

31—When ball goes out of bounds, caddie should inform player at once in a loud tone so that he may hear distinctly.

32—Only one caddie should be on the green at one time.

33—Never walk or stand on any line of putt.

34—Go around the line of putt.

35—Always face the player making a stroke on the green.

36—Caddies must always stand well away from the cup.

37—Hold the flag with either the right or left hand, standing off to one side so that your shadow will fall away from the hole and the line of putt.

38—After removing flag from the hole, keep the flag end down on the green and well away from the line of putt.

39—Be careful of the turf around the cup in replacing flag, use both hands.

40—Never touch a player's ball until told to do so, except when you are sure it is out of bounds.

41—No caddie is compelled to start out in a rainstorm.

RULES FOR CADDIE PROCEDURE

1—When a caddie is assigned to a player, he will first inquire, "Have you a score card and pencil? Have you any balls you wish washed?"

2—He will then count the clubs in the player's bag and say, "Mr. Brown, you have five iron and three wooden clubs," stating how many clubs are in player's bag.

3—If there is a local rule on any hole, he will call it to the attention of the player before the player reaches the tee.

4—On a twosome or a foursome there should be a caddie on each side of the fairway.

5—If the player's shot be out of bounds, he shall immediately call, "Out of bounds," being sure the player has understood him.

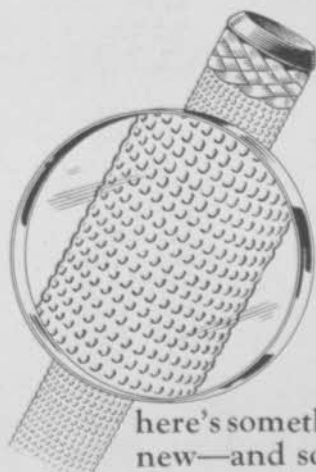
6—The first thing to impress on a caddie's mind is the need of team-work with his brother caddie.

7—In a twosome or a foursome if a player should hook or slice a ball which lands in the caddie's vicinity, even if it is not the player for whom he is caddying, he should signal to the brother caddie that the ball had been located and permit his brother caddie to help with other player's ball.

8—The caddie for the player whose ball is first on the green shall flag the hole. The other caddie or caddies shall hand their players their putters, one collect the bag of the boy who is flagging the hole,

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Dept. 4, Westfield, Mass.

and proceed to the next tee, which eliminates the caddies either kneeling at the green or standing about the green which is often annoying to players.

9—On a long hole, the caddies should leave their players' drivers on the tee and proceed up the fairway and shall watch the ball of the caddie who has flagged the last hole. The caddie who flagged the previous hole will collect and distribute the putters after the tee shot.

10—Balls should be washed when necessary without player having to ask for same.

11—When a caddie stands by the ball waiting for player to make a second shot, he shall stand the bag on the ground and hold it in both hands in front of him so that player may take whichever club he desires to use. If the bag is on the ground directly in front of the caddie and held with two hands, he will not be leaning on the bag, which is apt to injure the clubs.

12—Caddies should not offer suggestions to players.

13—In playing eighteen holes, the caddie at the ninth hole should again count his clubs and be sure they are intact.

Evanston's Fairway Watering Operating Data

By PAULE E. GREEN

SOME months ago the writer described in GOLFDOM the construction of the Evanston Golf club's fairway sprinkling system. This system has been in operation since the middle of May, 1928. Close observation has been kept over the operations and it is believed that some of the information which has been gained will be of interest to other clubs.

Evanston's system consists of 16,000 feet of pipe ranging in size from six inches to two inches in diameter. It was scientifically designed by an engineering firm on the basis of the amount of water which would be required. This resulted in the construction of a system over eighteen holes of fairways at a cost of \$17,500.00. The water is purchased from the village of Niles Center, Illinois, and may be reinforced by the club's existing deep well pumping system in case of emergencies such as inadequate amount of water from the village or reduced pressure. There are

DECREASE THE COST PER PLAYING DAY BY

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A season's overhead and maintenance expense can be spread over more playing days by perfecting the drainage of greens and fairways. Our study of soil types and topographical aspect leads to results that have lengthened the playing season clubs we have served three and four months.

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51 sprinkling connections or hydrants, set at ground elevation along the edge of the fairways.

