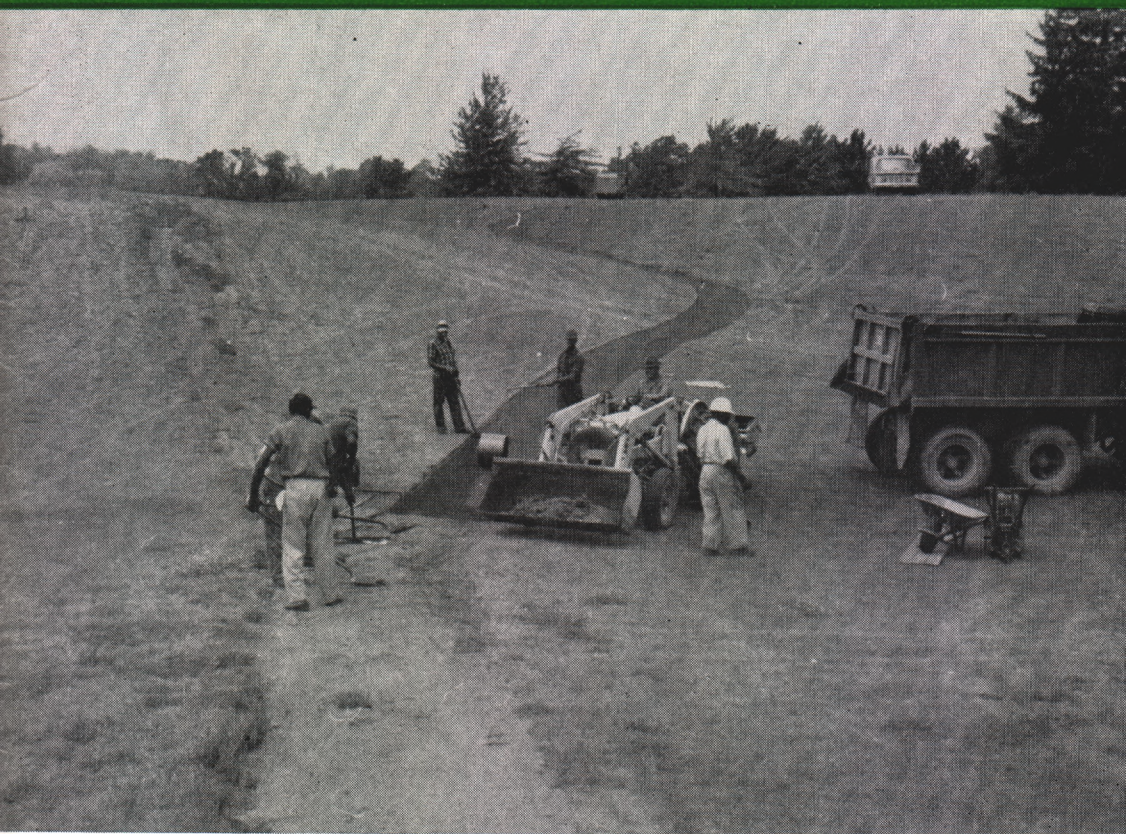


JANUARY 1967

USGA GREEN SECTION RECORD



A Publication on Turf Management
by the United States Golf Association



CART PATHS

Crew laying an asphalt path to carry cart traffic the length of a fairway.

USGA GREEN SECTION RECORD



Published by the United States Golf Association

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Published six times a year in January, March, May, July, September and November by the UNITED STATES GOLF ASSOCIATION, 40 East 38th ST., NEW YORK, N. Y. 10016. Subscription: \$2 a year. Single copies: 30¢. Subscriptions and address changes should be sent to the above address. Articles, photographs, and correspondence relevant to published material should be addressed to: United States Golf Association Green Section, Texas A&M University, College Station, Texas. Second class postage paid at Rutherford, N. J. Office of Publication: 315 Railroad Avenue, East Rutherford, N. J.

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Cart Paths

By James L. Holmes, Mid-Western Agronomist, USGA Green Section

Dirt, pine needles, redwood and other types of wood chips, tanbark, peanut and pecan hulls, sawdust, shells, concrete, sand, gravel and asphalt are among things used for golf cart roadways.

Indeed, the grand entrance of mechanized golf carts has altered maintenance practices as well as the game itself. Golf carts, especially those with wide tires, cause little compaction to soils. However, the shearing action where the tire meets soil, sandwiching grass blades between, results in bare, rutted areas very quickly. One cart pass will cause damage or shearing. Consequently, many golf course superintendents have cart paths, or plan to install them.

