

# Greenkeepers' Record Crowd Busy at Louisville Meeting

By HERB GRAFFIS

LOUISVILLE furnished the battlefield for the 1930 version of "onward the six hundred" when approximately that number of greenkeepers, supply men, turf experts and green-chairmen met for the fourth annual convention and exhibition of the National Association of Greenkeepers of America.

With not much chance of argument you could name as the highlights of the conclave the address of Prof. L. S. Dickinson of the Massachusetts Agricultural College on "a new phase in the control of large brown-patch," an extensive exhibition of equipment and supplies amounting to a practical short course in maintenance methods and buying, and the usual Ciceronian activities attendant upon naming the place for the next convention. Reference to Cicero concerns the "pineapple capital" and not the orator.

After the boys staged the regular debate of "you bring the convention to New York and we'll turn in a hundred new members" and the orthodox answer "let's see the hundred new members first," Columbus, Ohio, was selected as the 1931 meeting place. The gentlemen then kissed and made up so they could pursue the common and earnest aim of better golf course conditions.

John Morley was re-elected president of the organization and with him the 1929 ticket was returned to office, with the only change being the election of Fred Burkhardt of Westwood, Cleveland, as treasurer, the post formerly occupied by John MacNamara, deceased, and the election of Robt. Hayes, Pelham (N. Y.) C. C. to the directorate. John, in addition to carrying the title of president of the N. A. G. A. ever since its organization, now has official license to put Colonel in front of his name. At the annual banquet the veteran Youngstown greenkeeper was notified of his appointment as a member of the Kentucky governor's staff.

The program, under the guidance of Prof. George M. McClure, soil technologist of

Ohio State university, slid through in smooth and active fashion. A loud speaker arrangement made it possible for the convention session to get each word of the proceedings. After the opening festivities during which President Morley and the presidents of Louisville golf clubs welcomed the conventioners to the blue grass vicinity the business end of the show started with Lewis M. Evans, Cedarbrook, Philadelphia, talking on "the fraternal side of greenkeeping." Louie, who is no mincer of words, told the boys that an important part of their work consisted of finding some effective control to use on "the green-eyed monster." He pulled no punches in hitting at any ill-advised comment one greenkeeper might pass on another's work, and made an effective and well-timed plea for team-work and mutual consideration. He brought out the pertinent point that the golfing world is all for the greenkeepers so it is up to them to present a unified front not only in their technical activities but in their professional personal relations.

## Keep Sights on Target.

Evans counseled the greenkeepers to renew their pledges to the association's aim of concerted earnest effort in improving the standard of course condition and by that achievement to better the status and recognition of the qualified greenkeepers.

Prof. Dickinson made the first of his appearances on the program in a brief talk on seed. Dickinson stressed the importance of greenkeepers dealing with reputable seedhouses whose technical facilities and necessity of preserving the valuable business asset of their reputations, provided assurance that the seed would be right. He referred to crop conditions as a commonly neglected factor in considering seed purchases. His talk was especially concerned with south German bent seed. He spoke of the red-top ingredient as being one that must be accepted, and to some extent desirable and certainly as unavoidable. He

also told the greenkeepers that a reasonable amount of chaff in this seed did not rule it out, but rather made it to be preferred to such south German bent seed that had no chaff.

The next paper, that of A. E. Grantham of Richmond, Va., appears on other pages of March GOLFDOM.

Thursday's program was opened by James A. Smith, New London, O., speaking on "the life and activities of soil bacteria." He spoke of the breaking down of wood, straw and other denitrifiers providing the home for bacteria beneficial to plant growth. The next step he described as the nitric acid combining with lime in the soil to make nitrates soluble in water and available for plant feeding. He spoke of the combination of plant food, air, water, temperature and darkness giving the heaviest development of nitrates.

Smith identified clay soil as meaning that nature was through supplying a home for bacteria but added that soil wasn't good just because it was black. He strongly advised against stratification of any plant food material in green construction.

### Compost Recommendations.

In speaking of compost practice he recommended the compost area rather than the compost pile. He cited the statement of Dr. Lipman, the New Jersey expert, to the effect that half of the value of stable manure is in its liquid. Out of ten tons of raw manure improperly cared for, the Lipman finding quoted by Smith showed a ripe manure production of 2,100 pounds,

whereas this manure kept wet and dark so the denitrifiers can get busy results in a 3,600 pound first class result. Smith recommended starting the compost area in the fall, going over it with a spring-tooth harrow in early spring and harvesting the top-dressing in July when the maximum in nitrate content has been attained. Ample storage in a dry place was the final phase of his recommendation.

