



Greenkeeper Education and Development Fund

BIGGA GOLDEN KEY and SILVER KEY MEMBERSHIP

Unlock the doors to progress through BIGGA's Education and Development Fund - the key to a great future for greenkeepers, golf clubs and the game of golf.

Golden and Silver Key Membership is available to both companies and individuals.

For details, please contact Ken Richardson on 01347 833800 or via ken@bigga.co.uk

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Education Update

A Happy New Year to all our readers. What will 2007 bring for BIGGA, for greenkeepers, Sami and for me?

Following on from the Internet based Training and Development Manual, that is proving to be a useful management tool for members of BIGGA and the AGCS, we are producing a best practice Safety Management System (SMS) for golf clubs, again jointly with the AGCS. The SMS will be launched on Wednesday 24 January at 5pm just before the BIGGA AGM. We are also working on a Management Training Scheme for greenkeepers that we hope to launch in the autumn of 2007.

Environment Competition

If you attend the presentation of Awards on Tuesday 23 January in the Queen's Suite of Harrogate International Centre, you will see Brighthouse Bay Golf Club awarded the winners prize for the 2006 BIGGA Golf Environment Competition, with Reay Golf Club, St Anne's Old Links, Notts (Hollinwell), Royal St Davids, Rookwood, Guildford and the Grove Golf Clubs winning the other prizes.

Thanks to generous sponsorship from Course Care, Ransomes Jacobsen, Scotts Professional Products and Syngenta Professional, the BIGGA Golf Environment Competition will run again in 2007. David Withers MD of Ransomes Jacobsen said "Ransomes Jacobsen is delighted to sponsor the BIGGA Golf Environment Competition. As leading turf equipment manufacturer committed to environmental best practice and sustainability, sponsoring the competition enables us to highlight the importance of green issues. Our commitment is tangible, as demonstrated by our three-year Lead Partner agreement signed with Golf Environment Europe (GEE) earlier this year.

"Golf Environment Europe is a pan European initiative working to promote environmental sustainability in golf. Developed from the Committed to Green Foundation's principles, it is supported by a wide range of golfing organisations and is committed to the promotion of environmental responsibility across all areas of the golf industry.

"We are also the only turf equipment manufacturer to have ISO 14001, the international standard for environmental management. This is a voluntary standard defining the elements of an environmental management system for us to effectively manage our impact on the environment. Employee participation and commitment has been crucial and our team at Ipswich has been magnificent with their support for the project.

"The BIGGA Golf Environment Competition sits very comfortably with our environmental ethos and with golf courses across the UK becoming increasingly aware of their environmental responsibilities; the standard of entries will undoubtedly be high. It really does give golf clubs the opportunity to display their environmental excellence. At the same time it provides others in the industry with an insight into the standards which are being set, emphasising the high standards of stewardship that are being achieved."

BIGGA Golf Environment Competition entry forms will be sent to all golf clubs in Britain, early in the New Year.



The booking deadline for the 2007 Continue to Learn Programme is fast approaching. You have until 10 January to book your place on a Workshop, however, many workshops are now full and you may not be able to attend your first choice. Contact Sami on 01347 833833 to check what is still available. We still have spaces available on the Seminar Programme but again; you should book as soon as possible to be sure of a place. For those who cannot decide or want to leave bookings to the last possible minute, Seminars can be booked on the day at the BIGGA Registration Desk, that will be situated outside the Queen's Suite.

Please note that the R&A will be launching their World Climate Map Website and their The Open Road to Sustainability DVD on Tuesday 23 January at 9.30am in the Queen's Suite.

Safety Management System

The AGCS/BIGGA Safety Management System (SMS) will be launched at 5pm on Wednesday 24 January in the Queen's Suite. Please note that the BIGGA AGM will now take place at 6pm.

Presentation of Awards

The Presentation of BIGGA Awards will take place at 10.30am on Tuesday 23 January in the Queen's Suite. These will include the presentation of prizes for the BIGGA Golf Environment Competition, the presentation of Master Greenkeeper jackets and plaques to Bob Ehler, Ken Siems, Chis Lomas and Gavin Kinsella, followed by the presentations of 10 CPD Diplomas and the prize to the winner of the BIGGA Photographic Competition.

Gemma would like to welcome 49 new members to the Association and this month talks about the new BIGGA Member Badge and Harrogate Week.

Membership Update

REMINDER

The time of the Annual General Meeting at Harrogate Week has changed to 6.00pm on Wednesday 24 January 2007, Queen's Suite, Harrogate International Centre.



