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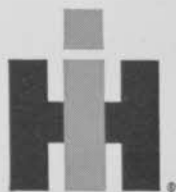
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The 300-yard eighth hole at Alma GC in San Jose, Calif., two other par 4s and six par 3s are lighted. (Inset) Recommended placement of floods and poles on 5-hole layout. Greens should be lighted from two directions to minimize harsh shadows and luminaires should be mounted at least 40 feet above ground.

Can A Standard Size Course Be Lighted?

By RON STREIBICH

When the subject of lights for golf courses is brought up usually it is in conjunction with Par 3, ranges or golf centers. Possibly as many as 50 per cent of these installations are equipped with lights because their owners have come to the realistic conclusion that not only profitable operations, but indeed survival, are dependent on night play.

Few people have tried to find an answer to a question such as this . . . But investigation shows that it can be done — and profitably, at that

How about standard size courses? Is it economically feasible to attempt to light all or part of layouts such as these? Several years ago it would have been considered folly to attempt it. But it can be and has been done in a few cases. And the cost, as you will find upon reading further, is not by any means outlandish.

The General Electric Co. has gone into

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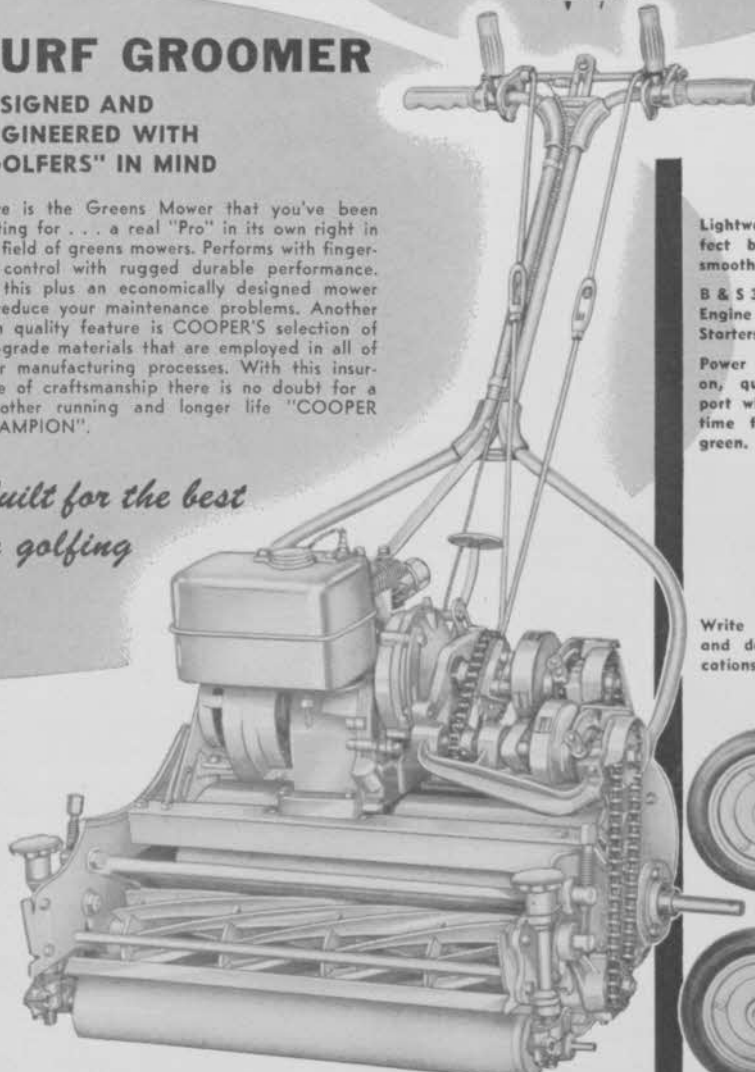
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the lighting of standard size semi-private and private courses quite thoroughly in the last year or so and has made some interesting discoveries. Its findings, based on a 9-hole, 3,300 yard course, give precise figures on installation costs and returns that can be expected. Here they are:

Municipal, Semi-Private Courses

Municipal and semi-private courses usually are most crowded and would have little difficulty in attracting players from 8:30 to midnight to a fully-lighted back or front nine. On the average, this type of course can recoup its investment in four years and thereafter gross an extra \$15,000 per year. These figures are based on:

Annual income from night golf: extra nine-hole rounds per day — 60; On an average public course, during the 4 to 7 p.m. "rush hour," about 60 players tee-off for a quick nine-holes. This rush stops at 7 because golfers cannot tee off after this time and still get in nine holes. However, by lighting the course until midnight, golfers could start until 10. The extra three hours of play, based on activity between 4 and 7, could mean at least 60 more nine-hole rounds per evening.

