

need it", said Tom Weiskopf. "Jay (Morrish) has designed 97 golf courses, the last 14 with me, and he believes there is no need for a stone carpet on this site. As you can see the greens have been formed, drained and pea graveled and the drainage is working perfectly."

"There is standing water around the course after the wettest winter period anyone can remember, but none on the green areas or where we have put in the fairway drainage system."

"When the growing medium goes on we will be using 12 inches of a sand/peat/soil mix, using some of the suitable peat we have dug out of the course."

Asksed what seed they will be using at Loch Lomond, Weiskopf said without hesitation. "Pencross, for greens and a bent with three varieties of fescue for the fairways."

"Why Pencross - because it has been proved to be the best grass for a putting surface. It is grown in Oregon, where the climate is similar to here. It is used all over the northern part of the USA where the winters are much harder and I cannot understand why there is such an objection to using it in Britain."

We are not building sand only greens, there will be a mix something like 80/20, which might increase to 85/15 depending on the final quality of the sand available".

Pencross first introduced in Britain for sand only greens has not proved successful, though whether this has been due to the climatic conditions or the lack of maintenance know-how is a matter of debate. What may not have been considered



Tom Weiskopf receives the traditional Scottish welcome

fully is that most north American courses are closed (often under snow) throughout the winter. Whether it will prove to be the correct grass for Scotland's cold damp climate is equally debateable.

It must be said that Tom Weiskopf's involvement at Loch Lomond is in no way that of the "big name" cashing in on his reputation as a leading light on the tournament circuit, it is total commitment. Last summer he spent eleven solid weeks, living in a cottage on the estate, surveying every inch of the ground, making sketches, and familiarising himself with the trees to such an extent he must know each of them intimately.

His visits to Loch Lomond are regular and frequent, flying in from his home in Phoenix, Arizona every couple of weeks or so, returning with more sketches and plans after consulting

WEISKOPF QUOTES

Who would I cross the road to watch playing golf? Jack Nicklaus. He plays golf like a game of chess, always thinking two or three shots ahead of the one he is playing. Who else? Lee Trevino. Still the finest shot maker in the game and entertaining to be with.

Nick Faldo? (and he said this a month before Faldo won the Masters). The best is yet to come, he will win at least four or five majors within the next ten years. He has a perfect swing, superb concentration and plays par golf under extreme pressure.

Did I come off the circuit too soon? Yes I think I did. I still play good golf and will enter some tournaments this year. Another three years I will be eligible for the Seniors Tour.

The best golfer he ever played with? Ben Hogan. "Mr Hogan", a man of few words, called me Sonny. After a round at the Champions, he murmured "Young man come down to Fort Worth one day and I will give you the key to make you into a great player". A young, headstrong Weiskopf never did.

His greatest embarrassment? Watching the closing holes in the 1980 Open Championship at Muirfield in the lounge of the Greywalls Hotel, when in the company of his wife Jeannie, he engaged Princess Margaret in conversation.

Unaware of her distinguished status he asked her if she played golf. Her Royal Highness informed him that she didn't, but her father was quite keen. "Really", said Weiskopf, "and what did he do for a living?"



Loch Lomond in March prior to reseeding

with his partner Jay Morrish. David Brench, who spent much of the summer with Tom, said it was not unusual to find him out prowling the course at 3'O'clock in the morning, returning for breakfast, and after two hours sleep, calling for another consultation with the men on site to put into operation a further stage in the plan.

It is his proud boast that less than 10% of the hard woods have had to come out and it is with a profound sense of regret that these have had to be sacrificed.

Conservation is the key to development on this 1,200 acre finger of real estate, guarded on three sides by the deep fish-filled waters of Britain's largest Loch, so much so that David Bellamy has been appointed to manage the retention of flora and fauna and a botanist is permanently on site supervising all excavations and tree surgery to ensure that nothing of interest or value is disturbed.

As an example, a group of half a dozen trees were found to be covered in a rare and beautiful lichen, so the line of the fairway from tee to green was changed to preserve them, which has in effect

improved the value of the hole.

Tom Weiskopf insists that every hole on the High Road course has its own significance, but singles out four at the top of his list.

The third, a par five, runs down to the Loch. To the right on the approach to the green, overhanging oaks and marsh demand an accuracy of approach.

The fourteenth, a par 4 can be reached from the tee down wind by the big hitter, though the safer route still offers many challenges.

The fifteenth, a 390 yard, par 4, appropriately named "Arboretum" has almost every specimen of deciduous tree on the golf course within 100 yards of the green.

And the eighteenth - expected to become one of the most photographed holes in golf and one that Weiskopf, bubbling with enthusiasm dragged a somewhat reluctant press corps through a squally shower to view.

