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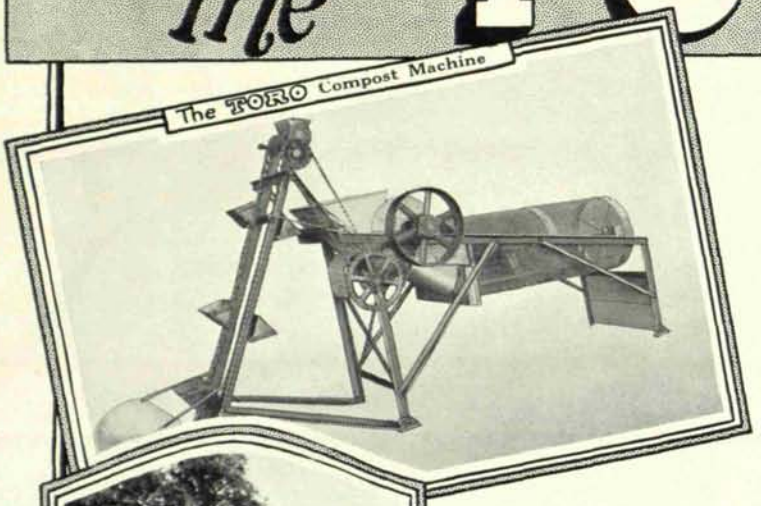

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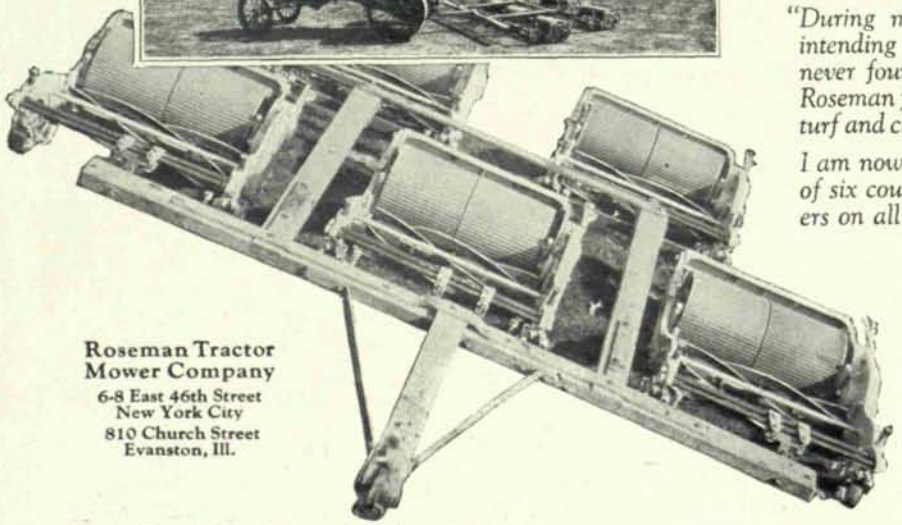

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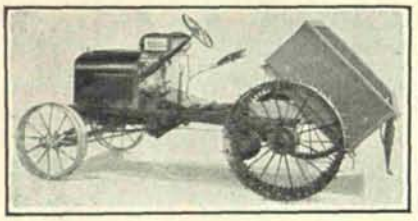

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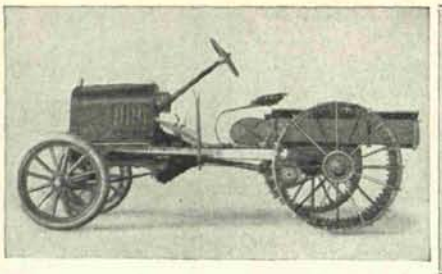

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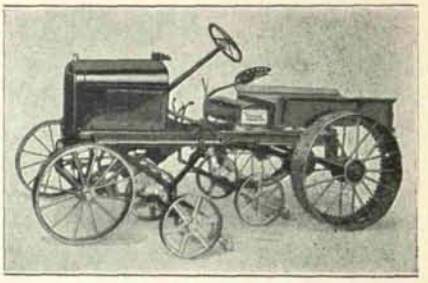

