

paratively free from the pest. Had the Green Section not rendered us this invaluable service in securing the cooperation of the United States Department of Agriculture in attempting to solve our problem, I know there would be no golf course on Jekyll Island today. Our old course had been utterly destroyed by the mole cricket.

Let me solemnly warn anyone building a southern golf course to make adequate provision for combating the mole cricket before he does anything else. In time the insect will unquestionably work farther north, invading even the country north of the Carolinas. At Aix-les-Bains, in southeastern France, a place almost surrounded by high mountains, the mole cricket suddenly appeared last year. I dug a few up there and was surprised to see that they were at least three inches long. As labor at that place was very cheap, they could afford to fight the pest with bisulphide of carbon, which must be squirted by hand into the burrows.

New pests are certain to appear from time to time as the game of golf grows and more courses are built in other sections of the country. It is only by broadcasting knowledge gained from various sources, in a medium such as the Bulletin of the Green Section, that intelligent and steady progress in greenkeeping can be obtained. I firmly believe that the greenkeeper today occupies the most responsible position in the game of golf. Good results can not be obtained without a good greenkeeper. Under the guidance of an inferior man thousands of dollars may be wasted and the best conditioned course may go to pieces in a few years.

In closing, I want to express my thanks for the valuable advice in the use of fertilizers, preparation of soil, and other matters given to us by the Green Section when we built our new course. By following their recommendations we saved a large sum of money and obtained most gratifying results.

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.

Early spring treatment of putting turf.—After the frost is out of the ground in the spring and the greens have been rolled, should the first treatment be the application of top-dressing, mowing the grass, or scarifying the turf with sharp-tined rakes? (Ohio.)

ANSWER.—After the greens have been rolled with a roller weighing from 150 to 200 pounds to the foot and having a diameter of at least 18 inches, the first treatment should be mowing the grass. Top-dressing should be delayed until the grass is growing sufficiently to require almost daily cutting. At that time the turf should be scarified

with sharp-tined rakes and then top-dressed and fertilized. Covering grass that is not growing is liable to result in smothering; also less injury will result from raking if this operation is delayed until the grass is growing vigorously. For the first application of fertilizer in the spring the use of a complete fertilizer is recommended, such as poultry manure tankage, cottonseed meal, or activated sludge (Milorganite). This should be applied at a rate of 15 to 18 pounds to 1,000 square feet, either by itself or mixed with the top-dressing. It would not be necessary to mix the fertilizer throughout all the top-dressing, but just in sufficient quantity to insure an even distribution. Such an application of a complete fertilizer should carry the greens for the first month or so in the spring, at the end of which time regular light applications of sulphate of ammonia should be started; these applications should be continued through the season until time for the last treatment in the fall, which should consist of another application of a complete fertilizer and a top-dressing and which may be expected to carry the turf over until the following spring. It is in early spring and late fall that complete fertilizers can be used to best advantage. Between these periods light applications of sulphate of ammonia (2 to 3 pounds to 1,000 square feet) and an occasional light top-dressing are all that putting turf seems to require.

Preventing the formation of crust on greens of stiff clay soil.—Our soil is a very stiff clay which becomes sticky and slimy after rain or if watered too much and baked hard in summer. The greens were constructed rather hurriedly two years ago. None have subdrainage, nor was sand, manure, or fertilizer worked into the soil at the time of construction. A hard scab forms on the surface of some of the greens. To improve the condition of the soil we have been top-dressing it with sharp sand. It is claimed by some that this practice is bad, in that the sand tends to form a crust under trampling, injures the grass by cutting into the growing shoots, and does not work down into the soil but is washed away to a considerable extent by rains. It is not practical for us to reconstruct the greens at present. What treatment would you suggest? (New York.)

