

Answers Questions They Ask About Fairway Watering

By WENDELL P. MILLER
(PART FIVE)

OUR recent articles on irrigation have brought inquiries for more information—seasonal water requirements, lower cost irrigation construction, and the benefits of fairway irrigation. We will answer these requests as far as space will permit.

Seasonal Requirements.

Seasonal requirements for golf courses depend upon the amount and distribution of rainfall, and upon the soil. Seasonal requirements vary much more widely than the daily requirements, not only from course to course, but also from season to season. On the other hand, clubhouse requirements are fairly uniform from year to year.

Records of the water consumption of clubs are conspicuous by their absence—and the few records available do not separate the house consumption from the course. Seasonal requirements are substantially lower than indicated by the daily requirements (multiplied by the number of days). Further, the figures, actual or calculated, for any past year will not hold for the coming years—as no one can accurately predict the rainfall for any one

year and hence the water required for artificial irrigation.

During the past summer we have obtained actual meter figures on an 18-hole course on Long Island (Pomonoak). From May 5 to September 13 the actual consumption for tees, greens, and fairways, was 16 million gallons, with a probable total for the year of 18 million gallons.

At Des Moines, Iowa, we have estimated the annual consumption for 18-holes (tees, greens, and fairways) on sandy type soils at 28 million to 30 million gallons. At Chicago, the courses on the heavier soils can get along nicely on 16 million to 18 millions. The requirements at other courses with which we are familiar range from 15 million gallons on tight soils to 30 millions on loose soils, for all purposes except clubhouse. These figures can be taken as limits until the further development of fairway irrigation and the use of meters, will supply more definite information.

Low Cost Construction.

We have previously given the cost of permanent irrigation construction using the best of materials and the best of engineering practices—installations costing



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\$20,000 and up. Now, for clubs which cannot spend so much as \$20,000—but whose courses are as badly burned this year as those of their wealthier friends. Accordingly, we outline the prospects for clubs with \$10,000 to \$15,000.

Cost of Water Supply Important.

An all important consideration in developing low cost construction is the cost of the pressure pumping plant. Few clubs have available ample water supplies at above 50 pounds effective pressure, (at lower pressures the labor cost for operations is excessive), hence for economical operation a pressure pumping plant is necessary. A reasonably good plant of adequate capacity but without automatic control can be installed for \$2,500. True, a plant can be installed for less—but cheaper installations operate at such excessive cost for labor, repairs, replacements, and depreciation, and are so lacking in dependability that their construction cannot be wisely advised.

There will be additional outlay where wells must be used. Each well situation is a study in itself and comparative figures on well installation are useless.

Isolation of Clubhouse Water.

We generally find the clubhouse and golf course water systems connected. In raising the golf course water pressures to 60, 70, even 100 pounds, or more, it is necessary to "isolate" the clubhouse on a separate source of supply, if possible; otherwise, the clubhouse plumbing must be protected by pressure reducing valves. The clubhouse supply is frequently complicated by the necessity for shutting down and draining the golf course water system during the winter months—and again by the underwriters requirements. The clubhouse water supply is usually involved with golf course supply, is often complicated, and must be satisfactorily and economically disposed of particularly if we are to have low cost construction.

Makeshifts.

Makeshifting is possible under favorable conditions of water supply and is facilitated when the existing piping is substantial. The difficulty with makeshifting lies in the waste due to abandonment of makeshift construction and equipment. Only under the most shrewd and careful planning is it possible to adopt makeshift construction which will have any permanent place in the water system. Again, makeshifts are either costly to operate or woe-

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fully inadequate, or both. Makeshifting cannot be recommended except in unusual cases where fairway irrigation is a real necessity, and funds are lacking for proper construction.

Use of Existing Piping.

In some cases it is possible to work the existing piping into the fairway system and save something against the construction cost. Recently we encountered a situation at Des Moines, where the club wanted to utilize existing three, three and one-half and four inch piping to good advantage, saving several thousand dollars thereby. In this case it was possible to use all of the existing tee and green system piping but only part of the mains—because the matter of isolating the clubhouse supply was involved. Frequently it is possible to "cut" the new system into the existing tee and green system to provide higher pressure for existing outlets. The average club should not plan on using existing piping until an investigation demonstrates conclusively its condition and the wisdom of incorporating it in the new piping construction.

Low Cost Piping Systems.

