'At Brocket Hall everything must be just right, to meet the company's high standards and this often means that items are specially made'

The course at Brocket Hall is less than three years old and while John was working out his notice at Welwyn Garden City Golf Club he attended many meetings to decide certain aspects of how the new club was going to look. "I learnt a lot at those meetings," he recalled. "We had a rep round and he showed us some signs made of slate. They were beautiful, excellent quality and in the room we held the meeting they looked wonderful. When we took it outside and put it on the tee it looked very much out of place, it just did not belong. I found out then that you can never buy things out of a brochure, you must see them in their context. Then and only then can you know that it will work.

"English Heritage has a say about many things the club does and they were particularly interested in the course furniture. It had to fit in and not be in any way garish. For the signs we had a look at plastic, marble, and brass, as well as slate, but in the end we plumped for wood – oak that had come from the estate. They were cut to size on the estate and sent to a sign writer and carved there."

Historic site

Almost cutting the course in two is the Broadwater, a man-made lake created by a weir near the bridge. John told me that many balls are lost in the Broadwater. Part of the kit of many of the 330 members is an extending pole to net their submerged balls.

Elizabeth 1 – then Princess Elizabeth – was sitting under an oak tree overlooking the Broadwater in 1558 when she learned of the death of her sister, Queen Mary, and thus her accession to the throne. The oak still stands near the first tee and the hole is called Elizabeth 1 to mark this moment in history. Other holes at the 235-year-old hall also have names associated with the place – like Caroline Lamb, Palmerston, Byron and Paine (the architect of the hall and beautiful bridge that crosses the lower end of the Broadwater, both built in 1760).

A touch of common sense is that every sign on the course is not set in concrete, instead it's set in a plastic tube. This enables the greenkeepers to remove a sign and cut over the hole instead of cutting around it and strimming up to the posts. The main sign has a map of the hole, its par number, length and the SI number. The Elizabeth 1 hole for example has the number 1 and the name, the map showing the Broadwater and the tees, trees and green. Plus par 4, 330 yards and an SI of 13.

To mark the white, yellow and red tees there are pearshaped wooden markers which are easily removed and replaced for mowing. The greenstaff have to repaint these four times year owing to scratches (caused by squirrels that abound in the park). There are also secondary signs on the yellow and red tees giving the hole number, the par, the length and the SI number.

The club spent a lot of time looking at ball washers and settling on the American make, Par Aid. These are in cast metal and will not break when a ball or the frost hits them. They come in two colours as stock items to this country but the committee didn't like those and opted for 'Hunter Green'; these took longer to be delivered as Rigby Taylor had to order them from America. "But we felt it was

