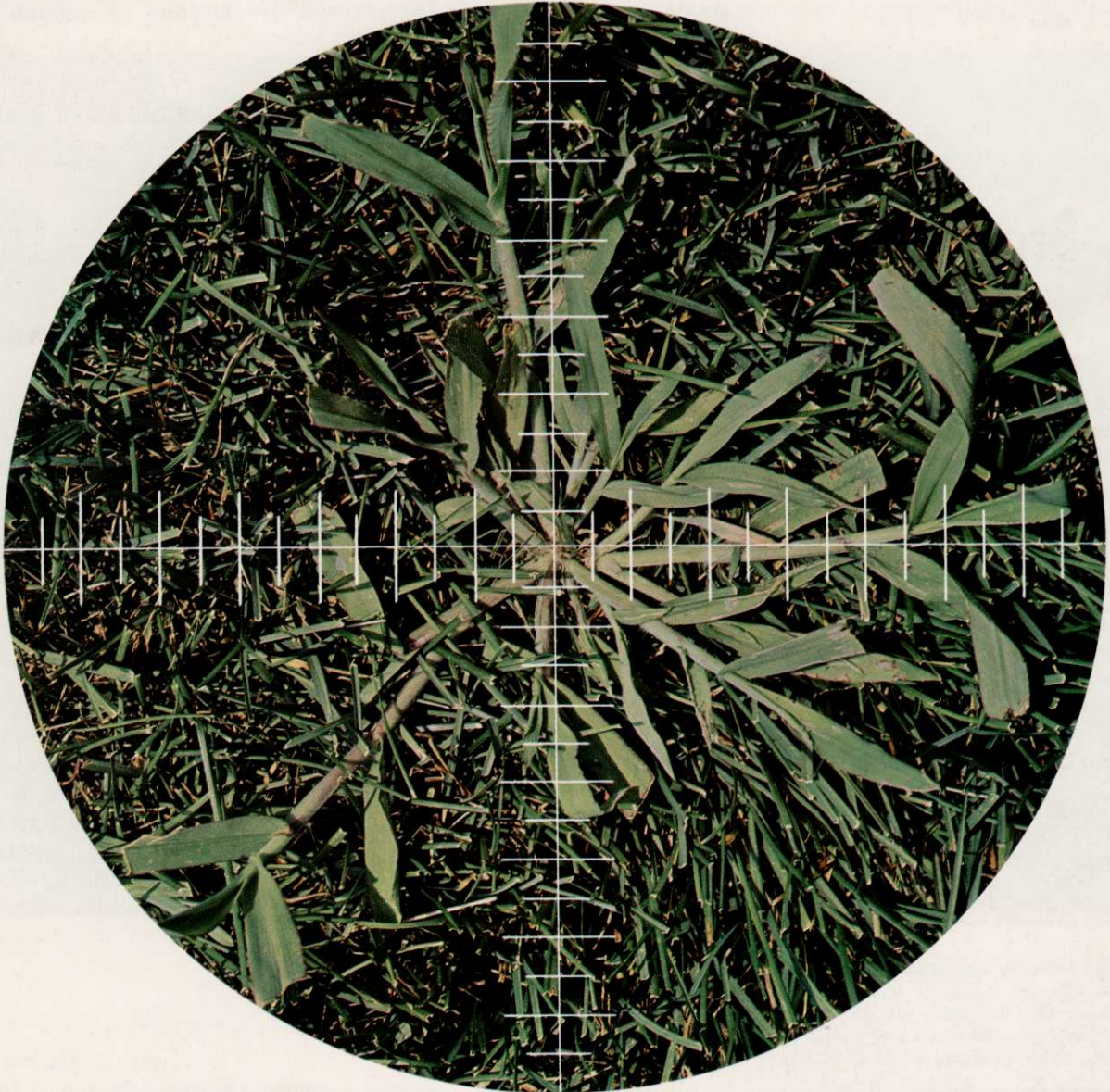


**Why let hordes
of crabgrass
take over your turf?**



**Stop the invasion
before it starts.**

The crabgrass - control program you

Balan goes all out...all over...all season. Stops crabgrass for as little as \$15 an acre.*

All-out control: Tests prove Balan's power. It's the one pre-emergence herbicide as easy on your grounds maintenance budget as it's rough on crabgrass and other undesirable grasses.

