

## Industry People On the Move



**Environmental Industries, Inc.**, Encino, Calif., has appointed Don Stockard to manage its planned garden center operations. EII owns Valley Crest Landscape, Inc., Curtis V/C Corporation, and Valley Crest Tree Company. Its retail garden center business arm is to be called "The Arboretum, Inc." Operation will be statewide from headquarters in Van Nuys.

\* \* \*

**Valley Crest Landscape, Inc.**, a division of Environmental Industries, Inc., Van Nuys, Calif., has named A. J. Lastuck, vice-president, as the Los Angeles divisional manager. Valley Crest is a state-wide landscaping, irrigation, and engineering contracting firm.

\* \* \*

**Amchem Products, Inc.**, Ambler, Pa., has appointed two sales representatives. Donald D. Richardson of Chesterfield County, Virginia, has been assigned to the state of Virginia and portions of North Carolina. Thomas J. Zielinski of Bay City is the new sales representative for Michigan.

\* \* \*

**Alco Chemical Co.**, Artesia, Calif., has appointed Philip Dellner as a technical sales representative for Orange, San Bernardino and parts of Los Angeles and Riverside counties.

\* \* \*

**Ian M. Wedderspoon**, native of Scotland and a graduate assistant in the University of Maryland's Department of Agronomy since 1968, has been appointed supervisor of weed control inspection for the State Board of Agriculture. He is completing his master's degree in weed control and plant physiology.

\* \* \*

**Missouri Botanical Garden** Board of Trustees has announced these officers for 1970: President — C. Powell Whitehead, chairman of the Arts and Education Council of Greater St. Louis; first vice-president — Tom K. Smith, Jr., group vice-president, Monsanto Company; second vice-president — Samuel C. Davis, retired senior vice-president, St. Louis Union Trust Company.

\* \* \*

**Toro Manufacturing Corporation**, Minneapolis, has appointed P. Robert Scagnetti as institutional mower sales manager for the turf products division.

\* \* \*

**Heath International**, Richmond, Mich., has selected Kenneth W. McCoy to head its newly formed industrial sales division. McCoy comes from Velsicol Chemical Corporation, where he was corporate manager of sales information.

\* \* \*

**Midwest Association of Golf Course Superintendents** has selected Mrs. Dorothy H. Carey as executive secretary. Mrs. Carey has similar responsibilities for the Chicagoland Golf Association, the Sod Growers Association of Mid-America, the Southwest Golf Association and the Illinois Turfgrass Foundation.

\* \* \*

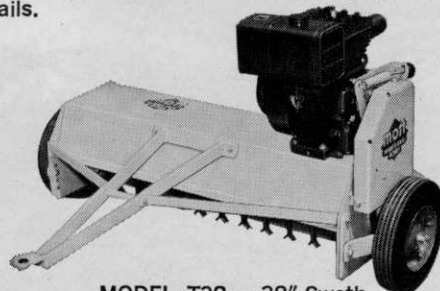
**Nutro Turf and Garden Products**, Columbus, Ohio, has appointed Harry F. Podvia as a territory manager to establish and supervise sales in western Pennsylvania.

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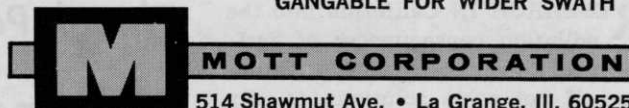
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While wood and field burning in general is not a major contributor to photochemical air pollution, uses of some fuels in those fires can be. This Californian is creating a smoke plume that is visible for miles. He's trying to keep



the fire hot enough to burn some orchard trees. Discarded auto tires, used for years to keep fires hot, are going to be outlawed. Authorities say there are other ways to keep fires hot without causing obnoxious pollution.

**R**ESearch IN California into the pollution consequences of agricultural burning may offer some solace, if not some solutions, to city officials and others who must dispose of diseased street and ornamental trees.

The fact is, clean burning of woody materials may not be as much a contributor to dangerous types of air pollution as has been assumed.

For some areas, such as those where trees afflicted with Dutch elm disease must be destroyed, the only sure method of eradication is burning. Yet, states and the federal government are moving rapidly toward the elimination of open burning as an air pollution control measure.