Harrogate Week has come round for another year. As usual the BIGGA staff will be on hand to help you with all your queries. Samples from our clothing range will be on the stand, along with copies of the books and DVDs that we stock which will be available to purchase. The new clip on blazer badges normally retail at £26 but will be available for the special price of £24 during the show. You will also be able to access the full range of membership services:



- Hand in renewal forms
- Hand in new membership application forms
- Change your personal details
- Collect field guides

The location of the BIGGA stand has changed and this year we are in HALL B Stand 47 alongside the Careers Clinic, Job Shop and Banquet Voucher Exchange.

BIGGA welcomes...

SCOTTISH REGION

Chris Findlay, East
Martin Turna, East

NORTHERN REGION

Robert Gilfoyle, North West
Jeffrey Strickland, North West
Martyn Taylor, North West

MIDLAND REGION

Andrew Baxter, East of England
Brian Griggs, East of England
Tim Harris, East of England
Ian Lloyd, Midland
Ashley Merry, Midland
Nicholas Orchard, Mid Anglia
David Taylor, Mid Anglia
Daniel Totney, Midland
Adam Wood, Midland

SOUTH EAST REGION

Scott Copard, Surrey

Richard Covey, Surrey

Keith Golding, Kent
Gary Jessop, Kent
Ross Jones, Surrey

Tom Relf, Surrey
Graeme Roberts, Surrey

STH WEST & WALES REGION

Robert Bailey, South Coast
Peter Brooks, Devon & Cornwall
Sam Eddolls, South West
Adrian Fisher, South West
Chris Fisher, South West
Nick Fox, South West
Ian Hatch, South Coast
Mathew Lawrence, South West
Rhys Norville, South Wales
Alan Pooley, South Wales
James Pritchard, South West
David Roberts, South West
Colin Shutt, South West
Kenneth Smith, South West

Jake Waites

INTERNATIONAL MEMBER

Neil Fergie, Other America

CORPORATE MEMBERS

Nils-John Gronholm, Finland
Marya-Leena Lahdenpera, Finland

STUDENT MEMBERS

Paul Cook, Central Scotland
Alan Lindsay, Ayrshire
Mark Rhind, Ayrshire
Michael Wannell, West Scotland
Robin Kriwitzki, Sussex

ASSOCIATE MEMBERS

Baden Turney, East Anglia
Damian Monaghan, Midland
Stuart Green, Northern
Ronald Skinner, Devon & Cornwall
James Lane, East Anglia

THE BIGGA LEGAL HELPLINE NUMBER HAS CHANGED TO:

0800 177 7891

For any incidents occurring before 31 December 2006 please call: 0800 019 2569

STAND B47

WIN
A NOKIA 6233
at



To be in with a chance to win one of 4 phones all you need to do is join or refer a new member to join BIGGA at the Show. Visit the BIGGA stand B47 to collect an application form and hand it in before the end of the show on Thursday 25 January 2007.

Bluetooth enabled phone with 2 mega pixel camera, large high quality screen with stereo speakers also boasts MP3 player and video ringtones. This phone takes a memory card for additional storage.



JANUARY'S MEMBERSHIP DRAW WINNER

Just introduce one or more new greenkeeping members to BIGGA and your name will be placed into a monthly draw to win a £10 Music Voucher. Our congratulations go to Phil Harman from Pike Fold Golf Club.



The secret is revealed...

...Previously only available to selected Golf Clubs,
now available to all on Stand M15e

For more information or demo disk please phone: 01347 833800
Contact: Rosie Hancher or Fliss Chaffer