Framed by the ruin of an old ivy clad castle, the slightly elevated green nestles picturesquely alongside Rossdhu Bay. The tee 440 yards away demands a shot across the water, though how much distance one dares to cut will depend on the skill of the golfer, the prevailing wind or sheer

bravery.

As a finishing hole for the amateur or professional, it will be one long remembered.

And so to the club-house, a £5 million re-fit to the home Sir Ivor and Lady Colquhoun had abandoned to the ravages of rot and decay. One room, the baronial hall has already been restored to its former glory, hung with ancestral family portraits, going back through the ages.

By mid-summer, the transformation will be complete, bringing to Rossdhu House, the 20th century luxuries of a swimming pool, saunas, solariums, restaurants and the inevitable corporate suits.

To complete this supreme golf complex, negotiations are at the final stages with an international group for a 200 bedrooomed five star hotel, corporate cottages, a 200 berth yacht marina, riding, shooting and fishing facilities. And a final touch - a caddy school is planned, which falls in line with the policy of buggies for medical reasons only. That is one aspect of Scotland's first American designed course the traditionalist Scottish golfer will approve.

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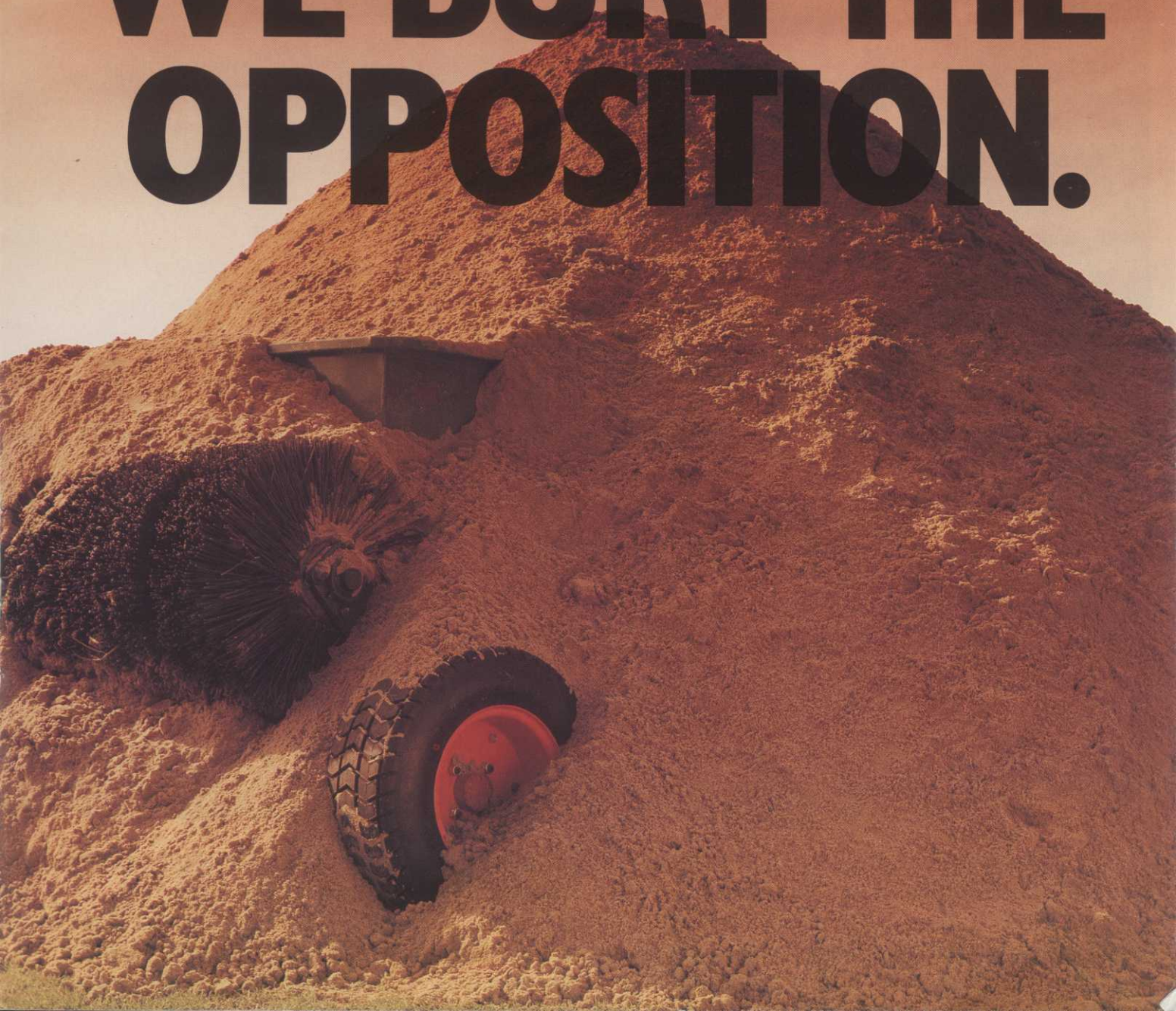
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NEW DEVELOPMENTS

DRIVE TO IMPROVE BOLTON'S MUNICIPAL G.C.

