Green Section to Submit Data on Demonstration Garden Results

By JOHN MONTEITH, JR., and KENNETH WELTON

IN 1928 THE United States Golf Association Green Section started a series of turf gardens on golf courses. This series was extended with the establishment of other gardens in following years. The chief purpose of these gardens was to test various grasses and fertilizers under a large number of soil and climatic conditions.

It is well known that soil and climatic conditions exert important influences on plant growth and, as a result, recommendations which are based on tests in one locality may need modification under somewhat different local conditions.

The Green Section experimental work previous to 1928 was confined chiefly to the Arlington turf garden. There has always been some question as to how generally applicable some of the observations at the Arlington turf garden might be. It has been well recognized for years that the general principles of turf culture as observed at Arlington have applied in a practical way on golf courses throughout the country. In spite of this general proving of the Arlington observations in practice on golf courses there still remained the important question as to how important the minor deviations in the observations might be under different golf course conditions. The series of gardens planted on golf courses were designed not to test out new materials and new methods but to serve as gardens for demonstrating certain fundamental principles and local variations. The gardens were therefore designated as demonstration turf gardens.

The demonstration turf garden series provided an opportunity to compare various grasses and fertilizers, both for putting green and fairway purposes, in a systematic manner under a greater variety of conditions than had ever been attempted before. Standardized blank forms were provided and records thereon were kept during the growing season. These reports were then tabulated and they have provided a composite summary which has served to provide some much needed information and also to break down several erroneous impressions of both grasses and fertilizers.

Anyone acquainted with golf course maintenance work during the past years has recognized that in altogether too many cases ideas and prejudices on turf culture are based chiefly on personal opinions hastily drawn without any background of fundamental fact. Thus it has not been uncommon to find an individual who is interested in turf culture, or even a fairly large group who have endowed a certain grass or fertilizer with qualities which it cannot live up to. In the demonstration gardens grasses and fertilizers are tested under similar conditions and fair comparisons can be made.

In the case of the demonstration turf gardens the seed and fertilizers used were all carefully tested to make sure that they were true to name. All lots were carefully analyzed and weighed and all gardens received the same amounts. Thus in the case of grass seed for a certain plot, the seed was analyzed and the same quantity of this seed was taken out of the same bag for all of the gardens. Therefore if there was any variation in the behavior of this particular grass in the Detroit garden compared with a garden in New York, for instance, that variation could be attributed to soil and climatic adaptability rather than to any variation in the source of seed.

During the season of 1928 15 of these demonstration turf gardens were planted. In 1929 and 1930 several more gardens were planted. Unfortunately, due to economic conditions and other factors, some of these gardens had to be abandoned after they had been in operation for only a year or two. Reports from the gardens have been consolidated each year for the past five years. These consolidated reports will be discussed in later issues of GOLFDOM. Because of the changes made necessary by dropping some of the first gardens and the establishment of new ones the figures in the yearly summaries

PLAN OF DEMONSTRATION TURF GARDENS

	A	B	C	D	E	
1						Optional
2	Red fescue / Chewings fescue	Washington	Metropolitan	Colonial, western / Colonial, N. Zealand	Colonial bent, R. I.	Velvet bent seed	Trial plots of putting green grasses.
3	Annual bluegrass	Virginia	Columbia	Seaside bent	German mixed bent	Highland velvet / No. 14276 velvet	
4	Activated sludge	Poultry manure tankage	Check		Sulphate of ammonia	Compost and sulphate of ammonia	Fertilizer experiments on putting green grass (seeded German mixed bent).
5	Check	Nitrate of soda	Urea		Ammonium phosphate	Check	
6	Complete fertilizer 6-12-4	Complete fertilizer 12-6-4	Check		Lime and sulphate of ammonia	Bone meal	
7	*German mixed bent	German mixed bent	German mixed bent		Metro. bent stolons	Chewings fescue	Putting green length. — Cutting experiments.
8	*Ky. blue and redtop	Ky. blue and redtop	Ky. blue redtop and Ger. mixed bent		Ky. blue and redtop	Chewings fescue and Ger. mixed bent	Fairway length. — Cutting experiments.
9	Ky. blue redtop and Chewings fescue	Ky. blue and redtop	Ky. blue redtop and Ger. mixed bent		Colonial bent	Chewings fescue and Ger. mixed bent	Trial plots of fairway grasses.
10	Bone meal	Lime	Check		Sulphate of ammonia	Activated sludge	Fertilizer experiments on fairway grasses (Kentucky bluegrass and redtop mixture).
11	Check	Manure	Complete fertilizer 6-12-4		Complete fertilizer 12-6-4	Check	
12	Lime and mixed fertilizer 6-0-4	Lime and mixed fertilizer 6-12-0	Check		Mixed fertilizer 6-0-4	Mixed fertilizer 6-12-0	

