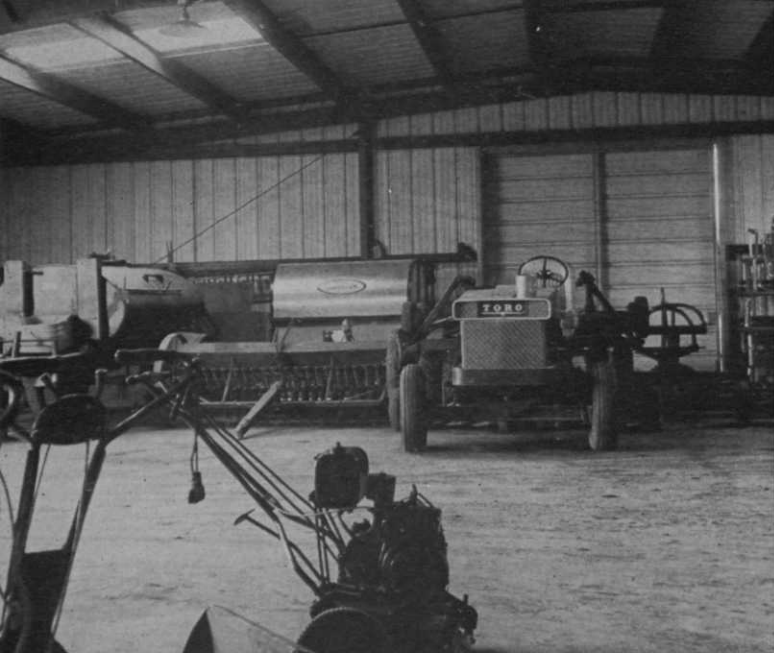


# **SOUTHERN TURF NURSERIES SAVES YOU MONEY SOLVES TURF PROBLEMS**

The appearance of hybrid Bermudas has made a big difference in the golfing world. They provide lush, velvety greens and fairways, that were not possible before. Superintendents desirous of keeping their courses at maximum playability and beauty the year round, have depended on hybrid Bermudas to lessen their fairway and greens problems and provide more luxurious coverage in shorter time. Southern Turf Nurseries promotes hybrid Bermudas that are famous for their hardiness, beauty, and ease of maintenance. They require less watering and mowing, and are almost completely disease free, thus saving considerable costs on maintenance and replacement. By starting out with hybrid Bermudas, new courses can save the difference in replanting and upkeep costs later on. When courses are being conditioned for summer play, hybrid Bermudas often can be interplanted without uprooting or disrupting play.

For the best in golf grass — GO with hybrid Bermudas, and let the turf agronomists at Southern Turf Nurseries help you solve your turf problems. Call Today! Area Code 912 Phone 382-5655.

**SOUTHERN TURF NURSERIES**  
P. O. BOX 569 · TIFTON, GEORGIA



View of the equipment storage garage section at Blue Hills CC.

it will soon be completely hidden from view by the 30 poplars planted between the building and the course. Black top walks, drives, and parking areas have yet to be laid around the building, but Elmer is hoping to have this done late this year. A 1,000 gallon gasoline tank has been buried near the front, the pump located between the street and the building.

### 3,000 Trees to Go In

The building is arranged and constructed for year-round use. A 240,000 BTU furnace heats the structure. The larger work and storage areas are insulated for winter comfort. Ductwork carries the heat into all rooms. Blue Hills kept nine full time men on Jerry's staff last winter. The overhauling of equipment, the various "get ready" tasks, and the large amount of care that had to be given to the new turf kept them all busy. More than 400 trees, largely pin oaks, maples, ash, sweet gums, and locusts, have already been planted, and eventually the beautiful course will boast 3,000 new trees. In addition, ornamental trees such as dogwood, flowering crabs, and red buds, have been set in.

With very good reason Jerry Elmer is proud of his equipment building. He planned it, sold the ideas to an under-

standing board, and manages it with great efficiency. In a day of rising costs, this one-unit operation has proved a good investment for the Kansas City club.

