

# GRAU'S ANSWERS TO TURF QUESTIONS

BY FRED V. GRAU



## Reflections on the Conference

The GCSA's 35th International Turfgrass Conference was by all odds the most successful ever held. By the same token it was the most significant from several viewpoints. The planning committee deserves commendation for putting on the show it did.

**STUDENTS:** The presence of turfgrass students from Massachusetts and Penn State created an atmosphere never before experienced. Prof. Joe Troll and Dr. Joe Duich deserve great credit for their imaginative pioneering in bringing their classes to the conference. They can well be proud of the conduct of their charges who receive our "A" for deportment, attendance and inquisitiveness. How can I ever forget a two-hour seminar with a group of dedicated students whose questions, direct and piercing, seemed never to end.

The Thursday morning session served notice that both the two-year and four-year courses are needed; also the winter course. Without question the top jobs will go to the trained men, of which there are not nearly enough.

The older heads deserve great credit for encouraging the colleges and the students in their endeavors and for setting a splendid example of doing the most with what is provided. Many are the self-made supts. who had no opportunity for formal schooling beyond high school or grade school — or less.

**EDUCATIONAL PROGRAM:** The terms "Well Balanced and Complete" fairly well describe the program. The excellent attendance Friday morning demonstrated the drawing power of the last speakers who were of the quality of those who preceded them. Virtually every presentation was a triumph of excellence.

**EXHIBITS:** Here, too, was "Completeness." Nearly every device for efficient

maintenance was represented. Booths were well manned for the most part and great courtesy and attentiveness were evident. One discordant note was recorded when turfgrass students failed to gain full attention of company representatives at some booths. Since the student of today will be the buyer of tomorrow, no one can afford to pay less than full attention to him.

**PERSONAL TOUCHES:** We were deeply gratified to find in our room a book by Stewart L. Udall, "The Quiet Crisis," a gift from a fellow who actively has fostered cleanliness and beauty, our good friend Bert Rost, Butterfield CC Hinsdale, Illinois. Bert long has promoted ways and means of preventing the litter on our streets and highways. His device "The Litter-Gitter" has been copied nationally. In his own way he has supported the great conservationists of our time named in "The Quiet Crisis," (Holt, Rinehart and Winston, Inc., 383 Madison Avenue, New York, New York—10017 — \$5.00)

One golf course architect in attendance stopped by to chat — Eddie Ault, Silver Spring, Maryland. A phase of discussion involved the preservation of natural or wild-life areas on the golf course. The obvious answer is "Why Not?" We recall with deep regret a bulldozer pushing its way thru huge beds of trilliums in a frantic effort to develop a fairway on schedule.

Happier moments occur when we tramp thru nearly virgin woods with Eb Steiniger at Pine Valley to see a wood duck's nest, or a clutch of newly hatched Mallard ducklings. If only each golf

**Phosphorus:** Symbol, P. Major nutrient for plants and microorganisms. Constituent of proteins, essential to life. Phosphate deposits are enormous in Africa, North America and Europe, occurring mostly in association with calcium carbonate as a water-laid mineral.

First production of phosphate fertilizer in 1842 was patented by Lawes and Murray who treated bones with sulfuric acid to make superphosphate or "acid phosphate." Double and triple superphosphates are made by treating phosphate rock with phosphoric acid. The electric-furnace method produces elemental P, a soft gray metal that bursts into violent flame with volumes of white smoke when oxygen is present (Steiniger & Grau, TVA, 1937).

P in the dynamic soil system is said never to reach equilibrium. Soil microflora require P and change it into organic compounds usable by plants. P rarely leaches out of soils. It is needed for transfer of heredity and is present in every living cell. P moves to younger tissue when there is a deficiency.

P in turf soils aids root growth but excesses tend to accumulate when P-bearing fertilizer mixtures are used indiscriminately. An excess of P tends to develop coarse grass blades, stemmy growth and seedhead formation. Optimum N fertilization aids transformation of insoluble P-compounds to usable forms. P and Sulfur (s) have similar cycles in soil and in proteins of plant and microbial tissue. P and Arsenic (As) tend to neutralize each other. High P in soil nullifies the effect of As in reducing poa population and insect depredation.

Young plants respond more to P than mature plants. As little as 1 p.p.m. in the soil solution is considered adequate for plant growth. Good soil aeration improves P relations with microflora and plant uptake. Soil compaction limits P uptake.

One application of superphosphate a year will supply all P needs for most turfgrass areas. Repeated applications of P-bearing fertilizer mixtures is wasteful and unnecessary. Soil tests may show *Low* to *Very Low* reading for P, yet turfgrasses will be amply supplied if N and K are in balance and conditions are favorable for soil microflora.



course could preserve for posterity some of the unspoiled natural beauty of the area! What are a few acres more or less when our fast vanishing wild life could gain a brief moment of rest before "civilization" crowds them into extinction? Cleaming club houses of chrome and walnut may be beautiful, but so is the nest of the ringneck pheasant filled with mottled eggs. What we are trying to say is "Can't we design a little more of *nature* into the new course?"

