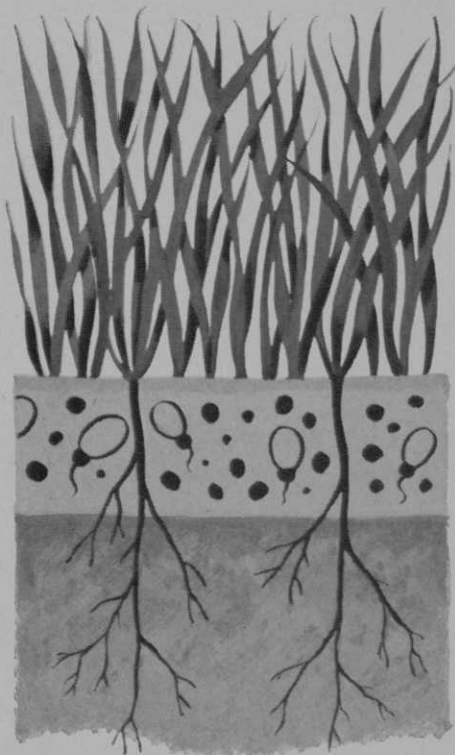


USE...

AZAK*

Selective Pre-Emergence Herbicide



Azak, as indicated by center section, must be applied before crabgrass seeds are ready to germinate. Azak then penetrates seed at time of germination to prevent initial growth.

FOR CRABGRASS CONTROL

AZAK* is Hercules' new crabgrass control designed for pre-emergence application on established turf. Its effectiveness has been proved in commercial use. Available as an 80% wettable powder, Azak 80-WP, it can be sprayed in conventional equipment or formulated by manufacturers into a granular product.

Azak brings to users the combined advantages of effectiveness . . . persistence . . . safety to established turf . . . low toxicity . . . economy . . . and practically no odor. Azak is

nonleaching. One application of Azak lasts through the crabgrass germination period. Of special interest to the manufacturer is its compatibility with most fertilizers and pesticides, and its low cost.

Technical information on and availability of Azak pre-emergence herbicide can be obtained from the nearest district office listed below, or from Agricultural Chemical Synthetics Department, Hercules Powder Company, Wilmington, Delaware 19899.

*HERCULES TRADEMARK



BOSTON, MASSACHUSETTS / BROWNSVILLE, TEXAS / CHICAGO (OAK BROOK), ILLINOIS / DALLAS, TEXAS / FRESNO, CALIFORNIA / GREENVILLE, MISSISSIPPI / LOUISIANA, MISSOURI / MONTGOMERY, ALABAMA / PHOENIX, ARIZONA / RALEIGH, NORTH CAROLINA / SAN FRANCISCO, CALIFORNIA / VANCOUVER, WASHINGTON

February, 1965

Westfall Alumni Association



Dale Foster



Bob Burns



Leon Hartogh



Richard Winn



Leroy Conard



Gerald Hall



Wendell Boken

to handle the job to the letter. If you don't understand, he'll start at the beginning and go through it again."

Nobody's A Hired Hand

Gil Collins, supt. at Mirror Lake CC in Kansas City, was attending the University of Iowa and majoring in art when he became acquainted with Norm Westfall in 1955. Collins had been playing golf for two or three years at the time, and, passing Wakonda one day in the early summer, decided it would be interesting to spend his vacation working on the course. Within a month after he was hired he had developed an intense interest in turf work. Westfall took special interest in Collins and encouraged him to learn everything he could about managing a course. Not only that but he constantly stressed learning how to get along with people in order to acquire the crowning qualification that

makes a man supervisory material.

"You admired Pop Westfall for the way he handled people," says Collins. "Nobody was a hired hand to him. He took time to listen to everyone's ideas although he didn't always agree with them. He was firm but he never pushed anyone. He created the kind of atmosphere that made people want to cooperate with him."

Talks to the Grass

Most of the Wakonda supt.'s former charges agree that Westfall's strong points are knowing how to handle turf diseases and repairing machinery. That doesn't imply, however, that he is deficient in any other phase of course management. "Norm," says Richard Winn, who is at Pine Knolls in Knoxville, Ia., "has a sixth sense for detecting disease symptoms. Most supts. stew and fret over what dis-

(Continued on page 94)

BROWN DOLLAR SPOT Red Thread COPPER PATCH LEAF SPOT BLIGHT

Kromad stops all 5. Why add Calo-Clor?