Bolton Leisure Services Committee is aiming to improve facilities at their Regent Park Golf Course - the Borough's only municipal course.

At the April meeting of the Leisure Services Committee Councillors discussed ways of increasing participation in golf for a wider cross-section of the community. Councillor Tom Alderton, Chairman of the Committee, said: "Golf is a sport for people of all ages and Regent Park is one of the finest courses in Greater Manchester."

The Committee plan to discuss possible improvements to clubhouse facilities, marketing campaigns to attract new participants in golf and special courses for beginners. Investment in the course over the last three years has created new greens, special winter tees of artificial grass and an extended professional's shop.

Councillor Anderton commented: "We already have an exceptionally well-used course. The aim is now to enhance the enjoyment of our existing customers whilst providing a warm welcome to new users."

A NEW COURSE FOR THE WEST COUNTRY

There are reports of a new golf course development at Erlestoke Sands near Devizes, which starts construction in May. Built on 163 acres of farm land, the 6,700 yard course will be a private members club, with an annual fee set at the astonishingly low figure of £275, though this does not mean the construction will be sub-standard.

The course designers, Western Golf Development, headed by Adrian Stiff, formerly course manager at Tracy Park, are aiming at a high specification with large greens, some measuring 800 square yards, three sets of tees for each hole, with interesting and unusual features, such as an island green at the fourth hole, completely surrounded by sand.

The green constructions will be to USGA specifications, with particular emphasis on drainage, though as the course is built on a 40 foot depth of "greensand", flooding is not likely to prove a problem.

Greens will be sown on a 12" mix 75/25, with an all bent grass mixture of Highland/Saboval/Bardot, medal tees with Frieda, a Chewings Fescue and the day to day tees with a more hard wearing species to be decided.

The estimated cost of construction to include materials, labour, plant and irrigation has been put at £386,000, well below some of the figures heard recently. The land includes a marked Roman site and archaeologists will be on hand in the early stages to search for coins and artefacts.

NEW COMPLEX AT QUINTA DO LAGO

The Algarve purchase of the Vilar do Golf complex at Quinta do Lago, by Trafalgar House (Europe) last summer also involved two superb nine hole golf courses, one of which, the D course, was still in the throes of construction. Now successfully completed, the course was officially opened in April 1990 by the new Ryder Cup captain, Bernard Gallacher, Trafalgar House Europe's Golf Consultant.

All four 18 hole golf courses at Quinta do Lago, are regarded as amongst the best in Europe. The regular venue of the Portuguese Open, the spectacular Bermuda grass fairways unfold amongst wooded and open slopes to provide a variety of true championship play.

The location of the new D course itself is superb. Both par 5 holes feature beautiful winding fairways through pine and heathland, with a view of the distant mountains behind the greens. A walk in the rough will also provide

botanists with an array of wild orchids, tulips, gladioli, corci, heather, bluebells, gorse, together with a beautiful selection of colourful birds.

The D course was designed by Joseph Lee with the collaboration of Rocky Ro-

quemore. The course, long for 9 holes at 3,067 metres, is a masterpiece of design, featuring beautifully contoured fairways. Excellent bunkering is a feature, with large greens, many of which contain gentle tiers to provide a multitude of interesting flag positions.

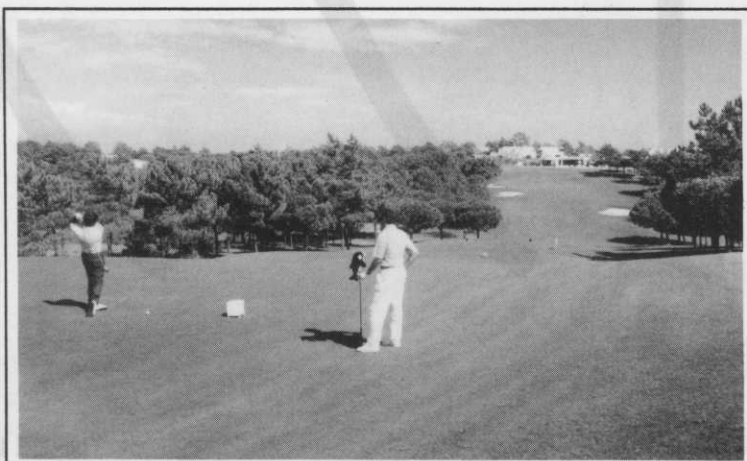
Tees and fairways are of Bermuda 419, with an overseeding of cool season grasses. The greens are Penncross bent. The courses are built on sand to the highest specifications, with a Toro irrigation system keeping the course watered.

