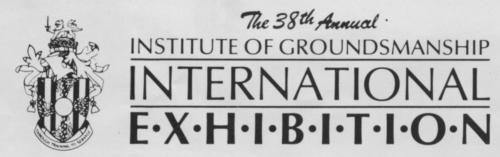


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This Issue

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Greenkeeper <u>did not</u> encourage association split

Publisher Michael Coffey underlines the reasons why EIGGA was founded...

ONCE again, I find it necessary to reply to comments made elsewhere and in print. I refer to Mr Harry Herrington, a man who obviously likes to adopt a high profile, not only as chairman of the BGGA. He states in the current issue of *Greenkeeping And Course Maintenance* that his main concern is the breakaway by some greenkeepers from the BGGA. He is 'firmly convinced' that this stems from the BGGA's refusal to accept *Greenkeeper* as his association's official journal. It is very apparent, and not just to myself, that Mr Herrington is rarely in possession of the full facts, or if he is then he deliberately chooses to misinterpret them.

The breakaway from the original association to form EIGGA had nothing to do with *Greenkeeper*, but was due entirely to the frustration experienced by members who were trying in vain to promote their profession, introduce an educational programme and generally improve the standing of greenkeepers. All these ideals were blocked by greenkeepers, no doubt of the 'old school' to which Mr Herrington is such an eloquent advocate. The proof of this Yorkshireman's pudding and the 'old school' policies he wants to implement will be watched with great interest at John O'Gaunt Golf Club over the forthcoming months.

The results of the breakaway, however, speak for themselves. EIGGA has attracted considerable membership, over 550 countrywide as we go to Press, with the latest branch in the north west having started on June 30 with over 60 members. More has been achieved by, and for, greenkeepers in six short months through EIGGA than in the previous 70 years and a great deal more can be achieved if, instead of looking back, we all look forward together. As Guy Catchpole of Ransomes said in the July issue of *Greenkeeper*, in his opinion the splitting of greenkeeping associations is not the answer—just as looking backwards is not the answer. *Greenkeeper* has played its part in improving both greenkeeping and the status of all greenkeepers in the British Isles, particularly through its connections with SIGGA and EIGGA.

The key remains to be forward looking and, in this, *Greenkeeper* will continue to play its part.

.....

Many will have seen the dreadful damage done to the 6th green at Royal Birkdale during the Open Championship and congratulations must go to greenkeeper Tom O'Brien and his team for their fantastic all-night repair job.

Tom was assisted in his efforts by his turf products supplier Rigby Taylor. There were a number of slogans painted in white on the green. A call at 3am from Tom to the company's sales director Keith Dickinson ensured that by 5am Rigby Taylor's paint division was in action producing a special green paint. This was delivered to the course in time to blot out the eyesore with the minimum delay to play.

Again, congratulations to Tom for a universally praised course, which produced the best championship in recent years. It was a shame that the BGGA's president could not make more during TV broadcasts of the greenkeeper's role in the championship.

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EIGGA membership tops 500!

General administrator Danielle Jones details the new association's progress since its inception.

IT'S just over six months since EIGGA took its first tentative steps towards becoming a recognised force in the world of greenkeeping and, as most of you will be aware by now, the word is spreading and EIGGA is going from strength to strength.

Membership of EIGGA is now well over the 500 mark and at the latest board meeting, the wheels were set in motion for the formation of further EIGGA branches throughout England and Wales. South Wales has recently started a branch and anyone interested in joining should contact the branch administrator Mrs R. Jamieson at 4 Westgate Close, Nottage, Porthcawl, South Wales. Also, the new northwest section is now operational following a meeting in Chester on June 30. A committee has also been elected and further details can be obtained by contacting section administrator Andrew Campbell on Chester 678879.

A great deal has happened since EIGGA's inception. The first annual conference in April was considered an unqualified success by delegates and the board of management. It was a good opportunity for me to meet some of the members who had, until then, been only names on the membership file and I found it most useful to hear the opinions of those present.

An educational conference is an ideal situation in which to gauge the feelings of people in the profession and the impression I got at Brighton was that greenkeepers are competent, professional men, who take a pride in their craft and are no longer



The Course Manager's Gold Diploma was the first EIGGA diploma to be issued. The presentation was made recently to Sturley Goddard, course manager at Bury St Edmunds Golf Club, Suffolk, who has completed 25 years at the club. Pictured are Mr and Mrs Goddard and EIGGA representatives Mr and Mrs David Jones.

prepared to accept being treated as labourers. This latter state of affairs is, at last, beginning to change, but the change will be achieved sooner if those in the profession take an active part in supporting the new association.

There must be many of you who have opinions on how EIGGA can work for you. Don't keep ideas to yourselves, send them to me. All suggestions will be given serious consideration, for this is your association and your ideas matter.

I hope many of you will be taking the opportunity to apply for the new diploma in management correspondence course. We have been fortunate in obtaining the services of the Bournemouth and Poole Management Centre, which has set the course. It is a definite step forward towards raising the status of greenkeepers and bringing them the respect they deserve.

Shortly before the first annual conference, I sent out letters offering company membership of EIGGA to firms involved in supplying the profession with its needs. While the response has been good, I feel that some companies are holding back until they see that EIGGA is going to survive.

I can assure anyone who is in doubt about joining, whether representing a company or an individual greenkeeper—don't hesitate. EIGGA is already strong enough to dispel any doubts about its ability to succeed and there are applications for membership coming in every day.

It was very gratifying that the first firms to take up company membership were T. Parker and Sons and Ransomes, Sims and Jefferies, both widely respected and with solid reputations.

Many members may be wondering why they have not yet received permanent membership cards to replace the temporary ones issued. Unfortunately, we were let down by the supplier and, as half the year had

Write to... The General Administrator EIGGA National Headquarters Malden Green Farm Worcester Park Surrey Or telephone Danielle Jones on Ipswich (0473) 711810. passed, it was considered unwise financially to place a new order elsewhere, as the cards will have to be renewed again on January 1 1984.

Therefore, it has been decided to delay the issue of permanent cards until that date, when new credit-card style membership cards, with your name and membership number on, will be sent out.

Members may have noticed in the EIGGA constitution a paragraph headed Etiquette of Members, part of which reads as follows: 'After five years from the inception of the Association, each member shall be required, when attending a formal occasion at national level, to dress in the tie and jacket of the Association and to follow the guidelines on shoes, slacks and shirt.' This is in order that members of EIGGA present themselves as a unified band of people, with high standards of dress and conduct and a pride in their profession.

It is felt that five years is a reasonable time for everyone to get around to buying an association jacket and tie and I would emphasise that all EIGGA clothing is of an extremely high quality and reasonably priced. The jackets are made specially for us in a wool and

EIGGA

APPLICATION FOR MEMBERSHIP OF E.I.G.G.A.

