Will Elm Trees Vanish from the Golf Courses?

by

Arthur Mason and William E. Knoop, Ph.D.

American elms have a chance to survive if certain precautionary measures are taken. Researchers are also diligently at work to find ways to combat Dutch elm disease, which has already killed too many trees. Unfortunately this disease has been occurring on British Golf courses as well.

THE AMERICAN ELM (*Ulmus americana*), once a picturesque landmark of many golf courses across the country, is gradually disappearing from the landscape. This tree is in a battle for survival against a foreign invader.

Our beautiful, graceful American elms are under attack by a fungus (*Ceratocystis ulmi*) that produces symptoms commonly called Dutch elm disease. This fungus was first discovered in Holland in 1919. It is generally believed that the fungus found its way into the United States in Carpathian elm logs shipped from Europe to be used for furniture veneer and spread un-noticed until detected by a Cleveland pathologist in 1933. Now Dutch elm disease has spread from the eastern United States to the Rocky Mountains, leaving broad bands of dead trees.

Carriers: Beetles

The principal carrier of the fungus is a tiny beetle known as the smaller European elm bark beetle, *Scolytus multistriatus*. Although of less importance, the native elm bark beetle, *Hylurgopinus rufipes*, can also be a carrier of the fungus.

The smaller European elm bark beetle usually breeds in logs and in dead or dying trees, including those killed by Dutch elm disease. The female beetle enters the tree and forms a 1- to 2-inch long tunnel or brood chamber parallel with the grain just under the bark. She lays from 80 to 140 eggs in niches along the sides of the brood chamber or main gallery.

After the eggs hatch, the larvae tunnel away from the parent gallery across the grain forming a brood gallery. Following larval development and pupation in the outer bark, the young beetles break through the surface of the bark and leave the tree. The beetles that emerge from a diseased tree carry the fungus spores on their bodies. These beetles transmit the fungus spores by feeding on the tender twigs of healthy trees.

The disease may also spread from infected trees to healthy trees by natural root grafts when elms grow close to each other.

The adult beetles feed on living elm trees throughout the growing season. Elm trees attacked by the fungus in the spring and early summer usually are more seriously affected than those attacked later in the season. The reason for this is that the long vessels of the trees' spring wood are near the bark surface and are open and functioning early in the season. Spores of the fungus introduced into these vessels by the insect are carried rapidly to all parts of the tree. These spores germinate quickly and the resulting fungal growth culminates in disease development that may kill the tree.

Symptoms

The symptoms of Dutch elm disease include wilting and yellowing or drying of the leaves followed by leaf drop. If the disease progresses unabated, the tree will die. Symptoms

Arthur Mason is an entomologist on the staff of the New Hampshire Department of Agriculture. Dr William E. Knoop is an extension turf specialist, Department of Plant Science, College of Life Sciences and Agriculture, University of New Hampshire.

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The British Golf Greenkeeper

usually occur on one or several branches. then spread to other areas of the tree. In some case the entire tree may suddenly show disease symptoms simultaneously and die within a few weeks. If a branch displaying symptoms is cut with a knife and examined, a brown ring may show in the annual growth ring and brown streaks may be seen just under the bark.

Are all American elms doomed? What is being done? What can be done? How long does a diseased elm have to live? What should one do if he suspects that an elm tree has the diseases? These are typical questions asked about Dutch elm disease.

There is no positive cure for Dutch elm disease at this time, although recent research indicates there may be a breakthrough in the control of the disease. New developments will be discussed later in the article. Up until now, however, once a tree had been invaded by the fungus there has been no chemical or other treatment that could be effectively used to kill the fungus.

Avenues of Prevention

There have been four ways to reduce the chances of Dutch elm disease contamination, as follows:

1 *The practice of good sanitation, which includes the prompt removal and burning of dead and dying branches and trees.* This will aid in reducing the beetle population by eliminating their breeding sites. If antiburning laws prevent this recommended treatment, then the infected wood should be carried away and buried. Stripping and burying the bark from the main trunk and stump will also prevent beetles from breeding.

2 *Keeping elms vigorous with fertilizer treatments and sufficient water.* Spring and fall are the most favourable times of the year to fertilize trees. Any complete commercial fertilizer such as 10–6–4, 10–10–10, 7–8–6 or 10–5–5 is suitable. For large trees the amounts generally recommended are 3 pounds of fertilizer for each inch of tree diameter at breast height. For small trees, 1 to 2 pounds per inch is generally adequate.

