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The ever increasing intensity of traffic on golf greens during the past three decades has necessitated the development and use of high-sand root zones, such as the Texas-USGA Method. Dr James Beard, one of the distinguished speakers at both the '95 National Education Conference and BTME seminar programme at Harrogate in January, outlines the construction methods and specifications for this green which he believes is suitable for golf courses around the world.

Pre-1940, greens were constructed with high clay content soils. This was for two primary reasons: (1) better stability of the surface, and (2) better water holding characteristics that assisted in sustaining an actively growing green turf in the dry summer period when there was no irrigation capability. The compaction proneness of clay was not an issue because traffic was light.

The late 1940s and early 1950s introduced an era of (a) increasingly intense traffic, (b) public demand for higher quality turfed greens, and (c) the development and widespread use of overhead sprinkler irrigation systems for greens. The increasing traffic combined with the traditional construction approach of relatively high clay soils led to soil compaction problems that became the limiting factor in turfgrass culture on recreational surfaces.

Because the increasing soil compaction problem was seriously limiting turfgrass growth, both practitioner trial-and-error approaches and detailed soil physics research with high-sand content root zones evolved. The primary objective in using sandy textured soils was to provide adequate drainage of excess water and the resultant aeration needed to support rooting and overall healthy turfgrass growth. This early interest in high-sand root zones for greens was pioneered in the United States. The first root zone construction system that was soundly based on scientific principles and backed by extensive laboratory and field research was the Texas–United States Golf Association (USGA) method of root zone construction developed at Texas A&M University under the direction of Dr James Beard, one of the distinguished speakers at both the ‘95 National Education Conference and BTME seminar programme at Harrogate in January, outlines the construction methods and specifications for this green which he believes is suitable for golf courses around the world.

The Texas-USGA Method

Suggested specifications for the Texas-USGA Method are based on the 1960 specifications, with subsequent evolutionary refinements. It consists of a 300mm (12in) settled root zone over a 50mm (2in) intermediate coarse sand zone, over a 100mm (4in) gravel or crushed stone drainage bed which overlays a drain line network (see Figure 1). It is important that the final surface grade ensures drainage of excess water across and off the surface, usually in multiple directions. The construction method for greens is as follows:

1. **Subgrade**
   - Contour the subgrade so it conforms to the proposed finished grade, with a tolerance of ± 25 mm (±1 in). The subgrade should be 450mm (18in) below the planned finished grade and should be firmed to prevent settling. Care should be taken to ensure that the final subgrade base contours, within the overall slope, drain off gravitational water to the nearest drain line.

2. **Subsurface Drainage System**
   - A berrinbone or gridiron design is utilized, with 100mm (4in) diameter drain lines spaced at 4.6 to 6m (15 to 20ft) intervals at a minimum grade of 0.5 percent. The drain line trenches should be cut into the subgrade at shallow a depth as possible. A 38 to 50mm (1.5 to 2in) depth of 6 to 10mm (0.24 to 0.39in) diameter crushed stone or gravel is placed in the bottom of the trenches and the drain lines laid. Then additional stone or gravel is placed around and over the drain lines to fill the trenches.

3. **Drainage Layer**
   - Angular, hard, noncalcareous, washed, screened river run gravel or crushed stone of 6 to 10mm diameter should be selected for covering the subgrade to a minimum settled depth of 100mm (4in). The proper sized crushed stone or gravel must be obtained to prevent migration of the sand into the gravel or stone bed and thereby preserve the integrity of two distinct layers: the upper high-sand mix over gravel or crushed stone. This drainage layer functions in the rapid lateral movement of gravitational water to the drain lines. Also, the porous crushed stone or gravel base prevents the upward capillary rise of salts from the soil base into the root zone. During installation, the crushed stone or gravel is typically dumped from the delivery trucks on the perimeter and then distributed over the construction site by a small, tracked crawler tractor, being careful to avoid driving over and crushing the drain lines.

4. **Coarse Sand Zone**
   - A 50mm (2in) deep layer of washed, screened, hard, angular coarse sand of 1 to 2mm diameter is carefully spread over the drainage layer. The specific size of the sand particles must be within 5 to 7 diameters of the underlying crushed stone or gravel. Thus, if 6mm stone or gravel is used, the particle size of the coarse sand zone should be not less than 1mm in diameter. This coarse sand zone has two key functions: (1) To prevent infiltration of the high-sand root zone mix into the spaces between the drainage layer particles and (2) To create a perched hydration zone of plant available water immediately above the drainage layer in the lower portion of the high-sand root zone mix. The distinct interface between the coarse sand zone and the upper 300mm (12in) of settled high-sand root zone mix disrupts the continuity of surface interfaces among the particles and the downward movement of water. When the perched hydration zone above the interface approaches water saturation, the force of gravity overcomes the interface perched effect and the excess water is released downward.

   Installation of the coarse sand zone is best accomplished manually, taking care to not mix the sand with or into the drainage bed. The coarse sand is dumped from the delivery trucks on the outside perimeter, and is typically moved across the crushed stone or gravel by wheelbarrows over a path of plywood boards. This thin coarse sand layer presents some difficulties in installation. However, this intermediate zone is critical to the overall concept and is a modest long-term investment compared to turf failure and...
rebuilding costs if improperly constructed.

