



Fred McClure of Applied Research and Development Co. of Addicks, Tex., demonstrated the versatility and ruggedness of his company's four-wheel drive, articulating tractor. The "Outlaw," as this model is called, has been adapted as a right-of-way spray rig. It also can be used for mowers, and navigates deep water and swampy areas where other vehicles would become mired.

men actively engaged in industrial weed control. Dr. Wayne McCully of A & M's Range Science department is chairman.

The conference recognizes all levels of experience, beginning with a session on "herbicides for beginners" and this year with a follow-up session on factors affecting herbicides. Program participants come from all aspects of the industry. Manufacturers report on and demonstrate new and improved lines of equipment the final day.

Dr. C. J. Scifres of A & M outlined the critical points that determine the effect a herbicide has on a plant. If the herbicide is applied to the foliage, there must be good interception and retention. The surfactant, short for surface acting agent, is the additive that lowers surface tension and spreads out the droplet.

In later discussion, a member of the audience pointed out that the surfactant can increase the rate of chemical flow through the equipment.

There must be good entry of the herbicide into the stem or leaf of the plant Dr. Scifres continued, followed by vascular transport, cell-to-

cell transport to the site of action where some vital function is disrupted. Herbicides applied to the soil must move to the root zone and enter the roots. From then on, the route to plant destruction is the same.

Dr. Scifres defined the residual classes of soil sterilants this way: no residual toxicity—a herbicide that breaks down in 48 hours or less; temporary—2 days to 4 months; semi-permanent—4 months to 2 years; permanent—more than 2 years.

Factors that affect the action of herbicides applied to the soil include: temperature, sunlight, rainfall, and soil properties, such as texture, organic matter and microbial population.

It is possible to apply too much chemical and thereby defeat the method in which the herbicide achieves plant kill, said another audience member. Applying too much of a systemic-acting herbicide, he said, is like burning off the pump before the pump has a chance to work.

In a later session, Henry O'Neal, A & M Extension engineer, cited

other factors that affect herbicide action. "A good herbicide depends on good application," he said. "Too much can hurt both the pocketbook and method of action."

He listed these trouble spots to watch for in equipment: water—use water that looks clean enough to drink; strainer—it may be too small; pump—keep close watch on the pressure regulator; pressure gauge—use one that has adequate tick-marks to give you the accuracy you need; run your engine at the proper rpm; mixing—devise an easy but extremely accurate method of measuring pounds and gallons; and booms—make them stout.

Problems of a different nature that affect the benefits of herbicides were discussed by L. Pat Collins, superintendent of airfield and grounds for Houston Intercontinental Airport. Concerning 2,4-D and 2,4,5-T, Collins said, "We know we're safe. Our city says we can't use them. If I could use 2,4-D and 2,4,5-T, our problems would be over."

Collins supervises a crew of 45 men that will increase to 75 in the near future. On the 619 acres of vegetation out of the 7,300-acre airfield, Collins faces about every weed, tree and turf problem possible. Mowing ranges from right-of-way to golf course quality. He has aquatic weeds along 18 miles of drainage ditches, a tank farm to maintain, and boulevards to be edged. When an outbreak of the pine bark beetle occurred, it took 60 days to get a request through the governmental process—too much for the pesticide to still be effective.

As in previous years, the problems between customer and contractor were discussed. Should a customer decide on the basis of bid, or stick with a good contractor? Should a customer hire two contractors, then award volume accord-





This panel discussed contracting for maintenance. From the left are Charles Middleton of Asplundh Tree Expert Co., Jenkintown, Pa.; Louis Hansen of Texas Power and Light Co., Dallas; and Hunter Jones, Leon County Tractor Co., Buffalo, Tex.

ing to performance? Should the contract always be let to the lowest bidder? There was no consensus.

Too often, said one contractor, the customer thinks quality and hires economy. But the economy performer may cause costly follow-up.

There was no consensus on solutions, either. Some felt that the customer should write tighter specifications, others believed specifications should be general, allowing the contractor to complete the job in a way he has found most efficient with the manpower and equipment he has. There was agreement that more monitoring of work done was necessary on the part of both contractor and customer.

Depending on the type of contract written, one participant suggested that it might be less costly for the customer to touch up a job than to get the contractor to come back.

Who pays for down time? The contract should specify the responsibility if down time could be a problem. One way suggested to reduce down time from flat tires was to use multi-ply airplane-type tires, puncture-proof, or solid rubber tires.

Hunter Jones of Buffalo, Tex., described how he is making a profitable business out of contract mowing. He is able to mow for less than the state, he said, because his labor costs are lower, and more maintenance doubles equipment life.

Problems, he said, have included: having to spend too much time checking to see if work is being done to specification; getting the job completed on time, which otherwise causes budget difficulties; and inconsistent bids, which can result in not enough money to do the job.

Chemical maintenance is improving with new techniques, equipment and materials. Invert emulsions and foam additives permit better targeting of materials, increased effectiveness of herbicide, and decreased need for water.

Do you have to worry about drift when you're using foam or invert emulsions? Answered Dr. C. L. Lein-

weber, head of A & M's Range Science Department: "Even a cannonball will drift."

Chuck Middleton of Asplundh Tree Expert Company reported on a promising technique using growth regulators. Siberian elms planted under power lines have not been trimmed for the past six years, he said. Instead, they are treated with a foliar spray each spring after the tree has leafed out.

Frank Lawson of Kershaw Manufacturing Co., Montgomery, Ala., gave a film report on the new Kershaw brush cutter, which, he said, has cleared nine spans of utility right-of-way in three hours over rugged country.

Dick Fields of Velsicol reported that federal registration had been granted on a 5% granular formulation of Banvel.

