Public Links Grow At Lively, Paying Gait

THE Public Links Section of the United States Golf association has just issued the fourth annual edition of the booklet, "Municipal Golf Courses in the United States," containing statistical information.

Unfortunately some authorities failed to give figures with regard to the cost of operation, but returns supplied by officials in charge of 198 courses show the expenditure of \$2.717.230. Statistics are missing from 78 courses with respect to the number of rounds played annually, but the total for 191 courses, during the year 1929. shows that 11,627,211 rounds were played. Many of the courses have no green fee charge, and others provide an all day fee which allows the holder to unlimited play, and no attempt is made to keep a record of the rounds. If the fee throughout the United States was a standard one of twenty-five cents, even at that low rate the annual income would more than offset the amount given as cost of operation. As indicative of the increase this form of sport is annually showing, it might be of interest to state that in 1926 the Public Links Section in reviewing the statistics for the preceding year, stated that the total number of rounds played on 120 city courses was 5,744,104. Four years later, with the addition of 71 courses, this total is more than doubled. Few courses are not self-supporting.

Some courses with sand greens show maintenance and operation costs as low as \$1,000, while one course of twenty-seven holes, with grass greens, states its annual cost of operation is \$65,000.

Playing fees range from five cents a round of nine holes on a course with sand greens, to 50 cents a round for the same number of holes on courses with grass greens. Eighteen-hole charges are as low as 25 cents and on a few courses as high as \$1.50. A number of courses have an allday rate and this varied from 50 cents to \$1.00. Annual or season tickets are as low as \$3.00 for an adult to \$60.00, which will provide for a family permit. Some courses maintain a twilight play rate, which allows about two and one-half hours. and this charge is usually one-third of the regular rate. On a number of courses, fees for playing on Saturday afternoon, Sunday and holidays are double the charges for week days. In order to encourage playing by school children, some of the cities provide free playing while others offer a special fee. The city of Dallas, Texas, maintains a free course for juniors.

Courses Self-Supporting

The city of Portland, Oregon, operates three golf courses, two of eighteen holes and one nine-hole course. The 1929 returns show that the total number of rounds played on the three courses was 303,790. The city receives 30 cents per round of nine holes, and it is evident that these courses are in no sense a burden to the taxpayer of that city. The Milwaukee County Park board operates four eighteenhole courses that call for an annual expenditure of more than \$70,000, and are self-supporting. Atlanta, Ga., is now completing its fifth city course to be known as the "Bobby Jones Golf Course"; Grand Rapids, Mich., maintains four golf courses. The first venture was a nine-hole course of 868 yards, constructed mainly to see if the city was ready for this form of sport and also demonstrate whether a course could be operated without being a burden to the taxpayer. During the first year of its operation, it netted a profit of \$3,000. and this on a course that didn't have a hole long enough to warrant the use of a wooden club.

Detroit, Mich., in 1929 opened its fifth city course, and the grand total of rounds played on the five courses during 1929 was 405,151. Rockford, Ill., maintains three eighteen-hole courses with a season rate for adults of \$3.00, and juniors \$2.00. The city of Indianapolis is operating six courses. In 1929 the city of Concord, N. H., took over a private course known as the Seaver Meadow Golf club, and will operate it as a city activity. Denver, Colo., continues to hold the honor of operating the longest golf course, the City Park lay-out being 6.767 yards.

Drainage, Watering, Landscaping High Spots of Good Job

By J. O. CAMPBELL Wethersfield (Conn.) C. C.

A GREAT deal of the progress I have made in the last four years has been due to help I have received from articles in GOLFDOM and the National Greenkeeper, as well as from my own study and experimenting.

In looking back over my work on our course, I have made several changes. I have turned swamps into dry fairways by drainage. This reduces maintenance costs to a considerable extent. When fairways are wet, it is impossible to draw fairway mowers over them; the grass gets such a start that it is necessary to use rough cutters ahead of the fairway units, piling up costs tremendously as the fairway mowers cut a 14 ft. swath, while the rough cutter cuts a 7 ft. swath, using about three times as much labor to cut swampy fairways as is necessary on a well-drained dry fairway. I think this one item of expense carried over a period of a few years is much greater than the cost of drainage.

Another item that is very expensive is watering greens. We have a system whereby we use the traveling sprinkler. This takes one man about an hour, starting about 8 p. m. He places the sprinklers on the greens where they are left to run until 8 a. m. The first thing the men do in the morning is remove the sprinklers and roll the hose. I find by using this system our sprinklers also help to eliminate brown patch. I have watched closely for the last two years and have never been able to find brown patch where my sprinklers were covering the greens.

Uses "Section Boss" System

I am using one man to each three greens, tees and traps. By making each man responsible for his own portion of the course, one has a chance to check up on the quality of the work of each man. One man cares for the grounds around the clubhouse, one looks after the mowing of the fairways and one does odd jobs, repair work, care of nursery and assists me in my experimental work.