HISTORY IN THE MAKING

John Wells, course manager

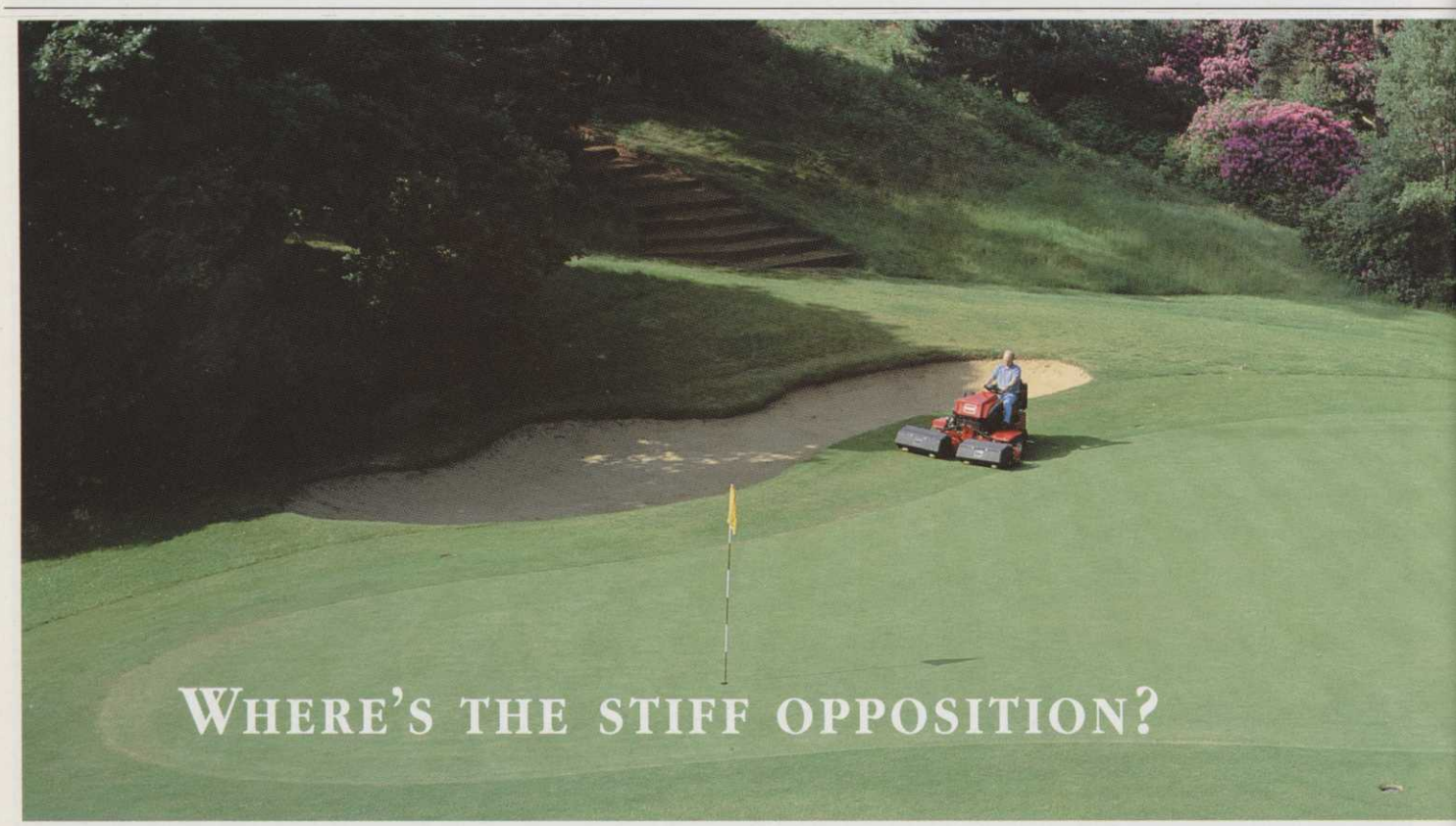
worth it, they certainly 'fit in'," said John. "At Brocket Hall everything must be just right, to meet the company's high standards and this often means that items are specially made."

To cross the Broadwater at the clubhouse end, Brocket Hall has what must be unique, a chain ferry, or cable in this case. Splasher plates from a Great Western Railway Hall Class Loco 'Brocket Hall' grace both sides of the ferry with its number plate, 5987, (scrapped in 1964). The ferry can accommodate two golf carts and their passengers with ease.

Walking around the 6584-yard, par 72 Melbourne course, you are struck by its grace, style and taste. Lots of time has been spent on making sure nothing offends the eye and it has all paid off.

Of course the furniture and fittings are just the finishing touches to the Alliss/Clark-designed course. To bring the course up to the present high standard from the construction in 1991, has required a lot of hard work. This has been carried out by a highly motivated greenstaff of 10. Staff training and welfare come very high on John's list of priorities. As course manager John feels the club's best asset is a greenstaff with pride in their work. All the staff are encouraged to play golf and are all members of BIGGA. This is paid by the club, out of the training budget, and time is given off to attend lectures and golf tournaments. All Brocket Hall staff are trained to provide a service where nothing is too much trouble.