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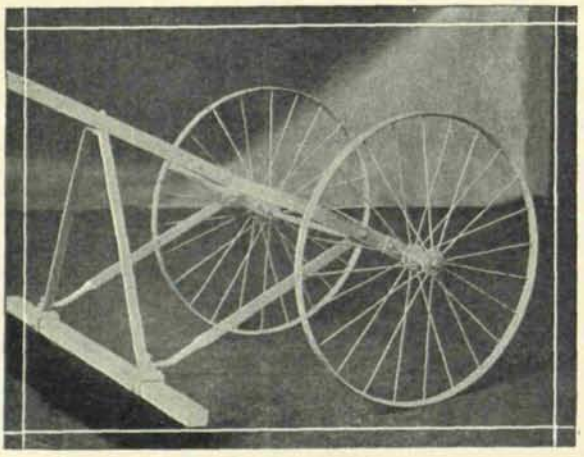

This is a valuable machine, for the greenkeeper, having various uses, some of these are, rubbing in compost after top-dressing, brushing worm casts, bringing the runners of bent to the surface where they can be cut, brushing the greens in the early morning, getting the dew off, and giving the grass a chance to dry off, so that the greens can be cut sooner, also "lessening the danger of Brown Patch."

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OCTOBER, 1927

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The NATIONAL GREENKEEPER

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VOLUME I. No. 10

Greenkeepers' Convention at Washington

Meeting August 29th at Arlington Gardens and Washington Clubs

GREENKEEPERS and Green committee chairmen from far and wide gathered at the Hotel Hamilton, Washington, D. C. on the morning of August 29th, and spent the day as guests of the U. S. G. A. Green Section.

Busses of the sight-seeing type conveyed the visitors to the Arlington turf gardens, where Dr. H. L. Westover, O. B. Fitts and Dr. John Monteith, Jr. led the crowd from plot to plot over these extensive experimental grounds, explaining in detail the work in progress.

Regarding the many strains of bent, Dr. Westover stated that the Washington and Metropolitan strains are standing the test of time, that nothing better has been found during the year's experiments.

Brown-Patch

Dr. Monteith, in speaking in general of mercurial products used in the control of brown-patch, emphasized the fact that the actual value of a commercial product can only be determined by ascertaining the amount of mercury used in the compound.

Greenkeepers were warned that when turf is of a soft growth and is injured by brown-patch, the addition of nitrate will often cause a bad burn.

Experiments at Arlington have proved Rhode Island bent to be more susceptible to large brown-patch than is creeping bent, but that it is quite resistant to the dollar type of this disease.

A new experiment now under way is being made with metallic mercury in brown-patch control. This is the least expensive of the mercury products on the market and it is hoped to prove its value during the coming season.

Copper Poisoning of Turf

One plot of turf upon which was a very thin and patchy growth, was shown to be the result of a residue of copper sulphate in the soil. No copper sulphate has been applied during four years' time, yet nothing encourages the grass to grow on this poisoned soil. No greenkeeper who examined this plot could fail to see what danger lies in long continued applications of any mixture containing copper sulphate, such as Bordeaux.

Fertilizers

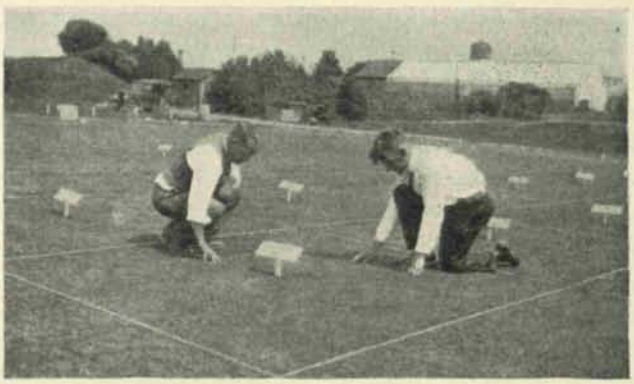
In showing plots fertilized with Urea, cottonseed meal, soy bean meal, ammonium sulphate and other materials, Dr. Monteith advised that Urea is one of the highest in value among nitrate fertilizers. Experiments show that Urea combined with mercurial cures for brown-patch brings the turf back to normal very quickly.

