Bert Gee, in charge of the oldest municipal golf course in Canada, that of Edmonton, Alberta, has come to the Pacific Coast for his winter's visit, thus making local greenkeepers with work beginning to pile up green with jealousy. Course superintendents in the East have no cause to envy their contemporaries out here.

Paradoxically enough, now that the rain has come in California, greensmen have to work harder than ever to keep the color in the greens because the grass insists upon hibernating unless treated. Chemical fertilizers are in order on many courses because play is at its height and must not be stopped by heavy topdressing.

Canadian News
By J. H. EVANS, Golf Editor, Toronto Globe

A larger delegation than in former years will attend the February convention of the National Greenkeepers' association in Columbus, Ohio, to represent the Ontario Greenkeepers' association, President W. J. Sansom announced at the January meeting.

Those superintendents and greenkeepers who are certain of attending the convention are Mr. Sansom, Toronto Golf club; Howard Lloyd, Rosedale Golf club; Frank Hamm, Royal York club; William Austin, Hum- ber Valley club, William Kirby, Lambton Golf and Country Club; James McCullough, of the Scarboro Golf and Country Club and a representative from the Toronto Ladies' Golf and Tennis club.

In addition to the seven greenkeepers who have made arrangements through their clubs to attend the convention, others are expected to join the party when it leaves on February 2. Mr. Sansom explained that club directorates were now considering the advisability of allowing their greenkeepers to take advantage of the opportunities provided by the National Greenkeepers' Association to study the problems with which they are confronted during the playing season.

Officers of the Ontario Greenkeepers' association are pleased with the attitude taken by the clubs toward the association's annual convention. It has taken some years to convince club secretaries and other officials that greenkeepers can and do derive a great deal of valuable information from the annual gathering, and it is with some satisfaction, indeed that the Ontario association has accepted the changing attitude of the larger clubs of the Province.

Mr. Sansom believes there might have been a much larger representation of Ontario greenkeepers at the convention but for the fact that several greenkeepers failed to make the necessary arrangements with their clubs before winter and are now confronted with the fact directorates are being changed which makes it more
One year from now—two, five or more—what will your mowing equipment be like? What will it have cost you? How will your course look? Have no regrets—no apologies to make—select the new F. & N. Unbreakable All-Steel Mowing Equipment—made by the world's largest mower manufacturers. Compare it yourself:

F. & N. All-Steel TITAN Mowers in this equipment are built especially for rugged service on all kinds of fairways. This year they are still lighter, more flexible, easier handled, longer lasting.

They won't break down just before a tournament or at any crucial time—they are positively unbreakable! Guaranteed!

Patented interlocking frame and cutter bar construction keeps the mowers in perfect alignment... prevents breakage... saves time and repair expense.

Gears are CUT from drop-forged steel—heat-treated—and turn on genuine Timken Roller Bearings in a constant bath of oil.

The blades—FIVE—are made of special analysis chrome vanadium steel—the toughest, hardest known.

Every mower is accurately machined and fitted together—not merely assembled.

BEST OF ALL—the revolving reel embodies the genuine, patented F. & N. Self-Adjusting Device.

The new all-steel gang frame, too, is even stronger, lighter, more flexible, more efficient. It fits any tractor—handles mowers in gangs of three or five. Send for full particulars.

The F. & N. Putting Green Mower

For obtaining velvety, smooth greens so necessary today, greenkeepers everywhere say this mower is easily the finest they ever used. Self-adjusting reel bearings—Alemite oiling—etc. Rubber-tired carriage for transporting is furnished. Write for catalog today.

The F. & N. Putting Green Mower

The F. & N. All-Steel Quintet Fairway Equipment

UNBREAKABLE!

A number of the clubs are taking a deeper interest in the Greenkeepers' organization and are sending their representatives to the convention," said Mr. Sansom. "If some other greenkeepers had been able to get into touch with officials for 1931, there is every likelihood they would also have been at the convention. It isn't entirely the fault of the clubs."

