pounds, and we use ¾ inch hose, as many courses in the North do.

Through the summer season, we have to water twice a day, early in the morning and again in afternoon, never watering while the sun is hot. In the winter the greens may be watered any time a day, night watering being preferable so as not to interfere with play.

Top dressing we apply to the greens approximately every three weeks to a month during the winter while they are under heavy play. During the summer rainy season, June, July and August, on account of washes they have to be top dressed oftener.

When ordinary soil is used, we mix with every two yards to a green, three pounds of sulphate of ammonia to every 1000 square feet of green to be covered, and this dressing must be thoroughly watered in and kept moist until sulphate shows results, to prevent burning the grass. Our compost mixture is 1/3 yard of well rotted stable manure to 2/3 yard of dark loam soil.

We have a plentiful supply of laborers, and keep twelve men all the year around, at from $3.50 to $4.50 a day.

Greenkeeping Asks for the Best You Can Give

One of the worst animal pests we have is the Salamander, a burrowing animal somewhat on the order of the northern gopher, and we find the easiest method of eradication to be traps placed in the burrows. Army worms, hybernating worms, grubs and Hessian flies keep us busy at times with copper lime in dry form or arsenate of lead in liquid form, and so far their depredations have been held pretty well in check.

While sometimes our winter grass, red top and Italian rye, is affected to a slight degree with Brown Patch, Bermuda grass is immune to this disease. From all I hear, we have no more drawbacks for the greenkeeper in this section of Florida than he finds in the Northern states, and I guess greenkeeping means about the same thing the country over, a good knowledge of individual soils, climatic conditions, and how to grow and maintain the kinds of grass that are suited to any one given locality. No job holds the interest of the man at the helm unless it holds difficulties to overcome, and if a man sticks to the game of greenkeeping and makes a success of it, there is only one answer to it,—he loves his work. There are many easier ways for a man to make a living, but the easy road, even though it leads to success, is seldom the one that gives the most satisfaction. I am only twenty-four years old, but down here in Florida, where thousands of dollars have been made over night by boys a lot younger than I am, I am not sorry that I have stuck to keeping greens.

The Permanent Beauty of Concrete

By JAMES E. FOSTER
Portland Cement Association Educational Bureau

IN order to cut the time they must devote to structural improvements (such as walks, bridges and fences) to a minimum, many greenkeepers are using concrete extensively on the courses under their supervision. Its permanent qualities, together with its resistance to climatic conditions make it easily adaptable to the needs of the greenkeeper.

James E. Foster
Portland Cement Association
Educational Bureau

Concrete Gives Service

Consider first of all the matter of steps and of sidewalks. They are constantly used and are exposed to changes in temperature. Naturally, they must have outstanding wearing qualities. The action of rain and of wind, of zero weather, and of the sun's unchecked rays on a hot summer day must not impair their quality. Concrete meets these requirements.

Artistic Possibilities

The broken down bridge crossing a stream is a relic of bye-gone days where this material is used in making bridges. The smallest structure can be as well built as a gigantic span weighing thousands of tons. Concrete can be colored; and since it can, in its plastic (or gluey) state, be put into any shaped forms, it is adaptable to numerous design schemes. Even rustic beauty, which harmonizes so well with the natural surroundings of a golf course can be successfully and permanently reproduced with this material.

Such garden ornaments as fountains, bird baths, sun dials, flower boxes and similar pieces, when made of concrete, demonstrate the artistic possibilities of this material. As with benches, these fixtures, because of their weight, should be set on very firm ground or on flat slag supports.

Extremely ornamental fixtures, such as bird baths, benches and sun dials are manufactured by several products plants, located in different parts of the country.

Preventing Washouts

By the use of dams, piers and abutments, erosion can be retarded and changes in the stream channel can be

prevented. Natural action often results in serious topographical changes, and while the process is slow, it is inevitable unless counteracted. By placing slabs at proper places, the greenkeeper can prevent much natural damage to the property under his care.

When piers and abutments are used, they should extend at least one foot below the water bed, so that the ground cannot be washed away from underneath them. The sides of dams and similar structures should extend a fair distance into the stream's banks as a safeguard against the water making a channel around the slab.

Permanent Fence Posts

Concrete fence posts have come into widespread use because they do not rot, they do not burn, they do not require replacing, and they always present an attractive appearance. As a rule, these posts are from seven to eight feet in height, with a rectangular cross section of 4 by 5 inches at the bottom, which tapers to 3 by 4 inches at the top. Other shapes and sizes, however, may be used. The post may be round, or oval, or triangular, or octagonal—in fact, it may conform to any shape within reason that is desired.

