

This exclusive oil painting reproduction depicts the famous 9th Hole at Oakmont, site of the 1962 U.S. Open Championship



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Table 3. The effect of applying four nitrogen sources to Tifton 328 for five consecutive years upon the soil population of sting nematodes at the end of this period.

Source of Nitrogen	Annual Nitrogen Rate of 18 lb/1000 sq. ft. Applied:	Sting Nematode Count* in		Grams of Roots per Core**
		1959	1960	1960
Urea-formaldehyde 38% N	Monthly	105.3	46.0	.31
	Quarterly	78.2	41.0	.35
	Semi-annually	96.3	48.3	.30
	Average	93.3	45.1	.32
Activated Sewerage Sludge 6% N	Monthly	123.3	121.3	.43
	Quarterly	128.0	108.0	.33
	Semiannually	93.8	100.8	.28
	Average	115.0	110.0	.34
Ammonium Nitrate 33.5% N	Monthly	149.5	53.5	.36
	Quarterly	57.5	43.0	.29
	Semi-annually	131.0	48.5	.34
	Average	112.6	48.3	.33
Urea 45% N	Quarterly	47.3	55.5	.35
Check	None	89.0	36.8	.30
5% LSD		NS	47.5	NS

*Number of nematodes in 150 cc of soil, average of 4 replications.

**Core—6 ins. deep and 1 in. diameter.

obtained by the inorganics, but due to this lesser initial availability, have a somewhat longer-lasting effect. The natural organic forms require much less care in application since they do not have a high salt concentration that may burn grass. Most of the organic sources, however, are more expensive per unit of nitrogen than the inorganics. In determining the cost per pound of nitrogen from any given source containing only nitrogen, multiply the per cent of nitrogen in the material times 20 and divide the product into the per-ton cost of the material.

Study Made at Tifton

A study, begun in the spring of 1956, at the University of Georgia Coastal Plain Experiment Station in Tifton was designed to evaluate four nitrogen sources for Tifton 328 Bermuda. This grass was chloropicrin planted on a Tifton loamy sand (previously treated with methyl bromide-chloropicrin soil fumigant) in the spring of 1956 and has since been managed similar to golf greens with respect to irrigation, topdressing, mowing, pest control, etc. The Bermuda was overseeded with rye each fall which received the same

fertilization as the Bermuda. The four nitrogen sources used were two synthetic organics, urea 45 per cent N and urea-formaldehyde 38 per cent N; one natural organic, activated sewerage sludge 6 per cent N; and one inorganic, ammonium nitrate 33.5 per cent N.

Each of these materials except urea was applied at the rate of 18 pounds of nitrogen per 1,000 sq. ft. per year in monthly applications of 1½ lb. N/1,000; quarterly applications of 4.5 lb. N/1,000; and semi-annual applications of 9 lb. N/1,000. Urea was used only in quarterly applications. Phosphorus and potash were applied in the form of an 0-10-20 fertilizer. For each two pounds of nitrogen, the grass received the equivalent of one pound of P₂O₅ and two pounds of K₂O. Lime was applied as needed to maintain a favorable soil pH.

Density, Greenness Rated

Each month during the growing season, visual numerical ratings were made on all treatments with respect to greenness and density of the sod. Treatments

(Continued on page 81)

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By JOSEPH W. DRAGONETTI

24-Hour Day— It Isn't Long Enough for Fazio

You'd agree that it isn't, too, if you traveled around in George's wake . . . He designs courses, operates a couple clubs and even fills in as club pro when the rush is on

What happens when an old playing pro (in this case old connotes experience rather than age— he is only 48) seeks new horizons in the golf world as a course architect, builder and operator? He may end up working 16 to 18 hours a day, seven days a week as seemingly tireless George Fazio does.

Five time winner of the Philadelphia Open, former Canadian Open champion, strong contender in the 1950 USGA Open and one of the country's top golfers for many years, Fazio, who lives in Plymouth Meeting, Pa., shows amazing zest for a variety of activities.

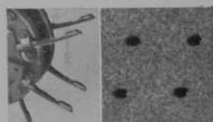
He doesn't get as much time to play or teach as he used to, but he has a full schedule on the business side of the game.

Fazio operates the Flourtown (Pa.) CC, and the Langhorne (Pa.) CC. He has designed and is building the Atlantis CC, near Beach Haven, N.J. He drew up the plans and is building the Kimberton GC, near Phoenixville, Pa. On top of that, he has two other courses in the drawing board stage. (He is not ready yet to reveal their locations).

Quite a schedule and quite an achievement for a man who started caddying



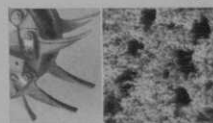
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at a club near Norristown, Pa., when he was only seven.

