

Last month Bernard Findlay took Greenkeeper International readers through the planning and preparation stages of the exciting new links construction at Portstewart Golf Club, culminating in the building of a pilot hole. Though much of the experiment was successful, there was to be a bitter learning experience...

**T**hough the tee and fairway on our experimental hole proved a great success, the sand-only pilot green was a failure. This is where our lessons began.

First, a rather late sowing in September – especially in the north – would not allow sufficient time for grass to establish before the rigours of winter. With this in mind, it was deemed essential that further sowing should take place no later than the end of July.

Second, we had not sown the seed to a sufficient depth, which meant that if moisture was not continually available (which in the first several millimetres it wasn't), on emergence of the root hair the seed died. That seed which did germinate and live was 12mm or more below the surface.

Third, the lack of rainfall during the particular September in question meant that it was very difficult to maintain adequate moisture levels, especially with the type of hand-held irrigation we used.

Lesson one, therefore, suggested to us that before embarking on the establishment of any fine turf area – particularly on sand – it is essential that an adequate, preferably automatic, watering system is available, for a number of reasons:

- Obviously, since 15 minutes direct sunlight on a sand growing medium can dry out the surface and produce dire consequences on emerging seedlings, it is necessary to ensure moisture is available continually.

- A regular supply of water imparts physical properties on the sand particles by holding them together, thus preventing the seed bed from being blown away.

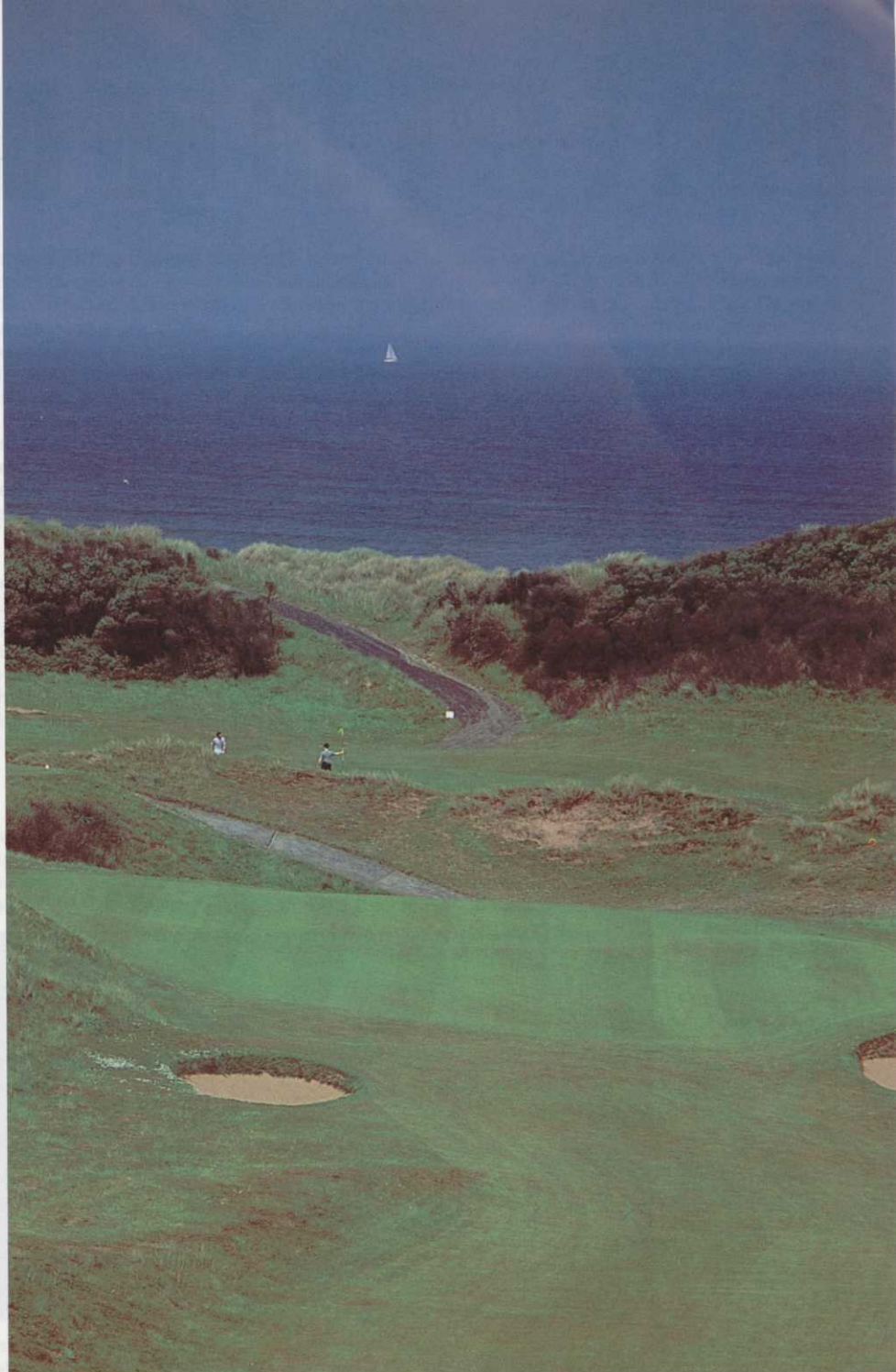
- The regular application of irrigation water firms the seed bed and ensures cohesion between the sand particle and seed coat.

