

# The British Golf Greenkeeper



February 1974 15p

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# The British Golf Greenkeeper

HON. EDITOR: F. W. HAWTREE

No. 345 New Series

FEBRUARY 1974

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### Front Cover Picture

Significant savings in labour and water consumption have resulted from the installation of a fully automatic irrigation system at Aspley Guise and Woburn Sands Golf Club. The installation was designed by Rober Sandow (Calf Glade Ltd), Beadlow Manor, Beds., using Rain Bird equipment supplied by Plastic Tube and Conduit Company Limited.

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# TEE SHOTS

A new star has arisen on the golf architectural horizon in California. 14 year old Woody Richardson has started the world's first magazine devoted to golf course architecture. Vol. No. 1.01 appeared in December.

To give you an impression both of Woody and a glimpse of the future, we reprint his front page article. We wish him all success and look forward to seeing results when he finally takes up the job.

## "McCormick Ranch

Nestled between the gentle slopes of Scottsdale, Ariz., is a Kaiser Aetna development; McCormick Ranch. And within that development are 2 championship golf courses which are challenging every player who plays them.

The golf course architect is Desmond Muirhead and along with his usual unusual tees, greens, lakes, and fairways, a new idea has been introduced; TransGlide Co., a division of Dahlberg Industries has designed a system that will move players around the golf course on a track. The principle is somewhat like that of a top slot car track, but in this case the players will be able to operate the 'cart'.

The 'carts' will look similar to a regular electric golf cart, as they

move on a 2" wide track. They will run down the middle of the fairway connecting tees with greens, and greens with tees. The 'carts' will operate on 220 volts, this will come directly from the track, thus enabling possible heaters, coolers, ball warmers, and more. The possibility of the golf ball hitting, falling into, or obstructed by the track is "O", a zipper-like network of flaps will open as the 'cart' moves along the track, and drop as it continues on.

A trial system will be installed soon at McCormick Ranch. It will be just North-east of the Palms Course on the Pines Course.

For more information we suggest you contact :

Mr. Ron Jashowski; TransGlide Co.,  
14601 North Scottsdale Road,  
Scottsdale, Arizona 85253"

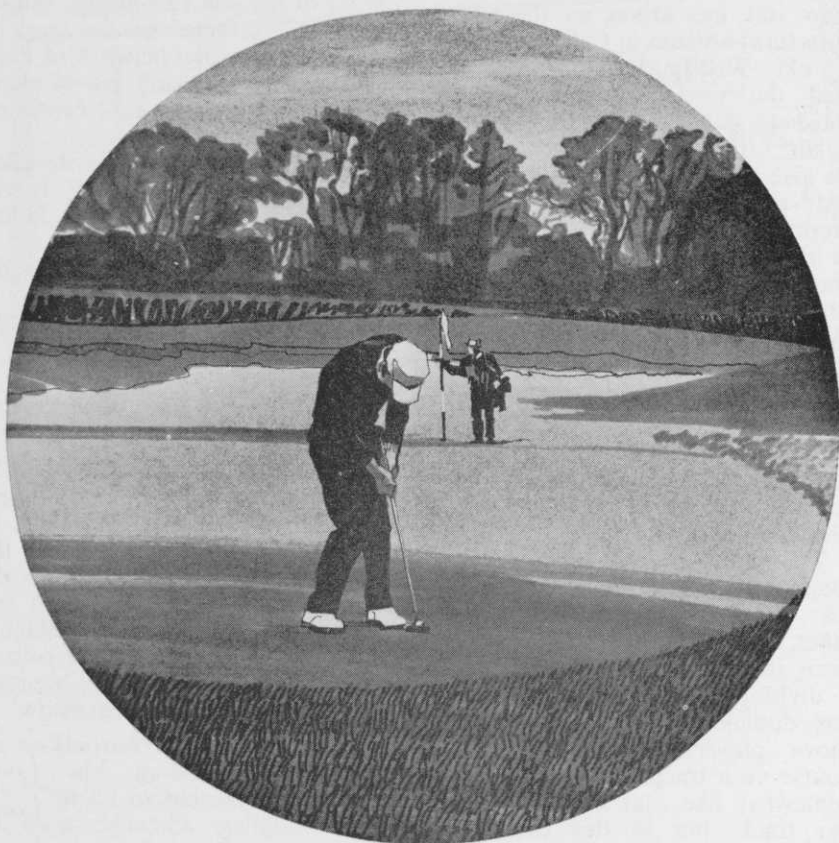
(With grateful acknowledgements to "The Golf Designer")

Work is now proceeding on the new Birmingham Municipal Golf Course and Sports Centre at Hilltop. The site lies alongside the Handsworth Golf Club where the President is also our President and Vic Smith, a well-known Midland member, has charge of the course. Vic has been an Honorary Member of his club for some years now.

It looks as though restrictions on Government spending via Local Authorities is bound to hit new golf course building. Greenkeepers can look forward to crowded courses and difficult maintenance conditions for some years to come. Happy New Year.

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# TANA GRASS

C. GOODALL,

*Plantagenet Seeds Ltd.*

The gratifying world-wide interest in Tana Grass shown since its introduction just over two years ago, is now being accompanied by a sober appraisal of it under a number of widely differing climates and circumstances in various countries. In the United Kingdom it may now be viewed on recreational and residential sites including a completed nine hole golf course and a recently laid bowling green. Tana Grass may also be seen at the Sports Turf Research Institute, Bingley, alongside grass maintained to the highest standards.