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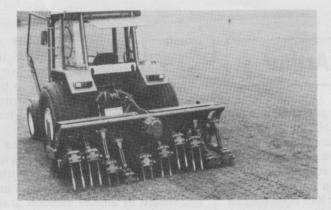
It is hoped that members will wear the jacket and tie with a white shirt and grey slacks.

Although not an essential part of the outfit, pullovers with the EIGGA

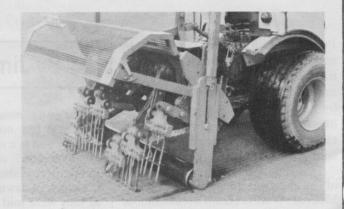
emblem embroidered on them are obtainable in navy, bottle green, camel and wine at £14 each, inclusive of p&p. The pullovers are doubleweight lambswool, made in Scotland, and comparable in quality to the best-known golf pullovers.

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There's too much change!

Probably the biggest problem in golf course management is one that has existed certainly for 60 years and is still largely unresolved, save by those fortunate few clubs blessed with men of vision and experience in charge of their course.

This problem was the main theme of the excellent address given by Bill McCrae, Walton Heath's redoubtable secretary, at the inaugural national conference and AGM of EIGGA at Brighton in the spring. This was the best paper of the conference and it certainly dealt with the most important factor of all—namely, continuity of policy.

Constant see-sawing of direction in management, and even of standards considered desirable, has damaged so many of our courses in the past. Consequently, some form of policy document seems an essential first step to better continuity. Such a document would not in any way attempt to dictate to a head greenkeeper how to do any operation or even when, but it should lay down agreed standards of course presentation and management policy.

It should cover staff structure, job specifications (as well as salaries and pensions) and deal with the routine replacement of equipment on a proper budgeted basis.

It would require that detailed records be kept and would lay down standards to be achieved in every aspect of the course, but not detailed methods of achieving them, only broad outlines—for instance, frequency of mowing rather than height of cut.

The head greenkeeper, in other words, could work with a completely free hand within the broad limits set by this policy document.

Of course, the controlling body will differ with different clubs and, indeed, types of club—for instance, proprietary or non-proprietary—but at least the formulation of such a document, on an agreed rather than an imposed basis, would relieve the head greenkeeper from the problems of constant changes in policy with every change of committee.

By Jim Arthur

The way most golf courses are managed has not altered in half a century and is a relic of the day when greenkeepers were regarded as unintelligent labourers, turning up at the crack of dawn on a Monday to do as they were told or had been trained on an unthinking and unquestioning pattern to do and taking their holidays when it suited the club—in the bad weather periods of winter!

Things are very different today and, on the whole, greenkeepers have improved more than the rest of the management team and have adopted a more professional approach to the job. The pattern of honorary officers and constantly changing committees still persists, dating back to the times when there was no money to pay salaries to trained and professional managers.

Nothing irritates me more than to advise a club for some years—even ten years or more—as part of a good team, with a 'permanent' chairman of the green committee or secretary and a skilled head greenkeeper, to suddenly be told policies have changed with a new man at the helm.

I then have to watch while course conditions deteriorate in front of my eyes, because, for example, the new greens chairman is swayed by members who oppose routine slitting of greens or by others who want soft, target bogs—not firm, fast greens. Sadly, these are often the younger element, many of whom have never played on to unwatered greens in their lives and, so, have never learned the skills of the run-up game.

In passing, I would like to make it absolutely clear that my policy has never advocated a ban on all irrigation or fertilisers—only limiting both to sensible levels. In particular, the folly of using phosphates—and potash has been so clearly demonstrated that most good greenkeepers would eschew the use of NPK fertilisers and use nitrogen only to keep annual meadow grass at bay.

It is, therefore, exceedingly

irritating to read comments in magazines to the effect that the reaction of fertiliser companies—or of one company to be precise—to this policy was overdue and the writer, himself, preferred to play on a green course.

With nitrogen and water, even at sensibly limited levels, you can have a course as green as you want within reason without getting it lush and dominated by annual meadow grass, which produces impossible conditions on fairways and greens alike.

It is only in the traumatic changeover period, when the effects of unwise over-feeding and overwatering have had to be reversed, that conditions may get worse before they get better, but it is a temporary phase and, in any case, it is the only cure for a self-inflicted wound!

I hear of newly appointed greenkeepers taking over and reversing my advice from day one. On one course, the greens have not been

Back to the soggy bogs from which I rescued them

aerated more than twice at most for 18 months and are rapidly going back to the soggy bogs from which I rescued them in 1976. Why, oh why, do not clubs check with the previous club—if not with me—to avoid taking on a man who has virtually been sacked by his previous club and which is glad to give him a reference and get rid of him without traumatic repercussions?

When a system has produced good results, whatever the feelings of the new man, surely it would be wise to continue it or at least modify it *after* discussion? In this way, I have often converted the die-hard feeders and waterers by amiable discussion.

At the other end of the management team, I have been told by the secretary taking over a new appointment: "Give me a couple of years and then I'll ask you to call when I have got it right."

I have two filing-cabinet drawers full of thick files on clubs advised,

Contined on page 19...

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Common weeds of turf

By R.B. Dawson

A great deal has been written about weeds, but the information is scattered through numerous books and pamphlets often inaccessible to those concerned with the weeds of golf course, lawn, bowling green and sports turf of any nature. Moreover, such information almost always has a strong bias towards agricultural practice with only indirect bearing on the problems of weed control in fine turf. That such is the case is not to be wondered at, but it makes you realise the need for literature written specially for those who are responsible for turf upkeep. It is, thus, the purpose of this article to deal comprehensively with turf weeds.

While perhaps the immediate desire of most greenkeepers is to know exactly how to exterminate weeds, some knowledge of their life history and an ability to recognise them cannot help but be an advantage leading to a better understanding of methods of eradication. Weeds differ considerably in their structure, life history, aggressiveness and amount of harm they cause.

How Weeds Are Spread, The Harm They Cause, And The Reasons For Their Persisting In Turf

No exact definition of what constitutes a weed can be given. Weeds to the popular mind are 'plants out of place' growing where they are undesired, but it must be realised that sometimes a turf 'weed' may, under other circumstances, prove of distinct value. Thus, Ribwort plantain, or ribgrass, one of the commonest weeds of turf has a high nutritive value and is so relished by sheep that sometimes it is actually included in seeds mixtures, so as to ensure its being available in the pasture. Should the farmers' best grasses, Ryegrass or Cocksfoot, appear on a putting green they are described as weeds. Similarly, Wild White Clover on a putting green or fine tennis lawn is a subject for eradication. Conversely, a high proportion of bent grass in a pasture is anathema to the farmer, but provides the basis of excellent fairways and greens.

