

Results Show Value of Three Phase Fertilization

By B. R. LEACH

*"O father, I hear the church bells ring,
Oh, say, what may it be?"
"Tis a fog bell on a rock-bound coast"—
And he steered for the open sea.
—Wreck of the Hesperus.*

TWO or three years ago I attended the annual meeting of the Green Section at New York, and sat on a hard and uncomfortable chair for two hours while absorbing the series of addresses comprising the opening session of the meetings. If my memory serves me the program went something like this:

"What the Green Section Has Done for Me" By Mr. Wormwood Spatz, Chairman, Long Bar Harbor C. C.

"Why We Should Support the Green Section." By Cholmondeley Chubb, Chairman, Minnetooka C. C.

"My Experiences as a Green Chairman at Scrubb Oak." By Algernon Butts.

When twelve o'clock came around, physically and mentally exhausted, I dazedly wandered out into the lobby and ran into Riggs-Miller, who casually intimated that I had all the appearance of having been recently dragged through a knot-hole. Consequently I told this Beau Brummel of New York greenkeepers that I felt a recurrence of the old trouble in my left tonsil.

Grasping me firmly by the arm he led me to the elevator, we were whisked to the 16th floor and shortly found ourselves amid the elite of New York's greenkeepers and golf course supply dealers, holding in our hands a glass of what is known technically

by the odd name of "tonsil varnish." On imbibing of this "varnish," one notes the gradual but complete abeyance of all soreness in the tonsil, a slight thickening of the tongue, a complete sense of well-being and an added indifference to the vicissitudes and tribulations of the hour.

Amid these salubrious surroundings the talk drifted hither and yon, while the gentlemen of the turf recuperated from the exhausting effects of the morning's program and gathered strength for the afternoon session.

Questions One-sided Fertilizing

We shortly found ourselves listening to an impromptu and informal address by Mr. Riggs-Miller, his theme being the abnormal and one-sided nature of the present day (this was in 1928) system of fertilizing fine turf. I gathered that The Bishop did not agree with the contention that fine turf needed only nitrogen for its well-being, said contention being based on the theory that sufficient phosphate and potash were present in the soil for the needs of the turf with respect to these two fertilizing elements. He attributed the soft growth of our fine grasses during the hot months and the poor root development of our closely mown greens to the excessive use of nitrogen and the insufficient use of phosphates. He sketched the experimental work at the Rothamsted Experiment station in England and the results thereof in logical support of his belief. It was the consensus of opinion among those present at this august assembly of brains and talent that Mr. Miller had said a mouthful, in fact several mouthfuls.

In June of 1929 I spent a day at the Pennsylvania State Agricultural College at State College, Pa. This institution is beginning to delve into the mysteries of fine turf production and maintenance in cooperation with the golf clubs and greenkeepers of the state. At the time of my visit the turf plots were small in number as can be expected in the initial stages of turf

The writer, with no small degree of pleasure and appreciation, wishes to take this opportunity of acknowledging the many letters received from readers of GOLFDOM commenting on his article in the May number entitled "Green Plots Questioned."

investigations but there was one experiment which literally knocked me cold, in fact it might well be considered a classic among fertilizer experiments on turf from the standpoint of the significance one could attach to the results obtained.

This experiment consisted of four plots of grass of the same general makeup. Plot No. 1 received no fertilizer whatever and may be considered the "check or control plot." Plot No. 2 received nitrogen alone. Plot No. 3 received the same amount of nitrogen as Plot No. 2 plus phosphate. Plot No. 4 received the same as Plot No. 3 plus potash.

These plots had been fertilized in the early spring and in June (when I saw them) the comparison of the grass-growth on the four plots was exceedingly interesting. In Plot One the grass growth was stunted and meager. In Plot Two (nitrogen alone) the grass growth was much better than in Plot One. In Plot Three the grass growth was appreciably better than in Plots One or Two and the individual stalk of grass was much thicker and sturdier. The grass in Plot Four was best of all the four plots being heavy, thick and sturdy.

Needs Complete Fertilizer

The professor who had planned and carried out this experiment (unfortunately I cannot remember his name) had evidently done considerable thinking and calculating with regard to the result of the above experiment as evidenced by some of the pertinent statements he made while explaining the experiment.