Turf professionals aren't easily satisfied. Not with weed-killers that cost 3 to 4 times as much...or quit working after 4 to 6 weeks...contain poisonous chemicals (a big consideration in public areas).

Balan is the result of exhaustive testing at the Eli Lilly-Elanco research center. Its performance was confirmed by years of field trials. Many leading universities added their recommendations. Golf course and grounds superintendents began using it. They agreed. Balan stops smooth crabgrass, hairy crabgrass, goosegrass (silver crabgrass), watergrass (barnyardgrass), yellow and green foxtail on established turf.

***All-over control: Balan's modest price permits it.** Costs as little as \$15 per acre, depending on the type of turfgrass and climatic zone. On northern (cool



SCHOOLS



PLANT GROUNDS



GOLF COURSES

This side-by-side test is proof. Straight through the summer, all-season control Balan continues working in the treated area at right. Desirable turf isn't crowded out by crabgrass, isn't competing for moisture and nutrients. Look how crabgrass has taken over the untreated area at left and then browned out.



can afford. 1. Apply Balan.TM (That's it!)

season) turfs, one yearly application provides effective control.

On southern (warm season) turfs, where a heavier and a second application may be needed, the cost will be higher. Even so, Balan's economy makes it ideal for use everywhere, including areas you may have thought were too costly to warrant treating with a herbicide.

How can Balan give you this kind of stopping power—and economy besides? Because Balan's active ingredient has more killing power. With more strength to unleash, it covers more ground.

All-season control: weatherproof Balan stays put. Many herbicides are very soluble in water and subject to leaching. Rainfall and irrigation quickly wash them out of the weed-control zone. Not Balan. Balan's low solubility and strong adherence to soil particles means that it stays put. It resists leaching, even under excessive rainfall or irrigation, to give you months and months of control. Balan doesn't give crabgrass a chance to mar your turf.

On warm-season turfs and in southern areas where the growing season exceeds 4 to 6 months, a second application may be necessary for continued control.



ATHLETIC FIELDS



OFFICE BUILDINGS



PARKS



(BalanTM—Benefin, Elanco)

ELANCO PRODUCTS COMPANY:

I'd like to know more about Balan Granular pre-emergence herbicide. Please send me complete technical information.

I'm interested in treating a total area of _____ acres.

I presently do _____ do not _____ use a pre-emergence herbicide.

Name _____ Title _____

Establishment _____

Address _____

City _____ State _____ Zip _____



Balan Granular is the easy-to-use herbicide formulated for turfgrass professionals.

You'll appreciate Balan's convenient granular form. There's no messy wettable powder or spray to handle. Granules pour smoothly and won't clog equipment.

Both drop-type and rotary-type spreaders, commonly employed to apply granular herbicides and insecticides, may be used to apply Balan. However, a spreader that provides a consistently uniform distribution of granules is recommended. Use a spreader that avoids any uneven distribution or concentration of the herbicide in narrow bands, and spreads the granules evenly over the area.

Balan offers a good safety margin. It will not injure these established turf grasses, when applied as directed: perennial bluegrasses, perennial ryegrass, fescue, centipedegrass, St. Augustinegrass, Bermudagrass, zoysiagrass, and bahiagrass.

And Balan contains no poisonous arsenic, mercury, or lead. Used properly, it attacks only your undesirable grasses by killing the seeds as they germinate. It does not control established problem grasses.