The farmer is accustomed to work in two distinct systems, according as the land is laid down to grass or kept under the plough as arable. Generally, these two systems are combined and on the typical English farm you find grassland and arable land in proportions varying with the district and the farmer's needs. On the arable land, the crop is removed bodily when mature so that weeds are subject to hoeing, cultivation or ploughing in, but in grassland the crop is permanent until such time as it may be broken up, so permitting cleaning operations. While, therefore, grassland may be said to have some degree of permanency it must be realised that turf in the nature of things is designed for continuous use for sport or ornament, is unlikely ever to be broken up and is, in fact, absolutely permanent.

It will be apparent that we are not more than casually concerned in this account with the weeds of arable land, for it is only when new lawns or courses are being laid down or new greens constructed that the greenkeeper has need to consider them. But in this connection it is worth mentioning that, while newly established turf in its first or perhaps second season may contain weeds common to arable land, only certain species, having a suitably adapted structure can persist under the conditions imposed upon them. Moreover, a number of grassland weeds, which the farmer is accustomed to dealing with (e.g. Creeping thistle), rarely, if ever, occur in regularly mown turf.

Weeds may be divided into three classes, according to the duration of their lives—namely, annuals, biennials and perennials. In connection with turf, annuals are rarely of serious concern and then only in newly prepared turf. They depend, like Groundsel and Chickweed (Stellaria), entirely upon seed for their propagation and under turf conditions, setting of seed is prohibited in all but the smallest annual weeds, such as Parsley piert. The annual meadow grass Poa annua can be mentioned here. The fact that under keen mowing conditions it can still produce seed very close to the ground explains its universal distribution on greens and fine lawns.

Biennial weeds are those that require two years for their life cycle. The germination of seed and vegetative growth take place in the first year, but flowers are not produced on the plants until the second. Biennials are few in turf, the conditions being against seed formation, but the biennials, wild carrot and spear thistle occur at times.

The vast majority of turf weeds are perennials—plants with no definite term of existence and capable of constantly spreading and increasing. The most aggressive turf weeds belong to this class.

For convenience, it may be well to tabulate (see panel) the commoner turf weeds, as well as a short list of weeds less frequently found. The botanical and the usual popular name has been given and you should make yourselves familiar with both.

In addition to the plants referred to in the panel there are a large number of miscellaneous weeds found in, for example, seaside, downland, or peaty turf.

The main function of sports turf is to provide a surface suitable in texture, fineness, firmness and density for the particular game it is desired for. Not only do weeds in fine turf prevent accurate play, but their presence destroys the æsthetic value of the sward. This aspect must not be ignored. All but the minutest of weeds are therefore regarded with great disfavour on putting greens, bowling greens, or croquet and tennis lawns. Besides affecting play, which is perhaps the most obvious reason for our dislike, weeds have effects one upon another and particularly on the grasses so much desired. Just as the units of human society are subject to constant impingements and interactions, so are the members of the plant community constituting a turf.

Weeds compete strongly for room, crowding out the grasses, shading them from the light and robbing them of soil nutrients and water, so contributing to progressive deterioration of the turf. Analyses show that weeds absorb nitrogen, phosphoric acid and potash in relatively large amounts so that, in effect, they cause an unnecessary drain on the soil. During dry weather, especially on light soils, turf weeds by transpiring moisture are actually depleting water reserves in the soil, which would otherwise be available to the grass. They may, thus, hasten the onset of drought conditions. Weeds frequently shelter insect and fungoid pests and their roots or root stocks may lead to chokage of land drains—for example, on golf courses.

You have only to dig up a really robust plantain and the relatively large area of bare ground left forces you to realise the intense smothering effect of a weed so closely appressed

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to the ground. Similar crowding between the underground parts (roots or root stocks) of weeds and grasses occupying the same soil stratum is persistently taking place. Add to this all the other detrimental effects, the great need for checking weed invasion on turf must surely be felt to the full.

The harmful effects of overcrowding plants can readily be demonstrated in the garden when growing plants from seed. Seed sown thickly in a box or in the open results in a crowd of stunted ailing seedlings, which eventually fail completely unless transplanted or drastically thinned. This factor is equally, if not more, severe in turf because the weeds are competing in a one-sided contest against grasses that are not only by nature dwarf or prostrate types, but which are, in addition, subjected to regular severe defoliation by rotary mowing.

Weeds Commonly Found In Turf

Popular Name

Botanical Name

Ribwort, Ribgrass or Narrow-leaved Plantain **Broad-leaved Plantain** Hoary-leaved Plantain Bucks-horn Plantain or Starweed Daisy Yarrow or Milfoil Selfheal Pearlwort Certain mosses Mouse-ear Chickweed Upright Buttercup **Bulbous Buttercup Creeping Buttercup Sheeps Sorrel** Dandelion Wild White Clover Yorkshire fog Creeping soft grass Catsear Woodrush

Plantago lanceolata L. Plantago major L. Plantago media L.

Plantago coronopus L. Bellis perennis L. Achillea millefolium L. Prunella vulgaris L. Sagina procumbens L.

Cerastium vulgatum L. Ranunculus acer L. Ranunculus bulbosus L. Ranunculus repens L. Rumex acetosella L. Taraxicum officinalis Web. Trifolium repens L. Holcus lanatus L. Holcus mollis L. Hypochæris radicata L. Luzula campestris L.

Weeds Less Commonly Found In Turf

Yellow Suckling Clover	Trifolium minus Relh.
Silverweed	Potentella anserina L.
Parsley Piert	Alchemilla arvensis Scop.
Water Chickweed or Blinks	Montia fontana L.
Speedwells	Veronica spp.
Shepherd's purse	Capsella bursa-pastoris DC.
Ragwort	Senecio Jacobea L.
Heath Bedstraw	Galium saxatile L.
Knotgrass	Polygonum aviculare L.

On glancing through the list of the commoner weeds already given, it can be seen that these weed species occur on lawns and sports turf in every part of the country and on nearly every class of soil. The reason for this ubiquity is easy to see. Irrespective of changes in soil, climate, altitude, management, and even manurial treatment, one factor constantly operates—namely, mowing. In explaining the spread and general distribution of weeds, this universal factor is frequently forgotten, but it is highly important to realise that it is *because* of it that the weed problem in turf assumes such magnitude.

The weeds that survive and become most aggressive in mown turf are those that can, by their habit of growth, not only escape the mower blades, but can also, despite cutting, increase either vegetatively or by production of flowers and seeds below the cutting level. Rosette weeds, such as daisies, dandelions, various plantains, catsear and starweed, all grow closely appressed to the ground, so escaping punishment from the mower. Moreover, a single plant occupies a large proportion of ground as compared to a single grass plant in a turf. Daisies, ribwort plantain and catsear when growing in turf throw out shoots, which develop into daughter plants still closely pressed to the ground, so building up the original crown into a closely packed colony.