Several points with respect to burning wood wastes are worth remembering by city street tree maintenance men and others who have burning to do but hope to avoid the wrath of air pollution control authorities.

—Burning should be done on a somewhat breezy day when there is

*Though Pollution of Air Is Low,*

## Where There's Smoke, There's Fire of Protest

By THORNE B. GRAY  
Modesto, Calif.

no inversion layer to keep smoke from dispersing.

—Fires should be kept as hot as possible, but without using such controversial measures as throwing rubber tires or smoky fuels into the fire.

—Fuel should be as dry as possible before the fires are lighted.

If these rules are followed, a strong case can be made that such fires do not contribute appreciably to the air pollution problem.

To understand why, it first is important to know the difference between particulate air pollution and photochemical air pollution.

Briefly defined, photochemical air pollution is the chemical product of the mixture of some pollutants, mainly hydrocarbons, and sunlight. The common term for the resultant material is smog, and even a small amount of smog can be harmful to humans and plants. A level of .15 parts per million will cause eye irritation.

### Causes More Barking Than Bite

Particulate air pollution, on the other hand, often causes more public outcry and anguish than does actual smog. In many areas, particulate air pollution is severe and dangerous, especially when emissions fail to disperse or where they affect urban populations. In the great Central Valley of California, farmers are faced with learning to conduct necessary burning while not causing visible or harmful particulate pollution, and they are having some success.

“As far as particulate matter is concerned, as far as aesthetic values and their impairment and the effects on visibility, no one I know of, who is a responsible person, will deny that agricultural burning doesn't contribute,” admits Victor P. Osterli, a researcher with the University of California extension service who has done substantial work on air pollution and farm burning.

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"But from the standpoint of gaseous emissions, of hydrocarbons particularly, when you consider quantitative emissions from a given volume of plant wastes, smog generation is small by comparison with the internal combustion engine source," he said. "Likewise, smog production gets smaller yet when compared with the total volume of gasoline usage in a metropolitan area and its surroundings."

Osterli's office at the university's Davis campus is in the center of the rice producing area of the Central Valley, and rice stubble burning often has been an acute problem for farmers and their city neighbors. Other farmers must annually burn orchard prunings and there is a continuing need to burn entire orchards which have been removed to make way for new crops.

Thus far, neither the state nor counties in the valley have seen fit to abolish rice field or other agricultural burning. Instead, some effective voluntary controls have been devised with the help of the weatherman.

#### Ventilation Index Established

A ventilation index for each day is published by the US Weather Bureau, based on the height of the mixing layer of the atmosphere plus wind velocity, as predicted for mid-afternoon. Values range from zero to 2,000, with the higher numbers representing the best weather for burning. Compliance with the index is voluntary, but well over half the farmers heed it and the results, in terms of air pollution incidents, have been encouraging.

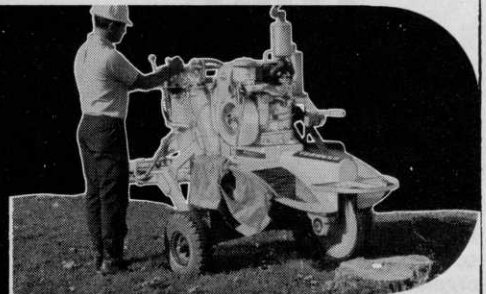
Osterli said in the San Francisco Bay area, the Bay Area Pollution Control District relies on the ventilation index to outlaw all open burning when conditions are unfavorable.

Agricultural burning, of course, involves thousands of acres and often is an annual occurrence. Sometimes the burning must occur in the same months when air pollution is greatest from other sources. In part, controls on farm burning have proved one point: air pollution continues anyway.

