

GOLF COURSE

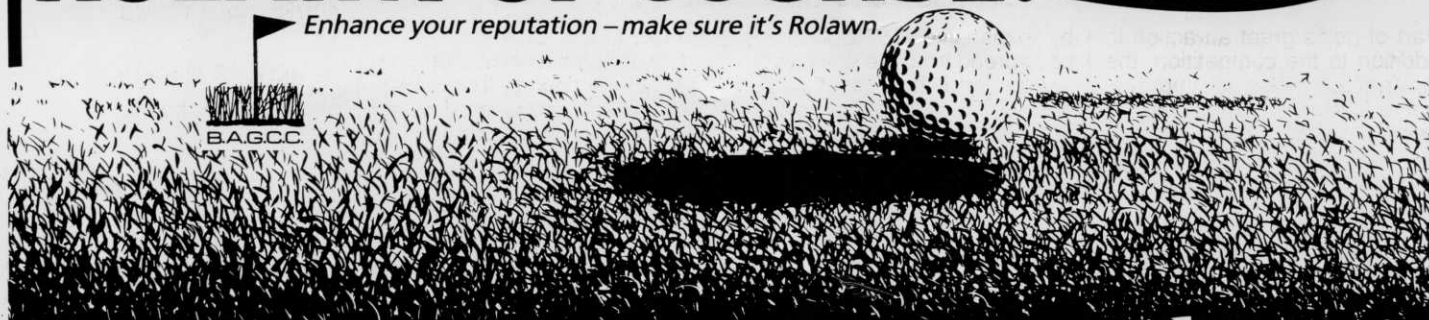
Many a reputation has been won and lost on the tees and greens. Ours has grown and grown over the years with leading clubs throughout Britain proud of their Rolawn turf.

Rolawn turf is:

- ★ weed-free
- ★ quick and easy to lay
- ★ mature
- ★ locally-grown
- ★ of uniform thickness
- ★ always matchable

ROLAWN OF COURSE!

Enhance your reputation – make sure it's Rolawn.



Rolawn®

Contact us direct
 Head Office: Rolawn Ltd., Dept. GG, Elvington, York YO4 5AR.
 ☎ (24 hours): (0904 85) 661

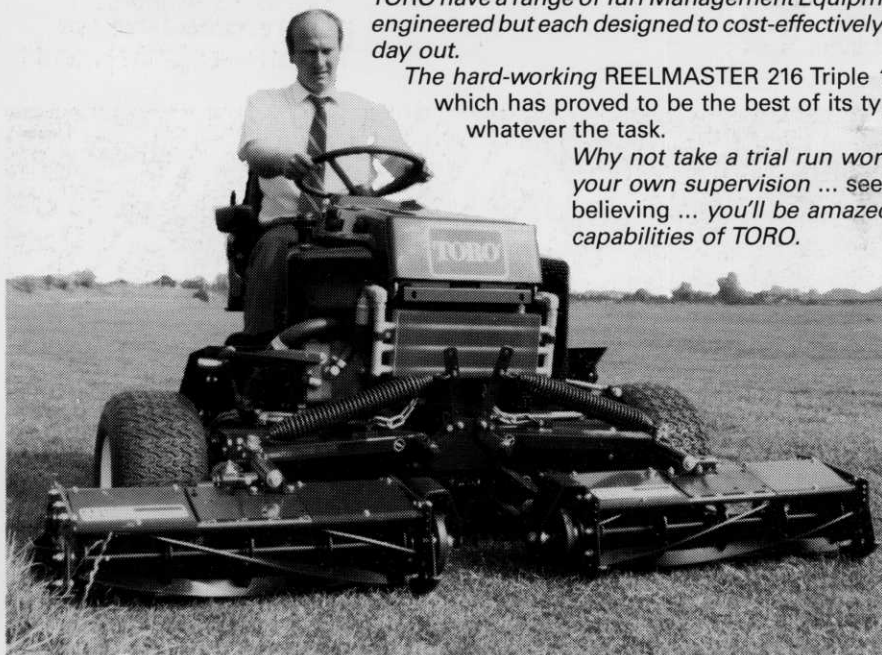
Toro

the name you can trust

TORO have a range of Turf Management Equipment that is not only superbly engineered but each designed to cost-effectively handle all conditions day in, day out.

The hard-working REELMASTER 216 Triple 'an exceptional mower' which has proved to be the best of its type whatever the task.

Why not take a trial run working under your own supervision ... seeing is believing ... you'll be amazed at the capabilities of TORO.