The fertilizer should be put in holes that have been previously placed in the ground under the trees. These holes should be 15 to 18 inches deep, made with a crowbar, $1\frac{1}{2}$ inch auger or other sharp instrument. The holes should be dug 3 feet apart in concentric circles 3 feet apart, starting 3 to 4 foot from the trunk and extending just beyond the drip line. The holes should be filled with the selected fertilizer to 3 inches from the top. The top 3 inches of the holes can be filled with sand or a core of soil to prevent patches of abnormally green grass from developing around the holes. This is followed by soaking the areas under the trees after fertilizing.

Water alone in dry areas is important. Watering from 2 to 4 hours at a time twice a week is recommended if the soil is not a heavy clay type.

Soil testing is important and the results of soil tests may determine the fertilizer and water amounts and schedules. Contacting the nearest county agricultural extension service for advice on soil testing is advised.

3 The fumigation of the soil around the diseased tree to prevent the spread of the fungus to nearby elms via root grafts. This is necessary only if elms are closely spaced Vapam or MC-2 (methyl bromide plus chloropicrin) may be injected into the soil around the tree to kill possible root grafts.

4 The prevention or reduction of the feeding by the elm bark beetles in living elms, especially during the spring and early summer by applying an insecticide. Since various states have different pesticide regulations, the county agent should be consulted for the suitable chemical pesticide that is legal and available in the given state. Methoxychlor has generally replaced DDT in the control of the elm bark beetles. Methoxychlor is applied at the label-recommended doses as a dormant spray – i.e. before the buds break in the spring.

If Dutch elm disease is suspected and expert advice is desired, there are several places to which one can turn. State universities can help through their Co-operative Extention Service facilities. The Extension Service has a county agricultural agent in nearly every county in every state. There are also university or state specialists who can give assistance. These are free services. There are also a great number of commercial tree maintenance services that are in the business to save trees and improve the vigor of their growth.

The Future

Research is continuing in an attempt to develop or find disease-resistant elm trees and to develop fungicides that will control the fungus. This has been and will continue to be a long process.

Some successes with a new fungicide (benomyl) injected directly into the tree have been reported. Preliminary trials in the laboratory and the greenhouse at the University of Wisconsin have revealed the potential of benomly treatments, which have now been extended to field tests. A Michigan State University plant pathologist has also been conducting studies that have shown that treating mature American elms with the systemic fungicide benomyl resulted in a significantly lower number of trees becoming naturally infected with Dutch elm disease.

This fungicide is now registered in some states for Dutch elm disease control but is restricted to use by trained arborists only. Conclusive results on its overall effectiveness are yet to be revealed. In the meantime, the remaining elms should be protected by the best methods known: by maintaining tree vigor, by sanitation, by reducing breeding areas for the beetles and by correct use of recommended chemicals.

With grateful acknowledgements to the "Golf Superintendent"



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Please apply to The Secretary. The Sports Research Institute, Bingley, Yorkshire BD161AU

Ashridge Golf Club Head Greenkeeper

Required to succeed our present Head Greenkeeper who is to retire after more than forty years service with the Club.

The appointment will be effective from 1st October 1973 and the successful applicant will have the benefit of working in conjunction with the retiring Head Greenkeeper until June 1974.

The Position will be filled by a man who is currently a Head Greenkeeper and/or possesses much practical experience at the highest level, as our Club enjoys one of the country's finest golf courses. Salary will be above the recommended scale and considerable additional financial

benefit will accrue from our staff gratuity scheme.

A modern three-bedroomed house in a lovely and secluded setting will be provided free of overheads on a Service tenancy to the successful applicant.

Applications which will be treated in confidence to:

The Secretary Ashridge Golf Club Little Gaddesden Nr Berkhamsted Herts

Letter to the Editor

Dear Sir,

Ransomes Do It!

Yes, gentlemen, its here with a bang, Ransomes-Hahn Triplex from the other side of 'Lake Atlantica'. For better or worse, who knows, only time will tell. Well, everybody knows that! But how did it come to this poor old Greenkeeper? This I wish to tell you.

Did it arrive at yours truly's shed in the middle of the course, or somewhere in a deserted corner of the back car park at posh clubhouse? Well, in our case, it came with surprise – and a big one too – not experienced in my 20 years of greenkeeping. Local Ransomes agents, Burrows Ltd., of Manchester, can be congratulated to last word!

Date was fixed in person (not left over message in secretary's office), greens-committee Chairman informed by phone.