We were proud to have superintendents and students stop us in the halls and ask questions. Here are a few. What is "Ecology"? Ecology is the study of the relationship of an organism to its environment. In animal ecology we learned that the Brahma cattle were resistant to the

tick which wiped out other cattle in the South. In plant ecology we are learning about the limitations of Bermuda grass coming North and bentgrass going South. We learn why the cattail is at home in the "skeeter pond" and how the cactus can survive in the desert.

In human ecology the variables are many but an example is the effect of overcrowding in the city slums. With overcrowding comes unemployment, too many people with nothing to do, then poverty, crime, disease, hopelessness.

**What is fertilizer?** Fertilizer is a material which, when applied to the soil, supplies nutrients for plants, improves soil fertility and increases productivity. A fertilizer for turf must do this and more. It

(Continued on page 158)

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is used to sweep the course. Since Timber Trails no longer is known among golfers as a place to be avoided once the leaves start to fall, Charlie Bartlett expects that the gross for 1964 will be somewhat higher than it was in 1963. And, of course, the nice thing about it is that he's working on a percentage.

### In Good Company

Bartlett has been in the golf business since 1956 when he went to work for Errie Ball at Oak Park (Ill.) CC as an assistant pro. Two years later he transferred to Timber Trails to take over the pro-manager post. While in the Navy during the Korean episode, Bartlett was able to concentrate on both aviation maintenance and golf. After he obtained his machinist mate rating and worked on the flight line for a year or so, he was appointed golf range director at the San Diego Naval Base. His assistant was Gene Littler. Some highly talented young men, incidentally, knocked the ball around that range while Bartlett was there. They included Bill Casper, Bob Goetz, Mac Hunter, Bill Bisdorf and Bud Holscher.

## Gru's Answers

(Continued from page 110)

must have no undesirable side effects and also it must improve turf quality. Some fertilizers contain only single elements such as Nitrogen, Phosphorus or Potassium. Then there are mixed fertilizers which may contain two, three or more of these nutrient elements. Sometimes they are called "balanced fertilizers", but no one knows for what purpose they are "balanced." It is a poor term. "Complete fertilizers" are those which contain traditionally the three major nutrients, N-P-K. They may also contain secondary and trace nutrients. In turf it is wasteful to apply complete fertilizers when one or more of the nutrients already are in plentiful supply. Then it is only commonsense to apply only those nutrients that are needed.

**What is Chelation?** Essentially it is the encompassing of a metallic ion within and as a part of an organic molecule. Zinc (Zn), Iron (Fe), Copper (Cu) are examples of inorganic metallic ions which

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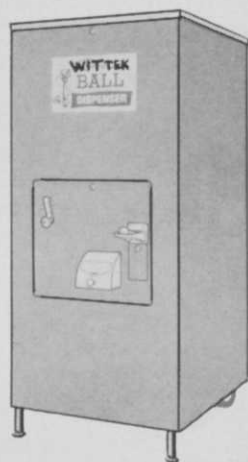
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are so quickly fixed and rendered insoluble by soil acids that they are essentially valueless as metallic ions. When they become a part of an organic molecule they are protected from fixation and thus can be absorbed by the plant roots.

## Why are soil microorganisms important?

Soil organisms are very effective in reducing organic residues to humus. An active soil microflora can prevent thatch formation by breaking it down as fast as it forms. Bacteria produce enzymes and colloids (glue-like material) which cement tiny soil particles together to form aggregates (grape-like bunches) which greatly improve the soil aeration and water absorption. Clay soils may act like sandy soils if the soil microflora is provided with a generous source of energy (carbon) and ample food (nitrogen). High bacterial populations seem effectively to reduce fungus attacks. Also they make available to plants so-called insoluble minerals that are "locked up" in the soil. To be fertile a soil must be plentifully populated by bacteria.

Q. Where does Penncross bent seed come from? I understand that there are three parents involved. What are their names? Is Penncross

a hybrid? For how many generations can they take seed from a field before it starts to degenerate?—(Ontario, Canada)

A. To produce Penncross creeping bent seed three parents (vegetative) are planted side by side in cultivated rows. The parents are: 1) Pennlu, a vigorous creeper from LuLu Temple C.C., Philadelphia and 2) and 3) two selected strains from a cross between Washington and Metropolitan. They have only numbers, no names.

Penncross seed technically is a polycross (many crosses), derived from open-field pollination but only among the three selected strains. Yes, it could be termed a hybrid. The seedlings seem to exhibit hybrid vigor. They develop many varying characteristics when grown individually, but produce a surprisingly uniform turf when grown as solid sod.

Certification standards permit a grower to take two seed crops from a field; then it must be plowed and planted to other crops. The vegetative parents that are used to replant, or to plant new seed fields, are grown under certification and must be kept absolutely pure to protect the buyer of the Blue Tag Certified Penncross seed.

Q. Our State Highway department has chosen to run the new Interstate road right through our present course. It will have to build us a new course under our supervision. Where can