ANSWER.—If the drainage of any of your greens is poor, permanent improvement may not be expected until satisfactory drainage is provided. It is evident that your soil is deficient in organic matter or humus. Such a soil may be so tight that even ordinary drainage will not benefit it. On the other hand, a soil of good physical structure will not drain properly if it is not elevated sufficiently to drain away free surface water. The formation of a scab on the surface of soil is usually not due to an accumulation of sand, although a considerable accumulation of sand on the surface of soil is liable to injure young grass by bruising it. A scab on soil is formed generally by the growth of algae resulting from poor drainage, or by the cohesion of top-dressing material when applied to a thin, poor top soil. The growth of algae on the surface of soil is sometimes not noticeable, but the constant growth of this low type of vegetation will leave a scabby residue. Where the improvement of drainage or soil texture fails to prevent the growth of algae, the growth can usually be checked by an application of corrosive sublimate at the rate of 1 to 2 ounces to 1,000 square feet; but if the grass does not again cover the bare spots caused by this scab, the algae will doubtless return. Such scabby areas

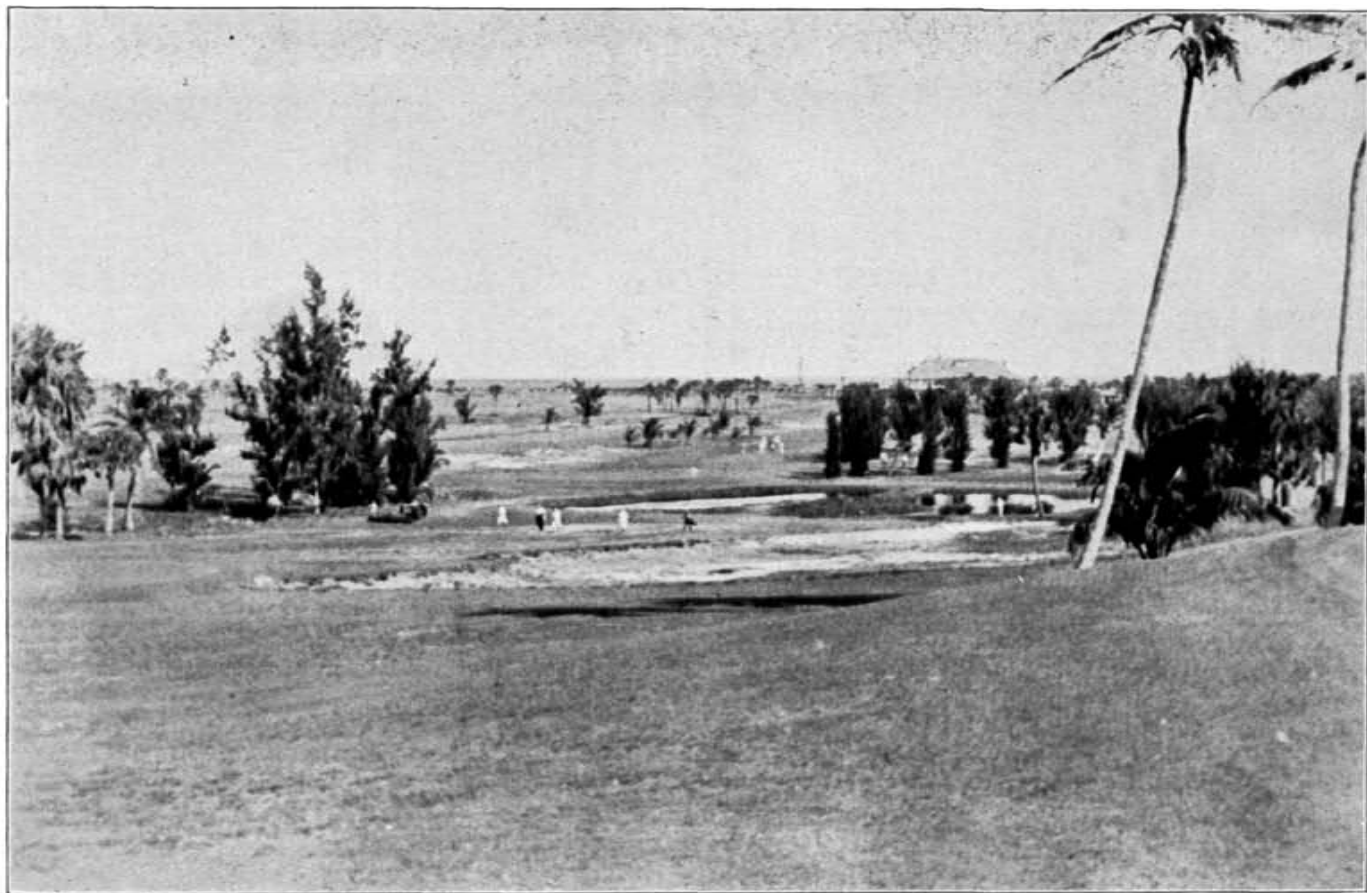
should therefore be broken up and steps taken to stimulate the growth of grass by reseeding and fertilizing.