Dependable, long-lasting Balan—the turf herbicide formulated for professional use. Do you want technical information or assistance? It's yours for the asking. Then watch Balan go all out, all over, all season to give you even better looking turf.



(Balan™—Benfen, Elanco)

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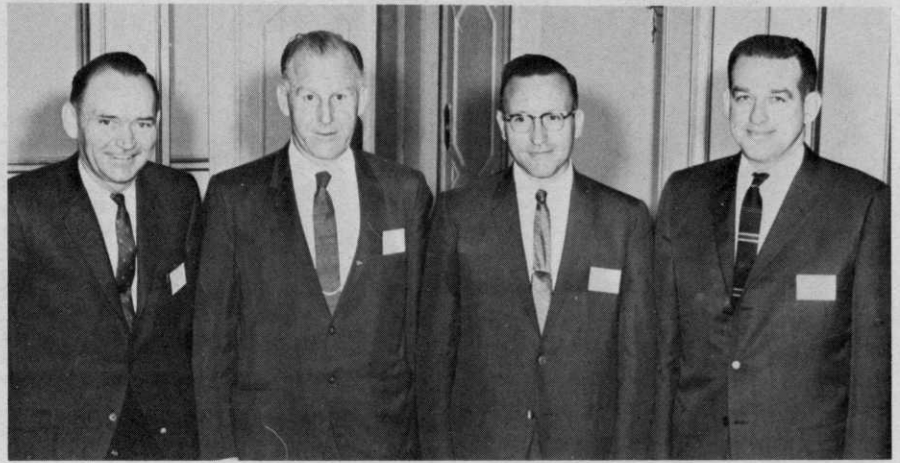
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Dr. Philip A. Butler, U.S. Bureau of Commercial Fisheries Biological Laboratory, Gulf Breeze, Fla., presented new information on pesticide monitoring of streams.



NWCC panel on problems of perennial weeds, left to right: Dr. Henry A. Friesen, Canada Department of Agriculture, Lacombe, Alberta; Dr. S. N. Fertig, Amchem Products, Ambler, Pa.; Dr. Ellis Hauser, USDA Crops Research Div., Tifton, Ga.; and Dr. William F. Meggitt, Michigan State University, East Lansing, Mich.

year, he said. Despite heavy rainfall this past season, Gunderson reported that the bromacil held up remarkably well as a residual type weed killer.

Long term weed control also helps keep spilled grain from germinating in work areas. Under signal and communications lines, and at road crossings where brush threatens overhead wires or blocks vision, a combination of brush killers achieve control. Where rights-of-way run through farm country, liability claims have been reduced by using a formulation which reduces spray drift. With perennial grasses, and biennial and annual weeds controlled, Gunderson said, a favorable environment was created for growth of milkweed and dogbane. Rather than increase the rates of bromacil being used, which would add greatly to herbicide costs, the Company added aminotriazole to the regular formulation. This gave excellent results, he said.

Discussing a different approach to rights-of-way maintenance was Professor William MacConnell, University of Massachusetts. MacConnell told of research the University is doing in cooperation with the Holyoke Water Power Company, Holyoke, Mass. The approach has been to find other than agricultural uses for rights-of-way, especially in forested or hilly areas. The idea, MacConnell said, is to reduce rights-of-way maintenance costs. To this end,

a project now in its third year is Christmas tree production. Christmas tree plantations, he said, do not interfere with power line maintenance. They are attractive and they reduce the cost of brush control. And they should have a substantial cash value at maturity. Trees, MacConnell offered, might be used as a donation to service organizations which would harvest and market the trees. During the growing cycle, trees benefit both people and wildlife. Larger utilities, MacConnell reported, are watching this 68-acre pioneering effort.