What is the best arrangement? Courses which have 12-month play and where cart use is heavy have installed paths throughout the grounds, and many insist that carts stay on those paths at all times. A non-cart en-

thusiast measured the distance walked for 18 holes with a cart and again without a cart. The difference was approximately 500 yards longer without the cart. Unless the golfer is inhumanly accurate and can hit his ball to a path in every shot, he is in for some walking with this arrangement.

Rather than build paths throughout the course, some clubs install roads where cart operators naturally seem to go. Invariably, this starts at the Number 1 tee, and also in funnel areas between greens and the following tee. Efforts are made, as indeed they should or must be, to place paths in out-of-play areas, such as among trees which may be close to putting surfaces, behind traps placed near greens, or behind the green.

Fairway-Length Paths

Rules are made, but not always enforced, whereby cart operators must use paths in funnel areas or where paths exist. Some paths have been

Paths for three modes of transport are shown in this picture. First, the rail car for walking golfers who shun hills. To its left is an asphalt path for powered carts. Alongside the asphalt path is a worn track created by walking golfers who climb hills, but not on hard paths.



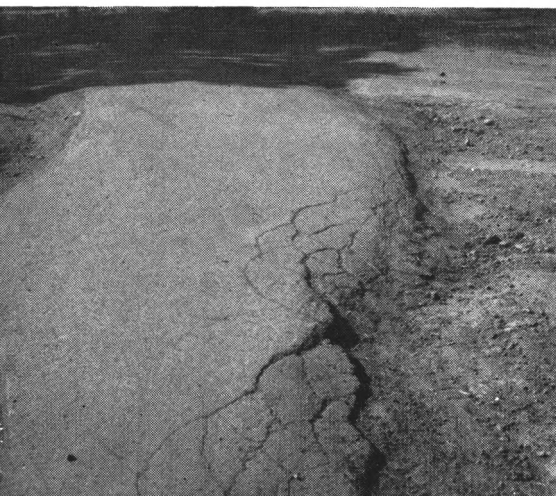


Paths often are laid through normally unused portions of the course.

installed the length of entire fairways for some specific purpose. If fairway and rough conditions are such on a given hole that paths cannot be installed, they are placed in remote areas or where cart use is assured.

Where paths have not been installed, it has been observed that less permanent damage is done if carts are allowed to roam throughout the course rather than restricted to specific locations, such as rough only or fairway only.

Cracked and crumbling edges demonstrate the damage done to paths that are not wide enough to contain a cart.



Where it is not desirable to install an artificial path, but turf wear is a problem, increased cultural practices are helpful. Such practices as aeration, extra fertilization, artificial watering and disease control should be carried out.

Even though many items are used as path material, the trend definitely is toward asphalt. If other materials, such as gravel or sand, are used, they eventually are covered with asphalt. Many superintendents, contractors, and cart users have been asked what type of path they prefer. Without exception, the one considered best, and actually the most economical in the long run, consists of 3 to 4 inches gravel underbase covered with 2 inches of "hot roll" (240°-280°) asphalt which will not harden to a consistency impenetrable by spikes.

Width Of Paths

In the beginning most paths were 4 feet wide. But carts simply will not stay on a 4-foot expanse. Paths have been increased to 6 feet in many cases but the trend is to 8-foot width. The

8-foot width is appropriate for a number of reasons:

- 1) Anyone can stay on them.
- 2) They can be used for maintenance equipment.
- 3) asphalt spreaders normally lay 8-foot swaths; thus it could be less expensive to place 8-foot rather than 6-foot paths in some instances.

At Number 1 tee locations, often even 8 feet is not adequate. Grass that once covered the areas next to tees is gradually being replaced by asphalt at some courses. Grass cannot grow when you are standing on it, and the Number 1 teeing area is the most difficult to keep turfed. As much asphalt or other type pathing as necessary must be placed here.

The range of path material is wide, from one extreme of just dirt roads formed by traffic to complete concrete runways. But, as previously mentioned, gravel covered with asphalt is finding favor. Generally these paths are built as follows:

1. Of most importance is the formation of a sound, well-constructed base; the resulting path will be as good



Water was encouraged to run off to the sides of this path, causing the erosion shown along the edge.

as its base.

Remove existing sod and soil to such a depth that the finished asphalt surface will be level with the soil. The center of the path should be 2% to 3% higher than the edges to provide for drainage. If four inches of gravel and two inches of asphalt are to be laid, the depth should be six inches. One variation here could be to "swale" the pathway or make the center lower if water drain or carry-off from the center area is necessary. This could

Once grassy, the area alongside No. 1 tee is now being converted to accommodate cart and foot traffic.



help control erosion at the edge of the path. This consideration is for areas where considerable water must move in natural drainways.

