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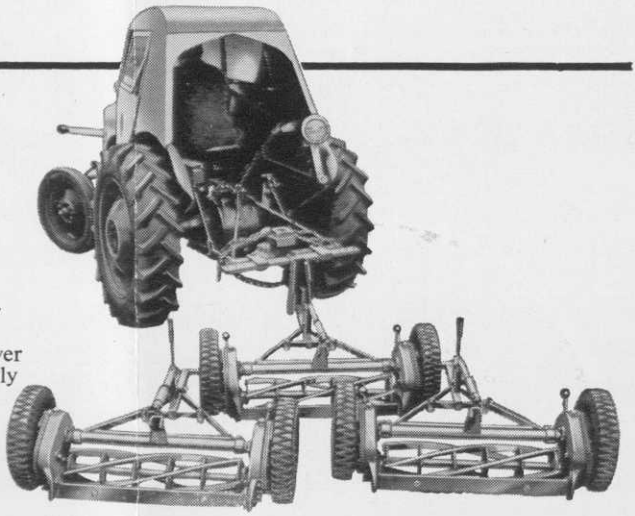

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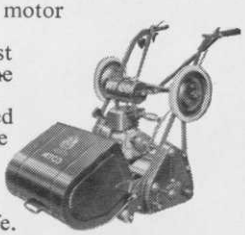

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THE BRITISH GOLF

GREENKEEPER

HON. EDITOR: F. W. HAWTREE.

BGGA JOURNAL

FOUNDED 1912.

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No. 215 New Series
FEBRUARY 1963

The best sermon is preached by the Minister who has a sermon to preach and not by the man who has to preach a sermon.

WILLIAM FEATHER.

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FEBRUARY CONTENTS

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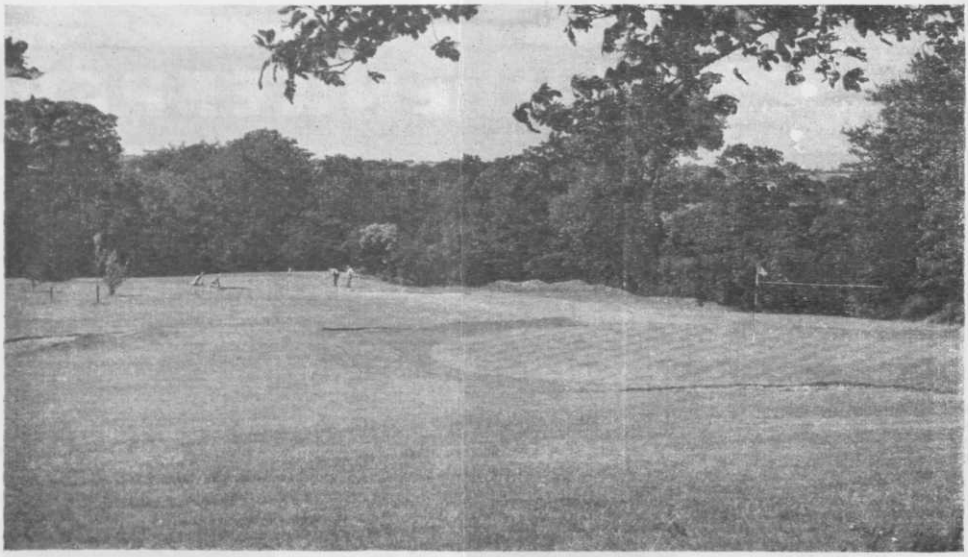

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"We consider that Hi-Grow and Seagrow fertilisers are better than anything on the market at the present time. We would have no hesitation at all in recommending Hi-Grow for use on the fairways throughout the growing season. Seagrow has been used on newly made and old established greens and this has produced marvellous results. Our greens have received praise from everyone because of the marvellous results, and the beautiful colour which has been maintained throughout the winter. We have no hesitation in recommending your fertilisers to all golf clubs".

