girl received considerable instruction from "Blackie" Nelthorpe, Francis Gallett and Jerry Glynn.

Byron Nelson's book "Winning Golf" is high among non-fiction best sellers in book stores of many cities. . . . Nelson's and Snead's ghosted syndicated newspaper features each are being used by more than 60 newspapers. . . . Pros are selling Nelson's book in their shops and finding the book going so well some pros are thinking of adding other golf books to shop stock. . . . Next golf book will be that by Ben Hogan, now being readied for publication.

Kaler E. Bole, chief storekeeper, USNR, exploring Hiroshima after the atomic bomb blast, found in the basement of the Bank of Hiroshima 3 MacGregor Pacemaker model PIM clubs, which are being sent to the MacGregor museum. . . . Metairie CC, New Orleans, is to enlarge and modernize clubhouse at cost of $200,000. . . . Oconomowoc (Wis.) CC is restoring 9 holes out of play during the war to return to 18 hole status.

Jimmy Nichols, one-armed golfer on Spalding's staff, recently won Elks-Shriners tournament at Springfield, Mass., with 3-under-par 69. . . . Harold Sampson and PGA instruction committee campaign to liberate dubs from high scores was subject of James K. McGee's sports column in San Francisco Call-Bulletin. . . . Putter sales at pro shops this summer have been surprisingly large considering difficulty of getting the stock.

Distinguished old-timers in the gallery at the PGA at Portland included Rudie Wilhelm, Doc Willing and Walter Fovargue. . . . Walter, born in Cleveland, O., played with Hagen when the Hague won the Open at Midlothian in 1914. . . . Fovargue was pro at Skokie (Chicago district) from 1906 to 1916. . . . He went to the Pacific slope 28 years ago. . . . In 1917 he laid out 10 courses in California. . . . He's been architect of 60 courses. . . . Now he's a lumber magnate at Aberdeen, Wash.

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Junior Golf Vital to Smaller Club's Future

By EDWIN J. BAGGETT

THERE'S a tendency for the smaller 9-hole clubs to consider many of the larger club ideas as something beyond the reach of the smaller club, but that policy doesn't hold good at the Monoosnock CC, Leominster, Mass. At Monoosnock, Promgr. Errol Richardson, says the club's idea is to consider that if an idea is found good by the large and wealthy clubs, it calls for adaptation and use by this smaller club for the simple reason that the wisely operated smaller club must make ideas a substitute for money in numerous instances.

For instance, the idea of junior golf class instruction, which is almost standard procedure at the majority of larger clubs, is given vigorous application at Monoosnock, a 9-hole club. Instead of having the classes considered as a casual sideline of pro duties and conducting them only on Saturday mornings during the summer, Richardson extends the classes into the fall as far as weather will permit. Naturally when football begins there will be a slump of interest among some youngsters, but Richardson points out that in establishing strong interest of youngsters in golf instruction there is always some challenge that should increase the ingenuity and effort of the pro. Hence, he maintains, the smaller club pro with kid classes should not become discouraged because there isn't a stampede of kids to get first class instruction free. The kids have to be sold, like anybody else. Their notion, in many instances, is not that they are getting golf instruction free but are paying for it by the sacrifice of time they have been in the habit of devoting to other activities.

The way Richardson looks at the kid class proposition is that it is a very important long-range business development and insurance work for the smaller town, as well as the larger metropolitan district, club.

Richardson points out that the higher rates for caddying coming at a time when many thousands of limited incomes have recently taken up the game is reducing the number of kids who came into golf via caddying work. He says the great popularity of lighter bags and bag carts is something to force golf to look ahead in making its expansion plans instead of depending so much on the caddy factor for kid golf education as in the past.

He further maintains:

"Golfers are made, not born.

"As proof one need only look at the overwhelming number of ranking professionals who learned the game in their early, formative years. At Monoosnock are the five Jancaitis brothers, all top-flight amateurs. They grew up on the outskirts of the club and were caddying almost as soon as they were taller than a golf bag. They learned the game from the bottom up.