2. Be sure that drainage is assured, then place 3 to 4 inches either field run gravel, "pea" gravel (though pea gravel does not compact well or evenly), or what is known in Illinois as Grade 8 crushed stone. A material of this type is finding favor because it is easy to handle, compacts evenly, makes a smooth, even surface, does not erode readily, is acceptable to foot and cart traffic, thus can be left uncovered by asphalt for a period of time if immediate use of asphalt is not possible.

The book, *Standard Specifications for Road and Bridge Construction*, published by the State of Illinois, specifies Grade 8 stone as: "Crushed stone shall be the angular fragments resulting from crushing by mechanical means the following type of rock quarried from undisturbed, consolidated deposits . . . calcareous or dolomitic limestone . . . or similar rock." With the following specifications:

- 100 per cent passing a 1 inch sieve
- 60-90 per cent passing a $\frac{1}{2}$ inch sieve
- 40-60 per cent passing a No. 4 sieve ($\frac{1}{4}$ inch)
- 25-50 per cent passing a No. 8 sieve ($\frac{1}{8}$ inch)
- 20-40 per cent passing a No. 16 sieve ($\frac{1}{16}$ inch)
- 5-15 per cent passing a No. 20 sieve ($\frac{1}{25}$ inch)

With the above sieving specifications, it should be possible to locate similar material anywhere.

This type material definitely makes the most suitable cart path if gravel is used.

3. Roll—firm—compact gravel. Be sure soil to the sides of the cut is not broken down. Especially if existing

soil is sandy, superior results are obtained if barriers are placed at edges. Also, barriers definitely should be placed near the clubhouse or any other location that carries heavy foot traffic.

4. Place asphalt so that two inches will be present after compression ($2\frac{1}{2}$ inches to start), or figure that one yard of hot asphalt will be reduced by 30 per cent when compressed. Use material readily penetrable with spikes after hardening. This is important because golfers simply will not walk on hard surfaces and it is dangerous to do so.

As specified by the State of Illinois, asphalt is:

PA 1-2 For surface treatment and seal coat.

PA 3-4 For bituminous concrete, dense graded aggregate type, and for bituminous macadam pavement.

PA 5 For bituminous macadam pavement.

PA 5-6-7 For bituminous concrete, dense graded aggregate type.

PA 7-8 For sheet asphalt binder and surface courses.

PA 3 or PA 4 is suitable for cart paths.

5. Compress with rollers which are not to exert more weight than 400 psi or less than 200 psi of roller surface. Rollers are not to be propelled at more than 150 feet per minute.
6. The cost range is wide. It is difficult to arrive at an exact figure for every area. One course paid 37¢ a square foot for all work done by the contractor. Another dug road beds and the contractor laid stone and asphalt for 30¢ a square foot.
7. After asphalt has been firmed, turf damage to side of path should be repaired by filling and sodding. However, the freshly-laid path should be

allowed to harden for 8 to 12 hours before it is used.

8. After asphalt has been in place 30 days, apply a sealer coat. This sealer coat, which costs between 3¢ and 4¢ a square foot, can be obtained in various colors. If desired, a green, white, or lavender path can be obtained. Sealer coat lasts about 3 years. For sealing old asphalt, mix 1 quart of sand with every 3 to 5 gallons of material used. Sealer coat is merely dumped on and spread with mold boards or squeegees.
9. Asphalt paths hold up amazingly well if installed properly. Nonetheless, breaks are frequent. Cold patch can be used to repair small ruptures when hot mix is not available. Large breaks should be repaired with the same hot mix used in original construction because cold patch is not long lasting. Therefore, it is desirable to re-repair cold patches with hot mix when hot mix is available.

Care must be taken to insure safety, especially in hilly terrain. Sharp corners and turns should be adequately banked. In extreme cases, even a path eight feet wide may not be wide enough. Paths must not slope downhill or toward water. Except where absolutely necessary, stay away from trees. Repair large chuck holes immediately.

The tendency, even though much less than in the past, simply is to not make a long enough path. The carts must get off some place when the entire course is not pathed. Where carts always leave the path at the same spot turf is worn away. The roadway must be extended from the green to the tee and 50 yards or so down the following fairway in heavy traffic areas. If the cart path can be bowed or meandered off into the woods to

the right or left of the fairway, it is then possible to place barriers on the path which force carts off at that location.

Saving Wear

Carrying the roadway slightly past the tee, then "flaring" it out, is not particularly successful in reducing end-of-path wear. Unless forced to do so otherwise, all drivers leave the path in the same place.