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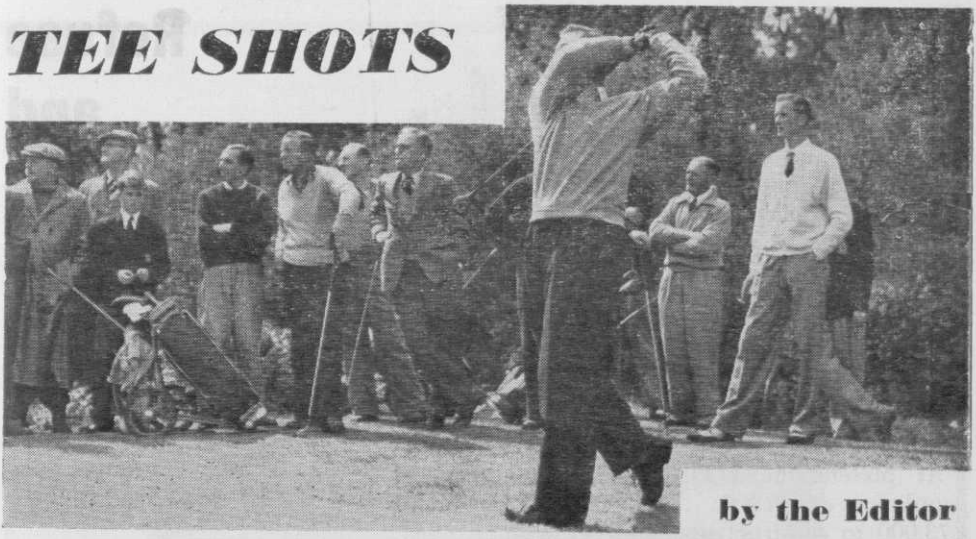

by the Editor

A SIX thousand mile search for visible grass last month brought up some odd results. No snow round Lough Neagh and hardy golfers enjoying the Massereene Golf Course, Antrim, just about to extend itself to eighteen holes from nine. Deep snow at Lyons — –27°C. on the club-house terrace but work well on with their new 18-hole course. No snow on two new Paris courses under construction—the one where tree felling provided frequent blazes along future fairways distinctly the favourite. An inch or so at Wigan where Ashton-in-Makerfield Golf Club is getting ready to move itself to a new home. Not a flake in Majorca though rain has been holding up work on the new Son Vida course. More fell last November than normally in the whole year. A sprinkling at Lavandou in the South of France —but the sun already strong enough to shift it and the new 18 holes all roughly shaped. But up to the knees at Orpington where a new public course is planned not far from the West Kent Golf Club at Downe.

* * *

The Apprenticeship Scheme has had the blessing of the English Golf Union and the Welsh Golfing Union. Next stage is to set up the Central Council. To show how fast they move in Wales, just a fortnight elapsed between requesting consideration and a reply saying it had been approved and more copies were wanted to send out to clubs.

* * *

Thanks to C. R. Cooke, of St. George's Hill, for telling us about the celebration that never was. A paragraph in the *Daily Express* mentioned the 50th Anniversary celebrations of the B.G.G.A. and a lot of greenkeepers may have wondered why they did not have an invitation. To reassure them, neither did the President, Chairman, Hon. Secretary nor anyone else. Out of curiosity, it would be interesting to know the occasion which led to the rumour.

Refuse and sludge into compost at Leatherhead

FOR two years the Leatherhead Urban District Council have been operating a Refuse and Sewage Sludge Utilisation Plant for the dual purpose of a sanitary method of disposal for refuse and sludge and secondly, to produce a much-needed humus in a form that can be readily applied to the soil without inconvenience or nuisance. This plant was first installed in late 1960 and will handle the refuse from the whole of the Urban District and an estimated future population of 45,000 persons with an in-put of 9,000 tons of crude refuse per annum. This figure can be exceeded, depending on the hours of operation.

At present the U.D.C. area has a population of 36,000. The plant cost £73,000 to construct and operates with nine or ten people. Obviously, the principal return for this outlay is the sanitary disposal of refuse and sludge.

The plant was designed to have a capacity of 25 tons of refuse in an eight hour day. It consists of a refuse reception building, separation, salvage and baling building which is linked to a final separation building by a Dano bio-stabiliser. The buildings are of steel framework in-filled with brickwork. Incoming vehicles pass over a weigh-bridge and on directly to a reception hopper. This has a storage capacity of 55 cu. yds. and is constructed below ground level.

From the bottom of the hopper the refuse is transferred on a conveyor to first floor level and through screening and salvage buildings. At one end of this conveyor is a picking station for the removal of bottles. The refuse is then fed into a large horizontal rotary screen which is fitted internally with a helix to propel the refuse over perforated mesh plates. The first portion of the screen has suitable perforations for the separation of dust and in the second portion large mesh plates extract cinders. Blanking plates are provided so that the quantity of the material screened out can be adjusted according to requirements. The

The compost conveyor and glass extractor.

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separated cinders gravitate into a large steel storage hopper of over 6 cu. yd. capacity, from which they are loaded through quick-opening discharge doors direct into trucks standing below.