The gist of his remarks were as follows: "Certain turf authorities constantly reiterate that, generally speaking, turf is adequately supplied with phosphate and potash and needs only to be fertilized with nitrogen. That such a statement is open to question is indicated by our experimental work and observation."

"The plots show that soluble nitrogen alone will stimulate the grass and cause it to make an increased growth, an increased growth that seems entirely satisfactory until you look at the plots which received nitrogen plus phosphate or nitrogen, phosphate and potash. When you examine all these plots carefully from a comparative standpoint you readily note that nitrogen alone does not give the *utmost* in strong, vigorous, tough volume of grass growth."

"In other words nitrogen alone is not a complete or balanced plant food for

grass. Nitrogen can only produce a healthy stimulation of grass when it is adequately reinforced or supplemented with sufficient phosphate and potash."

"Under the circumstances the only condition under which it pays to apply nitrogen alone to turf is when the turf is abundantly supplied with available phosphate and potash. To say that the turf of the average golf course and lawn in the east is adequately supplied with phosphate and potash is incorrect and putting it mildly if our observations and soil tests are any criterion."

"The vast bulk of fine turf in the east is low in phosphate and potash so that when you fertilize with nitrogen alone according to the present practice you do not get value received but worse than that you get a soft, sappy, weak-kneed grass growth that picks up every disease blowing across the course."

Checks with Other Experiments

"As a final observation based on these plots it is enough to say that the results are not of an amazing or revolutionary nature. Practically all the experimental work on the fertilization of farm crops of the past 30 years has shown that best results are obtained only when nitrogen, phosphate and potash are present in adequate amounts. If one of the three materials is not present in sufficient amounts the other two are handicapped and the crop suffers. In these respects grass is no different from other crops."

The luxuriant and persistent growth of blue grass in certain sections of the mid south has always been a source of intense interest to agrostologists, (grass experts). These particular sections seemed to be especially favorable for the growth of bluegrass. People thought it was the climate or something and despaired of ever securing stands of bluegrass in their own bailiwicks to compare with these favored regions.

Soil Analysis Shows Reason

Then just a few years back some of our shrewd experts began telling us that bluegrass needed rich soil to do its best, that acidity or lime was not the controlling factor, bluegrass was a gross feeder. It is a fact that bluegrass does better when planted in a rich soil but as a matter of fact the experts were still about three miles wide of the bullseye, just guessing.

It wasn't until one of the experiment stations sicked a clever soil technologist

onto this problem that the grass growing public began to see daylight and like most of the problems be-deviling the turf world the answer was disgustingly simple when brains were turned loose in search for the simple truth.

When these soil technologists got busy on the problem they made a great many soil analyses, talking samples of soil from fields where bluegrass was growing to perfection and samples of soil from fields where bluegrass was having a hard time to keep from slipping down into the slough of despondency.

When these technical sharks sat down in the office one rainy day, with their feet on the desk, cigarettes in their pans and otherwise giving the casual observer the erroneous idea that they were loafing, they compared the analyses of all these soils, and discovered an amazing fact, a fact which threw light on how to grow bluegrass.

The boys discovered that the stand and growth of bluegrass was always good when there was plenty of *available phosphates* present in the soil. In other words no phosphates, no bluegrass.

The Marquis of Milwaukee (the erstwhile O. J. Noer) has the reputation of being able to make 17 blades of grass grow where only stunted bull thistles grew before. I understand that his system involves the use of his Milorganite PLUS phosphates. If that boy had only kept away from college he would be making \$50,000 a year right this minute.

Last but not least we find the Green Section, in a recent issue of the "Bulletin" receding from its previous stand that fine turf as a rule is sufficiently supplied with phosphate and potash. Dr. John Monteith, in the December number states (speaking of the results obtained in the demonstration plots): "There are indications that some readily available potash and phosphorous are desirable for grass in its first season."

Just why phosphorous and potash are needed by grass only in its first season and presumably not thereafter is more or less a mystery to me, and yet in turf journals we frequently find the statement that new seedings should be well supplied with these two fertilizing elements. All of which is entirely true but why confine applications of potash and phosphate to new seedings? The stuff doesn't last forever. In the space of a very few years it is exhausted from the soil and I venture to say that soil analyses of golf courses the

country over will show insufficient amounts of these two elements present in the bulk of established turf.

