

1922 to 1924 he officiated as president of the Metropolitan Golf Association. The United States Golf Association elected Mr. Douglas a vice president in 1926, and he was reelected to the same position in 1927 and 1928. He is also president of the Burns Society of the City of New York and of the Twenty Club. His best known club affiliations are the Apawamis Club, the Blind Brook Club, and the National Golf Links of America, of which he is a founder. The Green Section is highly indebted to Mr. Douglas for the personal interest he has taken in advancing its activities, and his genial presence while acting as chairman of the annual Green Section meetings during the past two years has served to lend an old-time dignity to the proceedings and the discussions.

Mr. Melvin A. Traylor, the retiring president, a well-known banker, is president of the First National Bank of Chicago and a former president of the American Bankers' Association. In retiring from the office of president of the United States Golf Association, Mr. Traylor, we are happy to say, does not lose contact with that Association, since, as a member of the Advisory Committee of ex-Presidents of the United States Golf Association, his knowledge and keen judgment on golfing matters will hereafter be available in helping to guide the continued progress of the national governing body.

Testing Turf With a Mechanical Putter

By John Monteith, Jr.

What grass will give the best putting surface? Probably every golfer who is sufficiently interested to know one grass from another and frequently many who do not know even that much about grass are likely to have most decided opinions on this subject. When called upon to furnish proof as to the superiority of such a grass from the putting standpoint alone, such an individual is soon forced back to the defense that it is the grass on which he personally can make his best scores. It is claimed that turf produced from one supply of bent seed is superior in putting qualities to that produced from seed of very nearly the same kind of bent. Advocates of fescue argue that its bristle-like blades produce the only true putting turf. Enemies of bent planted with stolons argue that there is always a tendency for the stolons to run in one direction, producing a "grain" which makes a slow turf when the putt is against the stolons and a fast turf for the putt rolling in the direction in which the stolons have grown. Annual bluegrass, to some golfers, affords the most accurate and uniform putting turf. Likewise each grass used on putting greens apparently has its supporters who are willing to argue interminably in its favor and as vehemently to condemn all others.

During the past season at the Arlington Turf Garden we have had several large plots which have been kept in as nearly perfect putting condition as possible. These plots all have the same degree of slope and are mowed and otherwise cared for in exactly the same manner. The only difference between these several plots is that each was planted with a different grass. Each plot is provided with a regulation cup, and visitors have been invited to choose the grass which looked like the best putting turf and then to compare his choice with the other grasses. Anyone who has any misgivings as to an actual

effect of the much-discussed "psychological influence" on putting would no doubt have seen some convincing demonstrations on those plots. Many professionals and amateurs of no mean putting ability have tested that group of grasses. If a golfer expressed a decided preference for any particular plot before trying any he invariably holed a higher percentage of putts on that particular grass than on any of the others; on the other hand, another golfer who preferred an entirely different grass usually succeeded in holing more putts on his favorite than on the others; all of which further supported the old verdict that putting is largely influenced by one's attitude of mind. It also demonstrated the utter futility of mere argument and especially the intense feeling that has marked some discussions as to the relative merits of various grasses in producing true putting surfaces, for when the evidence supporting any theory is so seriously overbalanced by the personal element no convincing decision is possible from argument.

There are many factors that must be considered before deciding as to the best grass for a putting green. Some of these are biological and have to do with the growing of grass, such as resistance to trampling, ability to withstand extremes of heat or cold, response to the soil in which it must grow, disease resistance, and many others. These are important, for it is undoubtedly self-evident that if there is found some grass which is ideal from the putting standpoint it may be im-

practical to grow it on greens in certain sections due to natural forces acting against it, and until those forces are understood and can be overcome by some artificial means such a grass would have no place on a putting green in such unfavorable regions.

The ultimate aim in developing putting greens is to provide an area on which a ball may be rolled with the greatest possible accuracy and a surface which will remain in good condition throughout as long a season as possible. It is therefore evident that even though a grass might be developed which possessed all the more desirable characteristics of growth, such as suggested in the preceding paragraph, but which at the same time failed to produce the kind of surface that is necessary for good putting, that grass should be tabooed. Much has been said and written about greens which are beautiful to look upon but which are wretched putting surfaces. It is now generally recognized that the surface of the soil, like the slate under the billiard



The Arnott Mechanical Putter

table cloth, is the part that largely determines the accuracy of the green. The speed, uniformity, and other minor characteristics of a putting green may depend chiefly on the quality of the grass growing upon it. In carrying out a program of turf improvement it is necessary to analyze the various factors to be considered, and it is important to know whether different grasses in themselves actually do exert any direct influence on putting, and if so, in what way.