From the screen the fine dust and tailings are carried forward on a rubber belt conveyor which is designed to display the refuse for sorting and picking and which conveys refuse to the stabilser inlet. Recoverable materials, such as rags, glass and non-ferrous metals are deposited in chutes leading into bins on the ground floor to await further sorting before sale. Tins are baled by a mechanical process. Waste paper is collected and baled separately. The ferrous materials are removed from the conveyor by a magnetic separator and deposited in bins on the ground floor.

materials are turned into compost by heat fermentation and the self-grinding and abrasive action obtained by the mass of materials in rotation. During this stage air is introduced by an air pump through several air valves on the longitudinal access of the stabiliser.

A twin motor drive to the stabiliser allows it to be rotated at a suitable speed during the day when material is being fed and discharged and a lower speed at night.

The material, by the bio-chemical action and temperature rise, is reduced to an innocuous friable material and is conveyed to the final separation building.

The compost is separated from the inert matter by passing through $\frac{3}{4}$ in. and $\frac{3}{8}$ in. screens. An "egaliser" built in between the screen outlet and the compost

The "Dano" stabilizer and screening building.

The refuse tailings from the conveyor belt are discharged with fine dust into the Dano bio-stabiliser. This comprises a rotating drum approximately 10 ft. in diameter and 72 ft. long, with a special stationary inlet. As the tailings enter the stabiliser they are mixed with sewage sludge injected by a pump; the drum is thus kept substantially filled with tailings and sludge and as it slowly rotates the mixed materials move in a screw path towards the outer end. During this process—which takes about five days—the conveyor from the fine screen rejects inert matter such as glass, nails, etc.

Some 3,000 to 4,000 tons of compost are produced annually. The compost is primarily humus and although rich in nitrogen and containing valuable trace elements it is not claimed to be a general fertiliser.

The Council do not possess the required sales organisation to market the compost and offers were invited on a contract basis from firms, organisations,

(*Concluded on page* 12)

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BGG-5

BEATING THE WEATHER

A Special Bulletin from the Sports Turf Research Institute, though primarily aimed at sports grounds will be of interest to frost and snow bound greenkeepers

We can consider protection of pitches under various headings :

(a) against frost
(b) against rain
(c) against snow

and against combinations of these three.

(a) PROTECTION AGAINST FROST. The methods explored for protection against frost are :—

1. the use of chemicals
2. the use of cover
3. the use of heat

1. *Chemicals.* In this country chemicals such as common salt have been used to help thaw out frozen pitches, but all chemicals that we have dealt with harm the turf and sometimes the soil as well so that its drainage qualities are severely impaired. This applied particularly to salt. Moreover chemicals often thaw only a shallow depth and thus produce wet mud on a hard base.

2. *Cover.* As regards cover to protect against frost, canvas sheets and plastic sheets give only moderate protection and are by no means as good as straw. Straw—with its entrapped air—effectively used (before frost gets into the ground) at rates of 1 to 2 cwt. per 50 sq. yds., (i.e. 10 to 20 tons for the pitch), can be counted on to give protection against practically any frost. There is often a weed problem associated with the use of straw but a few weeds would scarcely be considered serious as compared with the state of grounds in recent weeks. The real worries with straw are :—

i. getting suitable straw (good, stiff, clean wheat straw is best).
ii. handling on and off the pitch (labour is difficult to obtain and machinery may damage the pitch).
iii. handling, particularly when covered with a thick layer of snow.
iv. storage (including fire risk).

(N.B.—Straw applied to a frozen ground keeps the frost in).

3. *Heat.* Soil warming can be more or less guaranteed to protect against any frost and the most practical warming is electrical soil warming which has been comprehensively investigated and proved. If sufficient electricity is used it would appear that snow can also be dealt with in this way. Experience also tends to show that there may be advantages in thawing snow artificially in that it can be thawed at a controlled rate. We have been convinced for some years that soil warming is both practicable and desirable and have worked out suitable depths (6 ins.) and spacing (6-9 ins.) of wires as well as suitable electric loading.

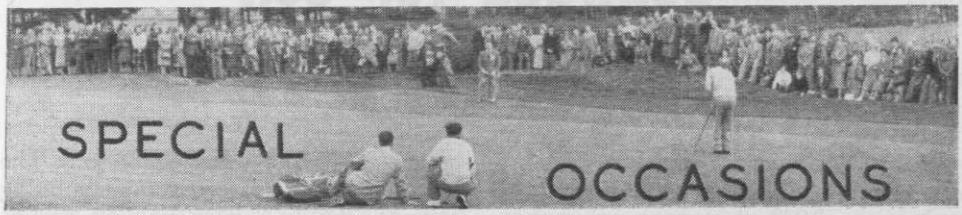
The capital cost of a soil warming installation cannot be given except in relation to each individual job because so much of the cost lies in the possible provision of capital equipment to supply the heavy load of electricity required, i.e. of the order of 750 k.watts.