Our view in hindsight was crystal clear: Had sufficient rainfall fallen during that fateful September the new green would not have failed. Equally, had the rains been adequate, the pitfalls of sowing into pure sand would not have been realised!

#### **Work schedule for the entire project**

With valuable lessons derived from this exercise, confidence was gained to an extent that a full go-ahead began in April 1987, with all construction and sowing completed by the summer of 1989.

Work began on the greens, with extra labour recruited in order that our existing → 16



# LESSONS learnt

## Building a new links course – Part Two



# Don't try to go one better

15 course maintenance programme might remain relatively unaffected. Four young men were provided through a Government-run employment scheme known as Enterprise Ulster, the newcomers supplemented by a couple of our green staff to offer local knowledge and essential greenkeeping skills. Financial outlay for these extra men amounted to nothing more than payment of National Insurance contributions in their first year, supplemented by 10% of their total pay during their second year.

Hired machinery requirements amounted to a tracked digger complete with an extremely skilled operator; a 7 tonne tractor with trailer and a tractor-fed soil grading machine. These were further supplemented by our own machinery and included a 4WD 4150 Kubota with front bucket, which proved most valuable.

## Construction

Ten greens were built, each begun by a digger removing existing vegetation to expose clean dune sand. Nothing was wasted, for all this stripped vegetation was used to cover various less stable areas within the dune system. Once stripped, the required green contours were arrived at by constant consideration for the surrounding geography, much the same, I imagine, as our forefathers must have done, with no pre-conceived ideas for green shapes other than from a maintenance viewpoint. It may seem simplistic, but if the shape of the green looked right in its setting there was nothing more to be done!

I felt that the STRI suggestion of ameliorant applied at  $70\text{gmsm}^{-2}$  was insufficient for the situation and with this in mind, previously well-composted and friable farmyard manure and black sandy top soil was being shredded and screened to add to the surface to a total depth of 8cms. Granulated Alginure was also applied at  $150\text{gmsm}^{-2}$ . A tractor-mounted rotovator passed in three directions, thoroughly mixing this to a depth of 25cms to provide a sound growing medium. Though this method of rootzone mixing is perhaps not strictly according to Hoyle, in this instance it proved most successful, probably because of the friable nature of the materials used.

Following this, the tracked digger passed to and fro over the green to thoroughly firm up the surface. Any fear of compaction was dismissed – certainly it has not been encountered at Portstewart – thanks to the rounded shape of our indigenous sand particles.

Four or five men raked and then rolled the surface prior to fertiliser application and again prior to seeding at  $35\text{gmsm}^{-2}$ , this to ensure full cover of the fertiliser. Finally the seed bed was raked and rolled, the seed covered to a depth of 20mm. Throughout, the seed mixture for our greens was 20% browntop bent, 20% slender creeping red fescue and 60% chewings fescue.

As there were no pre-conceived plans regard-

ing green shaping it was difficult to time the introduction of a fully automatic pop-up system, so to begin we had three full circle sprinklers fed by manual take-off points. As I have already written, the wind can destroy a perfectly good seed bed unless it remains moist, thus the temporary irrigation system led to some rather unsociable working hours during darkness.

Before the spring of 1988 the entire course was updated, using impact drive sprinkler heads controlled by a two-wire system. The advantages were clear to see, for a two-wire system allows for additions with minimal disruption at a later date.

Germination at first was a trifle patchy, perhaps as a result of uneven final raking of the seed bed and despite our vigilance in attempting to rake in a uniform manner. To eliminate this human factor in future, final raking should be done by machine to obtain continuity within each site. Notwithstanding that point, with localised overseeding and a lot of patience the end results were well worth waiting for.

## Fairways and tees construction

As most of the tees were situated on elevations and therefore exposed to the elements, they were all turfed in the manner mentioned earlier. We have made considerable use of rail-



way sleepers in these areas for steps, seats and defining path edges. A D8 bulldozer was added to the list of hired machinery for this second phase, which started in October 1987.

The fairways were sown mainly on a very sandy growing medium, containing small particles of peat and topsoil, again to 'dirty-up' the sand. It would have been far easier to add large quantities of topsoil from an inland source to allow grass to germinate and establish quickly and though this would have been okay in the short term, problems associated with inland conditions would soon have been apparent, eg. poor drainage; invasion by coarse grasses and lush growth. We must remember that an essential for a pure links course is infertility – something not afforded to us by most inland soils and certainly not soil from building sites that hitherto may have been agricultural land.