"The holes are testing for the good player but the high handicap players will not lose many balls as the rough is not punitive" said Stuart Woodman, Vilar do Golf Resort Director and British PGA member. "The course is tremendous and really makes the player think and plan his route. Interesting holes include, for example, the 4th hole 'Lago', a 90 degree dogleg around a two acre lake".

The opening of the D course will coincide with the launch of the first of 180 refurbished villas with a distinctive Portuguese flavour, with spacious interiors and surrounded by extensive landscaping.

Whilst eventually all these villas will be offered for sale, currently villas can be taken for holiday lets by golfing enthusiasts with swimming pools, tennis courts and restaurants. All part of the complex. Future freehold purchases of Vilar do Golf's one bedroom apartments and two or three bedroom villas will also be able to enjoy discounts on green fees and given guaranteed starting times. They will also be eligible to apply for membership of the Quinta do Lago Golf Club.

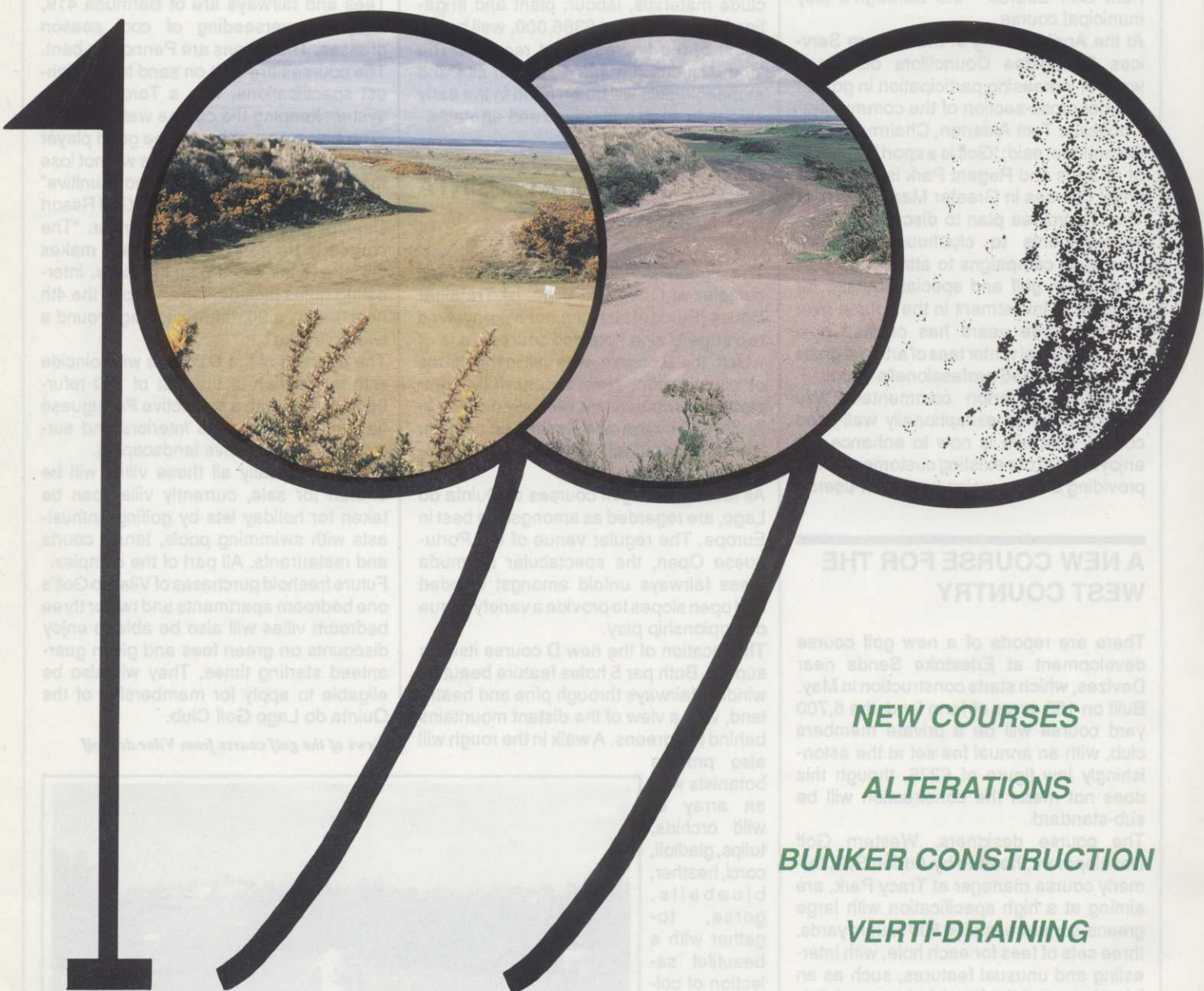
Views of the golf course from Vilar do Golf



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THE NORTH, SOUTH DIVIDE

Roger Newman compares two courses and finds differences, but much in common

Is there a 'North-South divide' as far as golf course management is concerned? Roger Newman looked at two 18-hole courses, one in the leafy lanes of stockbroker Surrey, the other on the edge of industrial Sheffield.