Under conditions of really keen mowing—for example, on putting greens and bowling greens—these weeds do not normally form seed, but it is a common experience to see daisies flowering and seeding on fairways and even ribwort plantain seed heads that have escaped decapitation. On seaside courses, huge areas of starweed (or bucks-horn plantain) are not uncommon and this is due to this weed being able to set seed in quantity well below the level of the keenest cutters.

While the weeds mentioned above are aggressive in turf because of their habit of budding off daughter plants and because of the relatively large size of their leaf blades compared to those of mown grasses, certain other weeds by reason of their habit are much more powerful in the competitive struggle. These are creeping buttercup, wild white clover, selfheal, yarrow, silverweed, pearlwort and mouse-ear chickweed, to which should be added a gramineous weed, creeping soft grass. The weeds in the category have the ability to adjust themselves to turf conditions by developing much shortened stems and leaves—these, thus, escape defoliation but, in addition, they can spread rapidly by vegetative means.

In the case of white clover, creeping buttercup, mouseear chickweed and silverweed, overground runners force themselves in among the grass shoots, later rooting at nodes and sending out new shoots. Yarrow, selfheal and soft grass increase, however, by a system of underground stems ramifying in the soil and sending up new shoots. In addition to the above, certain weeds trail over the surface and do not root at the nodes—for instance, knotgrass, chickweed and various speedwells. Perhaps the worst of the weeds mentioned is pearlwort and its universal distribution and persistency in fine turf is due to its very low moss-like growth, to the fact that it can spread by vegetative growth and to its capacity of also being able to seed despite keen mowing. It is, therefore, a plant singularly well adapted to existence in fine turf.

Not only do weeds directly smother grass, but their presence makes the grass grow more upright, less closely appressed to the ground and, consequently, it is more seriously defoliated than need be.

Continuous keen mowing is necessarily essential all the year round on putting greens and for at least six months per annum in the case of bowling greens, croquet and tennis lawns. This intensive cutting has some weakening effect on the grass, but when it is accompanied by the intense ground floor competition set up by rosette and creeping weeds, leading in turn to smothering or reduced shoot (tiller) production, is it to be wondered that faulty or inadequately managed turf should progressively deteriorate? The removal of ground floor competition by mechanical, chemical or other means is always a first step to improvement of neglected turf.

The dispersal of plants, either locally or over large distances, is a study of no little interest, but it is necessary to confine ourselves here to certain typical cases and to those plants which, in relation to turf, we have decided to call

Continued overleaf...

Have matters altered much since Mr Dawson's day?

The Sports Turf Research Institute's Director Dr Peter Hayes says...

What Mr Dawson wrote in 1932 is very much true today, except that we now have modern methods for the control of weeds. It is rather interesting to look back to the 1930s and examine the chemicals that were available for weed control on fine turf. For example, ammonium sulphate, iron sulphate, sulphuric acid, flowers of sulphur-all these chemicals were used to lower the pH of the soil-that is, to make it more acidic, so that the favoured fine grasses would survive, yet the troublesome weeds would not grow in these conditions. Other chemicals that were used include copper sulphate. calcium cyanamide, common salt and paraffin oil. In addition, various mechanical means were applied for the control of weeds. such as frequent raking, hand cutting, etc. This contrasts with modern-day methods of controlling weeds, such as the array of modern herbicides available to the present-day greenkeepers. Nevertheless, there

are some weeds that are still troublesome. For example, Poa annua was common in 1932 and is just as common in 1983. Yorkshire fog is still present on some golf greens as are pearlwort and parsley piert. However, with the achievements of modern science the greenkeeper has many chemicals to control weeds, but he has to be persistent with some treatments.



A general view of the trial grounds today at Bingley. In the foreground, museum plots for grass and weed identification.

weeds. Distribution of weeds may take place either by means of seeds or by portions of the actual plant and the agency of dispersal may either be through some fortunate coincidence or through the aid of special adaptations of the seed or plant itself.

During high winds, the seeds of many plants are carried long distances and it is not unknown for portions of plants (for instance, rhizomes) to be transported in this way. As an aid to wind dispersal, many seeds are provided with wings or plumes. Dandelion, catsear, groundsel, thistle and numerous composite plants have seeds (more strictly fruits) equipped with a plume as an aid to wind distribution. Other seeds are provided with hooks (for instance, wild carrot) which, readily catching on the coats of animals, are transported. Birds are known to be active agents in spreading seeds. The seed of such species as ribwort plantain, mouse-ear chickweed, groundsel, sorrel, creeping buttercup, dandelion and others has been found in viable condition in the crops and dropping of many birds.

Vegetative growths, such as rhizomes, occurring in, for example, soft grass, coltsfoot, couch grass, sheeps sorrel, creeping thistle are not only a means by which plants of these species may extend their range, but an aid to colonisation of new ground. Thus, on golf courses you frequently see soil being transported, for the building of a green or bunker, from one part to another infested with rootstocks of soft grass. Weeds of this class are frequently difficult to eradicate. Some plants, such as bulbous buttercup, are reproduced by budding of small replicas from the bulbous underground portion of the plant. Many weeds (for instance, mouse-ear chickweed) safeguard their spread by the production of numerous seeds, the distribution of which is fortuitous through various natural agencies, a big margin being allowed for failure.

Seeds are also distributed in mud attached to the feet of human beings, animals, or through adhesion to implements. Distribution of weeds on golf courses from fairways to greens through seeds being picked up on the shoes is quite feasible and where worm infestation is bad such spread is liable to be made still easier. On fairways, there is little doubt that multiple gang mowers, through scattering cuttings, are responsible for the spread of many weeds, such as daisy or the various plantains.

Another frequent cause of weed invasion of turf is through the use of badly prepared compost made from soil or manure containing weed seeds. Or, again, in laying down new turf, the sowing of grass seed containing weed impurities may be the beginning of a heavy weed crop. It must be stressed that in greenkeeping practice, the heavy seed rate necessary to obtain high establishment and an early result means that though only a very small *percentage* of weed impurity may be present, there is actually a large *number* of foreign seeds sown on each square yard. Thus, if New Zealand Browntop seed, containing 0.1 per cent of mouse-ear chickweed, were sown at 2oz per square yard, in actual fact some 500 mouse-ear chickweed seeds would have been sown also.

