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THE BRITISH GOLF

GREENKEEPER

HON. EDITOR: F. W. HAWTREE

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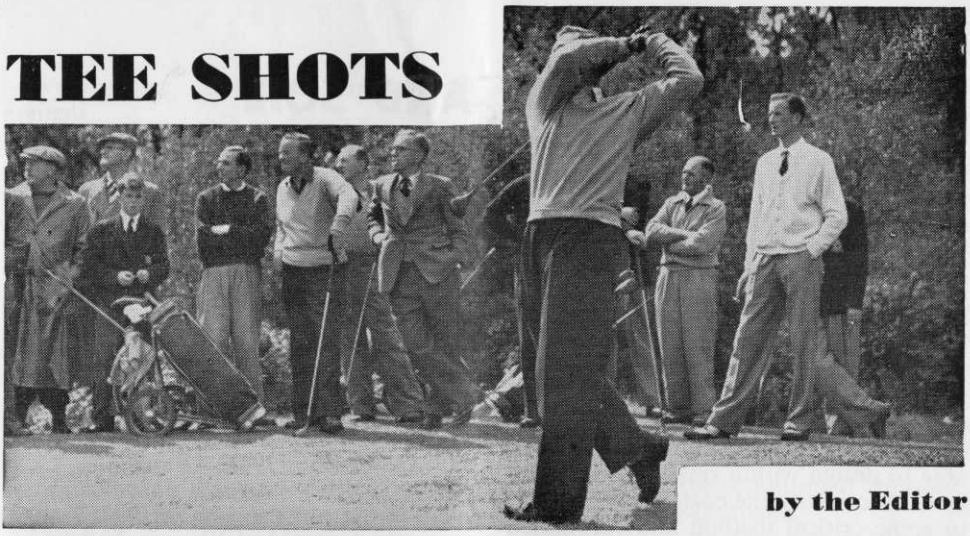

by the Editor

The Balmore Golf Club near Glasgow has started debt actions against 18 members who have ignored repeated warnings to pay their annual subscriptions. The club's constitution, like many others, entitled them to recover subscriptions in the absence of proper notice of resignation but this is the first time that Balmore at least has gone to law.

* * * *

The usual processes of farmers turning their land into golf courses has been reversed in Galloway where the Newton Stewart golf course has to close because the owners are taking it back for farming purposes. The golf club hopes to acquire a site near Newton Stewart in order to continue. Farther north at Aberlour there was a modest 9-hole course before 1939 but it was ploughed up as part of the war effort. The books and funds have lain dormant in a local bank since then but last year a group of local residents reformed the club and arranged competitions on neighbouring courses and now they have plans for laying out their own course and building a clubhouse.

* * * *

A round of golf on one of the Bournemouth municipal courses will cost 75 new pence in the new currency. Although this sounds reasonable it represents a 50 per cent increase on the present charges: so that golfers do not bear the burden alone deck chairs in the gardens are going up from 6d. to 4 new pence and 4 new pence are said to be 9d.

* * * *

The Joint Council for Golf Greenkeeper Apprenticeship reports that over 170 sets of deeds have now been issued and 55 apprenticeships have been completed. The BGGA can feel proud of its contribution towards ensuring the maintenance of its traditions and skills in the greenkeepers of the future. Several of the young men who have completed their apprenticeship have already got good jobs as assistants and we hope that in due course when they have a solid backing of experience they will be equally successful in the senior posts. One thing which still holds back many training schemes is the lack of educational facilities in some districts but generally it is possible to find some course of instruction which is closely related to this type of work.

DRAINAGE AND SOIL

by A. LESLIE TURNER
Principal Assistant (Landscape), Kent County Estates Department

PART

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Design of Piped Subsoil Drainage

IN the costs of soft landscape works that of under-drainage can often be the most expensive single element; it must be desirable in these circumstances to be able to design within small limits and to be able to justify the costs with reference to some critical method and recognised criteria. Alas in this scientific age this is one area in which empiricism has not yet fully given way to scientific method. The design of field drainage systems is still considered more as an art than as an exact science, although there have been many attempts to give mathematical exactitude to it.