The present chaotic condition of fertilizer recommendations and practice in the turf business is more or less deplorable although virtually unavoidable. It is a deplorable condition because of the chronic controversy and disagreement on the subject with the resultant annoyance and expense to the fertilizer industry. It was unavoidable due to the restricted nature of the fertilizer research monopoly inadvertently, and undoubtedly unwillingly held by the Green Section for a period of years ending in 1928.

Green Section Gets Help

Up to within two or three years ago the Green Section was doing practically all the fertilizer research on fine turf in this country; at any rate if they were not doing all the research they were doing all the recommending of fertilizer applications.

That such a lone-handed service for research and recommendation by any organization would, in the long run, prove a deleterious influence upon the turf industry will hardly be questioned by intelligent observers in the realm of fine turf. Fortunately this exclusive burden of research on fine turf by the Green Section is now a thing of the past. Several of the state experiment stations are taking an active hand in fine turf research and there has been and will continue to be some active checking and rechecking of previous research and recommendations.

In the meantime greenkeepers and golf course officials will do well to keep their eyes peeled and centered on fertilizer research conducted not only by the Green Section but also by such state experiment stations as Pennsylvania, Massachusetts and New Jersey. A year or two ago the turf industry, its back to the wall, swung back to the use of lime. Now there is every indication that complete fertilizer (nitrogen, phosphorous and potash) will become the order of the day. Old man Progress hobbles along on crutches with one arm in a sling but thank God, he hobbles.

HIGH weeds in the rough should not be tolerated. Rough should be uniformly difficult; a player should not be penalized unduly because his wayward shot has the hard luck to come to rest beneath a bushy weed while his opponent, after an equally poor shot, draws an open spot of heavy grass.

Club Officials Show Interest in Advancing Pros

By HERB GRAFFIS

IT may be simply a coincidence or it may be significant but at any rate I have noticed that whose operating status is in good shape are those clubs interested in the welfare of their professionals.

Giving the professional encouragement in the improvement of his business situation means that the club is sure to get a good pro and benefit from the pro's deep and continuous interest in the progress of the club.

You can't entirely blame some of these pros who were hired at a figure that wouldn't provide a living and then disappointed at not getting some help from the shop concessions. They were given assurance that the members' loyalty and buying enlightenment was such that the shop ought to be a pretty good thing. Then the "buy it wholesale" evil and the failure of the club officials to acquaint the members with what is expected from them in the way of pro co-operation ruin every prospect for the pro. Maybe he has bought too heavily. A false and alluring picture of members' support has wrecked many a pro right at the start of a new job. Before he knows it, the unfortunate pro is listed in distressing figures in that "sour credit" record book of the manufacturers.

Part of the fault undoubtedly is the pro's. He may be a good man in many respects but deficient in those details of commercial temperament that must come into lively action when he is confronted by a selling dead stymie laid by indifferent members.

Officials Are Helping

More and more club officials are showing a sympathetic interest in this problem of the pros. GOLFDOM has cited the work of several well known clubs that are helping their pros to help the members. Two more cases worthy of note are those of Brentwood (Calif.) C. C. and Woodmont C. C., Milwaukee, Wis. Brentwood is a consistent plugger for its pro, Olin Dutra. Its latest

boost, printed in its house-organ, *The Brassie*, reads:

SUPPORT YOUR PROFESSIONAL

"Once more we ask our members to kindly give a little more consideration and thought to the purchase of golf clubs, balls and all accessories from our professional, Olin Dutra. Many of you do not understand that Olin's livelihood depends entirely upon your patronage. It is quite evident of late that some of our members have been purchasing elsewhere than at the Brentwood shop. Olin maintains one of the finest and most complete shops in California and his prices are always right and within everyone's reach."

"Visit the shop more often where you get real courteous service and come in contact with the man who is primarily interested in the welfare of the members. He will appreciate your patronage."