The reaction of many commentators who have visited us—according to their articles—has been one of some scepticism of claims they had heard, followed by conviction from the evidence presented to them. We intend therefore to proliferate demonstration areas so that these will eventually be in easy reach of all potentially interested bodies, of whom we hope there are some in the readership of this magazine! In the meantime I hope you will find this article informative and that it will serve as an avenue of communication for those wishing to obtain further information.

Tana Grass enters at the point where all the hard groundwork of construction or renovation has reached a point where the normal question posed would be of whether to seed or turf the area prepared. All this preliminary work remains unaffected and the better it is done the better, of course, will be the long term results.

Ease of laying is followed by speed of establishment, slashing the amount

of maintenance work before the green or tee is ready for play. The carpet-like texture of Tana literally folds over all contours. It evens out minor obstructions and thus greatly reduces the amount of top dressing required to achieve a smooth surface. The rapid root strike provides growth to continue with practically no check and within a week to ten days the sward is firmly anchored in, a process that starts in a matter of days from laying. This accelerates the whole programme of maintenance prior to the green or tee being ready for play. The established canopy of grasses resists intrusion from unwanted grasses such as *Poa Annua*.

## Watering essential

The treatment of Tana is basically the same as for any other grass surface. Maintenance in the early days is however very important. Watering should be carried out at least once a day for a week to ten days during which Tana should not be allowed to dry out. Prior to laying, the application of a complete basal fertilizer dressing, preferably including slow release nitrogen, is recommended. A worm dressing should also be applied as birds, particularly blackbirds, can prove a nuisance in the early days if worms are to be found. After laying, a light dressing of fertilizer should be applied, most conveniently as a foliar feed. Thereafter repeated light dressings should be given according to normal practice. A fungicide could be applied with the foliar feed or separately, and we advise preventive fungicide dressings to maintain healthy growth. Cutting may commence within two to three weeks of laying, and should be progressively lowered from 1" to the appropriate height some weeks before being brought into play. Top dressings of peat/soil/sand composts should also be applied early in its establishment with repeated light doses until the

# Time for **TEXTURF**



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The British Golf Greenkeeper





*Rolling out the turf at Ganstead Golf Club*

surface is considered to be satisfactory.

A pure sward of true colour and texture is the distinctive quality and hallmark of Tana Grass, which gives us great pleasure and this we hope will be shared by others. The process now resides in a patent which for the U.K. is No. 1313121 and is covered by the Trade Mark 'Tana' Registration No. 979144.

It is generally agreed when weighing up the pros and cons, that seed scores in providing the ideal mixture of varieties, but that it is slow to establish a strong turf and is attendant with the frustration of seeing thousands of weeds flourishing in the perfect seed bed. Turf, on the other hand, accelerates establishment of the sward, but is rarely of acceptable standard. Moreover, with the roots shorn off in its lifting, turf has to re-

juvenate and much time and care is needed while it settles in and grows fresh roots. So what of Tana!

#### **Water-borne**

Tana Grass is the product of a new discovery which brought 'growth flotation' to the science of hydroponics, and the grass is in fact grown on water in a series of shallow lagoons. A rich carpet of grass is produced in record time by making full use of water and sunlight—the two prime energy sources of growth. A mixture of compost materials are spread on the lagoons, these level off to give a constant thickness. Polyurethane foam covers these materials and acts as a platform for the seed which is sown on top. Any mixture of grasses can be sown. The readily available moisture results in rapid and even germination and soon the roots strike through the carrier sheet into the

# A regular thrashing has taught us all we know.

During our 160 years in the grass seed business, we've been thrashed about by a lot of different players on a lot of different courses.

For instance, we're always being cut up at Royal St. George's and Sunningdale, both of which were sown with our seeds at the turn of the century.

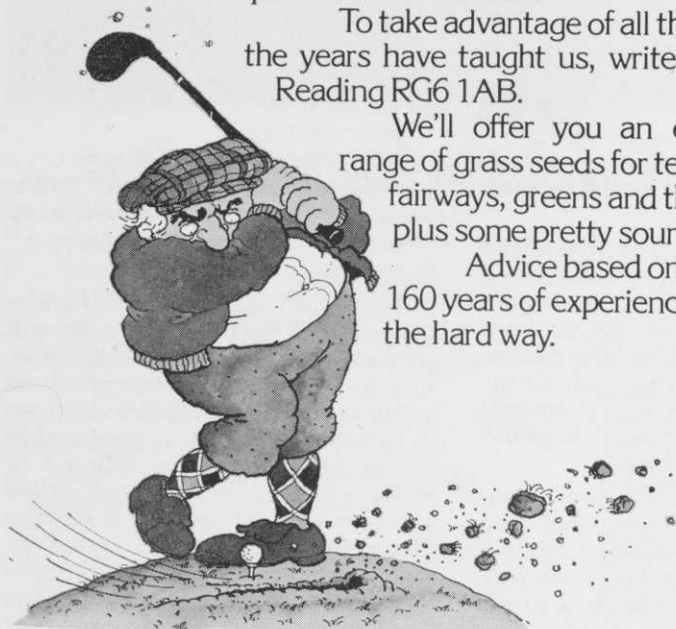
And we're getting hacked about all the time at Vilamoura in Portugal, Puerto di Hierro in Spain and Walton Heath.

Which isn't exactly playing the game, but it all helps with our education.

To take advantage of all that the years have taught us, write to us at Reading RG6 1AB.

We'll offer you an extensive range of grass seeds for tees, fairways, greens and the rough, plus some pretty sound advice.