Enthusied Over Atlantis

Of all his present projects, Fazio speaks most glowingly of the job he is doing at Atlantis. It will be finished this fall and opened next spring. This potential 36-hole course is located atop a bluff on Great Bay overlooking the Atlantic Ocean and Long Beach Island. Fazio has utilized much creative ability and vast experience to design a course that will offer many challenges and breathtaking scenery.

Fazio says that he is confident that Atlantis will be one of the finest courses in the country. It is 100 per cent wooded, has four natural lake holes on it and the course is designed in many shapes and contours, taking full advantage of the natural terrain.

In playing courses throughout the world, Fazio has acquired an abundance of knowhow and feel on how a course should be designed and built. "Feel" connotes an artistic and intuitive approach and George indicates that more than mere drawing boards, blueprints and money are necessary to make a course come alive with individuality.

Architects Meet Challenge

"We can't all be fine golfers," Fazio says, "but golf certainly is appealing to a great cross-section of people. In many respects in our concentration on championship play we have neglected the average golfer. The trend now is to help him, yet keep courses tough for the pros and better amateurs. It poses problems, but I think most architects are equal to them."

Fazio has been the operator of Flourtown CC for the past three years. This is a 9-hole course and was in a rather rundown condition when he assumed control. He has rehabilitated the entire course, put in three swimming pools and added facilities to feed 500 people. Although membership is well-screened, he has kept member and other fees reasonable to stay within the reach of middle bracket people.

He has done a similar job at Langhorne, an 18-hole course. The club is about 60 years old and was in rather rundown condition when George took over. Fazio has been the operator there for the past year. The clubhouse at Langhorne has been remodeled and swimming facilities added. Some changes in the course have been made.

George Fazio attended Norristown



This is one of George Fazio's favorite photos — with Ben Hogan and Lloyd Mangrum, prior to the playoff in the 1950 USGA Open. "They let me hold most of the cup," George recalls, "but when it was all over Ben's the fellow who took it home."

High School and after his caddying experience, became a caddiemaster. He obtained his first pro job at Plymouth CC, also near Norristown. This was followed by a job as assistant pro at Cedarbrook for a year.

Pine Valley Influence

In 1939 Fazio went to a club which has had, according to his own estimates, one of the greatest influences on his golf career. He became an assistant pro at Pine Valley in Clementon, N. J., one of the world's great courses.

Fazio became a par player at Pine Valley and learned much about the game from John Arthur Brown, who has been president of the club for over 30 years and, at 86, still plays good golf. Eb Steiniger, the course supt., also taught him a great deal.

"Brown," Fazio says, "is one of the finest men I have ever known. He is a man of firmness and high integrity and he can make definite decisions. His guidance helped me over many a rough spot."

At Pine Valley, Fazio also absorbed design and maintenance ideas from Steiniger. In later years, as he began to think more and more about becoming an architect, he consulted with Joe Valentine, Merion's venerable supt. He thinks that Steiniger and Valentine are two of the greatest greenmasters he has met.

Fazio served in the Navy in World War II and after the war became a pro at the Hillcrest CC in Los Angeles. Among those who took lessons from him were Bob

(Continued on page 80)

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Grau's Answers to Turf Questions



Attitude on Lime Application Is Distressingly Casual

Lime is important to turfgrass in humid, high-rainfall areas where soils tend to become increasingly acid. In arid regions where evapo-transpiration exceeds rainfall, lime accumulates in the surface to the extent that measures often must be taken to counteract the excess lime and other salts.

Where lime is needed, often it is neglected with damaging effects on soil microorganisms, on fertility relationships and, consequently, on turfgrasses. Applications of lime seldom produce dramatic effects with the result that there is a distressingly casual attitude on the subject.

Old-time "green keepers" demonstrated their awareness of the value of lime when they built their compost piles of alternate layers of sod, peat, manure, lime and soil.

Historical turfgrass literature is liberally sprinkled with items on the use of lime. Here and there we find that agricultural ground limestone on half a fairway had

something to do with producing nearly disease-free turf when an attack of dollar-spot occurred. One could cite many such instances.

Two Important Functions

Louis N. Wise in "The Lawn Book" (W. R. Thompson, State College, Miss.) calls attention to two important functions of lime: (1) it supplies calcium and magnesium, both essential plant nutrients; and (2) it influences soil reaction, reduces acidity and thus affects the availability and utilization of other nutrients.

Wise goes on to say that lime improves the availability of phosphorus and reduces toxic elements. It encourages soil microorganisms and thus discourages mat and thatch formation. Lime improves soil structures, stimulates root development and improves resistance to certain fungus diseases such as dollar-spot and brown-patch. Drought tolerance is increased.

