treated with calomel to control dollar-spot. which may be expected even in cooler weather, but a new problem presented itself when the greens were badly attacked during these extremely humid and hot periods with brown-patch also. Calomel controlled dollar-spot effectively but was too slowly soluble to check brown-patch and greenkeepers were forced to resort to applications of the more soluble, and hence more active, bichloride of mercury. Some greenkeepers had to repeat light treatments several times in a week to keep brown-patch under control. It was proven in many instances that persistent repeated treatments of bichloride saved many putting greens. Greenkeepers who treated once or twice and then gave up further treatments when the brown-patch continued to be active lost a great deal of turf. Putting greens which had been treated previous to rainstorms with calomel or mixtures of calomel and bichloride of mercury for dollar-spot were less severely injured with the occurrence of brown-patch than greens which had not been treated for sometime, as, although the calomel did not entirely prevent brown-patch, it had considerable effect and the brown-patch did little damage before bichloride could be applied.

When brown-patch first occurs an application of one or two ounces (according to the severity of attacks) of bichloride of mercury to 1,000 sq. ft. should be made, but if the disease again becomes active within a week a further application of from %-ounce to 1½-ounces of bichloride of mercury is usually sufficient to check it.

Dollar-spot and Sulphate.

As usual, dollar-spot was much more active on putting greens which were somewhat over-fertilized, especially if sulphate of ammonia had been used. If the putting greens soil contained sufficient lime, the use of sulphate of ammonia had no more effect on dollar-spot than other fertilizers. During the humid periods following the Eastern storms it seemed impossible to check dollar-spot on some courses. In these cases it was usually discovered that the putting green soil was quite acid. In some cases an application of lime was effective and the plants became more vigorous and resistant to further attacks of dollar-spot. Also the grass would respond to fertilizer and the diseased spots would heal over more quickly. When lime is indicated it is best to use hydrated lime, since it is more active than the ground limestone and hence gives quicker results. Great care however must be exercised in using hydrated lime in the summer when bad burns might be fatal to the turf.

Hydrated lime should not be applied within a week of sulphate of ammonia and vice-versa. To relieve acid condition in greens as an emergency in the summer the hydrated lime should be applied at the rate of 15 pounds to 1,000 sq. ft. It is best to apply lime mixed with soil or sand and to spike the greens lightly following the application in order to aid the lime to reach the roots. Before applying lime to all greens on the course greenkeepers should try lime on a corner of one green or more to ascertain its effectiveness. If an emergency application of lime is effective in the summer the greens should receive a heavy application, 45 lbs, to the 1,000 sq. ft., during the following winter.

Over-fertilizing.

As usual, over-fertilized putting greens made up a considerable portion of the summer turf injury. This was particularly true on *Poa annua* putting greens. Rank, lush turf caused by applications of nitrogenous fertilizers apparently is too tender for certain summer conditions. Fine, soft, dark-colored grass may be maintained when the weather is dry and hot, but if heavy rainfalls which keep the soil saturated for several days occur during hot weather much over-fertilized grass is bound to be lost by disease or other causes.

Greenkeepers dread to prepare for tournaments in hot weather. If the grass on greens can be left to grow slowly and naturally during the summer, possible injuries are greatly restricted and the turf is in a condition to make a quick recovery. Turf allowed to go naturally through the summer will become faded in color. harder and thinner in texture and faster for putting. Golfers should be taught to realize that it is better to sacrifice something in the appearance of the greens for a couple of months rather than to have greens as perfect in appearance and feel as in the spring or fall one week, and eaten up with disease and covered with dead or dying areas the next. The putting turf on some courses was unwittingly stimulated this summer as in previous summers. Greenkeepers forget that bulky organic materials can supply large amounts of nitrogen to the greens when the comparatively large quantities applied are con-

Proper use of preventives would probably have prevented the brown-patch attack which has ruined this green.

sidered. For example, a compost may be made up for topdressing greens which contains $\frac{1}{3}$ well rotted manure. A yard of this compost contains approximately 650 lbs. of the manure. Well-rotted manure will probably analyze 1 per cent nitrogen, and therefore $6\frac{1}{2}$ lbs. of nitrogen, or as much as is contained in $32\frac{1}{2}$ lbs. of sulphate of ammonia, is put onto the greens at each application. Perhaps two or more such topdressings are made before hot weather.