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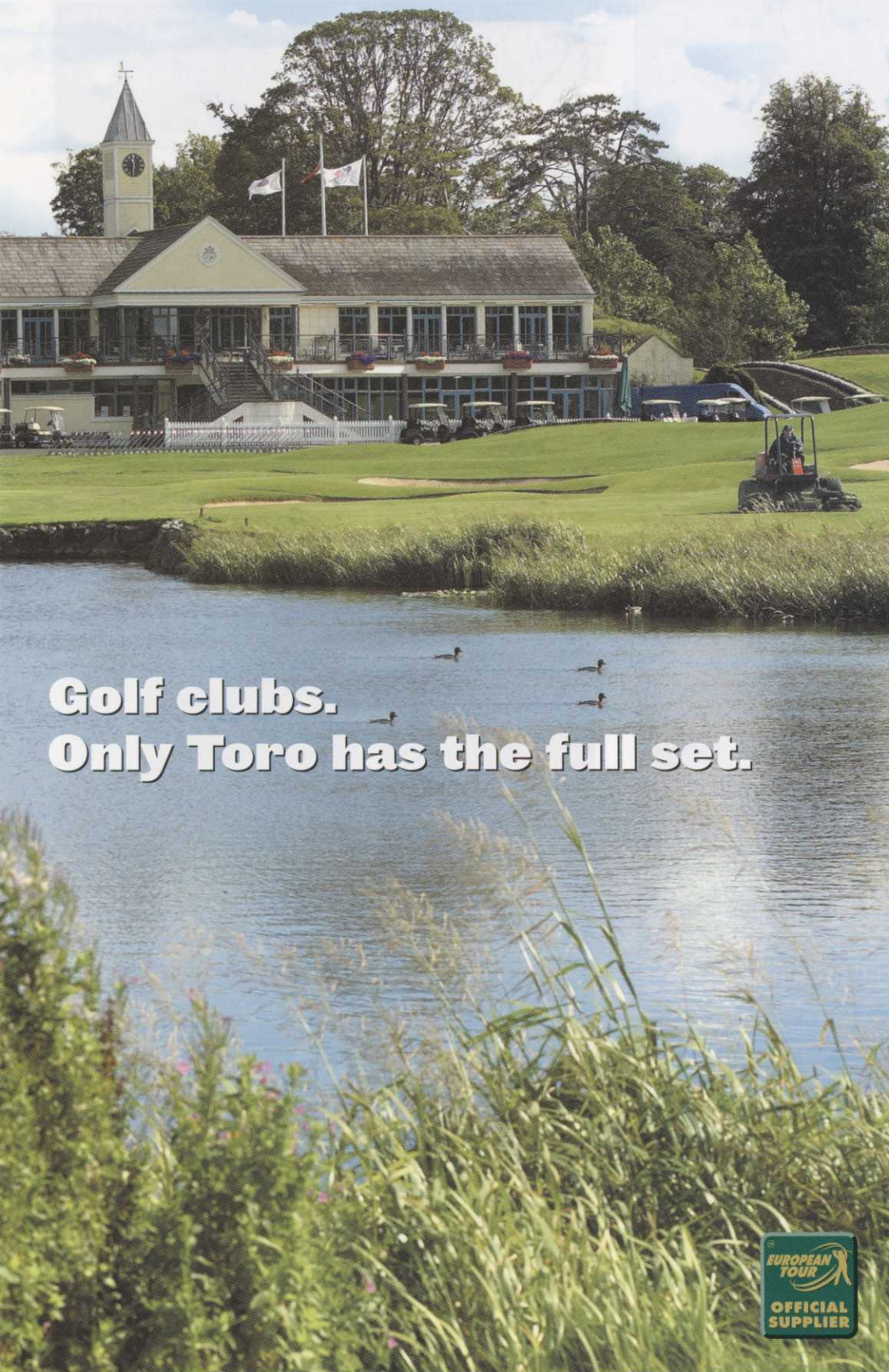
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Count on it.



The law concerning fire safety in all golf clubs is undergoing a major review.

The new legislation, which came into effect in October 2006, is basically a re-working of the Fire Precautions (Workplace) Regulations 1997.

Responsibility for complying with the new legislation will rest with the "Responsible Person" - In a golf club this will normally be the Captain or any other person who has been delegated the control of the premises.

FIRE SAFETY DUTIES

The "Responsible Person" must where necessary put general fire precautions in place to ensure, so far as is reasonably practicable, the safety of any employees and others e.g. members, visitors, or contractors. The Responsible Person must appoint one or more competent persons to assist in undertaking any control measures to reduce the level of risk from fire.

FIRE RISK ASSESSMENT

The basis for deciding what fire precautions are required is a fire risk assessment. This risk assessment must consider those persons who are on the premises or anyone in the immediate vicinity of those premises who would be at risk from a fire. Excluded from this are fire-fighters carrying out their duties. The risk assessment should identify the combustible materials present, potential sources of ignition and the control measures required to reduce the risk of fire to a minimum.

Where more than five people are employed the risk assessment must be documented.

DANGEROUS SUBSTANCES

Where there are dangerous substances present e.g. highly flammable liquids and gases, large volumes of volatile liquids e.g. butane gas cylinders, large stocks of acetone, alcohol based liquids and aerosols etc, the risk assessment must consider the risks from these substances and they must either be eliminated or reduced so far as is reasonably practicable.

In deciding upon control measures to reduce the level of risk, there are certain fundamental principles of prevention.

- (a) Avoid the risks, i.e. can you stop doing the activity that may cause a fire?
- (b) Evaluate the risks which cannot be avoided. Are they likely to happen and what would be their outcome?
- (c) Combat the risks at source. Install control measures to prevent fire.
- (d) Replace the dangerous substance if possible by a non-dangerous or less dangerous substance e.g. water based materials rather than solvent based.
- (e) Develop a coherent overall fire prevention policy that covers the personnel, activities and organisation of working environment.
- (f) Give collective protective measures priority over individual protective measures.
- (g) Provide appropriate instructions to employees on how to raise the alarm, evacuation of the premises, use of fire extinguishers etc.