UK DISTRIBUTORS
LELY (UK) LIMITED
 STATION ROAD
 ST. NEOTS · HUNTINGDON
 CAMBS · PE19 1QH
Telephone:
(0480) 76971
Telex: 32523

Please send details as ticked

Literature Nearest Dealer Trial/Demo

Name _____

Address _____

Post Code _____

Tel _____

Student

GCCM/3/88

Editor & Publisher:
JOHN LELEAN

National Advertising
Executive:
Mike Massey
'Fieldside', Grange Road,
Bowdon, Cheshire
Tel: 061-928 2997

Printing by:
Walkergate Press

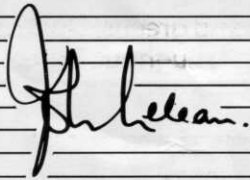
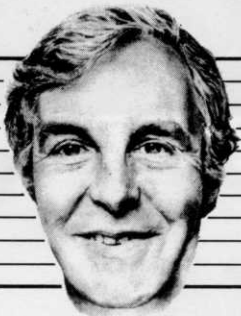
Graphics & Design:
Bruce McDonald

Golf Greenkeeping is a combined subscription and controlled circulation publication for the golf course management industry. Current distribution 2,500 copies per month. Published ten times per year. Copies are available on subscription, postage paid, £14.00 per year. Overseas surface, £16.00 per year. Air mail rates on application to the publishers.

The Editor and Publishers do not necessarily agree with the comments and views expressed in this publication and do not accept any responsibility for any personal opinions stated therein. ©Copyright 1988 Golf Greenkeeping. Permission for the reproduction of features and articles will be favourably considered for non commercial purposes on application to the publisher.

Published by:
Wharfedale Publications Limited
P.O. Box 12, Wetherby,
West Yorkshire LS22 4SR
Telephone: (0937) 63181

Greenside Comment...



Litter Louts

Part of golf's great attraction in addition to the competition, the striving for personal improvement and unique fellowship among fellow golfers is the pleasure one can enjoy amid the tranquillity of nature's living environment.

Greenkeepers have moulded, sculptured and nurtured their individual domain to a place of beauty as well as an arena for sport. Why, we ask, is such a desirable piece of countryside subjected to acts of wilful desecration by none other than golfers?

Walk almost any course, both public and private, and one is faced with an accumulation of discarded drink cans, either dropped where the contents were emptied, thrown into bushes, stuffed down rabbit holes, hung in the branches of trees, floated down streams and even buried in the bunkers.

The mentality of these litter louts, who squeeze a tin into an obscene shape to enhance their fantasy of a Rambo image, before casting it to the four winds is beyond all comprehension. Do they think the greens, staff have nothing better to do than act as refuse scavengers?

The trend of soft drink consumption, no doubt stimulated

by expensive TV advertising, has spread from the home to the streets and now to the golf course. The time of the year appears to make little difference. The need for a drink on a hot summer's day is understandable, but some golfers now regard a couple of cans of Coke as a necessary part of the golf equipment.

The can is often opened somewhere on the fairway, the metal ring dropped just where the gang mower will run over it. Before reaching the next tee where there is invariably a convenient litter bin, the can is thrown into the undergrowth.

How much damage is caused by these rings is difficult to estimate, perhaps greenkeepers would like to look through last year's maintenance accounts and see for themselves.

The excuse is - *It is not the members, but must be golfers from visiting parties.* Although there may be an element of truth in this suggestion, on the grounds that the Chinese philosopher, Confucius, said "*Man does not foul own doorstep*", nevertheless, most golfers playing away are members of one club or another and if they do not foul their own nest there is no

excuse to foul another.

Such behaviour is not confined to the course. In one well-known club, considered to be fairly up-market, a member was seen cleaning his shoes in the locker rooms with one of the shower towels. When challenged his reply was "They all go into the wash, don't they?"

Until clubs insist on a more civilised standard of behaviour by making an example of those culprits caught in the act, the problem is likely to grow.

One club, or more precisely the professional, incensed by the litter on his course, organised the caddies to gather all the tins they could find. He piled them into a container outside the Pro's Shop, put up a large notice informing all concerned where this unsightly rubbish had lain and offered a bottle of whisky for guessing the number collected.

Thereby he achieved two objectives. The course was cleared of rubbish and the caddies split the sweep money.

Food for thought, for similar fund-raising schemes for Junior club members.

NEWS ROUND UP	4, 5, 7, 8, 9, 12, 13
GROWING GREENER GRASS	10, 11
DRAINAGE	14
RETIREMENT AWARD LETTERS	16
SITUATIONS VACANT	15, 18
TRADE DIRECTORY	19

Next Month:
Golf Course Tractor Survey.
Turfland's Open Day.



News . . News . . News . . News .

Quarter Million Pound Support for golf green research

The Royal and Ancient Golf Club of St. Andrews has pledged support totalling £250,000 for research on golf green turf at the Sports Turf Research Institute at Bingley over the next five years.