### Televising Masters Is A Spectacular Production

Covering a major sports event, such as the Masters, requires a lot of expensive equipment, many highly-paid technicians, and plenty of television knowhow. This being the ninth year that CBS has covered the Masters, it is in a position to know.

A total of 170 production and technical people were involved in televising the action on the 15th, 16th, 17th and 18th holes at Augusta as well as in the clubhouse. More than a half-a-million dollars' worth of equipment, with a total weight of more than 40 tons, was used to bring the action to the livingroom gallery. That is enough equipment to outfit two complete television control rooms and one taping studio.

Fourteen cameras, both stationary and mobile, were used to cover the play on Augusta's final four holes. Four miles of cable, much of which runs through permanent underground installations, were used to tie the production together.

THE 1964 VERTIFIER

**TRY IT!**



*West Point Products Corp.  
West Point, Pa.*

## **Selected Bent Strains Lose Identity When They Are Overseeded**

By **EUGENE D. JOHANNINGSMEIER**

Hiram F. Godwin & Son, Inc.

**T**here is little question that the demand for the finest quality greens is more prevalent today than ever before. Golfers know too well that it is possible to produce quality putting greens. They expect the finest greens at private clubs and daily fee courses. Since the number of rounds played has increased tremendously in recent years, the demands on course supts. have increased in proportion. It has become increasingly difficult to keep excellent putting greens at all times throughout the growing season.

Bentgrass, when allowed to grow naturally, is cross-pollinated. Cross-pollination (a process of reproduction in which the pollen of each plant is shed freely and serves to fertilize the flowers of other plants of the species rather than its own) gives new plants in which the individual plants differ considerably. No two are exactly alike. The most vigorous grasses in the seed will crowd out the less vigorous types.

### **Not Always Most Desirable**

Vigorous types are not necessarily the most desirable grasses for putting green turf. If two plants of a selected strain, (such as Cohansey) are allowed to grow to maturity, they form seedheads and cross-pollinate. No two seeds produce exactly the same plant, either as the parent, or others, from seed.

Some might resemble one another so much it would be impossible to distinguish one from the other, but genetically they would be different. They may look exactly alike, but have considerable differences in disease resistance or in heat and cold tolerance.

To consistently produce true stolons of selected strains, it is necessary to either

prevent seedhead formation or remove any seedheads that are formed before they become fertile. Greens planted with a selected strain of bent should never be overseeded with any kind of seed, since the identity of the original strain is lost. Seeded greens will eventually present patchy turf as a result of variations of texture and diversity of color. This comes about because the more vigorous grasses from seed will increase in the greens while the less vigorous ones recede.

The first research to find improved grasses for putting green turf was initiated in 1920 with the selection of several outstanding creeping bents that were present in putting greens of that era. These selections were made because they exhibited outstanding growth characteristics. Quite frequently their resistance to disease made them more aggressive.

### **Uniformity Is Necessary**

Another important factor in selection was the uniformity of texture and color since these factors are of prime importance for the finest greens. Individual clones were selected and increased. In producing stolons the runners are divided and increased with all subsequent growth being exactly the same as that of the parent plant.

After much study and evaluation the best of these grasses were released to golf courses to use in putting green construction. This marked the first time that a supt. could plant his greens with stolons of a single strain of creeping bent with uniform quality, texture and color. He knew in advance the quality of turf he could ultimately expect to have.

### **Given Thorough Testing**

Since 1920 many more selections have been made and evaluated. A promising selection is usually tested in many locations to determine its range of adaptation and its limitations. Only those grasses consistently giving the best performances are released and recommended for use. Conscientious producers of these selected vegetatively propagated stolons have spent millions of man hours in labor to keep the true identity of each strain released.

It has been necessary to either prevent  
(Continued on page 116)



## Pamper your turf with Ford LCG tractors and low-pressure tires!

Now, protect your turf with Ford LCG (Low Center-of-Gravity) tractors equipped with optional 18.4-inch low-pressure drive tires.

**Your tractor floats** gently on these new wide-base jumbo tires for smoother, more streakless mowing. In damp or dry conditions, on the flat or on side slopes, you get improved flotation for turf protection.