The question naturally arises as to who shall decide which grasses shall be ostracized, if such action is necessary, and by what measure they shall be judged. Certainly appeals to a large number of good golfers avail little, since for every bitter enemy one meets he finds another golfer equally as quick to champion the cause of any particular grass chosen for inquiry. Such balancing of opinions indicates that some impartial method is needed for measuring the differences that may be found among the various grasses. During the season of 1928, Mr. R. F. Arnott, of the Upper Montclair Country Club, kindly furnished the Green Section with a mechanical putter which should do much toward settling some of these disputes. Mr. Arnott's machine simulates very closely the stroke of the ordinary putter, but unlike the human putter the machine is tireless and can continue in a test indefinitely without any deviations due to fatigue; it of course has the additional advantage over the human putter in that it has no "mental attitude" to handicap it in a decision; it has no favorites and can give impartial decisions; it sees no "grain," weeds, footmarks, or other imperfections; and above all it is looking for no alibi for missed putts.

Mr. Arnott has succeeded in making a machine which is effective but at the same time essentially simple. It consists of a pendulum mounted on an adjustable tripod, the details of which are shown in the accompanying illustration. Four long aluminum tubes were used in making the pendulum in order to make it swing in exactly the same plane. This pendulum swings from waist height, as does the usual putter. The power, or "wrist action," is furnished by a spring which connects the pendulum with a rod projecting forward from the tripod head. The length of the putt can be varied by using springs of different power, as well as by attaching the spring at different points along the rod protruding in the front. Lateral adjustment is provided for in the tripod head. At the base of the pendulum is the "putter blade." This blade can be adjusted to give a direct stroke, overspin, or underspin, and it swings in practically the same manner as does the blade of the ordinary putter. The height of the blade above the turf can be changed by adjusting the legs of the tripod. To operate the machine the tripod is set with the top level and at the desired height. The pendulum is allowed to swing free, and when it has come to rest a ball is placed just in front of the center of the blade. The spring is adjusted and the pendulum is drawn back and held by means of a hook attached to the back leg of the tripod. A slight touch releases this hook and the pendulum swings forward and strikes the ball.

To test the influence of different grasses on putting it is essential that the conditions for all be as nearly alike as possible. During the past summer the machine has been used on a series of plots at the Arlington Turf Garden, where the various grasses are grown on the same soil, with the same degree of slope (2 per cent), receiving the

same compost and care, and are all cut with the same mowing machine at the same height. In making the tests the machine is set up at the edge of the plot and a ball is repeatedly putted from the same position. The average distance of several (usually five) putts is taken as the distance for that setting on that particular grass. The machine is then moved to a corresponding position on a nearby plot and with the same spring and back-swing setting the test is repeated. After several repetitions of the above, both upgrade and downgrade on the different grasses, there is something more than mere personal opinions on which to base a judgment as to the relative putting qualities, particularly that of speed, of the various grasses. Before any scientific judgment is warranted from such tests it will be necessary to repeat them many times at different seasons of the year and in different localities. It is perhaps sufficient for the present to state that, from the preliminary trials made so far, it is safe to predict that many of the dogmatic assertions of the past are doomed to be decidedly modified within the near future.

As an illustration of the apparent failure of the golfer's eye to detect slight differences in speed of turf a single example may be cited from the experiences of last summer at the Arlington Turf Garden. Three good players who were visiting the garden together were asked to look over six different grasses growing in adjoining plots and to choose the fastest and slowest. Three of these grasses had been planted by the stolon method and three with seed, and all had just been mown. Each visitor chose the same plot, which for convenience we shall designate A, as the fastest, and agreed on the adjacent plot, B, as the slowest. The putting machine was then brought into the discussion. The machine reversed the decision for it showed that on both the upgrade and downgrade putts plot B was faster than A. In justice to these golfers, however, it should be added that the difference between the two grasses was small.

Soil Studies at the Rhode Island State Station

Many of our readers, especially those in New England, will be interested in the results of the golf turf studies which have been conducted for a period of years by the Rhode Island State College. These results were published by the college in June, 1928. For the benefit of our readers we are giving a brief review of the publication here, and suggest that those who are further interested write to the Agricultural Experiment Station, Rhode Island State College, Providence, R. I., for Bulletin 212, "An analytical study of the putting greens of Rhode Island golf courses," by Dr. B. E. Gilbert.

Especial attention has been given to the study of soil acidity and active soil aluminum (a chemical in a form which is toxic to plant growth if present in excessive amounts), in influencing the growth of turf grasses and certain weeds. It is pointed out in the bulletin that it is an open question as to whether weeds are discouraged by the acidity of the soil or by the presence of large amounts of active aluminum. Before investigating the matter further it was decided to make a chemical study of soils on which cultivated grasses were growing. In 1926 and 1927 samples of soil were obtained from putting greens of 22 Rhode Island golf courses and chemical analyses were made of the samples. Observations made in the collection of these samples are included in the publication.