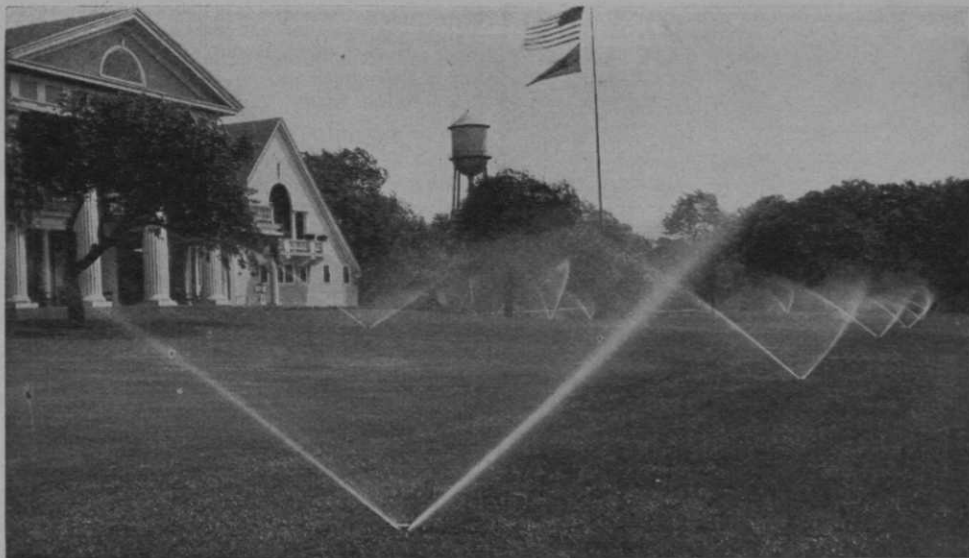
The fairway piping system, disregarding the tees and greens, can be installed for as little as \$10,000 to \$12,000, if the course layout is compact and if the soil is tight or has a high water holding capacity and further provided the club is willing to face replacement of the piping in 12 or 15 to 20 years.

Some further reduction might be made by installing common black steel pipe but the life of this pipe is very short under most soil conditions—therefore its use would prove very costly and wasteful indeed.

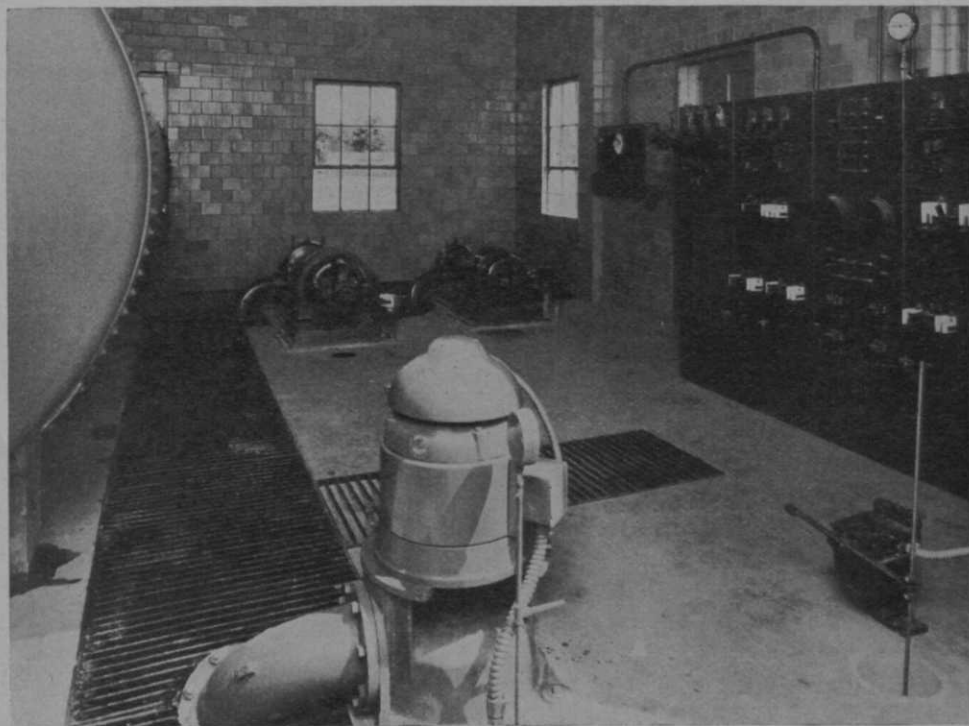
Range of Construction Cost.

Thus we arrive at a minimum of \$10,000 for an 18-hole fairway hose piping system without tees and greens, and \$2,500 for the pressure pumping plant, *if the water and electricity are available*. These figures do not include the necessary hose and sprinklers, another \$800.

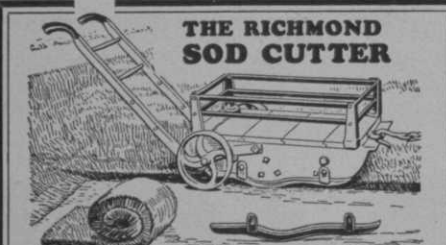
Above these bed rock figures and running into permanent construction, automatic control for the pumping plant, and on into hoseless irrigation, there is an intermediate type of construction to fit every club's finances. It is practicable to plan a combination of 100 year, and 12 to 20 year construction, with the installment method of developing hoseless irrigation, so that



Concealed sprinkler type becoming popular on golf courses. Mowers pass freely over concealed sprinklers not in use.



This photograph, showing interior of Eden pumphouse, was omitted through error in September GOLFDOM. Note deep well pump in foreground discharging into intake sump connecting to large pond. Roof has hatch over turbine pump for well driller's future convenience.