In 1934 J. L. Russell[8] was saying " it must be concluded that the mathematical formulation of the movement of ground water to drains is of doubtful validity and that while it may have some practical application in homogeneous light soils it has none in heterogeneous or heavy soils."

In 1942 Nicholson[4] confirmed this " because of the uncontrollable and erratic variables which influence the final result ". As he said " given flat ground, a level water table, a soil uniformly permeable from surface to depth and rain falling at a steady rate it is possible to work out depth and distance apart, which will keep the water table from rising above a certain height midway between the drains ".

And of course this was only a discussion of water table problems—in clay lands water tables do not exist and there is an entirely different set of variables to consider.

In more recent, 1959,[9] American textbooks, the statement is made that " no method has been developed which is satisfactory for all areas ". However, there are solutions for some specific conditions and a study of these textbooks[3 9 11 15] and also in the few Russian translations some answers are given to enable mathematical solutions.

If you are seeking economic and/or optimum design the new textbook *Techniques of Landscape Architecture*,[7] 1967, will not help very much. Tables of depth and distance are given there with ranges over very few soil types; for instance, " in clay—4 yards to 7 yards apart " that is 1,210 linear yards to 691 linear yards per acre, which costed at 10s. equals £605 to £345, a difference of £260 per acre. In " sand " the variation is 403 linear yards to 220 linear yards or £202 to £110 per acre, a difference of £92 per acre. Which then do you choose, and upon what basis —the upper or lower limits? Is there a landscape designer in the country who has dared to face his client with a bill for £605 per acre for lateral land drains, plus mains and outlet costs? It is clear to me that recommendations of this nature are not helpful in design as they are only based upon the roughest and vaguest classification of soil in terms of clay, sand and loam and can only lead to excessive and wasteful work.

The table in *Soil and Water Conservation*,[9] page 324, is more helpful because it adds another dimension, namely " relative permeability " which is a much more realistic measurement than a bald description of soil type.

In this connection I would draw attention to the table in *Code of Practice* 2001 which lists the " Classification and Characteristics of Soils for Roads and Airfields ",[2] not because the classification is of much use to us as it treats soil as an engineering material, but because it shows a column of " Drainage Characteristics " of some soils under divisions of " excellent, good, fair, poor and practically impervious ", and I would particularly remark on the following list:

" *Practically Impervious*

—Well-graded gravel with small clay content.

—Gravel sand mixtures with excess of fines.

—Well-graded sand with small clay content.
—Sands with excess of fines.
—Clayey silts (inorganic).
—Organic clays of medium plasticity.
—Highly compressible micaceous or diatomaceous soils.
—Organic clay of high plasticity."

Consider the " range "—from " well-graded gravels, etc., gravel-sands, sands with clay, sands with fines, clayey silts, organic clays, etc." and compare these " practically impervious " soils with the bald classifications laid down in agricultural and landscape textbooks which recommend the spacings of drains under three or four headings based upon such impossible terms as clay, loam and sand with consequential expenditure varying from £100 to £600 per acre. By far the most difficult soils to drain are the " silts " and these are not distinguished sufficiently in *Techniques of Landscape Architecture.*

Such empirical tables are no substitute in drainage design for carrying through a series of in situ investigations before making decisions as to depth and spacing —firstly with the geological and soil maps available; secondly looking at a profile of the soil to identify its general drainage characteristics by cracks, colours and depth of roots; thirdly assessing permeability if necessary by laboratory tests; fourthly comparing the soil profile with some other known soil which has been drained (the Ministry of Agriculture's drainage officers can often assist here); fifthly by finding out if the land has been previously drained and what has happened to them; sixthly finding out what is actually causing the condition of impeded or unsatisfactory drainage.