We do not recommend the applying of sand alone, but we recommend mixing it with fine soil and decayed organic matter so as to furnish a sandy loam top-dressing. The continuous use of such a top-dressing does not work sand into the soil but does build up a sandy-loam top soil.

To benefit conditions such as yours the following procedure should be helpful. After the free moisture is out of the grass in the spring, rake the dead material from the greens by the use of sharp-tined rakes. Top-dress with clean, sharp sand at the rate of about 2 yards to 5,000 square feet. If the soil is acid or even neutral, apply ground limestone mixed with the sand at the rate of 225 pounds to 5,000 square feet. Then go over the greens with spiked rollers, or better still with spiked tampers. The spikes should be driven through the surface and as deeply as possible into the soil. As long as the putting surface is not made bumpy, the spikes may be agitated in the soil so as to loosen and break up the crust. Then brush or rub the greens so that as much sand as possible will be worked into the channels left by the spiking. Follow this after several days with an application of a good organic fertilizer, such as poultry manure tankage, cottonseed meal, or activated sludge (Milorganite) at the rate of 10 to 15 pounds to 1,000 square feet. Then water the greens with a fine spray, so that as much as possible of the sand, fertilizer, and lime will be worked into the spiked surface. Repeat this treatment the last thing in the fall, omitting however the lime. A single application of lime in spring would not likely bring in weeds or clover, as the fertilizer used would stimulate the growth of the grass sufficiently to prevent the undue development of weeds or clover. A single application of lime at the beginning of this treatment would be sufficient for several years. Lime has a tendency to make soil friable, although its continued use would make the soil too alkaline for the best development of turf grasses. We have seen good results follow in a few seasons by this procedure.

Sulphate of ammonia for bluegrass fairways.—Is sulphate of ammonia a good fertilizer for Kentucky bluegrass fairways? (New Jersey.)

ANSWER.—Kentucky bluegrass thrives best on soils derived from limestone or supplied with ample calcium carbonate (lime). Sulphate of ammonia will in time deplete a soil of lime, but with soils which are nearly neutral or are on the alkaline side it would be quite safe to use sulphate of ammonia either alone or along with organic fertilizers. It requires considerable time to change a neutral or an alkaline soil materially with sulphate of ammonia when the sulphate is applied only at rates required by turf. Acid soils should receive sufficient lime to make them at least approach the neutral point in reaction. Bone meal contains considerable calcium and is good for bluegrass on acid soils. Bone meal is more beneficial, however, when its nitrogen content is raised by the use of a little sulphate of ammonia. The sulphate may be mixed with the bone meal just before applying it to the turf, or it may be applied alone in the spring and the bone meal applied in the fall. Organic fertilizers such as cottonseed meal, activated sludge, poultry manure, and well-rotted manure also give excellent results on bluegrass fairways whether the soil is alkaline or acid.



On the course of the Palm Beach Country Club, Palm Beach, Fla.



Art little? Do thy little well,
And for thy comfort know
Great men can do their greatest work
No better than just so.

Goethe