Essentially, there does not appear to be what Disraeli termed 'two nations' in golf course maintenance and ideology.

There are, of course, problems found in one and not in the other, and there is certainly a different management policy at West Surrey Golf Club, compared with Abbeydale Golf Club. But both have one aim in common: to keep the course up to the highest standards required by players.

Another interesting fact in common is that both were designed by W. Herbert Fowler, the distinguished golf course architect and landscaper, best-known, perhaps, for the championship course at Walton Heath.

West Surrey Golf Club, near Godalming, was set up by a local landowner, John Eastwood, in 1910. It has spectacular views towards the great ridge known as the Hog's Back and an attractive Clubhouse designed in the style of a typical Surrey farmhouse. Apart from the loss of several mature trees in the 1987 hurricane, the appearance of the course has changed little over the years.

Abbeydale Golf Club, in the Sheffield suburb of Dore, was designed on its present site in 1922 - it is interesting to note that Fowler's fee for a report and travelling expenses was £20. The original course, at neighbouring Beauchief, was only leased and a change of landlord meant that much of the ground was required for building development. As at West Surrey, the new site of Abbeydale has magnificent views, this time over the Tetley Moors towards the Peak District. And here too, the general layout is little altered from Fowler's final designs.

West Surrey Golf Club is wholly-owned by the members, so there is no requirement, as secretary Ralph Fanshawe pointed out, to 'generate and put into reserves any more funds than they wish to spend'. There is a course management committee chaired by an elected director plus two elected members, secretary Ralph Fanshawe and greenkeeper Mike Kirkham.

Abbeydale, on the other hand, has the more usual Board and Committee structure, including the green committee chaired for the last 10 years by David Wish. It is unusual too, in having a husband and wife team - Paul and Jane Ryan - as greenkeepers. Previously at Whitby, they came to Abbeydale at the beginning of 1983. Also unusual in a sector which has always been male-dominated, Abbeydale has a lady secretary and a lady steward. As the secretary, Kathryn Johnston, suggested: 'A number of northern clubs now have lady secretaries and I followed one here. There must be a message there, somewhere!

The soil at West Surrey is very fine sand, not necessarily typical of Surrey, and classed as Lower Greensand - but it is far from muddy, even in heavy rain. Ralph Fanshawe said that the course is usually ready to play soon after heavy rain, although the third and sixth greens, which tend to flood, are always the last to clear. As an experiment, Ralph Fanshawe has invested in a small rain gauge which relates to the condition of the sixth green. It is a simple attempt to judge from the Club House the likely condi-

only two fairways and improving. Last year's hot weather produced some patches on greens but this is now cured.

Inevitably, both clubs have suffered from compaction and drainage problems, although four years ago both purchased a Verti-Drain from Charterhouse Turf Machinery Ltd and both Mike Kirkham at West Surrey and Paul Ryan at Abbeydale saw 'immediate effects'.

'Even the problems with the third and sixth greens, after rain, have eased significantly', said Mr. Kirkham; while Mr. Ryan added: 'Our greens never drained well, but they do since we began to use the Verti Drain. They used to be the first area of the course to be closed: not any more.

The Verti Drain encourages deeper rooting, and both clubs agree that grass seed companies should seriously consider the introduction of deeper-rooting cultivars, particularly if the mild weather pattern, apparently set last year, continues in the 1990's.

Ralph Fanshawe of West Surrey said: 'There is no real growth here until the beginning of May, and



Gun-booted greenkeepers Paul and Jane Ryan are one of the few husband and wife teams on Britain's courses

tion of greens during heavy rainfall. Waterlogging can be a problem at Abbeydale also. Much of the course is solid clay over shale which goes down to 18" and much of Abbeydale lies on North facing ground and gets little sun in winter. Torrential rain used to close the course completely and slime would appear, but now this is confined to

we could be facing a new and unwanted experience if we have a repetition of the drought last summer. We will certainly be looking to create the environment for deeper-rooting grasses'.