Advice based on 160 years of experience learnt the hard way.



## Suttons Seeds

We've been thrashed around for 160 years.

growth materials below, binding them together into a carpet. So a completely weed-free turf is produced with roots intact and containing only the grass varieties sown. The water is drained off and the carpet of grass is rolled up ready for despatch. The measure of the impact of this new culture lies of course in the performance.

### Lightness

Tana's first contribution is to take a lot of the uncertainty and hard work out of producing a first class playable sward. Tana units are light—less than a third of the weight of conventional turf. They are also much larger, coming in just over one yard wide by up to six yard long pieces. Being of uniform thickness, no boxing is required. Care of course should be taken with laying, but this only involves correct alignment as the units are unrolled, and the use of an adjacent wooden platform on which to stand. They should be lightly tamped down but preferably not rolled until the roots have anchored. To gain full advantage of fresh growth and active root growth the Tana units should be laid within two days of being lifted and transported from the production site. The speed and ease of laying enables you to measure jobs for completion in a very short time, so there should be few hold-ups for breaks in the weather once work is under way.

---

"If you suffer from bad compaction contact Gordon West (Auckland, N.Z.) who by elaborating on a Ted Lowen (Waikerie) system, shattered his clay pan and rattled Middlemore Hospital's windows.

Five holes 17' deep and 15' apart tamped with 5½ plugs of gelly each, not only relieved compaction but gave "porina" a bad case of shell shock".

**From the N.Z.G.G.A.  
Newsletter No. 3**

# LETTERS

Mr. D. DIX  
"Greenkeeper Association"  
Addington Court Golf Club  
Featherbed Lane  
Croydon—Surrey/England

Sehr geehrter Herr Dix !  
Über Herrn Tom Bovingdon, Golf—  
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In unserem Club ist die Stelle eines  
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evtl. Interessenten mit.

Mit vorzüglicher Hochachtung  
Wolfgang Taegener  
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TEAM	1 <sup>ST</sup> ROUND		2 <sup>ND</sup> ROUND		TOTAL POINTS SCORED	POSITION
	HOLE	POINTS SCORED	HOLE	POINTS SCORED		
CANADA	12	14	11	11	36	2
IRE	12	11	11	11	42	4
ENGLAND	10	19	11	11	41	5
EUROPE	13	13	11	11	37	7
N. IRELAND	16	11	11	11	41	6
SCOTLAND	13	11	11	11	46	1
U.S.A.	10	18	11	11	40	3
WALES	15	11	11	11	36	8



# INTRODUCTION TO AUTOMATIC WATERING

R. W. SITWELL

## Watermation

It is reputed that an expert on the care and maintenance of sports turf, when asked the question "How do you make grass grow?" replied, "wet it?". Appreciating that there are other factors governing the growing of grass, let us consider the need for water. It is a fact that to survive, any crop requires water in varying degrees in order that it may feed.

Accepting therefore that water is required, and on highly cultivated areas in quantities greater than those obtained from natural rainfall, there exists a need to water artificially.

Why therefore automatic watering?

To consider the advantages it is necessary to appreciate the water requirements of the area to be watered. These requirements will not only be dependent upon the nature of the soil but also on the climatic conditions which vary day to day as well as the natural contours of the ground.

### How much ?

Taking these factors into account the amount of water to be applied weekly to maintain an average root depth of 9" on a golf green can vary from as much as 1" on a light sandy soil in a moderate climate to as little as  $\frac{1}{2}$ " or less on a heavy soil. In hot climates these figures are increased whilst in a cold climate they decrease. Whilst charts are available in differing forms which will act as a guide, these do not take into account the construc-

tion of the area to be irrigated, i.e. drainage arrangements, and thus to a greater or lesser extent the precipitation required is a matter of trial and error. Taking all these factors into account and bearing in mind that each green may have a different drainage factor it is only with experience that the Greenkeeper will know how much water has to be applied to any particular green.

Having established that the application of water is a fairly precise exercise let us consider the alternatives to automatic watering.

### Manual problems

Assuming water mains have been laid to each green, watering is accomplished by either portable sprinklers or by a man with a hose spraying the area almost ad lib. Taking the former, these are usually of the single or twin nozzle impact type and due to their relatively poor performance require moving two or more times in order to cover the whole area. Due to the increase in the popularity of golf, courses are now heavily played which of course means that when a golfer approaches a green that is being watered and the sprinkler is unattended, he will either move the sprinkler so that it does not interfere with his game, or turn it off altogether. More often than not on leaving the green the golfer forgets to replace or turn the sprinkler on again

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so that watering becomes entirely hit and miss. The alternative is to water at night when there are no golfers about but this involves the Greenkeeper being out on the course at all hours moving sprinklers, which from his point of view must become extremely inconvenient and from the Club's point of view extremely expensive. There are courses which adopt the policy of turning the sprinklers on last thing at night and turning them off again first thing in the morning but of course this means only part of the green is watered and in a lot of cases the green is virtually unplayable for a greater part of the following day, as far too much water has been laid resulting in flooding.

### **Wastage**

Considering therefore the use of portable sprinklers it is quite apparent that the unauthorised movement and turning off and on of sprinklers results in uneven, as well as under and over watering, the former and latter possibly causing disease, whilst the third leads to shallow root depth and weak grass. Apart from the natural aggravation for the Greenkeeper, this will tend to result in loss of revenue to the Club as no golfer wants to play on bad greens and furthermore unnecessarily high water bills due to the obvious wastage. In addition the cost of labour charges has to be added but this is incalculable as the time involved will depend upon the layout of the course and therefore the distance between greens, the number of times the sprinkler needs to be moved which again will vary depending upon the strength and direction of the wind and the frequency of outside interference with the sprinklers. A further factor is the number of sprinklers which can be operated at any one time.