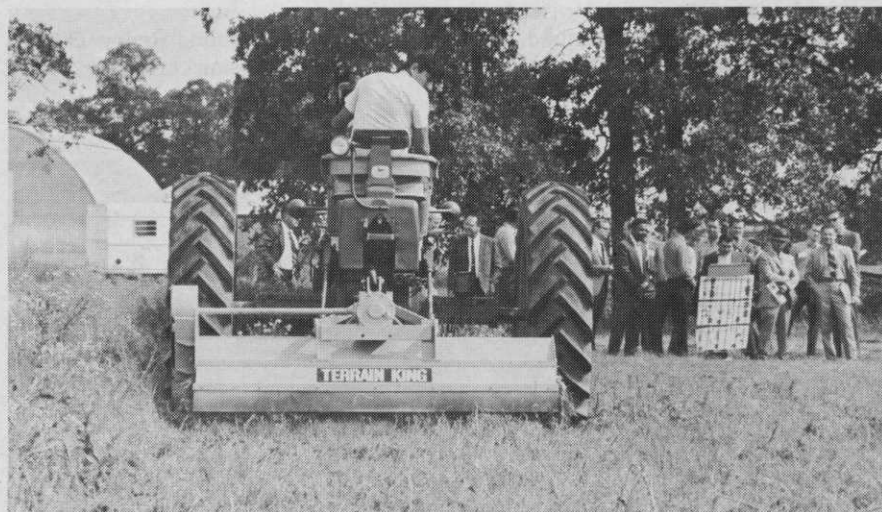
R. L. Robinson of Texas Electric Service was named to succeed Tom Mobley, Mobley Company, Inc., Kilgore, Tex., as chairman of the steering committee. New committee members are David Peterson, president of KDM Company, San Antonio, and Tom Dickerson, Dallas Parks Department.

## HAA Claims Immunity To New Airport User Tax

The Board of Directors of the Helicopter Association of America has filed a helicopter industry brief with the Federal Aviation Administration, charging illegality of the Airport and Airways Revenue Act of 1970 as it may be interpreted and applied to the civil helicopter industry.

The law is a "User Tax" to be imposed upon the "users" of the airports and airways — meaning electronic navigation system with a lawful floor at 1,000-ft. altitudes on "airways" and lower only within airport terminal areas. The tax is to support present maintenance and provide for the future expansion for all "users" of the system. The civil helicopter operating industry, is not a "user" of the airports or the "airways," the HAA board contends, as covered in the terms of the Act. The Act was designed specifically for fixed-wing aircraft whose present and future demands upon the system require more extensive and expensive real estate at airports and more sophistication in the electronic airway navigation system. HAA takes the position that the rotary-wing helicopter industry is not a part of the loose term "General Aviation."

"Our requirements, equipment, operations and problems are entirely different and apart from any other phase of aviation relating to fixed-wing aircraft, large or small, reciprocating or turbine-powered, military or commercial," the Board stated.



Engler Manufacturing Company of Houston introduced and demonstrated its new flail mower. The unit comes in lift and pull 72-inch and 90-inch cutting widths. The 72-inch model has 52 cutting elements; the 90-inch, 66 cutting elements. Engler also demonstrated its slope mower.



## Florida Nurserymen Tipped On Tree-Growth Retardants

Two tree-growth retardants have been used in Miami for the past four years and are now pronounced effective, Richard Hoeller, Florida Power and Light Co., told members of the Florida Nurserymen and Growers Association at its annual October trade show in Daytona Beach. The show drew just under 1,000 visitors.

Hoeller "inherited" the responsibility of keeping electric lines free of tree tops in 1958; a job he figured was a breeze until his subsequent encounters with irate home owners.

Therefore, as an expedient, he launched a tree conservation plan which would limit the removal of ornamental trees, but would allow substitutions of low-growing palms whenever possible.

In the meantime, he watched the progress of several universities seeking a safe tree growth retardant.

The two materials which have been in use in Dade County for the past four years are Tre-Hold (AM-CHEM products) and MH30T (U. S. Rubber Co.). Tre-Hold, he explained, is painted on tree limb stubs after trimming or topping. Its purpose is to limit and retard growth. MH30T is mixed with water and sprayed on the tree after it has been topped and has re-sprouted four to six inches.

Spraying the top one-third of the tree retards overall growth. After nine to ten months, the tree is again sprayed to discourage further growth until line clearance finally necessitates retopping; then the program is resumed.

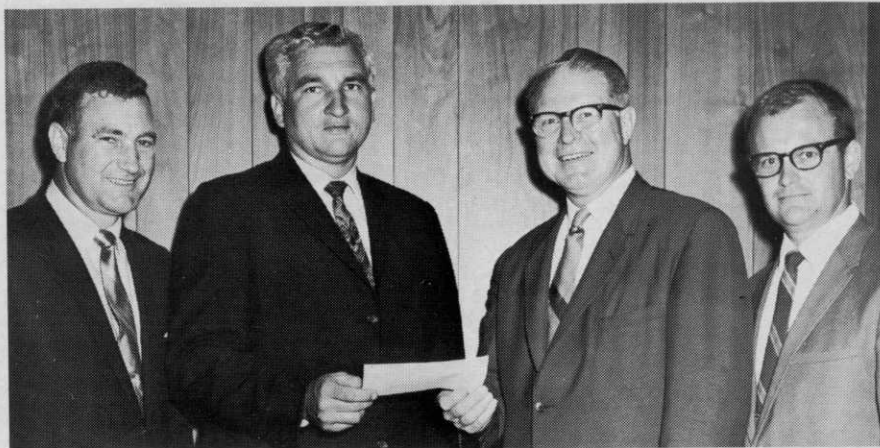
Hoeller said the treated trees are more compact than those not sprayed. Growth is retarded at an estimated 4:1 ratio.

An aerial lift and a two-man crew manning a 300-gallon tank is continuously on the move in the program.

Dr. Carl E. Whitcomb, Department of Ornamental Horticulture, University of Florida, speaking on trees for street plantings, said that fast-growing trees generally have more insect and disease problems, plug drains with dropping leaves and generally increase maintenance cost two to five times over slow growing species.

Wood density of fast growers is less than slow growing species, making them more susceptible to wind and storm damage, he added.