Good question. Mallinckrodt KROMAD® prevents ALL FIVE major summer diseases. But during severe "brown patch weather," you can always use extra protection. That's when you add a little CALO-CLOR® to your tank.

NOTICE WE SAID A LITTLE CALO-CLOR. When combined with KROMAD, ½ oz. of CALO-CLOR per 1,000 sq. ft. gives you the best all-around fungicide combination ever tested by many important experiment stations. And CALO-CLOR is so effective against brown patch, many courses have used it for 40 consecutive years.

KROMAD SAVES YOU MONEY ALL SEASON. This one broad-spectrum fungicide gives you a complete, basic disease prevention program. It saves buying several fungicides. It cuts spraying time and labor costs.

Here's the system: 2 oz. of KROMAD per 1,000 sq. ft. regularly. Add ½ oz. of CALO-CLOR when brown patch threatens. Economical. You bet. Saves your club dollars—and save your turf! Start your "KROMAD plus CALO-CLOR" program now. Call your Mallinckrodt Distributor.

Mallinckrodt Chemical Works / Turf Products / St. Louis • New York • Los Angeles

Mallinckrodt®





GRAU'S Answers to Turf Questions

BY FRED V. GRAU

Water Is Vital

"WATER" is the title of the 1955 USDA Yearbook. This volume belongs in the library of every course supt. It is the most comprehensive treatment of the subject that has been published. Ten years later we will do well to review every aspect of the Yearbook and of the subject wherever we can find it.

It is about time that each of us asks, "What can I do to improve the situation?" Water is life. Life can be beautiful when every person has all the clear pure water he can use for drinking, cooking, bathing and recreation. When green plants have ample water there is no fear of hunger or shortage of materials necessary for living.

Too much water causes death and destruction — witness the recent West Coast floods. Every person needs to look about him to see what *he* can do to retard runoff, control erosion and to cause more rainfall to sink into the soil where it can cause no damage.

Too little water has brought about the destruction and disappearance of entire civilizations. When water fails the fertile land becomes as the desert. In many parts of the U.S. water shortages are causing drastic revisions of normal practices.

A Major Problem

Polluted water is our greatest problem next to overpopulation. Domestic and industrial wastes have ruined many of our finest sources of fresh water. We can not

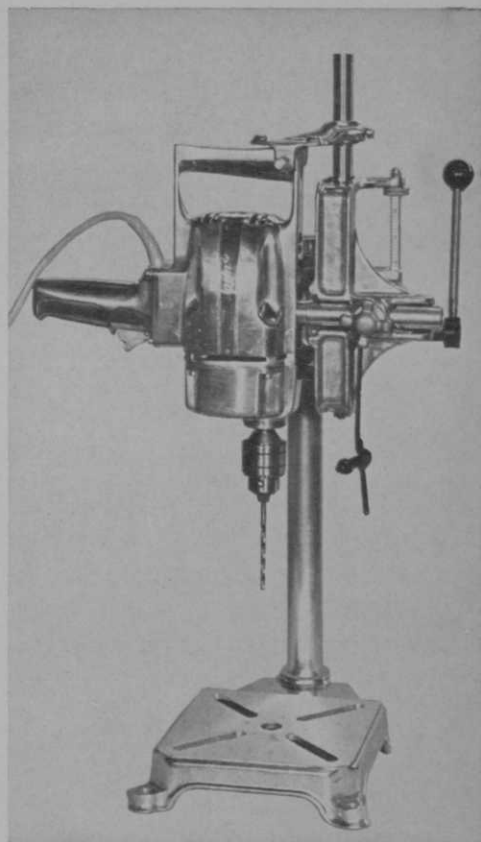
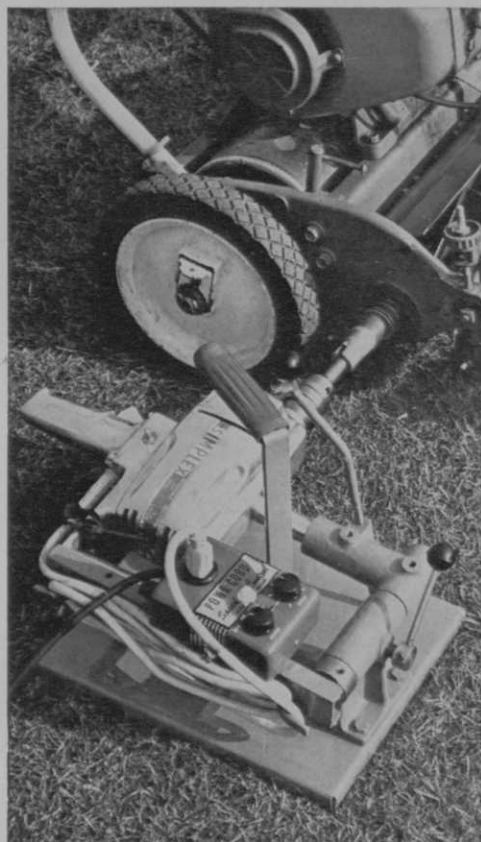
drink polluted water nor use it in cooking. Industries move away from bad water because they can not use it in processing their products. Recreational uses dwindle or are prohibited. There is danger in using polluted water for irrigating crops and turf for fear of spreading diseases.

