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**GRAFFIS** *from page 9*

reactions after veteran superintendents, professionals and managers retire. Clubs are wiser than they used to be about retirement plans—maybe because so many members are not too remote from their own retirement and see sensible plans for retirement and because a club that turns a good man loose after long faithful service and hasn't considered a retirement plan isn't going to attract first-class replacements.

Changing of the guard from veterans to sound, well-schooled younger men with the veterans continuing in consulting capacities has been especially well done in the Chicago district where, to cite a few cases, at Knollwood, Glenview and Glen Oak, teamwork of the retiring veteran and the new man in command has been a fine break for the clubs.

Have you noticed that almost every time you get a chance to study tournament scoring statistics it

is performance on the par three hole that determines the winner? For example, at the Masters Jack Nicklaus was three under par on the par three holes and other contenders were over par. Nicklaus was seven under par on the par five holes, but other close competitors also were well under par on those long holes. On the par four holes Nicklaus was plus eight, Tom Weiskopf and Bobby Mitchell were plus two and Bruce Crampton was two under par.

So why do people who pay for building the courses get so many long par fives and par fours when it is the par threes that ultimately grade the architecture? Perry Maxwell, who designed fine courses with many outstanding holes, used to say that any number of architects could design good par four and par five holes, but the tough test was to design exceptionally good par three holes.

*James Murphy*, now manager, Brook Lea CC, Rochester, N.Y. . . . *Karl Hollerberg* now is manager Bryn Mawr CC, Chicago. He previously managed North Shore in the Chicago district . . . *Owen Griffith*, for years the golf editor of the Hartford Courant until his retirement, has returned to action with a Sunday golf column in the Cape Cod Standard.

*Carol McCue*, who has been secretary of the Chicago District Golf Assn. for more years than you'd guess by looking at her, has been named the first woman board member of the United States Golf Assn. Green Section committee by Edward Meister Jr., now chairman of the Green Section. Meister succeeded Henry Russell, who retired after 11 years of substantial service. Russell's work as a member of the USGA Executive Committee and Green Committee chairman must have cost him at least \$75,000. The value of his competent and cheerful contribution to golf course management and to golf in general is beyond anybody's guessing. Meister used to be a top-rated amateur. Arnold Palmer in winning his only National Amateur championship, that of 1954, at the Country Club of Detroit, had to go 89 holes in a semi-final round to beat Meister. □

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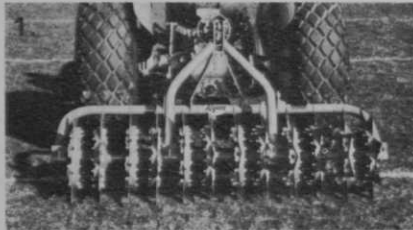
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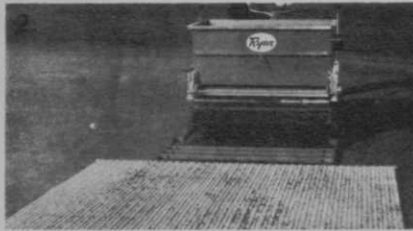
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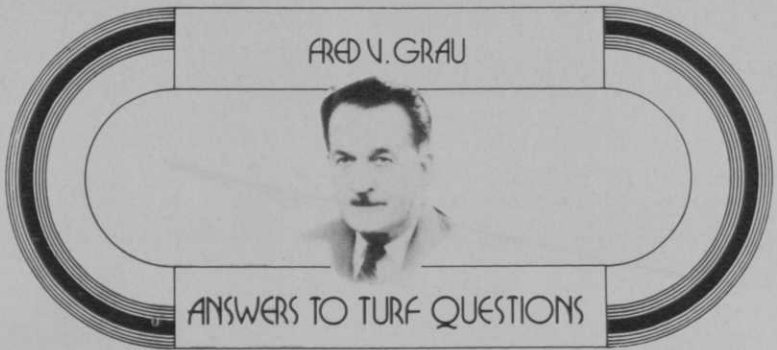


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**SUPERINTENDENT  
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Two ideas crowd my thoughts as I sit at my desk and look at my backyard display of brilliant azaleas.

First, the golf course superintendent is being recognized. I was the speaker at the recent monthly meeting of the Mid-Atlantic GCSA at Crofton, Md. A copy of the USGA Journal had just arrived and I showed the article on Richie Valentine and said a few words about how I worked with his father, Joseph Valentine. Recognition can come not only to the famous or to those who are kin to the famous, but to all who are diligent, successful and who can capture the fancy of the public and press.

An excellent case in point is the recognition that has been given to George Thompson of Columbia CC in Washington. He is Mid-Atlantic president and presided effectively at the meeting where I spoke. The next morning's mail brought the May Golf Superintendent, and who should grace the cover but George Thompson!

Another fine recognition for a superintendent appeared on the cover of Grounds Maintenance for April. Ted Woehrl, director of GCSAA and superintendent at Oakland Hills CC in Michigan, is pictured on the job. A fine story is carried inside on his irrigation system.

Recognition of this kind is the best public relations that can be found. The stories are not only reaching other superintendents, but the general public, who now better appreciate the superintendent's job.