Other undesirable characteristics



Ohio Turfgrass Foundation has awarded a \$15,200 grant to Ohio State University for turfgrass research. The grant was announced at a recent OTF Board of Trustees meeting in Columbus. This is the third consecutive year the Foundation has donated \$10,000 or more. OTF President Richard B. Craig (second from left), Robert W. Miller (left), executive secretary, and Gene Probasco (right), treasurer, present the \$15,200 check to Austin E. Ritchie (second from right), assistant dean of OSU's College of Agriculture.

of the fast growers include: short-lived, weak-branching angles, height too great for location, and persistent suckering and sprouting for several years after removal of the original tree.

Dr. Whitcomb listed some of the more preferred slow growing trees as: live oak, white oak, Japanese evergreen oak, black olive, dogwood and southern magnolia.

A proper establishment period during the first four to six years is particularly important, he said, and recommended: 1. Good soil conditions. 2. Adequate nutrients. 3. Adequate water, supplemented by irrigation whenever needed. 4. Full sunlight. 5. Moderate soil temperature. 6. Little disturbance of the root system. 7. Weed control to prevent competition for water and nutrients.

## Conwed Corporation Offers Turf Protection Blankets

A new turf protection blanket against winterkill has been announced by Conwed Corporation, St. Paul, Minn.

The blanket is a lightweight, easily handled combination non-woven fiber cover. It is designed to be unrolled and secured (1,200 sq. ft. per each 6x200-ft. roll) over intensively cultured turfs, such as golf tees and greens, bowling greens and athletic fields.

The blanket is said to perform a number of functions. It prevents winter desiccation injury by trapping or retaining soil moisture and modifies extremely low temperatures that can cause direct grass kill. It also reduces washing of snow

mold fungicides from turfgrass leaves and crowns, and allows sufficient light penetration and energy exchange for rapid and early spring green-up.

Technical data, prices and sample orders are available by circling (712) on the reply card.



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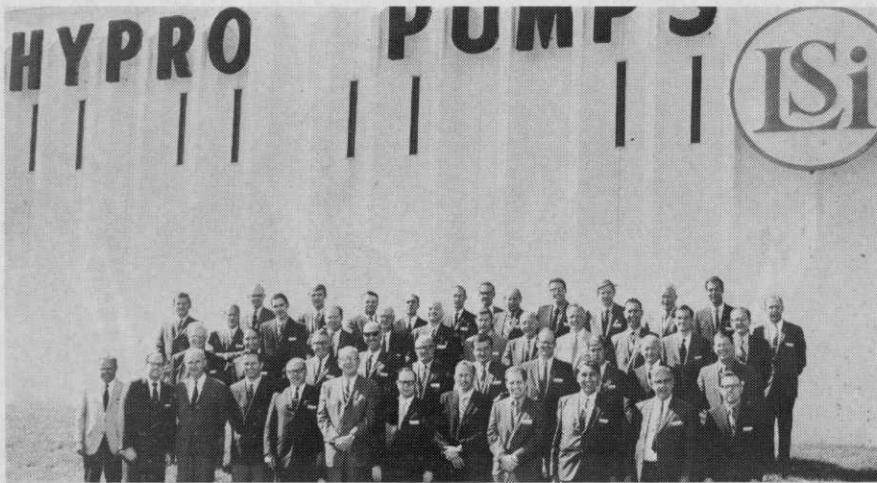
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Five new products were introduced at the 18th annual sales seminar of Hypro Division of Lear Siegler, Inc., recently. The products were covered from conception to complete market analysis, including product application and distribution techniques and outlets. The seminar was conducted by Sales Vice-president Conrad Letourneau with help from Sales Manager DuWayne Olson, Market Consultant Carl Keiser and others. Andrew Haiduck, group vice-president from LSI, addressed the 30 factory representatives at the banquet.

## New Turf Fungicide Ends Need for Mercury

A new fungicide designed to control a fungus that destroys turf during the winter is an effective substitute for mercury-based fungicides used for the same purpose, says a Michigan State University plant pathologist.

"Mercury and cadmium-based fungicides have been widely used on golf courses to control *Typhula* snow mold," says Dr. Joseph M. Vargas. "Legislation may soon be passed to ban the use of such potentially toxic metal compounds. Therefore it was essential to develop an equally effective fungicide without metallic ingredients."

Tesan SP, the commercial name of the new fungicide, will be on the market for the first time this season. Its chemical formula is 1,4-Dichloro-2,5 demethoxybenzene, or Chloroneb was developed through the work of Dr. Vargas and another MSU scientist, Dr. James B. Beard.

The gray snow mold the fungicide controls causes flat patches of dead grass often seen on golf courses in the spring. The gray threads of the fungus may be seen also.

Severity of damage inflicted by the fungus depends on how long the snow remains on the ground.

"When the turf is snow covered for four or five months, gray snow mold has a greater period of time to damage desirable grasses," says Dr. Vargas.

The MSU plant disease experts found the best time to apply Chloroneb was two weeks before the first

permanent snow. It was also discovered that the new wettable powder fungicide performed best in nine-ounce concentrations. This amount was mixed with four gallons of water per thousand square feet, and was found to be just as effective as the mercury fungicides.

The granular form of Chloroneb had a longer residual effect, and performed better than the wettable powder. However, it is not available at this time. Another desirable feature revealed about the new fungicide is that it will not cause a yellowing of the grass, common with mercury fungicides because of their slight phytotoxicity.

## Michigan Names Best Mixes For Roadside Grasses

The best way to establish grass along a roadside is to plant mixtures containing no less than 20% each of perennial ryegrass, Kentucky bluegrass and red fescue.

"In our study, we also found that adding cereal rye was beneficial to the mixture for sandy sites," John Kaufmann, Michigan State University turfgrass researcher, told scientists at the annual meeting of the American Society of Agronomy.

"But the addition of the cereal rye for clay-loam sites did more damage than good."