The responsible person must make fire safety arrangements, depending on the size and nature of the undertaking which will plan, organise, control, monitor and review the preventative and protective measures decided upon from the risk assessment.

FIRE SAFETY PREVENTIVE AND PROTECTIVE MEASURES

Where necessary to safeguard relevant persons, the responsible person must:

- Provide appropriate fire fighting equipment
- Provide fire/smoke detectors and alarms as appropriate
- Nominate competent persons to implement these measures
- Arrange necessary contacts with external emergency services
- Ensure that routes to emergency exits are kept clear
- Emergency exits are able to be opened during the working day
- Establish appropriate evacuation procedures, including drills, in the event of serious and imminent danger and nominate competent persons to implement these.

For further advice on the new regulations and on any aspect of your fire risk assessment, please call the Xact Technical Team on: 0845 665 3006.

HOBBIES

GI has begun a new feature, finding out what greenkeepers get up to in their spare time. Here's something you didn't know about me...

Name: Sean McDade

Age: 39

Club: Sandwell Park

Hobby: Is it Angling, Fishing, or Poaching?

How and when did you get introduced to fishing?

I don't really remember when, as apparently the first time I went fishing was at six months old, four months after leaving hospital. (I was two months premature, 40 years ago). Fishing was, and still is the reason for the locations of my holidays.

Father taught me to fish the upstream worm method as soon as I was old enough to ride a bike to the local streams. Then came the day the local Bobby felt my collar while poaching the rich American's estate, and took me home to face father's wrath. As father served dinner he fixed me with the evil eye and scowled across the table "Sean that was very stupid of you. Don't you DARE get caught next time" - I know he was content if I was doing no greater harm with my idle hours than giving an absentee American's neglected trout a touch of toothache.

What is it about fishing that appeals to you?

The wonder of the natural world and its diversity and the way such is interacted and combined. Without a type of soil there are no plants, thus no insects, no fish, no birds or my favourite, wild otters. Until five years ago I'd never seen a wild fresh water otter. I have now been privileged to experience such twice. On both occasions I was fishing for wild trout or sea trout/salmon. I shall now sight the last time I experienced such. I was returning from a sea trout fishing holiday in North Wales and while returning home crossed over a river bridge on the upper R. Severn, had to stop and look, all true/sad anglers do this, and it is part of the religion. There's no one about and I will put them back anyway. I now gain greater satisfaction from helping trout in whatever guise recover and be there to spawn. While fishing this river very quietly I became aware of something above me moving downstream towards me - an otter, it stopped 10 yards from me on the same bank, looked at me as if to say "we are no threat to each other, we are both at the same thing" and we were. I enjoyed watching the otter for 10 minute's right in front of me. You cannot buy that mutual understanding from a wild animal. I stopped fishing and lay back in the bank and enjoyed a very rare sight indeed.

Have you entered any competitions or do you intend to do so?

I have for the last five years I've organised an annual angling event for the BIGGA Midland Section. Which has, on the whole, been a success. Sponsorship has provided prizes of £50 and a fine buffet. I have never been a match angler, fishing to me is more about escapism, and the contest is between me, the fish, the river, and the interaction of the truly wild and wonderful within our beautiful country. Miss it at your loss.

I have enjoyed fishing throughout all of Britain, Germany, Austria and Iceland, but my favourite is without doubt the north east of Cumbria.



GOLF BY DESIGN

The game may well have started in the 12th century, going by some of the ancient images I have seen from China.

But surely not?

Or in Holland, playing that game on the ice - KOLF was the name - or is that too much of a coincidence?

Or in France, as Jeu de Maille?

Or even by the Indians in America, before any Europeans found it - there is some evidence to say that a stick hit a round object in one direction or another all those years ago.

No! No! No!



Bundoran 11th approach

Let's stick to the east coast of Scotland, to the land behind the sea, alongside the river estuaries, and the great depositions of sand.

Let's stick to the dunes, no holes, just rabbit scrapes; no greens, just sheltered areas amongst them; no tees, just a short length from the previous hole; no fairways, just valleys in the dune slacks; no bunkers, just eroded areas where sheep may well have huddled to shelter from the elements.

Simple, rudimentary...natural.

Natural land, the links, natural designs, these golf courses.

No golf course architects, just Mother Nature and God...how well they did! How we have striven to follow them!

The spread of the game, to the coastlines of other parts of Scotland, England, Wales and Ireland, to the poor soils of the inland links on the heaths, eventually to the grasslands, the parklands, the arable lands - heavier soils, less than exciting topography and so unlike the links - meant more adjustment, more formalisation, more design.

So the profession was born...

Allan Robertson, Golfer from Dornoch; Old Tom Morris, Golfer from St. Andrews and custodian of the links: The Parks, The Duns, Young Tom - all professional men in the game, all lent their hand to designing golf courses.