"It is high time for all country clubs to consider as an essential detail juvenile classes, free-of-charge, and to make necessary equipment for the classes available to all children of members.

"This is especially important to the small golf courses of the country. The big clubs with a vast financial backlog and wealthy members can be run on the same general policy as they were 50 years ago. The great change in golf has been in small clubs in the past decade.

"It is now an established fact that golf is not a 'rich man's plaything.' In the past 10 years hundreds of thousands of persons have discovered the game and this

Clubhouse of the Monoosnock Country Club, Leominster, Mass.

influence is now being felt by smaller clubs over the country.

"Golf has become a national game—and, thereby, a national industry. But it is not yet secure! Golf must continue to build its popularity while the opportunity is here. The large clubs may not bother because any change will affect them slightly, but the small clubs must.

"The simplest way to do this, the most satisfactory, the soundest for a foresighted policy—is to introduce the game to youngsters.

"There are few children who do not like the game once they know it. Golf grows upon a person.

"Pros should make one of their foremost public relations jobs free lessons for school-age youngsters. These classes should be publicized in newspapers and through personal invitations to Boy and Girl Scouts, school, or club groups.

"At smaller clubs where there are no pros, a visting pro may be secured. The expense will be a good investment for the club. Or perhaps a competent member of the club will volunteer for the job.

"Hold the classes on a weekday morning during the summer school vacation, or at any other time when it will not interfere with normal club business. Give the youngsters instruction in correct stance, grip, swing, etc. And don't neglect teaching golf courtesy, caution, and proper care of the course. (Replacing divots, etc.)

"Remember that youngsters are easily bored and shy from regimentation. Your primary purpose is simply to show them that golf is fun! The pro can do this by actually letting the kids play when they are ready and anxious. Kiddies tournaments, putting or driving contests, and other events can be staged just as for adults. It's a good idea to have an older person or a supervisor with small groups.

"This whole program, in fact, may tie in with your city's recreation program. In Leominster they have such a program and the sole task of the supervisor is to keep the kids amused.

"Any club official knows that the happiest and most regular golfers are the low-handicap men and women. The duffers come and go. Almost anyone who has played golf since he was 10, let's say, is pretty sure to be better than average. That kind play year after year. They are your best customers.

"The biggest single bottleneck to the idea is securing sufficient equipment. This is not insurmountable, however, for only the barest equipment is required. Have your members turn in every old putter, brassie and 5-iron they can dig up.

"The club can pay, perhaps, a quarter or fifty cents for them and turn them over to the children at cost. In no event should the profit angle be attempted here. Your one idea should be to get equipment and old balls into the hands of the youngsters now. You, and golf itself, will reap big dividends in another decade.

"A two-fold purpose will result from a juvenile golf instruction program. The future success of small golf courses will be insured and another increase may be noted today. Parents of children are very apt to visit the course and become interested themselves. This should be of secondary importance but it will more than make up for any extra work involved."

Practical Aspects of Lime Usage on Turf Grasses

By O. J. NOER

The reaction of the soil, expressed as pH, is the best yardstick for judging the probable need for lime. When a soil is medium acid, or stronger, that is below pH 5.7, the need for lime is definitely indicated and its use justified without regard to any other factor. Lime may be beneficial when the soil is slightly acid, pH 5.7 to 6.2, particularly on areas where Kentucky bluegrass predominates. But when the soil is not more than slightly acid (about pH 6.0) the large scale use of lime can await the outcome of applications on test strips. In that case, strips across the fairway measuring 10x100 feet are a convenient size. Rates of 25, 50 and 100 pounds are equivalent to ½, 1 and 2 tons per acre.