This Dutra boy never misses a chance to show a sincere and businesslike appreciation of his club's attitude toward him. In his story on winning the Pacific Southwest P. G. A. championship, printed in the club paper, Olin concludes:

"I am happy for Brentwood and myself in my victory, and wish, through the columns of the Brassie, to convey my thanks to the members of the Board of Directors who so kindly allowed me enough time to compete in this championship."

It is highly important that executive attention be given to pro support in the smaller clubs for here a good pro is really a vital factor in operation that pleases the members. It is difficult to get a first class experienced man to go to a small club unless he is sure of a decent income. Woodmont is a club having only 125 members. This exclusive and wealthy club is fortunate in having "Doc" Treacy as its pro and shows many another club the way to assist an able man to attain an annual income that will keep him as one of the main cogs in the club machinery.

Each one of Woodmont's members at the start of the season received a bulletin on patronizing the club pro. Copies of this



Here is a forecast of the big future of the pro market; a girls' class Fred Newham teaches at Greensboro, N. C. Note the good start of equipment.

bulletin are displayed prominently in the club's men and women's locker-rooms. The bulletin reads:

MAINTENANCE OF A GOOD GOLF PROFESSIONAL SERVICE

"Doc" Treacy, our professional, begins his fourth year at the Woodmont Country Club.

The major part of "Doc's" income is derived through the sale of golf clubs, bags, golf balls, and accessories, also through giving lessons.

During the playing season "Doc" is on duty early in the morning until late at night and we are sure, particularly if we have daylight saving, you will agree any profit he makes is well earned.

In addition to "Doc's" duties as club professional he also has assumed responsibility for the upkeep of the course and this is of great help to the grounds committee.

Patronizing our professional is the duty of each member and through this you make it possible for your club to have an efficient and capable man. At times there is a temptation to buy through other sources at reduced prices, but if your purchase turns out poorly, you have no recourse. On the other hand, when you purchase from "Doc" Treacy you not only receive good merchandise, but personal service, which is more satisfactory than the cost of the article itself.

The Golf and Grounds Committee ask many things of your professional during

the season and for which there is no charge. We venture to say every member does likewise. This alone is sufficient reason for you to patronize "Doc." You can be sure when you make a purchase from him or take lessons, his merchandise is right and his personal service very helpful. Therefore, won't you please co-operate with the Grounds Committee in following our suggestions to PATRONIZE "DOC" TREACY?

GROUND'S COMMITTEE,
Ralph Heilbronner,
Chas. Wirth.

PING-PONG, or table tennis, is returning to popularity after almost 20 years of comparative inactivity. The game is fast, and requires plenty of skill, yet is enjoyed by the veriest beginner. The investment needed to install a ping-pong table at the country club is nominal, yet its presence will often keep a member out to dinner in order to play a session or two of the game in the evening. Ping-pong is a subtle way to build house business.

* * *

IF YOUR greens turn brown during July and August, make sure the trouble is really brown-patch before applying expensive chemicals. The trouble may be lack of water, soil impoverishment or chemical burning.

"Samples" of Menu Merit Build House Volume

By E. IRENE YAHR

THAT much maligned 19th hole! Why not subtly conduct a little inside "reform" work, and profit on the side by moving the scene of that reminiscently labelled "cocktail hour" from the locker-room to the living rooms and verandas.

Country club managers are deriving a great source of revenue from the correct observance of that witching hour at their clubs. A glass of gingerale, chilled fruit juices, and other beverages, when supplemented with tasty appetizers, is sure to appease the first hungry pangs, and later will guide the owner of these pangs to the dining-room where his appetite can be fully satisfied.

Noted hotel chefs have leaped to the rescue and contributed ideal snacks either of fish, cheese or vegetables as an ideal accompaniment to the beverages. The tangy imported cheeses are extremely popular with guests, whether they have returned from a strenuous 18 holes, have participated as spectators, or whether they merely enjoyed an afternoon bridge game.

Of course, the purpose of these snacks is to whet but not to satisfy the appetite. The manager should arrange with his steward to serve a limited number of these hors d'oeuvres on a regulation hors d'oeuvre tray, or on small platters which

may be passed to each guest. Single portions must be arranged so that they can be lifted by the guest without any difficulty.