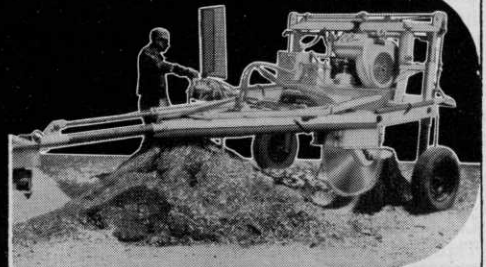
A city fire to remove bark beetles which spread Dutch elm disease, by comparison, would never approach the aggravating smoke levels found in Oregon's Willamette Valley last year, for instance. Grass seed harvesters there burned off some 240,000 acres of stubble last summer when conditions were bad and the smoke drifted over the city of Eugene. On Aug. 12, conditions became so poor

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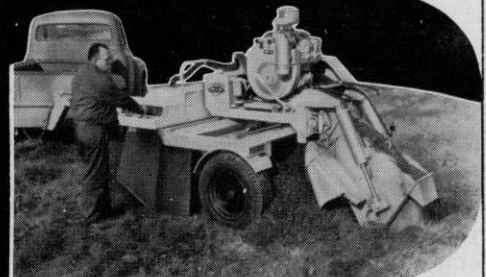
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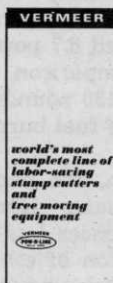
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the day was labeled Black Tuesday and the Lane County Air Pollution Control Authority received 2,000 protesting telephone calls. Finally, Gov. Tom McCall declared a health and safety emergency until atmospheric conditions improved.

## Burning Tower Tests

Dr. Ellis Darley of the Statewide Air Pollution Research Center, University of California at Riverside, has investigated both rice and grass stubble fires, and other agricultural fires, for several years. Darley and his associates use a burning tower which permits them to measure the smoke ingredients from sample fires. The fires are laboratory versions of those which burn the same ingredients on farms.

Scores of such fires have been tried in the burning tower, and the results show conclusively agricultural burning is a negligible source of photochemical air pollution when compared with the emissions of the internal combustion engine.

Darley hesitates to apply his findings directly to the type of burning which might be conducted by a nurseryman in destroying a city tree — he never has tested the pollution output of any fuel more than two inches in diameter. He is certain the thicker the fuel, the longer the fire will burn and the more pollutants will be created, though how much more is in doubt.

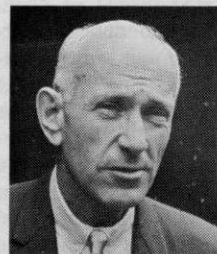
While the State Air Resources Board continues to rely on estimates of such pollutant levels compiled prior to Darley's work, Darley is convinced the estimates are high, even for heavier materials such as orchard trees. "Their estimates don't come out with our measured figures," he said.

## Ideal: Hot Fire, Dry Fuel

In general, Darley said the hotter the fire and drier the fuel, the less the pollution. The cooler the fire and wetter the fuel, the greater the pollution. If a fire merely smolders, particulate air pollution can become highly significant.

Fruit prunings, he found, yielded 13.9 pounds of hydrocarbons per ton of fuel burned, barley straw yielded 18.2 pounds per ton burned and native brush yielded 6.7 pounds per ton burned. By comparison, the gasoline engine yields 130 pounds of hydrocarbons per ton of fuel burned, he reported.

For one hydrocarbon, the photochemically active ethane, Darley found the value differences less diverse: 2.7 pounds per ton of ethane were produced in the fruit pruning



Dr. Ellis Darley

Statewide  
Air Pollution  
Research

University  
of California  
Riverside

fire against about 7.8 pounds from auto exhausts. Estimating some 151,000 tons of fruit prunings, barley straw and native brush are burned per year in the San Francisco Bay area, Darley estimated some 950 tons of hydrocarbon effluent would be generated per year, an average of 2.6 tons per day. Automobile emissions greatly exceed that figure in the same area on a per day basis.

Withall, the indisputable fact remains that agricultural burning causes substantial amounts of particulate air pollution. Those who light such fires are creating a conspicuous source of pollution, and the finger of blame is easily pointed toward them. The fact that particulate pollution is less dangerous, in many instances, than is automobile-caused smog, often makes little impression on the general public.

To continue burning diseased trees, regardless of how necessary the burning may be to eradication of a disease, nurserymen and tree crewmen will have to carefully marshal facts, arguments and burning procedures which are as pollution-free as possible.

