

An exceedingly troublesome perennial in lawns is buckhorn. This weed has seeds that will live in the soil a long time. Neither do they decay when too wet, as most seeds do. Then, whenever conditions are right, they begin to grow. The seeds of buckhorn are of about the same size and weight as those of red clover, and for a long time they could not be detected among grass seeds. Finally, someone discovered that buckhorn seeds could be separated from clover seed by moistening all the seeds and mixing them with sawdust. The buckhorn seed has a mucilagenous covering which the clover does not have, so that, when damp, the weed seed sticks to the sawdust and can be sieved out of the other seeds.

Heal-all, the seed of which is found to some extent in mixtures, is a weed that reaches a height of one or one and one-half feet when grown. It is likely to form solid patches, for it spreads underground, and it is a perennial.

A greenkeeper should know what the sow thistle looks like, for greens are almost sure to be infested with this weed at some time. It maintains itself in pastures, where it is seldom eaten by animals, and the seeds are carried for miles by the winds. It is a bristly, leafy-stemmed, coarse weed, bearing yellow flowers in summer.

Seeds of the Canada thistle are also conveyed by the wind and may prove a

nuisance. This weed cannot maintain itself in grass land as well as in a field, but it sometimes gets started somehow.

In England, keepers of estates sometimes include yarrow in a seeding of grass. But in this country it is a bad grass land weed. It should be dug up wherever found and never allowed to go to seed.

Many grass seed mixtures contain ox-eye daisy seed, and in some places this becomes a pest. Yellow trefoil seeds are common, too; they look so much like alfalfa seeds, it is almost impossible to tell them apart. Although an annual, yellow trefoil is a persistent weed, and it has the same mean habit as crab grass and chickweed of lying close to the ground. The seeds of white cockle resemble those of white clover. This weed spreads entirely by its seeds. It is biennial, that is, it requires two years to produce seed.

A persistent little vine with a purplish blue blossom, called Creeping Charlie, trails along the ground. Its seeds are seldom seen, but it gets into the greens in some way, and it will run out the grass in those areas where it appears unless it is controlled.

"Since so many impurities are likely to exist in seeds that are mixed commercially, it is usually better for greenkeepers to buy grass seeds separately and mix them themselves when a mixture is needed," is Prof. Stone's belief.

California Greens Problems Cover Wide Range

By ARTHUR LANGTON

A WORK on California greenkeeping if done properly would present a symposium of all the problems which harass greenkeepers in all parts of the world. Added to this there would be included a goodly number peculiar to the Golden State which it has acquired in the course of time. This in spite of the fact that the region is one notorious for its equable climate. What is given here is merely a survey of conditions as they are and as they have developed.

In the old days, about ten years ago, the state was an ideal place for the greenkeeper. He could throw down some grass seed, almost any kind, and await developments. If he was located in the south he added as much water as he could obtain conveniently. Usually the seed came up without any more attention, thus justifying the somewhat extravagant statement fostered by enthusiastic chambers of commerce that "anything will grow in California." Almost anything will grow in

California, and well, too; unfortunately, this applies as forcefully in regard to weeds, rodents, diseases, and other pests of the fairway and green. It is true that the state has no extremely cold weather to combat, but it is also true that the grass never gets a rest and that the pests mentioned above have twelve months in the year in which to promote their depredations.

But all these things did not matter in the old days. Golfers, largely tourists from the east, were so delighted with the idea of playing the royal and ancient game while a blanket of snow covered their home course in Kokomo that they were wont to overlook such details as Bermuda greens and fairways, dried out grasses, perpetual winter rules, and the like. It was golf and they were thankful for it.

Players Get Fussy

There came a time, however, when the blandishments of California real estate agents, state publicity bureaus, and native sons prevailed upon easterners to close or transfer their businesses and move to the west coast where they could have twelve months of uninterrupted golf. As residents with more time on their hands these men began to take more detailed notice of western courses and found them wanting in many respects when compared to their eastern counterparts. Especially were faults found during the late summer months. Therefore, because golf tops all earthly things, it behooved the newcomers to make investigations, to hire experts, and to spend money in order to make California's courses come up to the eastern standard.

With this more lavish outlay, the state's greenkeepers began to show results. Greens became smoother and stayed that way for a greater length of time. Fairways were improved to such an extent that one could be reasonably sure of getting a playable lie on them. The war against Bermuda grass began with the introduction of finer grasses which made for better playing turf, but which wilted under unceasing weeks of play and hot sun. This inability to stand up necessitated the introduction of powerful artificial stimulants, which created an abnormal, unbalanced condition in the soil, making it a parade ground for brown patch and other insidious grass ailments.