Owners of newly sown lawns that have developed a heavy weed crop along with the seedling grasses are prone to attach the blame to the seed merchant, forgetting thatthe seeds of the common lawn weeds, such as daisy, ribwort plantain, dandelion, selfheal and pearlwort, rarely, if ever, appear in the desirable seeds used for lawn mixtures. Improper fallowing of land before sowing, for which the lawn owner alone can be held responsible, is the true cause of most of the disappointment with seeding. It is foolish to sow highly cleaned seed on insufficiently cleaned soil.

Many weed seeds are possessed of remarkable powers of vitality when left buried in the soil. A well-known case is charlock—a purely arable weed that often appears when land, after a period of years in grass, is returned to arable. Even though turf removed, let us say from the site of a new green, looks clean, the land may contain hosts of dormant seeds shed many years earlier. In one set of experiments, old pasture turf on a field, which no living person knows as having been arable, was cleared of weeds by treatment. Yet, on stripping this clean turf and cultivating, a big crop of weeds appeared, many being arable land species.

Notebook

Turface—Taking Care Of Lynn's Greens

Lynn Arbon, head greenkeeper at Woodbridge Golf Club, Suffolk is one of many advocates of Turface. He first used it in December, 1978 on the 15th green at Woodbridge—a very wet green, which is low lying and shaded during winter.

He used three bags of Turface with good results on the green, which measures 450 square yards, applying it with a Cyclone Spreader and levelling with a power drag mat.

"The following autumn, I hollow tined the green first and cleared the cores off, then applied four bags of Turface by the same method," Lynn said. "To force it into the holes, I used the drag mat three times and then brushed it well in. Another green, the 9th, which is rather saucer shaped, was also given the same treatment.

"These were the only two greens that did not require spraying early in the season for disease. Also, the surface of the greens kept much drier and good colour was maintained."

In the autumn of 1980, he increased the number of greens treated—on some, only doing the bad patches. The results have continued to be promising and a bonus appears to be that the greens do not dry out so much in summer or require so much watering.

"My intention is to treat all the greens in time. The worst ones have been treated first to give Turface a real test; it helps the root system and drainage and colour is maintained," Lynn concluded.

Full details from Supaturf Products, Oxney Road, Peterborough. Tel: Peterborough (0733) 68384.



Woodbridge Golf Club head greenkeeper Lynn Arbon and Supaturf's Ken Stearn inspect the 15th—a wet, low-lying green heavily shaded by the bank of trees and bushes to the south and east.



Two club members on the saucer shaped 9th green at Woodbridge, which tends to hold water.



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Golf Landscapes Irrigation, installers of Toro equipment to golf courses and sports areas, has appointed Ian Hunter irrigation supervisor. He was previously with Watermation for eight years.

The irrigation division has just completed the fully automatic 690 series pop-up system to the new Dunlopark synthetic grass area at Crawley, West Sussex and is presently working for the London Borough of Bromley, Ruxley Golf Centre, Kent and John O'Gaunt Golf Club, Bedfordshire.

Graham Templeton has been appointed commercial director of Nickerson Turfmaster. He is an associated member of the Institute of Bankers, having spent ten years with National Westminster before joining Nickerson Turfmaster five years ago as operations manager.

Graham has been involved in the continuing development of the



Graham Templeton.

company and the launch of several new products, including the Nickerson Turfmaster 2001 and, more recently, the 360 70in Triple Mower.

Graham is also a council member of the Scunthorpe, Glanford and Gainsborough Chamber of Commerce and his spare time interests are agriculture and horticulture. He is still a member of the young farmers movement, which he joined 20 years ago.

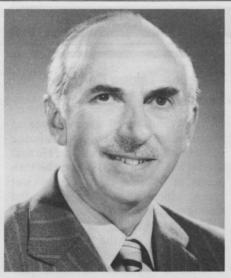
James E. McLoughlin, executive director of the Golf Course Superintendents Association of America, resigns his position in September.

Synchemicals is re-structuring its sales force, splitting the garden products sales activity from that of amenity and industrial. The first stage of this development has seen the appointment of Allan Stow as technical rep covering the south, London, and East Anglia.

Allan has for a number of years successfully handled the company's garden products and amenity and industrial interests.

As announced in *Greenkeeper* last month, Mr Geoffrey Bone has handed over the chairmanship of Ransomes Sims and Jefferies to Mr H. Astley Whittall. Appointed managing director in 1964, Mr Bone became chairman in 1977 and was with the company for 21 years.

Ransomes' move from the old Orwell Works in the centre of Ipswich to the 260 acre Nacton Site on the outskirts of the town was completed under Mr Bone's guidance, as was the



Geoffrey Bone.

formation of Ransomes Property Developments to develop the 130 acres not required by the factory as an industrial estate.

He gained a degree with first class honours at Clare College Cambridge in mathematics and mechanical science. On leaving university, he spent a period with Rolls Royce in Derby before joining the RAF where he worked with the then Wing Commander Frank Whittle developing the jet engine.

Currently chairman of Ipswich Port Authority and a director of the Colchester Building Society, Mr Bone continues to have considerable involvement with charitable and educational work. Mr Bone and his wife, who is a JP, live in Colchester.

Due to increased demand and a need to expand production facilities, Groves Marketing has moved to new headquarters at 53/59 Lenelby Road, Surbiton, Surrey, KT6 7BQ. Tel: 01-399 5047/0021.

Telex: 937 079 Grovex G.

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SISIS Equipment (Macclesfield) has appointed Paul Raynham area rep for the north east. This operational area extends from Cleveland in the south through Durham, Tyne and Wear, Northumberland and the Borders. Paul is a mechanical engineer and much of his industrial experience was gained on Fiat construction equipment.



Paul Raynham.

Johnsons Seeds of Boston has recently added to its wholesale division staff. David Williams has been appointed sales executive for Scotland. He will be responsible for selling a range of products, including agricultural and amenity grass seeds and root seeds. Richard Brown has joined the R & D department. He will supervise the development of native flower and grass wild seed production, which is centered at the company's farm and trial grounds and includes crops contracted out to growers in the UK.

Mowchem For Less Mowing

May & Baker has launched Mowchem-a new grass-growth regulator. Developed specifically for local government authorities, although equally at home on golf courses controlling rough and difficult-to-mow areas, the maker claims that Mowchem can cut the cost of grass maintenance, enabling swards to be controlled at tolerable heights, at less than half the cost of intensive mowing routines.

Based on mefluidide, Mowchem slows grass growth naturally while allowing grass root systems to remain strong and healthy, giving a mowing break of up to two months and allowing staff more time to do other essential work.

Where previous growth regulators based on maleic-hydrazide failed to give seed-head control-resulting in unattractive grass head heights often requiring a further mow-mefluidide achieves leaf and stalk regulation, without the risk of scorch found with maleic-hydrazide.

Indeed independent trials undertaken at the Weed Research Organisation have demonstrated that mefluidide is a safer and more effective grass-growth regulator than other product currently anv commercially available or under trial.

