Too many golf club officials assume that as soon as the golfing season is over work on the golf course should cease. This short-sighted policy accounts for many cases of hurried and makeshift work during the rush season. It usually means waste and inefficiency as well as being unnecessarily unfair to the greenkeeper and his best workmen.

In the normal operations of most golf courses it should be possible to keep the greenkeeper well occupied during the winter months even on courses where there is no play for several weeks. On most of the better courses the greenkeeper during the winter months can also use to good advantage the services of at least one helper. Many serious interruptions and inconveniences next summer may be avoided by a little judicious use of labor during the winter months.

**Overhauling Equipment:** Winter offers an exellent opportunity to thoroughly overhaul machinery and equipment. Any good piece of machinery will last longer and give more effective service if it is occasionally overhauled, greased and painted. Old and worn equipment can often give additional good service with proper overhauling and replacement of worn or broken parts.

Work Shops: Any consideration of the repair of equipment and some of the other jobs naturally raises the question of proper housing for these operations. Altogether too many first-class golf courses are still maintained without an adequate workshop and sheds for housing equipment and materials used on the course. This particular season is a good time to make an appraisal of adequate building facilities in order that new construction or repair work may be started at once to provide these facilities in time to be used to advantage during the remainder of the winter.

Burning and Clearing Rough: Burning over the rough and clearing out some objectionable thickets are good jobs for late fall and winter whenever the weather will permit. If this type of work can be done early, it will keep it off the long list of jobs that must be done during the rush period in spring and it will serve also to provide better playing conditions during the winter.

Raking Leaves: This is probably the major job in fall and early winter on courses with plenty of trees. The removal of leaves and other litter from golf turf is usually a costly procedure. A few machines have been developed in recent years designed to speed up this type of work and reduce the labor cost, but on most courses the leaves are still removed by the use of the hand rake. Until machines which can do this work efficiently are in general use, the rake is all important. It may be worth while to consider the type of rake that is adapted to the purpose. A wide rake has much to recommend it for clearing leaves from greens, tees and fairways — at least double the width of those commonly in use. An example of such a rake is described and illustrated in The Bulletin of the United States Golf Association Green Section, Vol. 11, p. 224. Men who have used these rakes have found them no more difficult to handle than the ordinary size and with them one can cover a much larger area of turf in a given time.

Using Leaves for Compost: The leaves removed from various parts of the golf course may be used to good advantage for supplying organic matter in compost. Leaf mold is well recognized by plant growers as a desirable form of humus material. The cost of hauling the leaves is practically the only expense involved as the leaves are usually raked and piled, whether or not they are utilized for the compost pile. The unsightly areas in the rough or out of bounds made by burning the leaves in piles would be avoided, likewise the disadvantage of the weedy growth which often develops in these burned areas. The addition of chemical or organic fertilizer materials as the leaf humus pile is made has been found to hasten the decomposition materially.

One of the formulae for hastening decomposition in straw or leaf stacks consists of approximately 70 pounds of sulphate of ammonia, 25 pounds of superphosphate, and 55 pounds of finely ground limestone to each ton of material. The leaves should be spread in layers of about 6 inches. Each layer should be treated with the preceding fertilizers and watered individually as the pile progresses. This work will require some labor but it will be found to be well worth while when the pile is ready for use on putting greens. Leaves may also be spread on a soil bed and worked into the soil by thorough discing. Fertilizers spread on the leaves will hasten their decomposition on the soil bed as in the case of the pile.

Screening Compost: The best time to screen compost is when it is relatively dry and friable. This condition is usually reached in the late summer, when it cannot be screened due to the rush of other work. Too many times the greenkeeping force is diverted from important work during the growing season to screen some compost. This is particularly annoying to the greenkeeper in early spring when compost may be wet and soggy and when he is pushed with other jobs. Some provision for shelter for an adequate supply of dry and screened compost ought to be made. It is a wise policy to screen enough soil for next year's use during the fall and winter.

Fill Surplus Traps: For many years the Green Section has advocated the leveling and sodding of the large number of useless and expensive traps and hazards that clutter up the fairways of many courses. Winter offers many opportunities to do much of the hauling of materials needed for such changes.

