

### "Those Hillcrest Greens"

"Everybody around Los Angeles is talking about the excellence of the greens at Hillcrest Country Club. They only recently were reopened with their new bent grass covering and now offer as fine a putting surface as one could imagine.

"The splendid improvement was brought about in an unusual way. About two years ago Mr. Baruch, chairman of the green, sent to Washington for a sample of a certain strain of bent. The sample came in a single envelope. It was duly planted. The growth was rapid. The grass on all 18 greens came from this one sample.

"Enough grass for the 18 was developed in one large bed, and then the turf was taken bodily and placed atop the greens. In a very short time it was all connected up and the present perfect surface is the result.

"There seems to be no further doubt that bent is the proper grass for California greens. Wherever it is tried it is giving better results than anything experimented with in the past. There are many different strains. All of them appear to produce a fine surface to begin with, but it is asserted that only one or two varieties will stand up over a period of years. Golf clubs should remember this in selecting seed or stolons, and choose the variety that gives best results over an extended period."—*The Country Club Magazine and Pacific Golf & Motor*, November, 1926.

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## Activities and Accomplishments of the Green Section

By O. B. Fitts

For some time the green section workers have recognized the necessity of acquainting the golfing public, and especially the supporters of the Green Section, more thoroughly with the various phases of work which it has undertaken in an effort to aid the clubs in the development and maintenance of better golf courses. Many articles discussing the various accomplishments of the Green Section have been published, but as yet nothing has been published that would give any definite idea as to the actual extent of its activities. Consequently there are comparatively few who are familiar with the many phases of work involved or the extent of the efforts put forth in an attempt to solve the numerous golf course problems. It is therefore believed that a brief review of the Green Section's activities and accomplishments will be helpful toward furnishing this information to a greater number of people, and, in turn, probably result in a wider interest in the Green Section.

The activities of the Green Section, as the work has been conducted, are divided into two branches, which will be treated here under the terms "research" and "service."

The research branch involves all the different phases of experimental and investigational work which are being conducted for the purpose of obtaining all the information possible pertaining to golf course construction and maintenance, while the service branch involves the work of dispensing information to the clubs in such a manner as to give them the greatest amount of assistance possible in the solution of golf course problems.

The experimental work with turf has been and gives promise of

continuing to be a very important source of information, as it provides means for a more intensive study of turf problems than is provided under the practical maintenance program on the golf course. The fact that a wide range of turf problems is concentrated under one series of experiments makes it possible to study the relation of the various factors involved in turf maintenance as well as to study singly and work out solutions to many problems which can not be segregated and studied individually on the golf course.

The Green Section, in cooperation with the United States Department of Agriculture, maintains at Arlington, Va., an experimental turf garden consisting of 480 plots of turf, each  $\frac{1}{2}$  rod square, and a nursery of about  $\frac{1}{2}$  acre in turf grasses. The plots are utilized for the following purposes: To test the different grasses under turf conditions in order to determine their adaptability to or their suitability for the various golf course purposes; to test fertilizers in an effort to determine the best and most practical fertilizers to use on the golf course and the best methods of applying them; to study the various turf diseases and pests and various remedies in an effort to find the most practical and effective preventive and curative treatments; and to study the effect of various turf maintenance methods, such as topdressing, mowing, rolling, watering, etc.

Every experiment on these 480 plots has its individual object, and in order to accomplish these objects each experiment must be systematically or consistently conducted and closely observed at all times, which entails much work and careful study.

The nursery is utilized for growing grasses for identification, for producing planting material for the test plots, and for maintaining a supply of the most satisfactory grasses for distribution to clubs that desire to start their own nurseries.

Since the establishment of this experimental turf garden there have been tested (including those now on the plots) over 150 different grasses. These include practically all the northern turf grasses and a few that are adapted to the South but that can be grown as far north as Washington, such as Bermuda and the Japanese and Korean lawn grasses. Of the northern grasses there have been tested four species of *Poa* or the bluegrass family, six species of *Festuca* or the fescue family, three species of *Lolium* or the rye-grass family, and five species of *Agrostis* or the bent family. The last named includes redbot (*Agrostis alba*), Rhode Island bent (*Agrostis vulgaris*), velvet bent (*Agrostis canina*), seaside bent (*Agrostis maritima*), and creeping bent (*Agrostis stolonifera*). In addition to these pure species of bent considerable work has been done with the South German mixed bent, which usually consists of about 80 percent to 85 percent *Agrostis vulgaris*, 15 percent *Agrostis canina*, and a trace of *Agrostis stolonifera*, and sometimes more or less redbot or *Agrostis alba*.