## Fast-Growing, Salt-Tolerant Pine Shows Promise at MSU

Michigan foresters and commercial landscapers may soon have a new pine tree.

According to J. W. Wright, Michigan State University forestry professor, the new hybrid cross between Austrian pine and Japanese red pine shows promise for use in pulpwood operations and in roadside plantings.

The hybrid was first discovered in 1961 by MSU foresters at the W. K. Kellogg Forest near Battle Creek. Hybrid trees were growing naturally in an open area between mature stands of Japanese red pine and Austrian pine.

"These hybrids show excellent growth," says Wright, "growing faster than either parental species."

Other characteristics which make the hybrid potentially useful include earlier reproduction, good recovery from transplanting shock and the possibility of tolerance to salt.



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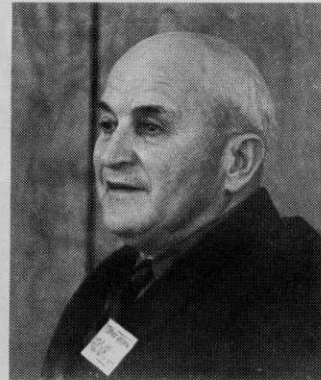
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*Disease, Thatch, Pelletized Clippings, Sod Covers  
Cicada Wasp, Sod Strength, European Turf . . .*

## At Michigan's 40th Turf



These gentlemen, part of the 450 persons attending the 40th Michigan Turfgrass Conference, are listening to a report on European turfgrass culture.

Of course, Clarence Wolfrom was there . . .

**E**MPHASIS on beautification may be new on the national scene, but it's at least a 40-year-old idea in Michigan.

That's how long the Michigan Turfgrass Conference has been convening. Only Massachusetts can claim seniority, of about a year.

"We saw a need for research and education," recalled Clarence Wolfrom. Fulfilling these original objectives, he continued, "have been the greatest contributions of the conference over the years . . . this plus the experience exchange that goes on."

Wolfrom, superintendent of the Maple Lane Golf Club, Warren, attended the first conference, helped form the Michigan Turfgrass Foun-

ation. He was the first vice-president and served as the second president. He received the Meritorious Service Award last year.

Clarence Wolfrom has attended all 40 of the turfgrass conferences.

He contributed ideas for a course of study for students interested in a career in turfgrass management. A two-year program is now offered that includes both classroom study and on-job experience. Currently, the course has 24 first-year students, 23 second-year students, and more than 30 are expected to enroll this fall.

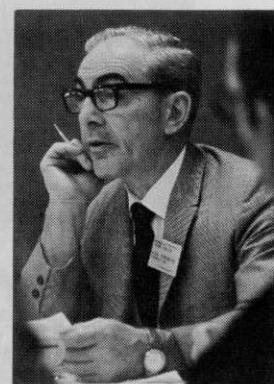
With encouragement backed by financial support (another \$7,200 was voted this year) from the Michi-

gan Turfgrass Foundation, the University has developed one of the best turfgrass research programs in the country. About three dozen major studies are under way.

A steady flow of reports on research progress comes through the University information offices, but the big events are the summer field days and the winter conference.

Some 450 persons came to the 40th conference at East Lansing, Jan. 27-28. Sessions dealt with research reports, sports turf, sod production, pest control, and pesticide usage.

Special reports in this issue on irrigation from Carl Miller of Miller Sprinkling Systems, and Ted Woehrl, Oakland Hills superintendent, were a part of the conference



Board of directors of the Michigan Turfgrass Foundation is in session, with representatives of MSU present. From left are Dr. Kenyon T. Payne, MSU; James E. Armstrong, J. D. Armstrong Landscape Co.; Vice-president William Milne, Country Club of Detroit; Dr. Paul E. Rieke, MSU; William F. Miller, ABC Sod Farms; Norman W. Kramer, Point O Woods Country Club; and President Frank Forier, Terminal Sales Corporation . . .



# Conference



... As were about 50 students from the turfgrass program.

agenda. Following are glimpses of what else was reported.

## Fusarium Blight Increasing

A fungicide to control **Fusarium** blight still defies discovery. The problem, since it appeared in Michigan six years ago, is increasing on sod farms and home lawns. The disease is associated with compaction and drought stress on lawns, said Dr. Joseph Vargas.