Extent of Experimental Work

According to the list of plots now laid out and in process of experimentation, there are 385 squares of turf maintained and carefully watched by the Green Section, for the express purpose of determining what is good and what is not good for the golf courses of the U. S. A.

Visits to Indian Springs and Burning Tree

Returning to the hotel, luncheon was served promptly



Edw. B. Dearie of Chicago, and L. J. Feser of Wayzata, Minnesota, examining a plot of velvet bent at Arlington Turf Gardens

A group of the guests of the U. S. G. A. Green Section, taken at Indian Springs Country Club, on August 29

to allow those present to visit and inspect some of the district's fine courses.

Indian Springs was selected as the first on the list, where considerable time was spent by Dr. Westover and Mr. Fitts in identifying grasses and explaining the effect of soil and climatic conditions as prevail in the district. This club is in the process of introducing creeping bent into their greens. Only a short inspection of the course was made, but the well-groomed appearance of the greens and fairways was apparent to all.

Burning Tree was the second course visited and time had been so taken up that it was the final inspection of the day. At this club the group found some of the most beautiful bent greens in the Washington section. Not only were the greens bits of Paradise for the golfer, but the lay-out and contour of the course are both remarkably fine.

Mr. Otto W. Schaum, and Mr. F. H. Chapman of Whitemarsh Valley Country Club, Philadelphia, were discovered in process of play, and both voted Burning Tree second to none they have played over.

Dinner and Meeting

At 6:30, dinner was served in a special hall at the Hotel Hamilton. Quick service, and the healthy appetites inspired by the footwork of the day, soon prepared the way for open discussion.

The need for a convention reporter was evident from the moment Mr. O. B. Fitts opened the meeting, as many of those present at once started to ask questions.

Velvet bent, its characteristics of growth and its resistance to disease, was a topic of animated talk. One member described his success in raising turf from velvet bent by the nursery and vegetative method. "It has been done successfully," said one. "It can't be done, for it won't creep fast enough," said another. The result of the discussion seemed to put the weight of the blame upon anyone who wishes to experiment with a velvet bent nursery.

(*Editors note*: *We would like to hear from all greenkeepers who have made such an experiment with velvet bent sod.*)

Mr. Fitts stated that at Arlington, the darker colored strains of velvet bent seem to be more resistant to brown-patch, and this was confirmed by Mr. Robert White of Westchester County, who stated he had noted this consistently for some period of time.

Perhaps the old fashioned expression, "a pleasant time was had by all" most aptly describes the day spent in the capitol city.

Where Algae Thrives

By JOHN MORLEY, President
National Association of Greenkeepers of America

IN visiting a number of courses in an advisory capacity, I have observed that some golf architects have at various times laid out a short hole where the tee is placed on a high location, and the putting green in a low one, which gives the hole a beautiful appearance. The greens are often surrounded on three sides by a large number of trees, which often keeps the air from reaching the surface of the green. They are often built on an angle. Some of these have clay loam top soil and have no drain tile, as some officials are inclined to think they are not needed because they are built on an angle or sloping formation. Some place two rows of tile parallel.

This kind of putting green should be well drained. I prefer that the tile be laid in herringbone fashion.

This brings us to another important matter. A number of these putting greens are built over a subsoil consisting of blue clay. You have often noticed where there is a pond or artificial lake that during extreme hot, dry weather some of the surface of the pond or lake contains a lot of dark green scum, which is known as algae. This is supposed to be a poisonous substance that the energy of the sun rays has drawn to the surface of the water.