I must quote a remark made by R. A. Walpole (Drainage Officer for Yorkshire) who in a discussion at Askham Bryan Agricultural College in 1966 said: " For many years we have been aware of the main problem confronting us in the

(*contd. on p.* 12)

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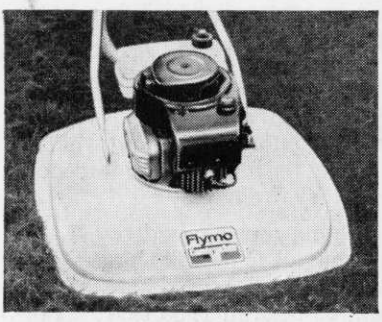

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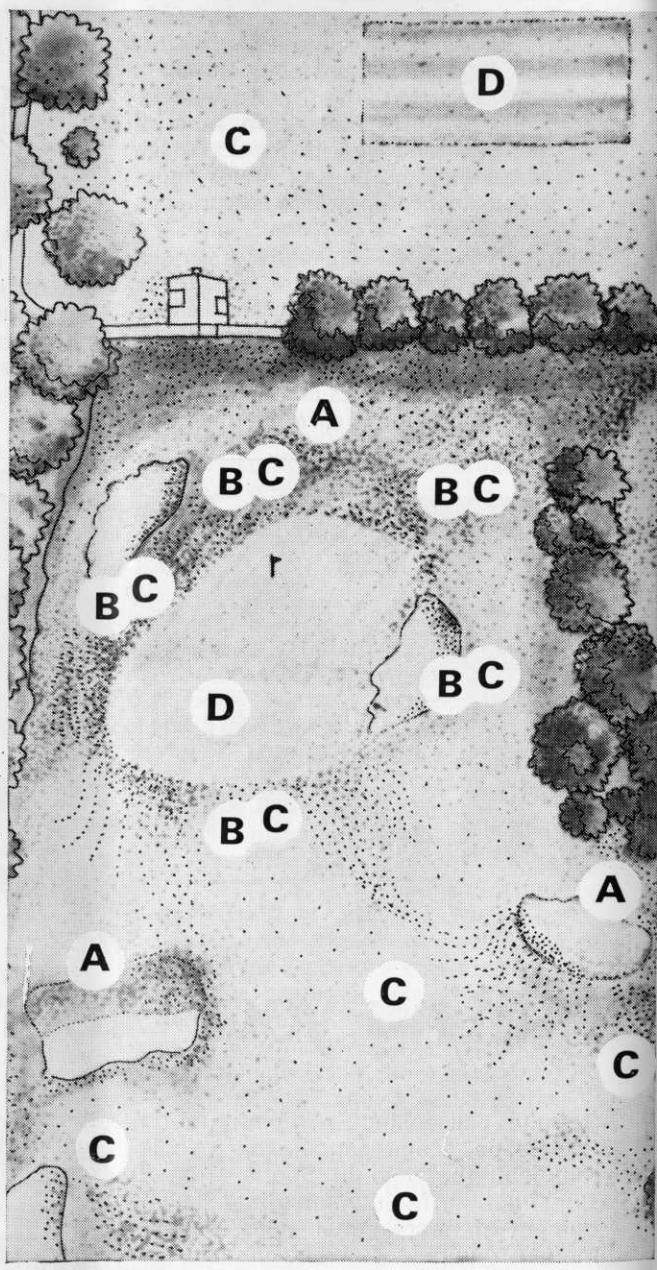