*Soil in plots 7A and 8A poisoned with arsenate of lead.

do not in all cases represent the same group of gardens. In some instances a garden was maintained properly throughout a season but the reports were not complete and it was therefore not included in the summary for that year. The summary of the 1929 season included the reports from 12 gardens; for the 1930 and 1931 seasons, 14 gardens; for the 1932 season, 17 gardens, and for the 1933 season, 12 gardens.

The demonstration gardens were divided into series of plots 10 feet square and the plots were arranged in groups for making certain tests. Thus one group, containing 10 plots, provided a test for different kinds of grasses maintained as putting green turf, while another group of 15 plots was set aside for testing different fertilizers for putting green turf. Another group, of five plots, was used for comparing different combinations of grasses for

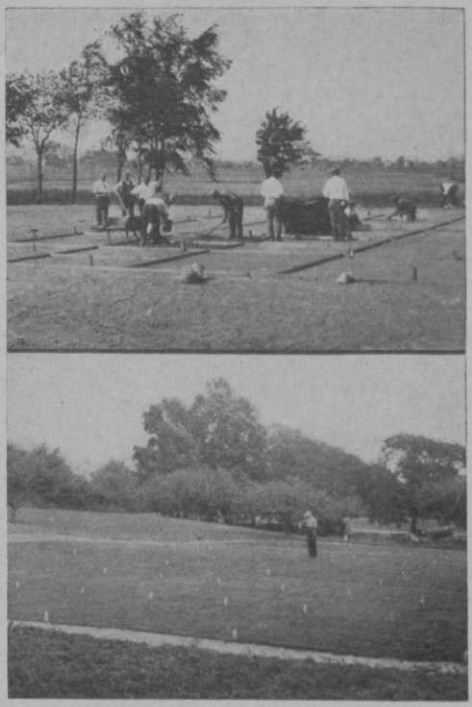
fairway turf. Another set, of 10 plots, which was later extended to 15 plots, was used as a comparison of different types of fertilizers for fairway improvement. Other plots included tests on height of cut, use of arsenate of lead, and miscellaneous tests.

All seed, stolons and fertilizers for the gardens were supplied by the Green Section. Certain standard directions for the general care of the gardens were given those who were charged with their maintenance. The details of maintenance were left to the individual greenkeepers. In general the instructions were to maintain the turf in the sections where different grasses were tested as turf for a similar purpose would be maintained on the golf courses where the gardens are located. The plots in the fertilizer series did not receive the dressings of compost that are commonly used on golf courses, because compost contains elements of plant food, and applications of compost would complicate the results to be obtained from the fertilizer tests. Fertilizers were applied at regular intervals according to directions. In addition to the differences due to soil and climate there were differences in the care of the several gardens due to variations in the individual maintenance methods practiced on the courses where they are located. As a result of this variation the highest ratings indicate the ability of the particular grass or treatment to produce good turf under a great variety of soil, climatic and cultural conditions.

Reports Made Monthly

Monthly reports on the condition of turf on the various plots were made out in duplicate, one copy being sent to the Green Section office in Washington and the other retained for home reference. These reports were made out from May to October. In most cases the notes were made by two persons in order to give the results the advantage of combined opinions, thereby reducing the likelihood of overlooking some points of interest. Occasionally the report was omitted for one month due to some unusual rush of work which prevented its preparation or due to the fact that no change had occurred in the previous ratings of the plots. In order that the summary might not lack the benefit of these otherwise complete and well-prepared reports they have been included.