John A. Meade Elected 1968 President

More than 650 persons, mostly weed control specialists and researchers, attended the 3-day session at the Hotel Commodore, Jan. 3-5. J. R. Hansen, in charge of public relations for the group this year, said that interest among newspapers, television and magazines in special fields had been greater than ever. Officers were elected at the Thursday business session. John A. Meade was elected president. Meade, who is a member of the Soils and Crops Department, Rutgers University, New Brunswick, N. J., moved up from the vice-presidency. He succeeded John Gallagher of Amchem Products, Inc., Ambler, Pa. Arthur Bing, Cornell Ornamentals Research Laboratory, Farmingdale, N. Y., was reelected secre-

tary-treasurer for the coming year.

Of special interest to turfmen was a research report on evaluation tests of preemergence herbicides for control of crabgrass in turf. John A. Jagschitz, Department of Agronomy, University of Rhode Island, Kingston, R. I., discussed tests carried out this past season of 1967. He said that Bandane and Betasan gave better residual control the year after treatment than did Azak, Balan, Dacthal, Planavin, Siduron, and Sindone.

According to Jagschitz, crabgrass control from Bandane and Betasan ranged from 75 to 83 percent at the standard rate of application. Control jumped from 92 to 98 percent when the rate was doubled. Double rates on the other chemicals showed less than 71 percent control, he said.

Herbicides in the Rhode Island study were applied in May, 1967. Turfgrass injury observations were recorded during the season and the degree of crabgrass control noted in September. To determine residual effectiveness, crabgrass seed was broadcast in December, 1966, over areas which had been treated in May, 1966. Control was then checked in September the following year.

Effective seasonal crabgrass control with only slight injury was obtained with certain formulations or rates of Azak, Bandane, Betasan, Dacthal, Planavin, Siduron, and Sindone.



George H. Bayer, Product Development Manager, Agway, Inc., Syracuse, N.Y., left, and Dr. Chester L. Foy, Department Plant Pathology and Physiology, Virginia Polytechnic Institute, Blacksburg, Va., visit regarding efficiency of new weed control chemicals.

With the exception of Betasan, certain rates or formulations of these materials, in addition to Balan, Eptam, Neburon, RP-11561, and Zytron, did not give effective control, or caused more than slight turf injury or both. Spray and granular formulations of most chemicals gave similar control, but some sprays caused greater turf injury. The least injury was noted with fertilizer formulations.

Oils Mixed With Atrazine Gave Superior Results

Dr. Henry P. Wilson, Virginia Truck Experiment Station, formerly of Rutgers, reported on his work with Dr. Richard D. Ilnicki, Rutgers. They ran tests on the effects of atrazine and linuron when mixed with certain phytobland oils for control of annual broadleaf weeds and grasses.

Uses of adjuvants composed of combinations of phytobland oils and surfactants increase herbicide effectiveness in their studies. They found that applications were most effective at a rate of 20 gallons per acre. A single application at a delivery rate of 20 gallons an acre containing 1 gallon of oil was more effective than an application in 40 gallons containing 2 gallons of oil. Most effective were applications in 20 gallons per acre

containing 2 gallons of oil. In short, Wilson reported good broad-spectrum weed control can be obtained with 3/4 lb/acre atrazine, if applications are made when weeds are small and if the applications contain adjuvants composed of phytobland oils and surfactants.

Ragweed control and the resulting comfort of hay fever sufferers was the subject of several Conference papers. Today, ragweed can virtually be eliminated from any community before the pollen is released. In the northeastern U.S., the season usually begins about August 1 and is over by the end of September.

One outstanding community

program was that reported by Sanitarian Hans W. Stegemann, Dover Township, Ocean County, New Jersey. Stegemann said that community obtained control last summer and fall by spraying the 52 square mile area weekly with 2,4-D weed killers. First spraying was done August 18 and the final one September 20. According to Stegemann, airborne pollen collected on slides indicated a count of zero for both August and September. Streamflow from a forested watershed was increased fourfold in a section of the White Mountains, New Hampshire. Methods used were clearcutting of timber and application of herbicides to prevent new vegetation. Robert S. Pierce, research forester for the USDA, told the conferees that a study on a 39-acre hardwood forest showed that it is possible to eliminate water lost by transpiration by trees and to measure the increase in streamflow which results.