**Ford LCG tractors** are available in two power sizes, your choice of gasoline or diesel models, 4- or 5-speed transmissions, or exclusive Ford 10-speed, power shift. With Select-O-Speed, you can power shift, non-stop, into any of 10 forward gears. Single or dual 8.3 x 24 inch 4-ply rear tires available.

**Ford flail mower solves rough problem:** California golf course superintendent, says: "I have had trouble for years, maintaining the roughs on our golf courses. Now, thanks to the Ford flail mower, my troubles are over. I have cut bermuda grass at ½-inch heights, and star thistle to bare ground. This machine is second to none."

**See your Ford Tractor Dealer soon.**

# FORD

NEW YORK | RIDE THE MAGIC SKYWAY  
WORLD'S FAIR | FORD MOTOR COMPANY WONDER ROTUNDA



## Nine-Year Report Reflects Relatively Little Change

DINING ROOM OPERATIONS —	Sales	North	West	South	Out-of-Area
1955	NA	NA	NA	NA	NA
1959	119,865	108,065	134,389	83,693	
1964	128,869	107,838	113,235	96,210	

### GROSS PROFIT (Dining Room)

1955	NA	NA	NA	NA
1959	51.53%	51.95%	49.16%	46.64%
1964	54.52%	49.64%	53.27%	50.57%

### BAR OPERATIONS —

	Sales	North	West	South	Out-of-Area
1955	NA	NA	NA	NA	NA
1959	\$67,040	\$77,244	\$79,242	\$52,087	
1964	85,032	80,248	83,155	60,336	

### GROSS PROFIT (Bar)

1955	NA	NA	NA	NA
1959	62.25%	65.03%	64.40%	59.15%
1964	68.23%	67%	64.51%	60.55%

### COURSE MAINTENANCE EXPENSE

	North	West	South	Out-of-Area
1954	43,800	38,900	36,580	21,410
1959	53,285	39,040	50,018	31,621
1964	67,355	58,290	68,385	42,100

### AVERAGE SUPT. SALARIES

	North	West	South	Out-of-Area
1954	6,500	6,380	5,040	4,100
1959	7,756	7,937	9,908	6,580
1964	10,680	9,035	10,350	8,045

NA — Not Available

# PRESENTING KROMAD® ...TURF MAGICIAN!

## THE MAGIC OF KROMAD

The magic of Kromad can be your magic in your turf disease control program. It is for thousands of top-notch turf managers who repeatedly say, "Kromad is the basis for my entire turf disease control program." Why do they use it on precious putting greens and other fine turf? . . . "It works like magic!"

They use the magic of Kromad routinely as their basic turf fungicide throughout the turf-growing season. And if their expert experience and judgment tells them there's some especially "tough" disease weather ahead—they supplement it with just a touch of Calo-Clor® or Cadminate®. They feel they'll have a wider safety tolerance under really severe conditions with just a bit of mercury or cadmium added.

Plenty of solid reasons are behind the wide use of Kromad:

**Broad-spectrum.** Kromad is the original broad-spectrum turf fungicide—formulated for effective control of many major turf diseases with a single compound.

**Truly effective.** The Rhode Island experiment station reported, "Kromad provided the best all-around disease control" of all fungicides tested. Many other stations have given it similarly high ratings.

## THIRAMAD®- PLUS DEBUTS FOR 1964 TURF SEASON

Thiramad-Plus is brand-new, yet based on a very simple principle—that most fine turf is either deficient in iron or will show a marked, favorable response in color and turf stamina when iron is added. Thiramad-Plus gives you better turf because it has "something extra"—it's *iron-fortified*.

It's the same top-quality thiram 75% fungicide you've used so successfully under the Mallinckrodt Thiramad® label—but with 10% iron sulfate added.

In many areas turf routinely takes on a "chlorotic" or yellowing appearance due to actual iron deficiency. In other areas, the soil has adequate iron, but it's "tied up" by soil chemical conditions, unavailable to turf.

