Power Mowers, Inc., new high wheelers lower the resistance of the turf compared to small wheels. High wheels roll over holes small wheels fall into, says the manufacturer. Also they permit larger engine sizes without reduction of maneuverability. Circle 703 on free information card.

CLAY SPADE: This unit adapts to any tractor, portable hydraulic power source or other mobile equipment, claims Robinson Industries. Using optional tools, the unit becomes a light duty breaker, ground rod driver, a tamper and a chipper. Circle 704 on free information card.
It cuts grass with fishing line.

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MASK: This respirator mask from Mine Safety Appliances Co., features a Comfo II facepiece with a soft inturned lip construction for an efficient face seal, the company claims. Twin disposable combination chemical cartridges and particulate filters located on each side of the facepiece purify air breathed by the user. The pesticide mask is listed by the U.S. Department of Agriculture for protection against pesticides.

Circle 712 on free information card.

POWER PLANT: Allis-Chalmers has four new revolving field alternators, producing power in a stationary element which is conducted to outlets through solid connections. These units are used to provide electricity at the job site.

Circle 713 on free information card.

TRACTOR: This is Gravely's new Model 524, 8 HP, 4-speed, manual start tractor. The unit is powered by a Kohler K181, air cooled engine. The engine is designed to operate efficiently under all conditions and to deliver full-rated horsepower. All models feature Gravely all-gear and steel shaft drive from the engine to the attachment.

Circle 710 on free information card.

TRENCHER: Vermeer Manufacturing Co. has a new heavy-duty, rubber-tired trencher. According to the company, the M-475 offers a choice of two engines — both liquid-cooled power in the 192 Ford gas or 254 Ford diesel engine. The unit retains all of the heavy-duty construction and handling features of the M-470, including 15,000 lb. capacity, full floating Rockwell axles, hydraulic four-wheel brakes, power articulated steering and a heavy-duty electrically welded frame, says the manufacturer.

Circle 711 on free information card.
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WANTED, good tree spraying unit. P.O. Box 14198, Spokane, Wash. 99206. Phone 509 928-0410.
Chemical studies conducted at Wye College, London University, are leading researchers to discover many of nature’s own defensive chemicals. The tests were conducted by scientists who felt that many plant disease micro-organisms are developing resistance to commercial fungicides. Resistance, scientists say, can be caused by genetic change in the fungal cell which originate as mutations. At the Agricultural Research Council's unit at Wye, researchers are working on the premise that although growing plants are always exposed to a wide range of fungi, they are completely resistant to most of them. Many times resistance can be related to morphological characteristics. There is, however, evidence that natural disease resistance may be associated with protective chemicals within the plant cells.

One development came from scientists asking a simple question: “Why should roots growing in the soil always remain healthy?” After all, a living root is surrounded by millions of bacteria and fungi that inhabit the soil yet it is not attacked by them. If, however, the root were killed by dipping it into boiling water and then put back into the soil, the micro-organisms would soon destroy it. This led to a simple experiment in which pea and bean seedlings were grown with their roots in water. When the roots were extracted and examined, the antibiotics with antifungal properties were isolated and identified, indicating that the living root is able to survive in the hostile environment of the soil because it produces antibiotics to protect itself.

Philadelphia Association of Golf Course Superintendents celebrated their 50th anniversary recently. The event took place at the site of the original meeting; Whitemarsh Country Club. Honored guest for the evening was the only surviving member of the five founding fathers, Herbert F. Jewson and his wife Mary. The Greenskeepers Association of the Philadelphia Section held their first meeting on September 14, 1925.

University of Delaware’s Dr. William H. Mitchell, turf specialist, has one of the largest test plots we heard of — a nine hole three par playback course. The campus course looks like any conventional course, but beneath the neatly-trimmed turf, the ground is a maze of wires, pipes, tubes, drains, and soil types. Each green consists of eight separate soil mixtures, varying from sand and peat moss to the light sandy soils of lower Delaware and black soils high in organic matter.

Some of Mitchell’s objectives are to test out materials which could lower the cost of golf course construction, study subsurface irrigation methods which require less water and are less disruptive to play, identify superior kinds of grasses which tolerate divot removal and resist compaction, and develop ways to reduce maintenance costs. His underground system of drains on this course makes it possible to find out which chemical materials are leaching and which soil types hold the herbicides and fungicides the best.

What will the golf course of the future look like? The American Society of Golf Course Architects predict generally shorter courses designed for versatile maintenance equipment and created for the average golfer. The long, monster courses which have been so prevalent will give way to shorter courses measuring anywhere from 5,000 to 6,600 yards. With less length to challenge brute strength, golfers will need to devote more concentration to accuracy and strategy. Land availability is an obvious factor in the anticipated reduction of course acreage. Yet, in an architects survey, the most frequently cited reason for shorter courses was the average golfers’ ability. The soaring costs of building and maintaining a golf course further contribute to the shorter course outlook. Maintenance economy was cited by numerous architects.
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Bob Johnson of Illinois Lawn Equipment Company, Orland Park, Illinois, didn’t think anything could outperform the Jacobsen Commercial 60.

Then he saw the new Commercial 72. It does everything the other mower does. But the Commercial 72 does it faster. Because it cuts a superwide 72-inch swath.

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