No such results are obtained with these applications as would be obtained from a 321/2 lb. application of sulphate of ammonia, since the nitrogen in manure is mostly slowly available. The availability of nitrogen in such organic materials depends upon bacterial action which in turn is stimulated by a combination of heat and moisture. The trouble therefore comes when great bacterial activity occurs in hot humid periods in the summer and the nitrogen thus released causes a sudden rank growth of grass when least desired. Greenkeepers who have had experience with this type of injury are now using manure in topdressing only for fall and early spring applications. Should the greens require subsequent topdressing the organic matter in the topdressing is supplied with peat.

Putting greens may run short of various mineral elements if less and less manure is used and more and more sulphate of ammonia. So to meet this gradual change in greenkeeping practice it is customary nowadays to make sure that the greens get sufficient minerals, particularly phosphorus and potash, by applying a complete mixed fertilizer in the spring and fall. The remaining fertilizing of the year can be confined to occasional light applications of sulphate of ammonia as needed. As mentioned above, lime can be applied in the winter when calcium is needed. Most soils contain sufficient of the various other elements the grass plants use.

Effects of Poor Drainage.

After the storms in the East this summer it was quite easy to pick out the poorly drained greens. These greens were worst hit with diseases such as brownpatch, dollar-spot, and pythium. There was also considerable injured turf on poorly drained areas apart from the effects of fungus diseases. Poa annua was the first grass to disappear from the effects of poor drainage. In many cases the turf in low areas in greens was entirely drowned and failed to recover. It was found in poorly drained areas that the soil had remained saturated for days at a time and that the roots had died. After the turf had become thin it was usual for a heavy growth of algae to complete the injury. It was found that light applications of bichloride of mercury effectually held algae in check.

A great deal of secondary injury followed these hot wet spells. Apparently in some cases the grass continued to live with little or no root system so long as the soil retained sufficient moisture at the surface. In a good many cases greenkeepers felt that the soil contained enough water and failed to watch the greens closely. Symptoms of the need of water shown by the grass passed unnoticed and the grass died. Greenkeepers can recognize the peculiar metallic or lack-lustre shade that grass takes on before wilting. They know the danger of the darkened blades

and the failure of the blades to recover their erectness after being trampled. When these symptoms occur grass needs water and if this need seems unnatural perhaps an examination of the root system will explain. The grass on some putting greens showed these symptoms even though the soil had dried only to a depth of a little over one-quarter of an inch. An examination of the root system of this grass showed that the roots were practically dead and had ceased to function. Greenkeepers should realize that grass roots will not survive lack of oxygen (induced by saturated soil conditions) in hot weather and should examine the grass roots at certain times to ascertain their condition. If the root system is shallow, withered and brown, or if the feeding roots have died, the grass will probably depend mostly on surface water until it grows new roots, and hence it may be necessary to water frequently even though the cause of this condition was too much water.

Most of the trouble from too much water can be eliminated by proper drainage and soil structure. Topsoil should be of a sandy loam nature and should contain ample organic matter. Such a soil will hold well-played shots when dry and will absorb plenty of moisture to a good depth when watered. The greens should have proper surface drainage, and it is more important still that they have adequate underdrainage. With good tile underdrainage in a putting green the watering problem becomes much simplified. When the underdrainage functions, free water will not remain in the soil long enough to affect the roots adversely.

The usual amount of turf around the high edges of the greens was damaged this summer. The direct cause of this brown and dead turf on the edges of the greens is lack of water. The indirect cause is poor construction and maintenance. In constructing a putting green the builder often economizes on soil and does not carry the slopes sufficiently away from the green, with the result that the turf at the edge of the green dries rapidly. The slopes on and away from the greens should be very gentle. If a high mound on one corner of the green is desired the putting surface should slope up to it very gradually and the same long slope away from the green should be built. Frequently little if any good topsoil is put at the edges of the green or if so, the layer is too thin. In other cases where there are steep grades the good soil has washed towards the lower portions of the green. From lack of soil containing enough sand and organic matter, the edges become packed and the soil so firm that water runs off. So little water is absorbed on these high edges with ordinary watering of greens that they become too dry and the grass dies. This condition can be improved without rebuilding the green by spiking the hard dry edges and by working a soil high in organic matter and sand into the spike holes. This treatment followed by gentle hand to the soil through the hard surface crust. This treatment followed by gentle hand watering to allow the water to be absorbed will do much to prevent the unsightly loss of turf each summer from edges of putting greens.

Insects.