I simply refer to the above condition to show that when the same weather conditions prevail the energy of the sunrays is drawing to the surface of the putting greens, from the blue clay subsoil the poisonous matter which these soils contain. A large amount of this poisonous substance has a chance to escape if the putting greens are properly drained. Otherwise most of it continues to remain in the soil. After a heavy watering or rain it is forced down into the soil, only to again be brought to the surface by the energies of the sun rays.

Where these conditions prevail, the algae is often injurious to the turf and a number of greenkeepers are of the opinion that it is brown-patch. Sometimes it is for this scum often encourages its growth.

When Comparisons Are Odious

By FRED W. SHERWOOD, Greenkeeper
The Northmoor Country Club, Ravinia, Illinois

Fred W. Sherwood

I HAVE read with interest many and varied articles on up-to-date greenkeeping from the theorist, the golf expert who writes to some of the daily papers, the doctor and tailor, lawyer, banker, etc., and anybody else who is fortunate, or unfortunate enough to be made the chairman of a Green committee. What fine greenkeepers some of these men would make. I can't understand why some of the first class golf clubs in America don't engage these men. I am sure they would be in pocket, suppose they only paid them a salary of $25,000 per year.

How can you expect the ordinary greenkeeper to know, who has only had a practical experience, when to mow his greens, to top-dress and fertilize, to rake the traps and cut the rough, to clean, oil and have the tools put away in a methodical manner in the tool shed.

It is really a wonder the poor fellow knows when to commence work without being called. These do's and don'ts we read so much about are more harmful than helpful. To be candid they are generally just one person's opinion, theories that if carried out by the greenkeeper and they fail, why, he is to blame anyhow.

How many times do we read or hear it repeated that the greens ought to be cut every day, tees every other day, top-dressed and fertilized once a month, etc., etc. They do this at So and So's club and they get wonderful results. Greenkeepers who are members of the National Association of Greenkeepers, The Mid-West Association, etc., are visiting and inspecting So and So's club and seeing for themselves what perfect putting greens, lovely tees, beautiful fairways, and in general what well manicured golf courses are like away from home.

The comments and discussions from these visits to various golf clubs are certainly interesting and educational from more than one point. The greenkeeper finds that these clubs with their big salaried experts and wide-world reputations (and also big budgets) have got the same old complaints and diseases and complex problems affronting them as the greenkeeper has at home. Brown-patch, drying out, burnt up grass, grubs, worms, weeds, etc., etc. He also finds that the wealthy club is spending as much in one year on its grounds as he has to spend in two.

When comparisons are made of golf courses they should be made by a committee of experts who take into consideration the money that was expended in the construction, the drainage, the general locality, the expenditure per year for equipment, etc., and also whether it is per U. S. G. A. standard or whether it is to suit its own committee and members.

I remember some few years back one of these experts visiting a golf club and when asked his opinion of the course, he gave it freely—the makings of a very fine course properly worked and supervised, greens were in poor condition, which was unknown to the Green committee until they got his report, fairways were bad, traps were faulty, which was all due mostly to having a poor greenkeeper. The Green committee was much discouraged by his report and came to the conclusion they had a golf course in poor condition, and likewise a bum greenkeeper.

The outspokenness of this expert's opinion was a censure to the greenkeeper. The Green committee, however, decided to visit the course the expert had charge of, taking the greenkeeper with them to broaden his knowledge and pick up a few pointers. What a disappointment awaited this committee. Instead of finding a golf course which ought to have been in tip-top condition they found it in worse condition than their own. They found that five greens were out of commission and the members were playing on temporarys. They also found that the very things the expert had drawn their attention to on their own course was neglected and in much worse shape on his own. His expenditure per month for labor was between four and five hundred dollars in excess over the club which he had been knocking. As things turned out it proved to be a big boost for the greenkeeper and his committee came to the conclusion that a practical man was of more use to them than an expert theorist.

Why can't we all be candid and fair in our opinions? Don't always knock the other fellow. Find out under what conditions he is laboring, what difficulties he has to overcome, and rather give him a helping hand. I am sure there is room for all the experts and greenkeepers too in the good old United States of America, so let us one and all pull together. By doing so we can be of much value to one another and also to the clubs we represent.