Carts can be forced off the path at different points from day to day by the use of portable barriers. One very suitable barrier consists of a long steel rod, with both ends bent at a 90° angle. The ends are driven into the ground on either side of the path and the center of the rod stretches across the path at about a 3-foot height. A sign with an arrow pointing to the right or left can be hung from the center of the rod. Rarely will cart-using golfers move such barriers, and it is quite difficult to run over them; the cart occupants may be decapitated.

These barriers are moved to different sections of the extended path as considered necessary by the golf course superintendent.

Some sophisticated materials are being tried for paths. The big interest here is to find something with less bounce to the ounce than asphalt for use in areas where shots frequently land. Synthetics such as those used as surface materials in the Houston Astrodome and on race tracks are excellent but quite expensive. A suitable base such as asphalt must first be installed anyway.

Anyone considering installation of cart paths should plan to extend paths as dictated by cart wear even if it means completely from tee to green to following tee. This is especially so on hilly courses where the terrain limits areas where carts can travel.

A New Manpower Source

By Kenneth H. Freeland

Today, many high schools are providing Work Experience or Work Study Programs for students with academic learning problems. These students, termed in many states as "Educable Mentally Handicapped or Retarded" are placed in "Special Classes" with specially certified teachers in work oriented programs.

These students progress through a developmental type program and as they successfully complete their half day in school and half day on-the-job phase of job experience, they are placed in the community as full-time employees under the supervision of the school on new types of work experience until graduation. On this level, Teacher-Coordination prepare these more mature students for various work positions and correlate their school work accordingly to help insure job success.

One aspect of job placement which is proving beneficial to all concerned is that of a golf course maintenance worker. A year ago in the Western New York area, a group of boys from one of these classes was placed on a trial-working basis through the cooperation of two progressive and energetic golf course superintendents, Norman Leising of the Country Club of Buffalo, Williamsville, New York, and John Stellrecht of the Lancaster Country Club, Lancaster, New York.

Prior to placement, the tasks of the golf course worker were analyzed and discussed in the classroom. Emphasis was given to a general knowledge of golf and of safety precautions of the work. These preliminaries were neces-

sary because only a small percentage of the boys had played golf, knew about the game or about golf courses in general.

A training guideline was prepared with the participating superintendents and was incorporated into the pre-placement phase of the program. Training for specific tasks, such as cutting greens, aprons, tees and the like, was left to the discretion of the respective superintendents in charge. Each superintendent had his own particular techniques and methods he wanted his workers to follow.

Periodically, the student's progress was evaluated by the superintendent through a job rating form supplied by the Teacher-Coordinator. Weak areas in the student's reports were brought to the attention of the Teacher-Coordinator with hopes of improving these areas. Reports were good to excellent and problems were few.

The results were most rewarding. All students placed completed the eight-month season commendably and all were asked to return to their respective duties this spring. Some of the boys have since taken full-time jobs in industry. However, a majority of the boys have returned to their jobs. New students from other classes have been placed with the same successful results. The demand for workers has increased to the point that other superintendents are contacting the schools for the services of these boys. Each day more boys are placed.

With additional students entering the field, a recent interview was held separately with the participating super-

Mr. Freeland is the work-training supervisor for handicapped youth at the Old Harris Hill School, Special Educational Services, Board of Cooperative Educational Services, First Supervisory District, Erie County, New York.

intendents. Possibly some questions prevailing in the reader's mind may be answered by the following comments:

Superintendent Leising reported: "I was really impressed at the rate the boys learned their jobs. They seemed to take great pride in their work and responsibilities. To me, the quality of their work was indeed satisfactory in all regards. They completed their work on schedule with no problems."

In comparing them to teenagers from the regular grades who were employed in the past, he added, "There appeared to be no physical difference in these boys. They were strong and willing to work. They got along well with the other staff members and appeared to mix well, although they were quiet. They were polite, and they worked much harder and took a greater interest in the job."

Superintendent Stellrecht had this to say: "As far as work habits are concerned, these boys were on par with any others I have had in the past. The majority of the boys, after gaining the needed confidence in themselves, really took to the job. I was particularly delighted at the way some of the boys mastered the tee mowers. Some of the boys could handle the tractor with great skill and caution. The quality of their work was even better than some college boys I've employed here."

Both superintendents agreed that the boys took excellent care of tools and equipment and many of those employed possessed the necessary qualities for holding the job: punctuality, good attendance, trustworthiness, cleanliness, persistence, and the ability to take criticism.

