

# Higher standards – yet more **SPEED**

**Roland Taylor takes a look at developments in grass cutting equipment.**

**T**he increasing popularity of golf over the last decade has brought with it many changes, especially in the way courses are now

maintained. The higher the profile any sport receives, the greater the demand for improved facilities.

The UK golfer who watches televised matches from the USA now expects his home course to look as good the one his counterpart plays on across

the pond. For the local club, the nett result is a demand for manicured fairways and neatly trimmed rough.

This metamorphosis has brought about a fast-moving development in grass cutting equipment. While Budding's original principle has changed

very little, a technological revolution has taken place in the design of engines, drives and components. The grass machinery market is highly competitive and today's manufacturers have had to invest in computer-aided-design and control systems throughout

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their factories in order to keep up with the race. The result of all this activity is a range of hi-tech mowers with new concepts and innovations aimed at giving the greenkeeper equipment that will produce the style of course his greens committee expects.

The self-contained grass cutting unit is gradually superseding the tractor on many courses. These state-of-the-art machines incorporate a host of benefits designed to be user friendly and give high output. Electronics and computers now monitor cutting performance; built-in systems diagnose faults; and engine management is on the brink of becoming the norm.

With all the emphasis placed

on higher reel-mowing speeds it is easy to overlook the basics. To produce the optimum performance the reels must be correctly adjusted. If travel speed and cutting reel revolutions are not in the correct ratio the quality of finish is affected. Gauging this accurately with a hydrostatic drive can be difficult, so one inventive company has come up with an answer. Their fairway mower uses a computer system to monitor performance and automatically makes the necessary adjustments. Setting this up is simple – the number of blades in the cylinder plus the height of cut are fed into the control unit. The computer then sets the cylinder revolutions to match the ground

speed and the result is a consistent quality finish. If the operator drives too fast then the standard of cut begins to deteriorate and he or she is warned to reduce speed.

Aiming for high productivity plus a quality finish can put the greenkeeper in a "Catch 22" situation. Fast work rates often results in bouncing mowers. A number of factors contribute to this including length of grass, its moisture content and changes in the terrain. Manufacturers have introduced hydraulics and spring systems to prevent bounce happening, but so far none of these have been found to be the complete answer.

One company, which carried out a comprehensive study of

this problem, has found what is claimed to be the solution. The mowing unit is mounted on a frame which has pivot points at the front and rear. The linkage arms adjust independently to any forces that are placed on either the mower's front or rear rollers. While this system controls the cutting unit's rocking motion it does not counteract any up or down movement of the lift arm. To control this, a dampener that adjusts to any vertical movement has been incorporated into the tractor unit and the mower's lift arms. It compensates for upward movement and keeps the cutting unit on the turf. There is no restriction to downward motion so the mowers can fol-

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low the ground contours.

This system puts positive downward pressure on the reel units, yet allows them to float free.

Another area that has undergone extensive research is the bedknife angle. This is especially important when mowing in a low setting. If a bedknife's lip is too high or its angle too flat in relation to the ground, then there is a possibility that the unit will ride on it and not the rollers. This can affect the reel adjustment and also cause possible damage to the turf.

The thickness or profile of a bedknife may vary on each mower unit fitted to the same machine, so the finished cut can vary across the full cutting width. For this reason it is

important that bedknives are changed in sets and always bought from the original equipment manufacturer.

In tests carried out by one manufacturer it was shown that a mower was most efficient when the cutting edge of the bedknife rotates up and back, especially when the height of cut is increased. This is achieved by adjusting the cutting height only at the rear of the mower.

Faster operating speeds have made it necessary to take a look at all the possible structural stress levels throughout the machine. Steering systems; tyres; general layouts, driving seats and consoles have also come under the spotlight, and now play a very important

part in modern ergonomic design.

The addition of a cab can make a much more pleasant working environment but greenkeepers appear to be a hardy lot and so these are not seen very much on UK courses.

## **Rotary mowers**

The basic rotary principle has remained similar to the original concept. Pictures of those early rather crude models reveal a machine that sends shivers down the spine. They consisted of a flat deck with a wheel at each corner and something to drive the cutter. There were no guards to restrict the cut grass flow, so these early monsters could mow down virtually anything.

From a safety aspect this could not continue and the introduction of guards bought with it new cutting deck designs. Aerodynamics and airflow were taken into account to ensure the cut material could clear the machine quickly, otherwise blocking and balling-up occurred. That is now all in the past and the modern rotary mower is a far cry from its predecessor.