Mowchem can also be mixed with a broad-leaved weedkiller, such as Dicotox Extra, to achieve economical weed control in a single spray application.

Regulating grass height to several inches, the use of Mowchem greatly reduces mowing costs. Given that a typical grass maintenance programme involves at least 11 operations between March and October (ten for normal mowing and one for broadleaved weed control), that number can be reduced to five with Mowchem-three mowing operations, one tank-mix spray of Mowchem with a herbicide early

Continued overleaf...



Grass growth regulation using Mefluidide.

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season and a single Mowchem spray mid-late season.

Information from one authority suggested that by eliminating six mowing operations—each of which would cost something in the region of £150 a hectare—a yearly saving of at least £900 can be realised per hectare, with the added cost benefit of released labour and the hidden savings of reduced costs for grass cutting machinery—be it travel, fuel, maintenance and spare parts.

To enable Mowchem to be accurately measured, May & Baker has packed the product in the patented tip 'n' pour container guaranteeing precision dosage through a calibrated measurement chamber.

Richard Fry, the company's environmental products manager, said: "As the leading supplier of specialist herbicides and fungicides to the amenity market, May & Baker is particularly proud of Mowchem. An outstanding product with application to those vast areas of grassland associated with industrial, amenity

SIGGA Revels In The Sun At Rosemount

The burgh of Blairgowrie and Rattray lies where the river Ericht emerges from spectacular gorges into Strathmore. It is a beautiful area of very fertile country, which has long been the centre of fruit growing.

A mile to the south-east is one of Scotland's most picturesque and beautifully kept inland golf courses— Rosemount. And it was at this friendly club that SIGGA recently held its annual golf tournament.

It was an ideal day for golf and the course was in immaculate condition. The event was an enjoyable experience for the 80 competitors,



and sporting activities, Mowchem opens up the way to cost-effective mowing regimes without the burden of high overheads.

"Mowchem is also the first product to be packed in M&B's tip 'n' pour container—which offers the user the advantages of safe, sure and accurate measurement."

with towering pines and yellow gorse flanking the fairways placing a high premium on accuracy.

In the end, it was the skill and expertise of the experienced players that got them on the prize list.

The day had many compensations and the excellent meals and prompt service in the clubhouse was particularly appreciated by all. Joe McKean deserves praise for the smooth way everything was run.

Results

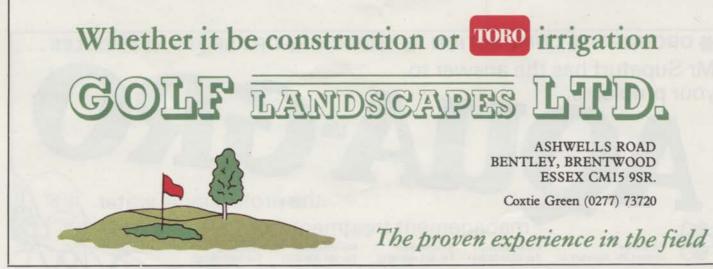
Scratch: SIGGA Trophy— G. Hampton 76. First Class: Ransomes Trophy— R. Miller 80-8, 72 (BH); T. Rogerson 77-5, 72 and G. Smith 82-9, 73 (BH). For further information on the costeffectiveness of Mowchem, May & Baker is providing a fully illustrated, technical leaflet, detailing step-bystep calculations. Local authorities have received a cost-comparison package containing wipe-clean melamine clip-boards to enable them to cost their own Mowchem versus mowing programmes. May & Baker and its distributors are also offering a free cost comparison analysis on request.

•The May & Baker Wall Planner is a comprehensive chart for easy weed and disease identification with up-to-date guidance for planning the use of herbicides and fungicides. In full colour with a laminate covering, the 33in x 24in chart allows users to plot yearly programmes. Priced £1 (including VAT and postage), the planner is available from the Promotions Department, May & Baker, Regent House, Hubert Road, Brentwood, Essex CM14 400.

Second Class: Pattisson Trophy— A. Glachan 85-16, 69; R. Anderson 88-15, 73 and E. Skinner 87-12, 75. Third Class: STRI Trophy— G. Stewart 109-22, 87. SAI Prize: Head Greenkeeper— I. McLeod 78-4, 74 (BH). Assistant— M. Clark 78-5, 73. Apprentice— G. McKenzie 89-9, 80. Souter of Stirling Prize: P. Bowden

85-15, 70. Friendship Trophy: J. Grainger 78-5, 73.

St Mungo Trophy: West Section. Veterans: J. Paton 88-12, 76 and G. Scougall 85-15, 70. Trade Golf: R. Bruce 93-19, 74. Trade Putting: R. Aitken Jnr 34.



The Facts About Drainage

The inadequate drainage of sports surfaces and amenity grassland has been recognised as a problem for some time. In 1981, the Department of the Environment and the Sports Council jointly funded a research project at the Sports Turf Research Institute, Bingley, to review drainage of amenity grassland. This study has now been completed by Caroline Ward and the work presented in a 112-page report.

The study was carried out in three sections—a review of the literature, a questionnaire survey and an investigation of the factors influencing the drainage performance of an area of sports turf.

From the survey, it was established that inadequate drainage on sports turf was a considerable problem resulting in a large number of golf clubs and local authority pitches having to be taken out of play during the winter. Even on Football League grounds, poor drainage was the major cause of unsatisfactory playing conditions.

Despite an awareness of modern drainage techniques, most schemes involved only pipes or mole ploughing on local authority pitches or pipes and catchwaters on golf greens. Very little impact on the overall size of the problem was being achieved due to inadequate finance and poor success levels with drainage schemes. The factors contributing to the latter are discussed.

Although rainfall was the major factor found to be controlling the occurrence of waterlogging on winter pitches, maintenance, soil characteristics and pipe spacing were also shown to have a significant effect. The implications of these findings are evaluated.

The review of the literature reveals



Questionnaire results showed that poor drainage on local authority maintained pitches was a considerable problem.

that most of the research has been concerned with the development of laboratory criteria for sand-soil mixes and there has been little field corroboration of these findings. Throughout the review attention is drawn to areas requiring further study to consolidate or expand current knowledge.

Copies of the report can be obtained from the secretary, The Sports Turf Research Institute, Bingley, West Yorkshire BD16 1AU. Price—£9.50 including postage.

British Boost For Brouwer

Watmore's Turfland, UK distributor for Brouwer turf equipment, recently placed a \$1m forward order for mowers during a visit to the Brouwer Canadian factory. Pictured are (left to right): Janet Watmore, director and financial controller, Chris Watmore, managing director, Gerry Brouwer, president of Brouwer Turf Equipment, and Ray Woodward, until recently of Turfland Professional Equipment.