The research programme includes a major project on irrigation, construction and fertilizer nutrition of golf green turf and a minor project on the nutrient requirements of fine-leaved bent and fescue grasses and greens.

The results of the research should be of considerable benefit to all golf courses, and will hopefully result in a return to faster, firmer and truer putting surfaces.

Over-watering, says the R & A, has probably been one of the main causes of the deterioration of British golf greens. Club golfers often demand a holding surface. Because Clubs have invested in an irrigation system there is an almost compelling desire to use it, even when watering is not really required.

However, over-watering cannot be isolated from the effects of different media used in the construction of golf greens, such as sands and soils, with their varying water-holding capacity.

In turn, green construction cannot be considered separately from the efforts of fertilizer nutrition with its consequences for root growth and distribution.

Over-fertilizing produces a restricted root system with

limited access to moisture in the rootzone.

The project will examine the relationship between irrigation, golf green construction and fertilizer nutrition with a view to providing recommendations for irrigation and fertilizer requirements of greens.

It is now generally accepted that the invasion of fine turf by the annual meadow-grass (*Poa annua*) is enhanced by high fertility levels in soils. This is especially true for soil phosphate concentrations. Because of this, greenkeepers are encouraged to maintain a low phosphate status in golf green soils. However, it is important that information is obtained on the likely effect of low nutrient levels on the desired fine-leaved species of fine turf.

A 5-year experiment is to be undertaken at Bingley to study the phosphate and potassium nutrition of the bent and fescue species commonly sown on golf greens. This will produce information on the relative abilities of these species to take up soil phosphate and potassium together with the effects on wear tolerance and disease resistance of varying soil nutrient levels.

•End

Turf who



FOR SPORTS SURFACES
FOR BOWLING GREENS
FOR AMENITY AREAS

The solution to your "green" problem.

Turfland
where the grass is always greener

The country's leading turf nursery.

Nurseries in the prime grass-growing counties in England

Head Office: Turfland, Dutton, Warrington, Cheshire. WA4 4LL.
Tel. (09286) 340/336

News . . . News .

IOG Show to move to Peterborough

The Institute of Groundsmanship is to move its annual IOG Sports and Leisure World Trade Exhibition from Windsor Racecourse to the East of England Showground at Peterborough in 1990.

The move has been made necessary because of the Exhibition's unprecedented success: new and existing exhibitors are clamouring for space, the 35,000 visitors annually have increasing expectations, and there is a growing number of delegations from overseas.

The Institute say they greatly regret the move will terminate a long and happy association with Windsor Racecourse but the change of venue will bring other marked benefits for the exhibitors — the 1990 Exhibition date will be almost two weeks earlier in the calendar, September 4, 5 and 6.

The 1988 Exhibition will take place at Windsor on September 20, 21 and 22, whilst the 1989 dates (at Windsor for the last time) are September 19, 20 and 21.

This year's Exhibition at Windsor

will be the largest ever. A record amount of trade stand space has already been booked; there is a greater demand for the demonstration areas; and a heavier than usual number of inquiries both from the UK and overseas have been received.

This showground site at Peterborough covers some 310 acres of fine parkland, providing approximately 365,000 sq.m. of outdoor space, and 2,500 sq.m. of indoor accommodation — with a further 4,500 sq.m. covered space held in reserve. Of the 105 — acres allocated to the event, 60,000 sq.m. have been reserved immediately adjacent to exhibitors' stands for working demonstrations.

The complex offers a vast array of amenities, including a private telephone system with 200+ lines available to exhibitors, a wide range of public and private catering arrangements and parking for 30,000 vehicles.

The success of the IOG Exhibition over its 50-year history has resulted in its outgrowing several venues: first Hurlingham, in 1938 then Motspur Park in Surrey, and now the Royal Windsor location.

Course alterations at Moor Allerton

Moor Allerton, the first Robert Trent Jones designed course, Britain is about to undergo its first major change since the 27-hole golf course to the east of Leeds was opened in 1971.

Last year the club was forced to make alterations to the 14th green, because of complaints

from a holiday caravan site, where mis-hit shots were said to be peppering the campers, but this has opened up an opportunity to build a new short 17th where a green will be set into the trees and the approach made over a small lake some 30 years from the putting surface.

This will also involve a change

Continued on page 7 . . .

GET A LOAD OF THIS



Neptune organic soil products are now available in your area.

You don't need to be told of the advantages of natural environmental conditioners and you don't need to be told that alginates are the best natural conditioners available.



You will however be very pleasantly

GOLF COURSE

surprised by the quality, ease of application and price of the Neptune product range.



LANDSCAPING

You will be hearing a lot about Neptune in the coming months but if

you would like a head start simply dial the telephone number below and we'll send you a comprehensive information pack.