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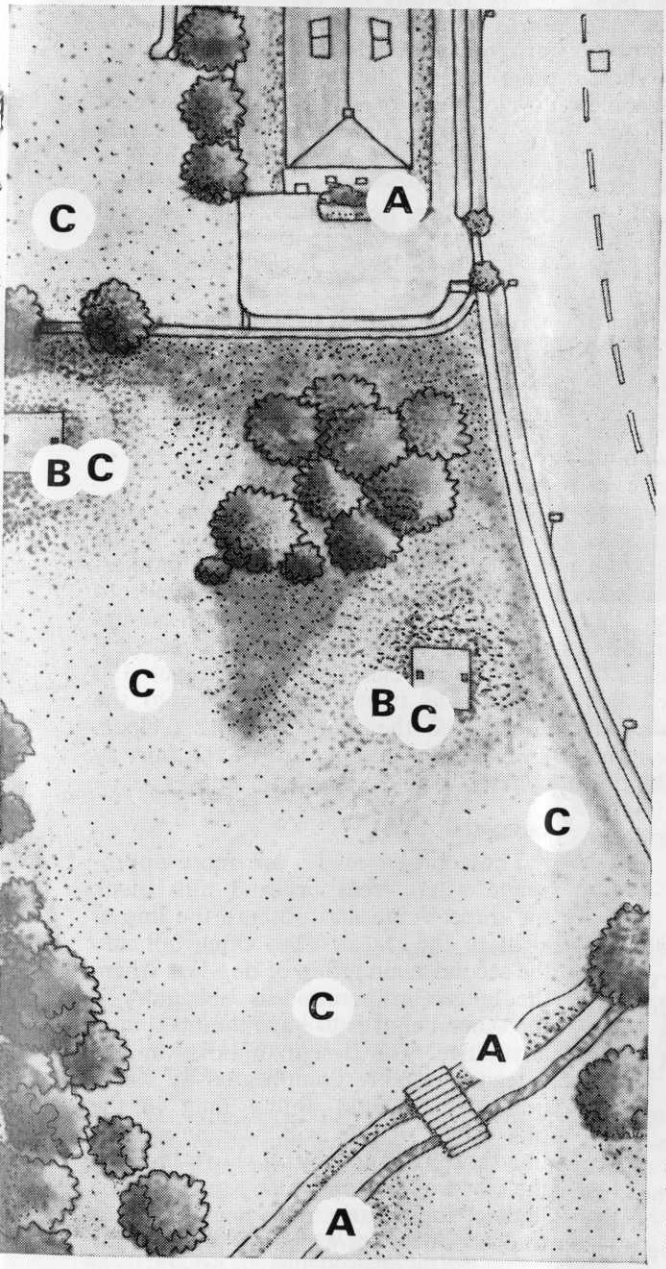

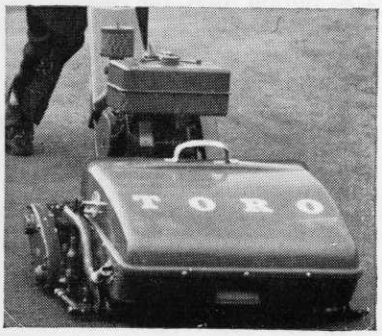

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EIGHTEEN HOLES WITH HAWTREE

NO 5 — THE DOG-LEG

by **FRED HAWTREE**

AT the 2nd hole we touched on the notion that the design of a hole undistinguished by special features will generally contain an element of " dog-leggedness " if the isolated shots required in playing it are to become related to each other and involve forward thinking. This forward thinking is fundamental to the highest skill in any sport and to human nature itself. It demands understanding of oneself, of one's abilities, of the problem to be met, and of the probable response by opposition. The best results then come from a compromise between brain and force and give twice the satisfaction gained from either element alone.

In the simplest form of dog-leg, this problem is put to the golfer without guile and if it has the advantage of being set by a strong natural feature we are on the way to a very good hole. This is the hole where, on the tee, you are invited to " bite off what you can chew ". This can be done on flat ground if the extent of the danger to be carried is defined in three dimensions and there is prior knowledge or some indication of the outline of the hole. But it is more attractive when the tee looks down on the hole, as on a plan, so that the full trajectory and ultimate fate of the ball can be observed with pride or horror.

Angles?