Delivery time was $1\frac{1}{2}$ minutes late. Next came Ransomes engineer with two Burrows Sales Reps and a van full of precious tools (even these did not fit all nuts and screws), and the fun started which lasted $1\frac{1}{2}$ days. At last there she was, the beauty, like a pretty girl in a wedding gown. Everything was checked, tested, set and tried. Information was fed in, to you *mate*, in full and practical experience shared with the Ransomes engineer. Parting was brief, no celebrations of any kind, just a last word – 'any problems let us know'.

Well, halleluja, myself and my No. 1 felt we knew everything about this pretty girl – wedding is over, dear, to work you go. Between us we did very successfully.

But Ransomes have not finished with us yet. Out of the blue Burrows Reps appeared and asked us, very polite, to attend Ransomes-Hahn operators' course at Harrogate. What a course it was! It made you feel that you are not anymore a so-and-so sod digger, groundsman, man on course etc. After coffee and biscuits, came technical lecture, so expertly performed by Ransomes Technical Adviser. He did it better than most university lecturers do; he also had that fatherly touch to feed it to you. What a eye opener! Expertly shown on slides, as well.

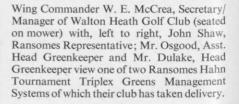
Afterwards, an excellent lunch where beer flowed freely. Then outside for more information and advice on Triplex mowers and practical demonstration on maintenance.

Home we went, like a dog with its tail between its legs. So mate, you thought you knew everything – what about this then !

Congratulations to Ransomes with my full respect: you have done it at last. Poor greenkeeper has seen what ticks under bonnet.

My only worry is, will good old 'Auto-Certees' sell well across 'The Lake Atlantica', to recover your expenses for our lovely day at Harrogate.

Yours faithfully, R. Janovskis, Head Greenkeeper, Swinton Park Golf Club







from the Sections

Special occasions

- June 12 Sheffield Section outing to Cannock Fertiliser Ltd.
 - 13 East Midland Section Presidents v **Captains Match**
 - Midland Section Presidents Match 14
 - 10 Welsh Section Summer Tournament
 - 18 Sheffield Section Annual Tournament
 - 23 Midland Section A.G.M. and Summer Cup
 - 13)
- Aug 14 B.G.G.A. Annual Tournament 15
- Sept

July

- Southern Section Autumn 5
 - Tournament 12 Welsh Section Autumn
 - Tournament North East Section Autumn 18
 - Tournament
 - 30 Southern Section Trip to Bingley
- Oct Southern Section Secretaries Match 10

NORTH-WEST

Chairman: O. P. JONES, Bramhall Golf Club

By H. M. Walsh Hon. Secretary: Horrobin Cottage, OldLinks Golf Club, Montserrat, Bolton, Lancs

Spring Tournament

Our sincere thanks are due to the Captain and Council of the Leigh Golf Club for their kindness in granting us the courtesy of their course and the facilities of the clubhouse, and

the very warm welcome extended to us by the Captain, Mr Tatlock. Our thanks also to the stewardess. Mrs Johnson, for the excellent catering provided, to Mr R. Vickers and his staff for the wonderful condition of the course. and to Messrs Barlow, Vaughan and P. Wyatt for their help with the score cards, meal tickets etc. Our very sincere thanks to all prize donors both individual and the trade. Thank you, once again, every one.

Prizes v	vere presented	by	the	Captain,
Mr Tatlock	, and prize wini	ners w	ere a	s follows:
Best Gross	E. Walsh	112	ove	r 27 holes
2nd Gross	F. Fletcher	117	ove	r 27 holes
Best Nett	H. McAddey	1031	ove	r 27 holes
2nd Nett	H. M. Walsh	109	ove	r 27 holes
3rd Nett	F. Fletcher	1091	ove	r 27 holes
			C.I	P.O.
4th Nett	B.S. Gregson	1091	ove	r 27 holes
5th Nett	R. Janovskis	110	ove	r 27 holes
6th Nett	E. Walsh	$110\frac{1}{2}$	ove	r 27 holes
			C.F	P.O.
7th Nett	J. Robinson	$110\frac{1}{2}$	ove	r 27 holes
8th Nett	R.L. Thomas	111	ove	r 27 holes
9th Nett	W. Sumner	1111	ove	r 27 holes
10th Nett	M. Sheehan	112	ove	r 27 holes
11th Nett	J. Wright	113	ove	r 27 holes
			C.F	.0.
12th Nett	G.A. Hall	113	ove	r 27 holes
13th Nett	H. Sumner	116	ove	r 27 holes
14th Nett	R. Lewis	117	ove	r 27 holes
15th Nett	K. Holmes	117늘	ove	r 27 holes
Over 50's				
Presidents (Challenge Cup			