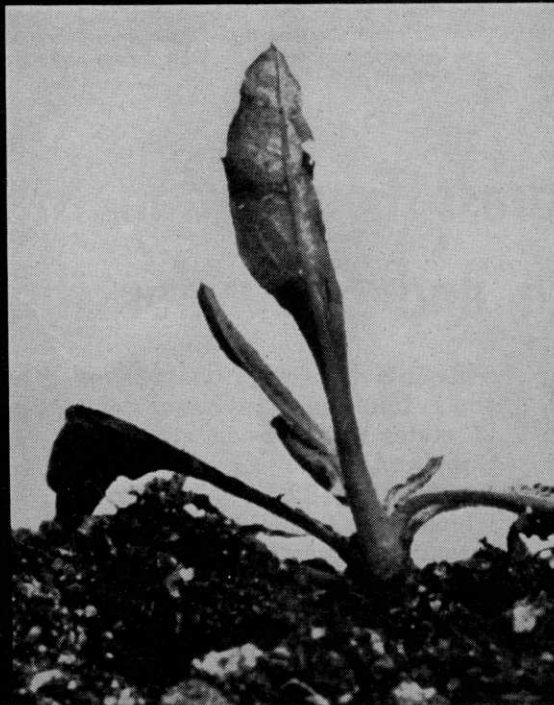
In the White Mountain work, Pierce said that trees were felled on snow-covered ground and no wood products removed. At the beginning of the first growing season following cutting, bromacil, which is non-toxic to animals, was applied by helicopter. This restricted growth of herbaceous vegetation and woody sprouts. Spot applications of 2,3,5-T were used the second summer to kill persistent stump sprouts. In the first growing

(Continued on page 41)

New officer slate for 1968 is, left to right: Dr. Walter Gentner; Dr. Arthur Bing, secretary-treasurer; Dr. Homer LeBaron, vice-president; John Gallagher, past-president; Dr. John Meade, president; Dr. Eugene Wilson; Dr. George Bayer; and Dr. Chico Haramaki. Absent was Dr. Richard Swartzbach.



Sudden death to all weeds.



Spray once with Assault® and kill off all weeds. Assault begins destroying foliage immediately and penetrates the soil to attack the roots. Regrowth is no problem, either. Assault stays in the soil for as long as 12 months.

But that's only half of it. There are no messy powders to dilute. Just add water to the liquid concentrate and you're ready to spray.

It makes clearing the land a one man job. For details, and for

a free weed identification chart, write: West Chemical Products, Inc., Dept. WTT-2, 42-16 West St., Long Island City, N.Y. 11101.

