

mous quantities" of sand to materially affect its porosity. There must be enough sand so that sand particles are continuous and completely surround the clay particles. Yet, it may take only 8 to 10 per cent of a heavy clay soil to completely change the characteristics of a sand.

Q — When we speak of "sand" what do we mean? Isn't there a big difference in sands? (Ohio)

A — There is a very great difference among "sands." To understand sand consult a book on soils where official sizes of sand particles are designated. Musser's *Turf Management* discusses this subject thoroughly. A very fine sand (i.e. "blow sand") can be more difficult to handle than a clay soil. "Coarse sand" usually is specified in mixtures for putting green construction.

Percentages of sand to produce a "sandy loam" are well outlined and illustrated in textbooks on soils. Write to your Agricultural Experiment Station Soils dept. and ask for publications that apply to your problem of creating a desirable porous loamy mixture for putting green construction, using available local materials.

Q — We have three "saucer" greens which will not drain. Can you suggest any way to improve the situation? (Ind.)

A — You might try drilling holes 6 to 8-ft. deep with a post-hole auger and back-fill with fine gravel to provide drainage wells. This has worked very well in a number of cases. Frequent aerifying and top-dressing with sandy material will aid drainage. By all means, reduce watering to a minimum, consistent with good grass growth. Hand watering is recommended "only as needed."

Q — Overseeding common bermuda with ryegrass on our athletic fields is not alto-

gether satisfactory in keeping green color. Would we do better to dye the bermuda green? (Ala.)

A — Common seeded bermuda is not a grass I would recommend because of its loose open structure and rapid loss of color. I would hesitate to advise use of dye on it until we have better dyes that last longer and do not turn a sickly yellow in the hot sun. Improved strains of bermuda which produce denser, finer turf and keep color longer might be the answer. Also, you might try overseeding with Kentucky 31. It's deeper-rooted and less slippery than ryegrass.

Q — Goosegrass in our Seaside bent greens is a recurring problem. Can you suggest any way to eliminate it? (Ill.)

A — Start sterilizing topdressing material at once. Thoroughly mix 13 lbs. of granular calcium cyanamide with each cu. yd. of mixed topdressing. (There are 21 bu. in each cu. yd.). Have topdressing moist but not wet. Pile it in bin and let stand for 2 to 3 months. Weed seeds will be killed. Unsterilized topdressing often is a cause of weed infestation.

Seaside bent is about the poorest creeping bent. I would recommend changing to a better grass. Arlington and Congressional mixed are good. Pennlu is rated even better. Goosegrass has difficulty getting a foothold in vigorous, aggressive grass.

Aerify only during the active growing season when grass is growing vigorously, so it can heal holes quickly. Vertical mowing every Monday morning, to nip off goosegrass leaves and stems and the runners of the bent, will help.

When you see goosegrass starting (probably late June or early July) try di-sodium methyl arsonate, according to manufacturer's instructions. Young plants will be easier to control than mature ones. Fertilize generously during spring and early summer. Dense, vigorous turf is good insurance against weeds. Keep insects and disease completely under control.

If goosegrass does return, don't waste time and ruin the putting surface by digging with knives. Chemicals and vertical mowing will maintain a smooth putting surface.

Q — We plan to fertilize and seed fairways this spring. How much fertilizer should we use and what type of seed do you recommend? (Mo.)

A — The best grass for fairways in your poor, gravelly soils is a good strain of bermudagrass which should be planted in

Club Manufacturers Report 3,941,206 Sold Last Year

Henry P. Cowen, pres., The National Association of Golf Club Manufacturers, advises that the organization's members reported 3,941,206 clubs sold from Nov. 1, 1954 to Oct. 31, 1955. Of the total, 2,746,591 were irons and 1,194,615 were woods.

The 1954-55 total surpassed 1953-54 figures by three per cent. Totals for the latter 12-month period were 3,826,580 clubs sold. These included 2,658,262 irons and 1,168,318 woods.