Clubs which are outstanding in maintenance are those which have realized that the golfers are demanding a more specialized turf than ever before. The clubs are making changes in their programs to meet this demand. Let's take a look at some of these changes, starting with the putting greens. Greens are cut either 3/16 or ¼ inch in height and cut 6 days a week which is a very good practice. To hold this specialized turf at these heights, there must be a good sub-drainage system, as well as a good surface drainage. Soil structure and a strong bent turf are also very important.

You may hear many arguments for and against sub-drainage, but I still will take the greens with a good tile system in them because it helps cut your troubles in half. Surface drainage is very necessary and don't forget to have ample room for cup location. If you are having trouble with the type of grass now on your greens, it may be wise to change over to some of the newer strains, such as Toronto, Collins, Arlington, Congressional or Old Orchard. In seeded bents, Seaside seems to lead the field, but look for Bert Musser at Penn State to break out with some new types of seeded bent. They are doing a wonderful job along this line at Penn State.

Tees Improving

Tees which in the past have been the neglected part of the golf course, are fast coming into their own. More of us are beginning to rate them with the same importance as we do greens. The Green Section has now shaped its research program in this direction. Anyone visiting the turf plots at Beltsville will find some changes will be made in grasses for tees. Here again I think drainage and soil conditions are important. Size and shape of tees should be given considerable consideration. We all know by now that those small tees built years ago are impossible to keep grass on with the amount of play we have nowadays.

Shade trees that send out thousands of small roots which take food and moisture away from the grasses present quite a problem, but I believe this can be over-come by a root cutting plow. In this way you can still keep your shade trees, which I believe have their place around tees. Regular applications of fertilizer will help hold this turf.

Fairway Grasses Changing

Concerning fairways, I feel that we are going to accede to the demands of the golfers and give them the closely cut, firm and dense type of grasses that will enable them to put backspin on the ball so shots to the green will hold better. Many clubs that started out with unwatered fairways and later installed watering systems have discovered they had to change to new types of grasses also. Clubs planning to install watering systems would do well to keep this in mind, as the initial cost is by no means the only one. More Colonial bent is probably used for fairway turf than ever before. If these are cut often, fertilized regularly and not overwatered, they should meet the demands of all golfers.

Aeration has been one of the best aids for establishing better fairways. Ground that has been aerified will readily admit water, which quickly seeps into the soil to a greater depth. When water does not penetrate deeply into the soil, grass becomes shallow-rooted and susceptible to drought injury.

Surface watering merely encourages poa anuina. Deeper watering benefits the more valued turf grasses. Fairways cultivated with the aerifier also makes fertilizer more available to the deeper rooted turf grasses taking it away from the shallow-rooted clover and poa anuina, which we do not want in fairways. This also is true in reseeding the fairways. The seed has a chance to get into these holes and develop more readily in loose, moist soil.

Roughs are also coming in for their share of attention nowadays. Many clubs are spot fertilizing and seeding the poorer areas of the rough which raises it to a par with the rest of the better turf areas. This not only makes a better looking course but is fair to all players whether they are 6 or 60 feet off the fairways.

Weed control in the rough is just as important as it is on fairways. You can't...
have weed-free fairways if you have a fine crop of weeds in the rough. It does not work out that way.

Trees around the rough should get special attention for two reasons. First, all trees except evergreens should have the lower branches trimmed high enough to enable a golfer to take a full swing in playing his shot. Second, as a safety measure do this for your tractor drivers, so they can drive under these trees without fear of injury to their eyes. You then can be sure the golfer will not complain about trees being a hazard on the course.

The type of rough on a course should be governed by the type of membership you have, but regardless of this, the area outside of the out of bounds line should be kept clean, enabling a player to find his ball more readily, which in turn speeds up play.

**Attend to Approaches and Aprons**

More thought will be required for the maintenance of approaches or aprons. Here also we should incorporate some of the better bent grasses to help offset the abuse from green mowers making turns. Aeration even during playing season and extra applications of fertilizer will help preserve this turf. This has been one of the weak points in our maintenance programs.

Changing of the cups on greens is a very important operation and employees should be well instructed along these lines. Cups should be changed often. It is poor policy to leave a cup until the edges become ragged and worn. When cutting the new hole care should be taken not to lift the area around the edges. A small tool is made to press this area down and is well worth the trouble it takes to use.

A good plan is to use two of your better tractor drivers for this job. On most courses they can't start cutting early in the morning because of excessive dew, so send each one out on a tractor with the hole changing equipment, clean towels, soap and water for ballwashers; the whole job can be done in two hours.

You then have that out of the way for early morning play. By this time the grass on the fairways or rough is dry and you can start these men cutting.

Keep the flag poles clean or painted at all times. Torn or ragged flags should be replaced at once. Flags are not so expensive. In fact they could all be replaced once or twice in a season. It is well to have an extra set of brushes for ballwashers. To prevent rank odors in ballwashers make a complete change of all brushes, cleaning the insides with plenty of hot water. Put the old brushes out in the sun to air and dry, they will then be in condition to use again. Change towels regularly, soiled towels are both unsanitary and unsightly.

