

fertilizers for fairways; the ability of various species of grasses to endure close mowing; and a comparison of soil mixtures in which the textures varied from sand to sandy loam, loam, and clay loam.

The visitors also inspected the controlled experiments being conducted in the green house, on the effect of organic matter additions to the soil, and mulching with organic matter, on the water economy of turf plants. The belief was expressed that the type of information being obtained from these experiments would aid in deciding under what condition fairway watering becomes a necessity, and the principles which must be observed where watering systems are installed.

ARNOTT PRESIDES AT DINNER

AT SIX o'clock the group adjourned to the Hotel Woodrow Wilson for dinner. Mr. R. F. Arnott of the U. S. Golf Association, and the New Jersey Golf Association, was in charge of the evening program. The first talk was given by Dr. H. B. Sprague of the N. J. Agricultural Experiment Station on the abundance of roots at different soil levels with various species of grass, and the relation of root growth to the amount of clippings removed.

It was shown that cutting at $\frac{1}{4}$ " largely restricted root development to the upper 4 or 5 inches of soil, whereas, mowing at $\frac{7}{8}$ " permitted the root system to extend 2 or 3 inches deeper. In all cases, however, very few roots penetrated further than 9 inches. This was apparently due to the fact that this soil, which had been under cultivation for many years previously, had been plowed no deeper than 6 or 8 inches. The greatest root development occurred in the plowed zone to which lime and fertilizer had been applied at some time during the past.

Attention was also drawn to the influence of fertilizer treatment on the development of roots where the type of grass was the same throughout. It was shown that acid soils prevent the decay of dead roots. There is an apparent increase in weight of roots on such plots, but in this case root weight does not serve as a satisfactory index of root activity. The treatments producing the most vigorous turf were those in which the soil was mildly acid, and this was accompanied with a marked develop-

ment of roots extending to approximately the 9th inch.

From the data presented, it was obvious that it will no longer be satisfactory to consider only the upper 2 or 3 inches in caring for putting green turf.

PROF. WHITE DISCUSSES FERTILIZERS

PROF. J. W. WHITE of the Pennsylvania State College gave a discussion of the fundamentals underlying fertilizer practice. He called attention to the necessity for using lime in preventing the accumulation of excessive acidity, and likewise the need for phosphates and potash on fairways.

He recommended that nitrogen fertilization be restrained, particularly on putting greens, since heavy fertilization produces the type of turf which was likely to suffer from disease and mechanical injury. Prof. White also called attention to the need for further research on plant and soil problems.

Prof. H. B. Musser of the Pennsylvania State College considered briefly the breeding work being conducted in an attempt to produce strains of turf grasses which are more resistant to disease and tolerant of soil conditions, than any strain now available.

Mr. John Anderson of the Crestmont Golf Club represented the National Greenkeepers' Association, and conveyed to the assemblage a message from Colonel Morley, stating that he regretted not being able to attend, and appreciated the type of work being done in such conferences.

Greenkeepers Visit St. Andrews

By WM. EDGECOMBE, *Greenkeeper*

St. Andrew's Golf Course, York Mills, Ont.

THE Ontario Greenkeepers held their monthly meeting at St. Andrews in September. A very interesting day was spent looking over machinery and the golf course. We were honored with visitors from Chicago, New York, Pennsylvania and Montreal.

We have twenty-seven holes here at St. Andrews which are difficult to keep. Throughout the Province we have had hot dry weather this summer, temperature being oftentimes up in the nineties, so that it has been necessary for greenkeepers to be on their toes.

I had no brown patch or disease on my greens, but I sure did see some in places. I do think excessive watering bad for greens. I topdress about twice a month. I use as little fertilizer as possible—in June, July and August. There have not been any webworms in this district, which is something we are thankful for.