Columbus Meeting a Huge Success

By JOHN QUAILL, Secretary
The National Association of Greenkeepers of America

THE Fifth Annual Convention and Golf Show of the National Association of Greenkeepers of America was a success from all angles. The turnout was all that could be expected owing to the business depression as several clubs could not afford to pay the way for their greenkeepers. Most of these clubs were the "pay-as-you-play clubs where they have to depend on the public for the revenue. The response from the private clubs was almost one hundred per cent.

The Golf Show, under the direction of Fred Burkhardt was as usual up to the high standard of past shows. The exhibitors were very profuse in their praise of the way the show was managed and all have expressed their desire and intentions of exhibiting again next year. Several of the exhibitors cleaned their total exhibits off the floor by sales and are shipping direct to the purchaser. Others told of increased sales through the show. One exhibitor claims that fifteen per cent of last year's business was done at the show and according to this year's sales he thinks he has raised this to about twenty per cent.

The conference brought forth much favorable comment. There has never in the history of golf been such a meeting. Every speaker was an expert in his line and every greenkeeper or any other person hearing the lectures surely received some good, sound advice and knowledge from the lectures. Unfortunately the program the first day was marred somewhat by the auditorium where the talks were held. The acoustics were very bad and it was difficult to hear plainly. The next day, conditions were improved and it was a lot better. The question box conducted by Prof. L. S. Dickinson on Friday brought out many interesting topics and the discussion was very lively and a lot of good was derived from this meeting.

The Annual Banquet was as fine a turnout as could be assembled. The greenkeepers and their wives enjoyed a very pleasant evening and the entertainment deserves praise. The Columbus boys and their wives surely arranged everything to perfection. The speakers of the evening were very fine and they kept the crowd in an uproar by their timely comments and humorous talks.

The Hon. J. J. Thomas, Mayor of Columbus, welcomed us all and extended the appreciation of the city to the association in favoring Columbus with our presence. The genial George (Red) Trautman, Convention Manager of Columbus, seemed to be every place at the same time aiding and assisting in seeing that everything went off smoothly. We surely owe him a debt of gratitude for the way he handled every situation.

The Midnight Show at the Elks' Club was a jolly party. It was planned to resemble a circus side show. Everyone was there from the bearded lady to the Siamese twins. (No one was seeing double.) The wrestling match with the bear was quite a novel stunt. The greenkeepers evidently have enough trouble wrestling with the problems on a golf course as no one seemed anxious to take a chance with the bear.

The business session brought out some good reports and fine suggestions.