The delegation from Ontario is going to the convention to extract a promise that the national convention will be held in Toronto in 1933. The delegation understands that the 1932 convention will be held in New York City, but is anxious to secure the gathering of the ensuing year. The delegation will have the official support of the city when it makes its plea for the convention.

That which would be expected from Ontario Greenkeepers' Association and the city of Toronto if the convention was held in Toronto was placed before the January meeting of the greenkeepers' association by Mr. Sansom who had secured the data from Fred Burkhardt, of Cleveland, Ohio. A representative of the city's official tourist bureau attended the meeting and expressed the opinion that there would be little trouble in meeting the requirements of the National Greenkeepers' association. As a consequence, the delegation to the Columbus convention proceeds with a hearty invitation to meet in Toronto in 1933.

'We hope to bring the convention to Toronto in 1933. Insofar as the city is concerned there will be no trouble," said Mr. Sansom. "In fact, I was surprised at the amount of assistance it was willing to extend to us. There is no use of thinking of it for 1932. We left the last convention with the understanding that it would be held in New York City. We must wait until 1933."

Officers of the Ontario Greenkeepers' association for 1931 are: President, W. J. Sansom; secretary-treasurer, Bert Hawkins, executive committee, Howard Lloyd, William Kirby, Joseph Stanfield, Fred Haines and James McCulough.

Are those critical eyes that line-up 30 foot putts expected to overlook the unsightly, worn-out cups, markers, direction signs, etc.?
Mid-West Elects
By A. L. BRANDON, Secretary

The annual meeting and election of officers of the Mid-West Greenkeepers' Association, was held in the Great Northern hotel, Chicago, Monday evening, January 5. After a pleasant dinner and social period the boys got to work and elected the following to guide the Mid-West for 1931:

M. L. Bezek, President, Beverly Country Club, Chicago, Ill.
Alfred Buller, First Vice President, Chickaming Country Club, Lakeside, Michigan.
R. N. Johnson, Second Vice President, Medinah Country Club, Medinah, Illinois.
Fred Kruger, Treasurer, Olympia Fields Country Club, Olympia Fields, Illinois.
A. L. Brandon, Secretary, St. Charles Country Club, St. Charles, Illinois.

Directors: Fred Ingwerson, Bunker Hill C. C., Norwood Park, Ill., for one year; John MacGregor, Chicago Golf Club, Wheaton, Ill., for one year; Gus Graham, Glenwoodie C. C., Glenwood, Ill., for two years; Alec Binnie, Shoreacres Golf Club, Lake Bluff, Ill., for two years; Pete Stewart, Lake Shore C. C., Glencoe, Ill., for two years.

Reports of the various committees showed that 1930 had proved an excellent and kind year for the Mid-West Association and the members being in a somewhat prophetic mood forecasted that 1931 would prove better yet.

1930 ended with a deficiency of slightly over seven and one-half inches of precipitation and at this writing Jan. 10th the deficiency is already .47 inches—it seems that the gentleman who remarked that this is supposed to be a dry country said a mouthful. As to the temperature, it has been decidedly mild—probably the thermometer has flirted with zero a half dozen times this winter.

Our next meeting will be January 29th at the Great Northern Hotel, Chicago. Arrangements will be made for attending the N. A. G. A. conference and show—train time, fare, etc., will be discussed.

Schardt Elected President

Al Schardt, greenkeeper, Wanakiki golf club, Buffalo, N. Y., was elected president of the Western New York District Greenkeepers' Association, at the annual meeting held recently. The other officers for 1931 are: Vice President, Frank Bulges, Municipal Links, Niagara Falls; Secretary, Arthur Stephen, Erie Downs Golf Club; Director, Robert Henderson, Buffalo Country Club.