Even in areas where there's adequate available iron, supplemental small amounts of iron sulfate have been shown to provide improved vigor and

**Economical.** Only \$1.12 to protect 1000 sq. ft. of turf against a wide range of diseases for a *full month*. Compare the cost of any other *effective* turf fungicide with that of Kromad on this per-month basis.

**Many plus features.** Contains thiram to give extra effectiveness to other ingredients and for safening effect—cad-

greatly enhanced deep green color to fine turf.

Thiramad-Plus fills the precise needs described at some of the 1964 turf conferences:

- The trace element of micro-nutrient most usually found deficient in turf is iron.
- The deficiency is readily overcome by adding iron—in the form of the *sulfate*.
- Iron sulfate should be applied as a spray—it is picked up by grass plants through the leaves.
- Best manner of application is along with fungicide spray. Thiramad-Plus fulfills all these requirements exactly. It gives you fungus disease control and corrects iron deficiencies—in a single product. And it produces a noticeable color and density response within 24 hours after application.

Thiramad-Plus is compatible in tank mixtures with both Calo-Clor and Cadminate. Add either to Thiramad-Plus to get that extra effectiveness of mercury or cadmium in your spray program.

So . . . if you've been using an ordinary thiram 75% in your program, plus separate applications of iron, switch now! Avoid the fuss . . . use Thiramad-Plus.

See your Mallinckrodt distributor today.



# Stan's Corner



## Why You Mix The Kromad and Calo-Clor Combo

"Why don't you mix Calo-Clor® in with Kromad® (or Thiramad®, or Thiramad-Plus) so we can buy a single product without the inconvenience of handling two or more products and doing the mixing ourselves?" Many of you who prepare such combinations routinely have asked this question.

We would like to offer you this service right now. But the fact is, even over short storage periods, package mixtures of thiram (even the thiram in Kromad) and mercuries (like Calo-Clor) do not maintain top quality. This conclusion is based on many years of research. For instance:

Calo-Clor and many other organic and inorganic mercury compounds have been mixed with many thiram compounds and subjected to all kinds of storage tests. *None* of the mixtures maintained good stability—all of them deteriorated at varying rates during storage. Also, reaction products developed that were either toxic to fine turf or ineffective for turf disease control.

Several producers of ready-mixed thiram-mercury fungicides acknowledge the seriousness of this incompatibility problem when they advise the use of "fresh material always" and discarding of mixtures left over from last year.

Repeated observations at experimental stations bear this out. For example, a report on the 1963 fungicide tests at Rutgers flatly states, "... the tank mix of mercury and thiram had the edge over the package mix in performance."

It all adds up to fresh tank mixes for best results. Kromad (containing thiram) is an outstanding, broad-spectrum fungicide with many premium advantages... it seldom needs a boost. But if you feel a boost is needed, add Calo-Clor in small amounts—in your tank mix. You'll get super effectiveness. The same is true for mixtures of Calo-Clor and Thiramad or Thiramad-Plus—if you mix in the tank.

As you use a fresh tank mix of these fungicides and watch great things happen to your turf, remember that we at Mallinckrodt are doing you a service, not a disservice, by asking that you do the mixing. You have the choice of using Kromad alone or beefing it up with Calo-Clor mercury. And if you prepare a fresh tank mix you'll know you're getting top effectiveness and performance for your fungicide dollar and top safety, too.

Will we ever supply a package mixture of the two as a single product? Someday... but only when we solve the problem of compatibility. Mallinckrodt researchers are hard at work on the problem now—promising formulas are under test—you'll be the first to know when we succeed.

Meanwhile, use Kromad routinely and add Calo-Clor when you feel a little extra mercury will help you over some tough disease weather.

mium for best control of dollar spot, copper spot, red thread, etc.—urea for quick recovery from ravages of disease—iron to help turf build stamina, overcome minor chlorosis conditions, promote good turf density and color—malachite green for brown patch control, and an indicator for you to show where your men have sprayed and if spraying was uniform.