From a 1991 construction, the course opened in June 1992. This didn't leave much time for the course to grow in and iron out any small problems. One of the early problems was poorly draining bunkers – now they have all been drained and complement the free-draining greens. The greens are built with a 12-inch layer of 90% Kingsley washed sand and 10% fensoil which overlay 2 inches



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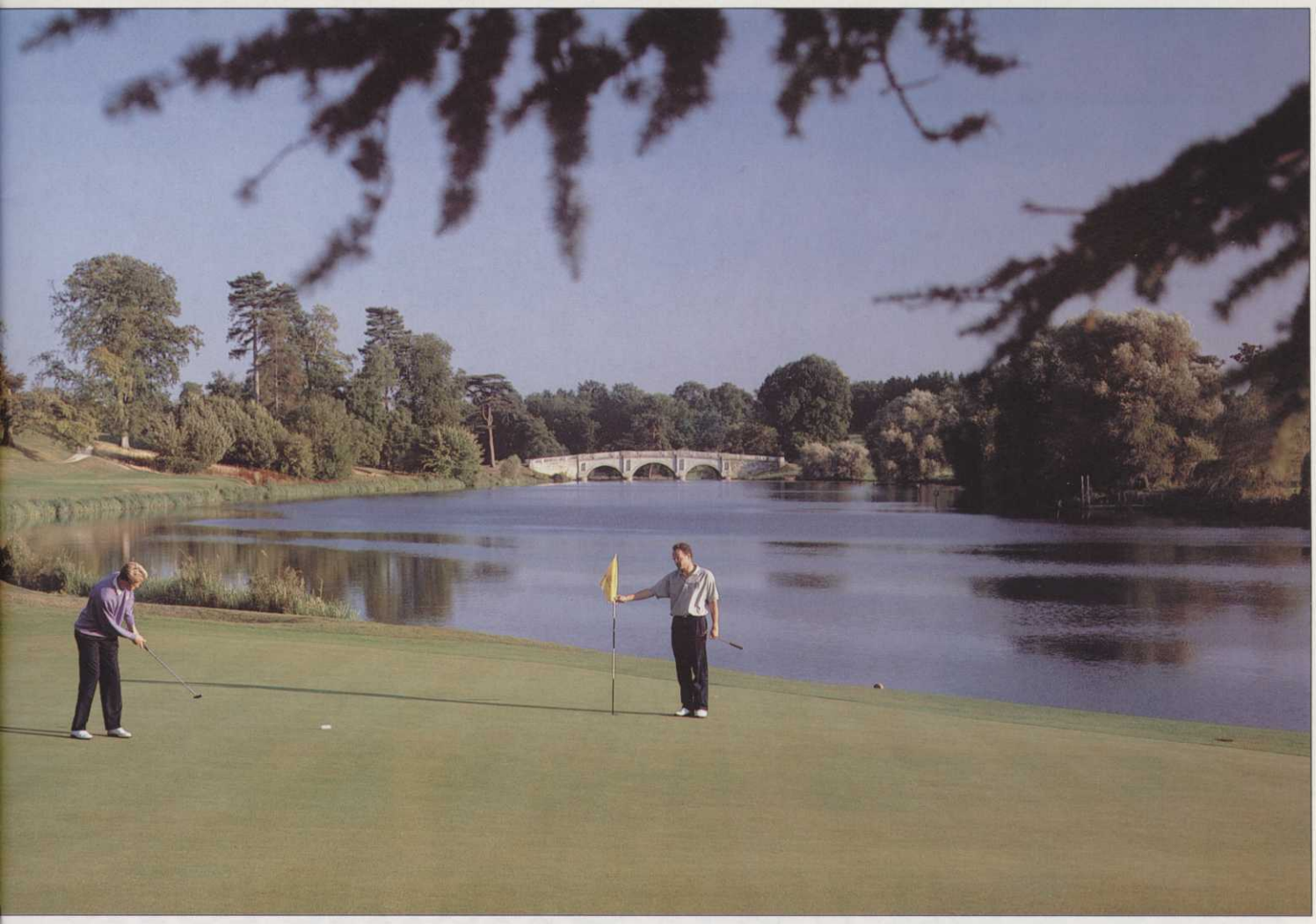