It was announced at the meeting that William Phillipson, greenkeeper at the Willowdale Golf Club for the past ten years, has accepted a new position in Grand Rapids, Michigan. 'Bill' has made a splendid record in Buffalo and every member of the Western New York District Greenkeepers' Association wishes him the best of success.
Rutgers Course in Turf Management

Rutgers University, New Brunswick, N. J., will hold a short course in Turf Management, February 16-21. This course is designed to acquaint greenkeepers, members of Green committees, estate managers and others in some of the fundamental principles that underlie the successful establishment of turf on golf courses. The same principles apply to the lawns of parks and estates.

Tuition is free but a charge of five dollars is made for registration. Applications should be filled out and sent in as early as possible, to F. G. Helyar, Director of Short Courses, Rutgers University, New Brunswick, N. J.

Following is a summary of the course:

<table>
<thead>
<tr>
<th>Period</th>
<th>Subject</th>
<th>Instructor</th>
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<tr>
<td>Monday A.M.</td>
<td>1 hr. 9-10 Registration</td>
<td>Dean J. G. Lipman</td>
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<td>1 hr. 10-11 Modern turf management</td>
<td>Prof. L. L. Lee</td>
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<td>1 hr. 11-12 Soil types and plant growth</td>
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<td>Monday P.M.</td>
<td>2 hrs. 1-3 Soil Physics—structure, aeration, moisture, supply, etc. Dr. J. S. Joffee</td>
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<td>2 hrs. 3-5 Drainage—natural and artificial.</td>
<td>Prof. E. R. Gross</td>
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<td>Tuesday A.M.</td>
<td>1 hr. 9-10 Principles of soil and plant chemistry. Dr. J. S. Joffee</td>
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<td>1 hr. 10-11 The natural supply of plant nutrients from the soil. Dean J. G. Lipman</td>
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<td>1 hr. 11-12 The nature of commercial fertilizers. Prof. A. W. Blair</td>
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<td>Tuesday P.M.</td>
<td>1 hr. 1-2 The use of commercial fertilizers. Prof. A. W. Blair</td>
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<td>1 hr. 2-3 The nature of soil acidity and its detection. Mr. H. R. Prince</td>
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<td>1 hr. 3-4 Forms of lime and their use on turf. Mr. H. R. Cox</td>
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<td>Wednesday A.M.</td>
<td>1 hr. 9-10 Fertilizer tests at New Brunswick. Dr. H. B. Sprague</td>
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<td>2 hrs. 10-12 Soil micro-organisms and plant nutrition. Dr. R. I. Starkey</td>
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<td>Wednesday P.M.</td>
<td>1 hr. 1-2 Compost materials and composting. Mr. H. R. Cox</td>
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<td>1 hr. 2-3 The structure and function of plants. Dr. H. B. Sprague</td>
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<td>1 hr. 3-4 The characteristics of good turf plants. Dr. H. B. Sprague</td>
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<td>Thursday A.M.</td>
<td>1 hr. 9-10 The climatic adaptation of turf plants. Dr. H. B. Sprague</td>
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<td>1 hr. 10-11 The soil adaptation of turf plants. Mr. E. E. Evaul</td>
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<td>1 hr. 11-12 Seeds of turf plants. Miss J. G. Fiske</td>
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<td>Thursday P.M.</td>
<td>1 hr. 1-2 Inspection of seed testing laboratory. Miss J. G. Fiske</td>
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<td>2 hrs. 2-4 Turf infesting insects and their control. Prof. C. C. Hamilton</td>
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<td>1 hr. 4-5 Weeds and their control. Dr. H. B. Sprague</td>
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<tr>
<td>Friday A.M.</td>
<td>2 hrs. 9-11 Turf diseases and their control. Mr. E. E. Evaul</td>
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<td>1 hr. 11-12 Starting new turf. Dr. H. B. Sprague</td>
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<td>Friday P.M.</td>
<td>1 hr. 1-2 Renovating poor turf. Mr. E. E. Evaul</td>
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<td>1 hr. 2-3 Care of turf—watering, mowing, rolling, top dressing, etc. Dr. H. B. Sprague</td>
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<td>1 hr. 3-4 Final conference. Dr. H. B. Sprague</td>
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Short Course for Greenkeepers

The College of Agriculture of the University of Wisconsin at Madison, will give a short course for greenkeepers and Green committee members which will include a number of vital problems of golf course maintenance. It will cover a period of four and one-half days, from February 9-13.