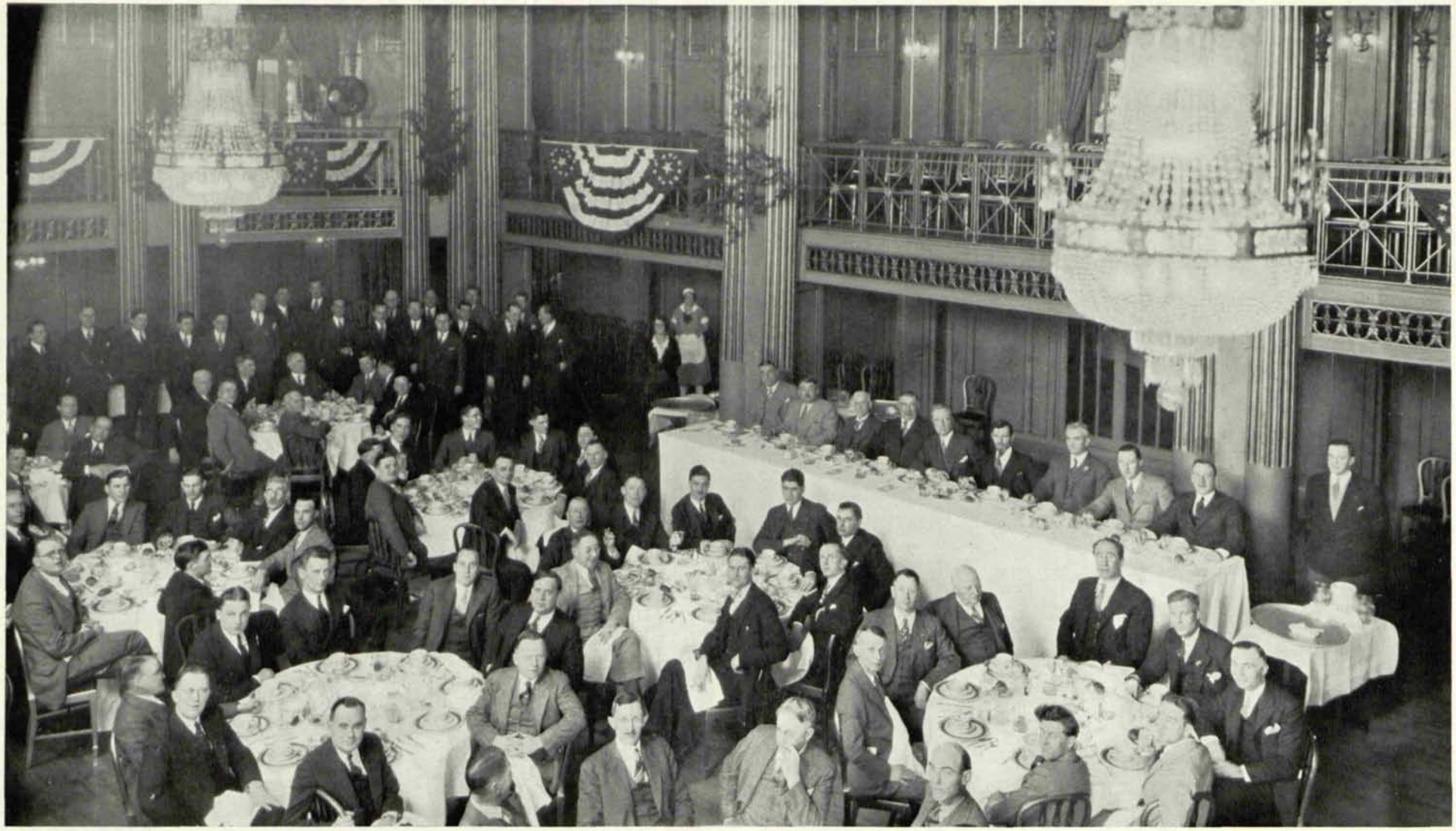
The treasurer reported a comfortable balance in the treasury. Detailed reports of the Finance Committee will be mailed to all members at an early date.

The Convention assembled approved the Executive Committees decision in selecting the next convention city as New York. New York has invited the convention for the last four years and it was the popular choice for 1932. Chicago for 1933 and Toronto for 1934 were the recommendations for future conventions with Philadelphia, Milwaukee and Indianapolis recommended as alternates in case conditions arise which would prohibit having the convention in one of the recommended cities.

The Committee on Death Benefit Fund reported that inasmuch as group insurance was not satisfactory, it was their opinion that the members should support the present plan and help to bring the Death Benefit Fund membership to one hundred per cent of the Association membership.

The Benevolent Committee reported that there has been no applications for benevolence so there

Show Exhibitors Feted by Greenkeepers' Association



EXHIBITORS' DINNER HELD AT THE DESHLER-WALLICK HOTEL, COLUMBUS, MONDAY EVENING, FEBRUARY 2

was nothing paid out. The benevolent fund is growing and shows a nice balance.

The Committee on the NATIONAL GREENKEEPER presented a letter from Mr. R. E. Power, President of THE NATIONAL GREENKEEPER, whereby he outlined a plan which will be of great financial benefit to the association. For every member of the association in good standing he will make a financial return to apply toward the benevolent fund. This will be a contribution and will help to increase this fund very materially every year. Mr. Power in making this offer, has shown to the greenkeepers that he is behind the association heart and soul and a rising vote of thanks was given him at the meeting.

The officers selected for the year are as follows:

President—John Morley, Youngstown, Ohio.

First Vice President—John MacGregor, Chicago, Illinois.

Second Vice President—W. J. Sansom, Toronto, Canada.