Keeping The Course Groomed

By JOHN MacGREGOR, 2nd Vice President
The National Association of Greenkeepers of America
Chicago Golf Club
Wheaton, Illinois

THE gift of writing one's thoughts is given to few. I am sorry to say I am not one of those, but I will do my best to convey to those who read this, an idea of my system of maintenance, I will say I have read with interest the articles written by my fellow greenkeepers in THE NATIONAL GREENKEEPER, which have been frequently beneficial, so I hope some may find what I have to say of some interest to them.

Distribution of Labor

Without system very little is accomplished. It is necessary to have a system of maintenance worked out if one intends to have a well groomed course. During the early season when the preliminary work is in progress, I observe the men closely and pick out men who I think are best suited for the different positions to which they will later be required to give their entire attention. I select nine men, and allot to each two greens, two tees, the sand traps, bunkers, etc. around or adjacent to the greens (our greens average 10,000 sq. ft.) one man for the nursery and putting green, two men for the tractors for fairway mowing, two men to care for the fairway bunkers and traps, one man for the Fordson tractor and truck, and one man a handy mechanic.

As soon as weather permits and the necessary patching and cleaning up is done in the spring, the men are started on their allotted greens to give them their spring overhauling, weeding, raking, etc. At this time it is not necessary to cut the greens every day.

System of Top Dressing and Fertilization

When the greens have been thoroughly freed from weeds, they are given their first top-dressing, using better than fifty per cent of sand for the first dressing. My schedule of top-dressing is every three weeks, as I believe three weeks of cutting every day, saps the vitality of the grass, and it is necessary to give it some nourishment. The greens are brushed and cut every morning. During the brown-patch season, I eliminate Ammonium Sulphate, as I believe through its rapid stimulating effects, it keeps the grass in a soft and weakened condition, and is not able to withstand the ravaging effects of brown-patch. During the brown-patch season I try to keep my greens rather on the dry side, and during the crab grass season I neglect everything around the greens but cutting. The crab grass must come out before anything else is done. The more crab grass you leave on the green the more you will have the following year. It is hard to keep out altogether, as the seeds are carried on the shoes from the fairways.

The two men who have the fairway traps and bunkers, are started as early as possible to loosen the sand and put the traps in playing condition. One of these men keeps the tees in condition, plugging them every morning.

The tractor men for the fairways work with the men on the fairway traps until the fairways are in need of cutting or rolling, and in spare time after the fairways are cut.

The fairways are cut three times a week until the first of July, and again after the first of September.

Control of Dandelions With Iron Sulphate

The man on the Fordson tractor and truck keeps the rough cut, using a sickle mower attachment on the tractor. He also keeps the grass clippings cleaned around the greens, fairways and bunkers, with the Ford truck. He also sprays the dandelions, using a two hundred gallon power sprayer, with a potato sprayer attachment, which is attached to the rear of the sprayer.

The material used for spraying is iron sulphate (copperas) and with this we have been successful in controlling the dandelions on our course.

The handy mechanic keeps the machinery in condition, also adjusts the knives of the green mowers every second morning.

Fairway Watering System

As our fairways are watered in dry weather, it is necessary to employ six extra men during this period, which lasts from five weeks to two months. It is well to commence in time. A soaking rain will carry the fairways about ten days, and it takes us seven days to water our fairways. That means three days after a rain, the sprinklers must be put in operation. The greens are watered in the morning by the men in charge of the greens.

I find this system very practical and successful. My efficiency expert is a pair of field glasses.

Fertilizers and Fungicides

The Function of Soluble Fertilizers and Fungicide Chemicals in the Maintenance of Putting Greens

By WILLIAM WARREN RHODES
Wilmington Country Club, Wilmington, Delaware

CHEMICALS such as the soluble fertilizers urea, ammonium sulphate and ammonium phosphate, and the fungicides such as Semesan, are indispensable in the maintenance of a perfect putting turf.

