

parts with a sulphur wash which cleaned it up quite effectively, and as nearly as I could learn it was much reduced if it appeared at all the following year.

This last fall one of the Ontario clubs, which is badly affected, treated an affected green with the organic mercury with the hope of arresting growth as soon as it commences in the spring, as it seems to grow under the snow. From the data already collected, the only stage at which this fungus is at all sensitive is when it is forming the webby, cottony, masses. These are so delicate that when transferred to a warm room from cool chambers where the temperature is around 40 degrees, it melts down like ice cream. The critical period for the development is during the general thaw in the spring with warm days and cool nights when the mercury hovers around freezing point. Excessive moisture, coupled with low temperature and darkness, will make it very active.

Such are the main features of course maintenance as touch the range of latitudes northward.

The successful greenkeeper, be he amateur or professional, in these days of high efficiency and superb golf grounds, is the man who can make himself familiar with climatic conditions of his immediate locality as they affect the growth of grass. He must be familiar with the texture of the soils he has to work with, and ascertain the chemical and physical requirements to bring them to the maximum fertility suitable to his purpose.

With this knowledge and ability to use it wisely and capacity to watch for and combat the inroads of disease and pests, he is truly worthy of a fellowship in that noble profession known as the Art and Science of Greenkeeping.

Weeding

By Sherrill Sherman, Yahnundasis Golf Club, Utica, N. Y.

When we speak of weeding it is primarily as it applies to putting greens, for there are but few clubs in the country where budget for the green committee is great enough to allow the weeding of tees, approaches, and fairgreens. Of course such an arrangement would be ideal but too good to be true and almost too high a standard at which to aim.

It is generally conceded that good putting surfaces mean at least, and maybe more, than 50 percent of the value of a course, at least from the standpoint of satisfaction and pleasure of the average player. For as a rule the average player, if he plays at all regularly, is reasonably proficient on the greens and the truer the greens the lower he can score, for it is there that he can the most easily save strokes rather than through the play to the green where distance and hazards penalize his mistakes more greatly.

Weeding is an every day job, an every week job, an every month job, an all season job, an every year job. Yet a weeding program, properly planned and carried out, means lessened rather than increased work in the future but is never finished. It is of vital importance in having really first-class greens as grass of one variety and uniformity unquestionably produces truer and better putting surfaces, if properly cared for. Care and thought must be given the problems of producing such turf. In using the word "weeding" I

am using it in a broader sense than usual, for I desire to include in this term the elimination, not only of the commoner better known weeds, but the elimination of all foreign or different varieties of grass. This article deals primarily with northern course conditions and I am assuming that greens of bent are desirable and desired. This being so, from the bent turf should be eliminated *Poa annua*, the greatest grass pest, along with all other strange varieties that will creep into established turf no matter how well nourished. From a visit to the Arlington Turf Nursery at Washington in April, 1927, I am convinced, in view of the clay which forms the base of the soil there, that bent can be grown anywhere successfully, if in its climatic belt, for I could not imagine tougher soil on which turf would have to be produced. Because bent is so distinctive it is as easy to distinguish the undesirable grasses from it as it is the weeds such as dandelion, chickweed, or butter cup. The very best time of the year, I believe, to eliminate these grasses is early in the spring before growth has started. While spring, before growth has started, or became rapid, is the best time to weed, it has a serious drawback and that is the fact that weeding at this time of the year is particularly hard on the men employed, due to the cold wind, the dampness of the ground, and the low temperature. While I have not tried it, I believe that a wind-brake of canvas erected to protect the workers, with the work done on the sunny side of the shelter, would take away most of the discomfort. Unless one has weeded for a period of an hour or more it is hard to realize how hard and monotonous the work is to the weeder. The average man would prefer the greater labor of even green cutting to the hours of weeding.

At this time the laborers, even the least skilled or careful, can readily tell the difference between *Poa annua* and bent, and if the weeding has been well done previously the clumps will be small. After the removal of the unsatisfactory grasses the bent, with the growth of May, will have filled in the bare spots left by the weeding, if the weather is normal, by the first of June.

Where the climate allows it, I believe velvet bent to be by far the finest and best turf, the fineness of its blades, with its upright growing characteristics, and thickness and depth of its root system, giving the best surface for a putting green, smooth without variation of grass, a proper resiliency to pitch upon, and an ability to stand up under the heaviest of play, in wet or dry weather. I seem to have rambled somewhat from the subject of weeding in singing the praises of velvet bent, but I believe it is necessary to emphasize such a green as a standard to which all greenkeepers should measure their greens.

To put into dollars and cents how much should be spent for weeding annually is almost impossible but I am sure that the average club at least is far short of a proper and adequate amount in its green committee budget to give the attention to systematic weeding that its greens require and deserve.

There is no one perfect and complete method for weed control and I am sure that those at Washington will agree with me that weeds will spring up even in soil supposedly hostile to their propagation. Because conditions vary different methods should be combined and used in any comprehensive plan, but the secret of success is embodied in the words "ceaseless attention." We have all seen clubs whose greens were built and started under as nearly ideal conditions as

possible, yet, after a few years have become almost poor from the failure to keep proper watch and call up the reserves when the first scouts of the weed army appeared. The 17-year locusts have the reputation of being real pests, if history is at all correct, but the armies of the weeds are ever on the alert to drive forward and consolidate their advance posts. As bad habits are more easily broken when first started, so weeds and coarse grasses can be cut out with the least trouble and damage when young.