In placing the markers, strict attention should be given to the line of play. It becomes very confusing to a player when he sees the markers pointing one way and the line of play pointing another. As the men go along changing markers, they should look around and make sure that there are no low branches or other obstructions in the way of players taking a stance or swinging. If so they should be reported at once.

Benches should be moved each time you change markers to prevent damage to the turf under and around them. As birds have a habit of parking on benches, it is well to see that the benches are cleaned occasionally.

**Clean-up Campaign**

Waste paper containers should be available at every tee. I'd like to tell you of an incident at our club relating to waste paper on the course. We had some galvanized tin boxes made, about 4x7x12, to fit along the side of the Lewis ballwashers at each tee, with the words "waste paper" and the yardage and par stencilled on them. Then to attract our members' attention to these containers, we ran an ad in the club's monthly bulletin as follows: "Help Wanted—300 men and 100 women to help keep the golf course free of paper and trash. Easy work, with the aid of new style paper containers now installed at each tee. Only takes seconds to deposit that empty cigarette pack, golf ball and candy bar wrapping, or stray papers found on the course. Instruct your caddies that their help is also needed. REWARD—a neat, clean course that will make your game more enjoyable."

This campaign was further emphasized by forbidding the caddies to take any lunches out on the course. They were told if the course was kept free of paper this order would be rescinded, and it later was. Employees on the course were also asked to cooperate. Everything was going fine, you couldn't even find a burned match around a tee.

Then it happened—an airplane flying over the course dropped 5000 paper plates as part of an advertising campaign. On each plate it said, "This is a flying saucer, take me to John Doe's Drug Store and you will receive a free pint of ice cream with every pint purchased." To make the matter really funny, although embarrassing to a very fine fellow, the drug store was owned by an Oakwood member. Other than this, our plan has been very successful.

There are many little things that make a course look dressed up, such as path-

(Continued on page 103)
In spite of the late start (June 18) in opening the Minnesota range, income averaged about $32 to $33 per day. Roughly 135 people per day hitting one small pail of balls (27 to 30 balls) at 25 cents per pail return this much revenue. The larger pails of 55 to 62 balls were 50 cents. Ryman figured that it required from 6 to 9 minutes to hit out the smaller number, and an average of 15 minutes for the larger pail. The above daily income made it possible to close the range the day after Labor Day with the books in black ink. Average daily costs of operation (personnel, lights, balls, tee rental, etc.) was about $30. This does not include interest or a return on the investment.

An important source of income was the concession which handled pop, popcorn, and ice cream. Because sandwiches were available at the lunch counter in the golf course clubhouse nearby they were not on sale at the range.

The bookkeeping should not be a matter of concern to anyone, advises Ryman. He found it a very simple operation.

"We’ve made a few mistakes along the way and have encountered some rough spots," concludes the Minnesota athletic business manager, "and we know darned well that we still have a lot to learn, but it’s an interesting undertaking and certainly a highly worth-while one in terms of the recreational opportunities it affords."

MAINTENANCE THAT MAKES
(Continued from page 71)

ways with clean cut edges, free from wash-outs. If a path becomes damaged after a heavy rain and is a constant maintenance problem, why not top with cold

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mix asphalt. This material is easily obtainable and the work can be done with your own labor. Cold mix is more porous and does not hold too much moisture. It will not get too hard and yet in the hot weather does not become sticky.

Tile outlets in creeks should be kept open, and broken tile replaced. Creek beds should be kept free of rubbish, broken tile, etc. Keep water flowing freely to prevent it from becoming stagnant.

The entrance and driveways to the club should be neat and clean, a few flowers or shrubs in the right place makes it colorful and pleasant, good turfed areas stand out here. A member of the golf club will get his first impression of your club as he is driving in. This also holds true around the starting tees on the course. A little extra fertilizer around the lawns, maybe a flower bed, here and there, shade trees, bulletin board, bag racks, etc., all make the area seem more pleasant and inviting to the players.

Shelter houses should be kept repaired and painted. See that they are kept clean at all times.

I would like to mention again that we must realize the demands for specialized turf by the golfer. If we do not have this type of turf on our courses, we should present the club officials with a well-thought out plan to make these changes. If we can't live with it, we should get rid of it. The sooner we do this, the sooner we will be recognized as experts in the field of turf.

U. of MASS. TURF MEET

(Continued from page 80)

reseeding. Final shots indicated a good catch of grass.

Retaining Labor

Greenkeeping superintendents from different types of golf courses presented ideas as to how labor could be retained by a club in competition with industry. Professor Cornish introduced the subject by stating that the need for skilled greensmen was becoming progressively larger with the introduction of new equipment and chemicals. Much of the burden of retaining labor fell on the superintendent who first has to convince his committee that the expense of training replacements is great.

Anthony Longo of Yale GC, New Haven, Conn., emphasized security. He brought up the question of insurance policies and year-round work. He discussed the skill required by a greensman in contrast to other trades. As an example, he explained the skill required in watering a green, a

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