We read and hear much about getting "fresh water from salt water" by various demineralization methods. Fresh water produced by these methods is more expensive than naturally fresh water, but who is to say that the costs are excessive. Dock strikes, too, are costly but we seem to be willing to pay the cost whether we can afford them or not.

Minimum Assistance

The necessity of water in the production of high quality turf needs no elaboration here. We should ponder the questions, "How can we increase the *efficiency* of the water we use?" and, "Do we need to use so much water?" Turfgrass research one day will be forced to seek those grasses that can produce acceptable playing turf with minimum assistance from irrigation. There are many practices that help to conserve natural rainfall and to extend the supply of soil water.

One is soil cultivation which aids infiltration and deeper penetration of roots. Adequate treatments with soil amendments improve porosity and water holding capacity. Fertilization can be designed to improve turf quality with no increase in water use but a large increase in water-



It's a lapping machine... It's a utility drill...

It's the new SIMPLEX 175

Now, get two, or three, valuable machines in one. The Simplex 175 is the easiest, most economical way to keep reel mowers in top cutting condition during the busy mowing season. It's also a big $\frac{1}{2}$ " portable drill for use anywhere. (Add the drill-press stand and you have a precision drill-press for your shop). The Simplex 175 has another feature you've always wanted — variable speed control for lapping-in big gang mowers or small greensmowers at the best speed for each, not too fast or too slow. Send for full information. Order now for early delivery.

THE FATE-ROOT-HEATH COMPANY

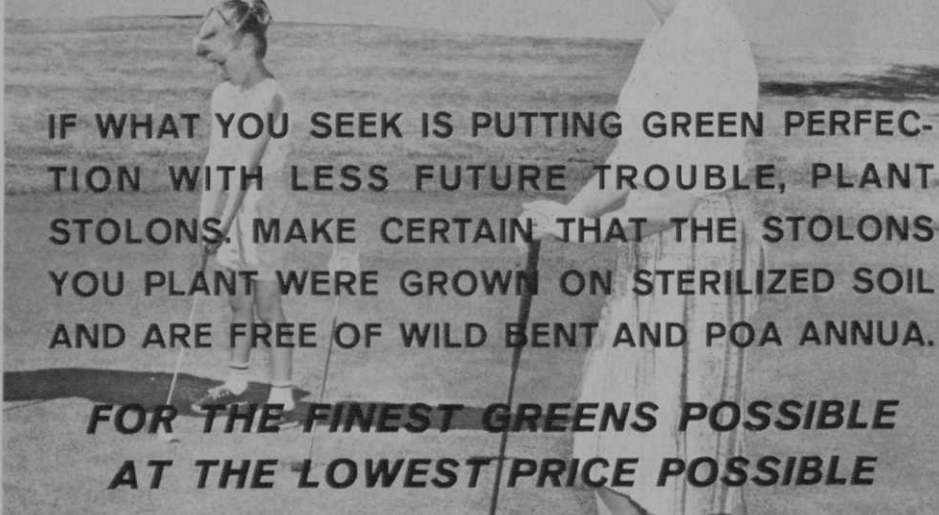
Special Products Division • Dept. G-2 • Plymouth, Ohio

THE ONLY WAY TO OBTAIN A PERFECT PUTTING GREEN IS WITH STOLONS!

A championship green cannot be established with seed. This fact has been recognized by leading golf course superintendents for over 50 years.