### **Pressures**

On many such installations the sprinkler system is operated direct from the water company main which of course means that the golf course supply is being shared by the nearby town or village. As will therefore be appreciated the pressure will vary according to demand by other users and thus the watering time should be varied accordingly. In terms of figures a sprinkler with a 5/32" nozzle will put out 4 $\frac{3}{4}$  gpm at 60 p.s.i. but only 3 $\frac{3}{4}$  gpm at 40 p.s.i.; thus instead of applying 500 gallons per green in a given period of time only 400 will have been actually used; thus inadvertently under-watering.

The alternative to sprinkler usage is to employ a man to water the green with an open ended hose. This invariably means that unless the man is careful some areas are over watered whilst others are under watered. Also the heavy rate of application, which always exceeds the rate at which the ground is capable of absorbing the water, results in considerable run off as well as pools forming in all the low spots. This of course means that where the water gathers the area is over watered and susceptible to disease. The only advantage that hand watering has over sprinkler watering is that it ensures that the watering period is not interfered with by outside parties. However, when this is compared with the labour costs involved it is quickly appreciated that it is a luxury that cannot be justified financially and even if the finance is available, the shortage of suitable man power which can be spared from other work quickly over-rides the financial availability.

### **Evaporation**

In addition to the foregoing it must be borne in mind that there is in this country an urgent need to ensure that

*Continued on page 19*

# Quick-change artist

The Ransomes-Hahn Tournament Triplex is a remarkable machine — so remarkable that we call it the world's first Greens Management System. The Tournament Triplex is a 12hp vehicle with hydrostatic drive, which powers four separate turf maintaining operations.

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**Verti-cut Units** Patented twin offset blades remove 'thatch', keep greens in play even in difficult conditions.

**Vibra-Spiker** Now spiking takes even less time than greensmowing. High-frequency vibration penetrates to a depth of 1½" with a minimum of compaction.

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**RANSOMES**



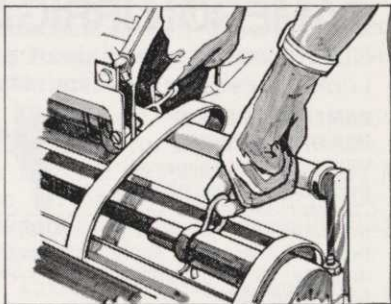
## Ransomes-Hahn Tournament Triplex





# Ransomes-Hahn Tournament Triplex

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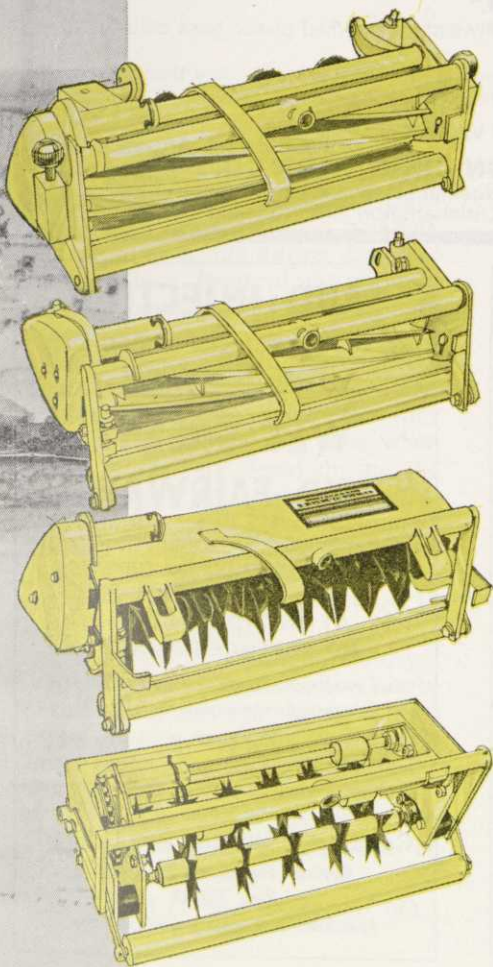
## Tournament Triplex Verti-Cut Units

Verti-Cut units use durable, yet thin offset blades to remove thatch and grain as they begin to form. With 67" of cut (the Verti-Cut units are the same width, work at the same speed, and use the same grass catchers as the greens and utility units) and a riding vehicle, these attachments are ideal for preventing the development of thatch etc., lessening the need to take greens out of play for renovation. Variable-speed cylinder drives provide high tip-velocity even at low forward speeds.

## Tournament Triplex Vibra-Spiker

Vibra-Spiker reels use gentle high-frequency vibration to achieve deep penetration, without excessive weight, even when ground is hard and dry. Spiking (summer aeration) provides root pruning and moisture absorption, relieves surface compaction, and conserves fertilizers and fungicides by getting them immediately to the root zone. Full 67" swathe and Triplex speed make spiking a task that now takes even less time than greensmowing. Spiker penetrates to depth of 14".

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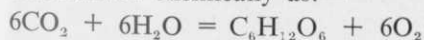
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we conserve our water resources. Manual watering, be it by sprinkler or hand, in the main means watering by day, during which time losses in evaporation and transpiration are taking place. Depending upon the area temperature, the humidity and wind, the rate of evaporation can be extremely high. It is not possible to calculate the rate of evaporation but at times it is believed to be as high as 25 or 30%. This means that for every 1000 gallons which passes through the meter, 250 or 300 gallons are lost to the atmosphere. Evaporation also takes place at night but the rate is negligible.