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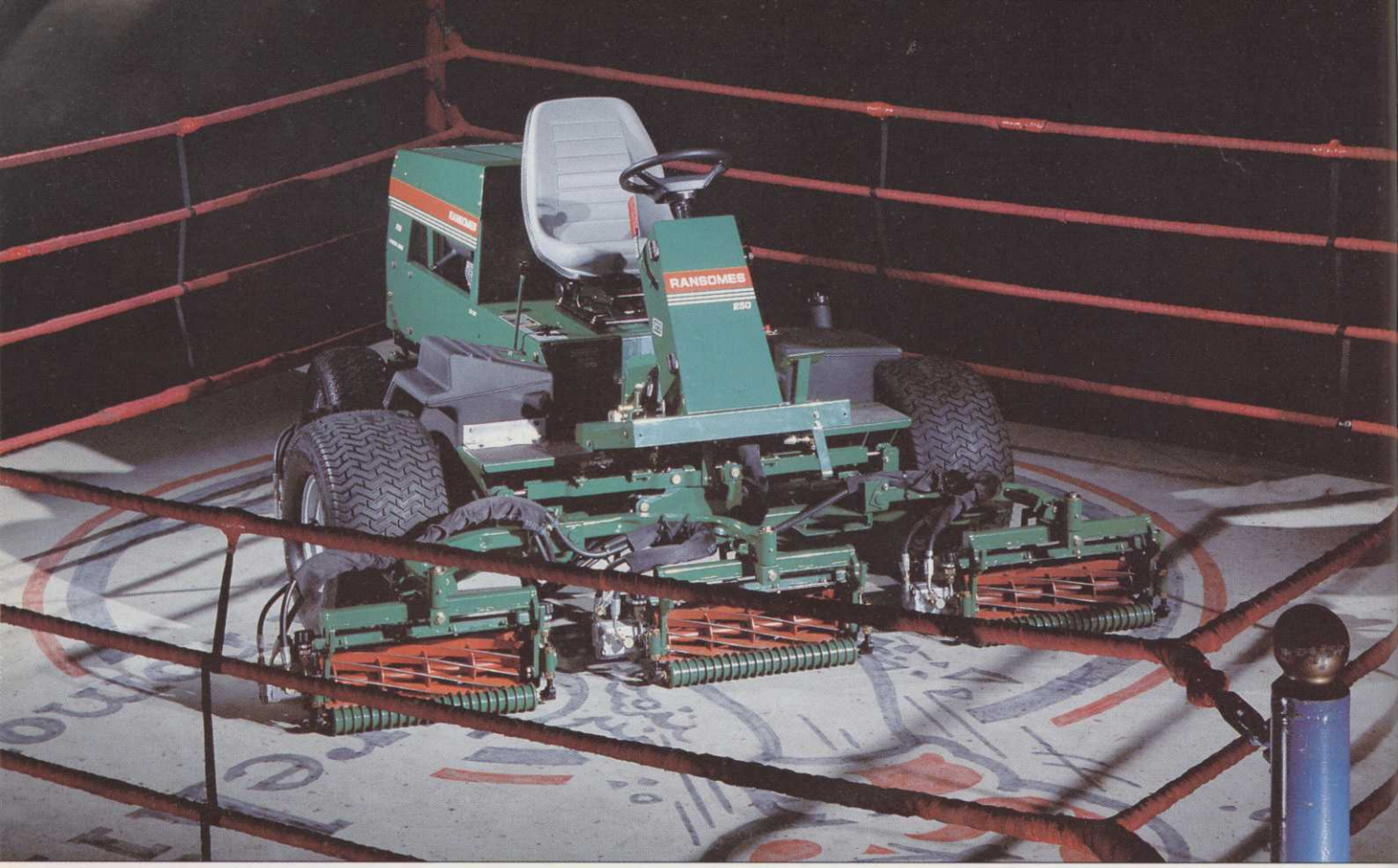

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of sharp sand and a 4-inch layer of pea gravel (10mm in size), with a draining system set into the subsoil. The grasses sown in construction were 80% fescue split between 60% chewing fescue, 20% slender creeping red fescue and 20% browntop bent. After three years, the total fescue is now 60%, the bent 30% and the other 10% is *Poa*. "This is my biggest disappointment on the course," says 35 year-old John.