Third Vice President—Robert J. Hayes, Pelham, New York.

Fourth Vice President—George Davies, Louisville, Kentucky.

Fifth Vice President—John Anderson, West Orange, New Jersey.

Secretary, John Quaill, Pittsburgh, Pennsylvania.

Treasurer—Fred A. Burkhardt, Cleveland, Ohio.

Lewis M. Evans, formerly of Philadelphia, Pa., withdrew from the Executive Committee as he has moved from the district and is now in Ohio and felt that the east should have the representation due them.

Fred Burkhardt presented a preliminary report from the Show Committee which was accepted with applause. Mr. Burkhardt explained that as there were several items yet to be taken care of before the show closed he could not give a final report at this time. He mentioned that according to the best calculations, a good profit would be made on this show. Mr. Burkhardt was given a rising vote of thanks for the work he has done on the show.

The meeting of the District Vice Presidents brought out many good suggestions and it is the opinion of everyone that in the future, the District Vice Presidents will be an important cog in the wheel. It was explained to them just where and how

they could be of the greatest service and help to the officers and members of the association in securing new members and in organizing new local associations. They all pledged themselves to cooperate with the officers and to build up the membership and help in all ways possible.

At the meeting of the Executive Committee on Friday night, Mr. Robert E. Power, President and Editor of THE NATIONAL GREENKEEPER, was made an Honorary Member of the association in appreciation of his past services. Mr. Power is very much pleased with his appointment and expressed his thanks to the Executive Committee.

A committee of three, Mr. Morley, Mr. Burkhardt and Mr. Quaill, were appointed to meet with the committees of the Club Managers' Association and the Professional Golfers' Association in Pittsburgh at the time of the Annual Convention of the Club Managers to discuss ways and means to promote a closer harmony and good-will between the organizations. This is undoubtedly a step in the right direction and we feel that an understanding will be reached whereby all concerned will profit by it.

Mr. Ganson Depew, Chairman of the Green Section of the U. S. G. A., has expressed thanks to the greenkeepers for their assurance that we will cooperate with the Green Section in their work. Mr. Depew looks forward to a pleasant term in office through the assurance that both organizations will be working in close harmony for the good of the game and sport.

McKay Honored

Now that the excitement of the Show, etc., is over, which I think was the best ever, I am pleased to tell you that I have been elected an honorary member of the Shawnee Golf Club.

I built and laid out Shawnee and they have made me an honorary member to show their appreciation of what I have done for the course and also for the golfers of Shawnee.

I am not sure that many greenkeepers get this honor so I thought I would let you know about it.

A. G. McKAY,
313 Cecil Avenue,
Louisville, Kentucky.

Some Water Relations of Turf Plants

By DOCTOR HOWARD B. SPRAGUE, Agronomist

New Jersey Agricultural Experiment Station, New Brunswick

Read at the 5th Annual Educational Conference of the National Association of Greenkeepers of America held at Columbus, Ohio, February 3-6

WATER is one of the most important substances connected with life in this world of ours. The plant uses water in some form at every stage in its life period. Germination cannot proceed without moisture, and the first organs produced by the growing plant are roots for the absorption of water.

Water makes up 50 to 90 per cent of the growing grass plant on fairways, tees, and greens. Even such structural parts of the plant as cell walls, vessels for translocation of food materials, fibers, and tissues for mechanical support, etc., are produced in the plant by combining water with other substances. Approximately 35 to 55 pounds of water is required for every 100 pounds of such tissues formed.

DR. HOWARD B. SPRAGUE

The material which plants use as food, principally the starches and sugars, require 55 to 60 pounds of water for every 100 pounds of food manufactured. The plant's food is actually made in the leaves of the plant, but this process can only take place when the cells and cell walls are kept moist with water. The nitrogen and minerals which the plant must obtain from the soil, and which is frequently added in the form of fertilizer, only enters the roots when dissolved in water. These minerals are transported to the various parts of the plant in a stream of water which extends from the roots, through the stems, to the very surface of the leaves.