### Other Losses

Transpiration is another loss which has to be taken into account. The word is derived from the latin trans (over, across) + spirare (to breathe). Transpiration occurs during day time hours. It is a form of evaporation from the plant itself. As warm, dry air passes across the leaf surface water in the leaf evaporates off through the pores. Although these pores open and close, observation has shown that they are open during the day time when the air is dry but closed during the night when the air is moist. Transpiration can be extremely high—example. A mature apple tree of the Grimes Golden variety are known to lose water at the rate of 15 litres per tree per hour.

A final loss is through photosynthesis which simplified is the absorption of water through the roots plus carbon dioxide from the air to form carbohydrates (or simply sugar) in the leaves with oxygen being given off. As the name implies photosynthesis is a function of light and can be summarized chemically as:—



### Summary

Day time watering results in high evaporation losses, high transpiration losses, wasted water due to outside interference, over, under and uneven watering, leading to disease and weak grass and high labour costs.

Night time watering by manual means involves high labour costs, or in the case of sprinklers that are left on all night, wasted water due to puddling, uneven and partially sodden greens.

Taking all these factors into account there is obviously a strong case for automatic watering providing that it can meet the following basic principles:

- (1) It gives even coverage.
- (2) It operates during night time hours.
- (3) It is reliable.
- (4) It is correctly applied.

### Design and Manufacture of Equipment

Before considering the different designs of turf watering sprinklers let us consider the aims to be achieved.

- (1) The sprinkler shall be reliable.
- (2) It shall give even coverage.
- (3) It shall be robust.
- (4) It shall be manufactured from non corrodible materials.
- (5) Where segment or part circle sprinklers are used it shall have an arc which is easily adjustable to suit the particular configuration of the turf to be watered.

*Continued on page 23*

# NEWS

The Telford Course at Sutton Hill will vary from 5,550 yards for ladies to just over 7,000 yards for top tournament play. Estimated maximum capacity is put at 70,000 rounds a year with an average of about 28,000 in the early stages.

Seafeld Nurseries (Cullen) Ltd., of Cullen, Banffshire are the contractors.

The Head Greenkeeper for Telford's first new golf course in East Shropshire will be Derek Keen (27) of Baystone Hill, Shrewsbury.

Derek is at present head greenkeeper at Shrewsbury Golf Club, an appointment he gained when their new course at Conover was under construction.

He will have a similar role at Telford where the daily fee course is

under construction. It is the first of its type in any British new town and one of several courses planned to cater for Telford as it grows to a population of 225,000 people by 1991.

Derek takes over in March. The course is expected to be ready for play in the spring of 1975. He has been in golf course maintenance for the last 12 years—as an apprentice at Maidenhead, then as assistant greenkeeper at Chesham & Leyhill and Ellesborough in Buckinghamshire.

He is a member of the British Golf Greenkeepers' Association. His handicap is 12 and he is a member of Church Stretton Golf Club. A married man, he plans to move soon to live in Telford.

Flymo Limited at Watford has announced agreement for new production facilities in a 15,000 sq. ft. factory and research complex near Darlington, Co. Durham.



By Appointment to  
Her Majesty the Queen  
Manufacturers of  
Motor Mowers  
Charles H. Pugh Ltd.  
Birmingham

**It takes one professional ...**



The new production centre, which will concentrate on heavy-duty commercial and institutional grass cutting equipment, is on an Industrial Estate at St. Helens, Bishop Auckland.

The new facilities come into production this month (January).

The move marks the second major project announced in the past 12 months in expanding production facilities. In July last year plans for a 38,000 sq. ft. extension to the main factory at Aycliffe were approved by the Department of Trade and Industry. This extension will consist of additional manufacturing space, loading bays and Research and Development Laboratories.

The latest move is in line with a planned expansion programme for production facilities to match increasing demands from the United Kingdom market, as well as exports to more than 770 countries.

The Bishop Auckland plant will include assembly lines, testing facilities and metal-working shops.

Main control and supervision will continue from the Aycliffe centre which has been involved in a continuous expansion programme since the Flymo hover mower made its world debut 10 years ago, . . . . .

### Golf Date Fixed

Ransomes E.A.P.C.A. Match Play Tournament 1974 will take place on Tuesday and Wednesday October 1 and 2 at Warren Golf Club, Woodham Walter, near Maldon, Essex.

It is appropriate that the East Anglian professionals' tournament should be held at the club where the late father of Mr. John Durham, the present owner, did so much in the interests of professional golf in Essex, . . . . .

## So why not use an ATCO VARI-GANG MK.II and have two professionals on the job!

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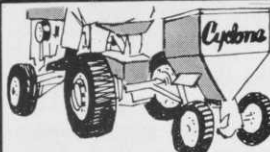
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- (6) The sprinkler shall have an acceptably long range and stroke.

Considering these aspects in more depth:

- (1) Reliability means that the sprinkler must operate for the correct period of time, which is of course a function of control and hence from the sprinkler aspect it must have a strong driving action; thus ensuring that it is not susceptible to sticking or erratic movement. In the case of segment or part circle sprinklers it must have a reliable changeover mechanism which ensures that it does not dwell or stick at the end of each segment.