In an early study of the turf-producing qualities of these bent species it was found that there were many noticeably different strains of the seaside bent, the velvet bent, and the creeping bent. This discovery led to the inception of the idea of selecting and testing the individual strains. By the aid of the vegetative method of propagating these species, the development of which resulted from a careful study of their habits of growth, there have been selected and tested at Arlington five strains of seaside bent, 18 strains of velvet bent, and

over 100 strains of creeping bent. Of course only relatively few of these strains have proved satisfactory for putting greens but such tests were necessary to determine which were satisfactory. Among those that have withstood these tests satisfactorily are the Washington and Metropolitan strains of creeping bent, the Revere strains of seaside bent, and the Highland and Acme strains of velvet bent. There are yet many strains under experiment that have not so far been tested over a sufficient period of time to prove their merits. Among these new strains it is hoped that something will prove equally as good or better than the strains at present available.

The study of the species and strains of turf grass, which has been one of the principal features of this experimental work, has disclosed the fact that many of the grasses such as crested dog's-tail, Canada bluegrass, the fescues, etc., which were commonly included in putting green and fairway mixtures were not suitable for fine turf production under various soil and climatic conditions, and that others were entirely too expensive in proportion to their usefulness. These discoveries have resulted in more sound and economical choices of seeds and seed mixtures for use on the golf course which, in turn has resulted not only in more satisfactory turf but in a saving of money for the clubs as well.

Another investigation which has been carefully conducted is the study of different rates and methods of seeding. This study has disclosed the fact that equally as satisfactory results can be obtained with 3 to 5 pounds per 1,000 square feet, depending upon the kind of seed used, as were formerly obtained where 15 to 20 pounds of the same seed were used. This reduction in the rate of seeding has resulted likewise in a material reduction in the cost of golf course maintenance.

A series of experiments with seeding at different seasons of the year has definitely proved that, for the northern turf grasses, fall seeding is preferable to spring seeding, while for the southern grasses, such as Bermuda and carpet grass, spring seeding is best. This information has been of very helpful and economic value to clubs.

The study of types of soil and materials commonly used in the construction of putting greens has been of economic importance, inasmuch as it has brought out the fact that a fairly fertile loam is the most desirable for putting greens and that the use of enormous quantities of manure, humus, and other similar materials incorporated in the soil is not only a waste of money but in many cases is detrimental to good turf production. Other practices in putting green construction such as the use of cinder layers, peat layers, and many so-called germinating and moisture-holding layers have been found through the agencies of experimentation to be useless and in many cases harmful.

The problems involved in turf maintenance after the turf is established are of equal importance to those involved in golf course construction and turf production; consequently these problems are given equal consideration in the experimental work. For instance: there are 160 turf plots at Arlington which are utilized for fertilizer experiments, on which there are 80 different experiments with various commercial fertilizers and mixtures of commercial products. A study of the effect of these fertilizers has resulted in a great advancement in the knowledge of what fertilizers should be used on

the golf course and how they should be used, as well as those that should not be used. One important feature in this work has been the development of conclusive evidence that an acid-reacting fertilizer such as ammonium sulfate is not only conducive to the desired growth of the turf grasses but is very effective in the control of weeds and earthworms. Another, is the evidence that nitrogen is the principal plant food element needed in fertilizer for turf, and another is the striking indication that lime as topdressing is harmful to turf. There are still other indications of important developments in this work but more time is needed for conclusive results.

The common turf diseases are given careful consideration in the experimental work at Arlington. About 25 plots of different species and strains of grass are utilized for the study of brown-patch and the effect of various remedial treatments, such as the various mercuric compounds, copper compounds and other fungicides. The work so far in this connection has resulted in a very great help to the clubs in the control of this dreaded disease and experiments now under way promise further advancement in the knowledge of its control.

The study of the earthworm and the effectiveness of various eradicators has been very helpful in determining the most practical methods to employ in ridding turf of this very undesirable pest. The experiments with the various worm eradicators have resulted in the conclusion that the very simple method of dissolving 2 to 3 ounces of mercuric chloride in 50 gallons of water and sprinkling over 1,000 square feet of green is a very practical and effective means of ridding putting greens of earthworms.

The study of grubs and insecticidal remedies used for their eradication has been very limited at Arlington owing to the scarcity of grubs in the experimental plots, but some very important experiments have been conducted and others are now under way, at Riverton, N. J., in which lead arsenate and barium silico fluorid have been used very successfully. This work is being done cooperatively by the Green Section and the Japanese Beetle Laboratory at Riverton, N. J. Previous developments of this work have been published from time to time in The Bulletin while the results of the past year's work will be published in an early issue.

Experiments are going on continually during the growing season at Arlington with phases of work involving the more common practices in golf course maintenance, such as the frequency of topdressing, the materials used for topdressing, the methods employed in topdressing, watering at different times of the day, applying different amounts of water at different intervals, methods of mowing and rolling, etc.

Other experimental turf gardens have been established at Gainesville, Fla.; New Brunswick, N. J.; Manhattan, Kans.; St. Paul, Minn.; Madison, Wis., and Lincoln, Nebr. These state agricultural experiment stations are cooperating with the Green Section in this experimental work, the object of which is to supplement the work at Arlington, Va., and Riverton, N. J., in the effort to gain all the information possible pertaining to the handling of local problems, such as determining the best grasses, fertilizers, etc., to use in the various sections of the country.