The British Are Coming...

When a marketing man begins a presentation by confidently stating that there are 847,287 hectares *precisely* of maintained grass areas in the UK, you listen to his other claims attentively. Such was the case recently when David Jenkins of the newly formed Charterhouse Turf Machinery marketing company unveiled the new Rolawn Power 5 in London's Holland Park.

"In a market dominated by keen overseas competition, news of an all-British machine is good. The Rolawn Power 5 is British and we all feel that it fills a long-felt need in grass cutting machinery," David said.

Attempting to cut even a modest portion of all those hectares during warm, wet weather can give many headaches. The professional gang mower, relying on ground friction for its cutting power, is likely to skid while hydraulic gang mowers can be expensive to buy and maintain. Also, the extra tank for the hydraulic fluid increases the tractor's ground pressure, which is obviously not ideal for use in wet conditions.

And it was with these problems in mind that Rolawn some two years ago, having experienced similar problems in its turf nurseries, looked at the technical problems involved in gang mowing tender grass plants in wet weather.

At the time of Rolawn's early research, a company in South Wales was asked to develop what has become the Rolawn Power 5. As it took shape, trials were undertaken at Caerphilly Golf Club where, even in this year's wet spring, the club was able to keep its fairways under control by using the new machine.

It is claimed that the three wheels will not scalp undulating ground and that the gangs will follow ground contours closely. The power mowing capabilities mean that mowing is also maintained when a slow turn is made.

Look for the new Rolawn Power 5 at Windsor next month, where full technical specifications will be available.



King's Coggeshall Garden Party Success

Essex-based distributor John King and Sons recently held its 1983 show. Devoted to horticulture and turf-care, some 200 trade buyers were invited by King's staff and its suppliers to view the exhibits. Staged in the pleasant gardens surrounding King's headquarters, 19 suppliers were available to talk about their products.

An audio-visual presentation was a prominent feature of the May & Baker stand, giving visitors a brief introduction to the company's key products in horticulture, including Mowchem, the new grass growth regulator. Great interest was also expressed in May and Baker's new five-litre tip 'n' pour container designed to make the dispensing of liquids easier, safer and more accurate.

Spraying specialist Cooper-Pegler displayed its latest range of sprayers and application equipment. Other prominent names from the turf-care industry included Fisons, Midox, Synchemicals, Steetley Chemicals and Perrot Irrigation.

Horticultural interests were fully represented, including the debut of Hortichem—a new specialist chemical company that started trading earlier this year.

On the 'pots and containers' side were Glenco, Congleton Plastics, Jiffy Pots, Synclaire Horticulture and Leisure, along with Styropak and Reed Corrugated.

Looking after compost and fertiliser needs were Sierra Irish Peat, while Bulldog Tools exhibited a full range and Clouis Lande the latest developments in polythene tunnels.

The new Rolawn Power 5 gang mower.



Jim Arthur—Continued from page 8...

often for upwards of 20 years, now 'ceased'. Some of these ceased because a specific problem was solved, but most because there was a change of the man in charge and none because the system of management failed. In fact, failure is rare. When it occurs, it is almost always because the work is not being done—or only partially.

There are blatant cases where I am told a pack of lies, which annoys only because it is an insult to my intelligence for those covering up to think that I am fooled!

The problems are at all levels. The new secretary wants to justify his salary by getting involved in greenkeeping; the inefficient at all levels cover up and are fearful or resentful of their incompetence being revealed; the incoming chairman of the green committee is desperate to make a show in his all-too-short year of office; hyper-sensitive head greenkeepers resent an adviser, especially (and naturally) if the club calls in the agronomist without consulting them and, worst of all, that 35-year-old pointed firmly in the wrong direction.

If all advisers would give the same basic advice, less harm would follow a change of adviser and less changes might be necessary. As with any profession, unanimity of advice is so important. Which is why the greater measure of agreement following Bingley's change of direction under Dr Hayes is so important for greenkeeping. There is plenty of room—even in golf—for all advisers, but it can only confuse if there is too wide a disparity on basics.

When clubs change policies, they

should think and think again and avoid over-reacting to members' criticisms, which can as easily turn to praise in weeks, sometimes even days. Only where results do not follow the enthusiastic and unselective implementation of a basic programme should the source of advice be changed and then ethics demand that the adviser is informed and given an opportunity to re-examine the situation.

I (and I know most other advisers do, too) make a point of receiving any

No present agreement with any other adviser

new clients' assurance that there is no present agreement with any other adviser and if there has been that the adviser has been formally discharged.

If we had a proper policy document at every club, binding on all involved in course management, such changes would not occur and we should be able to work forward to better courses over the next decade.

Sometimes the adviser himself is the only person providing continuity but, in the end, if continuity is lost, all is lost. We should not blame eager but uninformed chairmen or conveners of green committees; over-sensitive head greenkeepers or inefficient managers fearful of their jobs.

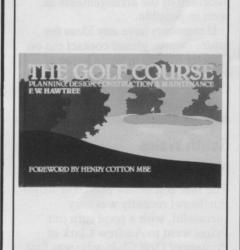
The answer lies in better education at all levels and in establishing sound policies implemented by an enthusiastic team, all believing in them and working happily as equal members with differing and separate responsibilities.

Book Review

With an introduction by Henry Cotton, Fred Hawtree's new book *The Golf Course* is a must for all those who have a library on golf or greenkeeping. Fred Hawtree's family has a long connection with all aspects of the golf course, his father having been a greenkeeper turned designer, a practice which has been continued by the third generation, Fred's son Martin.

Despite its unusual size and cover, the book—published by E. and F.N. Spon at £14.95—is a highly detailed journey through the planning, design, construction and maintenance of golf courses, with a special section for head greenkeepers in which the author gives his view on the greenkeeping profession, its status and rewards.

Detailing, as it does, the history as well as the modern techniques of design, it is a must for anyone intimately involved in the maintenance of a golf course and will make a fascinating addition to any golf club's library.





Branch News

North-West

Notes by Andrew Campbell

The inaugural meeting of the northwest branch of EIGGA was held at the City Arms Hotel, Chester on June 30. David Jones and Michael Coffey attended and gave an interesting and well-received account of EIGGA's role and aims for the future.

As a result of the meeting, a committee comprising the following members was formed: chairman—Bill Lawson, vice chairman—Keith Holmes, administrator—Andrew Campbell, golf administrator—Terry Adamson, treasurer—Phil Davies and assistant administrator—Norman Pierce.

Two weeks later, the committee met to discuss views and suggestions on how it could best represent the membership which, at the time of going to Press, numbered over 60. It was decided that the first major event would be a combined autumn/winter competition. Members will be informed of the arrangements as soon as possible.