Another way I lower expense is to eliminate chickweed, crab grass and worms by the use of arsenate of lead with a power sprayer. About every six weeks I mix a solution of 6 lbs. of sulphate of ammonia and 4 lbs. of arsenate of lead with 100 gal. of water, spraying my greens and far out on the mounds thoroughly. This saves hand weeding and the use of worm eradicators. I've found all "worm eradication" to be only a temporary remedy for Mr. Worm.

Studies Landscaping

I have spent a great deal of time studying the planting of trees and shrubbery. Since coming to Wethersfield in 1928 I have planted about 200 trees and have only lost four. Late in the fall I locate the trees I want to transplant the following spring. I prune them carefully, but do not cut the tops. Early in the spring before they start to grow, I take them up with as much soil and mulch as possible and transplant. This soil I've found to be more satisfactory than commercial fertilizers. Almost any tree if properly pruned and cared for will produce a nice tree for club grounds.

I am using more organic fertilizers and less chemicals.

In February, 1929, I helped organize the Connecticutt State Greenkeepers' association. We started with seven members and now have 27 of the 56 greenkeepers in the state. I think we have made good progress in a little over a year. We meet once a month, discuss anything of interest. We have had speakers from fertilizer, seed and equipment houses, and I believe most of the boys feel they are getting their money's worth.

No hard and fast rule can be given for specified quantities of any fertilizer to be used, as the soil, climatic conditions, the season of the year, and the state of the turf, are the leading factors. As much damage can be done to the turf of a golf green by overfeeding, as well as by underfeeding. Always err on the right side; a little and often during the growing season is the safest rule.



(Miller photo)

Fairway view, Country Club of Detroit, showing California hoseless watering system in operation.

Guide Posts to Course Watering Systems and Equipment Outlined

By WENDELL P. MILLER PART I

The irrigation season has opened early this year, in fact, many eastern courses are fairly "burning up." The conditions that brought on the forest fires in the eastern states proved disastrous to many turfed areas, accentuating the need for general irrigation as insurance against drouth.

Because of the premature irrigation season it is wise to omit all preliminary discussion, particularly arguments for the establishment of sound drainage, soil conditions, and fertilization as prerequisite to successful continued irrigation, and deal directly with actual irrigation practice. First, we shall outline the engineering procedure required in planning and installing fairway and other watering systems, then classify and describe the various types of systems and finally, in some detail, the mechanics and hydraulics involved in the latest and best practices of which we have knowledge.

Golf course engineering practice requires the application of agricultural knowledge and soils technology in determining certain fundamentals of the irrigation system. But many owners will not, or cannot, employ engineers. Other clubs customarily employ competent advisors to safeguard their capital investments; these will continue this policy regardless of anything that is published. Accordingly, in the interests of the clubs which must proceed without engineering services, especially the smaller clubs, this discussion will provide facts, figures, and data which will facilitate these clubs in proceeding with their irrigation plans on an empirical basis.

The First Stage: Water Requirements

First comes a determination of the true water requirements—the sum total of all water losses, including losses by evaporation, transpiration, and percolation to subsoil zones. Different types of soil on the same property must be taken into account; and tees and greens are special problems in themselves. Next, the engineer must learn the quantities of water supplied by Mother Nature according to the records of 20 years or more; also the maximum periods of drouth so far as recorded. From these determinations are figured the water which must be provided daily, and over what periods the maximum demands will obtain. Then it is necessary to investigate the available water supplies and probable cost per thousand gallons from the various sources. This investigation tells whether a continuing adequate supply is available for daily needs, or whether storage must be provided, and to what extent.

Now comes a study of the peculiarities of the various soils, their water holding capacities and the rate of absorption of applied water. From these facts—facts which can be developed only by soil technologists in the laboratory—are determined the necessary frequency of artificial applications, the quantities needed at each application, and the duration (in hours) of each application.

The Greenkeeper and the Budget

Enter now the greenkeeper's daily schedule of operations, the range of possible water pressures, the types of distributing units suitable for the possible pressures and necessary rates of application, the budget allowance for labor and supplies, and a determination of the club's policies as between (1) keeping the course in good condition at lowest possible cost, (2) maintaining the fairways at uniform length (uniform turf consistency) throughout the season, and (3) maintaining the grounds in pink of condition at all times.

Convenience of operation for the greenkeeper—which permits economy of operation—and the funds available for investment and operation are the controlling factors in the design of irrigation systems after all preliminary data has been secured.

So far this discussion is concerned with the information necessary for intelligently planning golf course irrigation. Having available all of the information above indicated it is time to make a tentative piping layout. Frequently it is necessary to prepare alternate plans and estimates to be passed upon by the club. Often the investment factor is strictly controlled by special financing. Green chairmen interested in financing methods are referred to "Financing Club Improvements" appearing in February and March GOLFDOM. Next, the calculation of the quantities of water to be delivered to each area in the time allotted under the greenkeeper's eperating program, how many outlets required for each area, where they must be located, and what sizes of pipe are needed.