Dr. Howard Sprague then came to the front with his recital of the seven years experiments on turf grasses at the New Jersey Agricultural Experiment station. Summaries of New Jersey findings are shown in tables herewith. Greenkeepers were particularly interested in the evidence that weeds have acid and alkali tolerance about as marked as that of the finer turf grasses. According to Sprague the testing of the theory of acidity in weed control shows the theory to be of doubtful validity. He pointed out the New Jersey tests showed clover doesn't necessarily come in when liming has been done. He stated that by adding nitrogen the grass was able to flourish without being handicapped by clover's supply of nitrogen from the atmospheric source. He added that lime in easily soluble form stimulates clover but lime plus nitrogen does not encourage clover growth.

### Worms Want Happy Medium.

He referred to the chart records in stating that worms evidently are not happily at home in soils that are either too acid or too alkaline. He commented that the acid plots' failure to keep their good condition

TABLE 1—The Effect of Various Fertilizer Treatments on the Condition of Virginia Creeping Bent Turf. Averages for the Seasons of 1927, 1928 and 1929, New Brunswick, N. J. (Referred to in Dr. H. B. Sprague's Convention Address.)

Treatment.	Material applied per 1,000 sq. ft. per year. (Lbs.)	Nitrogen applied per 1,000 sq. ft. per year. (Lbs.)	Acidity of soil. (pH.)	Acidity of soil in Nov. 1929. (pH.)	Total dry wt. of weeds per plot. (Gms.)	Proportions of turf composed.	Of turf in November.	Earthworm casts per 12 sq. ft.
No fertilizer	0.0	0.0	5.1	5.8	3.3	Of white clover (%)	Of poa annua (%)	
Nitrate of soda	18.7	2.83	5.5	6.3	3.0	33	21	poor 50
Sulfate of ammonia	14.1	2.83	5.4	5.1	1.2	12	15	good 51
Ammo-Phos	16.9	2.83	5.8	5.4	1.0	7	11	p. to m. 36
Complete fertilizer*	70.2	2.83	6.3	6.0	2.2	9	11	p. to m. 32
Alfalfa meal	115.7	2.83	6.4	6.1	3.0	19	18	good 83
Manure	688.7	...	6.1	5.8	4.9	23	19	m. to p. 51
Bone meal	117.1	2.83	6.4	6.3	5.0	24	24	g. to m. 70
Sulfur—Light rate	6.9	...	...	...	...	...	...	...
Nitrate of ammonia	8.8	2.83	5.3	5.2	1.6	9	15	medium 35
Sulfur—Heavy rate	13.8	...	...	...	...	...	...	...
Nitrate of ammonia	8.8	2.83	5.1	5.0	1.9	9	7	medium 23
Hydrated lime—Light	68.9	...	...	...	...	...	...	...
Nitrate of ammonia	8.8	2.83	7.6	7.7	2.4	9	10	good 45
Hydrated lime—Heavy	137.8	...	...	...	...	...	...	...
Nitrate of ammonia	8.8	2.83	7.8	7.9	1.3	9	15	good 42

\*The complete fertilizer contained 5% nitrogen, 10% phosphoric acid and 5% potash.

TABLE 2—The Effect of Various Fertilizer Treatments on the Condition of Metropolitan Creeping Bent Turf. Averages for the Seasons of 1927, 1928 and 1929, at New Brunswick, N. J.

Treatment.	Material applied per 1,000 sq. ft. per year. (Lbs.)	Nitrogen applied per 1,000 sq. ft. per year. (Lbs.)	Acidity of soil.* (pH.)	Total dry weight of weeds per plot. (gms.)	Proportions of turf composed	Vigor of turf in November.†	Earthworm casts per 12 sq. ft.
No fertilizer .....	0.0	0.0	5.9	12	18% of white clover.	poor	63
Sulfate of ammonia.....	14.1	12.83	5.4	0.1	33	4 medium	38
Urea .....	6.3	12.83	5.7	1.9	3	19 m. to g.	57
Cottonseed meal .....	44.5	2.83	5.9	1.5	8	15 good	77

\*The pH. values give a measure of soil acidity. The pH. is 7.0 for neutral soils. Figures lower than 7.0 indicate acidity, the lower the figure the greater the acidity.