- (2) Even coverage is a function of reliable operation, as a sprinkler that has a fragmented or erratic movement will apply more water during its period of dwell than it will during periods of movement.

- (3) A sprinkler which is to be buried in the ground will be subjected to outside forces and must therefore be of sufficient strength and design to stand the occasional knock and pressure when passed over by machinery and golfers. Due to the ingress of sand in top dressing and bunkers, pop-up sprinklers are known to remain in the operating position after operation and thus may be struck by a mowing machine. If manufactured from low impact strength materials the sprinkler will more often than not sustain damage to such an extent that it has to be replaced. Similarly, sprinklers walked over by a golfer wearing spiked shoes must have tops of a material which will not be punctured or broken. As far as the body design is concerned there should be sufficient bearing surfaces to prevent the sprinkler from being pressed into the ground when run over by machinery. Immediately after instal-

lation and for the first two years or so, no sprinkler should be subjected to heavy downward forces as the ground will not have had time to settle and consolidate after excavation.

- (4) To some extent water and soil contain corrosive elements and thus sprinkler equipment should be manufactured from materials which are resistant to corrosive and galvanic action. For instance, the sprinkler manufactured in mild steel would in some soil, and when handling some waters, have a life expectancy of a week or even less. This is why sprinklers are in the main manufactured from bronze which has a high corrosion resistance factor. There are of course many different grades of bronze and it is important that the manufacturer is aware of this. A leaded bronze, i.e. bronze with a high lead content, is more susceptible to corrosion than a lead free bronze; the latter is often known as phosphor bronze or gunmetal. In addition to bronze, other materials are used in the construction of sprinkler heads. These must again be carefully selected to ensure that the presence of dissimilar materials does not set up a galvanic or electrolytic action whereby particles of material from one component are deposited on to another resulting in weakening of the former leading to failure. In general stainless steel should be employed as the other metallic material, as bronze and stainless steel are immune to this type of attack. Bearings, etc., are usually a form of nylon or similar material which is well known for its resistance to attack and has a hard, low friction working surface. Sprinklers are available in a variety of different casing materials ranging from plastic at the bottom end of the scale to bronze at the top end of the scale. The alternatives in common use are cast iron or aluminium, both of which normally have a heavy pro-

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For full details of Gold-N, contact:  
England & Wales - Chipman Chemical Co., Horsham, Sussex EH6 7EN.  
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Scotland - SAI Horticulture Ltd., Hortus House, 3 John's Place, Edinburgh. Tel: 031 554 5451/6

N. Ireland - Richardsons (Ulster) Ltd., 1 Short Strand, Belfast BT5 4BS.  
Tel: Belfast 57424/5/6

Eire - ICI (Ireland) Ltd., 5/9 South Frederick Street, Dublin 2.  
Tel: Dublin 771831



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keeps grass lush  
and green 



tective coating of vinyl or galvanised steel, are used for the sprinkler casing. The plastic has the advantage of being cheap to manufacture whilst the bronze has the advantage of excellent corrosion resistance properties and high impact strength. The others represent a happy medium in so far as they are not too expensive to manufacture but at the same time the protective coating ensures a good resistance to corrosion whilst the material offers a high impact strength. If care is exercised in the handling of the coated variety their life will be as long as those in the expensive bronze.

(5) Very few greens are uniform in shape and thus in order to ensure that sprinklers are set so that they water just that part of the area that is necessary a sprinkler should have a fully adjustable arc. A number of sprinklers are available with a preset arc and whilst in many cases this can be adjusted after installation, it is often necessary to dismantle the sprinkler beforehand. From the operator's point of view it must inevitably be more convenient if adjustments can be made whilst the unit is in operation as this will ensure that the correct setting is achieved. In certain instances a need arises to water the surrounds as well as the green itself and if this can be effected easily it must be to the advantage of the Greenkeeper.

(6) Whilst the range and stroke of the sprinkler are not critical, a relatively long range of say 50 to 60 feet or more will be seen later to be an advantage,\* whilst the stroke, which is usually about  $2\frac{1}{2}$ " , must be sufficient to ensure that when in operation the surrounding grass does not interfere with the nozzles or the operating mechanism.

In general two forms of sprinkler are available for golf course water-

ing installation. The first is the impact operation type, whilst the second has a gear train which is driven by a turbine. The impact operated type obtains its movement by the action of the jet of water striking a spoon which, pivoted about the centre, swings out tightening a coil spring and then returns as the spring unwinds knocking the sprinkler round. Both full circle and part circle sprinklers of this type rely on this action but for the part circle unit the return is achieved by a changeover mechanism which limits the amount by which the spoon can be swung out. It is therefore driven back by the force of the jet of water being emitted from the nozzle.

The second type has a gear train that imparts a steady, powerful rotation to the nozzle. Water enters the base of the head through a diffuser that converts the stream into high velocity jets, which are then impinged against a turbine-like rotor spinning at about 3000 rpm. Gear reductions in the order of 5000 to 1 cause the nozzle to make one revolution every 2 or 3 minutes at torques ranging upward of 35" pounds. The part circle models incorporate a reciprocating gear mechanism that oscillates the nozzle back and forth over a predetermined arc. While the geared heads are usually more expensive, because of the greater number of parts and precision manufacturing, they do give a steady drive ensuring even precipitation. However, in view of the problems associated with altering the arc they are not often as favourable as the impact operation type, the arc of which is set by altering two spring clips.

\* see appendix.

*to be concluded in next issue.*

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Form from: The Manager of Recreation, Langholm Lodge, 146 Petersham Road, Richmond, SURREY. (01-940 8351) returnable by: 18th February 1974.