109 over 27 holes H. M. Walsh Visitor's Prize

71 over 18 holes C.P.O. S. Dogger

Annual General Meeting

There was a good attendance for the Annual General Meeting. The election of officers was as follows:

Vice Presidents voted en bloc

Chairman, O. P. Jones, Bramhall Golf Club

- Vice Chairman, E. Walsh, Childwall Golf Club Secretary, H. M. Walsh, Old Links Golf Club,
- Bolton
- Treasurer, R. Janovskis, Swinton Park Golf Club
- Committee, Messrs Drage, Rhodes, Bond, Sumner and R. Vickers ex Officio.

New Members

We welcome to the section the following new members and hope their association with us will be a happy one.

- F. Longworth, Swinton Park Golf Club Vice President
- R. M. Hurley, Houghton Lane, Swinton Associate Member

July 1973

SHEFFIELD SECTION

G. HERRINGTON (Lindrick) By H. Gillespie Hon, Secretary/Treasurer: 63 Langsett Avenue, Sheffield S6 4AA

A.G.M.

The Section Annual General Meeting was held at Renishaw Park Golf Club on Tuesday, Ist May 1973, at 7 p.m. when 27 members were present with the President, Mr S. K. Arnold, in the Chair. The minutes of the 1972 A.G.M. were read and accepted; a copy of the Balance Sheet was available to all present and this was accepted.

The following officers were elected – President, Mr S. K. Arnold; Vice Presidents, Messrs Elliott, Haynes, Hickling, Nunn, Park and Webster were re-elected enbloc along with Mr Crowther, Secretary at Hallamshire Golf Club.

Chairman, G. Herrington; Vice Chairman, J. Baxby; Secretary/Treasurer, H. Gillespie.

Committee: J. Hague, H. Herrington, B. Lax, E. Palmer and R. Whithead.

It was unanimously agreed that Mr H. Tanfield be elected a Life Member following his retirement.

A lengthy discussion took place on the proposed increase in subscriptions and it was agreed to send a resolution to the Extraordinary General Meeting to be held in London later in the month, and it was also agreed to send Mr G. Herrington as the Sheffield delegate.

It was agreed that the lectures for the '73/74 season would again be held at Abbeydale Golf Club on the first Thursday in the months of November, December, January, February, March and April; the meetings will commence at 3.30 p.m.

Annual Tournament

The Section Annual Tournament will be held at Hillsborough Golf Club on Wednesday, July 18th 1973, over 27 holes, the morning 9 holes starting at 10.00 a.m.

President's Trophy

The President's, Mr S. K. Arnold's, Trophy was played at Renishaw Park Golf Club on 1st May 1973, with 25 members playing an 18 holes Stableford competition in perfect weather conditions on a course in wonderful condition for the time of the year. Congratulations to Mr L. Allsebrook and his staff.

Scoring was on the high side, no doubt due to the very lush wet fairways not providing much run on the ball.

The winner with 35 pts. was T. Baxby;

2nd, H. Herrington 31pts. on last nine from M. Egginton 31 pts.

Our thanks to the President for providing the prizes and to the Captain and Officers of Renishaw Park Golf Club for allowing us to use their course and clubhouse and also the Stewardess for a very nice meal afterwards.

Handicaps

The following handicaps have been adjusted:-T. Baxby24 to 20J. Baxby10 to 12M. Egginton24 to 22A. Goldthorpe 7 to 8R. N. Maltby 17 to 15H. Gillespie18 to 20H. Tanfield10 to 12

WELSH

Chairman: H. FRY By J. Rees Hon. Secretary: Neath Golf Club, Cadoxten, Neath, Glamorgan

Spring Tournament

Our Spring Tournament was held at Whitchurch Golf Club on Wednesday, 18th April. The weather condition being perfect made it a most enjoyable day. After the prize giving, Mr H. Fry, our Chairman, thanked the Captain and Committee for once again allowing us to play over their course which was in an excellent condition for the time of year. We must congratulate Mr Tom Lloyd for the hard work he has put in. Tom is one of the longest serving greenkeepers of the Welsh section; he has been at Whitchurch for the past 44 years.

