

Fairway Treatment at Baltusrol

By R. Avery Jones

The Baltusrol Golf Club, at Short Hills, New Jersey, has two courses. Five of the fairways on the present course were part of the original Baltusrol course, and they are about thirty years old. Six of the other fairways are on ground that had been cultivated or cropped for hay. The remaining portions of the two courses are built on what was a wooded foothill over which all the surface water of Baltusrol Mountain had flowed for generations. The soil on the upper course is clay, with numerous small areas of gravel mixed with a very fine red sand, such as brass moulders use. The lower course is stiff clay. In the oldest fairways velvet bent predominates, and in the new fairways this desirable grass is increasing rapidly.

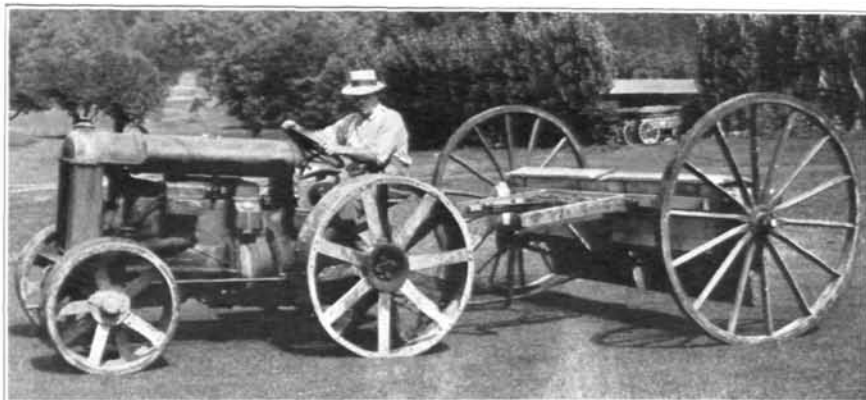
When the change from an 18- to a 36-hole course was made, nine years ago, red fescue was used liberally; but the soil proved unsuited to this grass at that time. Though hardly discernible five years ago, the red fescue is now however showing up rapidly and thriving, due no doubt to the use of fertilizers having the proper reaction.

In 1923 winter rules were played, for fairways were poor. During the winter of 1924 about 1,000 tons of fresh cow manure and 2,000 tons of soil were applied to the fairways. The soil was taken from a nearby field of about six acres. This field had been dressed with 100 tons of barnyard manure early in the fall of 1924, and the ground plowed, reseeded, and disked several times. During the winter this soil was taken to the fairways and spread, the dressing being about one-half inch thick. The cow manure was next applied. The golf course resembled a busy farm until spring. Regardless of frost or snow, the work went along. No seed was used. In the spring, chain harrows were brought into play, and the fairways were cleared of litter and stones. In 1925 the turf was vastly improved. Special attention was nevertheless given to the poorer areas. Turf in the rough was mown to fairway length and taken to sod steep hillsides and bad spots in the fairways, and additional soil was added where needed.

In 1926 the National Amateur Championship was played at Baltusrol. The same year a water system was carried to nine of the fairways, which helped much in improving the turf, and the system of patching with sod and top-dressing with soil was continued.

During these three years sulphate of ammonia had been used on the greens with good results, and in the fall of 1926 the first application was made to the fairways. The difficulty of applying sulphate of ammonia to large areas is well known. The writer has not yet seen a machine capable of applying such highly concentrated fertilizer evenly and lightly enough. The nearest approach to the desired machine is the one here illustrated. This machine will distribute as little as 100 pounds of sulphate of ammonia per acre, but the distribution is spotty. The difficulty can be entirely overcome, however, by applying the fertilizer mixed with cottonseed meal. At Baltusrol our best results have been obtained with 500 pounds per acre of cottonseed meal and 150 pounds of sulphate of ammonia. These two fertilizers are thoroughly mixed before being placed in the hopper of the machine. The machine is drawn by a tractor, which travels at a rate of about five miles per hour. By this method a fairway can be fertilized in about the same time as it would take to mow it with a three-

unit gang mower. If reasonable care is exercised in mixing and applying these two fertilizers no burning results. Some burning will however occur if the mixture is applied when the grass is wet with dew or rain.