Substitution of a non-biodegradable screen-like material for the coarse sand intermediate zone has been proposed. Problems have been observed with these geofabrics which tend to become clogged to the extent that they are impermeable to water and may cease to drain. However, a more open, non-filter mesh or netting may be used between the intermediate coarse sand zone and the drainage layer when using gravel to provide a stabilizing effect during construction. This netting should not be necessary when using angular crushed stone due to the stability of this material.

Ringing the Perimeter
Polyethylene sheeting should be permanently inserted as a vertical barrier between the outer native soil and the root zone mix. This barrier prevents lateral water transfer into the adjacent dry soil, which would cause perimeter turf water stress. When the sheeting is extended 100 to 150mm (4 to 6in) above the surface during construction, it will also function in preventing erosion of unwanted soil onto the construction area.

Root Zone Mix Installation
Quality control is the key to successful execution of root zone modification. All root zone mixing should be completed off the construction site, termed off-site mixing. Although it sounds good, in practice the procedure of in-place rotary tilling of the organic and/or soil components into the high-sand component has not been successful. Every truck load of each component in the soil mix, as well as the gravel and coarse sand, should be checked at delivery to ensure that the specifications are met.

Off-site mixing includes soil shredding, screening to remove any objectionable stones, and addition of the specified proportions of each mix component. Because of the narrow range in acceptable limits of the physical properties, it is very important that the laboratory recommendations be explicitly followed in mixing the components of the root zone mix. Upon confirmation that the root zone mix has met the specifications, it is transported to the construction site and dumped around the perimeter onto the coarse sand zone. A small, crawler tracked tractor with blade then pushes the mix over the area being careful to avoid crushing the drain lines. Be sure the unit is operated with its weight on the root zone mix. This reduces the chance of disturbing the lower construction profile.

Caution: Use of wheeled tractors causes rutting and they are more likely to crush the drain lines than are tracked vehicles. Grade stakes placed in a grid pattern at 3 to 4.5m (10 to 15ft) intervals will aid in constructing the final contours to the specified root zone depth. Success has been achieved by carefully selecting the components of the root zone mix and by careful adherence to the construction guidelines.

Texas-USGA Root Zone Mix Specifications
One of the greatest problems encountered in maintaining turfgrasses is soil compaction. This pressing together of the soil particles into a more dense mass results in impaired drainage of excess water and a loss of proper aeration needed to provide oxygen for healthy root growth. As a consequence, there is a general decline in turfgrass health, vigor, and recuperative ability following turf injury from wear stresses.

Soil compaction and the resultant negative effects can be minimised by selection of a high-sand root zone of the proper particle size distribution and associated key physical and chemical characteristics. The result is minimum proneness to compaction, adequate drainage of excess gravitational water, and proper aeration to provide needed oxygen for root growth and related soil biological activity.

However, such high-sand root zones are very droughty due to poor water retention capacity unless a perched hydration zone, such as achieved through the Texas-USGA Method, is utilized in the construction specifications. In addition, high-sand root zones tend to have a low cation exchange capacity, thus, the leaching of essential plant nutrients is a greater concern, particularly during the initial years following construction. This potential problem can be minimised through the use of slow release nutrient carriers and/or the timely use of foliar feeding techniques.

Composition of the 300mm (12in) settled depth of root zone mix should be selected based on specific physical tests conducted in a reputable physical soil test laboratory. The test report specifies the particular materials and the percentages in which they are to be mixed. The desired characteristics for a Texas-USGA Method root zone mix are given in the following paragraphs.

Component Descriptions of Root Zone Mix
It is important that the three components selected for the root zone mix be free of toxic levels of materials such as heavy metals, persistent crop herbicides, and industrial organic chemicals. Minimal amounts of soluble salts, boron (B), and sodium (Na) are preferred.

Sand Component
Angular, hard, washed, screened silica sand is strongly suggested. Avoid high pH calcareous sands. The preferred sand component particle size is: 100 percent below 1mm (18 mesh), 65 percent below 0.5mm (35 mesh), 25 percent below 0.25mm (60 mesh), and 5 percent below 0.05mm (270 mesh). Note: the mesh size refers to the US standard of the United States Department of Agriculture (USDA).

Organic Matter Component
It is suggested that the organic matter source selected be well decomposed and have no more than 15 percent ash or mineral content, preferably less than 10 percent mineral content. Examples include peat humus and reed-sedge peat. The organic material should be shredded to ensure mixing uniformity, but not to the degree that the material is pulverized thereby causing reduced soil water infiltration.

Soil Component
A sand, loamy sand, or sandy loam topsoil is suggested. The soil should be shredded to ensure mixing uniformity and should be screened to remove stone and other debris.

Composite Root Zone Mix Particle Size Distribution
It is suggested that the root zone mix contain less than 25 percent particles smaller than 0.25mm (60mesh), and contain less than 5 percent silt and 3 percent clay. The suggested
specifications for the particle size distribution of the root zone mix are shown in Table 1.

**Composite Rootzone Mix Physical and Chemical Properties Criteria**

The physical or chemical properties preferred for the composite root zone mix are summarised in Table 2.

**Mix Water Infiltration Rate**

The preferred water infiltration rate for a laboratory compacted root zone mix is in the range of 150 to 300mm per hour (6 to 12in/hr). The rate in the laboratory tests should not exceed 600mm per hour (24 in/hr). The upper limit in the water infiltration rate is designed high enough to account for the normal on-site reduction in infiltration rate that occurs during the first 3 to 4 years due to increases in roots and organic material.