The food manufactured in the leaves is carried throughout the plant wherever needed, but only as it is dissolved in water. The combination of sugars, starches and other substances with the nitrogen and minerals to form protoplasm and cell walls for new cells, in roots, leaves and stems, takes place only with an abundant supply of water.

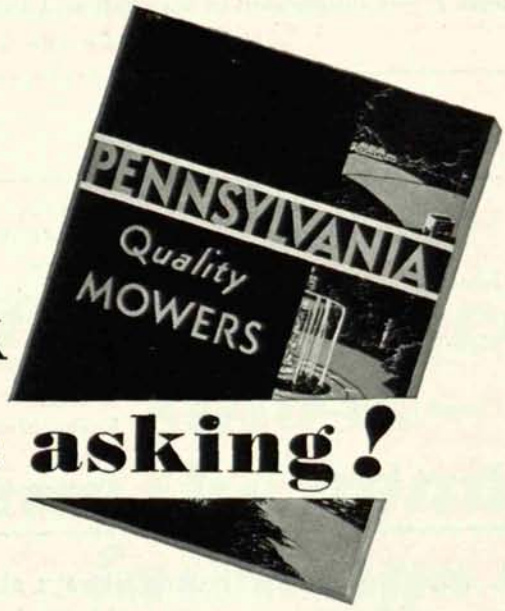
When the plant finally dies, it is decomposed by bacteria and molds which also require moisture for their activities. In nature, the decaying plant is broken down to its elemental components, which are water, carbon dioxide gas, and minerals. At an intermediate stage in this process of decay, humus is produced. When added to the soil, this decayed organic matter greatly modifies its water holding capacity, and other physical properties.

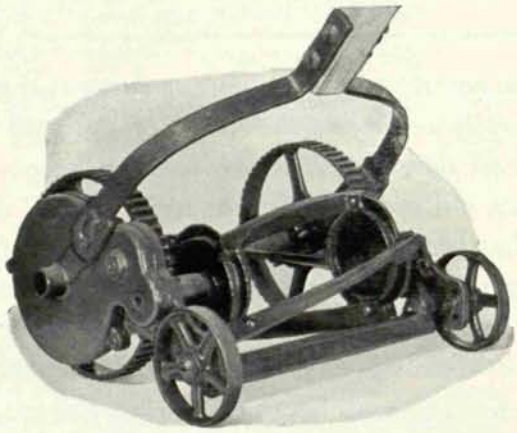
SEASONAL SUPPLY OF WATER

SINCE water plays such a vital part in the life of plants, it is extremely necessary that we consider the problem of providing sufficient moisture for normal growth. We have two principal sources of water on golf courses; one is natural rainfall, and the second is irrigation by some one of several systems. The goal that greenkeepers and others interested in turf management should bear in mind is that natural rainfall must be supplemented by irrigation, *only* to the extent necessary for moderate growth, and never in excess. The critical season of moisture deficiency in the northeastern states usually comes in June, July, and August, because of the relatively low efficiency of the moisture which is applied in this period.

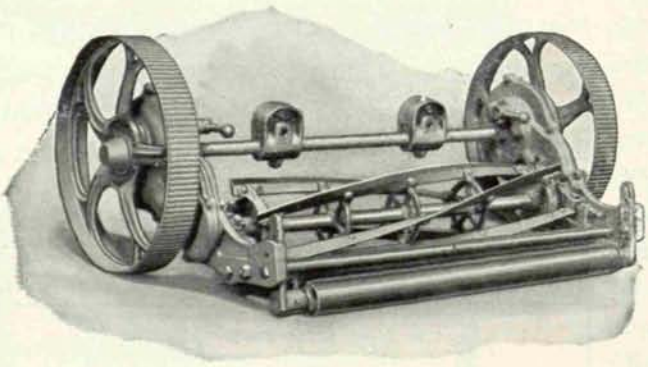
The rate at which water is lost to the air by evaporation largely determines the efficiency of rainfall. The comparative figures for rainfall and evaporation for the 5-year period from 1924-1928, inclusive, are given in Table 1 for 5 locations in the eastern United States. Whenever evaporation is greater than rainfall, artificial watering is required on greens. If evaporation is 1½ to 3 times as great

New! this valuable reference book is yours for the asking!





