As time *goes by*

Jonathan N Knowles delves into the archives

Advances in the developing and forward thinking sports turf industry is important. Nevertheless, sometimes it's good to stop, think, stare into a distance point and think where we've journeyed from and reflect. After all, there may be something worth getting back to the basics for.

In 1942, the song As Time Goes By, from the film Casablanca, delivered the poignant lyrics - 'The fundamental things apply, As Time Goes By'. Around the same time, many turf, lawn and greenkeeping publications were being printed. Are these texts still relevant in the 21st century? Do the same fundamental things apply, as time goes by in turf care?

Chosen are a selection of seminal industry texts from the time of around seventy to a hundred years ago, including; 'Golf Greens & Green-Keeping' edited by H. G. Hutchinson, 'The Seeding and Care of Golf Courses' by O.M. Scott & Sons, 'The Lawn' by H.B. Sprague and 'Turf for Golf Courses' by C.V. Piper and R.A. Oakley.

In the 1917 publication 'Turf For Golf Courses', it contains information on climate for turf, soils, fertilisers, nutrients, identification, lime, purposes of turf, care, machinery and interestingly, scientific experimental work. In the experiment chapter, the authors Piper & Oakley cite the work of J.B. Olcott, a recognised early pioneer of turf. The 'Olcott Turfgrass Garden' also known as the 'Connecticut Experiment Station' was said to be located at Olcott's home between 1885 and 1910. Olcott studied thousands of grass species and their uses in sports turf. He collected 'mats' of turf from across the US, Hawaii, New Zealand, Australia and Europe, propagating and caring for the turf in his garden of plots. This was a pioneering search for the 'perfect turf'. Olcott published his work and is paraphrased as stating the finest, highest quality turf in New England to be Creeping Bent grass and Red Fescue.

When Olcott died in 1910, the legacy was up taken by F.W Taylor, who purchased the plots and transplanted them in Highland, Philadelphia. Like Olcott, Taylor himself was a Turfgrass pioneer. Taylor was the first to identify the need for a standard approach for constructing a putting green. Taylor fundamentally identified the need for a rooting medium or 'Foundation' that had to have a high water holding capacity that, at the same time, provides the perfect drainage. These are still relevant fundamentals for root zone specification and construction today. Taylor also theorised and pioneered what could be described as an early form of hydro-seeding.

In the 1917 book, Piper & Oakley clearly depict Taylor's work in detail with care but, at the same time, analysing some of Taylor's methods. It's insightful to see these early pioneers questioning each others methods. Even in those early days, the use of lime as a soil additive was opposed by Piper & Oakley, while many promoted ground limestone. Taylor had suggested the use of lime and multi-laying a foundation incorporating peat-moss and bone-meal when constructing a putting green. While Piper & Oakley dismissed the use of lime for growing turf, as they had observed that the lime encouraged weeds and discouraged Red Fescues – a fundamental against the use of lime that is still widely observed in greenkeeping today. However, at the time, many other authors such as Harry Colt, Herbert Fowler, Fred Taylor and, indeed, Howard Sprague were recommending lime. It should be noted that Oakley was the pioneer of the infamous 'Acid Theory'. Indeed, some authors, such as Sprague, dismiss the 'Acid Theory' as failing to suppress weeds, making the soil infertile and losing its permeability to rainfall. Personally, I place the 'Acid Theory' as an over-theorised piece of science of the time, when

INSET ABOVE: Olcott's Turfgrass Garden in 1910, Located in Connecuticut. He had been collecting mats of grasses from around the world since 1885. It was noted that few recognised the significance of his work or indeed appreciated fine turf in those early days.
(Source: The First Turf Garden in America by C.V Piper, USGA article February 1921)

ABOVE: Annual Meadow grass or Annual Blue-grass (Poa Annua), described in 1917 as "a weedy little grass that produces blossoms even at the lowest of clips."
(Source: Piper and Oakley, 1917)

root zone, plant nutrition, irrigation and pesticide technologies were in their infancy.

The alternative British text to the Piper & Oakley technical manual was the 1906 publication 'Golf Greens and Green-Keeping' edited by Horace Hutchinson. Experiences and entrees are made on subjects such as; 'the formation of turf', 'the treatment and upkeep of seaside links', 'light inland soils', 'heath land', 'pine forest courses', 'chalk downs' and 'laying out and designing the links'. Authors of the book include; Harry Colt, Herbert Fowler, James Braid and Hutchinson.