Where, however, reports from a garden



Above, one of the demonstration gardens during construction, and below, how it looks after turf is installed and growing

were missing for two consecutive months the reports in their entirety have been disregarded in the preparation of the summaries. Anyone who has taken careful notes regularly on a series of tests such as these will appreciate the fact that it is a tedious and somewhat monotonous task. The names of those who have cooperated to the extent of performing this task conscientiously during the past five years are given in the following list of the demonstration turf gardens cooperating with the Green Section. Readers should bear in mind that without the help of these cooperators no such interesting summary as will be given in future issue of GOLFDOM could be possible: Allegheny Country Club, Pittsburgh, John Pressler, Paul F. Leix and Lois Miller; Century Country Club, Metropolitan District, Henry Shakeshaft, G. W. Milnes and T. T. Taylor; Charles River Country Club, Boston, F. H. Wilson, Jr., and G. J. Rommell, Jr.; Country Club of Virginia, Richmond, Douglas Call and Dominic Larusso; Detroit Golf Club, Detroit, Alex McPherson, M. Milenow and Ernest Way; Hyde Park

Golf and Country Club, Cincinnati, William Harig and William Fruechtemeyer; Indian Trails Golf Course, Grand Rapids, Floyd Metcalf, H. Pas, Carl Fiedler and Robert Cullin, Sr.; Interlachen Country Club, Minneapolis, E. W. Pahl and Harold Stodola; Keller Golf Course, St. Paul, P. N. Coates and Harold Stodola; Lochmoor Club, Detroit, W. F. Beaupre, F. H. Beaupre, Andrew Wedyke and Charles Hilgendorf.

Massachusetts Agricultural College, Amherst, Wm. E. Robison, Jr., and L. S. Dickinson; Meadowbrook Country Club, Detroit, Thomas Slessor and Wm. Slack; Morris County Golf Club, Metropolitan District, G. Donofio and G. W. Milnes; Niagara Falls Municipal Golf Course, Niagara Falls, Frank Bulges and Albert Bulges; Oakmont Country Club, Pittsburgh, Emil Loeffler and Lois Miller; Philadelphia Country Club, Philadelphia, M. E. Farnham, Herbert Murphy and Benjamin Webber; Pine Valley Golf Club, Clementon, G. T. Cunningham and E. R. Steiniger; Royal York Golf Club, Toronto, Canada, Frank A. Hamm; Upper Montclair Country Club, Metropolitan District, George Robertson, G. W. Milnes, Stanley Davis and T. T. Taylor; Westwood Country Club, St. Louis, A. J. Goetz and Al Linkogel; Wheatley Hills Golf Club, Metropolitan District, Frank Kraus, G. W. Milnes and T. T. Taylor.

How Reports Were Made

In order to simplify the taking of notes details were standardized as much as was practical. Blank forms were provided to be filled in with a few simple markings. The turf on each plot was rated as excellent, good, fair, or poor. In determining this rating of the turf it was specified that consideration be given its density, vigor, color, fineness, freedom from nap, and any other factor that would affect its quality for golf turf purposes. For several reasons it seemed desirable in 1931 to change to a numerical system which, when reduced to percentages, could be more readily summarized and thus represent more accurately the ratings as given. It was therefore decided to give a rating of excellent the value of 4, good the value of 3, fair the value of 2, and poor the value of 1. A plot which during six months received six ratings of excellent would receive a rating of 24 and a plot which was classed as good for six months would receive a rating of 18.

An actual comparison of the ratings with the two methods has shown that the relative positions of the different plots are the same except in occasional places where the differences between plots were extremely small by either method of rating. Therefore the tables prepared by this new method of rating can be compared directly with the previously established summaries for 1929 and 1930. The change of system was made primarily as a means for simplifying the consolidation of reports and preparation of tables.

No effort was made to establish any one standard of excellence by devising a score card. The ratings are therefore to be regarded as merely relative. In the series of plots of different grasses for putting greens, for instance, a report from one club might indicate that a certain grass was good whereas the report from another club might rate the same grass as fair. As an actual fact the turf in the latter case might be fully the equal of the former, but the person or persons making the report in the latter case were probably more critical and exacting than those making the report from the club where the grass was given a rating of good. However, the person who was more exacting and held higher standards would naturally scale down all the ratings in the same degree.

Since the purpose of the reports was to compare the grasses side by side rather than to compare the ratings of different sections, all reports that were made with care and fairness were equally valuable. It will be noted in the foregoing list that in the majority of cases the notes were made by two persons, which, of course, helped to avoid oversights.

