

Committee of the Green Section, to whom the writer is indebted for the preliminary data on this turf, will undertake the solution. Few elements of research are of more fundamental importance to the golf world; for though substantial progress has been made in the treatment and control of brown-patch, it comes like a thief in the night to despoil and discourage the best efforts of the green keeper.

## Golf Course Architecture and Construction

### Selecting the Property

By William S. Flynn

The selection of the property for a golf course is a most important matter. Often the question is asked how much ground is needed for an 18-hole layout and what type of terrain makes the best course. There is really no specific rule as to the total acreage required. Eighteen-hole courses have been laid out on as few as 80 acres or even less, while others have taken as much as 200 acres, and in some instances more have been utilized to advantage. The necessary acreage depends primarily on the availability of the property for golf-course purposes.

In hilly country a great deal more ground is usually required than in gently undulating or more or less flat country. This is due to the fact that it is imperative to make the climbs easy, using the steeper slopes for downhill play and the lesser grades for uphill play wherever possible.

It naturally follows that in planning a course along these lines considerable ground must be wasted, as in very hilly country there are sure to be slopes so precipitous they can not be worked in at all.

When a portion of the property to be had is low, and it is hard to find a piece of land large enough for a golf course that has no low-lying sections, intricate drainage problems are presented, and it is sometimes wiser to pass up the swampy areas entirely and use other and higher ground that can be put in playing shape at a much lower cost of construction and afterwards maintained more economically. This also would have a bearing on total acreage requirements.

While fine golf courses have been laid out over all kinds of country, hilly, flat, and gently undulating, the latter type is, generally speaking, the best suited for the design and construction of a really good course.

After all, the science of golf architecture is the presenting of problems and the placing of objectives to be reached by the players and an objective that is 10 feet above or below him is practically as formidable as one 30 feet above or below.

And the great mass of average players, the men who support the game, must be considered, because it is more or less of a hardship for them to tramp, month in and month out, over severely undulating country. For, after all is said and done, most everybody who plays the game does so for the pleasure they get out of it, not for the exercise, no matter how loudly they may emphasize the lure of its health-producing qualities.

Then in gently undulating country much better visibility can usually be obtained, and visibility is much to be desired, particularly on the shot to the green. Also the maintenance problems are, as a rule, more simple on this kind of terrain.

In really hilly country the average construction and maintenance costs are higher than on other types of ground, because the cuts and fills required in building the tees, greens, and bunkers are much deeper, while hand labor enters into the maintenance to a greater degree.

Flat country, while uninteresting in itself, can be made attractive from the playing viewpoint by the use of artificial hazards and generous tree planting where necessary. But the cost of building these artificial hazards and the raising of tees and greens required by this type of land will make the price of the course, as a whole, rather expensive.

The selection by a golf club of the site for its future home means more than merely securing enough ground for an 18-hole course. As a matter of fact, it is a fatal blunder to pick out a property with just that one idea in view.

For the club wishing to have a comfortable course I would say that approximately 150 acres in gently undulating or flat country would be enough to take care of 18 holes and the attendant facilities, such as clubhouse, parking space, practice field, tennis courts, and so on.

But when a club is in a position to acquire more ground than is actually needed for the primal requirements it is always advisable to do so. For land values immediately advance in the section surrounding a new golf course. In fact, the price per acre starts to jump the moment it leaks out that the course is to be constructed. And there is no reason why the club should not reap some of this harvest, as it is the real cause of the enhancement.

It is also necessary for the officers and directors of a newly organized club to consider the future very carefully before purchasing ground for a course. What are the prospects for ultimate growth? Is the club likely to be successful and expand until one 18-hole links will be entirely too small? These and other questions must be asked and answered before final decision is made.

For a great many clubs struggled along through a trying period of infancy striving desperately to make both ends meet because of an unfilled membership roll and then suddenly found themselves overwhelmed with applications for membership as the popularity of the game of golf increased, as it did, by leaps and bounds during the period just before and just after the World War.

It is obvious that the club having only a small acreage can not expand sufficiently to meet such a situation and is forced either to seek other quarters or else goes to pieces with the more progressive element breaking away and forming a new club.

If the original organizers had looked far enough ahead and had secured sufficient ground so that when the time came to expand 9 or 18 more holes could have been added a great deal of inconvenience and expense would have been avoided.

Then there are many instances of clubs that when built were counted on to stay put for a lifetime but which have been crowded out of existence in the short space of 10 or 15 years by building operations creeping up on either hand and eventually swallowing them.

While a situation of this kind is hard to control, yet had sufficient ground been purchased in the beginning the course could have been

laid out in such a way as to leave plenty of room between the fairways and the boundary lines, with the area between planted with trees and shrubbery so as to exclude the links from the encroachments of the building contractor.

While it is not generally considered good practice for golf clubs to go into the real estate business, it is often possible for a club to earn the price of its entire plant by purchasing enough additional property outside the limits of the links at a reasonable figure before it is known that a course is to be built in that particular section, and later selling it to members or to carefully selected homeseekers at the current market price, and applying the profits to the cost of construction.

This type of operation is accomplished more readily when the property held for sale abuts on established roads which would save the club the great expense of building them. Such a situation, however, is unusual, and is not to be found every day.

When the roads touching the property are few and in bad condition it would be wiser to turn the development of the building sites over to a reliable real estate concern, perhaps that of a club member, paying a regular commission for handling and disposing of the land. The real estate man should know the pulse of the public, and the building committee of the club is relieved of responsibility in a matter of which their knowledge is vague.

The realtor, however, should be under the direct control of the committee, which should pass on the architecture of the houses to be erected and approve the prospective home owners as being desirable additions to the little colony clustering around the golf course.