SPORTS GROUNDS



NEPTUNE SCOTLAND LIMITED
OLDHALL WEST INDUSTRIAL ESTATE,
SHEWALTON, IRVINE.
TEL: (0294) 311325

Rest assured with the Dual...

Take the worry out of lawn mower repairs and invest in the EXPRESS DUAL.

REST ASSURED no competitor can undercut you with a more efficient machine!

REST ASSURED that the EXPRESS DUAL will give you a faster turn round during the busy periods.

REST ASSURED your profit margins will be as good, if not better, than you thought possible.

REST ASSURED you'll get the backing of over 100 years of experience.

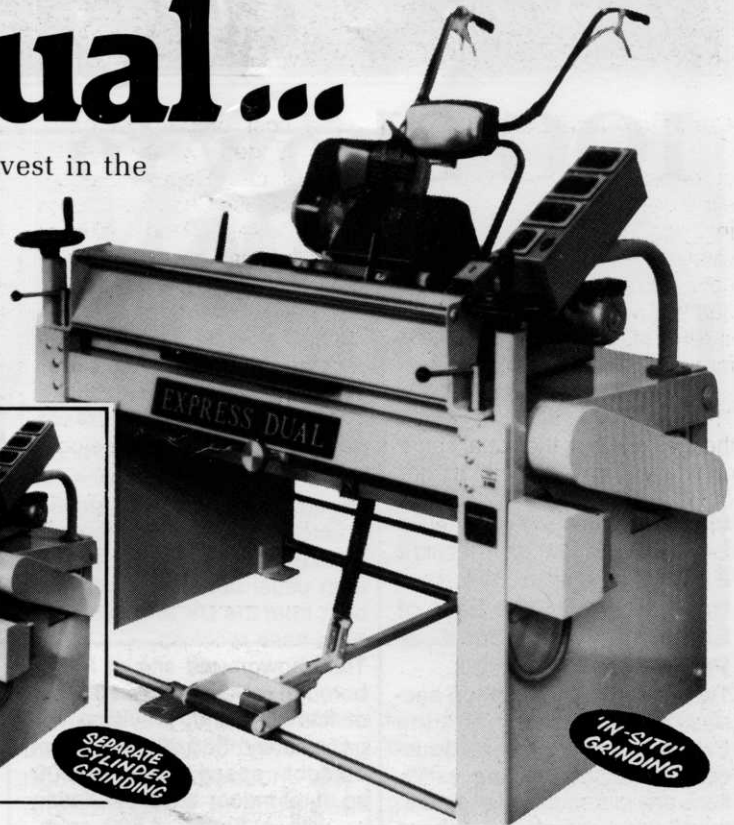
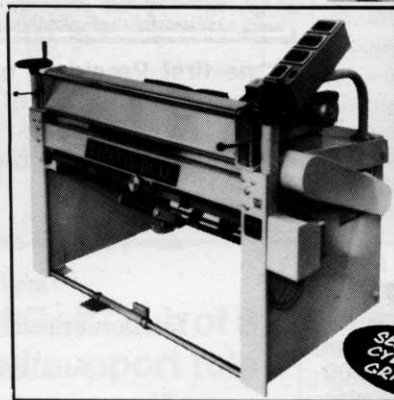
... there's no substitute for experience!



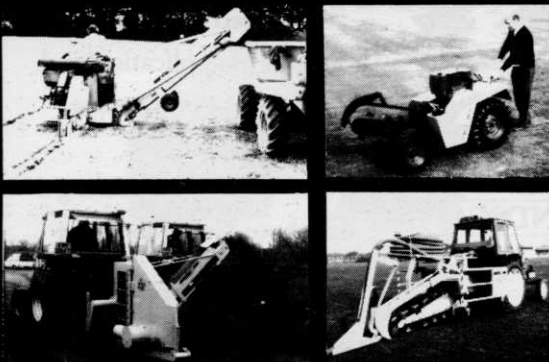
ATTERTON & ELLIS LTD

Iron Works, Haverhill, Suffolk.
CB9 8QH. Tel: Haverhill (0440) 702312/3

Manufacturers of fine lawnmower grinding machines for over 100 years.



For Multi-Purpose High Speed Trenchers Choose AFT



Our range of seven trenchers cut from 5 cm to 45 cm wide for all your cables, water pipes and sportsfield drainage requirements with unrivalled performance and cost effectiveness. Soil collection systems and laser assisted grading are available on some models. With over 20 years manufacturing experience, a first class after sales service and a convenient self-drive hire fleet we offer a unique trenching service that is second to none.