†"Good" means good vigor and color. "Poor" means poor vigor and color. "Medium" indicates an intermediate condition of vigor and color. The last fertilizer treatment of the season was applied during the first half of September.

much into the fall was due to the noticeable difference in bacterial activity.

Tribute was paid to the greenkeeper as the keystone man of club progress by O. J. Noer who spoke on "the trend of green-keeping." Referring to the rivalry between clubs and the difficulty of getting and holding members Noer said the greenkeeper on these counts was put in a position of vital importance. This, he added, called for every greenkeeper to stay open-minded and abreast of the swift pace of technical development. He lauded the greenkeepers as being more intensely interested in the study of their business than any other group concerned in agricultural and horticultural work.

### Many Mistakes Unnecessary.

The Milwaukee turf scientist impressed upon his hearers the necessity of respecting honest differences of informed opinion. He said many new courses present problems in turf maintenance that never should have occurred, in telling the wisdom of getting a competent greenkeeper in on the ground at the start and not letting false economy govern course construction. He emphasized the value of educating new clubs in what to demand and what to expect.

In the discussion following the Noer address, T. H. Riggs-Miller lamented the

greenkeepers' lack of time for specialized investigation and compared the greenkeeper to the family doctor in general practice. He told his fellow greenkeepers that "in building up the experts we are building up ourselves."

The greenkeeper is the works-manager of plants having invested capital of from \$125,000 to \$1,500,000 and in such a status should be considered, said Wendell P. Miller in prefacing his address on "Drainage and Soils."

The "standing room only" sign was hung out when Prof. L. S. Dickinson presented his address on "a new phase in the control of large brown-patch." The Dickinson work covers five years and although the Bay State turf authority stated he was not entirely ready to present his case as conclusive, the interest in the successful results obtained thus far was such that he yielded to the greenkeepers' eagerness for information.

### Probes Large Brown-patch.

Temperature is the controlling factor in large brown-patch, according to the Dickinson findings to date. Work along the temperature line has been done by the Green section and by private investigators, especially by Joe Mayo, superintendent of the Del Monte properties and A. C. Chapman, green-chairman of Audubon C. C.

TABLE 3—The Effect of Lead Arsenate Combined with 12 Different Fertilizer Treatments on Virginia Creeping Bent Turf. Average of All 12 Treatments for the Seasons of 1928 and 1929. New Brunswick, N. J.

	No lead arsenate.	10 lbs. lead arsenate per 1,000 sq. ft. per season applied in top dressing.
Acidity of soil (pH.).....	6.1	6.1
Weeds per plot in gms. (dry weights).....	3.2	1.0
White clover, per cent of all vegetation.....	8.6	9.0
Poa annua, per cent of all vegetation.....	17.7	11.8
Color and vigor in November.....	Medium to good	Medium to good
Earthworm casts per 12 sq. ft.....	38	0



This sectional view of the exhibit floor at the N. A. G. A. convention shows the vast betterment in facilities the exhibition experienced this year.

whose records on temperature and humidity have been employed in the brown-patch battle, but the Dickinson research in this field is considerably longer and farther into this phase than any other work reported.

The work at M. A. C. done by Dickinson and his staff has been checked by the Boyce Thompson institute and it was upon the institute's endorsement of his findings that Dickinson finally decided to release his report. Large brown-patch, so the professor related, is found all over the world. Some research done in Ceylon on brown-patch the M. A. C. scientist found valuable in checking his own work. Acting upon hunches he had received from greenkeepers and adapting work done in combating the disease on potato Dickinson set after brown-patch, using as his test plots various strains of bent.

He stated that large brown-patch ordinarily is in a resting stage, varying in size from a pin-point to thumb-nail extent. Under favorable temperature circumstances these resting bodies develop mycelia or feeding hairs. The resting bodies are hard to kill by fungicides, and are resistant to the usual extremes in temperature. He discounted the danger of putting clippings back on to greens in the form of compost for the brown-patch resting bodies were on the greens anyway.

