

3. *Kentucky bluegrass and redtop are generally the most satisfactory grasses for the fairway.*

4. *Under no conditions should mixtures for either putting greens or fair greens be purchased, since they are for the most part entirely unsuited for the purpose intended and the purchasing of them is not an economical practice.*

5. *No seed should be bought without first having it tested for trueness of variety or kind and for purity and germination.*

If the green committees will only act upon the suggestions herewith offered much of the useless waste now involved in the making and maintaining of golf courses will be obviated. Assistance in the selection and testing of seed will be gladly given by the Service Bureau.

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## Winter Work on the Golf Course

DR. WALTER S. HARBAN

Winter work on a golf course may be divided into two distinct kinds: first, the work on the course during open-weather conditions; second, work in the barns when impossible for the men to work on the outside. In each instance there is a large variety of work which can and should be done: in the one case, development and improvement of the course; in the other, proper preparation for the operations to follow later in the year. To present more clearly, as well as to demonstrate the actual workings of this system, it has been thought wise to make clear the plan that has for years been pursued at the Columbia Country Club, where the Open Championship is to be held in July. Recognizing the importance of a trained, efficient, skillful green-force, led to the permanent employment of a half dozen or more of the most desirable as well as useful employees. To give these men adequate employment to justify their retention during the winter months, has developed a plan of work more than commensurate with the outlay, and therefore economical in the end.

The summer activities, such as cutting greens and fairways, watering, worming, etc., usually end by the first of November, as it is better to let the grass become a trifle longer in order to withstand winter use. Winter trampling and kneading is believed to be beneficial rather than detrimental where there is a strong, well-matted turf. The Columbia course, therefore, is never closed to play except upon rare occasions, and then only when very soft, usually following the spring thaw. The months of October and November and part of December is the best time to build greens and to transfer sod. It is at this season that most of the greens have been built and remodeled, from one to three each year. Those built in the spring, especially as late as May or June, have not done so well, perhaps due to insufficient rootage before the summer season. At any time during the winter months when the ground is open, bunkers and tees can be more easily built, and even sodded, than at other seasons, and with far less interruption and inconvenience to play. The clearing of land both for use and for beautification, making drains and ditches, etc., are among the operations we have been able to take care of during the winter months. Again, at convenient times in the fall, the soils for the composts are placed

in the barn utilized for that purpose, where they are kept dry. During inclement weather these soils are screened and mixed in sufficient quantity for spring and summer dressings. During the latter part of December the greens are dressed with sharp sand at the rate of from two or three yards each, according to size. The winter trampling helps to work the sand into the soil, and at the same time perhaps does more to prevent the so-called "winterkilling" than any other treatment. Dressings of manure on the weak places of the fairways are applied late in February, just before the thaw.

The barn or indoor work is supposed to be done at times when the weather is unfit for outdoor work. A large barn for the storage of compost is almost indispensable, as this material should be kept dry and ready for early use in the spring, and can be prepared on days when the men cannot work on the outside. Another large barn is essential for the storage of machinery, tools, and implements, where they can not only be protected from the weather but where ample space is afforded for inspection, cleaning, and repairing. There is nothing more desirable in green-keeping than perfect machinery. A worn-out machine or tool should be discarded, as it only means loss of time and delay, nowadays involving financial loss or imperfect work. Everything possible under the care of the green-keeper should be repaired, if necessary, and made ready for its immediate use when the time comes. Tee boxes, benches, flag staffs, wagons, carts, rollers, etc., look better and last longer after a little paint has been applied. It is well to take an inventory of all property for comparison with that of the preceding year, so as to check up the losses, if any. You may be surprised how many things have disappeared, perhaps "borrowed," to say the least. We consider the indoor work of the greatest importance to facilitate the operations that come later in the year, when there are so many more things that should be done promptly. The chairman of the green committee will act wisely by visiting the barns at irregular intervals, especially on bad days, to see that the work is being carried out.

To those who have not adopted and conducted this sort of winter campaign, I believe the results will prove a revelation both as to the great benefit as well as to the amount of work that can profitably be gotten out of the way, making it easier to conduct the later operations with a smaller summer force.

*To sum up.*—Keep your trained men regularly employed, so as to insure having a good summer force. Plan and develop certain improvements to the course each year. Do all the repair work on bad days in winter when nothing else can be done. Finally, be prepared to do, without interruption, the things that must and can only be done in summer.

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#### *Number of Seeds in One Pound*

The number of seeds in one pound varies considerably depending on the amount of chaff and trash as well as on the quality of the individual seeds. The figures given below are in many cases average of several determinations:

German Bent.....	4,000,000	Timothy .....	1,200,000
Rhode Island Bent.....	4,000,000	Sheep's Fescue .....	800,000
Redtop .....	4,000,000	Red Fescue.....	600,000
Kentucky Bluegrass.....	2,400,000	Italian Rye Grass.....	270,000
Bermuda Grass.....	1,800,000	Perennial Rye Grass.....	270,000
Fine-leaved Fescue.....	1,250,000	White Clover .....	700,000