The pressure of the sprinkling hydrants has been 77 pounds and has averaged about 50 pounds at the sprinkling nozzles operating at the end of 100 feet of hose. At times the pressure, however, has dropped to as low as 30 pounds at which time the club's own pumping station would swing into operation and the pressure would then be raised to about 55 pounds. At 55 pounds the nozzle pressure would be about 30 pounds, and while this is not the best pressure, still very good results were obtained.

Normally 12 sprinklers covering three fairways were in operation at one time. The amount of hose used was 1200 feet or an average of 100 feet per sprinkler. It should be noted that the hose system is used at Evanston for two reasons: first, it was cheaper; and second, it did not tear up the course to install. The cost of operation, it is believed, is not in excess of the California or spray system, and the results are equally good.

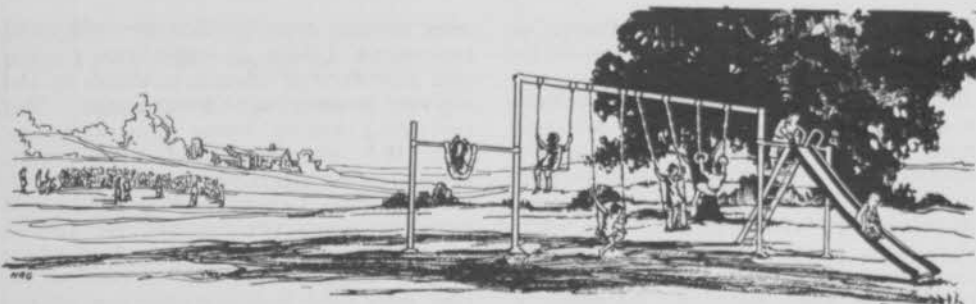
Nineteen twenty-eight has been a peculiar season in this district. There was practi-

cally no rain from the first of April until the middle of June, at which time a seven inch deficiency in rainfall, as shown by the weather bureau, had accumulated. The sprinkling system began functioning on May 20th and was used continuously, sprinkling at nights until about the 15th of June when torrential rains set in and lasted for nearly two months. The sprinklers were used only a few times during this period. From August 15th to October 1st they were used intermittently part of the time during the day and some of the time at night.

One extra man was required to operate the system. He was assisted from time to time by the regular greens sprinkler man who works at nights. These two men had no difficulty at all in shifting the hose or sprinklers and in giving each and every fairway when sprinkled a thorough drenching.

Improves Clay Soil Fairways

Much of Evanston's soil is a very hard close packed clay and a large amount of water was used. The course was sprinkled forty-one times during the period between May 20th and October 1st. Of the 18 holes,



A Playground for the Golf Club

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It would seem, therefore, that in the Chicago district at least with a course built on poor soil that the average yearly operating cost should not exceed \$2000.00, and that with better soil with less area in fairways than Evanston has this amount could be considerably reduced.

Audubon Tells Details of Fairway Conditioning

INTERESTING details of fairway conditioning practice followed at the Audubon Country club, Louisville, Ky., are revealed in a letter written by A. G. Chapman, Audubon's green-chairman, to M. H. Godby of Christchurch, N. Z., who wrote Mr. Chapman as a follow-up on a green Section Bulletin's story on the Louisville experiment.

Mr. Chapman tells of the method and results:

"For what it is worth to you, I am glad to advise that we have been using the spiked roller on all of our fairways for two seasons with satisfactory results. However, our number four and number fourteen fairways were so heavy with clay that the ordinary fertilizer treatment (consisting of nitrogen which we put on in the form of sulphate of ammonia; phosphoric acid (we used acid phosphate) and potash that we got from tobacco dust) did them very little good. The other and better fairways responded to the spiked roller and fertilizer treatment fine. We now have much more of the better grass (principally Blue grass) and less of the weeds and undesirable grass.

"On numbers four and fourteen, which baked into the concrete condition every summer, the spiked roller has helped them but we are now going to put on some old stable manure that has been screened. The process will be to roll the surface twice with the spiked roller and then put on about six tons of screened manure per acre and then run the spiked roller over them twice more. With this treatment and light seeding in the spring of the year we believe we are going to change these two fairways into first class sod.

"I have had a number of experts look at these two fairways and the information that appealed to me most was the conclusion by several that the trouble was lack of humus in the soil. The spiked roller going over them every fall will cause the dead grass on the surface to run

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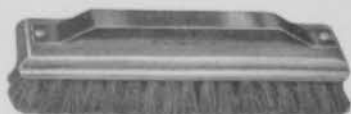
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Showing brush with new self-adjusting spring

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into these holes and when it finally decays will place the humus two or three inches below the surface. This is a rather slow process and we are aiming to hurry it up by using stable manure in addition to the grass cuttings that would naturally go into the holes after rolling.