The greens are contoured to shed water and have never held surface water in the three years since construction. They are firm and true 12 months of the year, which has enabled the course to stay open every day since the opening, apart from a fall of snow.

Although all the course requires a great deal of attention, the greens are the most important to John. A careful maintenance programme is carried out throughout the year. Spring maintenance starts in early March with a feed of 4-0-8 + 2FE 2MG 35g/m². A total of six feeds are used throughout the year, finishing with a late autumn feed being the most important on such high sand content greens. Totals for the year are between 200-250 kg/hectare of N 20-30 kg/H of P and 180-200 kg/H of K. Feeding is based on mini granule slow release methylene urea, and some summer liquid feeds of urea. "It is important to feed at the right time, and rate, to keep the grass healthy and to protect from wear. On sand more damage is caused from under feeding than over," said John. "This is also true with watering."

To control the build up of fibre, John advocates light grooming and occasional verti-cutting throughout the growing season. Aeration is in the form of solid tining at the start of every month, alternating between 3/8in tines at a depth of 1 1/2ins and 1/2in solid at a depth of 3ins. At the beginning of October, hollow tining is carried out with 5/8 tines to a depth of 2ins. In between the tining programme, light sorrel rollers are used to keep the surface open. Because of the good quality sand used in construction there are no signs of compaction. No slit tining is carried out because a slit in sand will just close up after the next cut.

Top dressing is applied from March to

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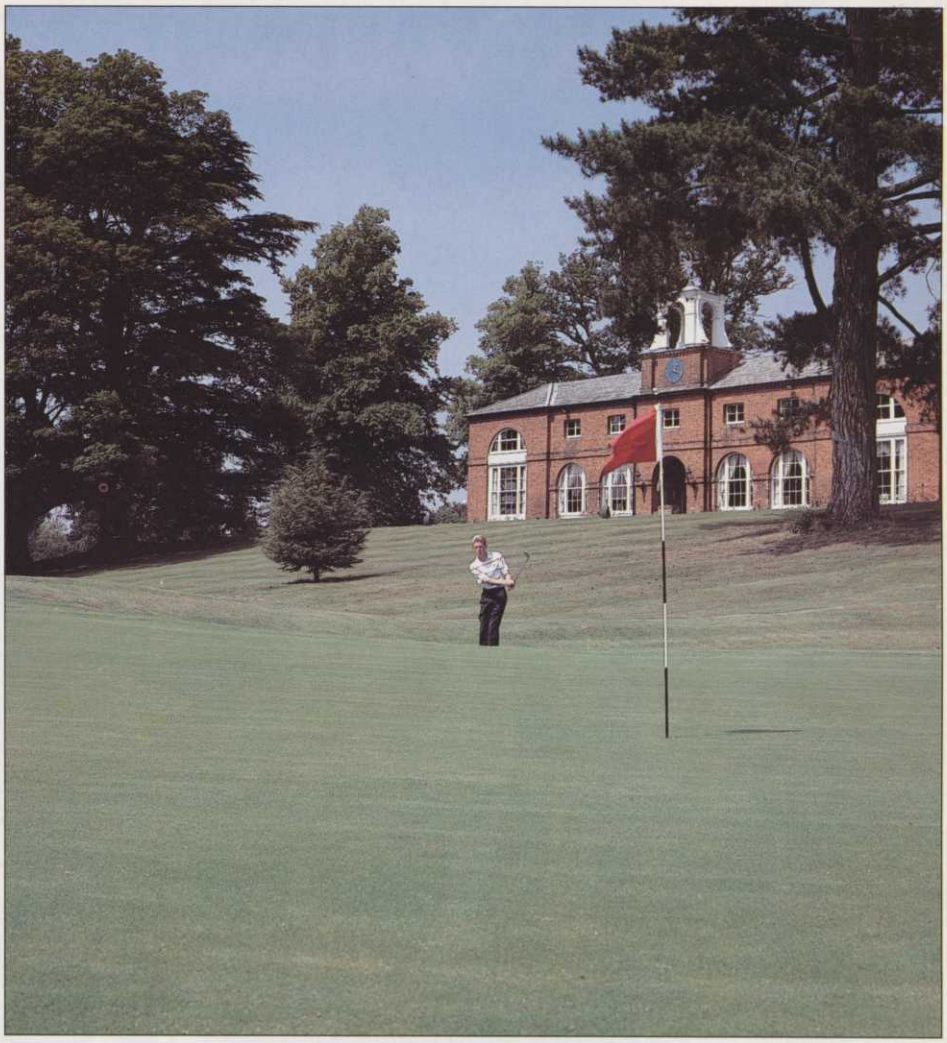

