

## Cutting, Moving, and Relaying Sod

By William J. Rockefeller

At the Inverness Club, Toledo, Ohio, our experience in moving sod, over many years, has led to the conclusion that the simplest method to accomplish this purpose is the best, and we believe that we make use of the least possible labor in the operation. At the present time we are engaged in moving our No. 2 green, slightly shifting its location. Strange as it may seem, my experience has convinced me that, if properly done, taking up the sod of a putting green and relaying it will improve the condition of the turf.

If we are to move a green we employ no particularly fancy system or specifications. Before starting to cut the sod we make sure that good drainage is provided for the new green, if necessary laying sufficient tile to insure proper drainage. The green must then have a good, solid foundation, and at least 8 inches of good top soil, enriched by being mixed well with manure, mushroom soil, or good compost. The top soil must be allowed to settle as long as possible—certainly not less than a week. Our next step is to rake it very evenly and bring it to the desired grade and contour, which is followed by rolling with a heavy hand roller. When it is ready for the turf, it should be gone over again with the rakes to remove any depressions and to get the grade and contours exact. This should be done at the last moment, while the new turf is being cut. After that no one should be permitted to walk on the prepared soil.

In cutting turf we are still using a sod cutter which we purchased 20 years ago, and it is giving entire satisfaction. We use a cable or rope long enough to keep our team or tractor from driving on the green. Three men are engaged in the operation of cutting the sod. One man rides the cutter for weight, as we find it necessary to hold the cutter down, and a workman seems to be the handiest weight available. Another man holds the handles of the cutter, and the third guides the cutter by taking hold of the cable 10 or 12 feet in front of the cutter. In this way we are able to cut the entire green with no waste, the blade on one side of the cutter running in the gash made by the blade on the opposite side in the previous cut.

We have found sods cut about one inch thick are most convenient to lift and lay, and further that as the roots of the grass spread out and take hold more quickly at that depth the sod will attach itself to the new bed much more quickly than when cut with more earth attached. Before lifting sod, it should be mowed close, so that it will not need to be cut soon after being relayed, since it is more difficult to cut the grass immediately after it is transplanted than before. We would not think of chopping our strips of turf into chunks say a foot square, as we can cut them into even strips 12 by 36 inches. By using an edger we can, with proper care, get all strips even and ready to lay. By so cutting the strips, it is not necessary to lay the pieces in the order in which they are lifted, as they will be perfectly interchangeable. Moreover, by cutting the sod in strips, so that it can be rolled up, the work can be done much faster.

We have not found it necessary to put the sod, when cut, into a frame, with the grass side down, in order to trim the pieces to an even thickness, as with care they can be cut as true in the first place.

As soon as the first strip is cut, the sods are rolled compactly and

slid say 6 inches off the line on which they were cut so that they will be out of the way of the next cut. This operation is continued until we have the whole green cut and the sod piled in rows.

We are now ready to lay the sod on our new green. The first step in this part of the operation is to lay boards end to end in a straight line across the green. The first line of sod is laid clear across the green against an edge of the boards, care being used to see that the line of the edge of the sod is true and always against the boards. As soon as one line or strip of sod is down, a line of boards is laid on it so that the men can work without damage to the sod or the prepared surface of the green.

The sod stretches more or less in cutting and rolling. We take out all the stretch or slack by pressing the edges together—that is, by taking hold of the strip being laid, at about the middle, and pulling or pressing it against the end of the strip already laid. This takes out the stretch or lengthwise slack; to take out the crosswise slack we compress the strips by pulling on them sidewise against sod already laid. This operation is somewhat difficult to explain in writing, but we aim to compact the turf to as near its original condition as possible.

We are careful to get all edges flush and even; and the surface also must be even. The edges are naturally even, and the sod is quite uniform in thickness. The surface of the edges must be kept even. This is done by fitting them even and pushing both edges into place and to the same surface at once. It will not do to attempt to fit the surface of one strip of sod to that of one already in place, as they will never become true. Thus it can be seen that we work always to true the outside edge of the strip in place and the inside edge of the strip being laid. The men always work on boards to avoid injury to the surface. In laying the sod, one man rolls the sod after it is cut, and another man, working on his knees, does the laying.