At this point, the advantages of such a program must be brought forth for the superintendent. There are some distinct advantages, indeed. The pre-employment stage, the evaluation

method and the supervisory assistance, if needed, have been discussed. In addition to this, Teacher-Cordinators can arrange working papers, transportation, and can supply these students long before the school term ends in June. It is also possible in many states, in cooperation with the Division of Vocational Rehabilitation, to secure training funds for this phase of instruction. This organization will help pay the wages of the student until he is fully trained to the satisfaction of the superintendent.

Most important, many of these students are more likely to succeed on the job than the regular worker who is between jobs or just putting his time

COMING EVENTS

January 11-13
Nebraska Turfgrass Conference
Nebraska Center for Continuing Education
Lincoln, Nebraska

January 24-25
Virginia Turfgrass Conference
Hotel John Marshall
Richmond, Virginia

January 27
United States Golf Association
Green Section Conference
Biltmore Hotel
New York, N. Y.

February 5-10
GCSAA International Turfgrass Conference
The New Washington Hilton
Washington, D.C.

February 20-23
Turfgrass Conference
Pennsylvania State University
University Park, Pa.

February 27-28
Southern Turfgrass Conference
Hotel Peabody
Memphis, Tenn.

March 6
Golf Management Seminar
Denver, Colorado

March 6-8
Midwest Regional Turf Conference
Purdue University
Lafayette, Indiana

March 9-10
Turf Conference
University of Massachusetts
Amherst, Mass.

March 13-14
Iowa Turf Conference
Savery Hotel
Des Moines, Iowa

March 15-16
Michigan Turfgrass Conference
Kellogg Center
Michigan State University
East Lansing, Michigan

in until payday. Many workers become bored with the everyday, routine tasks. The majority of these students can sustain the daily diet of the same work.

Superintendent Leising best summed it up when he said: "After being on the course for a month or so, these boys showed more interest in connection with their duties. The regulars, I know, get bored with the routine; but these boys, once they had their confidence, found a real challenge in the daily work to be done."

Moreover, these students in their school preparation through the years receive added emphasis in the fundamentals for getting and holding a job. The regular high school student receives little of this type of instruction in his curriculum. It is a known fact that more people lose jobs not because they don't possess the desirable skills to perform the job but because they can't get along with fellow employees or their employer. These students, however, are well drilled in this aspect.

In addition to this, there is a strong possibility that once trained, many of these boys will stay on the job permanently after graduation. How many of your regulars are getting along in age? It is an advantage to have de-

pendable replacements available. Many of these students are well suited for this type of labor; many enjoy working outdoors and no doubt find a real sense of security in this type of work, perhaps for a lifetime.

Foremost is the public relations advantage offered the superintendent. We are all aware that our club members in general are involved in various types of charitable and philanthropic projects. Many are aware of what is going on in the field of education for all handicapped youth and they are interested.

The members I have talked with, whether they fit this category or not, were deeply impressed by the work of their superintendents in this program. In short, the word travels fast and the personal image of the superintendent must grow in the process for the tremendous contribution he is making to his school system, his community, and his fellow man.

A phone call or a visit to your local school system will get the machinery in motion. Show the following training guideline to the Teacher-Coordinator. I am sure you will be welcomed and he will be willing to incorporate this phase of valuable work experience into his program.

TRAINING GUIDELINE FOR GOLF COURSE WORKER

For Educable Mentally Handicapped Adolescents

By Norman Leising, John Stellrecht, and Kenneth Freeland

I. General Knowledge

1. History, purpose and etiquette of golf.
2. Importance of grooming and care of course to members.
3. Courtesy to be shown members while working.
4. Working hours, overtime, and wages.
5. Advantages and disadvantages of job.
6. Outlook of job for the future.
7. Role and responsibility of the Golf Course Superintendent.
8. Terms used on the job: markers, rough, apron, aerification, etc.

II. General Equipment Maintenance

1. Servicing tractors and trucks.
2. Knowledge of routine service on small gas engines.
3. Knowledge of maintenance of large equipment.
4. Knowledge of sharpening cutting blades.
5. Painting.
6. General repair work.
7. Cleaning equipment.

III. Work on Greens

1. Importance of good greens to members.

2. Cutting greens.
3. Applying fertilizers and chemicals.
4. Use of aerification equipment.
5. Changing cups.
6. Rolling greens.
7. Whipping and removing ball marks.
8. Watering.
9. Sand trap care.
10. Courtesy to be shown members while working on greens.

IV. Work on Tees

1. Importance of good tees to members.
2. Cutting tees.
3. Changing tee markers.
4. Watering.
5. Applying fertilizers and chemicals.
6. Moving benches and ball washers.
7. Courtesy to be shown members while working on tees.

V. Work on Fairways

1. Cutting the fairways.
2. Using fertilizers.
3. Spraying for weed and insect control.
4. Using aerification equipment.
5. Rolling the fairways.
6. Courtesy to be shown members while working on fairways.