When fence posts are made, forms are required. There are a number of these on the market, which are made of steel, and which can be secured in a large variety of forms and sizes. While a skilful person can often make his own forms of wood, one who is not "handy with tools" should purchase these forms ready made. To insure strength bars of steel, called reinforcement, must be placed in the forms before the concrete is placed. These reinforcements run the entire length of the pole.

Expansion Joints in Sidewalks

When sidewalks are laid, joints should be made at regular intervals to allow for expansion. These may be construction joints, which are from four to six feet apart, or expansion joints, which are found every fifty feet. Construction joints, as their name implies, are those which are naturally made during the laying of the concrete. A batch is placed, and a sheet of steel is put against it to keep it from spreading. The next batch is then placed, and when the concrete has set sufficently to remain firm, the steel is removed. In making these joints, one thing should be remembered: have them perpendicular to the edge of the sidewalk.

Expansion joints are grooves between slabs of concrete. They are in sidewalks from one-half to three-quarters inch in width, and are filled with tar, asphalt or some other material of a plastic nature.

Both expansion and construction joints are separate distinct units. They are not mere surface indentations, *but go the entire depth of the slab.* Perhaps this point can be made clearer by saying that a sidewalk properly constructed is not a single strip of concrete, but a series of slabs, set end to end.

Be Careful of Your Mixture

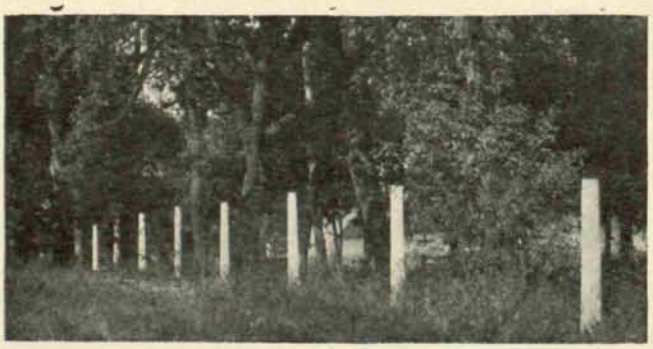
If you are making the concrete yourself, remember that the less mixing water used, the stronger will be the resulting concrete. Laboratory tests have proven conclusively that *too much water weakens concrete,* and inversely, that the less water used, the better. The old idea that concrete must resemble a thick soup is erroneous. Concrete must be plastic, but it must *not* be sloppy. Add enough water to your cement, sand and crushed stone to make a workable mix, but do not add any more.

Concrete May be Laid in Winter

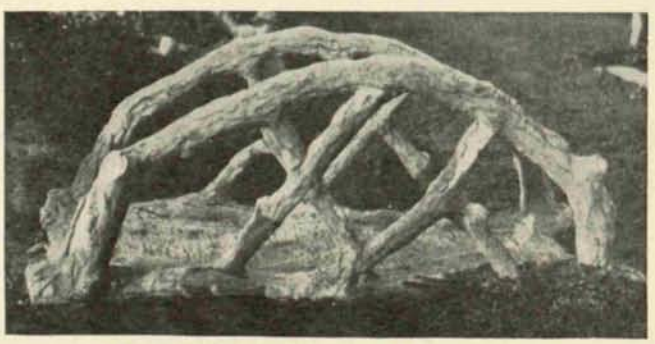
Work with concrete can be done as well in winter as in any other season, if proper precautions are taken. There is a false belief to the effect that warm weather is necessary for placing this material. Numerous skyscrapers, warehouses and other large structures erected when the temperature was below zero disprove this fallacy. If you wish to make some improvements with concrete this winter before your club opens in the spring, go to it.

When work is done in winter, the water and the aggregates (stone and sand) should be heated, and the concrete, after it is placed, should be kept from freezing for at least two weeks, so that the first stages of curing will not be hampered. A good plan with sidewalks is to cover the concrete with canvas, and then place a heavy coating of manure or straw over this. Unless the weather is extremely cold, this protection will suffice.

If you are planning to add any improvements to your course before the spring opening, now is the time to get busy. By starting now, you can, without crowding yourself, have your club in perfect order in plenty of time for an early opening.



Concrete Posts Like These Make Even the "Rough" Seem Attractive



Who Would Guess that This Bridge is Made of Concrete?