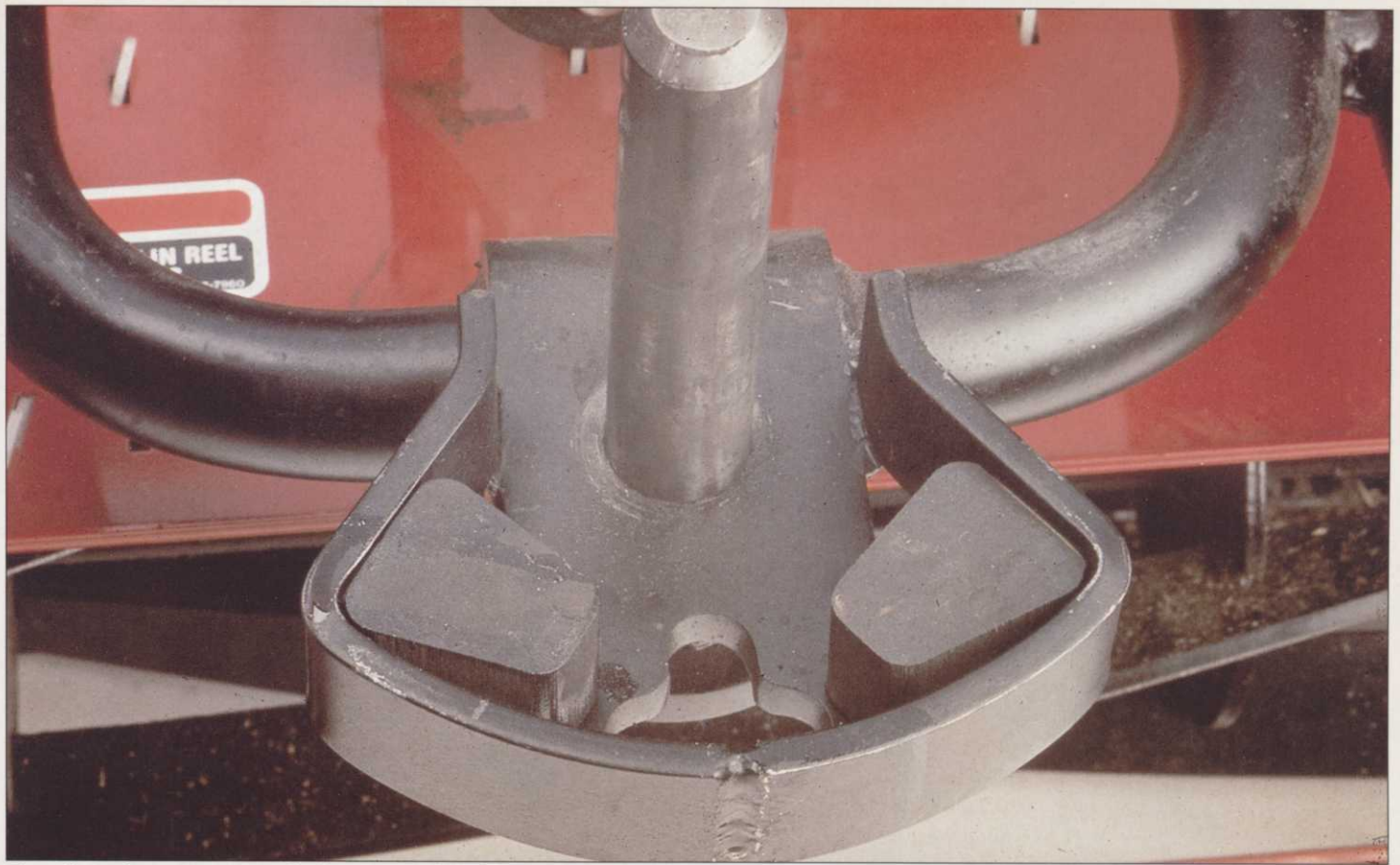
On the golf course this type of machine is usually used for mowing the semi- and deep rough, or for trimming banks around bunkers and tees.

A rotary blade spins in a horizontal plane so the width of cut on undulating surfaces is restricted due to the possibility of damaging both the

## INTRODUCING THE NEW GREENSMaster 3200-D.







The self steering system automatically re-centres the unit

turf and the machine. In the past this has often tended to restrict their use. One manufacturer has introduced a trac-

tor-trailed unit with a series of individual small rotary heads which float independently and closely follow the ground con-

ours. They claim this overcomes scalping.

Following the American trend, recycling is becoming

very much in vogue. Not surprisingly, therefore, recycling and mulching mowers are gaining in popularity. This sys-

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tem of grass cutting is being heralded as the way forward, but the idea is far from new. On fairways and sports areas in this country we have been recycling our grass clippings since the first gang mowers were introduced well over a hundred years ago!

There has always been criticism that the rotary mower when used without a collector, leaves the cut grass too long. The over all appearance is unsightly and clippings take a long time to disperse. For over three decades small mulching systems have been available to eliminate this problem, but it is only in the last two years that there has been any significant development. With the mulching

principal, grass clippings are retained inside the cutting deck and chopped into fine particles before being blown back into the turf.

Research has shown that there are a number of environmental advantages in using this system. Nitrogen and water contained in the grass are returned to the turf to provide nutrients and moisture. For it to be effective the mown grass has to be left fairly long which is ideal for the rough.

Greenkeepers are beginning to recognise the benefits of out-front rotaries with recycling decks and they can now be found in an increasing number of courses.

When walking round BTME

this year the visitor could not fail to see the wide range of grass mowing equipment that is available. In fact, today's Course Managers and greenkeepers are spoiled for choice. Interestingly, a closer inspection often reveals that most machines have the same engine, hydraulic system and general layout. The only difference between these is all those extra features, so its worth finding out exactly what these are before making a final decision. With ride-on mower technology advancing a cracking pace you are likely to discover additions that will make your job easier and produce the high standards of finish you are now being asked to attain. Time spent

thoroughly investigating just what is now being offered will put you at the forefront of today's technology and pay dividends in the long run.

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