

dressing and a proper method of filling up the valleys, than I have had by rolling and pressing down the hills, which simply come back. Greens should be watered and not sprinkled, as the roots seek water, and we want good thick turf. All these matters come under the question of how often grass should be watered and how closely it should be cut. When there is a long drought, grass should be kept longer than when there is the usual rainfall."—(*This is by a very competent but modest gentleman.*—EDITORS.)

"I think putting greens should be cut as closely as possible, without scalping. Cutting should begin early in the spring, and throughout the growing season the knives should not be changed unless to cut more closely. It is good practice to cut every day. I do not agree with those who hold to the opinion that the grass should be permitted to grow longer through the hot summer months, as from my observation this practice injures the turf. It has been my experience that the bents, which are the finest of our dwarf grasses, do best when kept closely cut, as in this manner taller-growing grasses are not given a chance to crowd out the bent plants. In mixed greens of bent, bluegrass, redtop, and rye-grass, close cutting in warm weather has a tendency to discourage the last three grasses, giving the bent a chance to make greater growth. Such greens should be lightly watered every day. Remember that 90 per cent of the roots of the fine bent grasses lie within one and one-half inches of the surface; therefore weekly watering, or even watering three times a week, does not furnish sufficient moisture where it is mostly needed. In my opinion the close cutting of fine turf grasses is comparable to the trimming of hedge plants, such as privet and hemlock; in both cases a dense growth of new plant-parts results. The same thing is also true with hay crops, such as timothy, clover, and alfalfa, as it is well known that when the crop is harvested for hay a finer, closer growth of the stubble develops. Moreover, a close, dense turf is more resistant to hard usage, heat, the washing of soil as a result of heavy storms, and the numerous insects which feed on grass roots. I would therefore suggest that putting greens be kept cut short even during the hot season, and that they be watered daily, and at times even twice daily."—*Walter S. Harban, Columbia Country Club, Washington, D. C.*

Tip Cuttings for Vegetative Planting

By K. F. KELLERMAN

The Bannockburn Golf Club, Glen Echo, Maryland, has recently carried through a complete reconstruction of its No. 1 green with a result so satisfactory both in general improvement of the course and in cheapness of construction that it seems worthy of recording. The green is approximately 7500 square feet in extent, protected by two shallow sand traps at the left, the foremost one partly encircling the entrance to the green, and also by a shallow sand trap at the right and a grassy hollow behind the green ending in a ridge approximately 3 feet in height at the back.

By taking advantage of the natural contours of the ground, the cutting and filling was reduced to a minimum, and all fills and contours constructed from earth removed from the traps. The green was planted with creeping bent by the vegetative method the 18th of September. In accordance with suggestion from the Green Section, instead of securing mature vegetative stolons, as is ordinarily done for planting greens, the material used consisted entirely of clippings from another new green planted the previous season and not yet in play. The turf on this latter green had been uncut for a considerable period, so the tip stolons were cut with a sickle and then

chopped into small pieces with a hatchet. These tip clippings were then taken to the new green and planted immediately, and the remarkably rapid growth of the new green appears to be due, at least in part, to the use of these fresh tip cuttings. The new green has been cut and rolled three times since the date of planting, namely, on October 9, 16 and 20. The stand of bent at the present time is almost perfect and could be used as a playing surface. It will undoubtedly be in excellent condition for early spring play.

An important feature of planting this green was the use of hand screens of one-quarter inch mesh, holding a little less than one-half bushel of soil, for applying top soil at the time of planting the vegetative stolons. This method of applying top soil greatly facilitated the work and enabled the workmen to cover the stolons without disarranging and with greater speed than it could be done with shovels and rakes.