**Mix Aeration Porosity**

An acceptable total pore space volume is between 40 and 55 percent. The preferred distribution would be 22 percent capillary and 25 percent noncapillary pore space. Noncapillary pore space should be not less than 15 percent. The measurements are made on a root zone mix that has been allowed to percolate water for 8 hours and then is drained at a tension of 400mm of water.

**Mix Water Retention Capacity**

An acceptable laboratory-established 400mm water retention capacity would be between 12 and 25 percent by weight on a 105 to 11°C oven dry soil basis. The available water in the soil is estimated to be that held at a tension of 400mm of water, which is the approximate distance from the surface to the drain line. The preferred water retention capacity is 18 percent, or 1.5mm of water held per 10mm of soil.

**Mix Bulk Density**

The preferred root zone mix should have a bulk density of 1.4 grams per cc; with a minimum acceptable bulk density of 1.2 and a maximum of 1.6 grams per cc.

**pH**

The acceptable pH range is 5.5 to 8.0, and the preferred pH range is 6.0 to 6.5.

**Soil Salinity/Electrical Conductivity**

The acceptable range is less than 4 millimhos per cm, with the preferred range being between 0 and 1.

**Soil Sodium Level**

The acceptable range is an exchangeable sodium percentage (ESP) of less than 15, with the preferred being a minimal sodium level.

**Root Zone Mix Analysis**

The starting point in selection of a root zone mix involves obtaining detailed physical and chemical descriptions of the components being considered for a root zone mix and how they respond when mixed in various combinations. One or more representative samples of each sand, organic matter, and sandy soil component under consideration for use should be submitted to a reputable laboratory.

The primary laboratory physical determinations made are the particle size distribution, bulk density, and mineral composition. The next laboratory step is to combine various proportions of the sand, organic matter, and sandy soil, based on physical determinations. These trial mixes are compacted and then evaluated for water infiltration rate, moisture retention, bulk density, and pore space. Mixes are made and tested until one is found that conforms to the standards. Recommendations as to the relative volume of each component to be used are then given.

The crushed stone or gravel for the drainage layer and the coarse intermediate sand also should be tested for particle size diameter to assure that the root zone mix does not wash down and block the drains.

In addition to recommendations concerning the appropriate sand, organic matter, and soil materials and their mix proportions, a description of the chemical properties of each material is needed. Included are the pH, total salts, and levels of phosphorus (P) and potassium (K). A sodium (Na) analysis is occasionally needed.
Submitting Soil Materials for Testing

A laboratory physical analysis requires a minimum of 9 litres of sand, and 4 litres each of organic matter, soil, intermediate coarse sand and crushed stone or gravel. If there is a choice of sands, organic materials, and sandy soil, send samples of each along with a note indicating a preference based on cost, accessibility, and quantity available. The laboratory will attempt to use the preferred, most cost effective materials in the recommended root zone mix.

Representative samples of the materials must be collected. If the materials are stockpiled, make sure to composite several samples dug from within the side or top of the stockpile. Materials near the edge or on a sloping surface may not be representative. Make sure that a prospective vendor will have sufficient stocks of uniform materials over a long period so that if there is a delay of a few months, the materials available at the time of construction will be the same as the original samples tested. All samples should be packaged separately and securely. Strong plastic bags inside cardboard cartons or metal cans are most satisfactory. Use plastic labels inside the package and also to mark the outside of the package.

Construction Plan

Proper construction usually involves an extensive subsurface drainage system, specialised root zone modification, and subtle surface drainage contours. It is a critical aspect, since improper construction due to cost cutting results in higher long-term maintenance costs, problems in maintaining a quality playing surface, frequent loss of turf, and costly reconstruction. The steps in construction are:

1. Survey and stake
2. Construct subgrade
3. Install a subsurface drainage system
4. Modify root zone:
   (a) Construct drainage layer
   (b) Construct coarse sand zone
   (c) Mix and install specified root zone
5. Install irrigation system
6. Finish surface contours
7. Plant
   (a) Soil pH adjustment, if needed
   (b) Fertilisation based on soil tests
   (c) Plant
   (d) Post-plant care

Throughout the world tens of thousands of greens have been constructed this way during the past 30 years as it has many advantages.

High-Sand Root Zone Advantages

While there have been a number of high-sand content root zone specifications proposed, many being modifications of the Texas-USGA Method, they tend to be deficient in sound science with inadequate fundamental research to support the concept. Many proposed root zone mixes are only slight modifications of the Texas-USGA Method, but they result in significant changes from a practical soil physical performance standpoint. Among all these proposed root zone mixes, none have proven nearly as successful and reliable under a diverse range of climatic and soil conditions throughout the world as the Texas-USGA Method. The advantages of a high-sand root zone of the proper particle size distribution include:

1. Resistance to compaction problems.
2. Favourable soil water infiltration and percolation rates.
3. Increased effective precipitation due to reduced surface runoff.
4. Enhanced aeration that provides adequate oxygen for root growth.

The primary problem now developing is not the underground limitations of poor drainage and lack of aeration characteristic of the finer textured root zones, but rather the divoting and turfgrass wear of above ground shoots. Under an ever increasing intensity of traffic stress, this latter problem eventually leads to turf thinning and bare areas. The use of improved turfgrass cultivars with (a) more rapid shoot growth rates, (b) a greater green biomass, (c) higher proportion of sclerified tissue in shoots, (d) better recuperative potential, and (e) disease resistance has partially solved this problem.