However, the fact that these new fairways were sown on such impoverished ground did present us with problems, such as bare high spots and bare areas through bottle-necks. To solve this problem in an instant these areas were turfed, the resilient fibre building up through the rest of the new course and causing the bare and stressed areas to become far less frequent.

## Nutrition and other chemical treatments

I have purposely left nutritional requirements for greens until now because they are worthy of detailed explanation. During their first full season, our greens received a complete fertiliser containing a seasonal total of 125 units of nitrogen per hectare with sulphate of ammonia; 100 units of phosphate with bonemeal and 100 units of potassium with sulphate of potash. This was applied in four separate applications through the growing season. In addition, an organic liquid – Abbeygrow – and iron sulphate were applied.

Three quarters of the way through the growing season of 1988 the new greens, particularly the fescues, developed a severe attack of corticium, indicating insufficient nitrogen. This situation improved once we applied the last nitrogen application (of the season) to the greens, though the corticium returned once the effects of this had worn off.

The application of Daconil turf fungicide and sulphate of iron kept the disease at bay through the winter months, though I was at a loss to know which move to take next regarding nutritional requirements for these new greens. At that time the STRI had published new information regarding nutrition of sand greens, suggest-

ing that between 250/350 units of nitrogen per hectare per season should be applied. I was prepared to use this lower figure as a nutritional benchmark and during the second growing season of 1989 the regime changed thus: 250 units of N per hectare using a slow-release fertiliser containing

IBDU; 100 units of K per hectare using sulphate of potash.

In addition, an organic spray, iron and Turfex were also applied, these in six separate applications throughout the growing cycle.

At the end of the 1989 season the bent grasses still had not made any significant advances. The fescue was still strong and no longer suffered from corticium, but small patches of *Poa annua* now colonised the greens.

An observation on my part suggested that the use of slow-release fertiliser, progress of which is out of one's control once applied, was doubtless a factor in the *Poa annua* encroachment, since *Poa* is able to profit from spring warm-up far earlier than the root systems of fescue or bent, which are still to receive the warmth of spring.

The seasons of 1990 and 1991, with the new course now in play, have seen a return to my using straight materials. If my observations suggested their use – and I stress the word observations – up to 250 units of nitrogen were applied in sulphate of ammonia form, spread over six applications through the season, together with sulphate of potash, sulphate of iron and a 100% organic spray.



# than nature...

The sandy greens quickly became hydrophobic, but for the last two years the use of Turfex wetting agent at every opportunity has ensured this is no longer the case.

Again over the last two years, mechanical treatments have included scarification; verti-cutting and top dressing with 20% organic matter and 80% dune sand, each treatment carried out on all the greens in order that continuity may be established between old and new alike.

To ensure the establishment of the nitrogen cycle on fairways a product developed by Fisons – Sportsmaster Organic 4 – is applied. Acting as nature intended, this is 100% organic and has the advantage over synthetic slow-release formulations in not building up supplies of nutrients over which the greenkeeper has scant awareness and little or no control. Once sufficient nitrogen is within the cycle, the application of this product will cease.

To summarise, and to answer the title question 'Can you build a seaside links, or is that nature's job?', I think the answer must be yes, but with a number of provisos.

First of all, do not attempt to go one better than that which nature provided in these linksland situations. Bear in mind that one hundred years or so ago, man simply did not have the machinery available today and thus could not stray too far from the features provided by nature. Instead, he had to work with those fea-

tures. Many world-famous links courses have been the happy result.

Links courses cannot be built and brought to maturity in just a few short years – it has taken nature generations to achieve that. The varieties of grass species used on a links construction must be those native to the area, otherwise the characteristics most desirable in links golf will be lost. This point was quite evident at the most recent Ryder Cup venue of Kiawah Island, where the chip and run shot was non-existent because grasses with differing characteristics were used between green and fairway.

Don't get me wrong, the Ryder Cup at Kiawah was a marvellous spectacle and a great credit to those involved in its staging – but it was not a test of links golf in the traditional form.

Finally, none who are, or may become, managers of links courses should be tempted into prostituting these gifts of nature for a single event, for corny though it may seem; these gifts are part of our national heritage.

■ The author, Bernard Findlay, (pictured right) is course manager at the Portstewart Golf Club, County Londonderry, Northern Ireland.

■ The ultimate seal of approval for Bernard's work on Portstewart's epic construction and development programme came in August 1992, when the Irish Close Championships were staged over the new links. Players were unanimous in their praise, describing the course as 'unbelievably mature' and



'a new golfing paradise'. The chairman of the Ulster section of the Golf Union of Ireland, Peter O'Hara, wrote: 'I have not seen a better kept course, such that no rules decisions were called for throughout the tournament. You are to be heartily congratulated'.

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