and prevent seed formation. On golf courses, crabgrass is found in fairways where the grass is kept short but seldom in the rough where the grasses are allowed to grow tall.

3. Close cutting of the lawn will help prevent the plants from going to seed, but many seeds will be formed below the cut. It is advisable to rake up the grass in several directions before mowing it, being sure to lift the leaf blades, runners and seed heads that have the habit of lying on the ground. If allowed to mature, crabgrass scatters thousands of seeds over the lawn when cut with the mower. For this reason it will pay to start a drive on this pest when it first appears. Whenever crabgrass is in seed, the catchers should be attached to the mower.

4. The time of fertilization is a factor in controlling crabgrass. Fertilize in early spring before the crabgrass gets a start. This will stimulate the grass on the lawn and help produce a vigorous growth which will crowd out crabgrass. Fertilize again in the fall after the crabgrass has ceased growth or been killed by early frost. Use a fertilizer high in nitrogen such as 10-6-4, 8-6-4 or 8-6-2, at 10 to 15 lbs. per 1,000 sq. ft.

5. Keep the plants from going to seed, as control is largely a matter of the prevention of seed formation.

20 Years Research on Crabgrass

On the basis of 20 years' search and research for preventive and control measures of crabgrass, the best treatment to eliminate crabgrass in turf appears to be a water solution of a phenyl mercury acetate organic complex such as PMAS.

During 1946, a cooperative disease-control study with Dr. F. L. Howard and Dr. H. W. Keil was conducted on putting-green turf (two-year-old sod). Charles H. Allen, Jr., turf foreman, observed that PMAS appeared to control crabgrass. Preliminary tests on lawn turf substantiated the effectiveness of PMAS as a crabgrass killer. Additional work was needed to ascertain effective dosages and opportune timing of treatments. The experiments conducted during 1947 definitely proved water solutions of certain phenyl mercury organic complexes were satisfactory.

Several hundred tests with various chemicals, including 2, 4-D preparations and sodium arsenite, were conducted in the greenhouse during the winter of 1946-47 and in the field during 1947-48 to determine, (a) concentrations of the materials that would prevent seed germination, (b) inhibition and control of crabgrass without injury to permanent turf, (c) the most effective time of application and (d) the number of treatments for complete kill of crabgrass.

In general, treatments applied early in the season, on turf composed of Kentucky bluegrass, fescue and Colonial bent, killed germinating seed and all young plants in the two- and three-leaf stages. As the season progressed, however, more crabgrass germinated and necessitated additional treatments. One treatment of any material used did not provide complete control of crabgrass.

(Continued on page 56)

O. J. Noer, photo

GREENBRIER IS BACK IN BUSINESS

Here's first hole (430 yds.) of the Old White course at Greenbrier which was put back in play, after wartime shutdown, by the widely publicized pro-amateur tournament. Business is great at the re-opened course at Greenbrier. That's why contract of Sam Snead, pro now at the place where he learned golf as a caddy, sharply limits his tournament appearances.

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Here's truly the "last word" in modern golf ball construction . . . Wilson's *new* Top Notch! Among its important new features is its amazing *one-piece, thin-walled* center, *completely filled* with liquid. No air space in the center . . . no liquid sloshing around inside of the ball. The new Top Notch has absolute *true balance* and *accurate flight* . . . pays off with maximum distance.

Star professional players of the Wilson Advisory Staff, who participated in a "blind ball" test, proved that the new Wilson Top Notch performs better in every way. *Better* . . . in its pleasing click off all clubs. *Better* . . . in its super-fast getaway. *Better* . . . in its true flight. *Better* . . . in its feeling of control and accuracy. *Better* . . . *amazingly better,* in its sweet reassuring feel off the putter and in its positive, precise performance on the greens.

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IT'S **Wilson**

TODAY IN SPORTS EQUIPMENT

Architect's Services Needed In Course Modernizing

By EDWARD B. DEARIE, JR.

In considering problems of alteration and modernization of golf course construction and architecture one who has been in the business a long time must write with complete candor. Some of the changes that should be made are in his own work of long past years.