And as the game spread throughout the world - France, India, Portugal, and to USA - with the British, so we saw the skills of the home architect exported to those foreign shores before the nationals, particularly in America, copied us and developed their own profession, and how they developed the game, and its architecture in that next 100 years.

A game apart, a world apart, one might say, from those earliest of natural designs.

Through the great British architects:

- BRAID
- TAYLOR
- VARDON

*Continue
to learn*

The triumvirate - all Open Champions, all golf course architects, Braid incredibly prolific in this time - a time with no cars, planes, just the railways...

To the non-professionals:

- COLT
- AUSON
- ABERCROMBIE
- MACKENZIE
- FOWLER
- SIMPSON

...Laying out the most classic of courses at home and abroad

...And their American counterparts:

- TILLINGHAST
- BENDELOW
- BLAIR MACDONALD
- FLYNN
- TOOMEY
- THOMAS
- WILSON
- CRUMP

The list goes on and on...

What a great heritage my profession has!

And from simplicity, changing the use of the land for the game to the modern day...the complexity of it all, the artificiality of it all, the expense of it all, changing the form of the land for the game.

Do we? Yes!

Must we? No!

Should we? No!

From human hands, to horse and cart, to rudimentary machinery...to bulldozers, excavators, and more bulldozers and excavators, and even more bulldozers and excavators...modelling and shaping for the game.

Do we really need all this?

Have we lost our way?

Have we forgotten about how it all started, on those most natural of links?

Golf courses designed to fit into the natural environment, couched in nature, imperceptibly, must be what we need to pursue as both philosophy and practice.

Such is the responsibility of my profession.

Not always easy on some sites where nature doesn't give you too much help...the greater the challenge, sure, but the principle should not change.

"The essence of the game is its simplicity." So said Tom Simpson in 1929.

Apply that to today's golf course architecture, I say, some 75 years later!

Since that golden age, life in the design world has undoubtedly become more complex, more expensive - over elaborate, one might say.

So what does the modern golf course architect do?

He or she follows three philosophies of design:

- PENAL
- STRATEGIC
- HEROIC

By Howard Swan

The earliest adopted or recognised - PENAL - is simply punishing, wagging the finger at the player, saying: "Don't dare stray from the straight and narrow, and if you risk anything you'll pay a heavy penalty". Square greens, rectangular fairways crossed and sidelined with fearsome bunkers.

The likes of the 14th at The Old Course - LONG - was considered at the beginning to be utterly penal, but - as the profession developed and with the likes of Colt and, particularly MacKenzie, this hole was considered to have some strategy. A course from tee to green could be plotted, options for routing of play identified by the player, and taken.

The strategic approach is one of risk and reward, thought provoking, favouring the brave, rewarded to the risk-taker but giving the less mortal a chance at his or her own level.

Heroism in design may be considered to have come across the big pond. Bite off as much as you can chew, and a good bit more. Carry water bravely, cut corners to the pin and become a hero by doing so.

Death or glory!

Typically American, if I may say so.

Based on these philosophies or best a mix of them to stir the emotions in playing the fame, we golf course architects ply our trade.

He or she - yes, we have a few women in our midst, not enough, in my view, but some - has to be many, many things to encompass, around that creative flair that he or she should have, an understanding of soil science, agronomy, engineering, construction, drainage, irrigation; surveying, mathematics, computer science; greenkeeping, economics, finance and accounting, project management and planning - the list goes on and on.

And yes...an understanding of the game, playing it at some level, not necessarily the highest, although just like all those years ago, many professional players, current or past, label themselves as golf course architects...rather designers, perhaps, I might say.

There is a fundamental difference.

Conceptualising design is the first stage, creating the masterplan, taking that piece of land and laying out a golf course on it, as naturally, with as little impact - environmentally, economically - as possible.

It may be 18 holes or more, or less, and it is pertinent these days in maximising usage of land, expensive and scarce it may be in 60 hectare blocks, to consider less - three, six, nine, 12 holes, compact layouts, practice facilities, little courses for beginners, of all ages, and give a maximum return for the developer's investment.

Once the masterplan is in place, just the golf course or with other infrastructures - an hotel, real estate, whatever - a technical project needs to be developed. This might run to a hundred drawings for an 18 hole course - staking, site preparation, earthworks and grading, field drainage, greens, tees, bunkering detail, irrigation, lake construction, grassing, landscape planting, habitat creation, traffic (golfers' and greenkeepers') routing, and presentation management with standard profiling of all the new course's components.

All this accompanied by a Specification, which sets out the quality of the golf course, and Bills of Quantities, which details clearly in an orderly fashion exactly what is to be done, how much is to be done, and, after a bidding process, how much it may cost.

