

going along on only 10,000 gallons per day for tees and greens, and doing nicely, too. Ten thousand gallons are all they can get. And this makes me question the wisdom of such large use of water on tees and greens. Outside of this extreme case we find the clubs using from 18,000 gallons

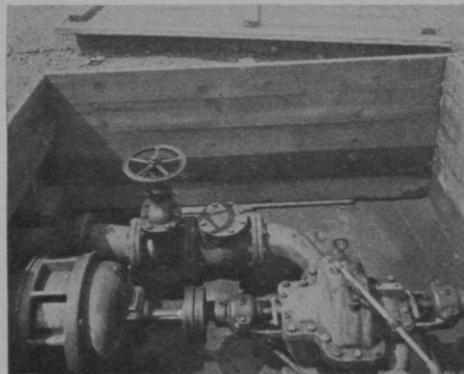
18 hole private clubs to range from 150,000 gallons to 300,000 gallons.

Importance of Water

If there be any panacea for the finance and house committees, it is a liberal supply of water for the fairways. On a recent visit to South Bend, Mr. H. W. Eldredge, chairman of the green-committee of the country club, said that he was certain that club officials generally do not appreciate the value of a liberal supply of water, and particularly at his club where they are over half surrounded by lakes and have 12 holes which are on marsh land and are automatically irrigated from below. Actual results show plenty of water boosts the guest fees and clubhouse revenues as an offset to the cost of irrigation operations. Clubs with fine surface water supplies are lucky because selectors of golf sites seldom worry about where water is coming from. Yet water is the blood and the pumping plant the heart of irrigation.

Consideration of Water Supply

Green chairmen and other officials are often surprised at the importance we give to the water supply. What good is a system for distributing the water unless you have plenty of water at suitable pressure? Golfers, especially club officers, think of a



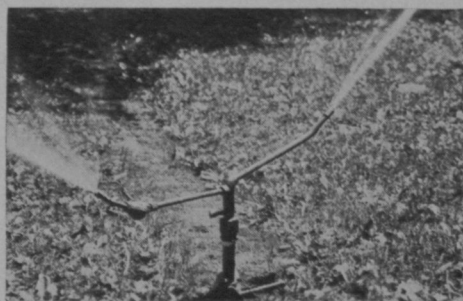
Interior of Eden pumphouse, ideal for large turfed area. Note deep well pump in foreground, discharging through sump opening into large pond. Roof has hatch over turbine pump for driller's convenience.

per day on the tightest soils to 60,000 gallons per day on Long Island and Jersey sands. Most clubs use from 20,000 to 30,000 gallons per day for their tees and greens.

Fairways

And now the big question: How much for the fairways? The variation on the fairway consumption, measured in gallons, is large, due to the extraordinary requirements of sandy soils. Pomonok C. C. used 163,000 gallons per day during June and July for tees, greens and fairways, a net total of about 140,000 gallons for the fairways (7 days per week). We figured Riverside (Chicago) to need a maximum of 200,000 gallons per day in this year's drouth for all purposes except clubhouse. The highest 18 hole requirement we have encountered to date indicates a possible maximum use of 240,000 gallons per day for 18 fairways. We know of several clubs using well under 150,000 gallons per day for 18 fairways. The limits, therefore, appear to be 125,000 gallons and 250,000 gallons for standard 18 hole courses.

Add to these limits tee, green, general area and clubhouse requirements, we find the average daily seasonal requirement of



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

water system in terms of piping and sprinklers. They do not generally consider that first comes the water—rivers, lakes, city mains, wells, or what have you?—and then the pumps, power for the pumps with suitable control apparatus, then the pipes and the outlets and sprinklers. Further, they do not consider that underlying everything is the greenkeeper and his operations. Unless you give the greenkeeper a good water supply, a good pumping plant, and a complete system de-

signed to facilitate the greenkeeper's work at every point, your irrigation operations will prove costly indeed.

Sources of Water

There are only three possible sources of water for a turfed area, other than rain and the irrigation ditches of the far west, as follows:

- (1) Surface water.
- (2) Subsurface water.
- (3) Municipal or water company mains.

Surface Water

First in importance are natural lakes and ponds which, spring or river fed, maintain a fair level throughout the year. Second are the flowing streams, ditches and self flowing wells of Florida and elsewhere.