Second, the Mid-Atlantic Assn. has taken the lead in forming and giving moral and financial support to the new Maryland Turfgrass Council, now being organized. All turf interests will join hands to de-


velop a strong, unified voice that can be heard and will have its effect on legislation and at the university. For too many years the turfgrass interests have struggled for research and education that would benefit this extremely important phase of agriculture. Planning committees have been appointed and a second meeting is due soon. I am sure that turfgrass interests everywhere join me in saluting the fledgling Maryland Turfgrass Council and wish it every success. With guidance from the Virginia Turfgrass Council on one side and from the Pennsylvania Turfgrass Council on the other, the Maryland group can be assured of support. Characteristically the Mid-Atlantic GCSA indicated that it would assist all three.

**Q—Our greens last fall (November) were treated with tri-calcium arsenate at two pounds and again in March at the same rate. The results were so good that we have bare areas where the Poa annua disappeared. The bentgrasses are vigorous and healthy. We've been on a "no-phosphorus" program for five years. The thin and bare areas will be reseeded at once with Penncross on the greens and Manhattan ryegrass on the approaches. Do we have enough toxicity to act as a pre-emergence for goosegrass (Elymus indica) or should we apply some kind of preventive chemical when we reseed?** (Virginia)

**A—**Under the circumstances I would use a small amount of phosphorus with the seeding and avoid the use of any more preemergent chemicals at this time. Give the grass a chance to grow and fill in. You have at least a full month before you can expect goosegrass to germinate.

Because you are using very light

*continued on page 17*



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**GRAU** from page 14

applications of soluble N, I would advise using a soluble 20-20-20, 24-24-24 (or similar) at seeding time to assure the seedlings of a good send-off.

**Q**—Recently I heard that “the mark of a good superintendent is a thin, shallow carpet of grass on his greens; it shows that he feeds his grass abundantly.”

Our greens (Penncross) are thin and shallow, but why not? We do everything from the top; cultivating underneath is hard and not very productive. Our fescue fairways (unwatered) shows roots 12 inches deep; our greens do well to reach down two inches. Please tell me if you think that grass, which is abundantly fed, should have roots that leave the “well-fed thin shallow carpet” and extend down 4, 6, or 8 inches? I don't believe it! I can't believe that grass roots are neurotic—striving for the impossible. They are not like Hillary, who climbed Mt. Everest “because it is there.” They do what comes naturally; they live off the top. Tell me, am I wrong or am I a success at growing “a thin, shallow carpet of grass?”

(Pennsylvania)

**A**—Everything is relative. Compared to prairie sod where roots of native grasses extend to depths of 4, 5 and 6 feet, the turf on any putting green is more like a “shallow carpet.” I've measured bentgrass roots on a putting green well below the 12-inch level, but that still is “shallow” compared to the prairie.

The depth of roots of grasses on putting greens are affected by many factors, one of which is water. By maintaining a saturated surface we can keep roots shallow. Conversely, we can help them forage deeper by careful management. Well-drained porous soil helps.

I must confess that I am puzzled at the concept of the “thin, shallow” carpet being the mark of a good superintendent. That doesn't seem to be a very high goal to shoot at. I would feel demeaned were I a superintendent. Perhaps there's more to the story. Your sharing this with us is appreciated. If you can maintain excellent putting surfaces at all times, you are a good superintendent.



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7/72 GOLFDOM MAGAZINE 17



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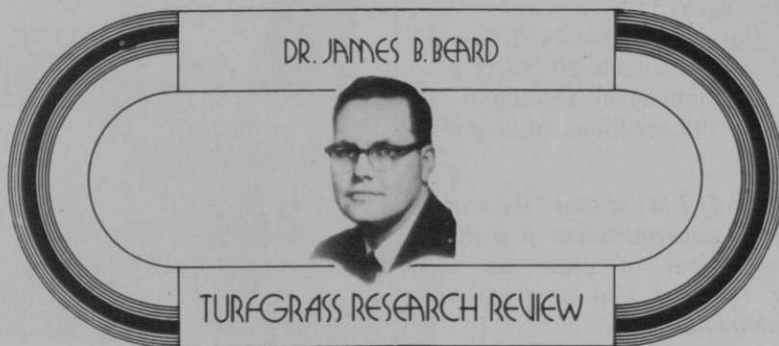


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### SULFUR DEFICIENCY: A POTENTIAL PROBLEM

*Distribution of total and available sulfur in selected soils and soil profiles. M.A. Tabatabai and J.M. Bremner. 1972. Agronomy Journal. 64:40-44. (from the Department of Agronomy, Iowa State University, Ames, Iowa 50010).*

The sulfur status of Iowa soils was evaluated during the course of this study. Sixty-four surface soils, representing the major soil series occurring in Iowa, were analyzed for sulfate-sulfur and mineralizable sulfur.