The next step is to incorporate an effective method of stabilizing the high-sand root zones, while retaining a favorable environment for turfgrass root growth. That's why Samuel Sifers and I have been assessing the use of randomly orientated, interlocking mesh elements.

The Mesh-Element Inclusion Concept

Since this system has proven very effective in improving the stability of soils for engineering applications, feasibility investigations were initiated concerning the use of randomly orientated, interlocking mesh elements, such as those made by British firm Netlon. The polypropylene mesh elements consist of discrete 50 by 100mm (2 x 4in) rectangular elements, with open ribs extending from the perimeter. The square aperture between the individual ribs of the mesh element is 10 by 10mm (0.4 x 0.4in) or 100mm2 (0.16 in2). The open ribs extending from the perimeter of each mesh element facilitate an interlocking structure of multiple elements in a randomly oriented matrix. The result is a unique three dimensional matrix of a relatively fixed, but microflexible nature, which ensures that the mesh elements remain in a stable position within the root zone. The turfgrass roots intertwine the mesh element ribs to secure a strong turf anchorage effect. The rectangular shape and specific size of the mesh elements selected for these investigations are based on extensive studies comparing a range of alternative shapes and sizes in terms of the most effective configuration for overall soil stabilization.

Five key studies have been conducted since 1985 at College Station, Texas, including two long-term field investigations. The findings revealed these benefits:

- enhanced soil stabilisation especially in sandy soils and on steep slopes;
- improved load-bearing capacity;
- better resistance to surface rutting and deformation;
- reduced divot size;
- enhanced divot opening turf recovery;
- reduced lateral cleat turf tear;
- enhanced turfgrass rootzone – improved water filtration rate, soil water percolation rate, soil moisture retention and overall turfgrass health.

There was also less compaction and a reduced potential for black layer problems, especially on fine textured high-sand root zones.

These qualities mean that mesh elements are suitable for use not just on greens but also tees, buggy paths and for bunker and grassy mound banks.
Keeping in touch with news and comment from the regions

CENTRAL SCOTLAND
The first real frost of the season did not help head greenkeeper Graeme Downie and his staff prepare Braehead GC for our final golf tournament of the season. But the sun did eventually break through and the course was in first-class order by the time the 50 section members and guests teed off.

The sun didn't last too long, however, and we ended up with a day of blustery showers. Nevertheless, everyone appeared to enjoy themselves, especially the winners:
Best nett agr spring and autumn - J Ellis, Glenbervie, 148; best scratch - W Whitfield, Stirling, 71; best nett - R Hadley, Pitreavie, 69; class 1 - 1, M Laing, Aberdour, 69; 2, N Morrison, Leven, 75; class 2 - 1, J Gray, Hags Castle, 71; 2, F McNeill, Braehead, 71; Patron's Prize - K Brunton, Souters, 75; Guest's prize - A Morrison, Leven, 72; Braehead Presentation Glass - W Whitfield, Stirling, 71.

Our sincere thanks go to Braehead GC for extending us the courtesy of their club and for the presentation of a beautifully engraved whisky glass, to club captain Val Buchanan and secretary Paul MacMichael for joining us on the day, and a special thanks to Val for presenting the prizes in the evening. The hospitality in the clubhouse was excellent, thanks to Dave and Janette who were kept going all day providing first class fare and drink.

Graeme Downie and his staff deserve a special thanks for all the hard work they put in on the morning of the tournament getting the course ready, despite the frost. Well done lads!

The quiz night which followed the golf tournament was quite successful with everyone joining in the 'spirit' of things, which made some of the answers rather interesting. It is intended to hold a further quiz night during the winter months, when wives and partners will be most welcome.

The next major event will be the BTME at Harrogate next month, which more and more members of the section are making an event not to be missed, and where they can renew old friendships and make many new ones. As usual the Scottish Region is running a coach for this event, so if you wish to go and have not booked your place yet, get in touch with Elliott right away as there may still be a few places left.

A date for your '95 diary is Thursday April 13 when the Spring Tournament/Hayter Challenge qualifying round will be held courtesy of Aberdour GC.

As we near the end of another year I would like to thank everyone who has supported the section in '94, with special thanks to all our friends in the trade for their assistance in organising lectures/demonstrations etc on our behalf and for their continued support of our golf tournaments.

Here's wishing everyone every success in '95.

JOHN CRAWFORD

EVENTS DIARY
December 1: Scottish Region North Section - one-day conference at Crieffstone Estate, Buckburn, Aberdeen
January 25-27: BTME '95, Harrogate International Centre

SURREY
Unfortunately our Autumn meeting, due to be held at Burhill GC, had to be cancelled through lack of support.

Ian Kerry has very kindly supplied our section with a coach for members wishing to attend the BIGGA Turf Management Exhibition. Members who are interested should contact Derek Walder on 0737 246088 as soon as possible.

Congratulations go to Euan Grant of Effingham GC upon winning the Toro/PGA European Tour Student Greenkeeper of the Year award, representing Plumpton Agricultural College.

A second winter lecture has now been arranged for February 13. The lecture, to be given by Watermann, will be held at Walton Heath Artisans Club.

A reminder to members wishing to receive an entry form for the annual Gentleman's Dinner - please return application slips as soon as possible to avoid disappointment.