Subsurface Waters

These consist of well waters, springs which can be pumped, and collected drainage waters. Of these, only wells are of common occurrence in turfed area irrigation. Wells are to be used only where there is no other alternative at anywhere near the same cost of operation. The well situation is peculiar to each locality and a satisfactory solution of the well problem can be secured only by men who specialize in this work. Beware of the well driller who is merely a well driller. Unless you bargain for a well of guaranteed capacity or else employ competent advice, you may buy something that will disappoint you and prove a costly investment.

A well for fairway irrigation of 18 holes, including all other purposes, should have a minimum capacity of 200 gallons per minute, or more, under continuous pumping.

The design, drilling and "development" of wells is so broad a subject and so highly specialized in nature that we cannot discuss the subject at any length.

Test Wells

Where shallow wells are practicable and in loose ground, it is a wise procedure to sink a test well first; then you know what to expect from the finished well and just what the conditions are.

Wells vary in depth from a few feet to 2,500 feet or more; in cost from several hundred dollars to \$20,000, occasionally more. The controlling conditions, and hence the cost and depth, vary so widely from one locality to the next, even occasionally from one property to the next, that it is useless to give any figures on the actual cost of developed wells.

Depreciation plays an important part in the cost of well water. Wells give out or accidental happenings put them out of commission. Small initial wells prove inadequate for fairway watering. More engineering skill and intelligence is required for dealing with well problems than any other part of the water system.

It is possible to contract for a guaranteed well but it is cheaper to employ an irrigation engineer and drill by contract. The results of this method are generally very satisfactory. If you buy a guaranteed well, be sure you get an adequate performance surety bond from the contractor and also be sure that the contract is iron-clad.

Wells Versus City Water

In many irrigation projects we encounter the time worn problem—wells versus city water. The solution to the problem lies, of course, in the net cost of water and in the certainty of the well supplies. Investments in wells are accompanied by risks that when the cost of city water approaches within a few cents of the cost of well water we generally decide in favor of the city water, provided that suitable guarantees of adequate capacity can be obtained.

For example, a well-known Long Island club was considering a well, to cost \$13,000, as the source of water for their irrigation project; in fact, the well people had them sold. Investigation disclosed an ample supply of city water at their gate, with a pressure of 40 pounds, and a ten cent rate (per thousand gallons). In this case the decision was easily in favor of city water.

In Des Moines we recently encountered



Wendell P. Miller

a prominent club which was giving some consideration to wells. Here wells are cheap, shallow, low in cost and rather certain. However, a survey disclosed an eight inch city main on one side of the property and a 12 inch main on the other side, with a 16 inch main to one corner. The water rate is ten cents, and even nine or eight cents in a year like 1930 (because of the necessarily large consumption). Here again there was no choice. Ordinarily driven wells cannot compete against cheap city water.

In the case of several clubs on Chicago's north shore, well water is cheaper than village water, even though the wells may be over 2,000 feet deep.

A club in Tennessee which is now planning fairway irrigation has at best 17 cent city water available. In order to obtain this supply the club must invest in one mile of main, adding perhaps three cents per thousand gallons for interest and amortization. Add to this another three cents for pressure pumping and the city water will cost 23 cents put into the golf course mains. It is probable that a well will prove desirable in this case.

It is quite evident that the clubs with free water are in enviable position with respect to fairway irrigation, and that while well water can be obtained in most cases at a total cost well under ten cents (including interest and depreciation on the well) per thousand gallons, nevertheless, when city water under good pressure is available at ten cents, or thereabouts, it is good policy to use the more certain city supply.

Clubs that are dependent on wells seldom need worry because no city or free surface water is available. We have yet to encounter the first case where fairway irrigation is impossible or too costly to operate for the average seasoned club of 18 holes and 300 members. The difficulty lies in the large plant investment for the water supply and irrigation system and not in the operating cost. Clubs taking on irrigation for the fairways find that the extra operating cost is largely offset by increases in guest fees and in the patronage of all departments. We repeat, if there be any panacea for the troubles of a golf club it is fairway irrigation; and irrigation may be provided as nicely through subsurface waters as otherwise. It should be pointed out that much more care, patience, and competent assistance are required in going into a well project than in a city water or free surface water project.

Municipal Water

Municipal water is very satisfactory if the quantity rate is low enough and the supply ample in times of drouth. When lawn sprinkling is in season, municipal water supplies frequently run short or the pressure falls very low. Sometimes this shortage can be overcome by collecting the water in a reservoir. In any event, possible shortage must be thoroughly investigated before you can place complete dependence in the municipal water supply.