VI. Watering

1. Briefing on underground water pipe system and shut-off valves.

2. Location and acquaintance with pumping system.
3. Spot water techniques during the day.
4. Knowledge of the role of the night sprinkler man.
5. Care and use of sprinkler heads and hoses.
6. Courtesy to be shown members during day watering.

VII. General Course Maintenance

1. Trimming trees and shrubs.
2. Raking and disposing of leaves.
3. Changing towels and water on ball washers.
4. Habit of picking up loose paper and rubbish on course.
5. Emptying refuse cans.
6. Tennis court repair work.

VIII. General Safety and Health Precautions

1. Using power cutting equipment.
2. Safety rules in tractor driving.
3. Insect and reptile awareness (bees, wasps, snakes, etc.)
4. Alertness while members are playing shots.
5. Use of chemicals.
6. Electrical storms.
7. Cold weather dress.
8. Hot weather precautions.

IX. Local Rules and Regulations as set by the Golf Course Superintendent

1. Ball "hawking."
2. Disposition of clubs found while working.
3. Appearance.
4. Cleanliness and care of equipment.

Budget Reporting

*By Alexander M. Radko, Lee Record and Albert Neuberger

Golf course maintenance costs continue to rise! According to Harris, Kerr, Forster & Co.: "Maintenance costs for 50 clubs with 1,044 holes of golf averaged \$3,807 per hole in 1965-66 and reflected an advance of 4.6% over last year . . . the past ten years have shown a steady

rise in the costs of maintaining golf courses and the current year's average of \$3,807 per hole exceeded 1956-57 by 42%."

Costs are rising, and as more money becomes involved, there always seems to be an accompanying close member inspection of expended funds. Where

*Eastern Director and Agronomists, USGA Green Section, Eastern Region.

does it go? Is our money being spent wisely? How does our spending compare to spending at other clubs?

These are some of the questions asked. To find the answers it is necessary to turn to the budget, which happily seems to be one of the few permanent course records.

Golf course budget preparation is a yearly task. However, its administration is a daily affair. Budgets and golf course records go together and resolve direction in a program of maintenance and management; a budget defines the bounds within which a superintendent must manage, and this in turn sets the limits of his maintenance program. Golf course records define the

detail of accomplishments in the golf course maintenance and management program.

Budgets usually are confusing documents. There is no set standard for make-up. Those responsible seem to favor their own style of budgeting, and so set it up in the easiest way they know. Sometimes the club treasurer or the club accountant suggests a pattern to follow, one which makes it easier to work into his system of accountancy.

At some clubs, the budget preparation seems to be an automatic procedure of simply duplicating last year's figure and seeing how it works

Statement of Ownership

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Act of October 23, 1962; Section 4369, Title 39, United States Code). 1. Date of Filing—October 1, 1966. 2. Title of Publication—USGA GREEN SECTION RECORD. 3. Frequency of issue—Six issues a year in January, March, May, July, September and November. 4. Location of known office of publication—315 Railroad Avenue, East Rutherford, N.J. 07073. 5. Location of the headquarters or general business offices of the publishers—40 E. 38th Street, New York. 6. Names and addresses of Publisher, Editor, and Managing Editor: Publisher—United States Golf Association, 40 E. 38th Street, New York, N.Y. 10016. Editor—Dr. Marvin H. Ferguson, 40 E. 38th Street, New York, N.Y. 10016. Managing Editor—Robert Sommers, 40 E. 38th Street, New York, N.Y. 10016. 7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.) Names and addresses—United States Golf Association, 40 E. 38th Street, New York, N.Y. 10016; President—Wm. Ward Foshay, 40 E. 38th Street, New York, N.Y. 10016; Vice-Presidents—Hord W. Hardin and Philip H. Strubing, 40 E. 38th Street, New York, N.Y. 10016; Secretary—Robert K. Howse, 40 E. 38th Street, New York, N.Y. 10016; Treasurer—Fred Brand, Jr., 40 E. 38th Street, New York, N.Y. 10016. 8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities—None. 9. Paragraphs 7 and 8 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. Names and addresses of individuals who are stockholders of a corporation which itself is a stockholder or holder of bonds, mortgages or other securities of the publishing corporation have been included in paragraphs 7 and 8 when the interests of such individuals are equivalent to 1 percent or more of the total amount of the stock or securities of the publishing corporation. 10. This item must be completed for all publications except those which do not carry advertising other than the publisher's own and which are named in sections 132.231, 132.232, and 132.233 Postal Manual (Sections 4355a, 4355b, and 4356 of Title 39, United States Code)

