permits a bronze precision metal-to-metal contact shut off.

The Sherman "Water Miser" washer comes in new faucets of that manufacture, and attachments can be bought for installed faucets. This is a monel metal ball-bearing assembly. The No-Pans washer slips over a special screw head, between which is a free turning brass washer.

The last two devices permit the washer seals to turn freely, and reduce wear, after bibb seat is trued up, since the closing action becomes a straight down shut off.

Preventing Winter Kill on Greens

By I. R. STROME

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IN response to GOLFDOM's request for an outline of our experience in prevention of winter kill on greens at the Rivermead Golf Club, I must begin by asking the reader to bear in mind that the writer's experience in turf culture has been confined to the Ottawa Valley in Eastern Ontario and that the methods described may not be applicable to golf courses located in districts that are not subject to our rigorous winter climate.

The climate in the Ottawa Valley is typical of Eastern Canada and similar to that of the northern New England states. The winters are usually long and severe, with occasional mild spells sometimes accompanied by heavy rainfall. The snow cover varies to a considerable extent but averages from one to three feet in the open areas. The damage done by snow-mold and winter kill is, at times, most extensive and it is no exaggeration to say that in particularly bad years in the past our greens have been almost completely destroyed.

Some 10 years ago our members decided that something should be done to prevent the annual loss of turf due to snow-mold and winter kill and the greens-committee was requested to study the matter.

Starting from scratch and with no particular knowledge of the subject, we were fully determined to master the situation. We tried out various suggestions put forward by the locker-room experts, also a few ideas of our own. We put up snow fences to hold the snow from drifting on the banked greens, scattered brush on the exposed greens to hold snow, covered the greens with a layer of manure to protect the turf from severe frosts, and we even dug forked trenches through the greens in the fall to provide drainage when the snow melted in the spring. After a few years of this hit and miss treatment we realized that we were not getting results and we became more determined than ever to find a solution to our troubles.

About this time we had the good fortune to meet J. R. Wilson of Toronto, who presently brought Dr. O. J. Noer of Milwaukee for a visit to our course. These two practical turf experts proceeded to take us in hand and give us a course in turf management, which has continued up to the present time. They made a complete inspection of our golf course and questioned us closely in regard to our methods of looking after the greens. Then they sat down and gave us the benefit of their experiences. As a result of several of these visits we gradually changed our methods and formulated a definite plan of procedure which we believed would bring about the desired results. Then we went to our board of directors and secured a free hand to put the plan into operation over a period of five years. We felt that we needed that period of years to protect us from the quite natural criticism that might arise should we meet with a bad year before we had made several basic preparations.

Our plan provided for a year-round program of turf culture that we believed would give us better greens and at the same time prevent the ravages of snow-mold and winter kill.

The first item on our program was to gradually do away with the various types or strains of grass on our greens and adopt one strain of bent grass that would enable us to treat all our greens in exactly the same manner. To this end we put in about one acre of nursery and the change-over was completed in about three years. In transferring the new sod to the greens, we first improved the sur-

face and sub-surface drainage conditions and then made sure that the topsoil was so prepared that grass roots went down to a depth of about three inches.

Several of the greens, although well placed from a golfer's standpoint, were too shaded and closed in by trees, which required thinning out and trimming in order to allow the free passage of air currents. This presented a problem in itself as certain of our members were strongly opposed to the cutting down of trees not realizing that you cannot have a forest and a golf green in the same place. This problem was solved by having the forestry work done in the winter time. It was surprising to see how very few members even noticed what had been done when they started to play the next spring.

While the foregoing preparations were being carried out we began to treat the greens in the following manner:

In early March, as soon as the sun becomes strong enough to melt snow in the middle of the day, we start to remove the snow from the greens. Where the snow is deep and drifted we first dig trenches through it to provide drainage and then start to work removing the snow from the sheltered greens, leaving those that are located in the open to the last. If a layer of ice has formed under the snow, as is often the case, it is gradually removed as it is softened and loosened by the sun. Sometimes we have a late snowfall which merely adds to the work.

Chemical Kills Fungus

As soon as the greens are completely clear of snow and ice they are treated with a standard fungicide to kill any snow-mold fungus that may have started. When the frost is out of the ground the sod is well rolled down with a heavy roller and this is the only time that the greens are rolled.

Early in May we spike the greens, using a three-section fairway spiker drawn by a light tractor. This may seem like rough treatment but it really does the turf a lot of good and is much faster and more economical than using a small greens spiker. The turf is then given a treatment of sulphate of ammonia in solution, at the rate of about 2 lbs. per 1,000 sq. ft., applied with a barrel sprayer.

At the end of May, or early in June, we apply a light topdressing with the following:

2/3 prepared topsoil
1/3 coarse sand
to which is added
10 per cent (by volume, of top soil and sand) peat mold
40 pounds Milorganite
8 pounds 20 per cent super phosphate
2 pounds muriate of potash
} per 1,000 sq. ft.

