

and their caddies at such times may leave the putting greens in very bad condition for themselves and others who may wish to play after the ground has dried out. A bumpy surface on a putting green is difficult to overcome, and usually when such a condition occurs in the late winter or early spring a good part of the best golfing season has passed before that very desirable true surface can be restored.

"These are some of the reasons why the unwelcome sign 'Golf Course Closed' may be found at your club occasionally; but be assured that this will not occur more often nor for any longer periods than is deemed absolutely essential for your maximum enjoyment of the course during the golfing season.

"When in doubt as to the condition of the course, a telephone call to the club may save a disappointing trip or a wasted day.

"Yours for the best golf course possible, and for you the best golfing season ever!"

**Stepladder tees.**—These ancient relics may still be found on occasional golf courses. It is next to impossible to grow grass uniformly on them, and if the grass does grow in spots it is an expensive task to keep it mowed. It would be economy to obliterate the steps by filling them in with soil and reducing the incline, and would add much to the attractiveness of the tee and its surroundings. We have seen tees twelve feet high easily reached by an incline and the turf kept in an excellent condition.

Tricky holes or shots are never good ones.

## QUESTIONS AND ANSWERS

All questions sent to the Green Section will be answered in a letter to the writer as promptly as possible. The more interesting of these questions, with concise answers, will appear in this column. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Section.

While most of the answers are of general application, please bear in mind that each recommendation is intended specifically for the locality designated at the end of the question.

**The relation of fertilizers to the growth of clover.**—Does cottonseed meal introduce clover on soils where legumes occur naturally?—(Colorado.)

**ANSWER.**—Cottonseed meal in itself would not introduce clover, but if clover seed gets into a green through top-dressing or by natural distribution the 3 per cent of phosphoric acid and 2 per cent of potash contained in the meal would favor the development of the clover. At the same time some phosphoric acid and some potash are necessary for the best development of grass, especially on soils which may be deficient in one or both of these fertilizing constituents. The compost with which putting greens are fertilized usually takes care of this need, but occasionally on some soils a deficiency of phosphoric acid or potash is shown by the quick and vigorous growth of grass after one or both of these fertilizing elements are supplied. An excess of either phosphoric acid or potash would stimulate the growth of clover and

various weeds, but with an occasional application of cottonseed meal, which is relatively low in these elements and high in nitrogen, clover is not stimulated at the expense of the grass. Apparently the best means of supplying a little phosphoric acid and potash to the turf each year is the use of the organic form of fertilizer, since organic matter is beneficial to soils, helping to conserve soil moisture and open up and otherwise improve the physical condition of the soil. Cottonseed meal is rather high in price at present, but other organic fertilizers, such as activated sludge, soy bean meal, pulverized poultry manure, and castor bean pomace, which are relatively low in phosphoric acid and potash, may be used in its place. Once greens are well weeded the turf should receive what it requires, and in the spring and fall growing seasons a little phosphoric acid and potash are safe to use. The supply of nitrogen should, however, be kept up, as it will stimulate the grass; but apparently clover does not require much artificial nitrogen, since due to its peculiar root system it is able to make use of the nitrogen which is taken from the air by certain bacteria which inhabit its roots. Usually some weeds and clover are introduced into a green through top-dressing, but if the nitrogen content is kept high in fertilizers there need be no fear of stimulating these beyond a good development of the grass.

**Selecting bent strains.**—We are considering putting in some bent greens. We notice from the literature that comes into our office that there are several kinds of bent advertised. Which do you consider the best grade to buy?—(Michigan.)

**ANSWER.**—You do not indicate whether you wish bent from seed or stolons. There is much discussion as to which is the better for putting greens, and since both types have their ardent supporters it is difficult to determine which is really preferred by the "average golfer." Of the bents commonly grown from seed, Rhode Island bent and South German mixed bent both give satisfactory results in your locality. Colonial bent and Prince Edward Island browntop are similar to Rhode Island bent. There are different grades of both of these bents. The seed of highest purity and germination is, of course, the best for sowing on putting greens, where it is desirable to have as little mixture as possible with weeds and the coarser grasses. There is also seed of different strains of creeping bent on the market, but so far these strains have not been sufficiently tested in your locality to warrant general recommendations. Of the strains of bent planted by the stolon method, the two which have given most satisfactory results are the Washington and the Metropolitan strains. Both of these are of nearly the same texture, showing, however, some minor differences in color and disease resistance. Apparently the choice of a bent for greens is much like the choice of an automobile; there are several satisfactory types on the market, and the final choice should be left to the individual or club. The Green Section has a newly established cooperative planting on a course in your locality, and it is suggested that your committee visit that course and judge for itself which type is best suited for your district. Although this planting is comparatively new, it will, nevertheless, give you an opportunity to see the characteristics of the various bents as grown in your climate. On this course you will see the grasses on small experimental plots and also on greens under actual playing conditions.

**Acid soil and sulphate of ammonia best for putting greens.**—We have had the soil on our bent putting greens tested and find it is slightly acid. Should we try to sweeten it? We have also tried a special commercial fertilizer on one patch of grass, while we have used compost alone on another; the fertilizer gave very much better results. Should we discontinue using compost?—(Georgia.)