	Average No. Copies Each Issue During Preceding 12 Months	Single Issue Nearest to Filing Date
A. Total No. Copies Printed (Net Press Run)	5,400	5,400
B. Paid Circulation		
1. Sales Through Dealers and Carriers, Street Vendors and Counter Sales	none	none
2. Mail Subscriptions	4,578	4,578
C. Total Paid Circulation	4,578	4,578
D. Free Distribution (including samples) by Mail, Carrier or Other Means	268	268
E. Total Distribution (Sum of C and D)	4,836	4,836
F. Office Use, Left-Over, Unaccounted, Spoiled After Printing	564	564
G. Total (Sum of E and F)	5,400	5,400

I certify that the statements made by me above are correct and complete.

Robert Sommers, Managing Editor

out at the end of the year. This is unfortunate; it shows a lack of planning and little direction.

Every Member Concerned

Every member is directly concerned with and is deeply interested in how his money is being spent. He wants to know what improvements are going to be made with the allotted funds. Members expect improvements, they don't like to tread water, or to have the course go backward; they expect that each year will be better than the last and that their golf course will continue to improve with age.

If things go well during the year, then usually no money problems arise; however, if the course does not measure up to their expectations, the members complain. They look around at other courses to see if they are better. If they are, what is the reason?

Is it because more money was spent on the other club? How much was spent?

And then the difficulties arise! Lump sum comparisons can be misleading because there is no uniform method of budgeting. If comparisons are to be meaningful, there is a definite need for uniformity in budget forms and in budget reporting.

What is a budget and what are its various components? It is a statement of proposed expenditure in a golf course maintenance and management program for the year, normally prepared by the golf course superintendent, but jointly agreed upon by the superintendent and his green committee chairman.

The superintendent has the opportunity here to express his feeling of management direction that he would like the course to take, while his chairman reflects the pulse of the membership. Together they define as generally or as specifically as they

wish the various categories of their budget for the year.

These could be as follows:

SALARIES AND WAGES	.....
Superintendent	.....
Assistant Superintendent	.....
Laborers	.....
Hospitalization	.....
Retirement	.....
Other benefits	.....
Unproductive time	.....
(sick leave, vacations, etc.)	
EQUIPMENT — OPERATION & MAINTENANCE	.....
Parts and repairs	.....
Gas and oil	.....
Other	.....
MAINTENANCE BUILDING — UTILITIES	.....
Heat	.....
Light	.....
Water	.....
Other	.....
IRRIGATION SYSTEM — MAINTENANCE	.....
Power	.....
Pumps	.....
Pipe	.....
Hose	.....
Sprinklers	.....
Other	.....
MANAGEMENT SUPPLIES	.....
Fertilizer	.....
Topsoil	.....
Seed	.....
Lime	.....
Herbicides	.....
Fungicides	.....
Insecticides	.....
Trap sand	.....
Other	.....
MISCELLANEOUS SUPPLIES	.....
Superintendent's office supplies	.....
Flags, poles, towels	.....
Ball washers	.....
Tee markers	.....

For cart roads and paths	
For shelter houses	
Other	
TREES	
New planting stock	
Pruning	
Spraying	
CLUB GROUNDS	
Flowers	
Trees	
Shrubs	
Mowing	
Roads	
Other	
EDUCATIONAL	
Turfgrass conferences	
Field Days	
Superintendent meetings	
EQUIPMENT DEPRECIATION	
(An inventory of all equipment listing original cost, life expectancy, depreciation, and present value.)	
EQUIPMENT REPLACEMENT	
(All new equipment scheduled for purchase during the year should be listed and individually priced.)	
IMPROVEMENTS	
(Any projected improvements should be listed individually with approximate costs for each.)	
MISCELLANEOUS	
Superintendent's	
meals, if any	
Superintendent's	
living quarters, if any	
Other	
GRAND TOTAL	

To consolidate the budget, it would be well for the superintendent and his chairman or committee to attach a letter of explanation of any items that might be controversial or need elaboration. The letter should also detail aims, recommendations, and

accomplishments for the year. This is not only good business but is also good public relations.

Another factor that enters the picture at this point is the need for support to promote continuity of a sound management program.

Normally, the Board of Directors is elected for a short term period. This makes it somewhat easy for strong-minded committee members to make changes which could prove harmful in the course of a management program. It could result in a club's treading water from year to year.

The superintendent very often is the only link in the struggle for program continuity. It therefore behooves him to be thorough in documenting his budget proposals, and then to follow up by keeping good records to substantiate his long range turfgrass maintenance and management program.