The variability in seed results eventually in "patchwork quilt" greens of different textures and different colors. Recent experimental plantings of Penncross seed resulted in over 100 different types of Bent from 1 ounce of seed. This extreme variability can be seen at our research center in Palos Park, Illinois.

A leading turf expert stated recently, "Now that the quality of turf developed from Penncross seed seems to be deteriorating (production fields appear to be left down too long) turf men are looking to the old standard commercial stolons"



IF WHAT YOU SEEK IS PUTTING GREEN PERFECTION WITH LESS FUTURE TROUBLE, PLANT STOLONS. MAKE CERTAIN THAT THE STOLONS YOU PLANT WERE GROWN ON STERILIZED SOIL AND ARE FREE OF WILD BENT AND POA ANNUA.

**FOR THE FINEST GREENS POSSIBLE
AT THE LOWEST PRICE POSSIBLE**

Warren's TURF NURSERY

8400 W. 111th St., Palos Park, Illinois

Send us details on beautiful, hardy, vigorous greens and tees with Warren Stolons • Warren' Sod

FREE LITERATURE

- "Construction and Planting of Putting Greens with Creeping Bent Sod or Stolons."
- "Genetic Variability in Creeping Bent" A study of seed versus stolons for planting putting greens.

Club Name _____

Address _____

City _____ Zone _____ State _____

Superintendent _____

PLANT
Warren
STOLONS

WATER: Chemical symbol, H_2O or HOH , 88.81 per cent oxygen and 11.19 per cent hydrogen, most abundant liquid on earth, the universal solvent. Heavy water, H_2O_2 or deuterium, is useful in research. Water in nature never is "pure", contains various kinds of foreign matter, dissolved and suspended.

The properties of water arise from the hydrogen bonding and the tetrahedral arrangement of electron pairs around the oxygen atom. Each molecule of water is bonded to four other molecules. Chemical changes such as rusting of iron result in breaking of chemical bonds between H and O atoms. Physical changes, such as evaporation or melting of ice, involve breaking of hydrogen bonds only, leaving H_2O molecules intact.

Cohesion is water sticking to itself; *Adhesion* is water clinging to a surface — both are due to hydrogen bonding; both are major factors in soils and in plant growth.

Every life process depends upon water for fluidity and movement. Water is a lubricant for tissues, a necessity for the disposal of wastes, a carrier of diseases.

Water absorbs oxygen which permits fish and underwater plants to live, reproduce and grow. Warm water contains *less* oxygen than cold water, thus limiting plant and animal life.

Plants obtain nutrients which are dissolved in water and held in a *thin* film on soil particles. This film is so thin that it would require 3.3 to 20 million film thicknesses to equal one inch. About half the pore space in soil is occupied by water.

Water is a source of the plant nutrient *hydrogen*. Evaporation and transpiration of water cause cooling. Alfalfa transpires over 850 lbs. of water for each pound of above-ground dry matter produced; sorghum 271 lbs., other crops intermediate.

About 70 per cent of the weight of the human body is water; 95 to 98 per cent of fresh plants is water, a large part of which provides *mechanical strength* through turgor or tension.

use efficiency.

It's Oversaturation

Before too long we can hope that irrigation engineers will devote more time and money to studies of how to use systems more efficiently. Statements such as "we throw a million gallons of water a night on our course" impress me only one way — adversely. No wonder we have so much poa annua to cope with, so many weeds to fight, and so much soft turf and crusted soils. Will it take a national catastrophe to cause us to seek better ways of growing grass than throwing on a million gallons of water a night? It is still true that "more grass has been ruined by too much water than by any other cause."

Overwatered Greens

Q. We have small greens and heavy play. The members insist on soft greens so the sprinklers run from 9 at night to 6 in the morning. Now the members complain that the greens are too hard. What happened? (Missouri)

A. The excessive watering and heavy foot traffic on wet soil has sealed the soil pores, "densified" the soil and created "brick". Oxygen in the soil has been depleted and roots restricted. You have created essentially a dead soil that has lost its resiliency. It may be necessary to start all over, rebuild the greens and manage more wisely henceforth.

Increases Water

Q. What is the role of potassium in water-use efficiency in the plant? (Maryland)

A. Potash-deficient plants are more wilted and the leaf openings (stomata) are opened more fully, with a consequent loss of water. K is essential in the stomata guard cells which

close the openings and "turn off the faucet."