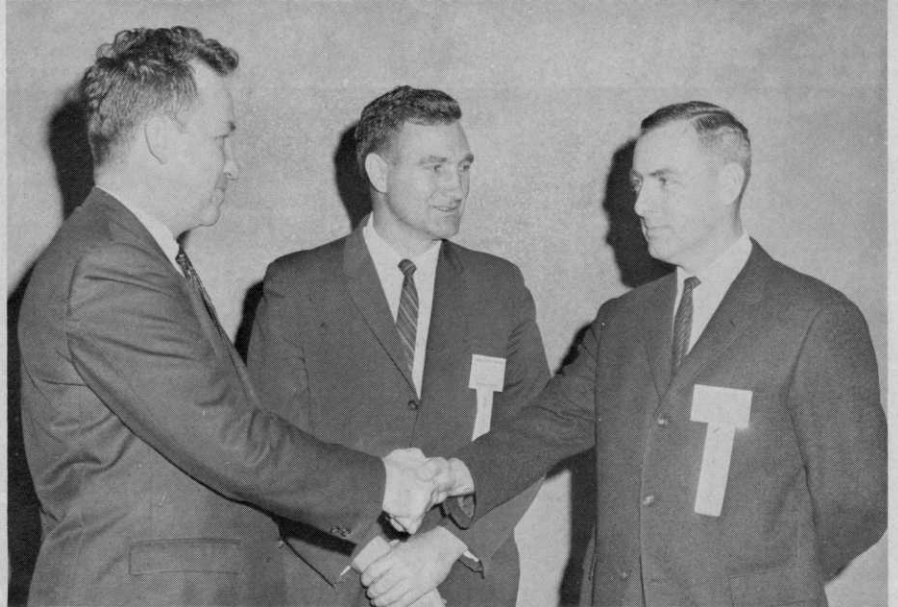
GO WEST

Assault





Frederick L. Witt, landscape architect, Catholic Cemeteries Association, Cleveland, O., left, discusses conference topics with Dr. Richard R. Davis, agronomist, Ohio Agricultural Research and Development Center, Wooster, O.



Prominent at the first Ohio Turfgrass Conference and Show were, left to right: Cecil F. Kerr, Chipman Chemical Div., Rhodia, Inc.; Robert W. Miller, agronomist, Ohio State University, and executive-secretary of the Ohio group; and Harry Murray Jr., Warren Turf Nurseries, Akron, O., president of the group.

Ohio Turfgrass Foundation Stages Major Conference and Show for the Industry

Industry members, 870 strong, gathered recently at Cleveland, O., for what promises to become an important yearly event for turfmen.

The Ohio Turfgrass Foundation staged a major show and conference of national interest. Feeling that there was a need for an industry show coupled with a meaty educational program, the Ohio group chose to gamble that turfmen and suppliers on a nationwide basis would participate.

Results bear out the logic of their thinking. Turfmen from 25 states and Canada attended. Suppliers, 54 in all, purchased the entire 100 booth spaces which were available. The educational program, which was attended almost en masse by the group, featured the most prominent turf specialists and researchers in the nation. These program participants represented every section of the U.S.

Organization this first year naturally required cooperation

and the utmost effort on the part of the Foundation members, particularly those charged with committee assignments. Harry Murray, Jr., president of the host group, and a representative of Warren's Turf Nursery, Akron, O., was officially thanked by the organization for his work in staging the event, particularly in lining up the exhibit area at the Sheraton-Cleveland Hotel, and for his work with exhibitors. Professor Robert W. Miller, executive secretary of the Ohio group, and Extension agronomist at Ohio State University, Columbus, O., was largely responsible for the educational program.

Discussing his 30 years of experience in growing commercial sod, Ben Warren, Warren's Turf Nursery, Palos Park, Ill., told the group that the company presently had 360 different strains of bluegrass in evaluation plots at the Palos Park, Ill., headquarters of the company. Commercial sod grown and sold by the company is being produced in New York, Ohio, Indiana, Illinois, Wisconsin, and California, he said.

Warren reported that the company is not completely satisfied



Enthusiastic discussions proved to be a highlight of the Ohio event. Engaged here are Jim Olinger, Warren Turf Nurseries, Plymouth, O., left, John Spodnik, Westfield Country Club, Leroy, O., center, and William Lyons, Sr., Lyons Den Club, Canal Fulton, O.



On the program which featured turfgrass management were: Dr. Edward W. Stroube, agronomist, Ohio State University, Columbus, O., left, Dr. Houston B. Couch, plant pathologist and physiologist, Virginia Polytechnic Institute, Blacksburg, Va., and Dr. William H. Daniel, agronomist, Purdue University, Lafayette, Ind.



Past Presidents of the Ohio Turfgrass Foundation were honored by members. Left to right are: Harry Murray, Jr., Akron, O.; Curtis Overson, Columbus, O.; George Hammond, Columbus, O.; and Roy Haney, Troy, Mich. Unable to be present for the conference this year was Past-President Dick Weaver, Cleveland, O.

with any bluegrass which is available today. His remarks indicated that as a result of testing by his company, commercial bluegrasses will become important in the market.