On behalf of the Surrey committee, I wish you all a Merry Christmas and a Happy New Year.

DAVID GIBBS

DEVON AND CORNWALL
Our first meeting of the winter season was held at the excellent venue of Dainton Park GC by kind permission of the owner, David Wood.

The day started with our golfing members playing a stableford competition over the superbly presented course for the DO Hunt Trophy. Non-golfing members were treated to their customary course walk, guided by host greenkeeper Buster Lewater.

After an excellent lunch Don Hunt of Roffeys presented the prizes he had donated for the morning DO Hunt Trophy to: 1, Steve Milne (Exeter) 40pts; 2, Tony Gooch (Torrington) 33pts; 3, John Parr (Exeter) 31pts.

Our congratulations to Buster Lewater and his lads for having the course in excellent condition.

Our afternoon educational talk on 'Anthracnose and 'Take-All Patch' was presented by Neil Baldwin of Service Chemicals. Neil's talk was most informative and has set a very high standard for our forthcoming meetings to follow. Our sincere thanks to Neil for making the long journey to Devon and for his superb talk.

The raffle rounded off a most successful day, with thanks to all the trade who donated prizes to the raffle table. Our thanks to Don Hunt and Roffeys for donating the morning's prizes and to Mr Wood and all Dainton Parks staff for making our day such a success.

There are still a few places left on the region's 1995 trip to Harrogate and BTME but you need to hurry as places are going fast. To recap, the Westfurth-sponsored trip includes return coach travel from your nearest pickup point, three nights bed & breakfast entry to all seminar sessions for only £99 per member. Wives are welcome at only £75 excluding the seminar sessions. For more details please contact Gordon Chilton on 0803 844056.

Wishing you all a Happy Christmas and a prosperous New Year and I will hopefully see you all at Fingle Glen on Wednesday January 11.

RICHARD WHYMAN

BERKS, BUCKS AND OXON
Our Autumn Tournament at Temple GC once again proved popular. Unfortunately I could not make it on the day but judging by feedback the course was in excellent condition as usual. Thanks to all staff for preparing it and to the catering staff for the excellent food.

First overall were S Lamb and S Cook (Donnington Valley) with 87pts on countdown from T Chester and M Fuller (Wimer Hill). Best am score came from C Mitchel and K Miodd (Maidenhead); best pm was P Clark and C Davis (Hillingdon). Longest drive - J Elton. Nearest the pin - N Edwards.

The final of the Rigby Taylor fourball was held at Mill Ride GC. Thanks to Gordon Irvine for hosting the event. Result: D Goodchild and I Rose (Ellesborough) beat R Wooten and B Payne (Burnham). Thanks to Roger from Rigby Taylor for organising the event and providing all prizes.

A football match between Bucks and Berks ended with Berks making berks of Bucks, winning 3-2. Thanks to Kimble cricket and football club for allowing a bunch of greenkeepers to hack up their pitch. Apparently the losing team has to return with Verti-drain and topdresser to return the pitch to some sort of normality.

Hopefully this match is just the start of a series between the three counties so anybody willing to represent Oxfordshire please contact me on 0491578147 (European rules do not apply - all nationalities welcome).

That's all folks, except to wish everybody a Merry Christmas and a Happy (hic!) New Year.

LINDSAY ANDERSON

AYRSHIRE
Results from the Autumn Outing: Texas Scramble - 1, Kevin Brunton, Brian Inglis, Dale Norquay, David Wilson, 61-4.4= 56.6; 2, George Brown, Martin Lotbian, Jimmy Johnstone, William McMeikan, 63-4.4= 58.6; Stewarts Trophy - New member, David Nelson 96-24=72; Visitor, Gordon Moir 83-6=77; trade, Brian Inglis 75-1=74; Rigby Taylor Trophy (class III) - 1, Jason Buxton 90-20=70; 2, Jim Paton 102-19=83; 3, Jimmy Johnstone 101-16=85; Scottish Grass Trophy (class II) - 1, Jim Devlin 86-11=75; 2, Derek Wilson 87-9=78; 3, Duncan Gray 89-10=79; Richard Atken Trophy (class i) - 1, George Brown 77-5=72; 2, Harry Diamond 83-5=78; 3, William McMeikan 85-7=78; Scratch - Brian Finlayson 76.
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A happy Christmas and a prosperous New Year to all our members, readers and advertisers.
**SOUTH WEST**

Two more team wins over recent months have meant that the section has made a clean sweep in all team matches this season, something which is not normally achieved. Congratulations to team captain Dave Neale on his successes and team organisation for each event.

The first of the latest successes came at St Pierre against the South Wales section. Played in excellent weather on a picturesque course, victory was gained by a margin of six matches to two with some good golf being played by many to achieve this. It was pleasing to note that the afternoon match was well supported for the presentation, so rounding off a very enjoyable day. Thanks to Peter Lacey for his organisation, to St Pierre for the course, and to the Welsh lads for their hospitality. Future events against the Welsh section will be organised on an alternate basis with a venue not too far over the bridge being chosen in England for next year.

Our annual match against the South Coast, at Marlborough GC, was played in rather blustery cool conditions. The winning margin was something closer at three matches to two. An enjoyable day included a first-class meal provided by the stewards. Thanks to Dan Dobie and his staff for producing a course in fine condition, to Marlborough for the course courtesy, and Bob Cully and his team for their participation. Next year's venue has been the choice of the South Coast and will be Lee on Solent GC.