Imported cheese still ranks foremost as an hors d'oeuvre basis, and its tantalizing flavors are especially conducive to genuine food enjoyment. The imported French Roquefort, Swiss and Stilton cheeses are extremely rich in cream and nutritive qualities, and very easily digested. Their distinctive flavors are the result of their unique manufacturing operations which can only be attained in the respective districts from which they came.

Try These on Your Palate.

When combined with other foods their delicious flavors and inherent goodness makes them an indispensable part of the cocktail hour. A few choice recipes are given below.

J. Jeton, Chef at the Copley Plaza in Boston, Mass., believes that this recipe is especially good as a country-club appetizer:

Cheese Club Crackers, Favorite.

Roquefort cheese,	Cream,
Cream cheese,	Cooking sherry,
Butter,	Seasoning,
	Chives.

Strain cheese through fine sieve. Mix above ingredients together until a smooth paste is made. Add chopped chives last.

This preparation may be used on club crackers served with salad or merely as an appetizer on tender branches of celery:

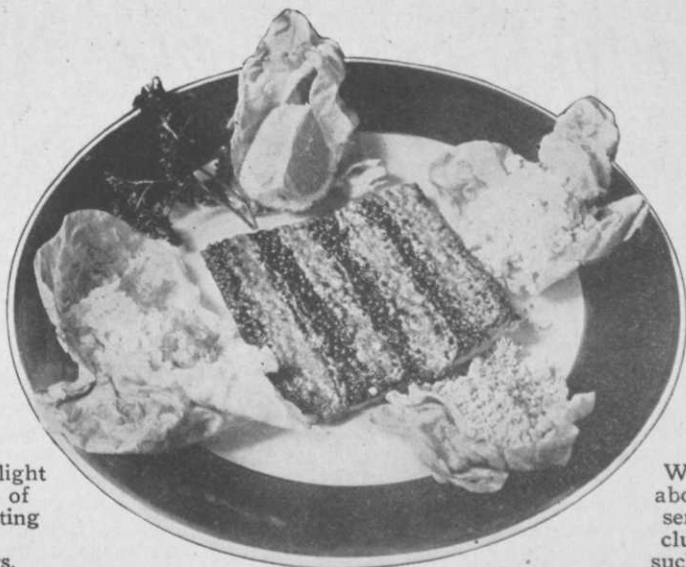
Anchovy Canapes.

6 portions prepared bread,
3 tablespoons anchovy paste,
3 teaspoons lemon-juice,
2 hard-cooked eggs,
Garnish of whole anchovies (may be omitted).

Anchovy paste, which comes in tubes, jars or bottles, may be utilized, or whole anchovies may be reduced to a smooth paste with a wooden spoon. Season with lemon-juice and spread the paste on the prepared pieces of bread. Split two anchovies lengthwise and lay them diagonally across



This sandwich Trianon is the old days' free lunch with a high hat. It makes the members customers for the house.



Sultan's Delight is another of those tempting "trick" appetizers.

Women brag about the food service of the club that uses such specialties.

the canape, marking the point where they cross by a little pyramid of iced yolk of hard-cooked eggs. Petal-shaped pieces of the hard-cooked white may radiate from this center pyramid. The anchovies may be omitted in the decoration. A large anchovy curved around a circle of hard-cooked egg in the center of a canape, is also effective.

Victor Leval, who is Catering Manager at the Hotel Winton, Cleveland, O., is the inventor of this dainty savory:

Roquefort Cheese Tid-Bits.

Roquefort cheese, Butter,
Prepared mustard, Saratoga flakes,
Worcestershire sauce, Sprig of parsley.
Pinch of paprika,

Mash a portion of Roquefort cheese in a bowl, add two drops of Worcestershire sauce, half a teaspoon of prepared mustard, small pinch of paprika and half an ounce of butter. Mix thoroughly to a smooth paste, spread on toasted Saratoga flakes, and serve on paper doily with a sprig of parsley.

Club Cocktail.

2 bouillon cubes,
2 cups boiling water,
2 egg whites,
2 tbs. catsup,
2 tbs. lemon juice,
1 tbs. Worcestershire sauce.

Dissolve cubes in boiling water. When cold, add Worcestershire sauce, catsup, lemon-juice and egg whites. Pour into

cocktail shaker and shake well; or use a Dover egg beater. Strain into cocktail glasses. Serve with crackers.