The results indicate that most of the agriculturally important soils in Iowa have low reserves of plant-available sulfur. Thus, these soils may require sulfur fertilization for satisfactory plant growth, particularly for those species having a high sulfur requirement. The total sulfur content of the soils analyzed ranged from 57 to 618 parts per million; the average was 294 parts per million. The sulfate-sulfur content ranged from one to 26 parts per million and averaged nine parts per million. The total sulfur content was highly correlated with the organic carbon content of the soils. In addition, the sulfate-sulfur content was significantly correlated with the total sulfur content. The majority of the sulfur occurring in these soils was in the organic sulfur form rather than mineralizable sulfur. Analyses of sulfur distribution vertically through the soil profile revealed that the total sulfur content decreased markedly with an increase in the soil depth. The authors concluded that Iowa soils have low reserves of plant-available sulfur.

*Comments:* Sulfur (S) is an essential

macro-nutrient for turfgrass growth and development. A sulfur deficiency results in the disruption of protein synthesis and a subsequent impairment of growth. Some sulfur also occurs in plant tissues in the form of sulfates and certain volatile compounds. The quantity of sulfur removed in turfgrass clippings is similar to the quantity of phosphorus removed.

A sulfur deficiency usually involves an initial paling of the older, lower turfgrass leaves. The leaf blades develop a pale yellow-green appearance as the deficiency progresses. A faint scorching of the leaf tip is also associated with discoloration. The scorching advances toward the base of the blade in a thin line along each leaf blade margin. Eventually the scorching enlarges until the entire leaf blade is affected and withers.

The visual foliage symptoms of a sulfur deficiency are quite similar to those of a nitrogen deficiency. An iron deficiency also appears as a yellowing and chlorosis of the leaf tissue; it first appears on the young, actively growing leaves. In contrast, the sulfur and nitrogen deficiencies appear first on the older, lower leaves. In this way, one is able to distinguish between an iron deficiency and the nitrogen or sulfur deficiencies. However, it is difficult to distinguish between the latter two other than to make an application of readily available, water soluble nitrogen to the foliage to determine if there is a greening and growth response. If not, it would suggest the possibility of a sulfur deficiency, assuming that the levels of available iron in the soil are adequate.

As indicated in the above paper, a

*continued on page 20*



# Brookside



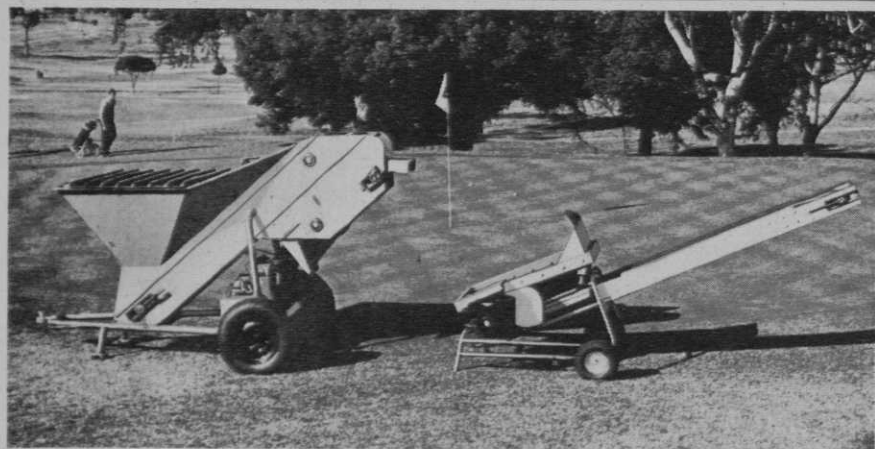
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## BEARD from page 18

considerable portion of sulfur in the soils is contained in organic matter and, therefore, is concentrated in the surface horizons of the soil profile. Soils having a lower sulfur content are usually associated with conditions that accentuate the decomposition rate of organic matter and where leaching is more severe. Sulfur that occurs in the soil in the sulfate form is highly water soluble and readily leached.

Sulfur is taken up by the roots as the  $SO_4$ — ion. Sulfur can also be absorbed to a limited extent through the foliage as gaseous sulfur dioxide ( $SO_2$ ).

A significant amount of sulfur can be added to the soil through the absorption and removal of sulfur gases from the atmosphere by rain water. Generally, the quantity of soil sulfur originating from the atmosphere is highest in urban or industrial areas.

In the past, turfgrass fertilization practices have not been concerned with a sulfur deficiency under most conditions. A visual sulfur deficiency was rarely reported. This situation may now be changing to one where sulfur may have to be added comparable to the fertilization practices for nitrogen, phosphorus, potassium and iron.

The reason for this change in the sulfur status of turfgrass soils is that most of the turfgrass fertilizers used in the past have contained significant quantities of sulfur. For example, the nitrogen carrier ammonium sulfate, which was once widely used for turfgrass fertilization, contains 24 per cent sulfur. Similarly, the phosphate carrier, ordinary superphosphate, contains 11.6 per cent sulfur.

Many of the specialty fertilizers now being manufactured for turfgrass use are of higher analyses and contain smaller quantities of sulfur. In addition, the use of ammonium sulfate as a nitrogen carrier source is declining. Consequently, the potential for the development of a sulfur deficiency in certain soils having an inherently low sulfur level has increased. This potential for a deficiency is greatest in those areas

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