The ryegrass will help you get quick establishment on roadsides, however. Kaufmann explained that the cereal rye used in his study of roadside grass mixtures seemed to form a good surface climate for fescue on a sandy site by helping to hold moisture.

"After three growing seasons, the red fescue became the dominant grass on the sandy sites used in our tests.

"On the clay-loam sites, the Kentucky bluegrass became dominant after four seasons."

Kaufmann, who conducted his research in conjunction with MSU turfgrass specialist David Martin, said the addition of tall fescue, red-top, creeping bentgrass, orchardgrass or brome grass had no effect on improving grass establishment in any of the roadside sites tested in southern Michigan.



Southern Illinois University, Carbondale, has cut leaf-raking time in half with a vacuum leaf collector that swoops up 14 square yards of leaves per load and grinds them to mulch. James Mayer, left, and Homer Pinkerton, physical plant workmen, operate the collector. The mulch, formerly burned, goes into a compost heap for campus use.



**WE DON'T KNOW** as much about injury to humans as is desired for making policy decisions on pesticide use, a presidential representative told Washington state weed control experts during their annual meeting at Yakima, Nov. 4-6.

But a weed scientist suggested that the federal government was not improving a complicated situation when it used irrelevant data as a basis for granting or denying registrations.

Edward J. Burger, Jr., M.D., of the President's Office of Science and Technology, said, "We live with incomplete information . . . on the safety of pesticides." He told some 300 representatives of industry, government and the academic world at the Washington State Weed Conference that research into the possible hazards of pesticides will need to be on a continuing basis, and will need to be increased.

But Dr. Dean Swan, Washington State University agronomist and weed specialist, noted: "I would hope they would confine their recommendations to what is based on laboratory results that are relevant." The weed specialist charged that in some cases chemicals had been injected into laboratory test animals and results used as a basis for government recommendations. The results of oral and dermal contact with pesticides may well be investigated "but let's not use injections in laboratory tests because that doesn't occur in the commercial use of pesticides."

Weed control is considered in the original landscaping design by the Washington State Highway Department, reported horticulturist Richard D. Austin. Weed control during the construction period is done under contract by licensed applicators, then the state highway maintenance crews take over.

Visibility on the highway takes precedence over aesthetics. Shoulders are laid bare with sterilants—diuron, monuron and simazine—even if this causes browning of shrubbery farther back. After sterilization, shoulders may be covered with asphalt.

Though chemicals are most economical in many instances, there still is considerable use of other control. Hand weeding to avoid unsightly brownout is still relied on in the vicinity of Seattle (35 inches precipitation) where hard core unemployed and summer college students are hired. Hand weeding is still used also around the state's largest city in the eastern section, near the Idaho border, with perhaps

# What's Best in Northwest Reported at Weed Meeting

half the annual precipitation of Seattle.

Casoron has been the most satisfactory material for controlling horsetail invasions of heath and heather.

Chemical control of all Scotch broom has not been economically feasible, so the state has been experimenting with planting douglas-fir and hemlock, which in 10-15 years may provide a sufficient canopy to shade out the broom.

Mowing is the basic control method in turf, said Austin, plus the use of fertilizer to encourage dense growth of the grass after initial use of chemical weed killers.

A large scale problem in Western Washington is the seedling trees starting between stands of native timber and the highway shoulder. These very soon cut down visibility from the highway, and the department is experimenting to see if grass or shrubbery will be more effective at discouraging the growth of the seedling trees.

Highlights on turfgrass weed control by Washington State University agronomist Roy L. Goss included:

Annual maintenance costs of the Washington state turfgrass industry are about \$72 million.

1967 figures show that weed control cost golf courses \$2.14/acre, schools \$3.25/acre, and cemeteries \$5.75/acre, while homeowners using weed control on 96,000 acres of turf spent about \$13.10/acre.

Goss suggests that results may not have been good with homeowners, and says that most members of the general public do not know a few simple herbicides for a broad spectrum of weeds.

After reviewing current WSU recommendations for chemical control of broadleaf and grassy weeds in turf, Goss said:

"Phenoxy herbicides are only partially effective (for controlling creeping Veronica) and timing and weather conditions are critical. DCPA (Dacthal) has proved most effective in research tests, although its action is slower than what we would like. Search is continuing for even more effective materials."

On the use of arsenic to control *Poa annua*, he said "up to 18 lbs. of calcium arsenate per 1,000 sq. ft. applied the first year have been recommended in the Midwest, with additional follow-up annual applica-

tions to maintain toxic conditions. "This may be a good practice, so long as we don't raise the toxicity level so high that we inhibit all germination should we desire to overseed."

Pre-emergence herbicides such as Bensulide, DCPA and Benefin will definitely kill germinating seedlings of *Poa annua*, but the chemicals do not kill the mature plants. "Although surface toxicity may be present disturbance of the soil surface will permit germination and development of new plants . . . There velopment of new plants.

In general, it is good management that pays: "Good nutritional programs are good weed control programs. Research plots at Puyallup (in western Washington state) with optimal nutrition (6 lb. N, 2 lb. P<sub>2</sub>O<sub>5</sub>, and 4 lb. K<sub>2</sub>O) are practically weed free after ten years of maintenance without weed control programs. Check plots, on the other hand, are almost solid weeds.