**Remove Rocks and Stumps:** A few winter days spent in removing outcropping rocks from fairways may save money or mower repairs next summer, in addition to making playing conditions more pleasant. Large rocks and stumps in the rough may also be removed to advantage. Dynamite will greatly facilitate the work and can be used to advantage when there is little or no play to interfere with blasting operations.

Clean Drainage Ways: Another important item of work that can as well be attended to during the late fall and winter season is the matter of drainage ditches and tile lines. Choked ditches and stopped lines of tile are unable to aid in the early opening of the golf course in the spring and may result in more than an ordinary amount of winter injury. The outlets of all tile lines should be inspected and all catch basins cleaned to allow capacity flow.

Install Tile Drains: A great many places on the golf course remain wet long enough to interfere with spring play. Many of these locations would require a relatively small amount of tile and labor. Diseases frequently appear in such poorly drained parts and the turf often suffers from the water-logged conditions. Seepage areas, for example, may interfere with an entire fairway and are usually of the sort that can be rather cheaply remedied by tiling on the uphill side. Pockets can sometimes be improved by installing French drains (pits filled with sand or gravel). This work may well occupy a number of men for several weeks during the months of little play.

**Cutting and Trimming Trees:** The best time to cut down trees or trim off branches is during periods of good weather during the winter months. In doing work of this kind it is well to keep in mind the opening of passage ways which will admit freer circulation of air on some of the greens and tees that are in bad air pockets. The pruning of shrubbery during the winter months will often add materially to the general appearance of the clubhouse grounds. It should be remembered, however, that many of the flowering shrubs. particularly those that bloom early in the season, should not be trimmed during the winter. In such cases the pruning is best delayed until after the shrubs have bloomed next spring.

Moving Trees: Fall and winter are good times to transplant trees. This work can be handled by any greenkeeping crew if it is done at the right time. Some detailed information on this subject appears in the Bulletin of the United States Golf Association Green Section, Vol. 10, p. 136. The tree is prepared for transplanting if time permits by pruning the roots during one or two seasons, gradually cutting around the ball and watering and fertilizing to induce growth of new roots close to the trunk. Medium to largesized trees are conveniently moved with the ball of earth frozen. Approximately 12 inches of root ball should be secured for each inch of the trunk diameter. If trenching is begun now the frost will penetrate deeply, and if desirable to wait until the soil freezes the place for the trench may be covered with straw or manure to save labor in digging. In the same way the hole for the tree on the new site can be dug now or covered to prevent deep freezing of the soil. The hole should be dug larger than the ball in order to allow room to fill in with good soil. Piles of such soil may also be mulched against freezing.

Fertilizing in the South: In the southern States where the summer grasses are turned brown during cold periods, it has been found that applications of fertilizer will encourage sufficient growth of grass during the intervening warmer periods to improve the playing conditions greatly. Sulphate of ammonia is the most effective fertilizer for this purpose. It should be applied during the cold period so that it may be available for the use of the grass as soon as the cold wave has passed. This method during mid-winter is effective only in the most southern portion of the Bermuda grass range.

Making and Repairing Bridges and Shelters: During slack time at this season there may be an opportunity to

utilize labor to good advantage in the repair of the old bridges and shelters and possibly to install new structures wherever needed. Plans for shelters have appeared in the Bulletin of the United States Golf Association Green Section and reference may be made to the volumes and pages as follows: Vol. 3, p. 136; Vol. 13, p. 52.

Inside Painting Jobs: When weather is unseasonable for outside work there may be some inside painting of the implements, out-of-bounds and other markers, barn, and the clubhouse itself. Probably nothing has the effect of promoting a well-kept appearance as much as a new coat of paint. Winter is one of the best times for such work.

**Reading:** The winter months offer many opportunities for the greenkeeper to do some reading which will provide him with information which may prove of considerable value to him next season. This is a good time of the year to get together a small greenkeeper's library as part of the regular course equipment. If used with even a small degree of intelligence a greenkeeper's library will no doubt return bigger dividends to the club than any equipment on the course regardless of the cost of the equipment with which the small library cost is compared.