The number which can be accommodated is limited to 80. Applications will be accepted in order of their receipt until the maximum number is reached. Applications must be filed not later than February 9, 1931.

A registration fee of $10 payable when application is made, will be charged to help defray the expense involved in giving the course. There will be no other fees. Registration will take place at the Horticultural Building, University of Wisconsin, Monday, February 9, between 10 and 12 a.m.

For additional information, write to James G. Moore, Horticultural Building, Madison, Wisconsin.

Wisconsin Greenkeepers’ Course

MONDAY, FEBRUARY 9
1:30 P.M. Fundamentals in Preparing Soils for Greens Construction O. J. Noer
2:30 P.M. Topography of the Green in Relation to Drainage and Play Kenneth Welton
Other Drainage Problems of the Green E. R. Jones
The Orientation of the Green as Regards the Snow Problem J. G. Dickson

TUESDAY, FEBRUARY 10
8:00 A.M. What to Look for in a Fairway Mower F. W. Duffee
8:45 A.M. Fundamentals in Grass Development G. W. Mortimer
10:30 A.M. Grasses for Greens John Montieth, Jr.
1:30 P.M. Laboratory Instruction
3:30 P.M. Experiences in Growing Bent C. T. Pedlow
Robert Zwerg H. A. Arnold

WEDNESDAY, FEBRUARY 11
8:00 A.M. Sources of Plant Nutrients C. J. Chapman
8:50 A.M. Fertilizing and Top Dressing Greens O. J. Noer
10:00 A.M. Mowing Greens—Its Relation to Maintenance and Play John Montieth, Jr.
11:00 A.M. Controlling Diseases of the Greens A. S. Dahl
1:30 P.M. Laboratory Instruction
3:30 P.M. Landscaping Problems F. A. Aust

THURSDAY, FEBRUARY 12
8:00 A.M. Grasses for Tees, Fairways and Rough John Montieth, Jr.
9:00 A.M. How Cutting Affects Grass A. Graber
10:00 A.M. What the Movies Show Kenneth Welton
10:40 A.M. Traps, Their Location and Maintenance Kenneth Welton
1:30 P.M. Laboratory Instruction
3:30 P.M. The Greenkeepers’ Records F. R. Elwell

FRIDAY, FEBRUARY 13
8:00 A.M. The Well-Kept Course John Montieth, Jr.
9:00 A.M. Fertilizers as Related to the Character of the Turf on Fairways George Mortimer
9:47 A.M. How to Determine the Need of Plant Food Elements O. J. Noer
10:30 A.M. White Grub Control C. L. Fluke
1:30 P.M. Laboratory Instruction
3:30 P.M. Final Conference.

Representatives will be in attendance at the National Greenkeepers Show, Columbus, Booth No. 47.
Here is the complete Official Program of the 5th Annual Meeting of the National Golfcourse Maintenance Association at Columbus, February 3-6, 1931.

## Official Program, Meetings, Etc.

### Monday, February 2 — 7:00 p.m.
Exhibitors’ dinner—Headquarters, Deshler-Wallick Hotel

### Tuesday, February 3
10:00 A.M.—Golf Show Opens—Columbus Auditorium (Admission free)
7:30 P.M.—Meeting of District Vice-Presidents
8:30 P.M.—Executive Committee Meeting

### Wednesday, February 4
10:00 A.M.—Golf Show Opens—Columbus Auditorium (Admission free)
10:00 A.M.—General Meeting of N. A. G. A. Committees—Headquarters. John Morley, President
10:30 A.M.—Show Committee Meeting—Headquarters
2:00 P.M.—Conference Opens—Columbus Auditorium
7:30 P.M.—First session of business meeting—Headquarters