Thanks were also given to the indoor staff for looking after us so well. The prizes were presented by the Captain of Whitchurch Golf Club. The following were the prize winners:-

Best Gross-J. Rees

Score 122 for 27 holes

Prize given by Chipman Fertilizers

Division I

- Best Nett J. Rees $111\frac{1}{2}$ 2 pairs Sheets
- 2nd Nett H. Fry $111\frac{1}{2}$ 1 set wine glasses
- 4th Nett D. H. Jones 115 1 set of wine glasses

Division II - One prize only

Best Nett W. Jones

1 Sports shirt given by Whitchurch G.C.

116

New Members

We welcome to the section the following new members:-

Messrs A. James, A. Brown, M. Murphy and C. Paulfry

The British Golf Greenkeeper

Summer Tournament

The date for this tournament has been changed by Royal Porthcawl Golf Club from the 3rd July to 10th July 1973.

To conclude, I would like to add my personal thanks to Mr C. Murphy and Mr P. Wyatt for taking over the clerical work of the tournament.

NORTH-EAST

Chairman: Mr. J. SIMPSON By G. Jeffries Hon. Secretary: 55 Brackenfield Road, Framwell Gate Moor, Durham

Spring Competition

Our Spring Competition was held on Thursday 12th April, at the Chester-le-Street golf club, by kind permission of the captain and committee.

Results

The winner over 18-holes was K. Barrs (Ravensworth), net 68, Salver; 2nd, B. Skipper (Eaglescliffe); 3rd T. McDonald (Durham City Golf Club).

Our Chairman, Mr J. Simpson, thanked the captain and committee for the courtesy of the course and clubhouse. He then introduced the captain who had kindly consented to present the prizes. Thanks also to the steward, and staff for the nice meal they provided, and to Tom Oliver for running the raffle.

MIDLAND

Chairman: G. HART (Gay Hill) By R. Goodwin Hon. Secretary: 4 Burton Old Road, Streethay, Lichfield, Staffs.

Summer Cup and A.G.M.

The Summer Cup will take place at Habberley Golf Club, Kidderminster, on Monday 23rd July, by kind permission of the Captain and Directors. The members of Habberley are again providing the prizes for this event and I look for good support from greenkeepers for this event.

The Annual General Meeting will take place at Habberley, after the Summer Cup at 4.00 p.m.

Spring Tournament

The Spring Tournament was held over 27 holes at the Edgbaston Golf Club, on Tuesday 8th May. A large entry of 41 took part in this event, which developed into a two-horse race for the Ransomes Cup, between Alan Cutler of the home club, and new-comer Stephen Spence. Cutler's Nett score was $33\frac{1}{2} + 67 =$ $100\frac{1}{2}$, with Spence just $\frac{1}{2}$ stroke behind, 34+67=101.

Alan Kite was 7 strokes further back in 3rd place.

Prize winner's were :--

A. Cutler $100\frac{1}{2}$ Nett – Ransomes Cup and Watch.

Gross Prize

R. Goodwin, 120 Gross – Sutton Cup and Cut Glass.

2nd NettS. Spence101Cut Glass3rd NettA. Kite108Cut Glass108108

- 4th Nett T. Jones 110¹/₂ Bottle of Scotch Whiskey
- 5th Nett T. Morris 111
- Bottle of Scotch Whiskey 6th Nett B. Lowe 113
- Table Lighter 7th Nett T. Cutler $113\frac{1}{2}$ 6 Golf Balls
- 8th Nett R. Chandler 114 6 Golf Balls 9th Nett J. Boffy 114
- 9th Nett J. Boffy 114 50 Cigarettes
- 10th Nett H. Drewitt 115 50 Cigarettes

Mr W. Blake, won the Visitor's Prize of 6 Golf Balls with a Nett score of 69.

The Captain of Edgbaston, Mr Pudmore, kindly presented the prizes and said that he hoped everyone had enjoyed their day at Edgbaston.

G. Hart, on behalf of the Greenkeepers, thanked Mr Pudmore for the courtesies extended to Greenkeepers throughout the day. He paid tribute to Mr J. Clemence, the Head Greenkeeper, and his Staff for the fine condition of the course. He also thanked the Catering Staff and Mr Bill Payne and Frank Cashmore for all the paper-work they had done during the day. An enjoyable day was rounded off when Mr Blake kindly asked all present to take liquid refreshment with him.

Our thanks go to the following prize donors: Ransomes Ltd; Flymo Ltd; Sparkbrook Golf Ball Company Ltd; Stewart and Co Ltd; Sutton and Sons Ltd; Fissons Ltd; F. W. Lees and Co Ltd; Kings Heath Mowers Services Ltd; Cambridge Soils Ltd; Mr R. Pilsbury and Mr E. White.