Several other symptoms aid in diagnosing possible need for lime. The failure of bent grass on greens to respond following an application of ammonium sulfate is strong evidence of the need for lime, provided all other conditions are favorable for growth. The prevalence of diseases such as brownpatch, dollar spot, and snow mold may be due in part to insufficient lime. This was demonstrated very strikingly on a turf nursery of Washington strain of creeping bent at Merion in Philadelphia more than 15 years ago. Lime was applied to a portion of the nursery as an experiment. Three weeks later the unlimed part was severely damaged by dollar spot. The limed area was hardly injured. Snow mold did little damage to a limed green on a course in the Province of Quebec, but all the others fared badly. The unlimed greens were strongly acid, about pH 4.5. Grass on moderate to strongly acid soil is the first to turn brown and suffer from the effect of drought. An application of lime on such soil invariably keeps the grass green longer, often a week or more, and the turf on the limed area is the first to recover following a good rain.

Acidity Reduces Plant Vigor

Apparently acidity reduces the vigor of the plant and adversely affects its ability to withstand disease, unfavorable weather, and the shock of chemicals used for the control of diseases, insect pests and weeds.

In some instances acid soil may have accentuated or contributed to the damage caused by 2-4, D. to bent, Bermuda, or other grasses. Excessive acidity reduced the amount of roots, or otherwise weakened the plant, and made it more susceptible to injury by the chemical. Time will verify the truth or falsity of this supposition.

When turf on greens is damaged by scald, an application of hydrated lime at 2 to 5 pounds per 1000 square feet is generally beneficial. The lime is not used to change soil reaction, but to kill any algae and to precipitate any deleterious soluble organic compounds formed as a result of anaerobic soil conditions. The soil becomes anaerobic because the pores are saturated completely with water and contain no air. Scald occurs mostly on poorly drained greens with a clay base, and happens during periods of excessive rains, or from over-watering. The low spots on badly contoured greens are apt to have scald because the soil becomes saturated with run-off water from adjacent slopes and banks.

In aggravated cases of scald the turf becomes so sparse that the soil is exposed and is covered with a green scum of algae. The use of hydrated lime, and deep forking or spiking destroys the scum and speeds recovery of the grass.

Soil reaction can be determined in the field with any one of several inexpensive test kits which are accurate to within several tenths of a pH. This is good enough for the purpose of judging lime requirements. Otherwise representative soil samples can be forwarded to the State agricultural experiment station, or to one of the commercial organizations equipped to do soil testing. Most laboratories also determine available calcium and magnesium which are generally lower in acid than in non-acid soil. Along the Atlantic seaboard and in some other regions the soil supply of available magnesium is frequently very low. Then magnesium deficiency may limit growth. A dolomitic lime of high magnesium content usually produces better results than one containing calcium only, when the soil supply of available magnesium is low.

What Lime to Use

The word lime has but one meaning chemically. It is the term for calcium oxide. But in agriculture lime includes all compounds of calcium and magnesium

1. The darker green strip at the right is volunteer Kentucky blue grass produced by lime inadvertently applied to a strip of rough at Tam O'Shanter in Canton, Ohio, when the tractor driver failed to close the shut-off on the lime spreader. The light colored unlimed area on the left was quack grass. The soil is too acid for blue grass to assert itself. 2. Fescue has stayed green longer in dry weather along a limed strip on a strongly acid fairway in Troy, New York. Lime was used to mark the boundary where balls could be lifted because of a local rule. Because of the striking benefits the first summer the entire hillside was limed in the fall. The picture was taken the next summer at the start of the dry season. 3. Lime used to mark the court lines improved the turf on the tennis courts at Marion Cricket Club in Philadelphia. There was noticeably less crab grass along the lime lines also. 4. Bermuda grass along the yardage lines on the football field at Rice Institute in Houston, Texas, was greener and denser than elsewhere on the field due to the effect of the lime. Benefits were accentuated during dry spells. The limed Bermuda stayed green longer.