Circular rings of dead grass indicate the presence of the disease, which apparently affects root growth. Vargas said shorter roots have been noted in the diseased grass. In dry weather and as the ground dries beyond these affected roots, the plant's leaves wither and

turn brown. Surrounding grass continues green with moisture supplied from a greater depth by longer, healthy root systems.

In the absence of a disease treatment, Dr. Vargas recommended fertilization and daily watering to ease the drought stress.

Dr. Vargas discussed other turfgrass diseases and gave his recommendations of curative chemicals and cultural practices (Table 1).

But chemical companies need to be more specific in pinpointing what diseases their products will cure, stated Dr. Malcolm Shurtleff, plant pathologist from the University of Illinois.

"For which *Helminthosporium* leaf spot" is a chemical effective? he asked. "There are 26 kinds. Which rust? Which smut?"

## New Facts on Thatch

A cultural management program to determine how to reduce thatch, after eight years, has resulted in "no observable thatch accumulation," reported David P. Martin.

"Contrary to what has been believed, clippings contribute very little to the thatch layer," he said. Instead, stems and roots are the major contributors.

Up to now, Martin continued, mechanical removal of thatch was the only method known. But research is in progress to determine if thatch can be reduced by increasing the number of microorganism that bring about thatch decay, or to increase the activity of existing microorganisms.

So far, Martin said, "use of sucrose and ferulic acid has almost doubled activity."

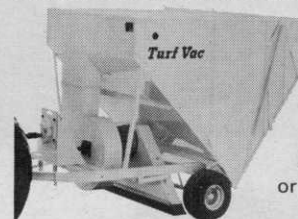
Martin hastened to add that "po-



... James D. Standish, III, executive secretary of the Golf Association of Michigan; Jas. W. Smith, Huron-Clinton Metropolitan Authority; Robert Spoelma, Spring Lake Country Club; Roy Peck, Kalamazoo Country Club; Clem Wolfrom, Detroit Golf Club; Dr. Joseph M. Vargas, Jr., MSU; Ted Woehrle, Oakland Hills Country Club; and Dr. James B. Beard, MSU.

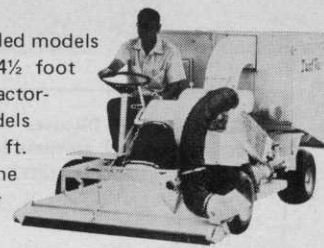
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# RAPID-GRO

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**TABLE 1. Turf Diseases — Chemicals to use; cultural practices to employ.**

**DOLLAR SPOT**

**Chemicals:**

- Daconil 2787
- Dyrene
- Cadmium

**Cultural Practices:**

- Maintain fertility
- Remove dew early

**BROWN PATCH**

**Chemicals:**

- Daconil 2787
- Fore
- Dyrene

**Cultural Practices:**

- Avoid high N fertility
- Increase air circulation (trim trees, for example)

**LEAF SPOT**

**Chemicals:**

- Fore
- Daconil 2787
- Acti-dione Thiram

**Cultural Practices:**

- Remove clippings
- Raise cutting height
- Fertilize

**FUSARIUM BLIGHT**

**Cultural Practices:**

- Fertilize adequately
- Water daily in hot weather

**FAIRY RING**

**Chemicals:**

- Methyl Bromide
- Chloropicrin
- Vapam

**Cultural Practices:**

- Inject water

**POWDERY MILDEW**

**Chemicals:**

- Karathane
- Acti-dione Thiram
- Sulfur

**Cultural Practices:**

- Reduce shade

**SNOW MOLD**

**Chemicals:**

- Calo-gran
- Demosan
- Cadmium
- Calo Clor

**Cultural Practices:**

- Avoid fertilizing after Sept. 15

**LEAF SMUT**

**Chemicals:**

- PCNB
- Benlate

**STEM RUST**

**Cultural Practices:**

- Fertilize

Awards included three scholarships from the Golf Course Superintendents Association of America. Recipients are above, from the left, Tony Tredente, Duane Zienert and Mark Fields. John King (far left) is coordinator of MSU's two-year turfgrass management course. Norman Kramer (far right), GSCA president, presented the awards. Dr. Kenyon T. Payne received the Michigan Turfgrass Foundation's Meritorious Service Award and Mike Donahue was named "Outstanding Student."

tential use of stimulators is under further investigation, and the use of these materials is in no way a recommendation at this time."