New Varieties Compared To Merion Bluegrass

Before Merion bluegrass was available, Warren said that the biggest problem faced was Helminthosporium leaf spot. Since Merion is resistant to this disease, every new selection of bluegrass has had to match or beat the resistance of Merion. A new grass must also excel in the areas where Merion is weak. These areas are primarily susceptibility to stripe smut, Fusarium roseum, powdery mildew and stem rust.

Warren said his company now has about 40 selections which have leaf spot resistance equal to Merion. He mentioned Warren's A-20 bluegrass as outstanding, and reported that in 7 years of observation, no leaf spot, stripe smut, mildew nor stem rust had been detected. Another Warren selection, A-10, has avoided Fusarium roseum completely. Because of this and other resistances, he feels it may allow the southern range of bluegrass adaptability to be extended. Another Warren selection which he rates very high is known as A-34. It has proved to be very good in shaded areas.

Effective irrigation systems do

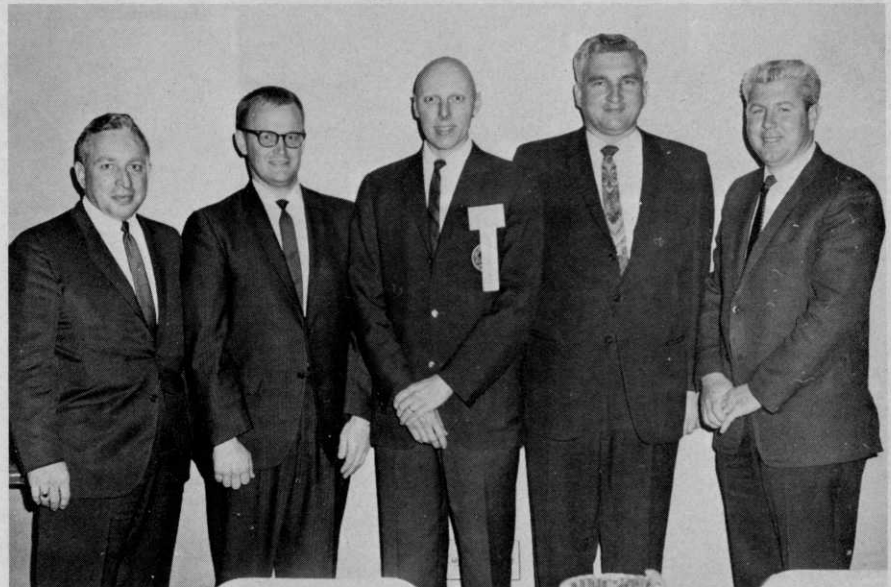
not just happen. They require many stages of design, building and trial use before they can be considered "happy" systems. Such is the thinking of Walter J. Wilkie, March Irrigation, Muskegan, Mich. Discussing irrigation system design with turfmen, Wilkie defined a so-called "happy" system as one which is useful and effective, and which fits the specific requirements of the user.

Because an irrigation system often represents one of the greatest capital expenditures within the turf industry, Wilkie cau-

tioned turfmen against gambling or becoming a guinea pig for an untried system. He urged buyers of systems to investigate and research every possible type of system available. He believes the prospective buyer must become knowledgeable and, above all, must know his specific needs. Wilkie discussed his experience during the planning and construction of Cleveland's Oakwood Country Club system.

The Oakwood Club system, Wilkie said, involved a 5-part process. He listed the parts as follows: (1) information gather-

Officers for 1968 and the two newly named directors are, left to right: Robert O'Brien, Century Toro Distributor, Toledo, O., a new director; Gene Probasco, Lakeshore Equipment & Supply Co., Columbus, O., treasurer; Charles Tadge, Mayfield Country Club, South Euclid, O., president; Richard Craig, Chemargo Country Club, Cincinnati, O., 2nd vice-president; and Paul Morgan, Browns Run Country Club, Middletown, O., new director. First vice-president Robert Rieman, Woodville, O., was not present for the picture.