Handicap Revision

A. Cutler	13-11
S. Spence	24-20
A. Kite	20-19

July 1973

SOUTHERN

Chairman: C. A. MOORE (Stanmore)		By F. W. Ford Hon. Secretary: 68 Salcombe Gardens, Mill Hill, N.W.7. Tel: 01-959 2847		
	g Tournament			
The i	following are th	he results of the Sp	ring	
	nament played a on Wednesday 9	at the West Byfleet (th May:-	Golf	
Scrat	ch Prize	G	ross	
	J. Kirkpatrick	(Dulwich)	152	
First	Year			
1st	R. Lance	(Surbiton)	154	
2nd	J. Newman	(Easthampstead		
		Park)	158	
3rc	A. Morton	(West Byfleet)	169	
Over	60		Net	
1st	E. Foulkes	(Flackwell Hth)	74	
2nd	G. Hitchcock	(Coombe Hill)	75	
Besta				
	F. Ford	(South Herts)	70	
Bestr	o.m.			
	J. Bishop	(Tandridge)	67	
36 Ag	gregate			
1st	B. Richardson	(Effingham)	134	
2nd	R. Hargreaves	(West Essex)	138	
3rd	M. Owen	(Roehampton)	144	
4th	R. Peters	(Bush Hill Park)	145	
5th	D. Major	(Betchworth Park)	145	
6th	W. Machin	(Addington Court)	145	
7th	A. Martin	(Haste Hill)	146	
8th	T. Price	(Whitewebbs)	146	
9th	L. Coyte	(Romford)	146	
10th	J. Risbridger	(Beaconsfield)	148	
11th	P. Whitehead	(Shooters Hill)	150	
12th	R. Plain	(Beaconsfield)	151	

Our thanks to everyone at the West Byfleet Golf Club for the warm and friendly way in which we were received and looked after; to 'Mac' for the good 'nic' of the course, to the Steward, Mr Cullen, for the excellent 'Grub', no after effects yet following the deep-tyned grapefruit, scarified beef or pork, pop-up watered greens, peas, beans or potatoes and fertilized sweets with cream, nitro chalk or PS4, etc.

Mr Cullen was also responsible for a free barrel of beer via Mr Hancock of Whitbreads which meant 'drinks all round', and a bottle of Glenn Drummond for the Benevolent Fund Draw.

Again our grateful thanks to our willing band of members in the trade who kept things running so smoothly from the 'Starting' at dawn, to the Prize presentation in the evening. The proceeds from the Benevolent fund draw totalled £26.00.

Trade contributors to the Prize giving:-R. C. Craig, Ransomes, Sims & Jefferies, Pattisons & Co, Flymo Ltd, Parkers & Sons, Suttons & Sons, Maxwell M. Hart, Kingston House Mowers, May & Baker, Universal Mat Co, Huxleys Garden Machinery and Gibbs Ltd.

New Members

A warm welcome to the new Members whose names are as follows:- A. K. Gadd (New Zealand), J. P. Smith (Ellesborough), G. Moss and D. R. Piggott (Henley), P. J. W. Scales (Arkley), R. Bowey and P. C. Quarmby (Berkhamsted) and A. Morton of the West Byfleet Golf Club.

Bingley Trip

A reminder to members not to leave it too late before advising me if they intend to travel to Yorkshire on 30th September.

POLYTHENE DRAINAGE TUBING

Muntz Plastics 'Landcoil' Polythene Land Drainage Tubing was primarily developed for draining agricultural land but, in recent years, it has been used quite extensively on sports grounds, tennis courts, etc and has an application on golf courses. The piping is supplied in black only.

'Landcoil' is a 2 in. diameter tube manufactured from polythene in coils 660 ft. long. The polythene from which it is made has been selected to give a tough tube which has a high crush resistance. At the same time, it is sufficiently flexible to allow it to be manufactured in easily handled coils.

In order to provide maximum water absorption, there are 16 rows of small slots running along the length of the tube. These slots are scientifically designed to prevent larger soil particles from entering the tube. Where it is necessary to make a joint between two lengths of 'Landcoil', or it is required to discharge through an outfall into a dyke, a slightly larger diameter tube is available to sleeve over the perforated tube.

'Landcoil' may be used with or without permeable fill, except that permeable fill must be used in all situations where it would be used with conventional materials.

20