When laying sod the pieces should be placed close together but not crowded or bulged. It is well to go over the sodded area and gently pat each sod with the back of a flat spade or shovel. The work should be carefully examined, and if the sods sink at the corners they should be brought level by having some loose soil placed under the low spots. Also bulged or raised corners that will not easily pat down should have sufficient soil removed to enable the sod to lie level.

When the sods are laid, we tamp them lightly to compact them and get a smooth surface, just hitting the high spots on each side of the seams. Sometimes we follow this by rolling. We then top-dress and work in the dressing carefully with brooms, mats, or poles, and our green is practically ready for use. We should, of course, prefer to let the job rest for a week or two to give the turf a chance to knit well; but many a time the play has started on the newly laid turf before the green was entirely completed. Players sometimes have dispositions that are none too sweet, and naturally these dispositions are not bettered when the players miss putts on account of the condition of a green; but, even so, greens newly sodded will furnish very fair putting.

After the sod is laid and tamped, the area should be sprinkled until the water has gone through the sod into the soil below, and this should be followed a day later, or still later if necessary, by a comparatively heavy rolling when the sod has commenced to dry out. A

roller weighing from 150 to 200 pounds to the foot of roller is sufficient. The sod should not be allowed to become dried out for lack of watering before the roots of the grass have had a chance to take hold in the soil below.

If a nursery is used for raising sod to repair old greens or build new greens, as much of the area as will be required in the near future should be treated the same as if used for actual putting—that is, the required area should be cut and watered daily, and for a month or so before the sod is to be laid on the green the area should be top-dressed as regularly as is necessary on a putting green.

We think we can move turf as well in July or August as at any other time, but naturally more care is required when the work is done in midsummer. If the weather is very dry, the turf must be prepared for removal by being soaked with water two or three days and then allowed to dry out until it can be handled nicely. The ideal time, however, in our experience here, is May or June. Our No. 9 green was built and sodded in 1919 between July 4 and July 15, and was in fine shape for the Ohio State Open Tournament held here in September of that year. Our No. 18 green was finished June 29, 1920, and went into the National Open Tournament on August 10 of that year.

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### U. S. Nitrogen Industry Now Factor In World Supply

The production of fixed nitrogen in the United States this year will be three or four times greater than last year, says Dr. C. H. Kunsman, fertilizer and fixed-nitrogen chemist of the Bureau of Chemistry and Soils, United States Department of Agriculture. This year's production, he says, will be the equivalent of about 600,000 tons of Chilean nitrate, of which this country has been importing about 1,000,000 tons a year.

By chemical and electrical means nitrogen can be taken out of the atmosphere, and the nitrogen so obtained is called fixed nitrogen because it is necessary to fix or combine it with other substances to make it commercially available for fertilizer and other uses, he explains.

For the first time, says Doctor Kunsman, the domestic United States supply of fixed nitrogen becomes an important fraction of the total supply, and also, for the first time, a considerable part of the domestic production will be used as fertilizer, the agricultural demands for nitrogen representing, in one form or another, about two-thirds of the total demand for nitrogen.

In establishing the nitrogen-fixation industry in the United States the Government has taken an active part, and the Fixed Nitrogen Research Laboratory of the Bureau of Chemistry and Soils, the research of which has been of great importance in establishing the industry in this country, is continuing its investigations.

"More than 10 years ago," says Doctor Kunsman, "the Government built the Muscle Shoals nitrate plant for war purposes. No fertilizer has been produced there, although the use of the plant for that purpose has been widely advocated. Our increasing supply of fixed nitrogen is coming from new and modern plants constructed by private enterprise."

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Even pine needles are used advantageously by greenkeepers for composting with manure.