October inclusive with the Kingsley washed sand straight after the solid tining (100 tons per year).

The rootzone is kept moist at all times, to guard against dry patch, and regular use of wetting agents from early March also helps.

Adjusting to sand-based greens was a novelty for John, as the principles of feeding and watering them were so completely different after 12 years of tending soil-based greens. But he must be getting it fairly right as in the three years since the course opened, only one application of fungicides has been used, to control fusarium patch. That was applied in October of last year.

As we completed our tour of the course and took in the view of the 18th 'Broadwater' hole – a vista framed by trees falling away to the Hall below with the lake just visible between – John concluded with this thought: "People think that sand-based greens are expensive to maintain because the cost of fertiliser is more, however the saving on fungicides and the lower cost of sand dressing makes the costs comparable. The major benefit to any club of sand-based greens is the 12 months play a year on smooth, firm, green surfaces."

Our greenkeeper.

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PRIME CUTS

Hugh Tilley looks at ways of achieving mower sharpness, to deliver the cut you need.

There is no dispute that cutting fine turf needs a sharp, well adjusted cylinder mower. However, when it comes to sharpening and adjusting the cylinder there are a number of opinions which seem to vary by manufacturer, nor are greenkeepers unknown to have strong views on how their machines should be set up.

It seems surprising that no research has been done into this critical area of greens maintenance or, if it has been, it is not known about. The original 'lawnmower' design comes from machines built to trim the nap of carpets, however there are fundamental differences between cutting wool in factory conditions and cutting grass (often with sand and soil) in radically different conditions.

Assuming that the shearing principle is the most ideal for cutting fine turf, and this may be debated, then several parameters are immediately set. It also begs a number of questions such as whether it is best to single blade grind or spin grind, what (if any) relief angle to grind and is there a place for backlapping? Arguments such as whether to in-situ or out of frame grind add to the confusion. Changes in recent years with more precise grinding means that spin grinding is now acceptable without any real need for backlapping or need to bed bottom blade and cylinder in together.

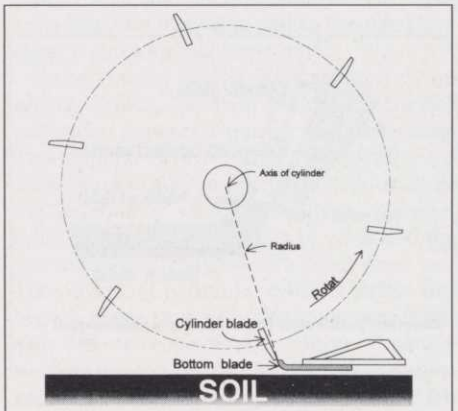

Diagram 1: General layout of cylinder, bottom blade

Having talked to a number of manufacturers of both mower and grinding machines it is obvious that a definitive answer need not be specific, and what is all important is what works in the field, in field conditions. Less disputed is the means of testing for sharpness, the usual method being to use a bit of thin paper (occasionally even a blade of grass) – perhaps not very scientific, but nevertheless effective. Some people (manufacturers) suggest there should be clearance between cylinder and bottom blades – a few thousandths of an inch, but most people find it more practical to adjust the blades to give the lightest possible touch.