**Sod Clippings Pelletized**

Because mowing is necessary to maintain sod quality, work is under way to see if clippings can be utilized in new ways. Dr. M. B. Tesar reported that two tons of pelletized clippings have been obtained. The pellets will be analyzed for total digestible nutrients, essential element content, protein content, and rate of digestibility.

Results to date indicate, he said, that pelletized sod clippings have considerable promise for use in specialized markets and could mean additional revenue for the commercial sod producer.

**Coverings Reduce Winterkill**

Dr. James Beard reported that his studies of winter protection covers indicate that both dessication and low-temperature kill can be prevented. He has determined that follow-up field testing confirms that cold-chamber techniques are valid in evaluating covers.

Of 16 types of coverings studied, the three best were a viscose-rayon fiber cover, a viscose-rayon-polyester cover, and an excelsior blanket. Some covers brought green-up three weeks earlier, he said.

Again, cultural practices can reduce winter-kill problems, he contended. Choose the proper variety. Seaside, for example, is definitely superior in resistance to dessication, he said. High rates of nitrogen applied just before winter sets in in-

crease the chance of both dessication and low-temperature kill.

**Beware the Cicada Wasp**

This is the year to watch for the cicada wasp around golf courses, warned Dr. William E. Wallner. The 14-year locust cycle is at hand, and the killer wasps should be unusually active.

The wasps are large, having a wing span of about 1½ inches. And they're capable of a serious sting, said Dr. Wallner.

Broadcast spraying isn't advised. Rather, he said, look for the burrows — the sand traps are a likely place — and apply a diazinon paste to the edges.

**Sod Strength Evaluated**

Sod heating and sod strength evaluations proved to be of considerable interest in the sod production session.

Dr. James Beard reviewed findings regarding sod strength that were demonstrated at the field day this summer.

The study is based upon only one year's results and final conclusions can't be reached until several more seasons, he said. Nevertheless, these findings have come to light:

— Most cutting height (one-half to 2½ inches) and frequencies (one and two times per week) resulted in an acceptable level of sod strength. The best strength was achieved by mowing at the 2.5-inch height once a week.

— Different varieties produced sod strength from 35 pounds required to tear (South Dakota Common) to 168 pounds (Nuggett), with 75 pounds considered as adequate to permit harvesting, handling and laying



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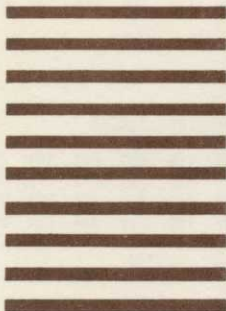
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DULUTH MINNESOTA





without problems. The top five varieties, including pounds to tear were: Nuggett, 168; Pennstar, 167; Fylking, 158; Pp-1, 155; and A-34, 146. Belturf, Merion, Captain, PSU k-107 and Jamestown Red Fescue all rated 140 or above.

— Most sod varieties exhibited an increase in sod strength between June and August.

— In a mixture study of six varieties — Fylking, Merion, Newport, Park, Prato and Windsor in 11 different combinations — those blends containing Fylking tended to rank higher in sod strength.

— An evaluation of sod strength for 11 mixtures of Merion and Pennlawn Red Fescue (a sod mixture in demand for areas having both sunlight and shade) disclosed that mixtures containing as little as 30% Merion on a seed number basis gave comparable sod strength to the five highest ranking variety mixtures.

Studies of sod heating since 1966 indicate that:

— Mowing at 0.75 inch and removing the clippings are the most effective ways to reduce sod-heating injury.

— A high nitrogen rate (5 lb. N/1,000 sq. ft.) applied five days before harvest was detrimental to the sod. Respiration rate and percent kill were significantly increased; root production was significantly decreased.