There was considerable injury to putting turf throughout the country from various species of cutworms. There was, however, no need for appreciable injury from this source. When cutworm injury was bad on greens either the greenkeeper had been negligent or did not know how to control this pest. In spite of the large amount of cutworm and sod webworm injury in 1930 when hundreds of greenkeepers learned how to control these pests, there are still greenkeepers who do not understand the difference between controlling white grubs and cutworms. In the case of white grubs, Japanese beetle grubs and earthworms, the grubs or worms eat the soil and the poison must be in the soil to be effective. Cutworms and sod webworms, however, do not eat the soil but feed on the blades of the grass, particularly the lower and tender part of the blades, and therefore the poison should be left on the blades and not washed off and into the soil. Lead arsenate is most useful and economical for the control of both these types of pests. In treating to poison cutworms, lead arsenate should be applied 1 lb. to 1,000 sq. ft. It is best applied by mixing it in just enough water to cover the green evenly and spraying it on the turf. The spray tank should be kept agitated while the arsenate is being applied to keep the chemical in solution.

Repairing Injured Greens.

When turf is lost from putting greens in the summer it is always a great problem to get it back quickly. *Poa annua* will return with the cooler weather in the fall from the many seeds the plants have de-

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The wide general use of Milorganite is not the result of chance, accident, or the experience of one man or one club.

•Milorganite has become the leading golf course fertilizer as the result of years of experience and hundreds of tests carried on by greenkeepers throughout the land.

INSURE GOOD FAIRWAYS WIT ORG

WAYS INCREASE CASH INCOME

Hold Old Members, Attract New Members and Guests

ADD INCOME FROM EXTRA GREEN FEES

- These days nothing is more important than good fairways. Two thirds of all golf is played on the fairways. So many things are competing for the golfers' dollars that they will not patronize a course where the fairways are spotty, mangy and ragged. Loss of playing members carries with it the loss of dues and the loss of guests' green fees.
- No matter what the cost you can't afford to let your fairways run down if you are going to keep your course open.
- Good fairways are not an expense item—they are profit makers. Good fairways are easy to maintain with a common-sense program of seeding, watering and fertilizing.

THAN ANY OTHER FERTILIZER

- Greens committees and greenkeepers wanted results. Milorganite gave superior results in test after test.
- For better turf at lower cost with less hard labor and less expense for seed — make the test on your own course. Milorganite will give superior results on your fairways and greens.

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FALL FEEDING

Milorganize fairways early this fall. Benefits obtained during the fall will carry over to next spring, for Milorganite does not leach during the winter.

ORDER NOW MILORGANITE PRICES WILL ADVANCE JANUARY 1, 1934



posited in the soil. It is however an excellent idea to get areas of dead *Poa annua* replanted with bent so that the same trouble is not so likely to re-occur.

When dead areas are found in greens, whether from *Poa annua* or various varieties of bent, the greenkeeper must repair the damage as quickly as possible. If a sod nursery has been maintained, the injured grass can be quickly resodded and the green will soon be in shape again. If there is no sod nursery and sodding is desirable a possible method is to cut the sod from the side and back edges of the green to repair spots towards the center of the green; the bare areas left at the edges can then be replanted, and since they are far from the cup they will cause little concern to the players.

When areas are to be replanted, it is extremely difficult to get even a fair catch during the hot summer weather. The young plants from seed can not stand the heat and soon curl up and die. There is more chance of getting bare patches filled during the summer from plantings of stolon bent than seed. The stolons should be slit into the bare areas and covered with light topdressings. A little bent seed can be sown with the stolons and if it lives, so much the better, but in any case the stolons will usually catch and gradually cover over the area. Needless to say the stolons should be planted closely together for quick coverage. But in any case replanted areas are slow to form turf, are unsightly and offer a poor putting surface, so that no greenkeeper should be without at least a small turf nursery.

Caring for Fairways.

Golf course economy is probably affecting the fairways on golf courses more than other parts of the course. As a matter of fact the rough, traps, tees (except on one-shot holes) and to a certain extent even putting greens should be neglected before the fairways. There are too many golf clubs around the country that, in spite of fine clubhouses, furnishings, swimming pools, etc., play winter rules on the fairways during the summer. Many clubs excuse themselves by saying that they intend to install fairway water systems, and are not spending any money on the fairways in the meantime. It is admitted that water helps to a great extent and many golf courses throughout the West would have given a lot for water on their fairways this summer. However if the fairways have a solid deep turf during the spring and fall it is not a great hardship to play on such turf even if it is brown and dry for an occasional summer month. When there is a good turf the lies are still good even though the grass is brown. Healthy fairways always come back quickly after a drought. There is seldom a soil so rich that good fairways may be maintained from year to year without fertilizer.