used to rectify the physiological condition, or the reaction, of an acid soil. The compounds commonly used on turf are the hydrates and the carbonates. The hydrates change to carbonates in the soil. No objectionable residue is left in the soil when lime carbonates react with the colloidal soil complex. The calcium and magnesium are absorbed by the complex with the production of carbonic acid. It is a weak unstable acid which breaks up into water and carbon dioxide gas. The application of gypsum (calcium sulfate) to the soil is not generally recommended. The reason is simple. When the calcium is absorbed by the acid soil complex a

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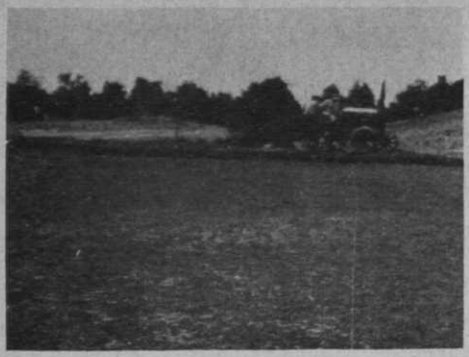

Above: Hydrated lime prevented serious damage from dollar spot on a nursery of Washington bent grass at Marion in Philadelphia. The soil was strongly acid. Hydrated lime was applied to the turf on the right-hand side about three weeks before the attack of dollar spot.

strong acid (sulfuric acid) is liberated and is not as easily disposed as carbonic acid. While gypsum may give good results at first, its continued use is likely to develop undesirable residues and thus defeat the purpose for which it was applied.

Blast furnace slag is another compound of lime which can be used to neutralize soil acidity. It is mainly calcium silicate. The calcium is active and the silicate residue is not objectionable in the soil. Usage is limited and confined to the vicinity of blast furnace operations.

Liming materials seldom appear on the market as single compounds of calcium or of magnesium. The carbonate forms of lime have a number of different sources and vary in purity. Some of them are by-products of chemical industry, but most are derived from deposits of limestone rock. The impurities are silt, sand and organic matter. Limestones which are less than 85 per cent pure are not used for agricultural purposes. The lime rock is ground to various degrees of fineness.

Lime is usually sold on a basis of its chemical composition. The guarantee may be expressed as the actual percentages of calcium and magnesium, either as the carbonates, or both. Sometimes the composition guarantee is stated as " calcium oxide equivalent" or as the "neutralizing power." The calcium oxide equivalent states the strength of the lime in one figure, namely calcium oxide (40 pounds of magnesium oxide has the same neutralizing strength as 56 pounds of calcium oxide).

The so-called neutralizing power of a lime is nothing more than a statement of its strength in terms of calcium carbonate. The neutralizing power of a dolomitic limestone may exceed 100 because 100 pounds magnesium carbonate are equivalent to 118 pounds calcium carbonate in capacity to neutralize soil acids.

Hydrated lime generally carries the conventional oxide guarantees. The statement includes the percentage content of calcium and magnesium expressed as the oxides. A chemically pure hydrated lime contains 76 per cent calcium oxide.

Guarantees for ground limestone usually show the separate percentages of calcium and magnesium carbonates. The closer the sum of the two figures approaches 100 the better the quality of lime. The carbonate content should approach 90 or over.

Hydrated lime is an impalpable powder so its fineness is always satisfactory. Pulverized limestones vary in size of particles and in hardness. It is desirable to know something about the degree of fineness because solubility is a function of particle size. The finer the state of division the more rapid is the rate of solution. The manufacturers aim to make a product with a large percentage of fine particles for immediate action but to include enough of the coarser grades to insure lasting qualities. A fineness guarantee is desirable when comparing the probable effects of different limestones. A mechanical analysis is made by using screens of different mesh. For example, a 10 mesh screen has openings approximately one-tenth of an inch in diameter. The guarantee shows the percentage which passes through the various screens. A typical guarantee of a reasonably fine limestone is: 100 per cent through a 10 mesh screen, 75 per cent through a 50 mesh, and 60 per cent through a 100 mesh. Some limestones are considerably coarser and others are finer.