#### Reports From Europe Trip

Dr. Beard and Dr. Paul E. Rieke reported on their trip to the International Turfgrass Society in Harrogate, England, and a subsequent inspection of turfgrass areas in a number of European countries.

Some general conclusions, they reported, were that the British are considerably behind the U.S. in turfgrass culture and maintenance; that Sweden, in some respects, is ahead of the U.S., particularly in the area of sports turf maintenance.

Solna Stadium in Stockholm, they reported, exhibited excellent grass, despite the fact that 90 games of soccer are played on the field a year. At Soderstadium, also in Stockholm, the field is in use 260 days of the year, to include flooding and freezing it for winter sport games.

At least a couple dozen stadiums were equipped with underground heating systems. Dr. Beard could think of only two or three in this country, one being at Green Bay, Wis., home field of the Green Bay Packers.

## Your Reputation as Grower Goes With Handler of Sod

A wise sod producer may conclude that his responsibilities don't necessarily end when he delivers the sod to the purchaser. What happens in the next few hours, days or months could very well damage his reputation through no fault of his own.

These inferences come from the remarks of Ben Warren, president of Warren's Turf Nurseries, Palos Park, Ill., during the recent turf courses at Rutgers University.

There is considerable difference in sod handling, Warren said, depending on who handles the sod between grower and ultimate buyer. Sometimes sod isn't stored properly and deterioration results.

He has noted that some merchants have no provisions for rolling out sod, but move large volumes quickly. These largest and "better organized" dealers plan that any surplus can be used on landscape jobs by their own landscape department or local contractors.

"Vacuum cooling has been a great aid to this type of merchandising, so sod can be kept three or four days in stacks before damage occurs," he said.

Some dealers, he continued, may stock sod for short periods but have no provision for rolling out surplus on pavement or polyethylene sheets.

And there are merchants that stock no sod, but maintain an attractive plot of grass from which orders are taken.

The large volume that goes through the landscape contractor isn't endangered unless unfavorable weather occurs, he said, for the sod generally is planted immediately.

Again, he added, vacuum cooling has been a boon on occasions when

unexpected rain delayed installation for several days.

"A high percentage of this grass is well-planted by competent workmen, Warren believes, "but that small part that is poorly handled is provoking and makes an unfavorable and lasting impression."

Warren has observed these bad practices:

1. Failure to recognize and correct contaminants that exist in the site soil can lead to dissatisfaction. The two most noxious problems are quackgrass and bentgrass. Eliminate these before laying sod.

2. Poor grading resulting in water-holding depressions or a surface too rough for satisfactory mowing creates conditions that are almost impossible to correct after grass is established.

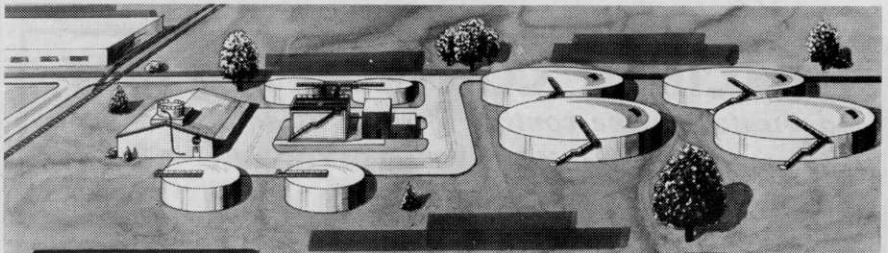
3. A not uncommon problem is the misuse of varieties. The outstanding abuse is the planting of Merion bluegrass in too much shade.

4. Lack of use or misuse of fertilizer is encountered.

5. Careless or ill-advised use of herbicides has caused from minor damage to complete kill.

6. Probably the most frequently encountered abuse of sod is seen in the management of water. This type of mishandling can be briefly described as ranging from too little, too late, too much, and too often.