Perhaps the first step in resolving some of these arguments is to get a clear understanding of the terms and geometry of cutting – not everyone is very clear of these and there is some ambiguity over how relief angles are measured.

Diagram 1, which is representative rather than typical, shows a general arrangement of bottom blade and cylinder – a fine turf mower has a much thinner bottom blade simply to enable it to cut exceptionally close to the ground. Each manufacturer has his own design in which the relationship between cylinder blades and the axis, and between axis and the bottom blade, varies. None sug-

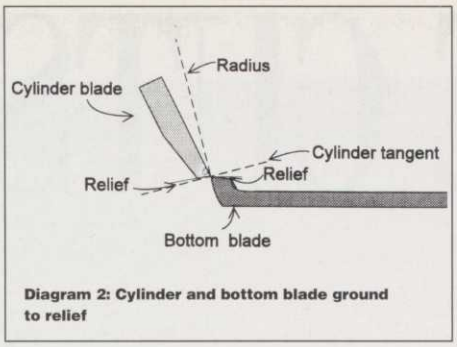

Diagram 2: Cylinder and bottom blade ground to relief

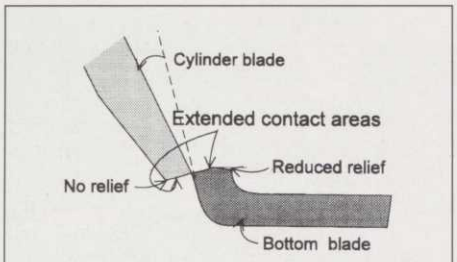

Diagram 3: Effect of back lapping (exaggerated)

gest any formula for these, but perhaps this is because the designs have been proven over time, or perhaps (more likely) there is some latitude in such relationships.

While the need to have sharp shear edges is obvious, the need for having any relief may not be. Relief angles are often described as the angle by which a blade edge slopes back from 'square' – but what is square? With cylinders this usually actually means the angle between a tangent to the cylinder radius and this is not the same as square to the blade because these are not radial (see diagram 2). One advantage of a large relief angle is that it allows backlapping to be carried out between re-grinds with the minimum of increase in the metal-to-metal contact area and in power consumption. More complex to assess is the best relief angle to grind onto the bottom blade as this depends on its relationship to the cylinder axis. If the cylinder leads the bottom blade (assuming it is horizontal) by a significant distance – ie its axis is well in front of the bottom blade – then a relief angle may be unnecessary. The less the lead, the greater the angle needed. This is highly academic when what is important is how cleanly and easily the machine cuts, in simple terms the aim is to minimise metal-to-metal contact and provide adequate clearance behind the cut point.

The ideal situation is a single line contact – or even a clearance (max .004ins) – so that there is virtually no drag due to blades in contact, ie as in diagram 2. Large angles can only be achieved by grinding blades individually. However, if little or no relief is required on the cylinder blades then it is possible to grind these to a true cylinder – American practice is changing away from single blade grinding to spin grinding and no relief. Atterton & Ellis claim their machines impart a 4-5deg relief because of the way their grinding wheel cuts in from the back of the blade – and this is probably true of others where grinder and cylinder rotate at different speeds but in the same direction. The maximum angle which can be cut with single blade grinding will depend on the closeness of the blades around the cylinder, however greater angles should not be advantageous for fine turf mowing. This is probably the crux of the matter, cylinder blade relief is possibly more valuable, and easier to apply, to mowers used for less critical turfs. In addition, not all grinders can single blade grind, manufacturers whose machines can't will say that single blade grinding is not for the golf course anyway, and in any case after blade grinding it is essential to either spin grind or backlap to ensure concentricity – an unwelcome second operation.

In-situ versus out-of-frame grinding may also be largely a theoretical argument, however there is the significant advantage with in-situ grinding of not having to remove the cylinder from the machine. The advantage of grinding a cylinder in its own bearings and frame should be a red herring – assuming that both are sound and true – and there is no

Relief grinding attachment

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