Whether American or British, all the old texts refer to Agrostis vulgaris, now known as Agrostis tenuis, as the desirable bent grass. In 1906, the author H.Hamilton describes the best varieties for the golf green as Agrostis vulgaris, as he had experienced 'unerring and true putting qualities at St. Andrews'; he had noted it to be present on the east side of the fifth and thirteen greens and northern side of the ninth green, adding that he knows not of any better wearing variety. Further recommended grasses and plants include: crested dog's tail (Cynosurus cristatus), vernals (Anthoxanthum spp), yarrow (Achillea millefolium), and wild thyme (Thymus vulgaris or could be in reference to Veronica serpyllifolia), and the small leaved clover (Trifolium dubium). It's not uncommon to read in these old texts the recommendation for a seed blend to include clover and yarrow. Surprisingly, the best tee surface to the author's mind is that of Mat-grass (Nardus stricta) and Brown Bent (A.vulgaris). Colt, in the 1906 publication describes how he had observed a mixture of smooth-stalked meadow grass (Poa pratensis), crested dogs tail and red fescues (Festuca rubra ssp.) had been seeded at Sunningdale across a ridge in the land. He observed and noted how the fescues had become predominant on the dry ridge, but in the rest of the nursery the grasses were growing more equally, highlighting the difficulties to establish similar species on all greens without variation to the pace. Hopefully, Colt, too, could see that the importance here was not just to apply a standard seed mixture, but also implement a standard root zone and drainage capacity, as addressed later by Taylor. The notorious Harry S. Colt offers the ultimate advice to Head Greenkeepers regarding club membership;

"Worthy men and excellent growers of tomatoes and cucumbers, but possibly without any experience in greenkeeping" Harry S. Colt

"Worthy men and excellent growers of tomatoes and cucumbers, but possibly without any experience in greenkeeping. These golfers believe any silly fool can grow grass. The Head Greenkeeper should therefore be prepared to hear criticism from every member of the club and have his methods discussed in every corner of the smoking-room. But

MAIN ABOVE: Golf Course construction in the early 1900s (Source: Turf For Golf Courses. Piper & Oakley (1917)

this will not matter much so long as he retains the confidence of the Greens Committee and is allowed to persevere."

Rolling has for a long time been regarded as a necessary task to provide a quality putting surface. The advice given by Colt is clear, only roll on free draining soils, light rolling of around a hundredweight is permissible, heavy roll has been acceptable in the past, but never in access or in the establishment of a new green. And incorrect rolling practices, as Colt identifies rolling as the greenkeepers' commonest fault, will lead to death of the surface.

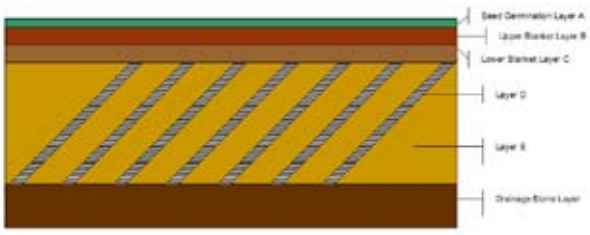
These bygone turf professionals knew the limits of rolling and its use. The damage and bad reputation of rolling we have seen in the past has come from incorrect implementation and use. As rolling has seen a renaissance in these past many years, we should continue to take heed to prevent history repeating. Rolling is a friendly method for providing the quality surface and should continue to be with the correct implementation and ensuring a 'porous' soil is obtained prior to any rolling.

How do you work your top-dressing in? Drag-mat, drag-brush or not at all? Colt recommends;

"On Monday mornings, brush the dressing in carefully with new birch brooms, on Tuesday sweep off what is left. Thus, by Wednesday or Thursday there will practically be no inconvenience."

What's insightful here is the importance of brushing in by hand, and look to apply more dressing in the hollows. How often these days do we apply an even blanket of top-dressing on hump or hollow? Does this application method exacerbate the difference in hollows? Working the dressing in by hand will allow the opportunity to manipulate the dressing carefully across the green in to portions that require different quantities.

