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 PAUL 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

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 practically 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,

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