Wages Largest Item

Once the budget is submitted and approved, the progressive superintendent then uses it as the base from which communication to the chairman and green committee springs. This could take the form of a monthly account of each budget item, showing the approved figure, what was spent in each category for that particular month, and the balance. This monthly account would be cumulative from month to month to provide the green chairman with a running account of expenditures. It should tell the up-to-date story at a glance.

Wages constitute the largest single item of expenditure in golf course operations today. Most clubs report that 66% or more of the total budget is spent for labor. Because golf is an everyday game, wages for Sundays, holidays, and overtime work figure prominently in the total expenditure.

Labor at this writing is without question the most serious problem that golf course management faces today. Industry offers a more attractive wage scale, year 'round employment, a promise of a 40-hour week with week-ends and holidays off, and fringe benefits. These are some of the reasons why good golf course labor is becoming more and more difficult to find.

Secondly, there is a growing concern on the part of superintendents regarding the increased use of the golf course. They continually wonder not only about how much traffic the turf could stand but also about how they can get the job done with this increase in golf, and the prospect of continued traffic increase.

With more play, maintenance operations are necessarily slowed down, and this surely reflects in the total wage story—it reflects in more and more **UNPRODUCTIVE TIME!**

This is a fact of golf course management life these days. Every time a man and a machine stop for golfers, his efficiency is reduced. The more play, the more his efficiency is impaired.

The alternative is to place restrictions on play to what officials feel are reasonable limits. This may differ at different courses, but as an example one green committee chairman in the Hartford, Conn., area stated that his club plans to restrict junior members to 18 holes a day—many were playing 36 holes daily through the summer months. Another example of reasonable play is the restriction on starting too early during weekdays. Once golfers get ahead of the maintenance crew's mowing operations, time that could better be used on other projects is lost waiting for them to pass. This certainly reflects in the total turf-

grass picture as well as the budget.

Little Uniformity

Normally, an 18-hole course employs from 8 to 11 men. Some payroll budgets include the salary of the caddie-master, the starter, and even the professional. There seems to be little uniformity in this regard, and this practice only adds to the confusion when golf course maintenance costs are examined or compared.

Budget preparation and budget administration are two of the best levers to better understanding among all concerned. The budget affords a common ground for communication and this normally leads to better understanding. When handled in a business-like manner, the administration of a budget should lead to solid relations among all concerned. One of the most helpful steps towards better budget understanding among clubs would be a standard form for budget make-up. Club officials compare budgets and they will continue to do so, but methods of budgeting normally differ so from club to club that it leads only to more misinformation and misunderstanding. Unfortunately, some published budget surveys also are misleading because of the difficulty in trying to reconcile the various items where differences in systems of budgeting occur. This doesn't appear to be a difficult problem to work out—let's take all this mystery out of budgets through a standardized system of recording and reporting.

The USGA Golf Handbook contains a discussion of budgeting matters and typical record forms. These were published following a lengthy study of the subject by a special committee on Uniform Accounting and Terminology. This material may be found in Section IV, Green Committee, pages 29-35, of the Handbook.

TURF TWISTERS

PINK GROUND PEARL

Question: We have been informed we have Pink Ground Pearl. Do you have a solution? (NORTH CAROLINA)

Answer: You have an unusual problem. Not much is known about Ground Pearl and even less about Pink Ground Pearl (*Margorodes Meredionalis*). The life cycle is still not known well enough for a firm eradication. We have observed it in what we call the crawler stage and it seems this would be the logical stage for control. The best solution we have to suggest is a contact insecticide applied during the crawler stage late in the afternoon and drenched in the next day.

MERION TEES

Question: What are your suggestions for maintaining Merion tees? (CONN.)

Answer: A good maintenance program should include the following:

1. Mow at a minimum of $\frac{3}{4}$ inch.
2. Catch clippings.
3. Do not overwater.
4. Aerate frequently, topdress as necessary and thatch at least twice a year.
5. Maintain the pH at 6.5 to 7.0.
6. Apply approximately 5 lbs. nitrogen per 1,000 sq. ft. per year.
7. Move tee markers frequently (at least once a day).

WATERING BERMUDAGRASS

Question: We have just installed a new automatic water system on our bermudagrass fairways and have religiously applied 1-acre inch of water per week. During July and August our bermuda turned yellow and we had a heavy infestation of silver and common crabgrass. Could water management have caused our problems? (VA.)

Answer: More than likely it did. Overuse of water kept the soil saturated, excluding oxygen from your heavy clay soils, and at the same time encouraged crabgrass at the expense of bermuda growth. Watering should be done on an "as needed" basis and the soil allowed to dry out between waterings. Too much water is just as bad as, or worse than, not enough.