Understandably, not a favourable manual task, however, we should question again does a handcrafted top-dressed green perform better than a mechanically dressed one? – Perhaps a workable approach is combining the old with the new? Sprague writes in 'Better Lawns' (1945) that the top-dressing should be spread over the entire surface and then worked into the low spots; he also makes an early reference for the recommendation and use of a steel door mat on a rope to drag in dressing.



ABOVE: Taylor's recommendation for Golf Green Construction from 1917. Layers A, B & C are said to be made up of large quantities of peat and manure with seed. Layer D the 'moisture and food slant' made up of three parts clay to one part cow manure, this is said to be moulded into flat pans of one and a half inch widths and then installed at around 45 degree angle. Layer E the 'deep rooting layer' is a 12 inch layer made up of chopped cow manure and decayed peat moss at nine parts to one. With copious quantities of organic matter for nutrition, water holding capacity while having so-called 'excellent drainage qualities'. Not a method that has lasted the test of time and very different from the current STRI and USGA specification. [Adapted from Piper & Oakley 1917]

The American methods of greenkeeping have long influenced greenkeeping in the UK; in the 1906 publication there is a quote of an 'Americans' opinion of St.Andrews dry turf.

"If we had a links like you have at St.Andrews, I guess we should keep the grass properly watered, if it took a pipe made of gold to convey the water out to the end hole."

Does this sum up an age-old American view that British Greenkeeping is under-resourced? Does it suggest that if the Old Course was State-side, vast amounts of cash would be pumped into maintaining the verdure 'properly'! If so, then the statement arrogantly disregards the Scottish Greenkeeping intention of maintaining firm, dry and fine turf. However, the quote in context is a recommendation for British seaside golf courses to have

an irrigation system. The author proposes that laying a 3-inch pipe with a hydrant to all greens, will see less wear, little seeding, less feeding and less re-turfing. If it was suggested that the present British golf green is over-watered, we could not blame the education by American turf management methods.

But clearly, the Americans' techniques have maintained their influence on British Greenkeeping over the years. Although, in the American 1922 handbook 'Seeding and Care of Golf Courses' By O.M Scott and Sons it does state 'little damage caused by over-watering', but again, this is in the context of the American turf. Are, or have we been taking these Americans out of context?

In case you were wondering, O.M Scott & Sons is the same company that still exists as 'Scotts'.

When it comes to greenkeeping practices, there are ranging and interesting concepts from all the early influential texts. The technical turfgrass information has clearly been borne in the States. The technical and descriptive detail in the 1917 book by Piper & Oakley and the later lawn care book 'Better Lawns' by H.B. Sprague (1945) is magnificent for the time, and the influence on the following technical text books and scientific papers is clear. In 1945, Sprague details the excessive use of nitrogen fertilisers, that stimulates top growth to the expense of root development, and how close mowing restricts root development, diminishing the ability to obtain moisture, nutrients from the soil, capacity to withstand heat, drought, disease and insect attacks.

In these contemporary times of over-feeding and excessive close mowing, are we forgetting these immovable fundamentals? It goes on, Sprague continues, with the affliction of springtime close mowing, identifying it as particularly harmful, since root development is limited by removal of top-growth, leading to the grass being limited to utilise soil resources for the remaining growing season.

For turf establishment, it can be tempting to apply a disproportionate amount of seed; Sprague identifies this as initial heavy seeding, and he clearly explains it is a flawed practice as it produces such competition between the plants, that there is little opportunity for any to develop strongly, until many have died in the struggle. This accounts for slow development of a vigorous healthy sod, in comparison with thinner sowing rates.

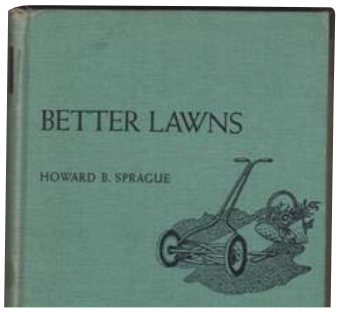
My final comment comes from 1945, whereby Sprague offers what could be described as the Holy Trinity for turf care, as they are three fundamentals that will remain no matter what duration of time goes by:

Sprague's three fundamentals for vigour and growth:

1. Provide adequate leaf area to receive sunlight by controlling the mowing height and controlling the leaf area

2. Supply of adequate moisture, adequate root development and soil moisture levels

3. Supply of carbon dioxide; this is abundant and inexhaustible from the atmosphere.



RIGHT: Sprague's 1945 Seminal Technical Turf Manual