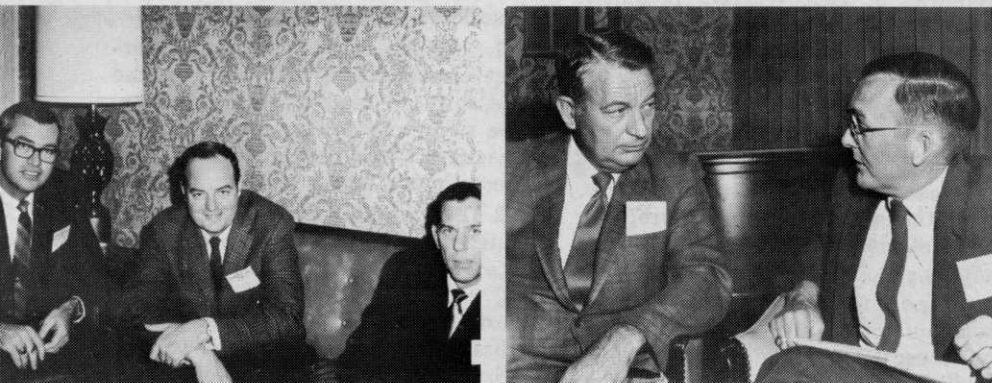
In conclusion, Warren said, "properly advising the new owner in the care of his new grass is often neglected or overlooked. We suggest that written suggestions on the care of grass be placed in the hands of the owner upon completion of every job." (And that seconds the motion, we offered in the February issue about a turf owners' manual.)



The first phase of a new \$2½ million Chemagro Corporation waste treatment facility is under construction at the company's production plant for environmental control chemicals in the Kansas City, Mo., Northeast Industrial District. Estimated completion date is mid 1970. A staff of six will operate the unit 24 hours a day. The treated water will be purer than the water of the Blue River into which it flows.

## Southern Weed Science Society Report:

# Look at Weeds As Pest Haven



They may be talking business or just visiting. Chances are the subject is contract applying in the left picture. From the left are Emery McEithen of Amchem, Ambler, Pa.; Frank Cady, contract applicator and owner of Rowco, Inc., San Antonio, Tex.; and John Kirch, also of Amchem. In the right picture are Jay D. Wright, left, Stauffer Chemical Co., Orlando, Fla., and Will Waters, University of Florida, Apoka.



Utility right-of-way maintenance is a good bet for the subject here. From the left are C. E. Walls of Du Pont Company, Columbia, S. C.; Hyland Johns, Asplundh Tree Expert Company, Jenkintown Pa.; L. A. Conn, Du Pont Company, Wilmington, Del.; and Dave Peterson, Stull Chemical Company, San Antonio, Tex.

## HYACINTH CONTROL SOCIETY

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**M**EMBERS of the Southern Weed Science Society—900 strong—held their 23rd annual meeting Jan. 20-21 at Atlanta, Ga. This weed science group continues to stage a program noted for its practical approach to weed control via new technology.

This year, more than 140 papers were delivered. Nine different sections were required to accommodate the many types of weed control under study. These consisted of weed control in agronomic crops, horticultural crops, forests and rangelands, rights-of-way and industrial sites, and aquatic areas. Other sections consisted of the ecological, physiological and edaphic aspects of weed control, teaching and research, developments from industry, and application of herbicides.

Common to this Society's sessions is the great involvement of top commercial company personnel along with researchers.

Dr. William R. Furtick, director of the International Plant Protection Center at Oregon State University, Corvallis, raised some interesting questions regarding the change in weed problems which occurs as the environment changes.

Frequently, he said, we may consider plants to be weeds but their presence may not have any detrimental effect on man's desires and they cannot be considered a weed problem. On the other hand, there is increasing evidence that plants growing in or adjacent to agricultural land, which have been considered unimportant in the past, may have major significance as weed problems in the future.

The plants Furtick referred to are those species that host important insects or disease pests. The study of weeds as intermediate hosts of other pests is perhaps the most neglected area of weed control, he said, particularly in recent years during which modern pest control has received major research attention.

The importance of weed control as a major element of integrated pest control, Furtick stated, has been frequently overlooked. Integrated control involves designing pest control programs that utilize all the control means to the best possible degree.

These would include cultural practices that minimize the potential for the pest or enhance ease of control, such as favoring natural predators, use of highly favored plant species as trap crops at intervals to concentrate insects for destruction without spraying a whole field, and the elimination of weeds that act as the breeding ground where insects or