The tendency is to use hydrate or very finely ground limestones in the Atlantic seaboard states. A so-called agricultural lime, consisting of equal parts hydrate and finely ground limestone is common there. In the Ohio, Indiana, Michigan region, finely ground limestones seems to be favored, whereas farther west more coarsely ground materials are used, and rates are increased accordingly.

Hydrate and finely pulverized limestones are the most expensive. However, they are faster acting so lighter rates can be used. But effects do not last as long so the interval between applications must be shorter. A rate for hydrate in excess of 1 ton per acre at any one time is questionable practice because of its greater activity which may adversely affect the solubility of manganese, iron, boron and other trace elements—besides reducing phos-

(Continued on page 58)

Pro Teaching Clinics Neglect Pupils' Psychology?

By HERB GRAFFIS

THE morning after the PGA instruction clinic I had breakfast with one of the most successful golf teachers in the country. Tournament stars pay respectful attention to his analyses. Several of the most promising younger tournament players credit him with having put them on the road to stardom. But this post-graduate phase of his instruction is decidedly secondary to his achievement over many years in converting middle-aged men and women of long-established bad swings into consistent low-handicap players.

What got us off on the subject of instruction was my expressed belief that the previous evening's session had been devoted almost entirely to the mechanical phases of the swing which really required, for explanation, a knowledge of anatomy. Pros' successful experience with applied psychology qualifies them to talk with authority, I maintained; partly because from the pupil's viewpoint I think the pros' controversies about the mechanics tend to confuse the pupils, and partly because I wanted to stir up this veteran pro and get him into another one of the arguments that have enlightened me.

"Almost any pro discussion of the swing these days," said the veteran, "is bound to be strong on speculation about the mechanics. And for a very simple reason. Byron Nelson is the first to have solved the problem of transition from the hickory to steel shaft. That has more ramifications than pros generally have talked about. But, by taking Nelson's game apart and examining it—which is what many of these clinics amount to—they'll probably make some discoveries that will be very helpful in determining the mechanics we want to apply to our pupils.

Clinics on Swing Research

"Whatever the new discoveries about swing mechanics will be, it's a sure thing that we won't be able to make them quickly, anymore than scientists could come right up with the sulfa drugs or penicillin. The discussions at our clinics are fishing expeditions in trying to determine the magic key to golf. Perhaps one of the best things about them is the way in which they show the open-minded research basis of pros. Certainly their exchange of ideas have given younger pros help that has saved them and their pupils a lot of time."

That comment somewhat cleared me up on the idea of the clinic being a research into the swing rather than a broad investigation of the teaching problem.

I remarked that there were two ideas mentioned the night before that I wished the general golfing public could learn about as examples of how the pros are trying to look at the instruction problem from the pupils' viewpoint. One was the way in which Bob Gutwein demonstrated how he got pupils acquainted with the feel of the correct swing. I've seen several very successful pros, much older than Bob, use the method with success and wondered why it wasn't more extensively employed.

The other idea was Joe Mozel's statement about using the phrase "holding the club" instead of the more common term, "gripping the club," because any emphasis on the word grip had the tendency to get the pupil to tighten up. The dictionary definitions of grips are: to catch with the hand and clasp closely with the fingers; to hold tight or close; to clutch; to sieze and hold fast; to clench; to tighten." Consequently a word that means to the pupil a tension that is almost the contrary to what the pro really wants done.

Yet Joe's suggestion was received apparently with indifference instead of sparking a discussion on what is a highly important element in revising golf teaching procedure; the need of a correct nomenclature that's easily and clearly understood by the pupils. How acute this need is became obvious later in the clinic during the controversy on open and closed faces.

After I'd popped off about my reaction, as a pupil of pros, to the Mozel suggestion, my veteran friend said:

What Do Pros Mean?

"Probably we should give more consideration to the semantics—the science of meanings—as this science can be applied to eliminate confusion in golf instruction. The golf teacher's basic problem is that of personality coordination with his pupil. It's impossible to solve that problem if the pupil doesn't understand and accurately interpret the teacher's words.

"I have found that the most effective