

must of necessity supersede Chilean sources as the arbiter of price levels in the world market for nitrogen.

"This is not meant to imply that Chilean production will cease or even sink to insignificant proportions. It may, in fact, actually increase, but the significant point is that it will have to follow and adjust itself to the world price level established by the attainable costs in synthetic production, instead of being able itself to determine this level solely with respect to existing Chilean deposits, traditional methods of operation, local labor costs, and the Chilean Government's necessity for revenue."

Although from a fertilizer standpoint the interests of golf clubs are chiefly centered in sulphate of ammonia, which is a byproduct of the coal gas and coke industries, the price of sulphate of ammonia was "always indirectly fixed by that of sodium nitrate," explained Dr. Cottrell. The anticipated decreasing costs in the artificial fixation of atmospheric nitrogen will therefore indirectly tend to lower the price of sulphate of ammonia.

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**Shade grasses.**—In the north the best shade grasses for turf are red fescue, fine-leaved fescue, and rough-stalked bluegrass (*Poa trivialis*). The first two are especially desirable for sandy or gravelly soil, but if sown alone they succeed even in clay. The last is generally the best in clays or loams. In the south the best shade turf is made by St. Augustine grass; this grass is started from stolons, as seed is not on the market.

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## A Golf Course Without a Water System

By W. C. Capron

The problem which we have been obliged to face at the Anaconda Country Club is not an ordinary one. To understand the conditions here it will be necessary somewhat to describe our community. Anaconda, Mont., is a town of 10,000 to 11,000 inhabitants. The only industry is a large metal reduction works employing about 3,000 men. This means that we are all working men and comparatively few receive more than modest recompense for our services; therefore the Country Club fees have had to be kept low or the membership would be extremely small. The Country Club was started 10 or 11 years ago, and the fees adopted at that time still maintain. They are: resident membership, \$25 initiation, \$20 per year dues; non-resident membership, \$12.50 initiation, \$10 per year dues; women's membership, no initiation, \$10 per year dues.

It was a struggle to keep alive up to about five years ago. Since then the club has been forging ahead rapidly; the course has been changed from 9 to 18 holes and many improvements made. At the present time the total amount we are able to spend on the golf course for both upkeep and improvements is around \$1,500 per year. With so small a sum, major improvements are impossible and we must use sand greens. We can not put in an irrigating system for our fairways. These considerations made it imperative that we find a grass which would grow without irrigation, other than that obtained from nature; one which would form a continuous turf, would not winter-kill, would grow on bare gravelly soil, and would spread.

The two grasses most common in this region are blue joint and

redtop. Both of them grow in bunches and not continuous and are therefore totally unsuited for a golf course in this region.

After a number of years experimenting and observing we found that the long-leaved salt grass met all the conditions enumerated above. Its color is not particularly pleasing and it turns brown early in the fall, but it forms a continuous turf, spreads rapidly with constant cutting during the summer, and simply will not kill. The farmers despise it on account of the difficulty in removing it. About four years ago we began to send men out each fall to gather what they could, put it in sacks, and store it until spring. The seed is very fine and blows away with the least wind.

Early in the spring we lightly harrow the worst parts of the fairway, seed these places by rubbing the grass to separate the seed, brush, drag and roll, then trust to nature. Two years ago we raised \$300 by subscription and spent it turfing the approaches to the greens. To make the money go as far as possible we placed this turf in strips—12 inches of turf, with 6-inch spaces between, 50 feet out from the green, knowing that these spaces would fill in within two or three years. This proved very successful, these approaches being nearly solid salt grass turf now. The salt grass is now very much in evidence on all our fairways, and on a few of them covers probably 25 per cent of the fairway.

In 5 or 10 years our fairways will be covered with a continuous turf of salt grass and then we will have one of the best and, because we have a clear mountain stream running through the course, one of the sportiest golf courses in this part of the country.

(In these days of elaborate golf courses with their expensive equipment it is always instructive to learn what some clubs are able to accomplish, with limited facilities, even under extremely adverse conditions. After reading the articles in this BULLETIN on watering turf one is likely to gain the impression that a prerequisite of a golf course is an abundant supply of artificial water. To disprove this we include Mr. Capron's interesting account of what has been done at the Anaconda Country Club to meet conditions which are decidedly unfavorable to ordinary turf grasses—and all without the aid of artificial watering. The game of golf, we understand, passed its somewhat obscure yet doubtless sporty infancy in cow pastures, where machinery and other expensive equipment were not dreamed of. Today some individuals think of golf only in terms of palatial clubhouses and vast expanses of perpetual green. Others apply the old adage "where there's a will there's a way" and "play the game" in more ways than one. After all, the old game is much the same. As'ide from the question of turf and artificial watering, does it not raise the query, What is true sportsmanship?—EDITORS.)

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The direction of a fairway is governed by a number of factors, chief of which are perhaps topography and the general layout of the course. It is generally considered, however, that fairways extending north and south are to be preferred to those extending east and west. The heaviest play on a golf course is perhaps in late afternoon, and then it is that the sun shines directly down an east and west fairway, much to the annoyance of players.

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Caddies' shelters and parking spaces should be kept in the background, or screened with trees or shrubbery, as much as possible. Let emphasis be placed on the natural features of the golf course, and let the accessories be concealed.

## AS WE FIND THEM

One of those helpful souls, Mr. Average Golfer, remarked, "Every time I come out here to play someone is in the way mowing, weeding, top-dressing, applying chemicals, or in some way puttering around. The grass on this course is good enough for anyone to play on. So why don't they let it alone?"

The long-suffering G. C. C. replied, "Did it ever occur to you that the reason why the grass on this course is good enough for anyone to play on might be due to the fact that someone is always puttering around on it? Every time you come out here you probably change your clothes and have a meal. You look sufficiently well groomed and nourished. Why don't you let yourself alone and quit changing clothes or eating?"

One old applicant for membership in the Hole-in-One Club was about to be elected but was blackballed by a worm-cast. Instead of going after the worm he looked up the green committee. Finally, one of the green-committee members had a chance to speak. "Aren't you one of the members of the self-appointed economy committee? Seems to me I remember hearing you on several occasions object to any additional expense for 'frills' such as worm or grub eradication. We thought you believed in keeping things as nearly as possible like nature provided them.

"You know, Dame Nature just loves to put worm-casts on the lines of long putts; and if she gets a chance to slip one in the way of a hole-in-one, so much the better. Just think how much fun Dame Nature must have watching big men chase those little pellets over green fairways and through dense thickets. Can't you hear her chuckle when one of her big 'masterpieces' explodes because her humble earthworm makes it necessary for him to take two shots to a hole—especially when that particular 'masterpiece' heretofore championed the cause of earthworms in the name of economy?"

Another locker-room reformer wanted to know, "Why do we use all those chemicals on the greens here? The fellows over at the Clover and Dandelion Country Club tell me we are getting ourselves in for a lot of trouble. They admit our greens look better than theirs, but they say we will suffer for it later."

His G. C. C. asked him if he had ever listened to a tramp discourse on the subject of frequent baths. "Baths will get you into a lot of trouble. They may make you look a little better for a time, but you will suffer later."

One well known observer of the human race concluded, "A fool is born every minute."

Had he been a G. C. C. he undoubtedly would have added, "and each seems born for the great purpose of telling the green committee how to run his golf course."