Regardless of what we say and believe about nature making the finest golf courses there has been such a development in the game that even the classic jobs at St. Andrews and Pinehurst have had to undergo some drastic revision. The game of golf has remained fundamentally the same but the players have become more demanding, the traffic on courses has become heavier and the ball and implements have improved, as have almost all other mechanical devices and the implements of all sports.

Furthermore, there has been great progress in the science of turf culture and that has necessitated revisions of practice in handling a crop of grass which, especially in the case of greens, has had to be kept in superlative condition regardless of an unnatural routine of maintenance.

Also of exceedingly urgent importance has been the problem of maintaining golf courses with far less labor than was available when most of today's first class courses were designed and constructed.

Now, while the advisability of modernization is so urgent and clubs generally are in good financial condition, the subject of bringing golf course construction up to date cannot be sidetracked by informed club officials.

It's a gross injustice to the course superintendent to be asked to make any major architectural changes to the golf course without due consideration or understanding of his ability to do this kind of work. It requires years of study and work to master the art of golf architecture, particularly in one of the exacting features, the placing of traps or mounds on any golf course.

Therefore, I will not put too much emphasis on the skill of the average greenkeeper to make any changes to a golf course or green site or revise any of the original construction mistakes without thorough knowledge of this work. I have really seen some sad attempts on reconstruction of greens and traps, in fact, they were worse than the original done by the resident greenkeeper.

I can understand very well the average greenkeeper's point of view on the job of correcting some of the errors on his golf course. He is usually given the old build-up by the Green committee. They tell him he is the man of the hour to correct the existing mistakes. Therefore, he is given the first opportunity to exercise his imagination and has the full cooperation (including much inexpert advice) of the committee to build the ideal golf hole or make the perfect green, and change the hazard arrangements if necessary.

Not a Greenkeeper's Job

Suddenly he discovers in the process of the construction work he has lost some of his imagination or in most cases discovers that they never had the required type of golf architectural imagination.

Do not subject your greenkeeper to this embarrassment. It's unfair to expect too much from him. The demands of his maintenance job are numerous and complex and the redesigning of a green with its necessary hazards is a branch of art in itself and is obviously risky to expect the maintenance authority to acquire mastery of a highly specialized department of golf work.

For 30 years I have been interested in golf architecture, construction and maintenance and the game itself. Of great interest to me has been the study of golf architecture in its development to the present day designing of mounds and traps.

The fascination of golf play lies in its intricacies and problems. The more interesting the course the higher becomes the standard of play and keener the enjoyment of the game. Most golfers have an entirely erroneous view with regard to the real object of traps and hazards. The majority of them simply look upon hazards as a means of punishing a bad shot, when the real object is to make the game interesting and develop skillful play. In fact, any uninteresting area of land requires an artist's vision and constructive

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imagination before you can call it a championship layout. And that's no easy matter to accomplish on some of the land I have seen chosen for golf course sites. In fact the land would be better for race tracks.

This condition is somewhat different today. The most interesting, beautiful and artistic golf courses are those upon which the least obvious attempt has been made to modify the attractive features of the natural terrain. Nature is the great artist and while you can change the landscape in appearance by planting and the earth-moving jobs that are done so speedily now, you've got to do the work so it looks like nature has done it. Harmony of proportion and form may always be observed in natural landscapes. Therefore in designing mounds and traps it is best not to attempt to exaggerate nature but to cooperate with her.

Those Old Design Mistakes

Too well do I recall the ancient cross bunkers and chocolate-drop mounds and pot traps, with stairs going into the traps. You could only see the top of the golfer's head. How monotonous such a course was to play, how hideous in design, and impossible to maintain except by hand labor that very few clubs can get and afford now. That has been the history of a lot of golf architecture in the past.

No set rules ever can be laid down for the construction of specific golf course features. To do so would provide standardized golf courses that would diminish interest in the game.

Considerable sums have been wasted yearly in trying to rearrange hazards and traps that were badly located in the initial construction and traps that were placed too far out in the rough and have no effect on the shot whatsoever. Others were too close to the line of well-directed tee shots or badly placed as to distance, angle depth and size for second shots. In fact I have seen mounds blind the approach to the green on a number of courses.