Need Different Method

But out of this innovated confusion of agrostis, ammonium sulphate, hoseless ir-

rigation, and power greens mowers, one thing early became apparent: eastern greenkeeping practices were not and could not be those of California. Conditions in the state were too varied and different. California is not solely a desert waste, a tropical jungle, a mountainous ridge, a pastoral plain, or a rolling plateau; it is an interesting combination of each with some interesting features of its own thrown in for good measure. There are courses in the state which incorporate several of these features and, incidentally, all the accruing problems of course maintenance.

An attempt to make a blanket description of greenkeeping in California therefore would be futile in view of what has been told. The state, which ranks fourth in the nation, has its approximately 250 courses distributed among seven distinct geographic or physiographic provinces: the Southern California coastal plain, the coastal mountain region, the Great Valley, the Klamath-Siskiyou region, the volcanic plateau, the Sierra Nevada, and the Great Basin. A few facts about these provinces will enable one to have some idea of the variety which is California.

Surveys California Sectors

Taking them in no particular order, the Southern California coastal plain shall be considered first. This is the southwest corner of the state and is the only plain not separated from the ocean by a range of mountains. For this reason it is kept comparatively cool in the summer months. The region centers about Los Angeles and is the scene of the famous midwinter tournaments. It is here that most of the money has been spent on golf courses with the result that many fine clubs are being maintained in spite of the paucity of rainfall. It has been said by an Eastern authority that at least one course near Los Angeles has the finest greens in the world. However, Easterners will call this statement pure propaganda.

Then to be considered is the coastal mountain region starting at Santa Barbara in the south and proceeding north along the coast to a point above San Francisco Bay. In the populous and fertile region of this province are many fine courses of championship caliber laid out so as to take advantage of the cooling ocean winds, rains, and fogs. In this region is located Del Monte with its famous Pebble Beach course, venue of the 1929 U. S. Amateur. This is one club which incorporates the

Pacific ocean in its layout, a truly brilliant course; not to neglect mention of Cypress Point nearby.

More Than 500 Soils

The Great Valley, which occupies the major central portion of the state, has a legion of more than 500 distinct varieties of soil washed down from the mountains which surround it on all sides. There are many golf courses in this great farming territory, many of which are of the sand green variety, although summer heat precludes year round enjoyment of the game.

The Klamath-Siskiyou region in the northwest corner of California is comparatively unimportant from a golfing standpoint. This is a rugged lava-strewn region which receives plenty of moisture, but the nature of the land forbids many golf courses. This is essentially a mining area.

In the northeast corner of the state is a huge volcanic plateau, the rockiness of which forbids any tilling of the soil. It is almost devoid of golf courses.

The Sierra Nevada mountains are a diastrophic block which constitutes the greatest single mountain range in the United States. In it there are 30 peaks with altitudes exceeding 13,000 ft. One of these is Mount Whitney, the highest point in the nation. Some of the mountain resorts here have their own golf courses, but they are necessarily short for the most part.

The Great Basin located in the southwestern states has a portion of its edge in the southeastern part of California and contains such picturesque but very dry features as Death Valley, the lowest and hottest point in the United States, the Mohave Desert, and the Colorado River basin. Not a territory conducive to golf but one containing a surprising number of nine-hole courses with sand greens which have their earnest adherents as does the most verdant club although they may not have a blade of grass upon them.

Force Feed Is Schedule

It may be seen that greenkeeping in California has a range as great as that of the state itself with hundreds of new problems demanding a solution every day. The vaunted climate is really an enemy of the greensman as has been hinted already. While Eastern courses are recuperating from summer wear beneath a foot or two of snow, the California clubs are pounding along on the same old force-feed schedule. A few of the private courses are able to shift play to temporary greens for a short period during the year; others quite con-



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"You must avoid fatigue," the doctor told Curtis W. Willock of Pasadena, Cal., so Mr. Willock bought this electric car and thus continues to golf and at the same time obeys the doc's command.

sciously allow the grass to become dormant and disregard the complaints of the players. But the problem of the public course is a harder one. Usually it has no room to spare for temporary greens and must remain open at all times. If it allows the turf to deteriorate in any way players refuse to come and the precarious existence of the course is undermined further.

It is a hard state for the greenkeeper. The public is now demanding fine grasses not indigenous to the region in which the courses are situated. Wages are comparatively low to the Eastern standard. There has been a scarcity of experimental stations of any kind and such bulletins as are obtainable nearly always apply to Eastern conditions. Consequently greenkeepers have had to feel their way in obscurity using a trial and error mode of procedure. In Southern California many of the greenkeepers get together on one of the courses once a month to discuss ways and means of confronting the various enemies of turf culture. They also have a monthly magazine published for the same purpose. The one thing which this group has found to dominate all others is that fixed treatments are prescribed for one set of conditions which have only a remote chance of obtaining locally.