**Safe.** Kromad won't harm the finest turf... even at many times recommended dosage.

**Beauty.** Kromad adds real beauty to your fine turf... there's real pride and prestige in having the *best-looking* putting greens in your area.

**You're boss!** Kromad makes you the real boss, let's you decide when to add Calo-Clor or Cadminate for super broad-spectrum effectiveness under your disease conditions. Yes, the magic of Kromad is your magic... when you treat your precious turf to the very best—regular preventive applications of Kromad. Get Kromad from your nearby Mallinckrodt distributor. Start now to enjoy your finest year—with disease-free putting greens and turf throughout the season.



## WHAT'S NEW WITH YOU?

Anything interesting happening at your course? Write and let us know how Mallinckrodt turf fungicides have solved some of your problems.



AVERAGE PRO SALARIES

	North	West	South	Out-of-Area
1955	NA	NA	NA	NA
1959	3,650	3,000	2,925	3,400
1964	3,095	3,390	3,810	2,955

AVERAGE MANAGER SALARIES

	North	West	South	Out-of-Area
1954	NA	NA	NA	NA
1959	11,118	9,100	12,000	8,900
1964	14,375	11,410	10,060	9,805

SWIMMING POOLS

—

Income	North	West	South	Out-of-Area
1955	2,672	4,000	3,160	775
1959	4,833	5,818	5,736	2,503
1964	5,130	6,750	3,785	2,340

EXPENSES (Swimming Pool)

1954	5,069	6,300	4,950	4,620
1959	6,274	7,073	6,469	6,301
1964	7,130	8,480	6,660	7,965

NA — Not Available

The above survey of a decade of course operations is taken from the 1964 Chicago District GA Directory and is based on reports of 130 member clubs. The CDGA Directory, along with that of the Metropolitan GA, is used by many clubs as a basis comparison for their receipts and cost outlays.

Over the past nine years, dining room and bar gross profits have remained approximately the same . . . Dining room sales have fluctuated although bar sales have increased, particularly in the North area where they have jumped \$17,992 in the past five years . . . Course maintenance expenses have soared . . . The average cost of the four areas has increased \$23,860 since 1955 with the greatest increase in the South area which reports that \$31,805 more was spent in 1964 than in 1955.

**Greenmaster Salaries Up**

Supts.' salaries have increased also, reflecting the additional responsibilities and training needed to meet golfers' current turf demands . . . Pro retainer salaries, on the other hand, have remained about the same or declined slightly . . . Salaries paid to club managers have increased somewhat except in the South area where there has been a significant decline among the reporting clubs.

Swimming pools seem to be becoming an increasingly expensive item for CDGA country clubs . . . Designed to provide complete family facilities, pools are usually operated at a loss . . . According to the survey, this loss has increased from an average in 1955 of \$2580 to more than \$3000 in 1964.

# GRAU'S ANSWERS TO TURF QUESTIONS

BY FRED V. GRAU



## Looking for Bermuda That Should Stand Up? Maybe Tufcote Is Answer

Much has been said and written about the loss of Bermuda turf, particularly where it is used during the dormant season. U-3 was lost on tees and fairways over wide areas in spring, 1963. Common Bermuda suffered a severe setback especially in the transition zone. Some relief was found where play was limited and where turf could be cut high for protection.

Recently I examined badly-abused athletic fields with Bob Thornton from S.C.S. Plant Materials Center, Beltsville, Md. Bob was one of the developers of a new Bermuda selection from South Africa which was first called Tuffy, and now has been christened Tufcote.

### Three Test Sites

In checking on survival of Bermuda-grass under continuous heavy play even while dormant, we examined three test plantings that were made in the spring of 1962 on the field at Byrd Stadium at the University of Maryland. The three test sites chosen were all on the 50-yard line: one under the home bench, one under the visitors' bench, and one in the center of the field. The main field had been established in common Bermuda, sodded. The test areas were subjected to full use soon after sprigging.