### 83° F. Brown-patch Optimum

In the work at M. A. C. it was found that the brown-patch mycelia develop into virulent form best at 83 degrees F. At 90 degrees F. they develop very little and at 50 degrees F. to 60 degrees F. their development is almost completely retarded. Conditions that are most favorable for turf development almost always are most favorable for the development of large brown-patch. Soil temperature below the surface is not to be considered, said Dickinson. A close cut grass is most sensitive to temperature changes Dickinson said in explaining green susceptibility to brown-patch.

Presenting the summary of his investigations the M. A. C. professor said large brown-patch is not necessarily nocturnal. A finding which checks with the observation made by Mayo several years ago. Joe found the optimum temperature as set by Dickinson came during the middle of the day at the Del Monte properties. By being on the job at the right time, Dickinson said, a greenkeeper could prevent the spread of large brown-patch. Large brown-patch is found most frequently where there is a poor soil and air drainage. In this connection Dickinson stressed the importance of correct watering practice in brown-patch prevention. Humidity, he stated, influences the critical stage only as it affects the



temperature, but humidity does increase mycelial growth.

Temperature forecasts have an important place in controlling brown-patch, Dickinson reminded the greenkeepers.

In telling of the two distinct stages in large brown-patch control, the Massachusetts expert said that if the disease is controlled in the critical stage there is little, if any, injury to the grass. He named as the critical stage a period in which the temperature ranges from 62 degrees F. to 68 degrees F., following a sudden drop from a higher temperature, and 73 degrees F. to 90 degrees F. as the range of parasitic stage. It takes about three and a half hours of this temperature to bring the disease to lively activity.

### Laboratory Tests Check

Dickinson showed a number of large temperature charts which had brown-patch history indicated along with the temperature curve. Conditions of sudden chilling to the critical stage which had occurred on the test plots outside were reproduced in the laboratory with identical results.

Noting that moisture helps mycelial growth Dickinson referred to the effectiveness of poling the greens at the critical time to prevent the development of large brown-patch. Relative to the application of fungicides to prevent brown-patch Dickinson made emphatic the importance of application at the critical times and in the proper manner. He stated that almost half the amount of fungicide recommended for control would be effective if not so much were lost in its manipulation.

With reference to the practical application of his findings Dickinson said comparative temperature readings of greens could be made so they could be closely estimated from the readings of a thermograph at the greenkeeper's headquarters.

Early morning mowing helps to prevent the development of large brown-patch, he stated. Among the factors that promote large brown-patch are deep wells producing very cold water and sprinklers deluging greens.

He recommended late evening watering after the greens had a chance to cool down. He stated that fungicide effectiveness is brief but highly valuable at the critical stage of brown-patch development.

At the conclusion of his address Prof. Dickinson made it plain that his report applied only to large brown-patch.

What the Canadian greenkeepers are do-

ing to work out their major problems of short seasons, winter kill and generally limited maintenance budgets was related by W. J. Sansom, greenkeeper of the Toronto G. C., whose address will appear in an early issue of GOLFDOM.

Dr. John Monteith of the Green section spoke in interesting outline of the activities and policies of this department of the U. S. G. A. There were many enlightening details of the Green section's work, aims and handicaps in the Washington notable's remarks. GOLFDOM in the near future will carry this address.

Concluding the Friday and final session of the convention, W. O. McAllister of the Davey tree doctor organization spoke on tree care. He hit the high spots of his subject with elementary details of transplanting, fertilization, tree surgery and protection against insects and scales. McAllister said the old idea used to be that spring was the best time for tree fertilization but his associates have learned that fertilization can be done with value the year around. On trimming he said the best time to trim is when the saw is sharp. Relative to painting tree wounds to prevent decay he said any good lead paint was O. K. The interest in the address gave evidence that the subject was a live one with greenkeepers and called for further technical information.

The curtain fell on the meeting with a midnight stag pulled by George Davies and his local reception committee.

Exhibitors this year reported a satisfactory amount of business and promising contacts made as a result of the showing at the Louisville armory. The exhibition was more extensive than any other the association has run. It demonstrated that it had a highly important place in the educational plan of the annual affair. Much interest attached to the construction of the two greens on the convention floor. The result of the work was a draw so the teams headed by Charley Erickson and Joe Valentine split the \$100 prize money. Both jobs were works of art and stirred up their champions to spirited discussions.

As testimonials of appreciation Pres. Morley and Fred Burkhardt, chairman of the convention committee, were presented with watches during the course of the meeting. The presentation was a happy spontaneous thought for the convention's success called for signal recognition of these two toilers and their associates.