Extra revenue per day — \$90: Assuming \$1.50 greens fees for nine holes, the added revenue for 60 extra nine-hole rounds per night would be \$90.

Extra revenue per year — \$18,000: Based on an average of 200 golfing days per year times the total added daily greens fees of \$90, extra gross income per year would be about \$18,000.

Lighting A Regulation Course

Initial investment amounts to about \$66,000. This is broken down in this manner:

As a general rule of thumb, one mercury floodlight for every 25 yards will give ample lighting for night golf. Therefore, an average nine holes — measuring 3,300 yards — requires 132 luminaires at a total cost of about \$21,500.

Poles — About 90 40-foot poles, with one or two luminaires apiece, would be needed to hold the 132 luminaires. The installed cost of these would be about \$5,400.

Lamps — A 1,000-watt lamp for each lighting fixture would total around \$4,100.

Cable — direct buried cable, eliminating overhead wires which might be unsightly for a golf course, would cost around \$2,200.

Transformers and controls — \$2,800 (based on \$20/kw)

Contractor's fees are almost impossible to estimate on a national level. However, as a rough guide, figure around \$30,000 for complete engineering and installation.

Cost of Lighting

Annual cost of the lighting system amounts to \$2,630. These factors must be considered:

Electric power — For 200 days per year, four hours per night, it costs about \$2,200 to operate the 132 luminaires.

Extra lamps — It's estimated that 9 of the 132 lamps will have to be replaced each year at a cost of \$280 for the lamps and \$18 for installing all of them.

Cleaning — All 132 floodlight fixtures should be cleaned each year at a cost of \$1.00 per fixture.

Wages — The course might now also require \$2,000 more in wages, due to the longer hours of operation. However, this can be compensated for by the added revenue from the pro shop, snack bar sales, etc.

From these figures it is shown that it would cost \$66,000 to light nine holes of a regulation golf course. Yearly operation would be \$2,630 extra, thereby resulting in a four-year outlay of \$76,520.

Paid For in 4 Years

Extra revenue for four years would be \$72,000, indicating the installation can be paid for in slightly less than that time. After this, added annual gross income would be \$15,370 — annual extra income minus annual operating cost.

These figures cover a hypothetical example and probably no installation would coincide with these exact figures. However, this is a conservative example. It is quite likely that many courses could pay for night golf in even less time and show even more profit if:

1. The nine to be illuminated were less than 3,300 yards.
2. There are about 200 golfing days per year. Many sections of the country have 250 to 300 golfing days.
3. More than 60 nine-hole rounds are played each night. Most people have more time for recreation after 7 p.m. than before.
4. Greens fees are more than \$1.50 for nine holes. A higher fee can be charged in most major metropolitan areas.

Country clubs and yearly membership courses may meet with some difficulty in proposing a plan to members involving

(Continued on page 135)



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Material that has gone through a preliminary mix is loaded into the Royer shredder. Machine can screen 11,000 square feet of material in a day. At left is Stan Wadsworth, who wrote this article.

Complete Processing Plant

Quality Blend for Greens

By **STANLEY WADSWORTH**

The Wadsworth Co., Downers Grove, Ill.

For preparing quality putting surfaces a machine which screens out foreign materials and mixes and blends ingredients is necessary in processing greens mixtures. For this operation we use a Royer Soil Shredder, the Paul Bunyan Model 360. This unit is a complete soil processing plant. Also, it's highly mobile — an important consideration for course construction firms that have to move to many parts of the country quite frequently.

Not only does this unit screen and blend materials, but it pulverizes and shreds the coarser types of topsoil and peat so that texture may be easily regulated. The quality of the blend obtained by use of the Paul Bunyan has been found to be su-

perior to that of older, more expensive, and time consuming methods. It also has been found that, although the formula for the soil mixture is of great importance, the thoroughness of the blending operation is even more so.

As a rule, various proportions of sand, peat moss and topsoil make up the basic green mixture. Proportions vary on each course, depending upon the physical properties of the available ingredients as well as budgetary limitations. Sand and peat moss, purchased off the site, are trucked into the course and stockpiled at each green location.