Write or telephone for details today:-

A. F. Trenchers Ltd.,
Gosbecks Road, Colchester, CO2 9JS
Telephone 0206 44411

CLEAR A PATH THROUGH THE AMENITY SEED JUNGLE



FREE

Our 1988 guide to Amenity seeds is out now – write or telephone for your free copy.



BRITISH SEED HOUSES LTD

Bewsey Industrial Estate, Pitt St., Warrington,
Cheshire WA5 5LE. Tel (0925) 54411

News . . News . . News . . News .

Continued from page 5 . . .

of direction for the 18th hole, eliminating the punishing, sloping, dog-legged fairway and the climb up "heart-break hill" with a new tee at the back of an old quarry giving an almost straight line into the green over the lake in front of the clubhouse.

Golf course architect Dave Thomas has been credited with the design, but the idea came originally from Course Manager Colin Geddes, who was previously the Head Greenkeeper at the original Moor Allerton Course at Moortown, sold for housing.

The cost of construction is being funded by the Vehicle Builders and Repairers Association, whose Chairman Robert Hadfield said "Moor Allerton Golf Club has been extremely accommodating to the Association over a number of years allowing us to stage what has become the biggest one day tournament in the country. We felt by sponsoring the new hole we would be putting something back into future competitions and will serve to remind golfers of the close co-operation between the club and our Association.

German trainee to join Belfry Staff for holiday working

Last November we made an appeal for a British Golf Course to offer a holiday working position for a young enthusiastic German schoolboy from Hamburg.

A number of golf club greenkeepers and secretaries contacted our office offering to take Franz Bach on to the staff and although he was prepared to work for nothing to gain experience, without exception all the clubs said they would not hear of it. He would receive a rate for the job.

Franz has now accepted an offer from the Belfry, where he will join one of Britain's most competent teams of greenkeepers. He will see at first hand how the Belfry staff have made this West Midlands course one of the best in Europe, building on their reputation for preparing the 1985 Ryder Cup to produce an even more outstanding venue for the defence in 1989.

Franz, at 17 years of age, is already steeped in golf course maintenance. His family own the Grambek Club outside Hamburg.

He probably hits a good ball himself if family reputation has anything to do with it. Franz's Mother has represented West Germany and his sister is in the Hamburg Ladies' team.

FOR the past five and a half years this magazine has been produced and printed in the works of W. Kristall Ltd, a second generation family firm of printers in Leeds.

Regretfully, the company issued notice to all members of staff at the beginning of February, whilst the Editor was in Houston, unaware of the problems back home. It has now closed and the staff made redundant.

This accounted for the later than usual publication of Golf Greenkeeping, but it was put together, albeit two weeks behind schedule, thanks to the loyalty of

Further Developments for Greenkeepers' Association

The first President of the newly formed British and International Greenkeepers' Association is to be Viscount Whitelaw, recently retired from the Government after illness forced his resignation as Deputy Prime Minister.

He was the Captain of the R & A in 1969 and currently the President of his home club of Silloth-on-Solway, Cumbria, where he plays regularly and according to a very reliable source, knocks it round the 6,343 yard course in the low eighties.

His experience as a leading government minister over many years could be of great benefit to the Greenkeepers' Association, who have announced development plans affecting training, education and the enhancement of their professional status.

Funding for greenkeeper education has always been a serious problem, mainly because in the past the Golf Unions have not seen fit to accept the financial responsibility and only the more enlightened clubs have been prepared to pay for day

and block release education for their young trainees.

Viscount Whitelaw's influence in this aspect of greenkeeper education and training could prove invaluable to the Association members.

Greenkeepers will be in attendance at this year's Open Championship to be played over the Southport Links Course at Royal Birkdale, giving voluntary help to the full-time staff at bunkers, similar to the duties performed last year by the Scottish Greenkeepers at Muirfield, gratefully acknowledged at the presentation ceremony.

Neil Thomas, BIGGA's Executive Director has also announced a two day conference at Ayr in September in conjunction with the National Tournament and in January 1989 there is to be a turf management exhibition in Harrogate in parallel with a three day series of educational seminars.

Changes at Golf Greenkeeping

staff at W. Kristalls, who over the years have taken an increasing interest in the publication. Our thanks are extended to all those involved, particularly Stephen Spellman, whose creative design has made Golf Greenkeeping a well presented and attractive publication.

We are pleased to report his talents have been recognised and his services quickly snapped up by a leading firm of creative advertising agents.

The production of Golf Greenkeeping is now in the hands of the Walkergate Press at Anlaby, Hull, where the highly sophisticated electronic compo-

sition will allow an even greater creative flexibility.

A glance at our growing number of appointment advertisements will demonstrate the scope of equipment that is capable of composing an attractive eye-catching advertisement on a computer screen, in less than five minutes!