Plants well supplied with K use less water per pound of dry matter. K increases water in plants, improves stiffness and turgor, keeps conducting vessels open for more effective water movement (and nutrients) in the plant.

Gallonage Requirements

Q. You have talked about fertilization and how it increases water efficiency. Can you give a concrete example? (Missouri)

A. In the May-June 1964 issue of Eastern Potash Newsletter there are statements on the subject in relation to corn (a grass). "Adequately-fertilized corn pushed its roots four feet or more into the ground - -." Unfertilized corn rooted only two feet deep.

Fertilized corn used 5,600 gallons of water per bushel to produce 79 bushels. Unfertilized corn used 21,000 gallons per bushel to produce 18 bushels (per acre). We have no figures on turfgrass use of water but the principle would be the same.

Algae in Pond

Q. We have to pump our irrigation water out of a pond that is foul with algae. Are we likely to get into trouble on our greens? (Indiana)

A. Yes, quite likely you can develop serious trouble. First you should consult an expert on pond treatment to reduce the algae growth. Copper compounds can be useful but their use must be carefully supervised to limit danger of poisoning, both animal and vegetable.

On your greens you can reduce algae growth by periodic treatments with hydrated lime. One pound of hydrated lime to 1,000 sq. ft. should be enough at one application. Keep soil well aerated and the grass adequately fertilized and let soil become dry now and then. Algae can grow only in the presence of continuous moisture.

Sporting Goods Sales Up By Five Per Cent Margin

The retail consumer market for sporting goods in the U. S. during 1965 will probably bring total sales to a record high of \$2,744,700,000 in the opinion of Richard E. Snyder, Chicago economist. His forecast appears a study prepared for the National Sporting Goods Association.

Snyder estimates that 1964 sales amount to \$2,594,400,000, an increase of 5.4 per cent over 1963. He says if the projected 1965 increase is achieved, it will represent the largest year-to-year increase since the 1960 increase of 8.2 per cent over 1959.

Fonken Got Retriever Idea from Watching Kids at Play

Martin (Duke) Fonken, who died a short time ago at the age of 60 in Glendale, Calif., built a business from an idea he got while watching children at play. He was practicing pitch shots on his lawn one day nearly 20 years ago when one of a group of youngsters, who were rolling flanged hoops, accidentally picked up a ball with his hoop. Out of this grew a design for a retriever that is used at many golf ranges throughout the country.

Fonken's first picker-upper consisted of a 3-foot row of flanged wooden discs, set slightly farther apart than the diameter of a golf ball (1.68 inches), that could be pushed by a jeep. The rolling discs picked up balls and tossed them back into a wire basket mounted directly behind the discs. Later, Fonken widened the picker-upper to 9½-feet and substituted rubber capped metal discs for the wooden models on his machine. He went into production with his first retriever in 1946.

According to Fonken's widow, Helene, the firm which he founded will continue to manufacture golf ball retrievers at 433 W. Magnolia ave. in Glendale. Other survivors are two sons, Arch Edward of Glendale, and Robert of Las Vegas, and a sister, Mrs Florence Miller.



Fonken

Cornell Turf Conference

The annual Cornell University turf conference will be held Feb. 22-24 in Statler Hall on the university campus in Ithaca, N. Y. The New York State Turfgrass Association will hold its annual meeting in conjunction with the conference on the 23rd. The Association will elect directors for four sections, one being to fill a vacancy created by the death of John Hohm.

Midwest Turf Conference

Midwest Regional turf conference will be held Mar. 1-3 at Purdue University, according to William H. Daniel, program coordinator, who is connected with the University's agronomy department.

ROYERATED SOIL™

Use it all over your course and substantially reduce the cost of

- New construction
- Maintenance
- Renovation



Royerated Soils are fluffy, thoroughly blended, trash-free soil mixtures that have been processed in Royer Soil Shredders. These soils are ideal for constructing and maintaining luxuriant, long lasting turf and can truly be used *all over your course*. Whether you're constructing or extending greens and tees, maintaining or renovating existing turf, building a turf-grass nursery or even cleaning and fluffing trap sand, you can substantially reduce your costs with a Royer. And, you'll improve the quality of your soils, too, because the shredders do the job *thoroughly*.