Side and rear views of tractor-drawn fertilizer distributor used at Baltusrol Golf Club for applying a mixture of sulphate of ammonia and cottonseed meal.

This system of fertilizing was not carried out with sufficient care to warrant definite conclusions as to just what proportion and quantity give the best and most economical results. The greatest attention was given to the obtaining of even distribution and to the avoidance of burning. Some fairways were badly burned during the experiments, but they recovered in two weeks. The yellow stripes turned dark green in a month, and can be seen to this day. The most marked effect of this fertilizing is the remarkable increase in the finer grasses, the bents and fescue, and a decided decrease in the quantity of clover.

As to the frequency of application, this has to date been governed entirely by the needs of the turf; but the time has now arrived when a uniform system can be employed.

Tees are fertilized by top-dressing with soil and sulphate of ammonia. They are never reseeded, but are patched when necessary. On busy courses, seed has little chance on tees.

Seed is not used on the putting greens. Velvet bent sod is taken from the fairways when patching is necessary; and these occasions are rare.

On steep hillsides subject to wash, the use of sod is the only solution on our soil. This takes time, and is expensive; but the result is immediate and usually permanent.

Controlling Fairway Weeds with Sulphate of Ammonia

By Joseph Valentine

Sixteen years ago the fairways of the east course of the Merion Cricket Club, Haverford, Pennsylvania, were seeded with a mixture of Kentucky bluegrass and South German mixed bent. The following year the fairways of the west course were seeded with the same mixture. Our fairway fertilizing program then included the application of bone meal, mushroom soil, nitrate of soda, and some limestone especially where we believed the soil to be acid. In 1920, eight years ago, our fairways were covered with crab grass, goose grass, and clover. In the latter year we discontinued the use of nitrate of soda, and in its place began the use of sulphate of ammonia. The weeds in the fairways have since been reduced about 80 per cent, and the clover almost 90 per cent. In fact, there is practically no crab grass in our fairways at this time. We expect to have all the weeds and clover completely eradicated within the next few years.

This year, for the first time, we have also used activated sludge on our fairways mixed with arsenate of lead at the rate of 500 pounds of the sludge and 40 pounds of arsenate of lead per acre. The arsenate is used as a grub control and also to eliminate chickweed, which has started to appear prominently on some of our fairways. Last year we used arsenate of lead on our putting greens, applied mixed in top-dressing at the rate of 2 pounds per 1,000 square feet of surface. We did not have to remove a single plug of chickweed from the greens, as had been necessary previous years, and very little of the so-called fall grass appeared on the greens.

Briefly, our present fertilizing program for the fairways is as follows: Late in the fall, in November or December, we top-dress the fairways with mushroom soil. Early in spring, about March, we apply sulphate of ammonia at the rate of 150 pounds per acre. Late in May the activated sludge mixed with arsenate of lead is applied. The first rainy day in July or August another application of sulphate of ammonia is made, and about the middle of September still a third application. The sulphate of ammonia is broadcast by hand, often mixed in compost to give more bulk. In making the midsummer and September applications during periods of rain, the men are sent out in raincoats. The rain washes the chemical off the leaves of the grass and into the soil, and thus prevents burning of the turf. This method does not affect the play on the course since the top-dressing is applied when the course is least used. The cost of the top-dressing, including the material, screening, hauling, and spreading, is about \$3.75 per ton. The sulphate of ammonia is applied at the rate of 150 pounds per acre. The analysis of the activated sludge is moisture 3.02, nitrogen 6.17 (equivalent to ammonia 7.49), and phosphoric acid 2.03. We fertilize only the areas of the fairways which are most used, such as where the drive is supposed to drop, and the approaches to the put-