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## Special Occasions

### 1974

- Feb. 6 Southern Section Lecture.  
 7 Sheffield Section Lecture  
 SISIS Abbeydale G.C.  
 20 Midland Lecture.  
 Mar. 6 Southern Lecture.  
 15 Midland Annual Dinner/  
 Dance Sutton Park, Sutton  
 Coldfield 6.45 — 12.30  
 Tickets £2.  
 19 East Midland Section Film  
 Show.  
 22 Southern Section Annual  
 Dinner/Dance.  
 May 15 East Midland Spring Tour-  
 nament — Longcliffe G.C.  
 15 Southern Section Spring  
 Tournament.

## North West Section

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 O. P. JONES,  
 Bramhall Golf Club

*Hon. Secretary:*  
 H. M. WALSH  
 Horrobin Cottage,  
 Old Links Golf Club,  
 Montserrat, Bolton,  
 Lancs.

## Congratulations

I am sure all members of the North West Section will be delighted to join me and the majority of members of the B.G.G.A. in wishing our friend and colleague, W. Summer our most

sincere congratulations on his completion of 50 years' service as greenkeeper at the Grange Park Golf Club. Fifty years Walter !! Well, I can only say that's a lifetime and not many people can boast of being at one club for all their working life, and he the tokens of esteem that were expressed by the Captain and Council of Grange Park at the dinner they gave in your honour, and I had the privilege of being a guest, they were truly appreciative and I am sure all the members of the B.G.G.A. who also remember you when you were the Chairman of the B.G.G.A., will be pleased to be associated with this tribute to a Gentlemen Greenkeeper; Well done Walter.

## Lecture

Our thanks to Mr. J. Cogan, of Flymo for the very interesting talk and slides which he gave to about 20 members on a very nasty evening weather-wise, also the refreshments provided. Our thanks also to Mr. Mitchell of Cheshire Light Tractors for his assistance to Mr. Cogan. The next talk will be given by a representative of Sisis on the 13th January, and the February talk will be given by Mr. P. Wyatt of Patissons on February 18th. Please make a note of these dates and help to make them successful.

## Annual Trip

Our sincere thanks to the directors of "Sisis" Macclesfield for their kindness and courtesy when our members made a tour of their factory recently, also for the refreshments provided. Thank you once again.

## Spring Tournament

Due to the kindness of the Captain and Council of Dean Wood Golf Club, we will be playing our Spring Tournament over their course on May 16th 1974, details nearer the time.

## New Members

We welcome to the Section the following new members:—

N. G. A. Gray, Heald Green, Cheshire. Hon. Member.

L. Basger, Ringley Road, Whitefield, Lancs. Hon. Member.

and hope their association with the Section will be a happy one.

## Midland Section

*Chairman:*  
G. HART  
(Gay Hill)

*Hon. Secretary:*  
R. GOODWIN  
2 Greenkeepers Cottage,  
Ashridge Golf Club,  
Ashridge Park,  
Berkhampstead, Herts.

## December Lecture

The December Lecture at Handsworth Golf Club was well supported and it is to Ransomes that we say "thank you" for a most interesting afternoon.

Their film "This Ancient Game" was followed by a most interesting experiment with a talk on Tape by Mr. Tom Mascaro and colour slides to illustrate his comments.

We are indebted to Mr. Bill Payne of Ransomes for making the arrangements and also to Handsworth Golf Club for allowing us the Clubhouse for this Lecture.

## Annual Dinner

There are still a few tickets left for the Annual Dinner Dance to be held at the Park House Restaurant, Sutton Park, Sutton Coldfield on Friday evening, 15th March. Tickets can be obtained from me or our Treasurer, Mr. Cashmore, at £2 each.

## East-Midland Section

*Chairman:*  
J. CARRICK

*Hon. Secretary:*  
S. FRETTER  
4 Queens Drive,  
Leicester Forest East,  
Leicester.

## Knock Out Cup

We are again holding the competition for the Knock Out Cup, this will run the same as last year. Would you please forward your entrance fee of 25p as soon as possible as we would like to start this competition earlier than last year. Closing date for this competition will be 31st March 1974.

## Film Show

A film show will be held at Birstall Golf Club on March 19th 1974 at 7.30 p.m. This will be given by Ransomes. We would like to see a very good attendance.

## Southern Section

*Chairman:*  
F. W. FORD  
(South Herts)

*Hon. Secretary:*  
F. W. FORD  
68 Salcombe Gardens,  
Mill Hill,  
London, NW7.

## November Lecture

The talk to be given by Synchemicals being cancelled owing to the non-appearance of the speaker, a Quiz took place with yours truly in the chair and a panel of three. Gerald Brooks (Huxleys Garden Machinery), John Field (Maxwell Hart), and to keep with the greenkeeping questions, a very well-known Scotsman, Jock Rennie of the Wanstead Golf Club.

To these three gentlemen I extend my sincere thanks for stepping in at such short notice and also to everyone at the meeting for the way in which the situation was accepted.

The "Derek Gould" monthly raffle in aid of the Section Benevolent Fund resulted in £8.35p., largely due to the donation of 200 cigarettes by Jack Stobbs. Thank you Jack.

This doesn't seem to be my year for lectures and I almost feel reluctant to announce the following meetings at The George. However, with crossed fingers here goes:—

Mr. R. C. Jenning of Chipmans Chemicals Co., has assured me that Mr. Colin Head will present a very interesting paper at 6.30 p.m. on Wednesday 6th February and to conclude the season of lectures, we shall have a visit from Flymo Ltd. Details in later magazine.