Many who are interested in these gardens have wondered just how these records could be of value without a definite standard to guide in making the ratings. To make this clear we use a single example. Reports were received from three gardens, which for convenience will be referred to as reports No. 1, No. 2 and No. 3. In report No. 1, Metropolitan bent is rated as excellent and Virginia bent as good; in report No. 2, Metropolitan is rated as good and Virginia as fair; in report No. 3, Metropolitan is rated as fair and Virginia as poor. This might be interpreted as meaning that in garden No. 1 the Metropolitan was much superior to the Metropolitan in either of the two other gardens, and that the Virginia in garden No. 1 was superior to the Metropolitan in

garden No. 3. Such a conclusion is unwarranted, for these differences may merely mean that those who made out report No. 3 used a much higher standard of excellence than those who made out No. 1.

Such comparisons between different course reports may or may not have some significance other than the personal factor. The important point in the three reports is that the Metropolitan proved superior to the Virginia in each instance regardless of differences in soil and climate.

From some of the gardens the reports for the entire year did not include a single rating of excellent even though the turf was well cared for and many of the plots in these particular gardens had turf which would have been a credit to most courses of that neighborhood. This merely indicates that those who prepared the notes in many instances were extremely critical and were inclined to underrate the turf rather than to assign any flattering ratings. This tendency makes the prepared tables more interesting than would have been the case had the tendency been the other way, with ratings universally higher.

The reports on fertilizers and grasses are condensed to tables, while the points of greatest interest are emphasized in the text. The reports cover a period of six months, May to October, inclusive.

The gardens in many sections proved of much interest and were carefully watched by greenkeepers and green-committee members in their neighborhoods. Meetings of greenkeepers and green-committee members were held during the summer on many of the gardens. Some of these meetings were attended by visitors from courses over 100 miles away. In addition to the visitors at the time of these regular meetings, a large number of persons, singly or in small groups, have gone over the gardens with the greenkeepers or others familiar with the plans. The clubs on whose grounds the gardens are located have willingly made the gardens accessible to visitors at all times.

Summaries of the reports of these gardens covering a period of five years will be given in later issues of GOLFDOM.

Alfred Sargent Heads Toledo PGA

TOLEDO, O.—Alfred Sargent, professional at Inverness GC, was elected president of the Toledo District PGA at the annual meeting. He succeeds Marty Cromb, professional at Country Club.

Clarence Bender, professional at Normandy Hills, was elected secretary-treasurer to succeed Harry Moffitt, pro at Ottaka Park. Plummer Whipple was re-elected to the post of recording secretary.

The Toledo professionals last season staged a series of golf lectures and exhibitions sponsored by the Toledo *Blade*, daily newspaper. Each session of the "course" attracted hundreds of spectators. The pros hope to provide something similar in 1934 in an effort to help increase interest in the game.

Sargent, the new president, is the son of George Sargent, long an active figure in affairs of the National PGA. He has been professional at Inverness for three years.

The professionals also elected S. P. Jermain, president of the Toledo District Golf Association, honorary president of the Toledo District PGA, in honor of his years of devotion to the game and to his tireless efforts in behalf of the professional golfer.

RUNS A SHOW

Brookside Club Starts Season With a Golf Exhibit

A SUCCESSFUL IDEA for beginning the golf season was used this year at the Brookside CC, Canton, O. George Howard, Brookside professional, was ringmaster of a golf show which resulted in stirring up golf interest and producing business for him.

Movies were shown to the club members guests, about 250 of whom attended. The PGA films of Jones, Wethered and Vardon, the US Rubber movies on golf ball making, and some films shot at the club were the picture features. A buffet dinner at the club started the whole affair.

Displays of the complete lines of several of the leading companies were put on. Salesmen of the companies were in charge at the exhibits. Companies and their representatives were: Jack Keefe, Wilson-Western; Arnold Minkley, L. A. Young Golf Co.; Bill Roney, Burke Golf; Al McCann, Bristol; Hawkins, United States Rubber, and C. Studer with a tennis line.

Howard and his chairman, Dale Holwick, consider the show one of the most interesting club entertainment events Brookside has presented. It produced business for Howard.