There are certain to be teething troubles in the first few issues, but Golf Greenkeeping will be back on stream within the next few weeks to give our increasing readership an informative, newsworthy, readable magazine.

Editor.



News . . . News . . . News . . . News .

Greenkeepers and Pro. Golfers - Follow Through

Ask any greenkeeper to name the most aggravating trait among some club golfers and most will pick on those who do not repair their pitch marks, replace divots and walk out of a bunker without raking the sand.

A novel idea has born fruit in the USA where the Superintendents, Association and the American PGA have combined their resources to produce an attractive colour poster, featur-

ing Tom Watson, reminding golfers to "Follow Through."

The follow through refers to those unrepaired ballmarks, divot holes and footprints in the sand.

Most golfers know the etiquette of the game, or should do, but seem quite oblivious of their responsibility when it comes to putting the approved practice into operation.

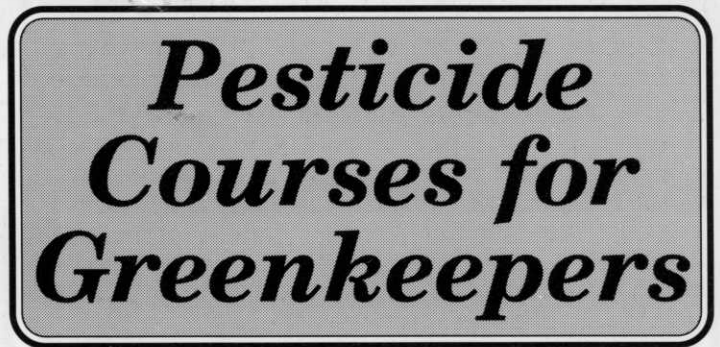
Perhaps our own Greenkeepers' Association and the PGA could discuss a similar poster campaign in the clubhouses. If they do not think it is their responsibility maybe the Golf Unions might consider spending a little of the club subscription fee to promote better behaviour on the golf course.



Due to the requirements under the Control of Pesticides 1986 to record all spraying operations, Chipman Limited have produced "The Chipman Pesticides Application Log" to enable professional Spray Operators to record accurately all spray applications.

The application log contains all the information that needs to be recorded - rate of application, area to be treated, spray volume etc and a special "tear off" instruction sheet for each Spray Operator.

They are available direct from Chipman Technical Representatives or Chipman at HORSHAM (0403) 60341 or HARROGATE (0423) 68658.



In 1986 the Government implemented the Pesticide Regulations as part of the Food and Environmental Protection Act introduced in 1985.

One of the features of these regulations is the need for many of the people involved in the application of pesticides to undergo training and competency tests in pesticide use and application.

To meet these training demands, staff from Askham Bryan College, York, have themselves undertaken specialist training and the College is now running courses at the College and through its Extra Mural Centres, situated at Guisborough, Bedale, Harrogate, Easingwold and Pickering.

David Marsden who is responsible for organising Adult Training at Guisborough Agricultural Centre is also a member of the Greens' Committee at Saltburn Golf Club. As he was arranging for the greens staff at Saltburn to attend training he

thought it would be a good idea to run courses especially for greens staff in the Cleveland area. As a result twenty greens staff from most of the golf courses in the Cleveland area have embarked on the two days of training which is the minimum required by these regulations.

The course covers all the requirements of the Act, including safety, storage, mixing and selection of chemicals, keeping of records and the correct use of the machinery involved in applying pesticides.

David hopes that as a result of meeting the greens staff any other training needs required in this increasingly technical occupation can be identified and met through the College's Green Keepers' specialist Nick Bisset.

If anyone wants to know more about these courses or has any other training requirements, then ring David Marsden on (0287) 33870 or 34323 (evenings) and he will be only too pleased to discuss your needs with you.

COSFORD GOLF LANDSCAPES

DESIGN, CONSTRUCTION,
EXTENSIONS, ALTERATIONS,
IRRIGATION, DRAINAGE,
ADVISORY SERVICE,

FREE COMPETITIVE ESTIMATES.



TEL: ALBRIGHTON (090722) 4248

News . . News . . News . . News .

New Pressure regulator from Weather-Matic

WEATHER-MATIC are producing a pressure regulating option for their 8000CR and 11000CR series valves. The XPR pressure regulating module senses inlet pressure and maintains constant outlet pressure regardless of inlet variations.

The new Weather-matic pressure regulator may be ordered as a factory installed option or installed in the field on existing Weather-matic valves where pressure regulation is required. Equipped with manual flow and bleed control, the XPR module regulates pressure when the valve is operated either electrically or manually. A downstream connection is provided for accurate pressure sensing. The XPR will accommodate a maximum inlet pressure of 150 psi.