Another plan that has proved feasible in some instances is for the club to sell the excess property outright to a concern making a specialty of real estate developments, under proper restrictions, of course, as to type of architecture and the personality of prospective purchasers.

There are other reasons for having ample acreage over which to spread a golf course besides those cited above. One is congestion, and that is a bothersome problem at all clubs, and the other is the actual danger involved in having fairways too close to each other.

Nothing is more irritating than to be at the top of your swing on an important shot and suddenly to hear a call of "Fore" and to have a ball, hooked or sliced from an adjoining fairway, whiz by your head. Naturally you are disconcerted by such an incident, and the feeling of insecurity continues during the rest of the round and, most probably, every time you play the course in the future.

A course that is jammed into a limited space is apt to be uninteresting anyhow, and the feeling of being crowded on top of each other, so to speak, is very annoying to the players. Take, for instance, a layout where there are boundary stakes marking the dividing line between the fairways. This always makes the members sore. A penalty stroke for out of bounds on even a slight hook or slice and yet the ball is still on the club property. It would be better to plant trees and shrubbery, if the evil can not be corrected by revising the course, and so eliminate the imaginary boundary lines.

The instances cited are given merely to show what to avoid in selecting property for a golf course. Look ahead, secure sufficient

ground, give your players plenty of elbow room. A building committee acting thus wisely will receive the everlasting gratitude of their fellow members.

Any competent architect should be able to determine after inspection whether a certain property is suitable for a golf course, whether there will be plenty of space and whether the average member will enjoy playing the course once it has been completed.

The pleasantest type of course is one where the holes are segregated, that is where the hole you happen to be playing is well apart from the others. In order to have this kind of course it is necessary to secure property that is already wooded or to do considerable planting of trees.

The old idea was to have golf courses as free from trees as possible. This notion, no doubt, was imported from Scotland because when golf was first taken up in the United States we knew very little about the game and modelled our courses on those of the Scotch which were, for the most part, built along the seashore where there were no trees.

It is impossible to conceive that the "Canny Scots" would have denuded their courses of trees if there had been any there originally. As a race they are entirely too thrifty for any such waste as that.

Today the old ideas have been discarded and the prevailing belief is that trees, most emphatically, have a fixed place on a golf course. This is true for many reasons:

First—Because there are few, if any, sites available that are devoid of trees and it is a costly operation to cut them down and remove them.

Second—Trees add beauty to a course forming picturesque backgrounds and delightful vistas.

Third—Their shade is most refreshing on a hot summer day.

Fourth—They are of great practical value in segregating the various holes.

While the character of the course the club wishes to build should weigh most heavily in determining the kind of property to purchase, yet due consideration should also be given to the question of a site for a clubhouse.

There is much enjoyment in sitting on a broad veranda, overlooking the course and consuming a twilight meal while incidentally discussing the high spots of the round just completed.

In many clubs there are members who do not play golf to any great extent, but who enjoy the comforts of a commodious and well equipped clubhouse situated on some hill or plateau giving a fine view of the links. Such men are valuable assets to every club, and when the clubhouse location is attractive and the building itself architecturally pleasing there is something to offer this type of member.

Water is a very important factor to be considered in selecting a site for a golf course. Any club that buys a piece of property without an adequate water supply from creeks or springs is at a distinct disadvantage and especially so when no public service water connection is to be had.

The absence of creeks or springs necessitates the drilling of wells which often proves an unexpectedly expensive proposition. Time

after time the estimated depth of a producing well has turned out to be far short of the actual depth and the deeper the contractors have to bore the higher the cost of the operation.

On the average 18-hole golf course the maximum amount of water for the watering of tees, greens and fairways should be approximately three hundred gallons per minute. On properties where there are creeks or springs it is easy to determine how much water is available by using a weir and thus calculating the flow exactly.

If the flow is less than 300 gallons per minute it is then necessary to build a reservoir and impound sufficient gallonage to take care of the stated maximum. But a reservoir, even counting the cost of the dam, pump and piping, is cheaper in the long run than drilling wells or buying from a private water company.

Finally one of the most important points in selecting a golf property is to secure a self-contained acreage without interrupting public highways.

Nothing tends to detract from the pleasure of the game more than the necessity of having to cross a highway, particularly where there is a constant flow of traffic, even though the crossing is between green and tee and not in the actual play.

Instances may be cited where this or that well known club with its so called championship layout has roads that must be crossed in the course of a round. Yes, but why perpetuate an error?

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## The Most Important Summer Work on the Golf Course

By R. A. Oakley and O. B. Fitts

As the responsibility for the upkeep of a golf course usually rests on the shoulders of both the chairman of the green committee and the greenkeeper it is very important that these men should understand each other and that they should both familiarize themselves with all the phases of the work involved in golf course maintenance to the extent that they appreciate the relative importance of the various phases of the work to be done at different times of the year.

Next it is important that the greenkeeper be supplied with sufficient labor and equipment to carry on the work properly and that he has his force so organized that the important jobs can be given the attention they need at the proper time.

During most of the active playing season the greens require more careful and constant care than any other part of the course, or, in fact, all other parts of the course combined. For courses having essentially the same conditions as those obtaining in the general latitude of Washington, and this means most of the northern courses, the summer is the time of the year when greens must not be neglected. Fairways or rough or bunkers may be slighted if it is actually necessary to slight them, and usually they will not show the evidence of neglect for any considerable length of time after good treatment is renewed; but neglect of the greens is not as easily corrected.

It is rarely the case nowadays that a club is over-supplied with labor. Competent laborers are far from plentiful. Therefore the problem is to use the available ones where they will do the most good. It too frequently happens that groups of men are put at work cutting