Now in order is to "rough in" a piping layout on a layout map of the course. If we are planning a hose system it is usually essential that the system be so arranged that it can be extended into a hoseless system without abandonment of any part of the hose system. Now let us assign the pipe sizes to the tentative layout and, knowing the costs of pipe in the ground, cost of power or water under pressure, estimate the cost of installing and operating several alternative systems, calculating for each the friction losses and the effect on costs and operations of using larger or small pipe sizes.

It is essential that the piping system be looped over the entire property to be irrigated; that water be supplied to each operating area from two or more directions, and that there be no "dead ends" in the system other than the small tee, green, and fairway outlets.

Planning of the water supply comes next; including the estimate of the cost of wells, pumping plants, reservoirs, or whatever is required; often there are alternative plans and estimates, such as city mains versus private wells.

Existing Tee and Green Systems

So far, existing piping has not been mentioned. Occasionally all or part of existing systems can be incorporated with the new system of piping. More often, however, the existing system is abandoned, generally because the golf course was built for a lump sum price, and the steel pipe installed on this basis has rusted out: or it is wholly inadequate. Incidentally, it is usually impossible to obtain a map showing existing drainage, water lines, and electric cables. And finally, it is not often possible to effect much saving by using the existing system because the new system generally reaches the vicinity of the tees and greens.

Outlets must be provided for present and future connections to serve the ascertainable needs of the clubhouse and other areas not a part of the golf course. This is important.

Now it is necessary to coordinate all of the facts and factors so far developed into one comprehensive system. Then

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comes modification and compromise between the requirements and finances. Not often is an original plan or alternate plan adopted without modifications occasioned by financial considerations. After modification, approval from the board or committee of a definite plan and estimate is needed. Perhaps they direct that bids on several alternative plans be taken. Where we have not already taken bids the estimates must be correct to within five per cent of the final installed cost.

The Final Stage: Letting Contracts

Finally it is time to prepare detailed plans and write detailed specifications covering every phase of construction conditions, materials, and actual construction and installation. It is customary to select bidders, invite bids, receive sealed proposals with deposits, tabulate the proposals for consideration of the committee, and in conference with the green-chairman select the most promising bidder and confer with him as to details. Usually bids are taken on several different classes of pipe, and on alternate methods of construction. When the board approves the final recommendation of the engineer, he prepares the contracts and sees that they are properly executed, and the contractor proceeds with construction under the direction of a supervising engineer who has full authority to enforce the plans and specifications. Contractors desiring to bid on the work are always provided with: (1) an invitation to bid; (2) complete information to bidders giving an outline of the project and scope of the work, and conditions of the bidding; (3) copy of the surety bond (50% of contract) that is bidder: of the successful required copy of the contract; (5) (4)CODY of the specifications; (6) a report form on which the bidder outlines his equipment, experience, responsibility, and references; (7) a complete set of plans (blue prints); and (8) a detailed proposal form providing places to quote lump sum prices as well as unit prices. The lump sum prices for the estimated scope of the work are used for comparison, while the unit prices are used in paying the contractor for the work actually done as shown by final measurements. To prevent indiscriminate distribution of these materials it is customary to require a deposit against the return of the plans and specifications, of \$15 to \$25. To eliminate irresponsible bidders and to insure that the successful bidder will sign the

contract, the specifications require a certified check of \$500 or more, to be deposited with each proposal.

We have outlined in detail the consulting engineer's procedure in handling an irrigation project for a turfed area. It sounds like considerable work, and certainly is! But remember that the engineer can take no chances and do no guessing. Procedure of the character outlined is always religiously followed even though the engineer may have ready data in supposedly similar projects.

As we have already stated, it is not practicable for clubs that cannot or will not employ an engineer to follow in its entirety the procedure outlined; hence in developing the mechanics, hydraulics, and detailed planning we shall in a future part of this discussion supply certain empirical facts and data that will enable such clubs, particularly the nine-hole clubs, to proceed with their water systems.

In part II we give a classification of irrigation methods and a practical; brief description of these methods.

Restaurant Business Perilous, Government Report Shows

WHEN golf club officials or members raise the question "why is it that we lose money on meals when there are so many restaurants making big money at lower prices," the manager is inclined to shrug his shoulders, talk about the uncertain load which is never too big at its best, and the high costs of the club standard of food and service.

All that part of the answer is well enough in its way but a government study made of the restaurants in Kansas City, Mo., a typical situation probed at the request of the National Restaurant association, shows restaurant profits are a long way from being satisfactory . . . even if there are any profits.

More than 50% of the 1,084 restaurants licensed during the year studied either changed hands or went out of business that year. The membership in the Kansas City Restaurant association, comprising "the more stable and prosperous owners of the city" showed an "amazingly high" turnover of its membership. Out of 73 of these restaurants belonging to the association in 1925 only 33 were still in business in 1929.

The commercial feeding business is one of perilous profits.

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