In the spring of 1963 there was no loss of grass in spite of winter play, plus lacrosse in early spring on still-dormant grass. Summer, 1963, was a drought year, marked by "disaster areas" where farmers had no cattle feed. Tufcote showed distress after 50 rainless days but it did not turn brown. It bounced back with the first rain. Our examination on April 16, 1964, showed perfect survival, with shoots

just starting to break from green stems and healthy white rhizomes. Common Bermuda "turf" adjacent to Tufcote could be classed as a "disaster" because there was no turf. Tufcote was worn almost down to the soil but it still showed a solid cover.

### Worthy of A Chance

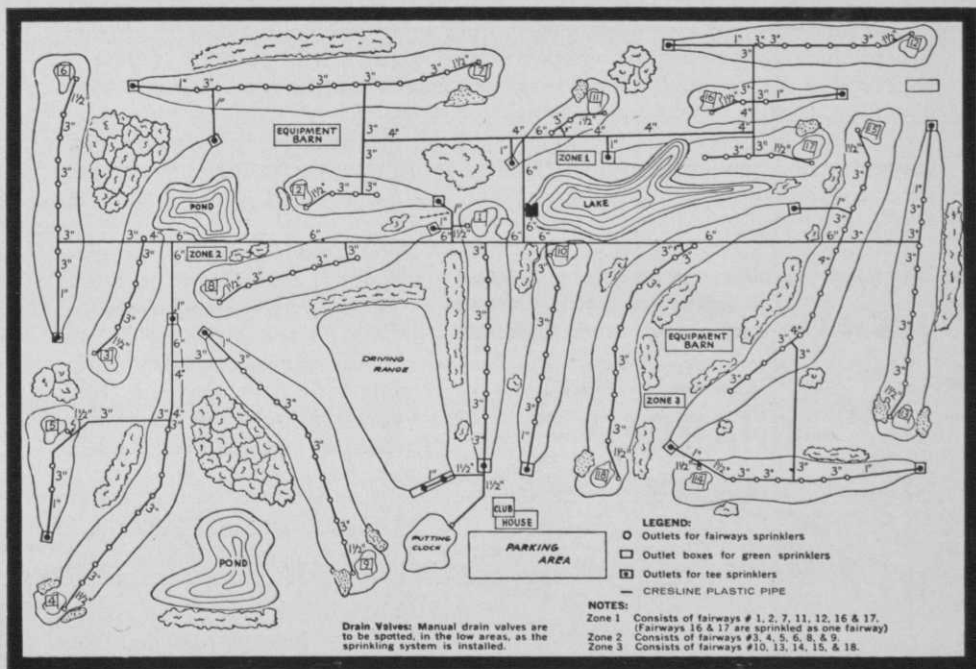
If Tufcote Bermuda can take the brutal punishment of year-round play on golf course tees as it has at Byrd Stadium, then every supt. who would like to have Bermuda tees that will tolerate continuous play should plant a nursery sufficient to sod problem tees. This grass deserves to be given the chance to prove itself on tees as it has under athletic field play.

To have top-quality turf we first must have a grass that will survive. Later we can apply techniques that enhance color, texture, density, cushion, freedom from diseases and weeds, and other attributes. From our observations there seems to be no question about the ability of Tufcote to recover from injuries because, frankly, we couldn't find any injuries such as cleat divots.

### Information Available

With adequate literature to describe Tufcote Bermuda we need not use this space except to say that information on the grass and its availability may be had by writing to:

Maryland Grass Growers Cooperative  
Dr. Mark Welch  
Secretary, Maryland



This is a typical layout (greatly reduced) of the kind of plastic pipe sprinkler system plan we develop for an individual course. It is part of the CRESline Engineering Service that has helped hundreds of golf clubs install efficient, economical sprinkler systems.

## HOW MUCH WOULD IT COST YOUR CLUB TO INSTALL A DEPENDABLE, ECONOMICAL

# CRESLINE<sup>®</sup> PLASTIC PIPE SPRINKLER SYSTEM?

We'll get all the **facts** and **figures** to you **fast!**

First off, write us. We will then ask you for a minimum of information about your course. Next, we will prepare the following: (1) a blueprint of your course, showing the pipe routing and sizes; (2) suggested operating instructions; (3) a complete bill of materials; (4) suggested supplemental sprinkling equipment. You will have definite figures on which to make a sound decision.