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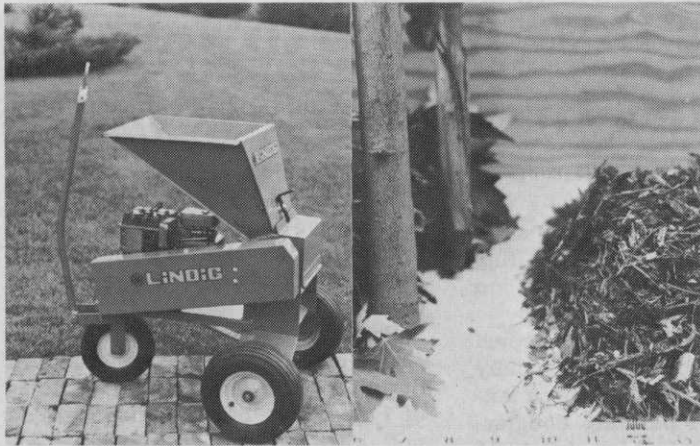
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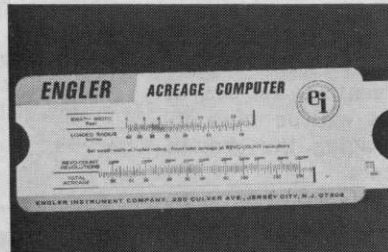
**MINI BRUSH CHIPPER, Lindig Mfg. Co., St. Paul, Minn.**

Lindig's Kajan Chopper is built on the basic concept of the big brush chippers. Its size and price give it a field of its own. Three models — two 4 hp and one 7 hp gas engines. Electric power available. 4 hp processes brush up to 2" diameter; 7 hp about doubles the size. Cuts to half-inch lengths. Price begins under \$300. Ideal for landscape contractors, lawn and tree services, golf courses, cemeteries, park departments, rental agencies and homeowners when material to be processed doesn't warrant using big chippers. For more details, circle (701) on reply card.



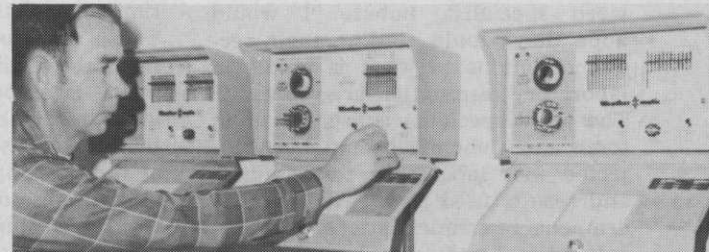
**BRUSH CUTTER, Kershaw Mfg. Co., Montgomery, Ala.**

This center-oscillating, all-terrain vehicle mounts twin rotors that cut a 7' swath. Brush and trees up to three or four inches in diameter are readily cut by flail-type blades. Each rotor is fully reversible. Hydrostatic drive. Length, 20'; width, 7'; height, 8'-3½"; weight, 14,350 lbs. GM diesel, Ford or Chrysler gasoline engines available. Fuel — 40-gal. capacity. Speed from .5 to 16 mph. Tires — 18.4-26 ten-ply steel reinforced. Winch — 18,000 lbs. capacity. Turning radius inside 14'4". For more details, circle (702) on the reply card.



**ACREAGE COMPUTER, Engler Instrument Co., Jersey City, N.J.**

A combination of the new Engler Revolution Counter plus the recently developed Slide-Rule Computer makes it easy to figure exact acreage. The Computer is easy to operate and permits the user to figure precisely, regardless of wheel sizes or swath widths, using just one standard Revo-Count. A Revo-Count also available to read acreage directly where wheel size and swath are known and constant. For details, circle (705) on the reply card.



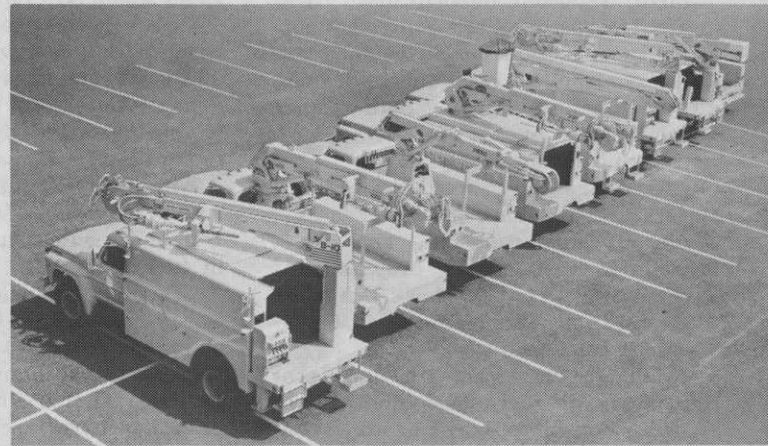
**IRRIGATION CONTROL UNITS, Telsco Industries, Garland, Tex.**

Underwriters Laboratory has approved a new SSV solid-state controller line made by Weather-matic Sprinkler Division. UL sanction now applies to all three series (others are MV and EM-7) of turf irrigation control units. Available in 11 and 23 stations. Provides 0 to 60 minute timing. SSV can be operated manually or semi-automatically without disturbing pre-set automatic program. For more details, circle (706) on the reply card.



**FLEXIBLE IRRIGATION PIPE RISER, King Brothers Industries, Sepulveda, Calif.**

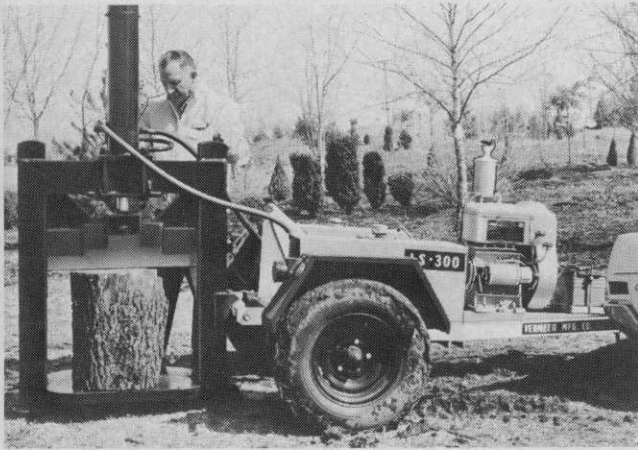
Product can reduce breakage in plastic sprinkler systems by as much as 90%. "Flex-Riser" is installed below soil level where sprinkler riser meets the plastic pipe line. Excellent for high traffic areas where sprinklers are kicked or run over often. All shocks and jolts are absorbed by rubber cushion while plastic pipe line remains undisturbed. For more details, circle (708) on the reply card.