Quite a substantial set of documents but, in my view, essential in order to structure any project properly from the outset, a framework in which all the team can work, a framework not restrictive in stifling that essential creative flair, that exciting and spectacular end result, but enough to make the development controllable in financial and other terms.



Goodwood 17th

During construction and establishment, the modern, professional golf course architect needs to be on the site, overseeing the implementation of the design. He or she needs to do that regularly, not just once in a blue moon as some might, not just a couple of times, but at a meaningful frequency so that the project team - contractor, irrigation installer, greenkeeper, client and the consultants - are all pulling in the same direction and a quality result is achieved.

Such management may also be effected, if the budget allows - yes, golf course projects need, and sometimes do get realistic budgeting which is maintained - by having the eyes and

ears of the architect on site all the time; or relying on the greenkeeper of the client, appointed in a project as early as possible, to watch over the development process as the golf course takes shape.

Such a stage in any project, new course or renovation of an existing one, is quite vital and cannot be underestimated if the best interests of the client are to be protected, which is, after all, the ultimate responsibility of the architect.

This is what today's architect does, or should do. A far cry from those earliest of days of Robertson, Morris, even Braid, Taylor and Vardon.

But hopefully in this complex of modern worlds, simplicity might prevail.

Appreciation of the land, its natural feature, its value and its character, environmentally, is the essence.

Changing its use sympathetically is the challenge.

To do this the modern golf course architect needs what? - education and training, experience in the field, with a basis of technical and commercial understanding, and the opportunity to practise and develop those skills.

Learning about golf course design is available through a number of avenues - masterclasses like BIGGA's own at Harrogate, the postgraduate Diploma programme of the European Institute of Golf Course Architects - my professional body - a two-year part-time course, a Masters Degree run by Edinburgh College of Art.

The Diploma gives the chance to get out and practise through a mentoring and work placement programme, albeit not yet extensive enough, but developing every day.

The programme is turning out some talented, young golf course architects from all over the world, where the game continues to grow, or is just beginning to be established - teaching us old guys a thing or two.

So what of the way forward?

Learning, appreciating, applying those professional skills sympathetically and sensitively is what the members of my profession need to do. And to do so in the framework of the team in any project, working alongside specialists in allied fields and particularly the greenkeeping profession, an immeasurably valuable relationship, alongside the administrators of the game worldwide.

To push out the frontiers of the game, wherever, to create golf courses to encourage people to join the game and expand its base; encourage players to have their skills, develop their playing prowess, to reach their golfing zenith.

And, above all, to do so...naturally.

Howard Swan has been involved in designing and building golf courses for almost 35 years. After founding his own architectural practice, Swan Golf Designs, in 1987, he has become one of the most respected golf course architects in Europe. Today, SGD's portfolio includes 30 countries from the USA to China, as well as Iceland, West Africa and, now, the new golf markets in Eastern Europe. A leading member of the European Institute of Golf Course Architects, in 2004 he received the British Turfgrass Industry's Life Time Achievement Award.

Course Feature

Chance of a Lifetime

The Ohio State University Turfgrass Intern Programme, has brought together seven interns from the UK for hands-on training at The Pinehurst Resort, North Carolina.

Robert Lucas - Course 3, Niall MacDonal & Tom Freeman - Course 4, Craig Hay - Course 5, Jaime Smith - Course 6, Stephen Brogan - Course 7, Neil Kennedy - Course 8 give you an idea of what life is like on an internship at Pinehurst.



Left to right. Back: Thomas Freeman, James Smith, Neil Kennedy, Stephen Brogan. Front: Niall Macdonald, Craig Hay, Robert Lucas

The aim is to equip the interns with the skills, experience and knowledge they need to succeed in the Turfgrass Maintenance Industry worldwide. The programme is also a great opportunity to have fun, learn, and make contacts with people who can extend your support network, both professionally and personally, from around the world.

Our visa allows us to undertake work based practical training for 12 months with the option of extending for another six months.

Accommodation is arranged by Pinehurst Resort and we live together in the same apartment complex, only five miles from the golf courses. There's lots to do when not at the course. We are all really keen golfers and spend most of our spare time playing. As Pinehurst employees, we get free use of the golf courses and practice facilities - the only cost is \$5 for a golf cart.

The hours we do and the amount of overtime varies throughout the year. During spring, summer and autumn we start at 6am and finish at 3pm, Monday - Friday. During winter we start at 7am. Weekend duty is compulsory and, although you are only asked to be on duty every other weekend, most interns go in every weekend for the experience. We do a lot of overtime during the summer months, it's not physical work but it is very responsible and an important duty - "wilt watching" and syringing greens (more later).