At Abbeydale, following a hard winter, there is no real growth until early June, commented Jane Ryan - usu-

ally because the weather on the edge of the Peak District is too cold. Ideally, we Verti Drain and top dress at the end of August when have some growth coming through, and then we top dress in May with a seed-compost mixture. Both clubs have recognised an eternal conundrum: how to educate players to use the course correctly, without placing undue and unpopular restrictions on them. At West Surrey there are 600 playing and intermediate members, and while the course is not over-used - as at Abbeydale, the period between Christmas and the New Year is busiest - it is essential that players' feet cause as little compaction as possible. To these ends, West Surrey has laid 600 railway sleepers as steps and curbs on pathways and woodchippings have been spread as a surface - both tidy and rural in appearance. Steps are also being laid on the tees at West Surrey, to ensure that players use them, and the first tee is being developed as a collection point; although Ralph Fanshawe insisted that 'we don't want it to look like a bus stop'.

At Abbeydale, Paul Ryan is more outspoken. There are too many golfers: the 'hard core', if you like, is greater than it used to be. Obviously, we need the revenue - we pay £25,000 a year rent and rates to Sheffield Council. During the war, the club was short of funds and sold the ground to the Council. We would like to buy it back, but at the moment the likelihood of doing so seems unlikely.'

There are 514 members at Abbeydale, but something in the region of 15,000 rounds a year are played. As in West Surrey's case, there is no shortage of courses in the immediate area, but Abbeydale has always been especially popular - and, as Paul Ryan stressed ruefully, 'too many golfers just don't seem to know the etiquette'. Competitions now run through to October, and golfers want to keep playing all year round. This, coupled with the results of the mild weather means that the grass gets little chance to recuperate.

Unlike the management of West Surrey, Paul Ryan does not agree with steps on tees. It simply makes holes on the top and bottom.'

Increasing the appearance of the course, without making them appear artificial, is naturally a primary aim at West Surrey and Abbeydale. Investment in equipment, notably the Verti Drain, has resulted in a much better appearance at both courses. With deeper rooting encouraged, bounce reduced and drainage improved. Neither club favours one particular manufacturer where machinery is concerned. Different equipment is



Mike Kirkham (West Surrey) shops around for best equipment

used for different tasks.

Paul Ryan and Mike Kirkham 'shop around' for whichever machine performs its task best, and both clubs have a good workshop for running repairs. Both men are agreed, too, that a great deal depends on the back-up available from manufacturers or dealers.

There is no clash of personalities over management at either club - unfortunately, the same is far from true of every golf club in the UK. Mike Kirkham sits on his management committee; Paul Ryan has a good working relationship with his green committee.

Abbeydale also sets an example that could be more widely followed by encouraging its greenkeeping team to play golf at the club - not just granting permission condescendingly and restricting it to 'after hours'. The past captain, Warwick Ward, has, in Jane Ryan's opinion, 'done more for the staff in his 12 months in office than anyone else she has known in fifteen years of greenkeeping'. He made sure that all the staff had handicaps and invited them all to play on his Captain's Day, and donated a trophy to be played for annually in a match against the club officials.

With an increasing use of machinery and automatic irrigation - Abbeydale has a Watermation system, although at West Surrey the tees are hand-watered - one might presume that a

greenkeeper's lot has eased. But all too often a greenkeeper is treated by his official as little more than a hired hand. This is certainly not the case at West Surrey or Abbeydale, but Jane Ryan's words should be noted: 'Greenkeepers should be encouraged to feel that they belong to their club in every sense. Get them to play - give them a handicap - give them clubs, if necessary. It all helps them to set up a course with the mind of a golfer. To teach them the game is essential: it means that a greenkeeper will take a real pride in his course if he plays on it, and is encouraged to play. And that, in turn, will result in the calibre of greenkeepers that golf clubs need.'

So, what of the future? There are no plans to redesign either course, but at West Surrey improved practice facilities could well be provided if areas of scrub and woodland are developed. At Abbeydale there are hopes that, in time, the club will own the course again, although this depends largely on a change of heart by Sheffield Council.

In the meantime, general improvement continues, and the comments of W. Herbert Fowler in his report on Abbeydale, submitted on 7th September 1922, are applicable to both courses. 'We have no hesitation in saying that in our opinion you have the most wonderful chance of making a first-class course.'

A FIRM NO TO SAND ONLY GREENS . . .

by Jim Arthur

As with so many catch phrases in golf, not every course described as having sand greens has been built with sand-only or pure sand greens. As one Texan Golf Course Superintendent said some years ago he wanted nothing to do with the sand-soil root zone of the USGA Green Section specification, as he had enough problems getting rid of the enormous amount of irrigation water he had to apply to stop the grass dying under what were virtually desert conditions.

Those who will doubtless leap to the defence of much publicised new courses with sand-only greens should first carefully check that there is no humus or soil addition to that sand. In fact they will be less ready to defend truly 'pure' sand-only greens because there is not one example of one in Britain which has stood the test of even a short period of play. Many so called examples of this desert inspired technique have in fact some source of moisture and nutrient retaining material, uniformly pre-mixed with the sand. In passing, rotavating bales of Irish peat into what were originally pure sand greens, as at one North Western venture is not a solution!