### Annual Dinner

By this time Members should know if they intend attending the above and how many guests they will be bringing. As stated in previous journals, tickets are £3, each, there is no limit on guests and the bar will remain open after the Dinner. It will help me a great deal if Members will let me know if they intend playing in the afternoon Stableford.

### New Members

To the following new Members who have joined our ranks during the past month, let me extend a very warm welcome:—

L. A. ADAMS (Berkhamsted) J. DONALD (transferred from the Scottish and new at Wanstead) and J. HAMILTON STUTT (Golf Architect).

### Christmas Gifts

Christmas greetings with money gifts from the Section Benevolent Fund have again been sent to all life members and Widows within the Section.

### Northern Section

<i>Chairman:</i>	<i>Hon. Secretary:</i>
J. SCOTT	WALTER HEELES
Wetherby Golf Club	7 Tentergate Close, Knaresborough, Yorks HG5 9BJ

38 Members attended the November Lecture at the Moor Allerton Golf Club on Thursday the 29th. Our thanks are due to Mr. P. Horner of Hayters Ltd., for talking to us and showing us many slides of the various machines, also the many slides he showed us on his visits to the many

foreign Agricultural shows which he attends. Once again Peter, many thanks for the refreshments both liquid and solid.

Once again we are indebted to the Moor Allerton Golf Club for the use of their Club House on these occasions.

The Annual Dinner of the Section was held at the Scarcroft Golf Club on Friday the 7th December and a good time was had by all. The Guests of the evening included the Captain and Vice Captain of Scarcroft Golf Club, Mr. W. Ferguson, Professional Ilkley Golf Club, who replied to the toast of our Guests and gave us a talk on his visit to the U.S.A.

Mr. F. G. Smith proposed the toast to the Association and talked on the Formation of the various Sections of the Association.

Mr. J. Mawson acted as Toast Master for the evening.

Once again the retired Members of the Section were invited as Guests.

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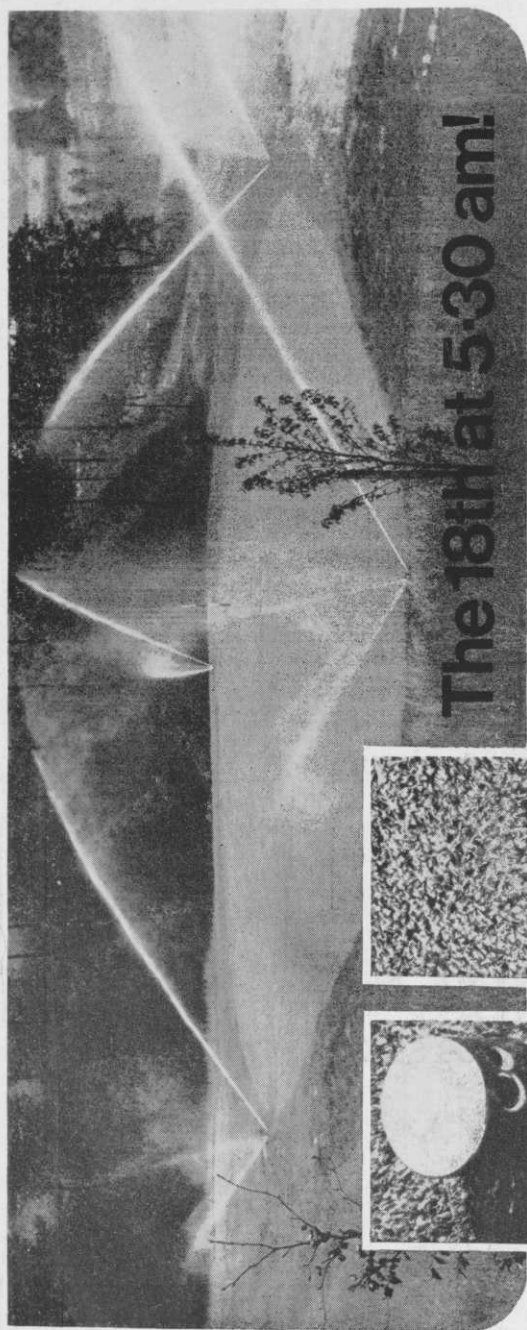
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✓RAPID ESTABLISHMENT

✓CERTIFIED SEED QUALITY

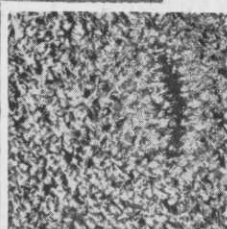
✓BRITISH TESTED



The 18th at 5:30 am!

**(It could be St. Andrews, Troon, Sunningdale or your club...)**

Toro 'pop-up' sprinklers water greens, tees and fairways through the night, automatically. Day time stoppages are eliminated, courses play consistently and of equal importance, greenkeepers can concentrate on other more demanding work around the course. Consider these benefits then ask Wright Rain to design a Toro 'pop-up' scheme for your club! Write for details and the name of your nearest appointed installer now . . .



Now you don't!



Now you see it . . .

**NEW!** This Toro 'pop-up' sprinkler disappears below ground after watering. Its fully retracting head protects against damage by mowers or vandals . . .

**Wright Rain**

**WRIGHT RAIN LIMITED**  
Ringwood, Hampshire BH24 1PA  
Telephone Ringwood 2251

Sole UK distributors for



pop-up sprinklers systems