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fairway irrigation can be initiated at an outlay of \$10,000 to \$20,000, and later extended over a period of years, into ultimate hoseless irrigation, at a low total cost, and with no replacements under 12 to 15 years, or more. Clubs interested in fairway irrigation should arrange a thorough investigation of all factors involved in their water supply and prospective distribution system, and give consideration to proceeding along safe and sane lines, to ultimate hoseless irrigation.

Low Cost Hoseless Systems.

The necessity for low operating costs has been responsible for the design of a "one man" hoseless system, a system whereby one man can irrigate an entire 18-hole property, including the house grounds. Systems of this type can be installed at an increase of from 10 to 25 per cent over the construction cost of ordinary hose systems (except on courses of rambling design and large total property area). The first systems of this type will be installed during the fall of 1930. It is quite possible that the "one man" system will prove very popular and lead to a rapid spread of hoseless irrigation throughout Eastern States.

Benefits of Irrigation.

Artificial irrigation is a necessity on the golf courses of the eastern and central states, but the golfing public has not yet discovered this. At Kansas City they even say that irrigation is impractical. Nevertheless, fairway irrigation is spreading and by 1940 nearly all of our 18-hole courses will be under complete irrigation. Of course, water alone is not a panacea for turf ills. Five things are needed to produce the finest turf: tilling, seeding, fertilization, irrigation and drainage and over all, intelligent turf management. Irrigation is a great blessing to established turf. It can be mismanaged to produce weeds as at Kansas City. But the general results are indisputable.

Evidence on Every Course.

Nearly every course shows evidence of the benefits on fairway irrigation. Go out on your courses and examine the fringes of your greens—where fairway turf merges into putting green—and see for yourself what a judicious combination of fertilizer, tillage, and water, will do for the fairway turf. While you are out there, count the weeds you see in the green fringe (usually you can easily count all you can see) and then imagine the condi-

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tion of your fairways were they to receive the same treatment that these green fringes unavoidably receive as a concomitant to caring for the greens.

Itemizing the Benefits.

Irrigation makes up for the irregularity of the rainfall and for its inadequacy, providing the optimum moisture content required for best plant growth.

Irrigation provides the means of securing maximum results from fairway fertilization.

Divots (when replaced) will grow on irrigated ground. Scars and other wear and tear are quickly and automatically repaired.

Irrigation enables the turf to hold its improvements in quantity and quality. Without irrigation the growth of the spring and fall are largely lost in the summer, and succeeding years often yield poorer, rather than, better, turf.

Irrigation to proper depth (usually six inches) plus sensible fertilization, reduces weed growths, and strengthens the fairway grasses to the point where they are able to crowd out undesirable growths.

Player Benefits.

Artificial irrigation maintains the turf in uniform playing consistency, and hence in uniform playing length, throughout the season. The same stroke produces the same distance at any time of the year.

Irrigation produces turf that provides sporty lies throughout the year and makes for a better game. Nearly every shot is "teed up" on a mat of grass. Brassie lies are particularly improved. Irrigation develops the grounds to their maximum beauty, and comfort. Just compare walking 7,000 yards over hard, dry, dusty ground with a like walk over springy, velvety, green turf.

Irrigation saves annual seeding expense.

Irrigation increases the guest fees and the patronage throughout all departments. If there be any panacea for the finance committee, it is fairway irrigation, and the resultant increased revenues.

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the maximum pleasure from the game of golf. Our clubs east of the Rocky mountains are slowly discovering this fact, and accordingly general irrigation is spreading slowly, but surely, among the stronger clubs, and in a very few years will be classed as a necessity instead of a luxury; for fairway irrigation is indeed a necessity, if we are to have the very finest turf, and the greatest pleasure from our golf.

CORRECTION—In the September installment of the Miller series on fairway watering two illustrations were incorrectly captioned. The view described as "interior of Eden pumphouse" actually showed the emergency pumping installation in the stadium grounds to supply University of Michigan golf course new seeding.

The California hoseless outlet and portable sprinkler was incorrectly described as a "concealed sprinkler."

Canadians Hold Second Show of Course Equipment

ONTARIO greenkeepers held their second golf course equipment and supply exhibition and demonstration at the Royal York G. C., Toronto, Sept. 9. The event was first held in 1928 and allowed to lapse during 1929. This year's revival was marked by a large attendance of both course maintenance men and manufacturers and won enthusiastic comment for the practical manner in which it was handled.

W. J. Sansom, H. Hawkins, H. Lloyd, W. Kirby, F. Hamm, J. Austin, J. Stanfield, C. W. Freeman, A. McCallum, J. Abbot, J. Anderson and F. Haynes comprised the committee conducting the exhibition.

Working demonstrations of equipment were given by various manufacturers and greenkeepers provided with an excellent opportunity to make close-up comparisons under actual operation conditions. It now is the intention of the Canadian greenkeepers to make the equipment demonstration an annual fixture.

Quebec greenkeepers made up a goodly percentage of the 200 in attendance at the affair.

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