Too often the use of chemical fertilizers has been attended by indifferent or poor results and here and there we find a discouraged greenkeeper reverting to the sole use of composted horse manure. Other greenkeepers have no especial difficulty in securing quick response and beneficial effects with the soluble chemical fertilizers, and the question naturally arises as to how they do it.

It is the purpose of this article to explain how it can be done and the underlying principles governing the utilization of the chemicals by the grass plant.

How Grass Derives Its Food

Plants derive potash, phosphoric acid, iron, magnesia, lime and other chemicals through the root system and plants other than legumes also obtain their nitrogen requirements in the same way. Grass, therefore, obtains all of its food through the root system with the exception of carbon dioxide most of which is acquired from the air through the leaves. I dare say that the greenkeepers who read this article have read such a statement many times and it is only incorporated here to make the writer's points in logical sequence.

All of us know in a general way how human beings and animals eat food, digest it in a stomach, how it makes blood, fat, and bone, but how many know how a plant derives its food and what form it should be in to keep the plant healthy and make it thrive?

Grass plants derive their food from the soil through a physical chemical process called osmosis. This process depends on the fact that a weak or dilute solution of a chemical separated from a stronger solution of chemicals by a thin skin or membrane, will penetrate the membrane in the direction of the stronger or more concentrated solution in order to weaken it. The pressure exerted during the operation is called osmotic pressure and for a solution which chemists call "normal," amounts to 330 pounds per square inch.

The root system of a grass plant is made up of not only the main roots which can be easily seen but of thousands of tiny hair roots which can only be seen by close observation and which provide relatively great absorption surfaces. The surface of these roots is a skin or membrane called the epidermis through which the osmotic process takes place, and within this cellular membrane is a solution of certain sap substances. The sap solution is concentrated enough to cause very dilute solutions of soluble fertilizers to penetrate the root membranes.

The soil salts such as calcium phosphate, potassium chloride and the nitrates, can only be absorbed by the plant when in true solution. They do not necessarily enter the roots at the same rate as water. Every soluble fertilizer chemical moves into the plant quite independent of every other soluble fertilizer chemical and water. Whether or not it will be sucked in depends on the necessity for it in the cell sap, for a plant will not take up through its roots fertilizing constituents for which it has no immediate use.

When the sap soluton is weakened slightly by the fertilizer solution it in turn by means of the osmotic process circulates upward through one set of the sap tubes or cells which scientists call fibrovascular bundles, and the fertilizer materials are withdrawn by certain of the plant cells and utilized for making tissue of various kinds needed for the growth of the plant. Relieved of its burden of soil chemicals, the sap again returns to the roots through another set of tubes bearing carbohydrates manufactured in the leaves for the use of the stem and roots and seeking more tissue building chemicals from the soil solution. Note how closely the circulation system of the plant corresponds to the circulation system of man and the sap to blood. A learned savant from

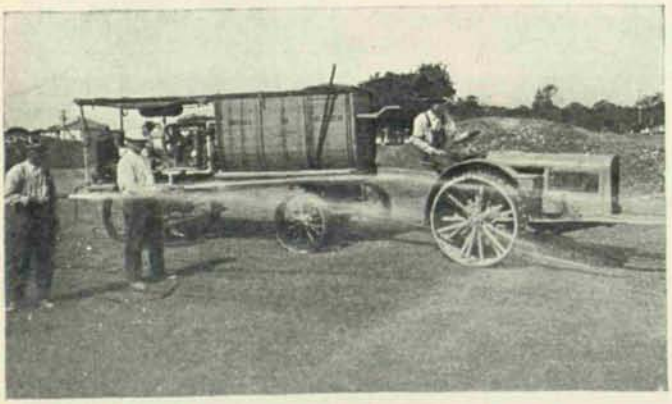
Using Boyce spray guns from giant pump in applying fungicide and ammonium sulphate mixture

India demonstrated last year in London that a plant on being injured acts as if it were enduring pain.