Usually city water must be "boosted" by pressure pumps. City pressures, particularly in the summertime, are inadequate for golf course irrigation. Irrigating with direct city pressure is a very costly operation. Often in the dry season the city water pressure drops to a point where, because of friction in small size pipes in original tee and green system, the water completely fails. We have encountered several extreme cases along this line this season.

Deep Well Pumps Versus Pressure Pumping

Deep well pumps carry plenty of load without requiring them to operate against the head required for irrigation. Further, few well and well pump installations have sufficient capacity to provide irrigation water at the rate it is used for fairway watering. Hence, intermediate storage is required, followed by pressure pumping. Well pumps providing pressure suitable for fairway irrigation do not prove satisfactory in the long run.

Automatic Pressure Control

It is desirable to have the pumping plant under automatic (electric) control. Under this plan the proper pressure is automatically maintained; the pumps, both well and pressure, automatically start and stop. Pumps which are not under automatic control are wasters of power and cause trouble in the water pipes because of the sudden increases in pressure when the pumps are turned on.

Every complete pumping plant for irrigation purposes includes a large steel pressure tank connected to the water main very close to the pressure pump. These tanks should have a capacity of not less than 3,000 gallons (5 by 20 feet) to 4,000 gallon size (6 by 20 feet)—the larger the better. The pressure tank is maintained two-thirds full of water and one-third full of air in height. The purpose of the tank is to provide a pressure reservoir.



A Walter Hagen miniature golf course at Detroit. The screen in the foreground is to keep pitch shots from going out of bounds.

Miniature Golf Now No Field for Pikers

By J. EDWARD TUFFT

"THE miniature golf course is here to stay. It provides recreation at nominal cost and it provides the thrill that comes from competition. However, only those courses with the most attractive features and properly built at the beginning can hold a steady patronage as the players become more and more discriminating."

The speaker is O. W. Chisum, foreman for the Bhend Electrical Construction Co., Pasadena, Calif., who has done the electrical construction work for several of the most attractive courses in that city of wealth and leisure.

"The man contemplating the installation of a course must look carefully to the future. When the vogue was new anybody would play any place but as the number of courses multiplies naturally enough

business competition will depend upon the same feature upon which it always depends eventually in any line—it will depend upon service, equipment, attractiveness, etc.," says Mr. Chisum.

"The man installing a golf course should first of all look well to his system of illumination. Co-operating with men putting in the miniature courses here we have urged a high system of wiring so that there might be proper illumination and proper distribution. We never string our messenger wires lower than twenty-five feet above the ground. The lamps used are aided by deep dome reflectors and 750-watt bulbs, clear glass, and are placed on the strands at intervals of 40 feet. The strands can be lowered by a pulley arrangement to permit re-lamping.

"Courses with inadequate or annoying



Photo Bartlett Service

One of the Pasadena miniature courses showing the elaborate construction work and maintenance work involved.

lighting facilities will not be able to compete as the players become more and more discriminating.

Must Give Life to Course

"The man installing a golf course of this kind must be sure at the beginning to give 'life' to his course. This can be accomplished by means of running water more readily and more economically than in any other way that I know of at the present time. We have installed motor driven water pumps which furnish plenty of water movement for miniature mill-wheels, miniature water falls, and artistic little rivers and rapids. Not only do these provide hazards but they give atmosphere. Especially do they give an atmosphere of coolness.

"Running water lends itself very readily to colored illumination both through the medium of flood lights and Neon lights placed under water.

"The presence of trees on the grounds also give opportunity for attractive lighting effects and in several instances we have decorative lighting, a real illuminated Christmas tree appearance being produced.

"These are but a few of the things that have come under the observation of a wir-

ing contractor in relation to miniature golf courses. Naturally, since we are interested in the illumination of golf courses of this kind we play ourselves in order to make contacts and learn through conversation where other courses are likely to be installed. We find that as we play more and more we become more and more discriminating and already we have eliminated from our list, automatically I believe, a number of courses that no longer in the light of comparison can make an appeal to us. We are becoming fastidious as I assume all players are rapidly becoming.

"In the Los Angeles area in the last year literally hundreds of courses have gone in. The average income, I am told, for each course at the present time is about \$87 per day with a maximum for an especially well located and well equipped course of \$900 per day.