(b) PROTECTION AGAINST RAIN. Good drainage and good management can do much to produce dry grounds but it has seemed to us for some time that League Clubs ought to consider protection against rain with a view to reducing mud formation and the production of poor quality football pitches. We have seriously considered permanent lofty cover to the whole of the ground but naturally this is not easy to arrange practically or economically. More realistically some kind of plastic cover for the actual surface of the pitch has tremendous attraction, but here again cost, convenient handling and labour difficulties enter the picture. Plastic covers can be a nuisance when they have 6 in. of snow on them but the snow can be removed either physically or chemically.

The Sports Turf Research Institute has also reported on investigations regarding the use of covers raised from the ground on the air-house principle (Journal No. 37 and F.A. News, July, 1961).

(c) PROTECTION AGAINST SNOW. Covers can be useful as above. Snow

(*Continued on page* 12)



FEBRUARY	
12th	North West Section, N.A.G. Lecture, Lancashire County Cricket Club Pavilion, Talbot Road, Stretford.
13th	Southern Section, Lecture, Talbot Restaurant, Moorgate.
19th	Northern Section, Lecture, Market Tavern, Godwin Street, Bradford.
APRIL	
4th	Midland Section, Spring Tournament, Sutton Coldfield Golf Club.
9th	Northern Section, Spring Tournament, Woodsome Hall, Huddersfield Golf Club.
MAY	
28th	East Midland Section, Spring Tournament, Derby Golf Club.
JUNE	
11th	Midland Section, President's Match, Handsworth.
AUGUST.	
12th, 13th and 14th	Annual General Meeting and Annual Tournament, Royal Birkdale Golf Club.

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Seaweed for soil and turf

by W. A. Stephenson*

ALTHOUGH grass has always been a feature of our countryside, it is only since 1930 that any real experimental work has been done, either in this country or in others on sports turf. So much research on close cut grass indicates a world-wide desire for information, yet nobody has arrived at a perfect formula. This can hardly be expected when one considers the varying factors of soil and climate. To a very great extent good grass depends on a good groundsman. Modern aids in the way of machinery, fertilisers, etc., are very important, but are not in themselves, sufficient. The groundsman must maintain a good soil structure if he hopes to produce hard wearing turf.

Headache

The making of a good pitch, cricket table or green requires much thought and work, each particular surface needing a technique specifically for its use and the local conditions. Having produced a good playing turf there follows, as always, the task of maintaining it, and this can provide the biggest headache. A sports pitch, whether for football, hockey, cricket or bowling, gets a severe pounding during the season and the heavy machinery, such as rollers, combine to compact the surface. Compaction is such that all too often we find that an almost impenetrable surface has been formed on the top layer of soil. This surface resists top water, especially heavy rain and indicates that the crumb structure of the surface soil is not right. A well-known turf consultant has said that most important of all is a layer of top soil with a good crumb structure—even if it is only ½ in. deep.

As early as 1947, J. H. Quastel and D. M. Webley showed that alginic acid, which forms 25 per cent. of seaweed, was an excellent soil conditioner. It not only improved the crumb structure, but also increased the water holding power of the soils, and that these provided better aeration of waterlogged soils. The alginates in the seaweed act as stabilising colloids, that is, water holding agents. Sodium alginate is more soluble in water and gives the fastest action, calcium alginate has a similar effect but needs longer to break down. When sodium alginate is added to soil that contains the slightest trace of lime, it immediately changes into either calcium or magnesium salts, and forms a dispersed colloidal solution. The alginates gradually disperse through the soil, and if the alginate decomposing micro-organisms are present, are rapidly broken down to simpler units, which are then used by the organisms in the soil.

Alginates can be detected for many months if these organisms are not present, but they will eventually appear, and the breaking-down process will begin. It is for this reason that seaweed fertilisers sometimes have little or no effect soon after their addition to the soil, but after a few months they quite suddenly show a marked effect. Whole seaweed meal not only supplies the mixed salts of alginic acid, but also other organic matter, which stimulates the soil micro-flora with the long term formation of humus.

Bacteria

Scientists seem to agree that soil organisms must have organic materials; "if one feeds the soil micro-organisms, they will feed the plant". Not only does seaweed, both dried and liquid, increase the rate of the nitrogen fixing bacteria, but a research student at Edinburgh also found that out of 217 bacteria found in rotting seaweed, 161 produced nitrogen salts.

Seaweed is also rich in non-toxic trace elements. Trace elements, particularly the metals, have now been found to be essential to the enzyme system of both plants and animals. Moreover, much lime in the soil can be responsible for locking the minerals already present—particularly iron, zinc and manganese.