Soil mixing, for example. (*And mixing is not as easy as it sounds.*) You can use a cement mixer—but it's slow. Or rototill—but this isn't thorough and can create stratification. You can 'doze and "pile-roll"—but you won't mix thoroughly. Or you can do the job right with a Royer and get the thorough mixing and blending of your materials that *only* these cleated belt shredders deliver. And, you'll get the economy of one-step soil preparation, too, from the combined action of shredding, mixing, blending and aerating that is built into *every* Royer. You'll get a ROYERATED SOIL—just right for use *all over your course*.

Now consider the various ways of removing sticks, oversize stones, clay balls and other trash from your soils. Power raking can contribute to compaction and hand raking is slow and costly. If your materials are damp and you use rotary screens or hammermills, they may plug up. But when you use a Royer you get *automatic and continuous trash removal* as your materials are shredded and mixed. And you can work with damp materials, too, because a Royer handles them easily.

Preparing top dressing. When you use a shredder and Royer's new POWER-screen, you can prepare top dressing at the lowest possible cost per yard. You get a top dressing that is easy to spread and materials that *mat in*, not off. And you screen out coarse materials that damage spreaders and dull mowers.

Shredders are available in ten sizes for hand shoveling or mechanical loading, with capacities from 5 up to 100 yds./hr. For complete information, send for Bulletin HS-12 (manually loaded models) or specify literature on "mechanically loaded models." For top dressing preparation, request Bulletin PS-30.

ROYER

ROYER FOUNDRY & MACHINE CO.

171 Pringle Street • Kingston, Pennsylvania • Export Department: 10629 S. Vernon Ave., Chicago, Illinois. Cable: ASMAN

If it's any consolation . . .

Trouble Can Show A Supt. Where the Weak Spots Are

BY HERB GRAFFIS

Sometimes I wonder what is the use of a supt. worrying so much about what it costs to operate a course. He can study his records for past years and make up a sound budget. Then along comes a blow such as winterkill, experienced in New England two years ago and which called for a marvelous job of repair work at the Country Club of Brookline (Mass.) prior to the National Open. Or up will jump the devil with a hurricane and/or bad water, such as was the primary cause of trouble that called for rescue work before the Canada Cup tournament in Hawaii last December. Or, perhaps, there will be the blight, such as that which, in a few days last summer, transformed some glorious courses in the Midwest into ghastly exhibits of afflicted turf.

With something like any of these things, there goes the budget all to hell. This could and should be partly anticipated by a budget item for reserve for repairs. Incidentally, I never have seen in very many of the hundreds of golf course budgets that I have examined where allowances have been made for repair reserves.

Cultivate the Manager

Speaking of budgets, one time at a Mid-Atlantic session I heard the general manager of a club, a very competent, honest man, tell the supts. not to forget that the books are kept in the clubhouse. He gave them a tip that to make their figures look good to club officials, they should be a friend to the manager.

This article is a digest of a speech given by Herb Graffis at the Mid-Atlantic GCSA annual conference in Baltimore, Md., Jan. 11-12.

There is the possibility, rarely realized by supts., that the manager also has a tough job. A veteran manager once told me his job meant getting up in time to show four crabby, old members that the manager is on the job while they were having breakfast and staying up on the job until he practically had to kiss the last drunk good night.

As regards budgets, I noticed in the annual report of a club, with which I am well acquainted, that last year's bar revenue was \$85,206.70, with a net 40,-826.60. The course expense was \$48,-172.75 and guest green fees were \$17,221,



Two seniors in the University of Rhode Island's College of Agriculture, Robert T. Leonard of Riverside (l) and Louis L. Lombardi (center) of West Warwick, receive John Samuel Clapper scholarships for outstanding work in turf culture from Dr. Robert C. Wakefield, chairman of the department of agronomy and mechanized agriculture. The award is made annually by Orville O. Clapper of West Newton, Mass., in honor of his father, who was a pioneer in the development of modern turf.

making the net maintenance expense a very low \$30,951. As a practical thing, the course expense at most private clubs should be figured on the overall cost minus green fees. On that basis, at the club I have cited, the net maintenance cost per round would be much less than \$2.

Do the Members Understand?

The money part of a supt's. operation is understood by officials and members. They know very little, if anything, about the rest of a supt's business. The green committee members may have heard about mechanized maintenance but they do not know that even with all the ingenious men, all the smart and keenly competitive companies on the job to de-