Check on Disease

Hydrated lime (essentially calcium hydroxide) is a valued member of the lime family for turf application. Many supts. maintain a stock of hydrated lime at all times and use it weekly during the summer. Light applications (1 or 2 lbs. to 1,000 sq. ft.) to greens in late evening, dusted on, allowed to lie on the grass until it is rinsed the next morning, check diseases and algae and renew turf vigor. Upon touching the surfaces of leaves and soil there is a sudden and dramatic rise in pH above the point where fungi can live. The net result is greater freedom from disease and an accrual of other benefits previously described.

Note: Carpetgrass and centipedegrass grow best at low pH ranges (4.5 to 5.5).

Supts. are urged to seek out publications on lime from state experiment stations and elsewhere in order to become more familiar with the benefits to be derived from its use.

Readers of the *Agronomy Journal* may have noted a paper entitled "Trace Elements in Agricultural Limestones of the U.S." by P. Chichilo and Colin W. Whitaker, Vol. 53: 139-144, 1961, a contribution from the Soil and Water Conservation Research Div., ARS, U.S.D.A., Beltsville, Maryland. The findings of these researchers and their co-workers point up some extremely interesting and valuable information. One sentence in the synopsis deserves direct quotation:

"At normal liming rates many limestones contribute significant amounts of

(Continued on page 83)

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Book Reviews

Kill It Before It Moves. Words and illustrations by Joe James. Published by A. S. Barnes & Co., 11 E. 36th st. New York 16, N. Y. Price \$2.95.

This book fills a long felt want for instruction in club drinking rooms. James is observant, funny and has been around. His "Tips on Putting" should be read aloud to those nuisances who back up traffic for four or five holes while they fool around before missing putts. "How to Play In the Wind" contains good but seldom printed advice on determining if any member of your foursome chews tobacco, and is especially useful when golfing with baseball players. The "Dictionary of Golf Terms" also is instructive. Among other definitions: "Cleck — water hazard on a Chinese golf course."

1961-1962 Digest of Distinguished Resorts. Published by Robert F. Warner, Inc., 630 Fifth ave., New York 20. Free on Request.

This booklet, describing 79 luxury resorts — 45 in continental U. S. and the rest in Caribbean area and Hawaii — and containing data on rates, availability of golf, etc., has information pros are expected to supply to members who are considering golfing trips.

Tackle Golf This Way. By John Stobbs. Published by Stanley Paul & Co., 178-202 Ct. Portland st., London W1, Eng. Price \$2.

John Stobbs is golf writer for The Observer of London. He writes this book as a supplement to pro instruction, giving just the ABCs of the "how" but a little more of the "why" than time permits the pro to give most beginners or other high-handicap golfers. It is a simple job of explaining the fundamentals. It sifts out elemental points that the 9- to 20-handicap golfers are inclined to forget as they go along into the fancier stages of golf education.

Golf Is Mental. By Archie Hovanesian, 38 Linwood Ave., New Britain, Conn. Price \$2.

Hovanesian, who started in golf 40 years ago and has won several championships in the New Britain area, has made a hobby of studying psychology. He has

applied his psychological studies to his own game and that of others and has come up with some helpful observations. He advocates mental as well as physical practice of golf and advances some suggestions for playing mental golf.

Chipping and Putting. By Bill Casper, Jr., with Don Collett. Published by Ronald Press Co., 15 E. 26th St. New York 10. Price \$5.

Casper gives the reader a bargain price lesson in golf on and around the green. Don Collett, pro at Coronado (Calif.) CC, worked with the 1959 National Open champion in putting this book together. There is a lot about the choice of a putter, the grip, the stance, reading the green, the touch and practice that hasn't appeared in previous books. On chipping and pitching Casper keeps the lessons simple and practical instead of trying to stretch them into many pages of type. What Casper has learned about shots out of sand and out of the rough are passed along to the reader. Bill is a golfer who has done very well by making the game as simple and as easy as possible.

Golf Lessons From The Pros. From Sports Illustrated. Published by Prentice-Hall, Inc., Englewood Cliffs, N. J.

Reprinted are the instruction tips by about 100 men and women professionals. They are good, sound and conventional advice. The illustrations are by Anthony Ravielli and that fellow is the greatest at his work. His drawings are technically correct and he has the knack of spotlighting the salient feature of the tip.

Golf in Europe, 1961. Edited by Horst T. Ostermann. Published by Golf in Europe, 14 Selnaustrasse, Zurich 1, Switzerland.

Every American golfer who intends to play courses on the continent will find this book a highly profitable investment. It is edited by Ostermann, editor of German Golf and an authority who knows European courses. It gives address, telephone number, location, description of course, data on guest privileges, green fee, pro's name and lesson fee, caddie fee, dates of season, and hotel information.

It covers 350 courses in 17 European countries. It is in English. The book doesn't cover courses in Britain and Eire. Those are listed in The Golfer's Handbook, 94 Hope St. Glasgow C2, Scotland, which is \$5.