Pre-mixing Operation

Topsoil is, in most cases, obtained from the golf course site and also stockpiled with the sand and peat moss. The ingredients are measured by volume and pushed together in a pre-mixing operation, after which the materials are ready for the important step of screening and blending. A front-end loader is used to charge the hopper of the shredder where the materials are thoroughly screened, mixed, shredded, and discharged on to the green sub-surface and spread over the putting surface to the required depth.

The important consideration here is uniform blending and screening of all materials. If sand, peat and topsoil are not thoroughly mixed there is the danger of layering with the resultant bad effects of poor water penetration. Also, the delivery of the mixture on the greens free of all stones, sticks, roots or refuse of any kind eliminates maintenance problems, provides a truer putting surface for the players and speeds up grading and seeding for the contractor.

Weather Factors Involved

The need for speed in taking advantage of dry weather is important to those in course construction. The number of greens completed in a day depends on the size of the green and the consistency and moisture content of the materials involved. Rain or excessive moisture, for example, can slow down or completely stop work. Larger greens require from one half to a full day to process the mixture.

It is now possible to prepare and screen material to cover as much as 11,000 sq. ft. of green in a day. This was not the case prior to the innovation of specialized soil processing machines, such as the Paul Bunyan. Nor was it possible to blend the mix, and remove debris, as completely and effectively as by the Royer method.

Not only is the putting mixture and sur-

Prosperous if not Booming

A survey of semi-private club operations, recently completed by Golfdom, indicates that the pay-play clubs generally are enjoying prosperous if not boom conditions. Play and pro shop sales for the past year are up by a comfortable percentage over the increase in the cost of operations, and owners and operators are almost unanimous in predicting that business will continue to improve.

Here is how the situation looked following Labor Day, compared with the previous year:

Average no. of rounds (1962)—	31,000
Average increase in play—	12 per cent
Pro Shop sales increase—	9 per cent
Average increase in cost of operations—	4.5 per cent
Maintenance costs (per hole)—	\$2,823
Property improvements (since 1960)—	\$25,000 average
Planned improvements in 1963—	\$3,000
Per cent of rounds played by women—	17

face drainage of the greens a critical part of the work, but so is the sub-grade or sub-surface that is prepared prior to the application of any mixture. The course architect has planned the surface contours by taking into account the surface drainage, playability and maintenance procedures. The sub-surface grading must conform to the grading planned by the architect for the finished putting surface to allow surface water to drain to the tile lines in the most direct manner possible.

After the sub-surface is graded and the green mixture applied, the finished grade is worked into shape and harrowed to a final, smooth finish. Grading a green calls for superior precision and skill and accounts for the need of a specialist.

Play Around Plastic

Doglegging around what is said to be the world's largest plastic-lined lake is California's newest 18-hole Par 3. It is built of 220,000 cubic yards of earth scooped out to form the lake and extends to 2,200 yards.

The course is located in Antelope valley, 96 miles north of L.A., in California City's recently opened Central Park. It has a practice green and driving range with 25 elevated tees in addition to the Par 3. Target greens are located on the range.

Replacement TREES

Seven or eight species requiring little maintenance, can take the place of those that have to be removed

By THEODORE F. APPEL • The Cole Nursery Co.

Dutch Elm disease and Phloem necrosis are taking a terrific toll in many Eastern states. The spread westward is rapid. There is no known cure. Spraying offers limited control, but it is almost impossible to treat all the trees that are affected. They seem to be everywhere. If there are many elms of this type on your course you should do something soon to prevent the stark appearance that will result when they die.

We suggest interplanting of other trees to take their place. Young trees planted 20 to 25 feet from the elms won't suffer too much from competition in growing near them and will be well established by the time the dying elms must be removed. Nothing will quite equal the majestic beauty of the elms but several kinds of trees are good replacements. Among these are the Maidenhair or Ginkgo, Marshall's seedless green ash, Amur cork and Japanese keaki. Honeylocusts of the thornless and seedless varieties, such as Majestic, Imperial and Skyline, also should be considered.

Every tee should have a tree or group of trees partially shading it or close enough to offer relief from the blazing sun. We once played the old Willowick CC course in Willoughby, O., that was

almost barren of trees except for about four holes. We can remember our relief when coming to the tee on a punch bowl hole. It had a comfortable bench under a liberal growth of elms. Seedless green ash, non-fruiting Amur cork or honeylocust would have been ideal there. Their filtering shade allows the turf to thrive under them and offers relief from the sun. They are low maintenance trees.