Interns are trusted with a lot of responsibility because we have all been to college and have a qualification. We also use machinery and equipment that we had never used before and carry out topdressing, aeration,

irrigation, spraying fungicide, herbicides, to insecticides and fertiliser.

The Pinehurst Resort is the largest golf resort in the US, with eight golf courses and three hotels. In 1900 Donald Ross came to Pinehurst and stayed for 48 years, during which time he re-designed course 1; was the architect for the world famous course 2, which opened in 1907, and Course 3 which opened in 1910. Course 5 was designed by Ellis Maples in 1961. Courses 4, 6 & 8 were the work of Tom Fazio. Course 7 was designed by Reese Jones in 1986.

Pinehurst has mild winters, allowing for a long golfing season so golfers from the northeastern states use it as a winter retreat. It is on sandy soil which provides great drainage all year round.

In 2005 it hosted the US Open Championship won by Michael Campbell with a score of even par.

The climate of North Carolina is mild winters and very hot summers which means Pinehurst is in a transition zone. They use warm season turfgrass during the summer months and cool season turfgrass during the winter months, which is a great experience for us to be exposed to from a management perspective.

PINEHURST THROUGH THE SEASONS

SUMMER

Summer temperatures frequently hit 40°C so bermudagrass (*Cynodon dactylon*) is used as the warm season turfgrass. A hybrid bermudagrass called Tifway 419 is used because it has a finer leaf blade, produces a tight sward and is more drought and shade tolerant than common bermudagrass, it grows on the tees, fairways, roughs, collars, and approaches.

We started to notice "green-up" and recovery of bermudagrass in late February when night temperatures remain above 15°C for several days, soil temperature also needs to reach 18°C at the 10cm depth. By the last week in June 99% of the ryegrass had wilted out of the golf courses.

The greens are cut everyday during the summer, the other areas such as fairways, rough, tees, collars and approaches are cut every other day.

The greens at Pinehurst are seeded with Penn G-2 creeping bentgrass (*Agrostis stolonifera*) because it provides a high quality putting surface and year round colour. We cut the greens very low - 3.1mm is the usual cut height.

G-2 is a very heat tolerant cool season turfgrass so is able to tolerate the high summer temperatures, but only if a lot of effort is made to cool the greens by syringing to replace lost water from the leaf and reduce the temperature of the canopy.

We are given the responsibility of syringing the greens, which involves hand watering areas of the greens that begin to wilt. These areas are called 'hot spots' and are syringed over and over all afternoon usually from

12 noon to 5pm. A very small amount of water is applied each time, just enough to replace moisture lost from the leaf. The idea is not to water the soil as this forces oxygen out of the soil creating anaerobic soil, root loss and, eventually, algae problems. We are sent out to syringe most afternoons during summer.

The warmest month is July, the average high temperature is 32°C, and the average low temperature is 21°C

July is also the wettest month average rainfall is 129mm.

AUTUMN

The courses are aerated in September, the greens are hollow cored and top-dressed. Fairways, tees, collars, rough and approaches are heavily verticut which removes thatch and creates a seed bed for the ryegrass overseeding.

During autumn the temperatures start to cool down so the growth of the bermudagrass slows down, as the temperatures get colder and frosts it will eventually go dormant. Dormant bermudagrass has lost all its chlorophyll from its leaves so is brown in colour; it requires warm air and soil temperatures and strong sunlight for its photosynthetic processes.



The Proshop at Pinehurst

Before the bermudagrass goes dormant the turf is overseeded with perennial ryegrass (*Lolium Perenne*). This happens the first week of October so by the time it is dormant the ryegrass will have germinated and the plants will be mature enough to provide a quality playing surface. All areas are overseeded, apart from the greens which are kept creeping bent grass (*Agrostis stolonifera*) year round. The growth of the grass slows down at this time of year, the greens are cut daily, fairways, collars, tees and approaches are cut three times per week and the rough is cut twice per week. The average high temperature in October is 22°C The average low temperature in October is 10°C The average rainfall in October is 95mm - ideal weather for golf but just remember, during aeration and overseeding the courses are closed for 2-3 days so we can get the work done as fast as possible. Closing eight courses for 2-3 days for both processes, leads to a big loss of greens fees so this is where you learn about efficiency and scheduling and organisation in a grand scale, because "time is money!"

WINTER

During winter temperatures can still reach 20°C, so irrigation is still used to prevent ryegrass wilt. It does get really cold at times if the wind is coming from the North or East it brings some really cold temperatures.

We noticed a big difference in morning and afternoon temperatures at Pinehurst, it's something we've never experienced in the UK, there was days when we would start at 7am and the temperature was -1°C with a hard frost on the ground but by lunchtime the temperature would be 18°C.

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The coldest month is January, average high is 10°C; average low temperature is -1°C and average rainfall is 117mm.