"Among the courses we have provided with illumination I might say those with the best design and maintenance are maintaining their average income the most easily in the face of a competition growing more rapidly than seemed possible a couple of years ago.

"The business apparently is a good business, but like every other business it will not yield permanently without proper investment."

Fresh Divots from the Pros' Pastures

By HERB GRAFFIS

FROM two directions the spotlight is being turned on the P. G. A. with prospects of some interesting news coming out of this sector ere winter comes.

The P. G. A. has begun to seriously consider its part in the winter tournament campaigning. That's one of the problems. The other stunt that has come before the P. G. A. for consideration is the matter of the association taking part in the promotion of a club in Florida.

Bob Harlow, manager of the Hagen, Horton Smith and Diegel trio, is being very earnestly appraised as a prospective head of the P. G. A. tournament bureau. Harlow, golf's live Rickard, in conducting circuses at no small profit to the performers, looks likely as a candidate for the job inaugurated by Hal Sharkey. Harlow has figured prominently as the impresario and stagehand for the best paying shows in pro golf. He knows the tournament business better than any other living soul and in this observer's opinion should be signally successful not only in handling details of the usual schedule but in encouraging new events and arranging for their safe conduct.

It looks to this writer like the only debatable feature of whatever official negotiations might be entered into by Administrator Gates, acting in behalf of the P. G. A. and Harlow, would twist around the matter of Harlow retaining his connection as manager of the Hagen-Smith-Diegel troupe. As it appears to us the bounding and billowy Harlow would be subject for a working over by a sanity commission if he cut loose from his present arrangement. It would be just too sad, in all probability, if the three boys were compelled to find another to take Harlow's place as his command of the business details of golf exhibiting in this country and abroad is shared by no other man.

But, will the rest of the dozen exhibition notables take kindly to Harlow being in a spot where there might be a suspicion that he would be playing his team

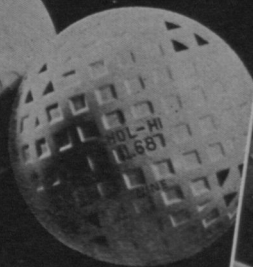
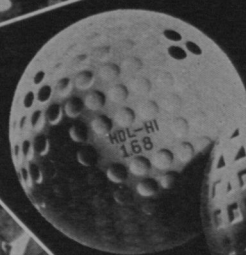
as the attraction in the main tent? Not that anyone is breaking down giving damns about how this looks to us, but it seems as though such an objection were not valid for the simple sufficient reason that Harlow, the players and the P. G. A. would make more money by Harlow playing the field straight, and no favorites. On this matter of exhibitions Harlow could furnish all clubs with a list of the available talent, and the guarantee money wanted. Then the clubs would engage the talent they wanted. If the clubs wanted Gene, Johnnie, Al, Harry, Mac, or any other of the rest of the big shots, they would take the choice and pay the dough without any influence other than that of established gate magnetism. If Harlow can put some more life into this exhibition business, the pros certainly could use him. His latest successful operation is to cut The Hague into the miniature golf course business on a basis that ought to be exceedingly lucrative to all concerned. The Harlow hombre overlooks no chances to horn his boys in on legal tender and if this happy faculty is extended to others of that selected group of journeymen clouters, there should be jubilation on all sides. The bureau job, in its most tranquil moments, would sorely try the patience of the Old Lady Who Lived in a Shoe so the manager of the tournament bureau is not to be the target of green-eyed glances from any sane citizen.

Into the pro picture again comes the widely famed "Tub" Palmer, Miami man who long has been in close contact with pro exhibition golf as an amateur pilot and promoter of Florida events. Palmer, spokesman for a syndicate headed by Lee Jarrell, Miami attorney, has proposed to the P. G. A. that the association sponsor the participation of its members in putting across the Tri-club, a layout that hopes to have three or four 18-hole golf courses in the Miami sector, a town clubhouse and an island fishing lodge.

As many who may be invited to draw

ACCEPTANCE

Maybe the sun isn't shining on business in general. We wouldn't know about that. We do know that the pros who are standardizing on Wilson golf equipment this year are certainly making a lot of hay. More players are using Hol-Hi balls and Wilson clubs than ever before. And more pros than ever are profiting thereby.