(The peat mold is added because our soil has a clay content that packs easily and the peat mold keeps it loose. This assists in retaining moisture and makes for a softer surface on the greens.)

The topdressing is well worked into the turf by dragging and cross-dragging with large steel door mats. This has the effect of eliminating all minor uneven surfaces and makes for true putting greens.

Arsenate of lead mixed with fine sand is then broadcast on the turf to eliminate dew worms and as our greens have been given this treatment for several years, we now use only about 2 lbs. per 1,000 sq. ft.

During the months of July and August, if the greens start to lose color, they are given one or two treatments with sulphate of ammonia in solution which is well watered into the turf to prevent burning. They are also treated regularly with the fungicide to prevent brown-patch and also to build up an immunity against snow-mold.

Early in September a second light topdressing is applied but at this time we leave out the muriate of potash.

Spiked Again in October

In mid-October the greens are again heavily spiked to loosen up the turf and admit air, and they are given a final treatment with mercury salts just before we expect to have the first snowfall. If heavy rains occur after this treatment, a second treatment is applied using half the regular quantity of fungicide.

In general the greens are mowed six times a week, i. e., every day except Sunday, but in particularly hot weather the daily cutting is sometimes omitted. Three or four times during the growing season the greens are well raked with a Del Monte rake to prevent the bent from growing on its creepers and forming a mat.

It might be stated here that our turf nursery is given the same treatment as

our greens except that we do not cut it quite as often.

At this point the reader will have decided that we have not mentioned any specific treatment for the prevention of winter kill. In our opinion there is no specific treatment and the answer is in keeping the turf strong, healthy, and deep-rooted by means of a regular routine based on sound principles.

The results obtained to date have been most satisfactory. We do not use temporary greens and our members are allowed to play on the permanent greens throughout the entire season. The amount of turf that we lose annually due to snow-mold and winter kill is negligible and our turf nursery has been reduced from one acre to about one-third of an acre.

On two occasions in the last seven years we have lost some turf due to dehydration during particularly dry springs, as we cannot use our water system until the frost is all out of the ground. In the spring of 1941 we lost about one-fifth of an acre of turf due to this cause but it was all turf that was at least five years old and, as such, not very deep-rooted. This trouble could probably be avoided by hauling water to the greens, but we doubt very much if this would be more economical than replacing the turf.

We realize that we are dealing with a very tricky subject and that we may have plenty of trouble in the future but it is a matter of record that over a period of years we have succeeded in reducing turf losses and in providing our members with greatly improved putting greens.

Everybody But Salesmen Play in Salesmen's Event

GOLF Salesmen's Assn. of Northern California held its annual Salesmen's tournament at the California GC, Sept. 22, with a field of 195 players. About 160 stayed for the dinner and evening entertainment.

The salesmen themselves will have to play for their trophies later as they were kept too busy running the tourney and being hosts to get a chance to whack around.

Harry Bassler's 68 led the pro contingent, and the 69 of Jack Finger led the amateurs. Teams of John Battini-Mat Palacio and Dewey Longworth-Don Neher tied at 65 in the pro-am class. Al Schoux's 70 won among the asst. pros.

Annual Turf Field Day Held at N. J. Station

A putting contest was held on the show plots of the N. J. Agricultural Experiment Station, New Brunswick, at the annual Turf Field Day held Sept. 8. Winner was R. E. Harman, Essex County agricultural agent; his score was 17 putts for the 9 holes. Prize was a pound of Raritan velvet bent seed—a grass strain developed at the N. J. Station.

Dr. Wm. Martin, director of the Experiment Station, opened the program that was led by Dr. Howard B. Sprague, agronomist-in-charge. Weed control, turf disease, heights of cut, fertilization, and liming were main topics. A fungicide used with good results in rubber plantations was tried this year, and while excellent for its purpose, was found to be of no value in controlling brown-patch.

Relatively new lime experiment plots were of interest. It was found that finely ground limestone penetrated into turf soil quicker than hydrated lime. The latter tends to cake on the surface.

Attendence was somewhat off the usual volume, this due to the fact that the nearby Connecticut and Philadelphia golf course superintendents held their regular monthly meetings on the same date. Golf course men comprise the largest interested group at this event.—CKB.

PGA to Name Cup Team—Tom Walsh has announced the appointment of the following to serve on the PGA Ryder Cup selection committee: Ed Dudley, chairman of the PGA tournament committee; Olin Dutra, Billy Burke, and Leo Diegel. The purpose of this group is to recommend to the executive committee of the PGA the players who will constitute the 1942-43 Ryder Cup team. The final selection of the Ryder Cup team will then be made by the executive committee November 10, 1941, at which time the annual meeting of the association takes place.

Due to the war, the official Ryder Cup matches have not been played the past two years. However, the American PGA Ryder Cup team has carried on in style by playing matches for the benefit of the American Red Cross and the U.S.O. Walsh stated that word has been received from PGA officials in Great Britain that "it was of great encouragement to them that the Ryder Cup team was being continued in America."