The education continues throughout the winter with BTME in January and a lecture and round of golf to be arranged as a section event in the early months of the New Year. PA1, PA2, first aid and chainsaw instruction courses are all ongoing too. Interested? Then phone me on 0272 793127 for further details.

To round off it just remains for me to wish you a Happy Christmas and thank everyone who has supported the section in 1994 to make the year a success.

KEVIN GREEN

**SOUTH WALES**

The weather was splendid and St Pierre was in good condition for the annual match, South Wales versus the South West. The annual presentation dinner was thoroughly enjoyed by all, but especially Kevin Green and his team from the South West, who cleaned up! Not only did they manage to win back the trophy by winning six of the eight matches but with thanks to Paul Ferragut and Nigel Pring they won the longest drive and nearest the pin competitions as well.

My thanks to all who took part but especially David Gladwin/Adrian Panks and Windsor Marks/Julian B Jones who were our only winning pairs.

Around the Green

The South Wales section's winter evening lecture programme is well underway at Pencoed College, Bridgend. Unfortunately I was unable to attend the first lecture – Dr W Rees' paper on soil science: "To help or hinder?" - but I understand a very informative and amusing evening was had by all. I was also glad to note the attendance was good, hopefully though this can still improve.

It was good to see so many locals supporting Celtic Mowers' annual open day at Margam Park, despite the weather. Both Kim and Sue were very happy with the steady stream of people that showed interest throughout the day, despite the mad rush come lunchtime (some things never change). Celtic Mowers have broadened their horizons so to speak and now stock a large range of chemicals, fertilisers, grass seeds as well as their ever increasing machinery range, so if you haven't visited them for some time they're worth a visit.

Have you booked your seat on the coach to Harrogate yet? The region is again offering an unbelievable opportunity for you to attend the BTME at Harrogate for £99. You will all have received an application form for this offer, take advantage of it! Contact Gordon or Marion Child today and reserve your space.

Congratulations to Steve Price, formerly of St Mellons GC, Cardiff, Steve, who spent eight years there, took up his new appointment as course manager of Keith Morgan's Kings & Queens courses at Usk on November 14. We wish him well and look forward to him hosting one of our competitions in the near future.

If you have any queries or would like more information, call me on 0792 233923 or 0850 716403.

PETER LACEY

**CLEVELAND**

Harry Lees has resigned from the committee of the Cleveland section. Harry is a founder member and has been a hardworking and active member. He has also been our chairman for three years. He remains, however, a member of the section.

George Malcolm, another founder member, is to end his long stand on the Board of Management. He has been the national chairman of both BIGGA and the old BGGA and has served for 15 years on the national committee. He is a very active and energetic figure and is a valued member of the Cleveland section and committee. Well done, George.

Dinsdale Spa's pond at the 14th has been greatly deepened by Tony Mears and his staff, and Chris Powley has been made up to first assistant.

The golf was played very competitively but in the friendliest of spirits, making the game most enjoyable. The region's annual workshop at Cannington College was on Health and Safety at Work, with Jon Allbutt and Richard Newman. The attendance could have been much better than it was for this important topic, but nevertheless it was an enjoyable and very informative lecture. We thank both Richard and Jon for their efforts in this ever decreasing minefield of information.

**LONDON**

The final of the summer knockout, played at Highgate GC, was between Richard Andrews/Russell Ling and Dick Dunne/me. The opposition were playing on home territory and the standard of golf was very good. We managed to take the match to the 20th hole but the pressure was too much for us with Richard and Russell jumping in to win the game. I might add that Richard played excellent golf and his score for the 18 holes was a gross 69 which was 9 under his handicap. I would like to thank Gem Professional for sponsoring the event and providing the prizes.

The regional seminar attracted a good attendance from our section, but it was very disappointing from the other sections around the area. I would like to thank our speakers and congratulate them all on their presentations. I would also like to thank Oaklands College for their hospitality and the excellent facilities that were on offer.

The day could only be successful with the support from the trade and Alan Goodchild for your help and contributions that kept the cost to a minimum for all the delegates that attended.

We will be running a number of winter workshops and details will be sent out. Please remember to keep me informed – you can phone me in the evenings on 081 9595629.

TONY DUNSTAN

**NORTH WEST**

In October I had the privilege of playing in the Kubota Challenge at The Belfry, as one of the BIGGA team. The Challenge comprises four teams – BIGGA, Golf Club Secretaries, Golf Foundation and the English Golf Union. The competition, played over two days, has been going on 14 years with the greenkeepers winning 11 times. But this year, I'm afraid, we could only manage second place with the Golf Foundation scoring their first win since the inception of the competition.

The golf was played very competitively but in the friendliest of spirits, making the game most enjoyable. The course was in great condition thanks to Derek Ganning and his staff and, I must admit, not as frightening as I expected, but with some fantastic holes. I would like to thank Kubota for a most enjoyable two days, with never-ending meals, a very welcome watering hole on the 10th tee, for showering us with gifts but most of all for giving us the opportunity to play this magnificent course and to meet the other people involved in the golf business.