IT shows the first power mower, the earliest power fairway mower and the first PENNSYLVANIA Quality mower (1877), which is illustrated at the left.



In addition, it is chock-full of up-to-the-minute golf mowing information, including full details of the revolutionary new UNBREAKABLE MALLEABLE IRON CUTTING UNIT (illustrated here) of the 1931 PENNSYLVANIA Fairway Quint or Trio.

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Table 1. — Comparison of Rainfall and Evaporation from a Free-Water Surface at 5 Stations Averages for the Years 1924-1928, Inclusive

Station		*April* (in.)	*May* (in.)	*June* (in.)	*July* (in.)	*Aug.* (in.)	*Sept.* (in.)	*Oct.* (in.)
Columbus, Ohio	Rainfall	3.07	3.52	4.27	4.74	2.49	2.99	2.33
	Evaporation	3.23	4.37	5.14	5.53	4.70	3.42	1.95
Ithaca, New York	Rainfall	3.09	2.82	3.46	3.86	2.92	3.51	3.18
	Evaporation	3.24	3.41	4.66	4.92	3.80	2.53	1.46
New Brunswick, New Jersey	Rainfall	3.53	3.35	3.58	5.47	6.55	4.47	4.63
	Evaporation	3.84	4.89	5.39	5.48	4.52	3.64	2.72
Chapel Hill, North Carolina	Rainfall	3.99	2.70	5.10	5.44	6.22	7.38	2.55
	Evaporation	4.12	5.05	5.56	5.83	5.16	4.19	2.79
Wichita, Kansas	Rainfall	4.29	2.66	5.35	3.01	2.84	3.22	2.97
	Evaporation	6.22	7.56	9.26	9.42	8.85	6.67	4.25

as rainfall, watering of closely-cut fairways also will be necessary, particularly if the soil has a low water holding capacity.

THE GERMINATION PERIOD

THE most critical phases in the life of a grass plant are the period of germination, and the stage of growth immediately following, when the young plant is becoming established. Water must be provided before the process of germination can begin. A continuous supply must be maintained after the young shoot emerges or death will result. Grass seed is planted very shallow because of its small size, and the difficulty of maintaining a suitable moisture content is therefore great. A few hours of drying weather may remove enough water from the surface soil to destroy a stand of seedlings which has taken weeks to establish.

Certain grasses require a longer period for germination than others, and the moisture content of the surface layers of soil must be maintained until the plant has developed a good-sized root system. The germination period for 10 of our turf grasses is given in Table 2. It is evident that the grasses which are most useful for turf on golf courses require 2 to 4 weeks for germination, with temperatures of 70 degrees F. or above. When the temperature is lower than 70 degrees more time is required. The period of establishment follows germination, and moisture is even more necessary for this phase than for germination. Sprouting seeds may undergo drying for short periods without great harm, whereas after the first leaf emerges even a severe wilting may prove fatal.

The common practice among successful greenkeepers is seeding at the season of the year when the least difficulty is experienced in keeping the surface soil moist. It is apparent from Table 1, that late summer and early fall are the most favorable periods in many regions. The chief concern with such seeding dates is to allow at least two months of growing weather before the temperature of the soil approaches the freezing point.