Research, generously funded by the Royal and Ancient, carried out for several years at the STRI, on the management of pure sand greens confirms both analytically and visually exactly, what logic would expect it to prove. Where there is nothing to retain water or plant foods, the grasses must snatch what they can as they passed own through the root zone and both feeding and watering must be both frequent and generous. Equally, with no compost-like buffer to hold basic nutrients, unless such sand greens are fed (and watered) regularly with complete (NPK) fertilisers and lime, the sown grasses die and if they are fed, then unsurprisingly *Poa annua* rapidly colonises and eventually replaces the bent grasses.

EXCELLENT SURFACES

Under arid conditions, and using heat resistant strains of bent (*Agrostis stolonifera*) the heat prevents any other grasses from invading and in any case there is not much *Poa annua* in the desert to provide seed to support the invasion. This is why such desert courses are virtually monocul-

SAND GREENS - STRI RESEARCH RESUME

by Dr Peter Hayes

Director, Sports Turf Research Institute

- 1) Sand greens require an intensive fertilizer programme with repeated applications of nitrogen, phosphates, potash and trace elements. If these fertilizers are not applied, deficiencies of the nutrients will occur.
- 2) The management of the pH (acidity/alkalinity) of the sand rootzone is critical as sand greens are prone to rapid fluctuations in pH, leading to poor growth and vigour. For example, on our trials the pH of the sand rootzones could drop by one unit in a year.
- 3) If liming is used to correct the lowering of the pH, lime causes too rapid an increase in the surface pH of the turf, thus leading to ideal situations for the ingress of the weedgrass *Poa Annua* and for moss, and the risks of obtaining the diseases Take-all patch and *Fusarium* are heightened with liming.
- 4) A rapid deterioration in winter

quality can occur on sand rootzones, resulting from nutrient starvation. This is due to the fact that there is no organic buffer to offer a supply of nutrients during mild weather periods.

5) The playing quality of sand greens is different from 'normal' greens. There is no resilience in the base of the turf which produces a "dead" ball bounce behaviour.

6) The quality of the sand used for the construction of pure sand greens is critical. It must be of uniform particle size and be lime-free, consequently construction can be subject to mistakes and, by using cheaper sands, inferior quality materials are often employed which lead to problems in the future with "concrete-like structures".

At the present time, the STRI would not recommend the use of pure sand greens for construction on golf courses.

tures of a specific bent, producing under these conditions superb fine, uniform and fast putting surfaces. Arguments about (or especially against) sand-only greens in Northern Europe are often confused by the effects of two other factors, the poor quality of sand used (which we will deal with later) and the all too frequent combination of sand-only and Penncross bent.

It must be accepted that Penncross and its relatives are simply not suitable for Northern European conditions, though unsurprisingly since they were bred primarily for heat resistance, so that bent could be used instead of Bermuda grass, they are satisfactory for Southern Europe etc. Claims that Penncross survives American winters in the cold Northern States are irrelevant. What Penncross will not stand up to are our long wet rather than very cold winters, coupled with

being subjected to constant play. In northern America, they spend the winter under snow and ice, with obviously no play.

It is fully accepted that regular spraying with dilute solutions of Paraquet can control for a time, seedling *Poa* in Penncross but in an unpredictable climate, this is akin to Russian roulette - and at best is certainly a very skilled operation dependent on calm weather, very accurate application and suitable growth. With so many imponderables, Murphy naturally is likely to have a field day!

The conclusion is unarguable. The system, though having considerable advantages in hot arid 'desert' climates, has no relevance to northern European conditions and creates a hundred times more problems than it solves. In passing the STRI confirm Penncross has poor winter colour, very poor disease resistance and worst of all is a



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thatch producer a doubtful second only to *Poa annua*.

This makes pronouncements by a senior member of the USGA Green Section that "English (sic!) greenkeepers have progressed no further than the belief that *Poa annua* and fescue are the two best grasses for greens and fairways in Britain" so infuriating! This is compounded by the claims that "only recently a few have come round to the belief that bent grasses may be superior and more dependable." So obviously, they are thinking of 'their' bents, which were bred for completely different climatic (and soil) conditions, rather than our native strains of *Agrostis tenuis* and *Agrostis stolonifera*. It may come as a surprise that Scottish golfers, were playing on bent grass greens and fairways whilst America was still a British colony!

Fine fescues have always been associated more with links and a few favoured sandy heathland courses, but the bulk of our better courses even today are based on bent, especially on heavier and more acid soils. It was only the mistakes in the past fifty years of overfeeding in a chase for colour, based on 'agricultural' advice, that caused *Poa annua* to dominate so much fine turf, and everyone (well, almost everyone) has been desperately trying to reverse this pattern for the past two decades at least.