We all love trees but let's not plant a wilderness! Give them room to grow and flourish to their ultimate size and beauty. Most of the larger growing trees should be planted at least 50 feet apart. Even flowering crabapples and hawthorns need 15 to 25

foot spacing. The young trees you plant may look lonesome for a while but give them time.

Always remember, "a \$1 tree in a



This Marshall seedless green ash is only five years old. Note straight trunk and symmetrical top. It's a low maintenance tree.



Agrico helps keep top playing conditions a tradition at Oakmont C. C.



"Lou" Scalzo

Country Club, scene of the '62 National Open. Lou was honored for the condition of his course at the tournament banquet.

"Regular feedings with AGRICO COUNTRY CLUB Fertilizers is a major factor in keeping our course in top playing condition," says Lou Scalzo, superintendent at Oakmont

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\$10 hole is better than a \$10 tree in a \$1 hole". Always have someone who knows how, supervise the planting. Don't forget to supply some drainage. Most trees do not thrive with wet roots. Good soil and fertilizer will help, too.

So far we have said little about color. We suggest using sunburst locust and crimson king maples as "marker" trees but there are countless other possibilities. From the spring show of the flowering crabapples to the winter-hanging brick-red fruit of the Lavelle hawthorn, the right selection of trees can offer a constant display of dazzling beauty to complement the various shades of green on your course. Foliage on Amur maple, sweet gum and black gum are spectacular in the fall. Many of the maples and oaks are gorgeous. However, the leaf problem they create tends to relegate their use to that of background trees far from the fairways.

Hawthorns pay off twice with white spring flowers and red berries in the fall and winter. Katsura trees seem covered with golden "pieces of eight" after the first fall frost. Golden rain and Japanese pagoda offer summer dividends of yellow and white flowers. We are familiar with the late summer and fall glory of the mountain ash. All of these are low maintenance trees.

High Branching

When ordering your trees it is advantageous to order those grown with a single stem, branched high enough from the ground to allow for machine mowing. This saves a good deal of labor. Judicious pruning keeps out low-growing sprouts.

Now we come to a controversial subject. To this writer, evergreen trees have little place on the golf course. Their winter color is fine and they grow well in many places, but they create an unfair hazard in many instances. You may recall that Phil Rodgers had to waste several strokes in the Open in dislodging a ball that came to rest in the thick "inverted umbrella" type branches of a blue spruce planted too close to a green. If evergreens must be used, trim off those lower limbs. Use them as a background placed well behind the greens and away from the fairways. (We'll bet this paragraph puts us out on a limb!)

Ornamental Shrubs

Ornamental and flowering shrubs also have a place in the planting. Be sure to select those that are completely winter-

hardy and do not require constant pruning to keep them in bounds. Those that flower in late spring or summer when the course is in use are most desirable. Give them room and remember that you can't mow under most of them.

A fine use for shrubs is as a screen between a green and a nearby tee. They will help close off distracting movements and sounds that often disturb the putter. They need not take too much room. Tallhedge, a recent development, will provide a dense sound-deadening screen about 4 feet wide and 12 to 15 feet tall within a few years after planting. Its lush green beauty is enhanced by varicolored berries all summer long. Tallhedge is completely hardy, transplants easily and requires almost no care. If plenty of space is available, many of the taller growing hardy viburnums, such as *dentatum*, *lantana* and *lentago*, are fine. White fringe grows into a fine specimen shrub.

Shrubs for Hazards

One thing that is quite interesting is the use of the native gorse as a hazard on British and Scottish courses. It creates almost unplayable lies and gives us an idea. On many of our courses, shortages of water prevent having enough hazards. Why not use some of our tough, low-growing shrubs instead? Certainly anyone whose ball landed in a mass planting of dwarf Japanese quince, Hancock coralberry or the like would rather take a penalty than try to chop the ball from such a lie. In fact, course rules could require it, as they do with the water hazards. This would add beauty as well as utility and would require almost no maintenance. Much precious water could be reserved for watering greens, tees and fairways.

Paul Runyon, Others Star in PGA Seniors Film

A film covering the 1962 PGA Seniors Teacher Trophy tournament is available from Modern Talking Pictures Service, Inc., 3 E. 54th St., New York City. There is no charge for the film which comes in two versions: 16 mm (28 min.) black and white, suitable for clubs; and 35 mm (9½ min.) designed to be shown in theaters. Stars of the production are Paul Runyan, the tournament winner, Jock Hutchison, Fred McLeod and 88-year old Bert Way.