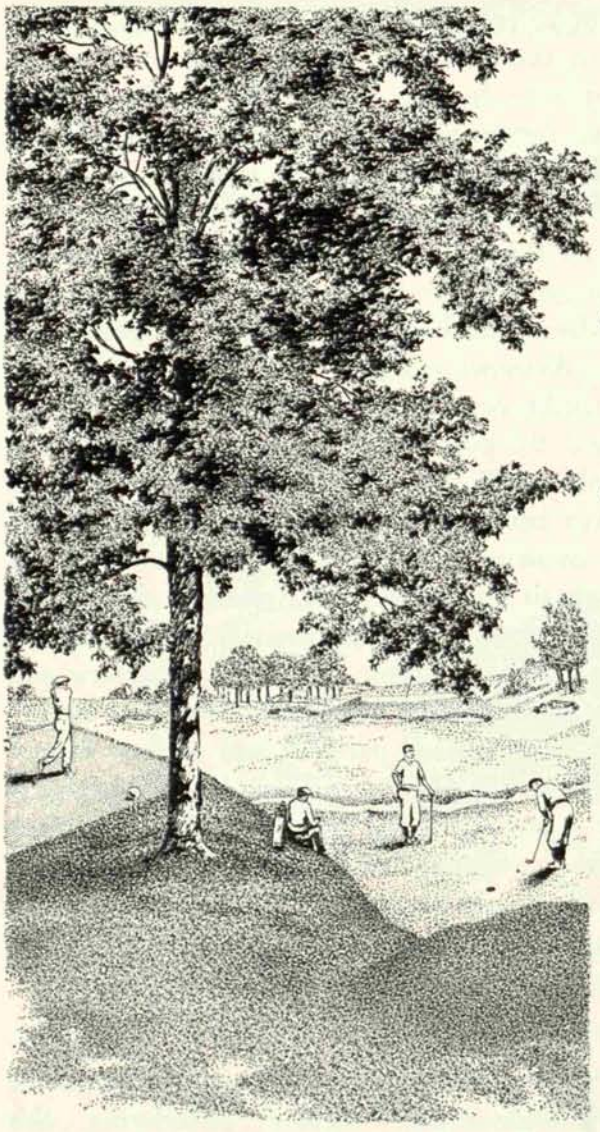
One month of this period is required for germination, and the other for establishment of the young plants. If grass seed is planted through necessity at other seasons of the year, constant care is required to insure the maintenance of a satis-

Table 2. — Conditions for Germination of Grass Seeds

Kind of Grass	*Optimum Temperature Degrees F.*	*Germination Period at Optimum Temperature* — *Majority Seed Days*	*Germination Period at Optimum Temperature* — *All Seed Days*
Kentucky blue grass	70-85	14	28
Canada blue grass	70-85	14	28
Redtop	70-85	5	10
Bent grass	70-85	10	21
Red fescue	70-85	10	21
Fine-leafed fescue	70-85	10	21
Meadow fescue	70-85	5	10
Rye grass	70-85	6	10
Bermuda grass	70-95	10	21
Carpet grass	70-95	10	21

The germination period is considerably extended when temperatu below those indicated.

(From U. S. D. A. Department Circular 406, Rules for Seed Testing



"Mr. MacPherson," said I, "I hae the bonniest fairways in America"

"Mon, ye have na got such fairways as mine," says Mr. MacPherson to me.

And so, "*far into the night*," as Briggs used to say, rather than show Mr. and Mrs. in a knock-down, drag-out finish.

But the fact is — whether they are Mr. MacPhersons' fairways or yours — fairways are IMPORTANT! And your reputation goes *up* or goes *down* with the reputation of your fairways.

Fortunately, now it is easier than ever before to have good fairways, because the new fertilizers are better and cheaper than the old ones.

Just think — 150 to 200 pounds per acre of Nitrophoska 15-30-15 supplies all the plant-food needed by your fairways. And Nitrophoska is as easy to broadcast as wheat. A ton — enough for 10 to 13 acres — costs only $110, in 100-lb. bags, f.o.b. your railroad station.

For best results apply Nitrophoska early — three to four weeks before your grass would ordinarily start to grow. It's time to order NOW.

Urea

Urea is recommended by the Greens Section of the U.S. Golf Association. It contains 46% nitrogen and is easily soluble in water. It furnishes soluble organic nitrogen in the same form as the nitrogen in liquid manure, and is long-lasting in its effect.

Leunaphos

Contains 20% nitrogen and 20% phosphoric acid — a concentrated fertilizer, excellent for use where a fertilizer without potash is preferred. Use at the rate of 100 to 200 pounds per acre.