### Thursday, February 5
10:00 A.M.—Golf Show Opens—Columbus Auditorium (Admission free)
2:00 P.M.—Educational Conference—Columbus Auditorium
7:00 P.M.—Annual Banquet—Deshler-Wallick Hotel (Secure tickets at Registration Desk)

### Friday, February 6
10:00 A.M.—Golf Show Opens—Columbus Auditorium (Admission free)
10:30 A.M.—Annual N. A. G. A. Convention—Deshler-Wallick Hotel (Open to members only)
2:00 P.M.—Educational Conference—Columbus Auditorium
12:00 Midnight—Annual Stag Party (See Jos. Williamson)
On Educational Program

Annual Greenkeepers’ Convention and Educational meeting—known speakers will discuss problems of science and management.

Greenkeepers’ Conference Program

GEORGE M. McCCLURE, CHAIRMAN
Soil Technologist, Ohio State University

Wednesday, February 4 — 2:00 p.m.

ADDRESS OF WELCOME—By Colonel John Morley
GOLF COURSE CONSTRUCTION IN RELATION TO COURSE MAINTENANCE—By Tom Winton, Golf Course Architect, Tuckahoe, New York
CARE OF TREES—By Martin L. Davey, President, Davey Tree Expert Co., Kent, Ohio
WHY MINERALS IN FERTILIZERS—By Professor R. J. H. DeLoach, Director of Agricultural Research Armour Fertilizer Works, Chicago
GROWING GRASS SEEDS IN AMERICA—By Theodore E. Odland, Agronomist, Agricultural Experiment Station of Rhode Island, Kingston
COOPERATION—By Ganson Depew, Chairman, Green Section committee, United States Golf Association, Buffalo, N. Y.

Thursday, February 5 — 2:00 p.m.

IRRIGATION—By John MacGregor, Greenkeeper, Chicago Golf Club, Chicago
SOME WATER RELATIONS OF TURF PLANTS—By Dr. Howard B. Sprague, Agronomist, State of New Jersey Agricultural Experiment Station, New Brunswick
DRAINAGE—By Edward B. Dearie, Jr., Golf Course Architect and Constructor, Chicago
POISONS IN LIMED AND UNLIMED SOILS—By J. W. White, Professor of Soil Technology, The Pennsylvania State College, State College
A FEW COMMENTS ON THIS AND THAT—By B. R. Leach, Riverton, N. J.

Friday, February 6 — 2:00 p.m.

THE GREENKEEPER AND HIS CHAIRMAN—By L. S. Dickinson, Assistant Professor of Horticulture, Massachusetts Agricultural College, Amherst.
PRACTICAL GREENKEEPING—By Jos. Williamson, Greenkeeper, Scioto Country Club, Columbus
BOOKKEEPING FOR GOLF COURSES—By E. W. Doty, Treasurer Cleveland District Golf Association, Cleveland
THE FORUM—An Open Discussion, Conducted by Professor L. S. Dickinson
Uses of Peat and Muck*  
By WRIGHT McCALLIP

Read at the January meeting of the Central Ohio District Golf Association

The subject assigned for this meeting is the "Uses of Peat and Muck" to supply the lack of much needed organic materials in the construction and maintenance of our golf courses. It is a pertinent subject and one that should interest us all and by going back to the beginning we find the origin as well as the composition of the materials and will be better fitted to judge values.

Nature provides a cycle of life, growth and death followed by decay. She clears the path for the future growth of plants, animals and humans by this cycle. Unless this were the case, there would soon be no space available for life of any sort.

The first stage of decomposition is the same in either animal or vegetable matter. An animal soon starts to putrefy because its body is made up largely of water. Grasses, mosses, trees, weeds, straw and the like take longer because in dying they have dried out and must first come in contact with moisture before decomposition can set in.

Annually, as the plant growth of one season falls to the ground, it is soon covered with water from the fall rains, winter snows, etc., and by the following season has undergone partial decomposition. In many low-lying areas, this partially decayed organic matter has accumulated for countless ages and has resulted in the formation of our peat deposits which in some areas reaches to a depth of 75 to 100 feet.