The work was carried on under the supervision of Mr. F. S. Moise, chairman of the green committee, and Mr. L. G. Walker, club professional, who has been also acting as greenkeeper. The total costs were as follows:

Aug.	16—7 men removing sod and sodding temporary green*-----	\$6.50
“	17—Cutting sod, 10½ hours-----	4.08
“	20—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	21—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	22—1 man plowing and scooping, 7 hours, \$2.03; 1 horse, \$2.00-----	4.03
“	23—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	24—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	25—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	27—2 men plowing and scooping, \$7.00; 1 horse, \$2.00-----	9.00
“	28—2 men general construction-----	7.00
“	29—1 man general construction-----	3.50
“	30—9 men, 2 hours; 2 men, 9 hours, general construction-----	14.52
“	31—5 men, 4 hours; 2 men, 9 hours, general construction-----	15.30
Sept.	1—4 men, 9 hours; 2 horses, general construction-----	15.00
“	3—6 men, 9 hours; screening soil and hauling to green; 1 horse-----	21.00
“	4—6 men, 9 hours; screening soil and hauling to green; 1 horse-----	21.00
“	5—6 men, 5 hours; screening soil and hauling to green; 1 horse-----	11.70
“	6—Wet.	
“	7—Wet.	
“	8—Wet.	
“	14—7 men, 4½ hours; planting-----	10.50
“	15—6 men, 9 hours; planting-----	21.00
“	16—2 men, 2 hours; planting-----	1.56
“	17—7 men, 9 hours (5 hours planting); 1 horse-----	24.50
“	18—7 men, 9 hours (6½ hours planting); 1 horse-----	24.50
“	19—8 men, 5 hours; 5 men, 3 hours; 1 horse, completing traps-----	20.30
		<hr/> \$279.99

An experiment with two additional greens, composed largely of bluegrass and redtop and in rather poor condition, has been tried, which, also as a result of the hand-screen method of applying top soil, seems likely to give a very satisfactory putting turf by the middle of the coming spring.

*This day's work cost \$24.50, but approximately three-fourths of the time was devoted to the preparation of the temporary green to be used while No. 1 green was under construction; only one-fourth of the cost, therefore, was charged to No. 1 green.

These greens had a badly moth-eaten appearance and were rather seriously invaded by crab grass. After the crab grass was weeded out, the greens were thoroughly raked preparatory to top-dressing with loam and sand. Just prior to this top-dressing, creeping bent stolons were scattered thinly over the entire green, and more plentifully applied in the partially bare areas. Top soil was then applied by the hand-screen method and the greens watered and lightly rolled. The stolons are apparently rooting and growing as well or better than the old grass, so that a good putting turf composed largely of creeping bent, seems assured for the coming season.

Moles

By WILLIAM C. GEER, *Portage Country Club, Akron, Ohio*

Every greenkeeper and member of a greens committee recognizes how pestiferous are moles. It happens that in my own yard I have been fortunate or unfortunate enough to have had, perhaps, more of them than have appeared on the greens of the Portage Country Club. Having been trained as a chemist, I have naturally tried a number of substances during the past two or three years to eliminate the moles.

A year ago I obtained a quantity of paradichlorbenzine, a chemical which the Department of Agriculture found exceedingly efficient as an insecticide for the peach tree borer. It is commercially obtainable in the form of a powder which, when placed in the ground, gives off a heavy poisonous gas which penetrates the soil. The thought occurred to try some of this to see what effect it would have on moles. My natural feeling was that since it affects the mucous membrane of anyone who smells of it sufficiently to drive him from its immediate vicinity, it might work out in a way to drive away moles; which is about all we care to achieve. In the fall of last year, therefore, experiments were made in my yard.

The runways were opened at intervals of six to ten feet and about a teaspoonful of the paradichlorbenzine dropped in and the soil put back. There was no further activity of moles in the area thus treated. Again this summer, when the activities of the moles began again, I tried it as a preventive measure. Instead of waiting for them to start into the territory where the working has been most active, little holes were dug in the sod at intervals of about ten feet in a checkerboard fashion over some forty feet along the edge of the lawn, from which the mole activity had evidently come. About four rows of these holes were made about ten feet apart out into the yard. This was done in July, and up to the present, the middle of October, there has been no evidence of mole activity. What has happened to the moles I do not know, but they did not dig up the yard.

Thinking, then, that it might be worth trying further, a small quantity of the paradichlorbenzine was given to the greenkeeper at the Portage Country Club, with instructions simply to open mole runways and inject a small quantity. The report has now come that wherever this substance was applied, no more mole activity has been observed.

This substance is now being tried out on a larger scale, but it seemed unnecessary to wait for the completion of our experiments before letting others know of the results. It is still in the experimental stage and final conclusions can not be available until after a very thorough study over a period of a year. This little story, therefore, is simply a contribution in the hope that others may find this substance of some value.