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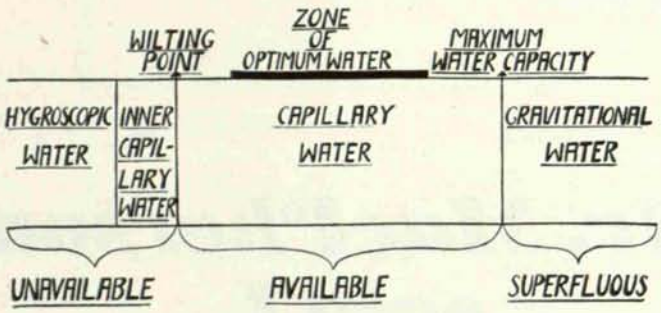
FORMS OF WATER PRESENT IN THE SOIL AND THEIR RELATION TO TURF PLANTS



factory moisture content. Water must be applied daily and perhaps more frequently during dry periods, and in such a manner as to avoid the formation of a crust at the surface. New seedings may be made at any time during the growing season, if attention is given to the watering. However, the most satisfactory period is one in which evaporation is no greater than rainfall.

SOIL MOISTURE

DURING the germination stage, water is absorbed through the walls or coverings of the seed. As soon as growth begins, a root system is developed, and practically all of the moisture required by the plant is taken in by the root system from that time on. Since the plant draws its water from the soil, it becomes necessary to consider the forms in which water is present and the use which the plant makes of each.

For convenience we divide the moisture which may be present in the soil into three parts, in the manner shown by figure 1. One part is so closely held by the soil particles that the plant can make no use of it; this is termed *unavailable water*. The second form of water is that retained in the soil by capillary attraction, and most of this is *available* to plants. The third form, known as gravitational water, is that present immediately after a heavy rain or watering. Gravitational water drains off in a short time, and the plant utilizes little of it. Such *superfluous* water is undesirable since it occupies pore spaces in the soil which should be filled with air. The *maximum water holding capacity* is the amount of water which a soil contains after the superfluous water has drained off.

We may compare the water relations of various soils by calculating their capacity for holding moisture in an available form. For example, a certain sandy soil may have a maximum water capacity of 17 pounds per 100 pounds of soil. However, in this soil about 4.5 pounds of water will be unavailable, leaving a potential supply of 12.5 pounds for use by the plant. For a loamy soil, the supply of available water will probably average 25 to 30 pounds for each 100 pounds of soil, more than double that of a light sandy soil.

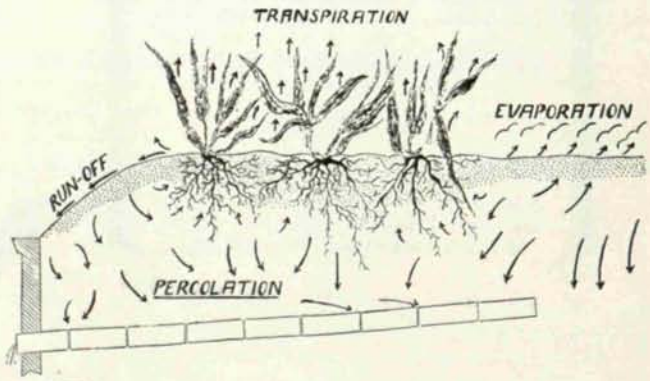
Fortunately the water content of soil may vary considerably and still permit plants to grow normally. As shown in figure 1, the optimum moisture content lies between the point of maximum capacity and the point at which no more moisture is available. We term this the optimum moisture content because the plant is able to absorb sufficient moisture to prevent wilting, and there is enough air left in the pore spaces of the soil for healthy root growth and activity. At the optimum moisture content, the desirable bacteria and molds are also most active and nutrients are released from the soil particles and organic matter for use by the plant as a result of their activity. Only a portion of the minerals needed for plant growth are supplied in the form of chemical fertilizers; the rest of the plant nutrients are derived from the mineral portion of the soil and the organic matter, as a result of bacterial action.

SOURCE AND SUPPLY OF MOISTURE

HOW shall the optimum moisture content be maintained? Before considering this question we must examine the fate of water added as rain or by irrigation. Figure 2 shows that the moisture added to the soil may

(1) Run off the surface without entering the soil.

(2) Percolate through and be lost as drainage water.



VARIOUS WAYS BY WHICH WATER MAY BE LOST FROM THE SOIL