Only a 100% plastic pipe system offers maximum advantages in installation and operating economies. Hundreds of courses have enthusiastically endorsed CRESline installations — names on request.

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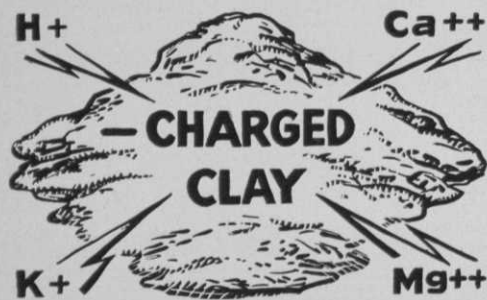


MEMBER OF NATIONAL GOLF FOUNDATION

**Soil Acidity — pH** — Soils that show a pH value of 7.0 are said to be neutral. A pH value of 6.0 indicates a soil that is 10 times more acid than 7.0. Similarly, a pH value of 8.0 shows 10 times greater alkalinity than pH 7.0. Most good agricultural soils are maintained between pH 6.0 and 7.0 (with exceptions).

The term pH refers to the logarithm of the reciprocal of the Hydrogenion concentration. This cumbersome technical term, reduced to "pH," avoids the need to use awkward statements like: ". . . the H-ion concentration is 0.000,000,1 gram per liter."

pH refers to active soil acidity, not to total acidity. pH values **do not** represent figures that can be used to calculate the amount of lime that is needed.



Plus charged nutrients attach to clay by electric magnetism.

Acidity develops as hydrogen ions increase. Water,  $H_2O$ , can also be written  $H^+ OH^-$ . Water splits into  $H^+$  ions and  $OH^-$  ions. Hydrogen ions develop acidity as they take the place of basic (alkaline) ions ( $Ca^{++}$ ,  $Mg^{++}$ ,  $K^+$ ) on the negatively charged soil particles. Soil is a balanced magnetic system with all the soil particles negatively charged.

When lime is applied the positively-charged Calcium

( $Ca^{++}$ ) ions replace the  $H^+$  ions on the surface of the clay minerals. This is called Base Exchange. As the plants use the  $Ca^{++}$  ions (and others such as  $Mg^{++}$ ,  $K^+$ ) their places are again taken by  $H^+$  ions and once again the soil acidity becomes stronger.

In 1856, Thaeer developed litmus paper which changes color in the presence of acidity. Many other methods have been developed, among them the zinc sulfate-calcium chloride boiling technique where liberated hydrogen sulfide blackens a paper treated with lead acetate roughly in relation to the degree of acidity. In 1935, I used a pocket kit developed by Hellige — Truog where color changes approximately indicate pH values. Newer methods of great sensitivity now measure pH values to three decimal places.

Students of soil chemistry may read for further detail:

Yearbook of Agriculture 1957 — pp. 72-79.

Soil Fertility, C. E. Millar,

Wiley & Sons, N. Y. 1955 — pp. 64-79.

Soil Acidity and its correction deserves serious, continuing study.

*Yes, the name of the Post Office is "Secretary."*

NOTE: This is not a blanket endorsement of Tufcote Bermuda. This evaluation has been presented to encourage wide practical testing under continuous play. The performance of this grass merits consideration by all who use warm-season grasses on tees.

### Fertilizer Framework

Q. "I am using three different nitrogen fertilizers on my course. Their analyses are 21-0-0,

55-4-0, and 38-0-0. I know that the first figure is the nitrogen, but why is it so low? Why can't I have 100-0-0? What is the rest of the material-filler?" (West Virginia)

A. Your question is typical of many we receive. Naturally, you want to get the most for your money.

There is no "filler" in these fertilizers. Take 21-0-0 for example. The chemical formula is  $(NH_4)_2SO_4$ , the well-known ammonium sulfate. Based on molecular weights the N portion of the molecule is 21 per cent of the total. The hydrogen, sulfur and oxygen are essential parts of the

(Continued on page 118)