**EQUIPMENT LEASING SERVICE, Baker Equipment Engineering Co., Richmond, Va.**

Pictured is a portion of the wide line of "instant equipment" available for lease on short-term and long-term basis. Baker leasing not limited to Baker products — equipment offered for lease or rental from many other leading manufacturers. Brochure available on complete line, and advantages of renting and/or leasing. For more details, circle (709) on the reply card.





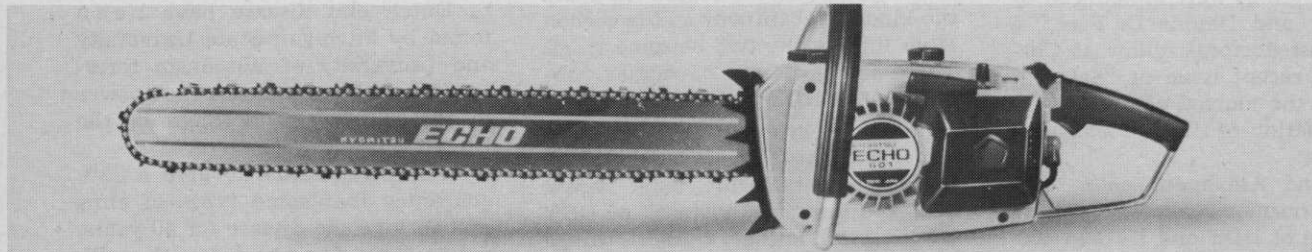
**LOG SPLITTER, Vermeer Mfg. Co., Pella, Ia.**

A faster, safer and more economical method of splitting logs into firewood is attributed to the new LS-300. The 18 hp unit hydraulically splits any log up to 30 in. long. Cutting blade exerts 30,000 lbs. of splitting force, automatically returning to starting position. Entire cycle takes 24 seconds. Even amateur operator can work single control lever. Unit can be towed. For more details, circle (703) on the reply card.



**GANG REEL MOWER, Toro Mfg. Corp., Minneapolis, Minn.**

Toro's new Parkmaster 9 is called the "world's largest flexible mower." Cuts a swath 18½ ft. wide. Mows 80 to 90 acres a day. Mower is a combination of well-balanced 79 hp turf tractor; a tractor-mounted, hydraulically operated 9-unit frame; and nine low-maintenance, six-bladed reel-type Spartan gang mowers. Transport speed is 40 mph. For more details, circle (704) on the reply card.



**CHAIN SAW, Mitsui and Co., Atlanta, Ga.**

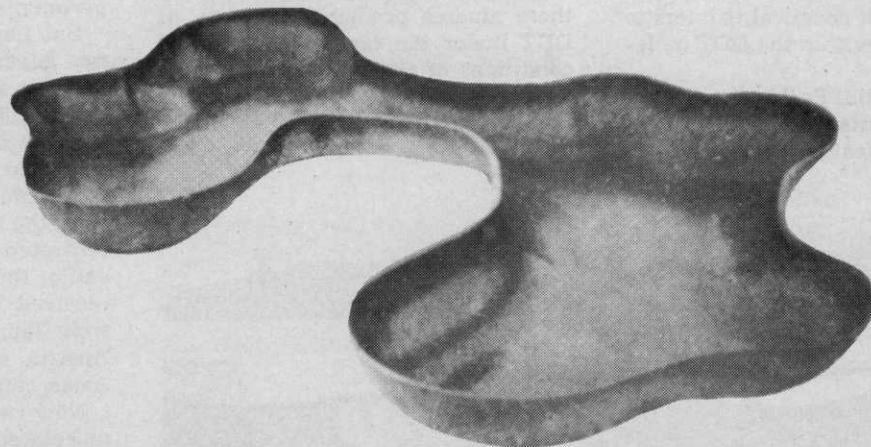
Echo-601 is powered by a 3.65 cu. in. heat-resistant aluminum engine with hard chrome-plated cylinder and needle and ball bearing supported vital moving parts. Starting of engine is easier with decompression valve releasing engine compression. Recoil starter. Equipped with 20" bar and ¾"

pitch chain directly driven through a self-energizing centrifugal clutch. Bar and chain lubricated by dual oiling systems, manual and automatic. Controls arranged for one-hand operation. Weighs less than 14 pounds without bar and chain. Cuts 18" diameter soft wood log in 15 seconds. For more details, circle (707) on the reply card.



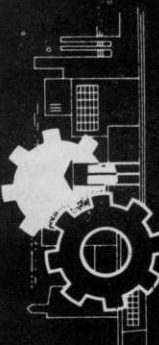
**PRECISION SPRAYER, Roberts Company, Burlingame, Calif.**

This sprayer delivers a fine, mist-like application of insecticides, fungicides, or foliar fertilizers to delicate or expensive plants. Built for professional use. 2-gal. brass, nickel and chromium-plated tank. For more details, circle (710) on the reply card.



**GARDEN POOLS, Hermitage Gardens, West of Canastota, N.Y.**

Pools are made of thick, lightweight fiberglass. Impervious to weather change. Come in artistically interesting irregular shapes to blend with any exterior landscape or garden. Pools can be set separately or combined into interconnecting systems. Six varieties of shapes, sizes and prices. Pool pictured is 114" long, 92" center length, 73½" wide at end, 8" deep. Comes in brown and blue. For free brochure, circle (711) on reply card.



## Cornell Scientists Trace Decay of DDT

Cornell University scientists have used a series of unique laboratory experiments to establish a more complete biological model for tracing the pathway of DDT decomposition in nature. This study focuses on the ultimate fate of DDT in soil and water.

Identities of these decomposition products, and therefore their possible ecological hazards, are largely undefined, explained Prof. Martin Alexander of the N.Y. State College of Agriculture, Cornell. Research at Cornell has now revealed how, in biological models, this insecticide can be degraded.

A major aspect of this research was the identification of the critical chemical factors responsible for the resistance of DDT to destruction by microorganisms.