Grass Injury by Improper Application of Chemicals

Now let us consider the effect of feeding a grass plant with a strong solution of a chemical fertilizer. When this is done instead of the sap solution being able to acquire the fertilizer through the root membrane the contrary is true and the water of the sap solution flows out through the root membranes into the fertilzer solution and the grass having been deprived of the water which holds the solid constituents of the sap in solution and its normal circulatory system upset, wilts, dries up and dies. This is the condition which scientists call plasmolyses. In most cases the soil fertilizer solution is not strong enough to cause withdrawal of much water, but the effect is such as to stop the growth of the grass for several days or a week until the plant regains its normal balance. Someone may reason that a grass plant loses considerable amounts of sap through the continual cutting of its leaves. Mechanical wounds made by the cutters soon heal and do little damage, but it is worthy of note that grass survives the playing season with a reduced leaf area and it is through the leaves that it acquires carbon dioxide. During trying weather periods, raising the knives and giving the grass plants a little more leaf area has a tendency to strengthen them.

Here in a nutshell is the reason why some greenkeepers get poor results from soluble fertilizers. It has been common practice to spread ammonium sulphate over a green mixed in the top-dressing. Amounts from twenty-five to forty pounds of ammonium sulphate are applied to a six or eight thousand foot green. Most all directions say to "water well" when they should advise that when water is applied it should be applied rapidly on a limited area and large quantities used. Speed here is essential and if your green outlet pipe flows less than twenty gallons a minute you are liable to have trouble unless you concentrate the water on a limited area—practically puddling it. Never play a hose over a green or use a single sprinkler when you are wetting down top-dressing containing ammonium sulphate, ammonium phosphate, or urea. Wet thoroughly a small area and move from this space and take another of the same size and get around the green in this way.



Samuel H. Purvis, superintendent at Seaview Country Club, Absecon, N. J., directing the application of fungicide with a Royal Leader giant pump. Mr. Purvis is second from left of picture

In playing a hose or sprinkler over say one-quarter of a green on which has been spread a liberal quantity of the soluble fertilizers, you first make a concentrated solution of the fertilizers which cause the injury noted above. Later when the fertilizer solution has become dilute no further damage occurs.

This brings up the point as to whether the use of ammonium sulphate in top-dressing is a proper method of applying it to greens, and it is the writer's opinion that the use of the top of the green as a dissolving tub is not justified by the results obtained. Such practice has been recommended to greenkeepers in the past because it was the easiest way and required no apparatus.

Furthermore, the writer is convinced that the grass cannot utilize four to six pounds of ammonium sulphate per thousand feet before at least one-half of the fertilizer is washed below the grass roots and into the sub-soil by successive sprinklings. Such applications are a gross wastage of fertilizer.

Proper Method of Applying Fertilizers

It, therefore, follows that the ideal way to apply soluble fertilizers is in the form of a solution of definite strength, and that the solution should be made up before application and not on the surface of the green. Furthermore, that weekly applications of small amounts are preferable to a large dosage once a month. In utilizing the fertilizer in this way the grass plants are fed just what they will consume with a little to spare and are kept continuously vigorous instead of "greening them up" once a month for a week or ten day period.

No one to the writer's knowledge has conducted research to determine the maximum strength of solution in chemicals that can be applied without injury to the grass and the proper strength to achieve best results and it was necessary to search the literature concerning other plants than grass to get an idea of the permissible soluble salt concentration of soil solutions which would not cause injury. In greenhouse practice it is apparently well known that the soil can contain soluble chemicals of the solution concentration of .5 per cent without causing injury to most flowers and vegetables and above that concentration injury commences. It is to be noted that injury is based on concentration of solution of soluble chemicals and has nothing to do with percentage of nitrogen.

The writer arbitrarily adopted a concentration of .25 per cent, i.e. one pound of chemical in fifty gallons of water to be applied to 1000 square feet weekly since this formula would give in ammonium sulphate an amount of approximately one pound of ammonia per thousand feet per month; in urea 2.2 pounds of am-