Now onto North West business. I think I should try to arrange some lectures for the section on map-reading. The reason is that only 13 greenkeepers turned up for our AGM at West Derby GC and seven of these are on the commit-
A round the Green

NORTHERN

The Autumn Tournament took place at our chairman’s course, Aldwoodes GC. This event was sponsored by our friends FG Adamson’s. Many thanks to them for their support. I must also thank our chairman, Phillip Taylor, and his staff for preparing the course for us. I was informed that the course was in superb condition and was enjoyed by all who took part. Unfortunately I cannot give you any results as my fellow committee man, Dennis Cockburn, has gone on holiday and did not leave the results. I can only say thank you to all the other sponsors on the day and I hope to see you all at the Christmas golf and AGM.

I welcome to the section new member Paul Sleight, the new head greenkeeper at South cliffs GC, Scarborough. Any information you require, please phone 0274 568128.

NORTH SCOTLAND

The final new member of the year to welcome is Barrie Edmond from Aberdeen, a student at Elmwood College in Cupar. The total section membership is 207 but we have lost quite a few from last year even allowing for natural wastage. They must try to hold onto everyone next year and increase with more new members. We have had our ‘Demonstration Season’ with some really good days our courtesy of our friends in the trade. I must mention Huntly’s head greenkeeper, Derek Green, winning the golf part of the Morayshire Tractors day at Skibo. He also won the Inverurie Open earlier in the year. Not bad for a guy who reckons he must be the shortest hitting five-handicapper in golf. All I can say is he must be a heck of a good putter! Seriously though, these days are a great idea, giving us greenkeepers a chance to see all the new products in action and meet up with fellow members. By the time this article is beginning to read many of us will have seen the new electric mower from Ransomes with engine and no hydraulics. What next, we ask?

Skibo’s Alick Mackay is on the move to become head man at Macranish down on the Mull of Kintyre. We wish him well. His place will be filled by another Mackay, from Royal Dornoch, whose father is the current deputy at Skibo.

There is a final BTME at Harrogate. Section members will note that I have been persuaded to speak at one of the seminar sessions. What other excuse do you need to come along, if only to heckle? Seriously though, I hope to see as many of you as possible at Harrogate for what I’m sure will be a great week.

Finally, I would like to wish all members and friends everywhere a Happy Christmas and prosperous New Year.

Bert Cross

GRAEME MACDONALD

The East of England against Secretary’s Association match ended in a 7-1 defeat for us due to a weakened side of 11 greenkeepers to 16 secretaries because of late notification. All who took part in the competition enjoyed themselves. The one win came from myself.

Section members Fred Cobb (Newark) and myself (Eyebury) qualified for the Midland team playing at Pannal in the Harry Final. The team finished a respectable second and I came second in category 1 and missed the gross prize by one shot. The Midland team have done well over the last few years, winning it once and coming second twice.

My thanks go to all the clubs and staff involved in the above tournaments for allowing us courtesy for the season’s competitions and thanks to all the sponsors, especially for our last event at Belton Woods where there were some superb prizes thanks to Lambs Lawnmowers, De-Vere Hotel Group, Chandlers, Atkins and Rigby Taylor.

The only new member to welcome to our section is Ian Ross from Scotland who has joined with GC

For our winter lecture programme we are hoping to organise a trip to John Deere and hold a seminar at Kennwick Park with guest speaker John Hacker. More details soon.

And, finally, if you have any information of interest to other members please contact me on 0733 260297 or write to me at 9 Loder Avenue, South Brunton, Peterborough PE3 9AB

Graeme Macdonald

MID ANGLIA

The Lodgeway fourball final was played over 30 holes, once again at Brocket Hall GC. A perfect autumnal day ensued, much to the relief of the finalists, contrasting with last year’s downpour. It was a pleasure to witness the majestic splendour of Brocket Hall once again, and the closely contested match ended in a 7-1 defeat for us due to the match all square after 18 holes, the afternoon saw Ronan McCown of Arley GC and Ken Bunting of Ashridge GC overcome the two Marks, Whittle and Ellis of Mentmore GC by a margin of 3-1.

Thanks go to Brocket Hall for courtesy of the course and to John Wells and his team for a course in superb nick. Also, we must thank Chris Ayres and Lodgeway for laying on a superb day and for their continued support of an excellent competition. We look forward to next year’s event, eagerly. It also looks hopeful that we can secure Brocket Hall for our Autumn Tournament in 1996, so everyone can have a chance to play this superb course.

Our Autumn tournament this year was played over the 18-hole Rosebury Course at Mentmore GC. Our thanks go to David Murphy and his company, Driving Force Leisure, for sponsoring the day and providing the prizes. Thanks to other members of the trade who supported us on the day and donated prizes for the raffle. The course itself held no fear for most of the 30 players, as high stableford points were scored. Four players managed 37 points and, after a countback, this was the final outcome: 1, Gavin Simkins (Mount Pleasant GC); 2, Mark Whittle (Mentmore GC); 3, Robert Pearse (Welwyn Garden City GC). Chris Ayers also had 37 points.

Thanks to Phil Quarmby and his team for providing us with excellent greens and course, and although the weather was murky the whole day this did not detract too much from enjoying the setting and golf course. We appreciate the hospitality shown to us by Mentmore and thank the catering staff for the excellent meal.

The AGM followed the prizegiving which I presided over, being my last duty as chairman of the section. A healthy balance sheet was submitted by John Wells, our treasurer, and the secretary, Gerald Bruce, reported that membership was still rising both at section and national levels. The current figure for the Mid Anglia section is 222 members and 5,546 nationally. I’m sure that you all must know of other greenkeepers who are not members of BIGGA, so I would suggest you encourage them to join. The more members we have, the stronger the Association will become as a force to be reckoned with in the game of golf.