"There are people in this country that perhaps have forgotten more than I know about a golf course, but the spiked roller which costs about \$100 and takes a man with a tractor about two and a half days to go over all of the fairways, and considering the cost, speaking frankly, I cannot understand why it is not done by every good golf course in the country. It certainly puts the humus below the surface of the ground (that is most desirable) and it has a tendency to take out divot holes and rough spots in the fairway, materially improving the sod.

"We have read very little, if anything, about the use of acid phosphate but this fertilizer, it seems to us, has increased the root growth and makes the grass stand up under a drought much better. It is available and inexpensive up here and we would certainly recommend the use of the spiked roller and phosphoric acid in some form in the fall and spiked rolling and nitrogen in some form in the spring. As stated before if you will add to this a little stable manure on poorer spots and perhaps get some kind of a fertilizer with a little potash in it, we are quite sure that you will see a decided improvement in your fairways.

"If the chemicals referred to are not available we believe a liberal use of manure with the spiked roller will cure the concrete condition, keeping in mind the grub prevention, if you are troubled with such things down there, and some check on the weed growth.



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BRENTWOOD COUNTRY CLUB



CALENDAR of EVENTS:

1929 JANUARY 1929

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

MEMBER'S GOLF EVENTS:

January 1st and 2nd - Winter Golf Open
 January 15th and 16th - V.C. & A. Club Open
 January 22nd and 23rd - Los Angeles Golf Club Open
 January 29th and 30th - Los Angeles Golf Club Open
 February 5th and 6th - Los Angeles Golf Club Open
 February 12th and 13th - Los Angeles Golf Club Open
 February 19th and 20th - Los Angeles Golf Club Open
 February 26th and 27th - Los Angeles Golf Club Open

1929 FEBRUARY 1929

Su	Mo	Tu	We	Th	Fr	Sa
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

Here's a practical club tip. Brentwood, in the Los Angeles district, issues a calendar to remind its members of scheduled club events

"Scotty" McLaren Figures Mower Mileage

"SCOTTY" McLaren, service chief for Toro, has turned out to be the demon statistician. "Scotty" dopes out the average fairway mower season cutting mileage as 1778.7 on a 6,500 yard course, excluding rough. He reckons the average putting green mower mileage on an 18-hole course as 920.3 each when three mowers are used, and 690.2 miles each when four mowers are used.

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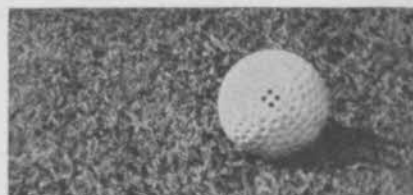
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Special Putting Green Bent Formula
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Remember:—All our seeds are of the highest quality, obtained direct from the most reliable sources of supply and are botanically true to name. All seeds are new and are cleaned and re-cleaned until they are brought up to the highest possible state of purity and germination, special care being given to the elimination of weed seeds.

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SOIL'S PART

By O. J. NOER

IN CAUSING AND CORRECTING

SICK TURF*

IN the matter of turf, golfers are getting more exacting each day. In July and August, when the heaviest golfing traffic occurs, the grass is least able to withstand the strain to which it is subjected. The conditions and troubles of the past season vividly brought home this fact. The heaviest damage was done in the southern sector reaching from Washington to St. Louis but the north was by no means unaffected, as volumes of testimony indicate. In my observation this was the worst season ever experienced; my findings have been confirmed by veterans who say it was the worst they ever have experienced.

A correct diagnosis of any turf disease is the first essential. Often this is exceedingly difficult. One case that came to my attention during the past year was that of where shade was confidently diagnosed as the cause for a poor green but when it was pointed out that part of the green (not actual putting surface) was unaffected by the disease, further investigation revealed that the grass on the green had been sown on a one-inch layer of humus superimposed upon a five-inch layer of beach sand. When the green was disced and reseeded, a healthy growth was obtained. Lack of plant food and not acidity also was revealed as the diagnosis of another condition that came to my attention where five tons of limestone to the acre had been prescribed but fortunately not applied.

In one case an abundance of weeds on a green was thought to be due to the large content of lime in that top-dressing, but in reality the weed infestation was actually the result of numerous weed seeds in the top-dressing mixture. The simple solution in this case was the elimination of these weed seeds in the top-dressing.