The top layers of these peat deposits undergo further decomposition because the air, moisture and heat so necessary in the breaking down process have been present, while the underlying peat seems to stay in practically the same state of decay as in its early formation. The fact that this underlying peat is nearly always in contact with very cold water tells us why further decomposition has not taken place, for without heat above 40 degrees decay is impossible. Ordinary refrigeration is evidence of this fact.

Peat, under these conditions, seems to be a material that is resistant to further decay but like scrap leather contains a future available nitrogen content. We must remember, however, that further decomposition, in either case, must so change the character of the material as to make it possible for it to give up this nitrogen content. When this change has taken place "peat" is no longer "peat," it is now "peat humus."

Muck is a peat humus that has been mixed, through the ages past, with washed in soils and consequently is an adulterated substance. Its very name implies a mass of undesirable materials and should be considered as such in construction and maintenance work. These undesirable materials have been supplied with air, moisture and heat, causing a very rapid breaking down and as a result we have a black, gummy mass of very poor physical structure due to the active peat humus being consumed. Therefore, its value as a peat humus material is a doubtful quantity and will only have a nitrogen-producing value in proportion to the peat humus which it now contains.

With a clear idea of what peat, peat humus and muck are we can intelligently consider the uses we might put them to in our construction and maintenance.

Peat, as you know, is used quite extensively by landscape architects, gardeners, florists and to some extent by greenkeepers. The only practical results we may expect to get from the use of peat is as a moisture holding mulch and an aid in the improvement of physical condition. Thoroughly mixed in the soil it will improve the physical condition but only in proportion to its fineness. To what extent the soil texture will be improved depends upon the number of soil particles that it will separate and the results are in direct proportion.
If we are expecting the immediate availability of the nitrogen content of the peat we are bound to be disappointed for it cannot become available until it has reached that stage of decay where it is possible for the nitrifying bacteria to become active, thus forming nitric acid which combines with lime or other alkaline bases to make a nitrate.

**USE OF MUCK A MISTAKE**

The use of muck on our golf courses is clear out of the picture. It's invariably poor physical structure alone is reason enough for us to dismiss it at once as a useable material. However, it is a strange fact that its black color entices us on and leads us to believe it has wonderful possibilities. Its color is just a mask and back of it is nothing but trouble. The structure is gone and when wet, it is a mass impervious to moisture and air so vital to the activities and welfare of our nitrifying bacteria.

Some of you may be planning to use muck. Before you do, take the precaution to have an analysis made, particularly of its physical condition and note especially the speed that water will penetrate into it after it has become wet and dried. If one C.C. (15 drops) of water takes more than 60 seconds to penetrate into a dried plug of soil one inch in diameter it is a sure sign that the physical condition is poor and that its peat humus content is very low.

One sample of muck soil, that looked like it had wonderful possibilities, was examined during the past year and showed a speed of porosity of 1245 seconds, compared to the normal speed of 60 seconds. This gives you some food for thought as it is not an unusual case.

**PEAT HUMUS HELPS BACTERIAL ACTION**

The deductions to be gathered from these facts points on an organic material in a stage of decay between peat and muck as the most desirable material for use. Peat humus is such a material and is the building structure in which every important bacteriological activity takes place. It furnishes food and energy and supplies the additional air and moisture so necessary for their interrupted and ceaseless workings.

It follows that with a great amount of peat humus in the soil the greater will be the housing facilities for and a corresponding increase in the number of desirable soil bacteria. It greatly improves soil texture or physical condition; through its fineness it provides mellowness; through expansion and contraction, porosity and aeration; through its water-holding power, added moisture. As a dust mulch, it conserves surface evaporation. It acts also as an insulation against sudden temperature changes, making possible a slow transition from heat to cold, or cold to heat.

There is just as much difference between peat and peat humus as there is between pig iron and steel.

Think it over.
Diagram of Space—Fifth Annual National Greenkeepers' Golf Show

Columbus Auditorium, Columbus, Ohio