The grass grows more during the winter than it does in the UK, sometimes it's mild and sometimes it's freezing. If it is mild, the greens are cut every day, fairways, tees, collars, approaches and rough 1-2 times per week.

During the winter we are on a shorter schedule, therefore, most interns take the opportunity to spend some hard earned money on vacation; Mexico, Florida, California and New York are places we have visited.

SPRING

The ryegrass is growing fast so fairways, roughs, collars, tees and approaches are cut every other day. Greens are cut everyday.

The average high temperature is 22°C; the average low temperature is 9°C and the average rainfall is 81mm.

During May the courses are aerated, the greens, tees and collars are hollow cored and topdressed, the fairways and rough are aerated with spoon tines.

Spring is a time when the bermudagrass breaks its dormancy and starts growing again, at this time the two grasses are competing against each other for root space, water, nutrients and sunlight. The objective is to remove the ryegrass to allow full bermudagrass recovery.

The ideal situation is for the ryegrass to wilt and die as the two grasses don't blend well with each other as bentgrass and fescue do, ryegrass is a lot darker green than bermudagrass so stands out like a sore thumb.

Optimum daytime temperatures for ryegrass growth is 15 - 24°C, temperatures which are warm enough for bermudagrass, these temperatures can be experienced until the end of May at Pinehurst, therefore at this time the bermudagrass can't out compete the ryegrass without help.

STEPS TO ENSURE DESIRABLE SPRING TRANSITION:

1. Overseeding Rate

High seeding rates are used at Pinehurst, which is expensive but tends to keep the overseeded grass more juvenile due to competition so makes transition easier in spring.

Lower seeding rates often result in more mature plants, which are less susceptible to heat and moisture stress so remain into summer.

Fairways - 625kg/hectare; Roughs - 225kg/hectare;
Tees - 850kg/hectare; Collars - 625kg/hectare;
Approaches - 625kg/hectare.

If your wondering about how much seed this takes, picture 15 Artic trucks full of seed!

2. Fertilisation

Nitrogen, Potassium and Phosphorous are applied in early Spring, for conditioning of ryegrass, the first fertiliser application is after any danger of a severe frost has passed but before complete recovery of bermudagrass. Nitrogen is applied after 20 to 30% green up of bermudagrass. Rates of Nitrogen are kept to a minimum while temperature still favors the ryegrass. When temperatures rise to favor Bermudagrass, Nitrogen is applied in May and June or until bermudagrass has completely recovered, for its conditioning. Potassium is applied to increase carbohydrate storage in stolons and rhizomes, and promotes root development in spring and autumn. Iron is applied as deficiencies are noticed in early spring when soil temperatures are low.

3. Mowing Heights

Low heights of cut are used to weaken the ryegrass, which reduces the shading and competition effect on the bermudagrass. Fairways - 12mm; Roughs - 25mm; Tees - 10mm; Collars - 7.6mm; Approaches - 12mm.

4. Herbicides

Selective herbicides which kill cool season grasses but don't harm warm season grasses are sprayed. Bermudagrass needs at least 100 days of growth in the absence of ryegrass competition, failure to do this will cause loss of Bermudagrass and the sward will become thin over time. If it looks like bermudagrass will not get its 100 days before overseeding in autumn, the Superintendent will decide to remove the ryegrass with a herbicide, using Monument (trifloxysulfuron) from the sulfonylurea herbicide family.

NAME	AGE	COLLEGE & QUALIFICATION	PREVIOUS GOLF COURSE
ROBERT LUCAS	25	REASEHEATH COLLEGE NATIONAL DIPLOMA HORTICULTURE & SPORTSTURF	STOCKPORT GOLF CLUB CHESHIRE ENGLAND
CRAIG HAY	20	ELMWOOD COLLEGE SVQ LEVEL 2	ST ANDREWS BAY FIFE SCOTLAND
TOM FREEMAN	22	LACKHAM COLLEGE NVQ LEVEL 2&3	BOWOOD GOLF CLUB, WILTSHIRE ENGLAND
JAIME SMITH	20	HARTPURY COLLEGE NVQ LEVEL 2	HILTON PUCKRUP HALL GOLF CLUB ENGLAND
NEILL KENNEDY	23	OATRIDGE COLLEGE SVQ LEVEL 2&3	ARCHERFIELD GOLF CLUB EAST LOTHIAN SCOTLAND
NAILL MACDONALD	25	GOSTA TRAINING AGENCY SVQ LEVEL 2&3	DRUMPELIER GOLF CLUB, NORTH LANARKSHIRE SCOTLAND
STEPHEN BROGAN	22	GOSTA TRAINING AGENCY SVQ LEVEL 2&3	HAYSTON GOLF CLUB KIRKINTILLOCH, GLASGOW, SCOTLAND