These findings were announced by Alexander and Dennis D. Facht, a former post-doctoral fellow at Cornell, in a recent issue of "Science" magazine, the journal of the American Association of the Advancement of Science.

Focht and Alexander note: "Despite the enormous concern with the persistence of DDT and its degradation products in nature, surprisingly little is known about the products of biological decomposition in natural ecosystems, wherein microorganisms are likely to be the chief agents of biodegradation."

The Cornell studies not only described breakdown products of DDT but also defined chemical barriers to decomposition within the DDT molecule.

Alexander and Focht stated that their experimental observations suggest that two features contribute to



Ward Swanson, superintendent of Plum Hollow Country Club, has been re-elected president of Michigan and Border Cities Golf Course Superintendents Association. The organization is made up of professional golf course maintenance men in the Detroit area. Other officers are from the left: Director — Robert Prieskorn of Western Golf and Country Club; new director — Al Kaltz of Maple Lane Golf Club; new director — Clem Wolfrom, superintendent of Detroit Golf Club; president — Ward Swanson; vice-president — Ted Woehrl, superintendent of Oakland Hills Country Club; new director — Dave Moote, superintendent of Essex Golf and Country Club, Windsor, Ontario; secretary-treasurer — Gerald Gill, Tam-O-Shanter Golf Club. Directors not pictured are Andrew Bertoni of Holly Greens Golf Course and William Madigan of Country Club of Jackson.

making DDT and related chlorinated hydrocarbons able to resist aerobic attack by bacteria.

They identified these two factors as the para-chlorine substitution and the kind of substituent on the carbon atom linking the two benzene rings. These chemicals are particular subunits of the DDT molecule.

In an interview Prof. Alexander remarked that it would be desirable to design a molecule that "would keep the pesticidal virtues" of DDT while eliminating those "things which make it resistant to degradation."

The finding of a short-lived chemical of the DDT class of insecticides would be aided by the identification of those factors that make DDT resistant to degradation.

The investigators emphasized that these studies predicted the fate of DDT under the carefully controlled conditions of the laboratory. Future experiments will show whether the same results can be obtained under field conditions.

## Elms Found Resistant To Dutch Elm Disease

European trees with a resistance to Dutch elm disease have been found by Michigan State University and University of Wisconsin foresters. These trees could be the answer to the Dutch elm problem in the United States.

It is now possible to give a 75% guarantee that some types of elms will survive the disease for 40 years, report Gary Long and Jonathan W. Wright, MSU forestry researchers.

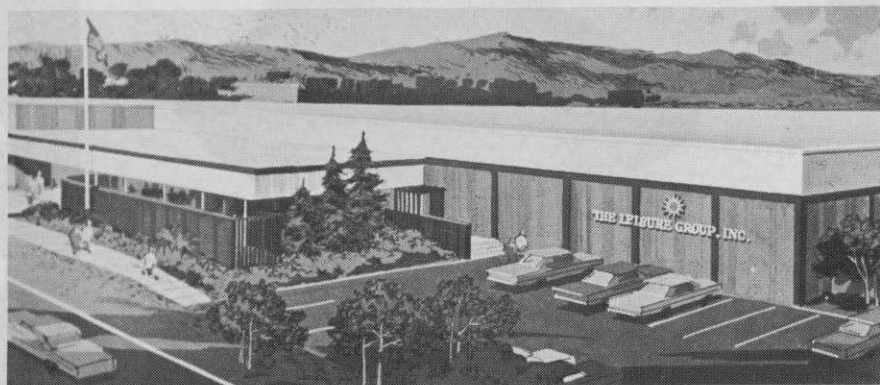
"This survival rate may be adequate for city foresters, but homeowners who plant only a couple of trees want practically a 100% survival guarantee," Wright said. "To get this, we'll have to conduct experiments for a much longer time."

But Long and Wright are optimistic. Several of the trees they've brought in from different parts of the world look promising.

While many researchers have concentrated on selecting the occasional American elms that escape the disease, the MSU researchers have concentrated on foreign species. By the end of the summer of 1968, they had received over 600 seedlots of elms from Japan, India, Rumania, Russia, Austria and other European and Asian countries.

Now two years old, the trees were inoculated with spores of the Dutch elm disease fungus early this June. Twenty-five thousand were inoculated.

First results from the inoculations have been obtained. Nearly all trees belonging to one European species died. Another European species, the smooth-leaved elm, showed much higher resistance. A Japanese species also showed considerable resistance.



The new lawn and garden products plant of The Leisure Group, Inc., will be located by the end of the year at Watson Industrial Center in suburban Los Angeles. The new 117,500-sq. ft. facility will consolidate manufacturing and distributing operations of Hayes and Big Andy spray guns, Black Magic garden products, Thompson and Rain Spray sprinklers.



## Anti-Desiccants Work On Stored Azaleas

Winter storage of container grown evergreen azaleas is often unsuccessful due to excessive leaf fall by late winter or early spring. Anti-desiccants should be given a trial for preventing this problem, believes Elton M. Smith, Extension horticulturist, Ohio State University.

Smith reported research results with anti-desiccants in a recent OSU Nursery Notes.

In an attempt to prevent leaf fall of Shams Flame Azalea, four anti-desiccants were applied to plants in a commercial nursery poly storage in Lake County. The anti-desiccants were Folicote at 1 (A.D.) to 4 (water) and 1 to 19; Foli-Gard, 1 to 4; Vapor Gard, 1 to 19; and Wilt-Pruf at 1 to 4. The first treatment was applied on Dec. 9, 1969, about 10 days prior to converging with the second layer. The second application was Feb. 10, 1970.

Leaves were counted on Apr. 3, 1970, on the terminal portion of stems six inches in length of three plants per treatment. Results are in Table I.

Most effective treatments with one application, Smith said, were Wilt-Pruf (1-4) and Folicote (1-4).