The fall is the best time to fertilize and when fertilizing is done it should not be skimped. A double rate, that is, two full rate applications applied during the early fall in one season, will fill in the turf and give much more permanent fairway improvement than the same amount of fertilizer applied in two years.

The clubs that are waiting for fairway water systems and meanwhile letting their fairways go to pieces will perhaps be surprised to learn that they will have to fertilize more heavily with water than without. Grass is not made up entirely of water and plant food cannot be taken from the soil forever without returning it. Watered grass grows faster and depletes the soil of plant food quicker than unwatered grass. Watered fairways without annual fertilizing soon fill in with clover, annual grasses, and weeds.

The Green Section Bulletin of November, 1931, published the results of extensive work on the effect of height of cut on bluegrass fairways. The results showed conclusively that the bluegrass had a much better root development, that it filled in thin spots more quickly and made a denser and more drought-resistant turf under high cut conditions.

Although the ideal height of cut is higher than present day golfers will allow, the custom of cutting fairway turf at 34 in. or less should be abandoned. If fairway turf is cut at 11/4 to 11/2 ins. the turf will become denser and the lies will be much better than on closely cut but thin turf. Sometimes greenkeepers cut fairway turf very close so that they will not have to cut so often. By cutting very close the stems are injured and hence the growth is set back. Nowadays it is possible to get fairway mowing equipment that will cut the fairways easily in a day. Golf clubs should supply the greenkeeper with adequate equipment and insist that the mowers be set for a sufficiently high cut even though the fairways may have to be cut every other day at certain times.

To Sell Christmas Golf Goods You've Got to Keep Plugging

By AL COLLINS

Pro, Indian Hill G. C., Kansas City, Mo.

O NE OF THE most difficult merchandising jobs a pro has is that of developing Christmas business. It should be. But its rewards are timely life savers to many pros. Christmas is out-ofseason for players north of the Mason-Dixon line. Only a comparatively few of them take vacations in the south or in California starting after the Christmas holidays, so the selling of golf merchandise for Christmas calls for a lively imagination of the far-off delights of warmer days that the pro must put over strong enough to arouse buying interest.

Frequently the point that works best is tactfully to remind the buyer—either husband or wife—that the suggested golf gift is definitely needed by the one to whom the gift is to be made, but it was passed up during the season because the house accounts were enough drain on the purse. However, whether to use this argument or that of deferred payments so the load of Christmas bills will be lightened is something that calls for the pro's own judgment.

The time to start planning a Christmas selling campaign is right now, before the bags are taken out of your shop at the season's close. Every professional who will inventory the contents of each member's bag in his racks not only has a helpful basis for his Christmas business solicitation but a valuable guide for his seasonopening operations in 1934.

What makes the Christmas business hard for the pros is that it must be gone after. It doesn't come near the shop. By telephoning to members' homes and at offices, by making personal calls to display samples and by writing personal letters making specific suggestions of the gifts and the price ranges, the pro stirs up business. It is a business that requires a pleasant but persistent follow-up. Very little business will be signed up on your first call. You will be put off for some reason or another but you have to arrange this so the way will be open for you to bring up the subject again.

First of all you have to become enthusiastic about Christmas golf gifts being a good idea for the buyers. When you get that in your mind and have enough industry and patience to sit right down at the telephone and stir up leads without becoming discouraged when you are turned down time after time, you are bound to make a good showing at a time of year that is a dead loss unless special effort is used. A lot of the fellows who have had bad seasons this year and who will be worrying in December how they will get through the rest of the winter can work this Christmas business hard enough to solve their financial problem.

But, as I say, the Christmas business is no push-over. Plenty of pros have tried it without success. Analyzing these failures, it seems to me that their cause, lies mainly in their unwillingness to keep right on the job and thoroughly develop the sales possibilities open to the pro because of his personal acquaintance with his members.

Christmas business is one of my hobbies and December has always been one of my best months. I have tried various sales ideas but in my opinion the one way to get the best results is by personally phoning each member's wife and the husbands whose wives or families play golf.

I start by listing what each person needs. All can use something—if not equipment apparel or balls, etc. Even a pair of nice socks nets a little profit. Of course, checking each bag will reveal that a club such as a sand blaster, a trick putter or something is missing.

Start phoning early in December, because the wives do their shopping early.