The information gained through these investigations so far has been of great economic value to the clubs in the construction of

golf courses and the production and maintenance of turf, but there is much yet to be learned in this connection, and the continuation of these experiments may be expected to yield much more valuable information.

In conjunction with the experimental work the Green Section has taken advantage of the limited opportunities to observe and study the results of methods as they are actually employed on golf courses. In speaking of the limited opportunities in this field of investigation, it is meant that the limited number of golf courses which are located conveniently enough to permit frequent visits, the limit in personnel, and funds available for travel, etc., has made it impossible for the Green Section to take full advantage of the possibilities which, otherwise would be available. Regardless, however, of these limitations much valuable information has been gained and much more will be gained in this way as long as the work is continued. Another source of information which has and will continue to be fruitful for the Green Section and in turn for the clubs, is the experience of practical men who have been successful in dealing with golf course problems. The Green Section is constantly on the lookout for such experiences, and it is through this channel that some of the most practical information is obtained.

The service branch of the Green Section's activities involves the publication of THE BULLETIN, the correspondence, the laboratory service, and personal service. In other words, all the information obtained through the research branch is available through the service branch to any one desiring it.

It is the object of the Green Section, in the publication of THE BULLETIN, to give to its readers sound and practical information based on the results of carefully conducted experiments and actual experience, and to do this and present it in readable form requires much thought and vigilance on the part of both the writers and editors. The average reader of THE BULLETIN does not realize the amount of work involved in getting this bulletin out each month. If he realized just how difficult it is to get good material for such a publication he would no doubt, out of pity, if for no other reason, be more liberal in the contribution of articles for publication. The success of THE BULLETIN and its value to the clubs depends largely on the cooperation of men of practical and successful experience in golf course maintenance, and it is the hope of the editors that every one who has had such experience will open up his heart and help to make this periodical more helpful and interesting to the readers by contributing to its pages.

The correspondence handled through the Green Section office requires considerable time, thought and effort. An average of about 375 letters are received monthly and approximately the same number written. Most of the letters received require specific or concise answers, and to be able to answer these letters promptly and intelligently one must keep as well posted as possible on the problems encountered on the golf course.

The laboratory service involves such work as identifying grasses, weeds, grass seeds, insects, and disease organisms, testing grass seed for purity and germination, and analyzing and testing soil and fertilizer samples, etc. An average of approximately 500 seed samples, 200 specimens of grasses and weeds, 100 samples of soil, and

20 samples of fertilizer are handled through this service for the clubs annually. Of course the Green Section hasn't the necessary facilities for doing all this work at the office in Washington, but fortunately there is available, for such work outside, properly equipped laboratories and the services of competent men, and regardless of whether or not the work is done in the Green Section's office, the clubs get the service they request without having to bother further than writing the Green Section, stating what they want and sending in the sample. Much of this work, especially with soils and fertilizers, is done in the United States Department of Agriculture laboratories, while most of the work with fine grass seeds is done by a competent and reliable commercial seed analyst. This phase of the Service Branch alone has saved large sums of money for the clubs that have taken advantage of it inasmuch as it has put them wise to the quality and desirability of seeds, fertilizers, and other materials offered for sale.

The personal service involves the visiting of golf courses by representatives of the Green Section, for the purpose of advising or offering suggestions concerning the problems with which the clubs are confronted. About thirty-five courses were visited during the year 1926 by representatives of the Green Section and these visits were made usually at the request of the chairman of the green committee or some other official of the club. This is an important phase of the Green Section work because it offers opportunities to gain information as well as to render service. The demand for such service has been much greater than the Green Section has been able to supply owing to the limit in its personnel, and indications are that this demand will continue to increase as the work of the Green Section becomes better known.

This report only covers roughly the work of the Green Section, but I hope that this is sufficient to give a general idea of what is being done through the office in Washington.

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### Some U. S. Golf Association Decisions on the Rules of Golf

In a match play event, after approaching a green, both players find their balls in casual water on the green with a direct stymie resulting. What is the correct action here?

Decision.—We will call the contestants A and B, A being farthest from the hole. A was entitled to lift and replace his ball in accordance with Rule 27 (3). Rule 6 directs that a ball must be played wherever it lies, or the hole be given up, except as otherwise provided for in the Rules. Rule 27 (3) is an exception to Rule 6. As each player has the right to lift in his turn, the stymie could not recur, A's ball being played to the hole from the new position before B's ball is placed in its new position. It is important to note that a ball lifted in accordance with Rule 27 (3) may not be placed on any spot not nearer to the hole, but must be placed on the nearest position to the spot from which it was lifted which affords a putt to the hole without casual water intervening.

One of the players in the President's Cup Tournament in the first flight defaulted and then went into the Consolation, which he won. Some of the members of the club feel that if a player once defaults, he