## Tulsa Nurseries Organize

Twenty-eight nursery and allied landscape firms in and around Tulsa, Okla., have formed the Tulsa Association of Nurserymen. President Jim Sanseverino of Midwest Nursery Co., said the new association is

### LETTERS TO THE EDITOR

#### Gaining Popularity

We certainly enjoy your publication and feel that it is gaining popularity among the turf managers in our area.—WALLACE G. MENN, instructor, Texas A & M University, College Station.

\* \* \*

#### Used Some of Your Ideas

I have read many of your articles and have implemented some of your suggestions here at the State Capital, St. Paul. I feel WEEDS TREES and TURF is invaluable in assisting me in budgeting, purchasing, and planning, which is my responsibility for the Capitol grounds and the Governor's mansion.—ROY ANDERSON, Landscape Architect, Forest Lake, Minn.

Table 1. Effect of anti-desiccants on leaf retention of Shams Flame Azalea stored under poly structures.

Treatment	Rate	Percentage increase in number of leaves on stems in April	
		One Application December	Two Applications Dec. & Feb.
Folicote	1-4	20	35
Folicote	1-19	10	35
Foli-Gard	1-4	5	20
Vapor Gard	1-19	5	35
Wilt-Pruf	1-4	15	20
Check	.....	0	0

to provide an information exchange among members and to keep up with current trends in the industry. Other officers are vice-president — Graydon Honeyman of Holland Nursery Co.; and secretary—Earl Foster of Green Thumb Garden Center.

## All Turf Entries Win For Venable Sprinkler Sales

Texas Turf Irrigation Association tagged a first-place award on the only two entries of Venable Sprinkler Sales, Inc., Irving, Tex., in the 1970 TTIA design and installation contest. Venable won in the heavy turf golf courses and parks division with its New Providence Development Corporation golf course in Nassau, Bahamas. The winning home lawn division entry was the W. Earl Harrison home in Waco, designed by Stanley Wright of Venable.

Judging was based on quality of design, appearance of the drafting work and adequate design criteria. The entry must have been designed, sold and installed by the entering firm, according to association rules.

This was the second year in a row for Venable Sprinkler Sales to win in the heavy turf contest. Last year the firm took top honors with its entry of the Burke Lake golf course at Annandale, Va.



"I'll call you Weed—I talk in my sleep."

## It's Now CIBA-GEIGY, Ltd.

Shareholders have approved the merger of J. R. Geigy S.A. and CIBA Limited of Basle, Switzerland. The resulting corporation, CIBA-GEIGY, Ltd., counts 65,000 employees and annual volume of more than \$1.5 billion. In the U.S., the merger combines CIBA Corporation of Summit, N. J., and Geigy Chemical Corporation, Ardsley, N. Y., into CIBA-GEIGY Corporation. Ardsley is corporate headquarters of the new firm, having 8,700 employees and research facilities and production plants in 10 states. The merger names Thomas Boucher as chairman of the board of the U.S. firm and Otto Sturzenegger as president and chief executive officer.

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## RAPID-GRO



**MICHIGAN'S TREE INDUSTRY**

could be sweetened considerably if woodland owners recognized the potential for maple syrup. Michigan State University forestry researchers say latest figures show 400,000 tapholes when there could be 22 million.

\* \* \*

**TORONTO** City Council's parks committee has recommended the city increase its budget of \$40,000 to \$100,000 in 1971 to be spent on tree plantings to replace Dutch elm disease losses.

\* \* \*

**A TON OF OXYGEN** is put in the atmosphere for each ton of wood produced, reports the Milwaukee Journal. A well-managed hardwood forest produces four tons of new wood, therefore four tons of oxygen, per acre, or enough to support 18 persons, the article said.

\* \* \*

**ANOTHER WAY** of explaining how turfgrass is an oxygen producer comes from the Ohio Turfgrass Foundation. A 50x50-ft. plot produces enough oxygen to supply four persons.

\* \* \*

**IS OUR TOTAL SUPPLY** of oxygen diminishing? No, says a recent government report. The Environmental Science Services Administration reports that the oxygen content of the atmosphere at sea level is 20.946 percent, almost exactly the same as in 1910.

\* \* \*

**WHAT'S THE DIFFERENCE** between a pesticide label "suspension" and "cancellation." Suspension means that interstate shipment of the pesticide must cease. Notice is given of a proposed cancellation. Then sellers or manufacturers have 30 days in which to object. The matter could be referred to a committee for review and evaluation. In the meantime, sale of the pesticide may continue.

\* \* \*

**A MASSIVE AERIAL RE-SEEDING** project was carried out recently in California to stabilized forest areas destroyed by the state's most disastrous series of brush fires. Helicopters were used to seed grass on 100,000 acres in a battle against time. The seeding was expected to be complete by mid-November, before possible heavy winter rains. Another 200,000 acres in less confined areas are being re-seeded by airplanes.



About 175 persons attended the 11th Lawn and Turf Conference in November at the University of Missouri—Columbia. After the formal program, conferees adjourned to UMC turfgrass research plots. John Dunn, far right, assistant professor of horticulture, and group inspect bluegrass plots devoted to management studies.



A \$2,000 check is being passed from newly elected president of the Missouri Valley Turfgrass Association, Gary Black, to Richard Aldrich, director of UMC's Agricultural Experiment Station. With them is John Dunn. The MVTA check is for turfgrass research. In another presentation, Robert Mitchell, left, secretary-treasurer, Golf Course Superintendents Association of America, hands Carl Wipke, UMC horticulture student a \$400 scholarship certificate. Dunn and the recipient's father, Sid Wipke, right, were close at hand for congratulations. The Wipkes converted their family farm into a recreation center that includes a golf course.

**Frost and Higgins Wins Landscape Merit Awards**

Frost and Higgins, landscape contractors, Burlington, Mass., recently received two merit awards from the American Society of Landscape Architects. The honors resulted from the landscaping of Polaroid, Winter Street, Waltham and McDermott Court, Massachusetts Institute of Technology. Frost and Higgins also has won nine commercial landscape awards from the American Association of Nurserymen. Sasaki, Dawson, DeMay Associates of Watertown, Mass., were the landscape architects.

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