The holidays are the *only* time in the year that we have a legitimate reason for calling the wives. Nine out of ten are groping for ideas of what to buy and are grateful for my interest and suggestions. Many times I tip the husband off and he helps by dropping a hint at home.

There are two important things to emphasize. First, that anything selected can

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• Early in 1933, with the business outlook most discouraging, there were presented to this company several creative ideas in golf equipment, so outstanding as to challenge our courage and spirit of accomplishment. They came from the ranks of the professionals and from the creative laboratories of the Wilson-Western Company.

The advice of business counsellors was to delay putting these ideas into effect until times got better, but such a course would have been a disastrous one for the professionals who depended largely on the sale of golf equipment to earn a livelihood.

So we turned to the professionals themselves for advice—and what a reply we got! "Just give them to us," they said; "it's just what we need to lick this depression that's got us all down!"

The rest of the story is history. Wilson-Western, encouraged by the spirit of the professionals, brought out three revolutionary ideas—Ogg-mented Woods and Irons, Flex-gauged Clubs, and the new Thin-Cover Hol-Hi Balls. Each of them has gone over in such a decisive manner as to leave little doubt as to the wisdom of the aggressive policy which Wilson-Western elected to follow.

The officers and directors of the Wilson-Western Company want to make this public acknowledgment of the courageous spirit and wholehearted cooperation of the professionals which made this success possible, and to assure the professionals that Wilson will not only maintain its present professional protective policy but will, wherever possible, strengthen it.

> Very sincerely, WILSON-WESTERN SPORTING GOODS CO. L. B. ICELY, President

be exchanged in Spring if not entirely satisfactory. Second, that they can have plenty of time to pay me. They may be burdened down with expense and this often turns the trick.

I offer to deliver and in the case of sweaters, for example, bring a selection to the house at her convenience.

In the December 1st statements a small enclosure is good, although so early it is not promptly effective. However, it paves the way for your follow-up. Those I have used in the past are merely an announcement that I am "open for business." The leading manufacturers also have some little booklets that can be included but I doubt that many of them are worth the expense of a special mailing.

Phoning is tedious work and will take about six hours a day for about ten days (my membership is 350) but I figure it is "velvet" for then I haven't many club duties anyway.

There are, of course, many other angles to be worked. For instance, most of my members employ a number of people. These employees usually buy the "boss" somehing for Christmas. I have made more than one sale running up to \$100 through this source.

I am strong for the Christmas Sales idea. I have had assistants argue that it seems useless to do all this extra work when we will sell them in Spring anyway. However, unfortunately, I do not know most of the members' non-golfing wives and it certainly gave me a headache to see the new bags, etc., in Spring that were Christmas presents I didn't sell.

"TRADE-INS PAY',

Member Service Policies Build Market for Spencer Murphy

SPENCER MURPHY, pro at Glen Oaks G. & C. C., Great Neck, L. I., made 1933 a highly successful year despite generally adverse conditions. Murphy attributes the greater part of his sales success this year to his "trade in allowance" policy which permitted members to turn in used sets of clubs in part payment for new sets.

Spencer, like other wise pros, applies this policy only after he has made rather definite arrangements to sell any sets accepted in trade-ins and has been able to make all-around satisfactory appraisals of the sets offered as allowances.

COULD YOU USE AN EXTRA HUNDRED DOLLARS?

No, we are not running a correspondence school —we are not going to try to tell you just how you can become a financial success. We don't know whether you would make a success as a moving picture scenario writer and we don't care, but we do know this—that there has been a keen and intense interest in a number of golf items which Wilson has brought out at the tail end of the season: Ogg-mented irons, Ogg-mented woods, flexible shafts and the already famous thincover Hol-Hi golf ball.

We know this interest is at white heat. We also know that last year with items of lesser acceptance, many professionals through direct mail campaigns, personal telephone calls and even in some cases house to house solicitations of their members, found a very ready market for additional sales at Christmas time.

We suggest that it would be a smart idea for you to hook up this idea with this ready acceptance of the new Wilson items and cash in on it to your own profit this Christmas. We will help you in any way possible. If you want Wilson to assist you in arranging a special letter, just say the word. If you want to hear how some of the boys succeeded last year and what their methods were, we'll slip you the dope on request.

The whole thing is a natural. Why don't you nail it by making arrangements at once?

Wilson-Western Sporting Goods Co.

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We Have a Definite Plan for You-Why Don't You Nail It Today?

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