The degree to which the hole is dog-legged round the obstacle will clearly vary the extent of carry feasible for any individual golfer. It will be at its maximum when the hole turns a right angle. But that angle can be used, if at all, only with great discretion. Unless the obstacle can be carried, there can be an element of potential silliness in a 90-degree turn. A good drive up the first part of the leg can be going farther from the green after it reaches the turning point—a bad one may have to be followed by a chip shot up to the corner before tackling the rest of the hole. If the triangle between tee, green and turning point contains " out of bounds ", there is the further risk of housing development or some other change of use involving danger to people outside the course. Then, however good the hole may be and however long it was there before your neighbours, the law will require you to change it.

Freak

Even when the contained triangle is open and free of all obstructions or legal tangles, the maximum dog-leg is still to be resisted; it risks becoming a freak unless it contains lake, beach, river or some obvious impediment to planning it any other way.

These comments apply in some measure to greater angles. But if the dog-leg principle is applicable in bunkering at straight holes, it is difficult to determine how big the angle can be and the hole remain a dog-leg. For practical purposes it can be set at about 150 degrees—at twenty-five past or to the hour when the green is at 12 o'clock. Even then a lateral shift of the fairway could virtually straighten it up.

Longest Way

These bigger angles are more appropriate where trees or sand hills block the direct route and obscure the line of sight to the target. They often fall into the second main group of dog-legs where the longest way round is obligatory if the second shot is to have the maximum advantage. The design of holes in this category is more complicated by variation in individual ability than in the first group. If you will imagine a davit like those used to hoist a ship's lifeboat, the curve at the top which represents the limit of the feature to be negotiated has to describe an arc which will obscure the

(*contd. on p.* 10)

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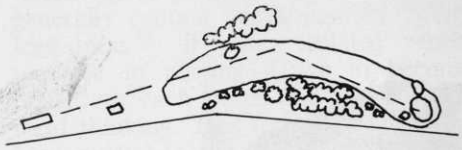
(*contd. from p.* 8)

green from one side or even the centre of the fairway up to a given distance. The sharper the curve, the longer must be the drive to open up the green on a given line. Those unable to hit the ball so far must play farther and farther to one side the shorter their drive. It is



THE PERFECT HOLE?
No. 14 Royal Salisbury, Rhodesia

possible, therefore, that this type of hole may be better reserved for the longer lengths where the player unable to open up the green would, for the same reason, have been unable to reach it in two shots. If the theme is used at short par-4 dog-legs, the obstacle should not obscure the green but present the type of problem set on the tee in the first group of dog-legs—in other words, the optional carry.

The dog-leg formula is therefore very flexible, though mistakes are sometimes made where no proper basis for the dog-leg exists naturally. Sharp turns on flat featureless land are to be avoided, though some degree of angling holes will relieve layout monotony. It will also enable the ground to be more fully used, thus gaining length on small sites.

Danger

The general feeling is probably that a carry or sailing close to danger on the inside of the angle is the more agreeable. This is the side where forethought and ability, as we saw earlier, are likely to produce the richest satisfaction—where the penalty for over-reaching ability will lead to self criticism rather than condemnation of the design of the hole.

There is a right-to-left dog-leg at Mougins which if I remember aright comes about No. 16 where a spoon from the tee (for my type of golf at least) sends the ball over a tall pine tree in the angle to reach a point considerably beyond that to which a drive with a lower trajectory could safely be aimed. This refinement, the choice of a shorter club to get farther, offers further subtle variations on the straightforward theme.

On the other hand, Mr Bobby Locke puts the 4th at Royal Salisbury Golf Club in his list of the best 18 holes in the world. Here the best line is round the outside of the curve. The hole is 495 yards long and its quality seems to reside only in the fact that its curve is exactly right. My own first impression of it was one of excitement and I have tried twice to work out the reason. It can only be that the trees along the right of the fairway follow a curve with a radius of approximately 365 yards. As there is no special contour interest, I can only conclude that here at last we have a simple formula for making a great hole. If only it were always as easy at that.