If members have any ideas for future events, please contact me on Chester 678879 or write to me at 45 Vyrnwy Road, Saltney, near Chester, Clwyd CH4 HQN.

South Wales

Notes by Carolyn Jamieson

The first golf match played at Royal Porthcawl recently was very successful, with a good turn out. Prizes went to Andrew Clark of Pontypool Golf Club, who was first with 36 points; John Walsh (Royal Porthcawl), second with 31 points; Stephen Rowland (Pontypool), third with 27 points and Tom Gray (Pyle and Kenfig), fourth with 21 points.

The prizes were: first—a golf bag, second—a holdall, third—a sports shirt and fourth—a sports cap.

A social evening consisting of a lecture was held at Wenvoe Castle GC late in July. Members and guests are welcome at all such events.

For further details, contact Bruce Jamieson on Porthcawl 771820.

Berks, Bucks and Oxon

Notes by Kevin Munt

Back in mid-May, a strange thing happened at Goring and Streatley GC... The sun shone all day for our 36-hole Spring Medal! The shock of this seemed to affect the scoring, for most of us had not seen our clubs for some weeks.

Considering the very wet spring, Goring was a picture in the sun and a great credit to Brian Valentine and staff. Many thanks to all concerned at Goring for their hospitality. The new clubhouse, paired with a fine course, make a lovely venue.

One or two managed to play some good golf. Barry Holt of Burford returned 75-78 to win the scratch prize—the Parker Shield. Barry just pipped Ray Wooten of Burnham Beeches.

Ray was to suffer a similar fate in the contest for the nett prize. With the last return of the day, Phil Walshaw of Downshire returned a fine 66 to edge out Ray. For his efforts, Phil collected the President's Salver and Ransomes Watch. Our next meeting is a members and guests day at Burnham on September 14.

If you are not a member of EIGGA, don't miss out—contact me at 45 Hitherbroom Road, Hayes, Middlesex, for a membership form. There are over 40 clubs in the area it would be nice to have them all represented.

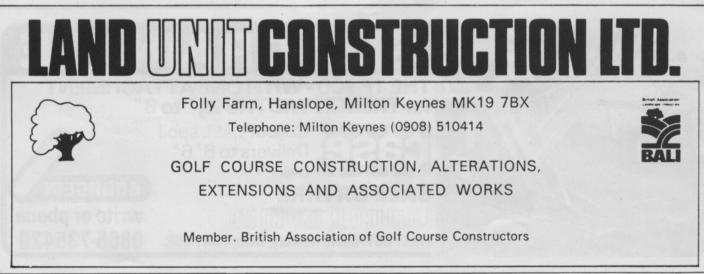
East Anglia

Notes by Mick Lathrope

Again, our tournament was a major success. This time, the venue was Theydon Bois-not a place for the faint-hearted. I had just finished reading in Greenkeeper, 'Golf Is A Game Of Open Spaces' and I wonder what Jim Arthur would say if he went there? Our thanks go to Frank Prince and his boys for all their efforts and to the captain and members for allowing us to play. It would seem that not all clubs will give us courtesy of the course, which is a pity as so many of us spend a lifetime providing enjoyment for others and yet we have to pay for the privilege of playing on one of our own creations.

The chairman's speech was not without incident, but an unruffled Sturley soon got into the swing of things and handed over to the club captain, who presented the prizes. Results: 0-17 section—first, Tim Watt, 25 points; second, Mr Templeman, 21. 18-25 section—first, Jeff Fayers, 33 points; second, J.Barnard 32. F.Feltham won the guest's prize with 32 points.

The game at Royal Norwich has been switched to Barnham Broom, at a date to be arranged but probably at the end of August.



Buyers' Guide

BARK AND BARK BASED PRODUCTS **Camland Products Ltd.** 36, Regent Street, Cambridge, CB2 1DB Tel: (0223) 68780 Telex: 81254 BOWLING GREEN, GOLF GREEN/ TEE CONSTRUCTION Wener & Longstaffe Ltd. 5. Lovelace Road, East Barnet, Herts Tel: 01 368 4845 BRITISH ASSOCIATION GOLF COURSE ARCHITECTS Cotton (CK), Pennink, Lawrie & Partners Ltd., Partners Ltd., Marlow Place, Station Road, Marlow, Bucks, SL7 1NB Tel: Marlow 72555 Telex: 311210. Hamilton Stutt & Co., 20 Bools Accord 12. Bingham Avenue, Poole Dorset, BH14 8NE Tel: (0202) 708406. Hawtree & Son 5. Oxford Street Woodstock, Oxford, OX7 1TQ Tel: Woodstock (0993) 811976. T. J. A. McAuley BSc FICE. 7. Donegal Square West, Belfast, N. Ireland, BT1 6JF Tel: (0232) 26981. BRITISH ASSOCIATION GOLF COURSE CONSTRUCTIONS Chipman Ltd., Horsham, Sussex, RH12 2NR Tel: 0403 60341. Eccles Contracting Ltd., Brickfield Street, Hadfield, Hyde, Cheshire, SK14 7DZ Tel: (04574) 63425. Golf Landscapes Ltd. Ashwells Road, Bentley, Brentwood, Essex, CM15 9SR Tel: 0277 73720. Land Unit Construction Ltd., Folly Farm, Hanslope, Milton Keynes, Bucks, MK19 7BX Tel: 0908 510414. Brian D. Pierson (Contractors) Ltd., 27, Vicarage Road, Verwood, Wimbourne, Dorset, BH21 6DR Tel: 0202 822372. Southern Golf & Landscapes Ltd., 85, West Street, Warwick Warwickshire Tel: 0926 492898. CONSTRUCTION Charles Lambert (Lawns) Ltd., Dudley Court, Cramlington, Northumberland

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Watkins Nayler & Co. Ltd.,

Tel: Woking 70303 Telex: 859224. LIQUID ORGANIC FERTILISER Farmura Ltd., Stone Hill, Egerton, Nr. Ashford, Kent Tel: Egerton (023 376) 241.

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Wilcocks. Walker Street, Preston, Lancs. Tel: Preston 53068. D. Rowe & Co. Ltd., The Hornet, Chichester, West Sussex, PO19 4JW Tel: (0243) 788100 Telex: 86110 Contact: Mr. D. Strange/Mr. J. E. Burfoot. SAND George Garside (Sand) Ltd.,

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Contact: W. D. Baker TURF

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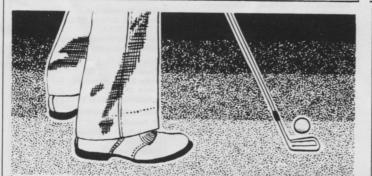
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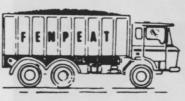
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