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from the Florida deck bat their eyes and shudder at the mention of a new promotion in Florida, the concluding paragraph of the rough outline of the plan presented to the P. G. A. is intriguing. The sentence ends: "authorizes me to give the City National Bank of Miami for reference."

Briefly the Tri-club plan is to sell 2,000 memberships at \$500 a member, and have the pros function as part of the sales force although the actual selling of memberships will be done in most instances by the Tri-club's own membership salesmen. The P. G. A. and the individual member of the association will split 10 per cent commission on the sale to each pro's member, according to the proposal. The split probably will be made 35 per cent to the P. G. A. and 15 per cent to the individual pro. In addition to this cut, the P. G. A. will be given one of the Tri-club courses as its own, fully paid when all of the 2,000 memberships are sold.

Details of the proposal are to be submitted to President Pirie, the directors of the P. G. A., and to Albert R. Gates, the pros' business administrator. Whether the deal will look too much like an injudicious use of the P. G. A. or be approved as a legitimate effort of the pros to get themselves a winter home course, probably will not be decided until the annual meeting of the P. G. A. at Lake Forest in November.

Palmer and Jarrell, stating that the property was picked up at a great bargain during the post mortem on the Florida boom, naturally are all feverish about the deal appealing to the pros and if it gets an O. K. from the tough jury that will sit on it for the P. G. A., then the boys can count on it as being worth a hand. It's one of the delicate problems of conduct that are bound to come up frequently now that the P. G. A. is stepping out as a vigorous business unit. Just where exploitation and aggressive advance along uncharted paths are to be separated for the good of the P. G. A. is going to keep its officials thinking deeply and steadily.

One of the younger professionals at the Western Open sat down at dinner to tell this inquiring reporter how business was.

"Everything would be O. K.," said this smart and hustling kid, "if I could get my assistant to snap into it and use his skull. I give him a commission on any

clubs that he sells and have tried my best to show him selling that is real service to the members, but the guy either doesn't care or he's lazy. Now, what to do about an assistant like that? He's a nice looking boy, well educated, and pleasant mannered, but he simply won't get on the job.

"I was assistant here for several years and when the big shot moved up to a bigger job in the major league, the club made me his successor. There were 30 fellows older than I was, and some good hands in the pro business, doing everything to get this job, too.

"That taught me the good sense of an assistant never overlooking a bet in working for the members. I sold a good part of the clubs that were sold in the shop and I never went after a man or a woman to sell them without knowing exactly what they needed, and that it would be well worth the money to them. You hear a lot about the danger of high pressure in pro shop selling, but although I'm a long way from being an experienced pro, I'll say that most of this danger you hear about is the alibi of some bird who is either downright lazy or doesn't know how to sell. There are mighty few members who don't appreciate the pro and his assistant taking enough interest in them to recommend something that will do their game some good.

"When my members come into the shop and look around, I want my assistant to ease over in a nice way after noticing what seems to interest the member and say, 'What do you think of that club, or set? They are going so fast all over the country it's hard for us to get them, because . . . and then give the member the whole dope on the club. If the guy even mentions to the member buying the club I'll beat out his brains, if he has any. Give the members any kind of a chance and they'll sell themselves what they need. You don't want to sell them any more than what they need, for if you sell your members half of what they need you'll be busting a record.

"One thing being a pro has taught me already is that the assistant is the most important seller in the average shop and that the pro who doesn't pay a lot of attention to picking the right assistant and training him right, has no right to holler about business. With the pro on the lesson tee a good part of the time, letting a punk be the shop man is just throwing good dough out the window."

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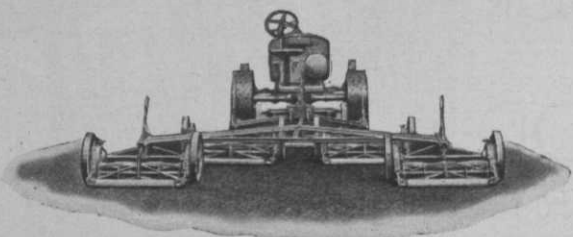
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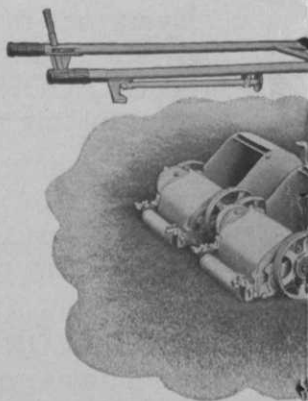
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