ANSWER.—A slightly acid condition of the soil is desirable, as fine turf grasses thrive in such a soil, while some weeds are discouraged. You have evidently a slightly wrong impression regarding the use of compost. Usually compost contains slightly less than 1 pound of nitrogen, half a pound of phosphoric acid, and 1 pound of potash, per 100 pounds. Putting green turf only occasionally requires more phosphoric acid or potash than the compost supplies. Also if phosphates and potashes are supplied in excess of the turf requirements, clover, chickweed and various other weeds may be encouraged. Putting green grasses, however, require nitrogen in addition to that contained in compost. The best form of nitrogen, other things being equal, is sulphate of ammonia, which also aids in acidifying the soil. Sulphate of ammonia should be used several times during the year in addition to compost. Apply it at the rate of 3 pounds in hot weather, and 5 pounds in cooler weather, per 1,000 square feet. Mix the sulphate in a sufficient quantity of dry soil to insure an even distribution, and follow the application by thoroughly watering the sulphate into the turf. The brand of fertilizer you are using is a comparatively expensive source of nitrogen. It contains  $7\frac{1}{2}$  per cent available nitrogen, while sulphate of ammonia contains 20 per cent, or nearly three times as much; at the same time the sulphate can usually be obtained at less cost per ton. You would be well advised to try sulphate instead of the fertilizer you now use, making applications whenever the grass seems to lag or need stimulation.

**Essentials of a machine and tool house.**—We are completing a nine-hole golf course and are anxious to obtain data relative to the essential features that should be embodied in a shed for the shelter of machines, tools, shed and fertilizer and for use as a work shop.—(Florida.)

ANSWER.—We would suggest that your shed should be about 18 feet deep and of any width to meet your requirements. At one end of the shed should be an enclosed room with a work bench. This room can be used as a greenkeeper's office, also for the storage of chemicals, spare parts and small tools. The room should be fitted with a lock as a guard against thefts. The shed should have a concrete floor, at least in part, so that fertilizers could be piled in the shed without danger of becoming damp. On such a floor compost could be piled and sifted also, or kept dry during wet weather; also soil or seed could be mixed on such a floor. The shed should be high enough so that wagons and implements could be backed or driven into it. The front of the shed, which runs lengthwise of the building, should be made up of large sliding doors, and several windows should be placed in the rear. The shed should contain bins lined with zinc for storage of smaller quantities of seed. Larger quantities of seed or fertilizer can be kept in bags. Racks for hand tools should be arranged in the shed.

**Killing poison ivy.**—How may we get rid of poison ivy in our rough?—(Massachusetts.)

ANSWER.—Sulphuric acid will kill any plant with which it comes in contact and is much used in the killing of dandelions, plantain, and crab grass. A sharp stick is dipped into the acid and then thrust into the root crown of the weed. Care must be taken not to get the acid on the hands or clothing. Poison ivy may also be killed by thoroughly spraying it with kerosene oil. Also a solution of salt brine (3 pounds to 1 gallon of water) will kill the plant if applied with a sprinkling can or a sprayer. The kerosene and salt brine will kill the foliage of most other plants also, but if the applications have not saturated the ground the roots of the grass will not be killed and the grass will recover. Most weeds, however, will be set back considerably, if not killed. Most of the commercial weed killers consist chiefly of arsenite of soda, and heavy doses of this will kill any vegetation. The arsenite should be applied as a spray in a solution of 5 pounds to 50 gallons of water. Fifty gallons of this solution would be sufficient to remove the weeds from 3,600 square feet, and at this rate would probably not destroy the grass.

**Controlling earthworms.**—Can we control earthworms on our greens with arsenate of lead?—(Illinois.)

ANSWER.—On most soils arsenate of lead will prevent earthworms from being active at the surface. Apply the arsenate to the putting green at the rate of 5 pounds to 1,000 square feet. It is well to mix the arsenate with dry soil in order to increase the bulk of the application and hence insure a more even distribution. The banks of the green and areas within 10 or more feet of the putting surface should also be treated, so that worms from the outside will be poisoned before reaching the putting area. After broadcasting the material evenly over the desired area it is well to drag a mat over the turf in order to work the arsenate of lead down to the soil by brushing it off the grass blades. An application of arsenate of lead will keep out earthworms for considerably over a year on some soils, but on others more frequent applications may be required.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF THE BULLETIN OF THE UNITED STATES GOLF ASSOCIATION GREEN SECTION, PUBLISHED MONTHLY AT WASHINGTON, D. C., FOR OCTOBER 1, 1928.

District of Columbia, ss:

Before me, a notary public, in and for the District of Columbia, personally appeared Kenneth Welton, who having been duly sworn according to law, deposes and says that he is the joint editor, managing editor, and business manager of The Bulletin of the United States Golf Association Green Section, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editors, managing editors, and business manager are: Publisher, United States Golf Association, 110 East Forty-second Street, New York, N. Y.; editors, managing editors, and business managers, John Monteith, Jr., and Kenneth Welton, Washington, D. C.

2. That the owner is the United States Golf Association, a corporation organized and existing under the law not for profit and having no capital stock.

3. That there are no outstanding bonds, mortgages, or other securities.

(Signed) KENNETH WELTON, *Joint Editor.*

Sworn to and subscribed before me this 4th day of October, 1928.

(SEAL)

(Signed) F. E. SINGLETON.

(My commission expires May 4, 1933.)

## AS WE FIND THEM

This is the season when little Sonny up North is being “sewed up for the winter”—likewise the putting greens.

Some greens are all tucked away under a heavy blanket of straw—much joy in mousedom.

On one course heaps of branches and underbrush are piled around the green to “catch the snow and hold it on the green to protect the grass.”

On the next course the men are busy well to the windward of greens putting up snow fences to “catch the snow and keep it from the green to protect the grass.”

Sounds like a rebuttal for the perennial fall debate: “Katy did—Katy didn’t.”