Weather-matic is distributed and installed in the UK by Prime Watermen Limited, Wangford, Beccles, Suffolk. NR34 8AX

Government Minister to Head Conference on turning

The National Turfgrass Council, the National Farmers' Union and the Sports Council are arranging a workshop on the "Recreational diversification of farmland" at the NAC, Stoneleigh, on Tuesday 24 May. This will be the first major workshop at which turfgrass experts and experienced amenity grass managers will explain some of the pitfalls and plus points in constructing golf courses and other specialized sports facilities.

The principal speaker will be the Rt. Hon. John Gummer, MP, Minister of State for Agriculture. Supporting speakers from the Sports Council, NFU and banking will set the scene, followed by turfgrass construction and management experts. This should

interest everyone in agriculture and the leisure industry.

Further details of the workshop can be obtained from:

**The Secretary, NTC,
3 Ferrands Park Way, Harden,
Bingley, West Yorkshire.
BD16 1HZ**

Sales integration for Hayter & Beaver

Following last October's acquisition of Beaver Equipment Company, Hayters plc has announced organisation changes and new appointments.

From 1st February 1988, the sales and marketing activities of both Hayter and Beaver will operate from Spellbrook, Bishop's Stortford.

The company is establishing two sales divisions specialising in domestic and professional machinery. The professional machinery division, incorporating both Hayter and Beaver professional equipment, will be directed by Richard Smith — formerly Beaver's Sales Director and now a Hayter Director.

Domestic product sales, including key accounts, will be directed by Kim Macfie, Hayter's Sales and Marketing Director, at Spellbrook.

It is the company's intention that, progressively, the Beaver range of product will be assimilated into the Hayter corporate identity under the Hayter trading name. The Beaver name will continue as a model designation. The Hayter range of product, both professional and domestic, will continue in its current form.

Managing Director, Bill Palmer told **Golf Greenkeeping**, "The changes outlined confirm our intention to support fully both the professional and domestic markets. Not only with extra sales personnel, but with additional design, manufacturing and support capabilities in combination with an ambitious investment programme. We aim to ensure that effective trading relationships can be established to the benefit of all".

FARMURA LAUNCH FERROSOL LIQUID IRON

FARMURA have introduced Ferrosol Liquid Iron to the UK market, which they say is specifically formulated for use by 'greenkeepers'.

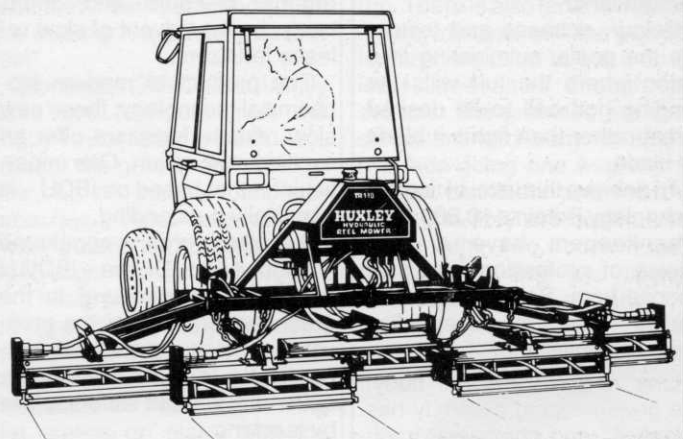
Ferrosol is a patented bonding of ferrous sulphate to urea which not only keeps the iron stable but also speeds up its intake into the plant system. Because plants have a high requirement for nitrogen they absorb it and the iron at the same time. However Ferrosol avoids the problems normally associated with excessive or unwanted flushes of growth

due to additional nitrogen as the amount of N actually applied per square metre is very low - i.e., at recommended rates the amount of nitrogen is as low as 30 grammes per 100sq. metres.

Ferrosol can be tank mixed with other Farmura products and will complement their liquid fertiliser programmes.



Mowers for weight-watchers. Not weight-lifters.



Huxley Hydraulic Reelmowers for compact tractors prove that you don't have to be a heavyweight to be strong.

So, if your turf could benefit from a reduction in pressure, without a reduction in performance, please ask us to demonstrate.

We could save you pounds.



on top, on turf

HUXLEYS GRASS MACHINERY
THE DEAN, NEW ALRESFORD,
HANTS SO24 9BL, ENGLAND
Tel: 0962 733222 Fax: 0962 734702
Telex: 894426

GROWING GREEN — THE IBDU

**Fertilizer technology has made major strides in
made with slow release fert**

Greenkeeping is very much about balance – fostering nature in a way to please the Greens, Committee while pandering to the naturalist notions of the club members. Standards must be uniformly high throughout the year, despite the fact that nature gives in the spring only to take away in the winter. For the majority of golfers their club is an oasis, a pinnacle of green perfection and, compared against their own domestic lawn, a veritable Kew Garden.