Chemicals, while they can help, can not entirely, at least from our present knowledge, eliminate weeds and the Green Section does not desire that such an impression should be broadcast. It may be possible in the construction of new greens to so prepare the soil as to lessen the probability of weed growth, but we still have before us the problem of caring for the vast number of greens that either because of expense, desire of members not to have their play interrupted, or other reasons, can not be so treated. Chemical treatment will help, but in greens already constructed the change will come but slowly to a condition that can be even remotely considered as weed proof.

The tried and true method of laneing a green by strings and having the individual worker proceed to carefully cut out the weeds by hand weeding in his lane can not be excelled. A lane three or four feet is wide enough. Before the passing of such a lane as being properly weeded the foreman or greenkeeper should carefully inspect the same, and if necessary have the worker cover it a second time that day. After a thorough weeding of a green, which as a practical matter is generally done in the afternoon, for the morning is well occupied by the men of the greenkeeping force by specific tasks, which unless the force available is quite large or a green quite small, can seldom be done in less than three afternoons, the green should have a second weeding or check over in about two weeks. This naturally can be done much more quickly if the first weeding has been thorough. It will surprise one how quickly a weed given just the littlest bit of root can recuperate and grow in a period of two weeks.

On an 18-hole course of the first class, with averagely large greens, it would require, at least for the first year or two, a minimum weeding appropriation of \$1,000.00. Granting a crew of eight men are available for weeding from 1 to 5 p. m., this would make a daily labor time of 32 hours, and three days to a green, a one-time weeding time of 96 hours, at 50c an hour, about \$50.00 per green, and the use of but simple arithmetic will very easily show a total of \$1,000.00. Because afternoon play is the greatest, there will be some lost time, from the fact that weeding must stop while the players are on the green. If a separate force were employed it could be used mornings as well as afternoons. But there is a drawback to this in the fact that extra labor is often not available and if available must be trained. In addition it would not take the same interest in results as the regular greenkeeping force.

I know that to the average member of a club, and even to a green committee chairman, the idea of spending say \$60.00 a green yearly in weeding, for the reweeding cost will bring it to this figure, can not but seem rather high, but I question whether a green can be kept properly free of weeds and undesirable grasses for a lesser amount.

In stating this figure I do not wish to discourage those clubs who feel such a sum is beyond their financial resources, but as a child usually learns to creep before walking, so the approval of spending some definite sum yearly, even if small, is a step in the right direction. If there should be criticism or objection in the club to the expense, I am sure that selecting one green, concentrating all the weeding efforts there—a green near the club house that would be in sight of the majority would be a wise choice—would make that green stand out as such an example that the club would demand that the other greens be brought up to the same clean condition. I can quite conceive that some of the clubs whose courses with their large greens rank in the championship class could spend \$5,000.00 a year weeding to keep their greens up to the highest standard. One could quite readily visualize the work that will be required to keep the 180,000 square feet, over four acres of green surface, free from weeds at the new course of Yale University at New Haven, Conn.

A point that I especially desire to bring out is this, that weeding must be planned both from the expense standpoint and the arrangement of available time and men. To me it is as truly important as the proper cutting of greens or fairways, a rather broad statement, but nevertheless true, like some other greenkeeping problems the solution is so simple that it is likely to be ignored or overlooked. There is nothing new in my suggestion, unless it is that undesirable grasses, at least in bent greens, should be classified in the same detrimental class as are weeds. If *Poa annua* is eliminated early in the spring it is prevented from blossoming and so going to seed and producing the second crop later in the season. Cold and backward as the season has been here at Utica, N. Y., this year at the Yahnundasis Golf Club, before the first of May I have already seen *Poa annua* in blossom. In writing as I have I am assuming, and I believe rightly, that the grass that will be used in the future for all northern putting greens will be some variety of bent, either from seeds or stolons. Personally I believe strongly in turf by the stolon method for a number of reasons, its greater uniformity, the greater certainty of the desired variety, and the greater quickness with which the turf can be played upon without damage to it.

In conclusion I hope to impress this message vividly on the mind of the reader, do not rely entirely on acid reacting fertilizers to eliminate weeds. Such fertilizers are valuable aids but do not eliminate the necessity for considerable hand labor.

Greenhouse soil as a topdressing.—We can secure at a low cost some compost rejected by a greenhouse for the reason that it has become too fertile for greenhouse purposes. Would material of this kind be suitable for topdressing putting greens? (Indiana.)

ANSWER.—We assume that in this case, by "too fertile" is meant too rich in organic matter. In such a case we believe such compost should be excellent material for use in topdressing putting greens provided it is first mixed with an equal, or preferably a larger, quantity of top soil.

It has been suggested that a meeting of Green Committee Chairmen and Greenkeepers be held in Washington late in August to visit the Arlington Turf Plots and discuss the experiments conducted there with Green Section representatives.

During August brown-patch is generally active in the vicinity of Washington and the effect of various treatments for its control are conspicuous. At this time the relative ability of various strains of bent to withstand extreme heat and humidity are also very interesting. Fertilizer experiments are also striking in their contrasts at this time.

While August is a busy month for every one engaged in course management the work at Arlington is also in its most interesting stage, in fact the men who have not seen the turf plots during the summer months have really never gotten a good impression of the work done there.

If sufficient interest is shown in such a meeting a formal program will be arranged which will include visits to various local clubs and an evening session at which papers on various subjects of course management and turf culture will be presented.

Will you write to the Green Section stating whether or not you will come?