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