Such demands make greenkeeping the profession that it is – a permanent reach for perfection conjured up by names such as The Belfry and St. Andrews. Television too has played its part; why is it that the North American courses look so lushly green? Could it be something to do with filters over the camera lens!

Colour, richness and texture are the goals, culminating in a green where the turf wills the winging golf ball to its desired target rather than fights it blade by blade.

To achieve this level of fine turf technology Britain's 10,000 or so greenkeepers have a vast choice of professional tools to choose from. Some are controversial – others are accepted as sound scientific fact.

Like any professional body, the greenkeeping fraternity has learnt by, and cherishes, tradition. From the experience of the past comes the wisdom of today and nowhere is that to be seen more than in the careful husbandry of the grass plant.

Fertilization – the correct feeding of fine turf – has long been held crucial to achieve a healthy, disease resistant sward. Indeed, it can be argued that a well balanced fertilization programme is the linchpin to all other operations, over-feeding leading to

grass 'flushes' and intensive mowing requirements.

Conversely, the under supply of nutrients leaves turf open to disease, moss and weed attack and the need for lengthy and expensive pesticide spray operations.

The Grandfathers of yesterday's greens used their skills and devotion to produce fertilizers based on the tools of the time – notably dried blood and hoof and horn meal.

This tradition is still followed by a number of greenkeepers who formulate their own fertilizers by blending 'straights' to their own or recommended specifications. This practice is time consuming and messy and often produces an inferior mixture if carried out incorrectly.

It has now been largely superseded by the introduction of ready mixed semi-organic and organic powders and, more lately, by the advent of slow release fertilizers.

The product of modern biochemical technology, these new slow release fertilizers offer an exciting new option. One in particular – that based on IBDU – is especially outstanding.

A synthetic organic compound – Isobutylidene Diurea – IBDU is the closest answer yet to the greenkeeper's dream – a product that releases nutrients proportionate to turf's growing requirement without suffering loss by leaching.

By far and away the greatest need for healthy grass is Nitrogen. It is here, in the unique Nitrogen release properties of IBDU, that makes it stand out from the other slow release fertilizers.

The chemical's two important characteristics are explained by Dr. David Lawson, Chemist to the Sports Turf Research Institute (STRI) at Bingley.

"In the first place, the release



Top Turf Team: Mascot Microfine and Mascot Spreader

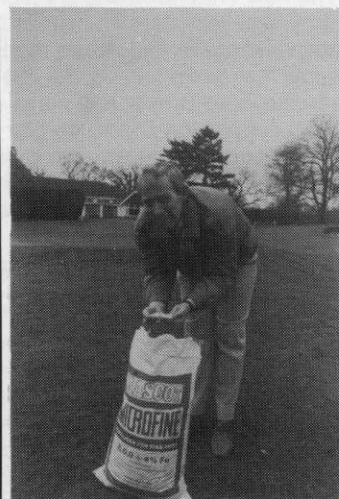
of nutrients from IBDU are dependent on the availability of moisture and soil temperature", he says.

"When added to the soil the granules are broken down by micro-organisms to produce soluble urea-N which is further decomposed to ammonium and nitrate. While grass plants may absorb a certain amount of urea and ammonium, most of the Nitrogen is taken up as nitrate".

"As soil temperatures rise and with it moisture levels, so the activity of microbial breakdown of IBDU increases. Greater quantities of nutrients are released when the turf is actively growing and requires feeding", comments Dr. Lawson.

The result is that as Nitrogen generation is harmonised with plant absorption and production of green leaf tissue, little wastage occurs through leaching or excessive turf fertilization. Sudden growth 'flushes' and the need for higher mowing regimes are avoided.

The reverse action is true in the colder months. As grass growth diminishes through lower soil temperatures, so the brake is put on IBDU Nitrogen release by reduced microbial action.



Peter Marsh "The Granules are very consistent and easy to apply".

"Plant growth is not completely dormant however and there is still a small release of soluble Nitrogen from IBDU over the winter months", says Dr. Lawson. "This is caused by a second action, a slow chemical breakdown of the compound".

"STRI trials have demonstrated this second release to be extremely beneficial in the more demanding months. It certainly gives rise to better turf colour, improved disease resistance and encouragement of earlier spring growth than that found with standard ammonium sulphate treatments. The use of IBDU also leads to less soil acidification than where the turf is treated with ammonium sulphate".

While priced higher than traditional products, IBDU fertilizers are applied less often and in smaller quantities. Not only is turf quality improved but significant time savings are made on an already over-stretched greenkeeper team.

Application is simple, the granules are not prone to drift and drop evenly between the grass blades to soil level whereas powder formulations tend to 'blow' and end up in unwanted