Many guests prefer dainty sandwiches, some of which are given below. Any respectable golf score will make them feel kindly and very sultanish after partaking of the Sultan's Delight which was prepared by E. P. Voegli, of the Hotel Mayfair, at St. Louis, Mo.:

Sultan's Delight.

Caviar,
Roquefort cheese,
Toasted bread.

Spread toast with high grade of caviar. Spread Roquefort cheese over caviar and set under broiler to toast slightly. Serve immediately.

(Single portion.)

K. Camille Den Dooven, author of "The Hotel and Restaurant Dessert Book," originated this dish for hungry golfers:

Sandwich Trianon.

2 slices whole wheat bread,
Butter, Mayonnaise,
Roquefort cheese, Pecans,
Lettuce, Tomatoes.

Spread one slice of bread with butter and the other with Roquefort. Place over the first slice a crisp lettuce leaf and a little mayonnaise. On top of it sprinkle mixed pecans. Put slice of bread with Roquefort on top of the other. Serve with lettuce and sliced tomatoes.

(1 sandwich.)

Hunt for Course Upkeep Data Shows Greenkeepers' Need

COMMENT on the maintenance cost articles printed in June GOLFDOM give ample confirmation of our statement that costs constitute the subject of greatest interest to greenkeepers and green-chairmen.

We repeat, for the benefit of those who overlooked our recital of policy in the June issue, that our fondest hope is that no course upkeep costs we print be used for purposes of comparison without full knowledge of all factors responsible for these costs. These are times when costs of doing business are being given searching investigation in every field. The golf turf field is being compelled to get down to a basis that will enable it to check up on results for the money expended. There are so many variable factors in making comparisons of course upkeep costs that some despair of ever reaching a good figuring standard. That opinion, however, is not shared by those who have delved most deeply into the subject. However, the way costs are usually kept now, it's hard to get any foundation for a good comparative study.

GOLFDOM to Finance Probe.

Because GOLFDOM has such convincing evidence that greenkeepers and club officials are intensely interested in getting a workable basis for cost accounting and checking, this publication is negotiating with Prof. Dickinson and Jay M. Heald, greenkeeper of the Country club of Greenfield, Mass., to dig into this matter during the winter session at Massachusetts Agricultural college. Assigned by Dickinson to make a preliminary study on this subject Heald got his ground work started during last winter's term of the M. A. C. greenkeeping school. GOLFDOM will finance further work along this line and invites each greenkeeper and club to send in, at the conclusion of the active 1930 season, a copy of its greenkeeping cost sheet, together with such comment regarding the condition of the course during the season, soil condition, architectural character, etc., as may be helpful in establishing a comparative basis.

One of the points that is bound to come out of such a consideration of costs is the matter of greenkeepers' salaries. Beyond any question the salaries now are too low, principally because the greenkeepers are not good salesmen of their own services. Some of the chairmen may question our repetition of this fact. Others have done so. Some greenkeepers may question the publication of figures showing a good man is working for amazingly little money here and there. Both criticisms are not to the point. What we are trying to learn, for the good of the entire field, is how much it cost to maintain a golf course, certain factors of the course being given.

Question Salary Figures.

Now, if a greenkeeper is maintaining his course in good shape for less than the average, it is reasonable to expect that his income benefit by some of the saving.

It's a tough job all along the line. Members of some clubs want every blade of grass and every grain of sand, right in place. The good greenkeeper will give them what they want, but they'll have to pay for the perfection of condition. This greenkeeper, too, although he may spend considerably above the average figure, is entitled to a bonus if his course is kept so it is 100% in every detail. The combination of method of determining the efficiency of expenditure and the appraisal of course condition improvement as set forth by Prof. Dickinson in a recent issue of GOLFDOM, will give both greenkeeper and his officials something to show them exactly where they stand instead of forcing them to blame cost mysteries on "the weather."

To give an indication of what the cost analyst is up against in trying to get a good safe start from available data, Mr. Heald says:

Studies Cases.

"The June issue of GOLFDOM contained on pages 54 and 68 just the sort of data I have been looking for, and while I am busy greenkeeping, I am not too busy to

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