The following officers were elected to form the committee for next year: Chairman - Chris
Brook; Vice chairman – Stewart Boyes; Secretary – Gerald Bruce; Fixtures Secretary – Richard Saunders; Treasurer – John Wells; Regional representative/magazine – Paul Lockett; Regional representative – Ronan Meekown.

All these appointments run to the next AGM with the exception of the chairman which is a two-year post. Please note the change in fixtures secretary to Richard Saunders, and ensure all entry forms for golf events are sent to him and not Chris Brook. Richard’s address will be printed on the forms for next year.

I will continue to represent the section at regional board level, along with Ronan Meekown. The regional board consists of five sections – Mid Anglia, Midlands, East Midlands, East of England and Mid Anglia. It also has two representatives who sit on the Board of Management of BIGGA. If any member of the section has anything they wish to raise about BIGGA or related issues, then the facility is provided to take anything all the way to the top, if it is sent to me in writing first.

Finally I would like to thank all my committee for their support over the last two years during my two-year post. As chairman – Gerald, John, Chris, Steart, Ronan and Richard. When I first took over as chairman it was my desire to provide the members with as many different and varied courses for golf events, and I hope I have succeeded in that. A priority was to maintain the excellent way the section has been run to date and again in that I hope I have been successful. It has been an honour to serve as chairman and I wish my successor, Chris Brook, good luck for the next two years.

The section is in very capable hands and its success and strength is not just based on educational circumstances, but by friendships which have developed and will, I’m sure, continue in the future.

PAUL LOCKETT

EAST MIDLANDS

Congratulations to our ten members who represented our section in the annual East Midlands v Midlands tournament. This was only the second time we have won the trophy in ten years. I would like to thank our regional chairman – Gerald, John, Chris, Steart, Ronan and Richard. When I first took over as chairman it was my desire to provide the members with as many different and varied courses for golf events, and I hope I have succeeded in that. A priority was to maintain the excellent way the section has been run to date and again in that I hope I have been successful. It has been an honour to serve as chairman and I wish my successor, Chris Brook, good luck for the next two years.

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PAUL LOCKETT

SOUTH COAST

Numbers were a bit down for our Autumn Tournament at Duddingbury GC but it was a fine sunny day and a good time was had by all. Results: 1, Paul Jackson; 2, Mike Yorston; 3, Shaun White; 4, Martin Woodrow. As always we are very grateful to our sponsors Vitax and Avoncroc for their sponsorship.

Support and to the staff at Duddingbury for the condition of the course and looking after us so well. Our annual match against the South West, played at Marlborough GC, ended in defeat, 3-2. Our thanks go to the staff at Marlborough for looking after us so well and especially to Kevin Green for organising the event. Next year the match will be held in Hampshire at Lee-on-Solent GC.

Our next event is at Brockenhurst Manor GC on Thursday January 12. Gordon Child, our regional administrator, will be coming in the afternoon at 2pm to talk about training in the modern greenkeeping industry. This is a very important subject and everyone interested in the future of the industry should be there.

The section is organising a workshop to be held on Thursday February 16. Entitled ‘Working Together’ it is being run by Frank Newberry who is one of the country’s top management training consultants. Some of you may know him from work he has done for BIGGA at Aldwarck Manor.

The purpose of this workshop is to train greenkeepers in the arts of team building and dealing with people (committees etc). The committee feel that this is particularly important in view of recent events within the section. We are very limited on the number that we can take for this workshop so please register early. Send for details by writing to me at 45 Constable Close, Sholing, Southampton SO19 1EN.

At a recent committee meeting it was decided to establish an education committee for the section consisting of the NVQ industry assessors. This committee will co-ordinate the assessing of NVQ level 2 candidates and will be working closely with Sparsholt College who are represented on the committee by Bob Dennis and Bob Young.

The committee consists of present of Kieron Daly, Ed McCabe, Martin Summers, Jeff Drake, college representatives and myself. Anyone with sufficient experience wanting to train as an industry assessor is more than welcome to contact the committee.

At the same meeting Peter Marsh, Eric James and John Payne expressed a desire to stand down. Our next event is at Brockenhurst Manor GC on January 12 and start at 6.30pm. Following the survey carried out some months ago with regard to section events, in particular winter lectures, Ivan Beetlstone has now arranged our first winter lectures using the subjects that came out top. The lecture will take place at Walshall GC on January 12 and start at 6.30pm.

The programme is as follows: 6.30-7.15pm – Thatch and companion by Andy Cole of the STRI; 7.30-8.15pm – Installing, maintaining and updating irrigation systems by Graham Francis and John Sheppard of Turf Irrigation Services.

I must say that the response to this survey was very poor, specially when considering that members only had to tick off the subjects they felt important and send back using a self-addressed envelope. 350 were sent out and only 50 returned.

The annual match took place recently between the East Midlands section and ourselves, sponsored by Rigby Taylor. The match was played at the Warwickshire, of which everyone spoke very highly. Many thanks to Howard Middlebrooke and his staff and also to the Warwickshire as well for a wonderful day. The day was slightly spoiled by the fact that the East Midlands beat us, well done lads!

Mike Hughes beat Paul Loffman in the singles knockout recently. The match, played over 36