But to return to sand-only greens, the specification for a suitable sand both in regard to uniformity and narrow range of particle size and shape is difficult enough but to find supplies of such sands in consistent quantity to build even 18 greens is nigh on impossible and demands constant check analysis, - indeed of almost every load. The use of sands with angular particles over a wide size range, which bed down with all the permeability of a motorway is indeed a major cause of poor performance of many earlier sand-only greens, all of which either have been or should be lifted and relaid to specifications more relevant to our Northern European conditions.

To state that we should at the present state of research into their management, confine verdicts on the use of pure sand greens to saying that the disadvantages outweigh the advantages is classic fence-sitting which, as it always is, will be rewarded by the sitters being left behind. When leading American Architects such as Robert Trent Jones Jr. at Wisley (not the professionals turned designers whose knowledge of relevant agronomy could be written on the top of a tee-peg) specifically reject sand-only and opt for sand-soil greens for all those courses where they are involved in Northern Europe and echo the above condemna-

tions, it is surely time to take a positive view.

What indeed are these advantages which are so obviously and heavily outweighed in the UK? The only one is that such greens are easier (not necessarily cheaper and certainly not better) built and the problems arise only when the contractor and architect have left with their fees safely banked.

What we must ensure, if only to avoid Britain being littered with "costly monstrosities which are maintenance nightmares", is that naive if well endowed developers are not taken for a ride by inexperienced designers or contractors into building courses which will predictably fail to meet the effects of our climate and ceaseless play - and incidentally, which cost so much more than they need do, because lack of flair in using the land to best advantage is replaced by costly and destructive earth moving and the creation of artificial water features perched half way up hills, often retained by banks looking like the sides of major reservoirs!

All members of the British Association of Golf Architects would not advise sand-only greens, and no qualified agronomist (least of all the staff of STRI) would recommend them. Research programmes into their hydroponic management may well not have been completed (and indeed when they are, the findings may well be of academic interest only in northern Europe) but we know enough now from both research and practical experience to justify advising a total prohibition on this method of construction, which is so clearly unsuitable to our weather conditions, soils and above all constant play all winter.

CORRECT CONSTRUCTION

If pure sand greens must be condemned what then is the correct specification? Virtually without exception all concerned with golf course construction in this country at each and every level, would advise building greens (and tees) with a uniform sandy soil root zone, over an underdrained stone carpet. There may be differences in detail but not in principle.

The only exception might be where the natural 'soil' is virtually sand e.g. links courses. The root zone of the greens is deliberately a copy of the black sandy top spit of such links built up by years of decomposition of grass and organic matter.

Certainly there can never be any excuse to use the local soil (save in exceptional heathland sites etc). as no amount of sand added to a basically clay soil will produce anything better

than bricks. We have progressed some way from the situation so common 25 years ago when greens were built on native soils with 2" of 'seed bed compost' - asking for and receiving a certainty of annual meadow grass dominance, by virtue of impeded root development. The soil is available quite economically from limited sources and is characterised by having a very low 'fines' content (less than 4% clay and silt) but 8% of humus.

One must feel a certain sympathy for inexperienced developers whose sole knowledge of the game seems to be based on what they have seen on television, swayed by those whose golfing experience is confined to playing it professionally, albeit once superbly, employing unskilled contractors, whose previous skills were gained in motorway construction. Such unfortunates end up with a £multi million monstrosity far too difficult for the average golfer to enjoy and costing fortunes to maintain.

As with all aspects of golf, including construction as well as greenkeeping, the clue lies in better education - in this case of inexperienced designers and their equally naive 'employers'. Sadly in every aspect of golf today everyone seems to be convinced that they can do another man's job far better - and make more money at it - than that man, who has spent a lifetime at the job, kept himself up to date (if he didn't he would be out of work) and has seen it all before. This trend is by no means confined to golf course construction nor even to agronomy and the root cause, it must be accepted, is that there is a boom and money to be made. This is a plea for avoiding mistakes, spending money wisely and learning from the errors (often very expensive to make, and even more so to correct) that others have made before.

Whether 700 new courses will be built before the year 2000 is arguable. What is certain is that we must build those well: provide all year round play; as attractively as possible (using the latent advantages of the site and not trying to move half Britain from A to B); and certainly as economically as possible (if only because diabolically expensive construction cannot be funded from returns). Ultra expensive courses, equally with cheap golf-in-a-field ventures will certainly not survive a down-turn in the economy, but properly designed, specified and constructed courses will remain as memorials to the varied skills of those producing them and be both a source of pleasure to all grades of golfers and profit to their owners, whatever happens, be it boom or bust!