If the variety of grass is suitable then the matter of soil is naturally the controlling factor. A green is not only a place to grow grass, it must hold approach shots,

withstand heavy traffic and preserve uniform putting texture, not only on the particular green mentioned, but in comparison with all other greens on your courses.

Soil Functions

Soil is not just so much dirt; humus content is its distinguishing feature, because its organic matter is essential for bacterial activity. Due to the presence of micro-organisms the soil is constantly changing and plant food is released as the bacteria utilizes the organic matter. Soil supplies the plant with the water and oxygen required by the roots. These apparently constitute the functions of the soil. It is important to understand the characteristics of ideal soil, the most important characteristics being texture and structure. These indirectly affect all other soil processes. Texture is the size of the soil grains. Structure is the grouping of the individual particles.

Drainage

Proper drainage is essential to proper soil condition. Adequate drainage means the removal of excess moisture which restricts air supply and depresses desirable bacterial activity. A further essential in soil is the presence of organic matter to supply energy to the bacteria. The next point to be considered is the matter of soil reaction, which is the degree of acidity. Aside from any effect it may have on turf growth we know that acidity retards the activity of the bacteria which release plant food. Acid soils usually are somewhat more compact and tend to revert to a puddled condition.

Plant Food

Soil never contains enough plant food to supply soil demands for an entire season so it is necessary to make conditions suitable for the constant release of this feeding from insoluble reserves.

The sorrows of 1928 showed the importance of a correct physical condition of soil due to this year's excessive rainfall. Sandy loam soil is the ideal soil and a light soil is preferable to a heavy one.

*Digest of address at N. A. G. A. convention.

The Peerless Mower Sharpener



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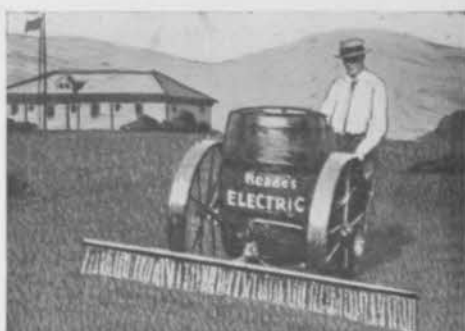
It Perfects the cutting edges of any make of Mower

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ELECTRIC WORM ERADICATOR

is a specific for earthworms. It is not intended for grubs, and if you are troubled with grubs, it may be necessary to use some poisonous chemical, even at the risk of injuring the green. But for earthworms, nothing else is so safe and satisfactory as the dependable "ELECTRIC" Worm Eradicator.

"ELECTRIC" brings the worms to the surface where they can be swept up. If the worms are killed in the soil by poisons, they attract ants which are a far greater nuisance than the worms themselves.

Get the evidence before you treat a single green for worms. Write today for complete information and prices.

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Sandy soils are generally to be condemned because of their low plant food content and their low water-holding capacities. On greens both of these faults may be regulated easily.

Excess water not only induces weak growth of turf but affects bacterial activity. There are two types of bacterial activity, depending on the presence or absence of oxygen. In water-logged soil where oxygen is excluded undesirable bacterial develop and are responsible for undesirable fermentation.

From the standpoint of fertilization nitrogen feeding is most important. The startling results produced by nitrogen are always evidenced by dark green color and rapid growth which is always associated with weak tissue. These results often are desirable for a quick come-back of ailing turf. While it takes courage to withhold nitrogen it should be done during hot weather. The detrimental over-feeding of nitrogen can not be wholly overcome by the use of phosphorus or potash.

We can predict with fair accuracy, despite the usual difficulties of prediction, that the combination of plenty of nitrogen, abundant water and relatively high temperatures will conduce to weak turf. This was the reason for the misery of 1928. We may be able to avoid some of the troubles by producing sturdy turf before the advent of the hot weather. This calls for correcting the drainage of heavy soils and avoiding fine textured top-dressing material. It is necessary to water carefully, keeping rather to the dry side. It probably will be necessary to overhaul the practice in nitrogen feeding. In the past the color and the amount of growth have been watched to determine the need of nitrogen, but sturdiness actually is more important.

Club Magazine Results Ease Officers' Jobs

THE golf club should issue a magazine of some sort. It can range from a little two-page mimeographed sheet to a more or less pretentious paper. The big thing is to have a magazine.

Your club, no matter how small, is a complex institution. New policies and rules must be put into effect almost daily; announcements must be made; golf matches are played; births, marriages, and deaths occur; somebody shoots a hole-in-