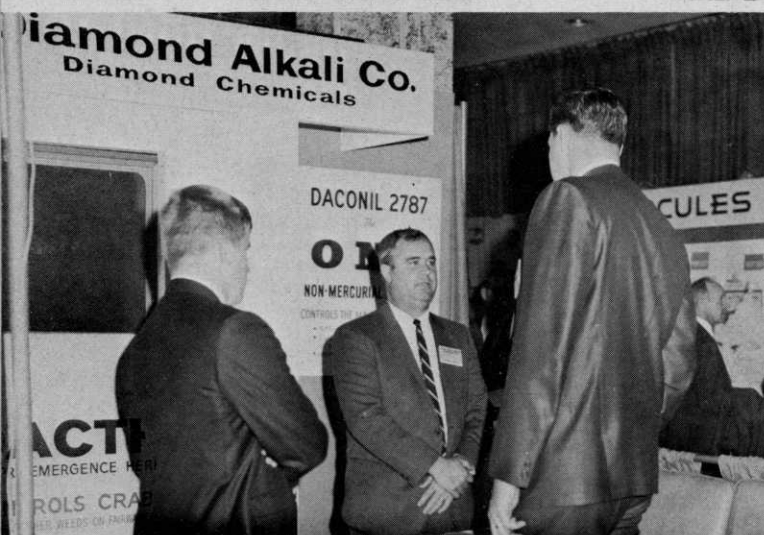




Hercules, Inc., representatives, Charles K. Mruk, left, and R. E. Gorfowski, center, talk shop with Dean Peterson, Lakeshore Equipment Co., Cleveland, O.



Russell E. Rose, Ryan Equipment Co., St. Paul, Minn., mans Ryan's booth which was one of 100 among 54 exhibitors at the show.



Diamond Alkali which has now been announced as Diamond Shamrock Corporation exhibited the full line of Diamond chemicals.



Busy at the Toro booth are, left to right: Frank Petranek, mayor of Garfield Heights, O., Tom Steers, Toro, Dr. James Watson, Toro, J. G. Dunbar, Toro, and Jack Brantl, Century Toro Distributor.

ing stage; (2) design stage; (3) construction stage; (4) balancing and adjusting stage; and (5) happy usage stage. By this approach, Wilkie says, a system doesn't just happen. It unfolds. It comes about by direct and deliberate planning. Through every stage, questions evolve and are answered. Among the questions answered as the various stages unfold are the following, which are typical concerns of the turfmen contemplating an irrigation system: (1) what type turf are we watering; (2) how much water does it require; (3) how fast will the soil take the water; (4) are there any extreme dry or wet spots within the given soil structure; (5) where do we get our water; (6) how much water is available; (7) how much time can we have in a given day to apply the water; (8) whose equipment should we use; (9) what type of pipe should we use; and (10) how much money can be spent on the system.

Most Questions Answered As System Plans Unfold

As the system design and construction unfolds, these and other questions, Wilkie believes, can be answered and incorporated into the master plan. He points out that it is a tedious and time consuming process. But he stresses that a "happy" system is worth the effort.

William E. Lyons, Lyons Den Golf, Inc., Canal Fulton, O., told conferees that there is a fine distinction between liming turf areas and liming regular soils. Mixing lime with turf, based on a mixed sample of the top 6"-8" can be very misleading, he says. In agriculture seedbed preparation, this may well be the best method. But with turfgrass, Lyons made the point that lime moves downward and turfgrass soil mixtures tend to be much more alkaline in the lower zones. Yet the mat and the upper layers may be quite acid. He believes this comes about as a result of heavy watering and nitrogen use which is necessary and common on golf greens.

Lyons takes soil samples by

(Continued on page 42)