Therefore I cannot put too much emphasis on the question of trap placing on a well designed course. It requires keen imagination and the ability to understand golf as it is played—certainly not a job for the average greenkeeper.

There are too many so-called golf courses that have been laid out and constructed by pitifully unqualified men who as golf course architects have proved very impractical.

Their experiments—all well intentioned—have given this country a great many golf courses which are deplorable examples of guesswork and a violation of many of the sound principles of golf course construction and designing. Such courses have been costly to maintain and impossible to understand. Not only have these costly mistakes been made in the past but even today in the face of the advanced knowledge we possess these mistakes seem to continue for some strange reason. The idea persists that any enthusiastic person can design, construct or alter a golf course, and this delusion is responsible for constant changing of badly constructed and poorly located greens and traps.

Every Change is Important

It is folly not to exercise the greatest care and discrimination in choosing a golf course architect to make even the so-called unimportant changes to the course. To think otherwise is a mistake. Don't look too much for the greenkeeper to solve this problem.

In placing a hazard on any golf hole one must have in mind accomplishment of a definite purpose. Unless this is very clearly in the mind of the designer the placing of a hazard becomes nothing more than a guessing matter and possibly a continual annoyance as long as it is there. Hazards—natural or artificial—are the risks that the golfer must take. Skill and daring, not luck, should be the demand in every well played golf shot. Nothing ventured nothing gained, is particularly true of golf. The soul of the golf game lies along the fairway on the way to the green.

I could go on for hour after hour on golf course architecture and maintenance but not too much on the jobs done by my fellow greenkeepers correcting errors in the original design. On construction—for soil condition, drainage and grass selection and development—the greenkeeper can and will do a job up to the high current standards. And in checking design for machine maintenance he will show command of a very important phase of the work. But course architecture of the same high standard as his turf development and maintenance very, very rarely is in his line. That's certainly no discredit to the course superintendent whose achievements and progress in his own field have accounted for bright pages in golf's history.

Golf architectural talent is rare enough to deserve rating on its own merits, and fortunately there are enough architects whose fees are within the reach of every first class club to relieve the course superintendent of responsibility for new design that he seldom is qualified to assume. The sooner club officials, course superintendents and architects realize this and properly place responsibility, the more certain we may be that alterations now contemplated will be made soundly.

WGA ADDS 7 ALL-STARS TO EVANS' SCHOLARS

Western Golf Assn., after carefully appraising records of many caddy candidates adds these 7 standouts as first of 1948 lads winning full tuition college scholarships from Evans Scholars foundation. These boys will attend Northwestern university, Purdue, Wheaton college and Colorado A & M. Total of Evans scholars in all schools this fall will be 27; highest number on record. WGA campaign among golfers for WGA membership has built Evans fund to about $100,000.
Above, L to R, seated: Chick Evans, Jr., founder of the caddy scholar plan; M. G. (Scotty) Fessenden, WGA pres.; Stuart Smithson, WGA director. The new scholars, L to R: Ed Piacentini, James Doyle, Don Hanson, Dick Lulay, Don Thomson, Charles Van Etten, Glen Winton.

CALLOWAY SYSTEM OF ONE-ROUND HANDICAPPING

The USGA Golf Handicap System remains the approved method for determining basic handicaps but, like every other system, it will not solve some of the unusual problems which face handicappers.

One of the most difficult problems is that of determining fair allowances for convention and resort tournaments which attract novice and occasional players. Obviously, the man who never plays except during his two-weeks vacation at Sloping Valley, or at the annual trade tournament at Flat Hill, is entitled to a fair shake in the competition for net prizes.

The standard way of solving such a matter usually has been to conduct a kickers' tournament, in which each player selects his own handicap and then shoots at a score which has been drawn blind.

Another method of handicapping which would seem to fit the same role is the Calloway System of Automatic Handicapping.

Under this method, a player's handicap is determined, after each round, by his gross score for the 18 holes and by the worst, or highest, individual hole scores he has made. For instance, if his gross score was 107, he turns to the accompanying table and opposite that score finds that he may deduct the total of his four worst, or highest, individual hole scores. Thus, if he had scored one 9, two 7s and several 6s, he could deduct 29 strokes, giving himself a net score of 78.

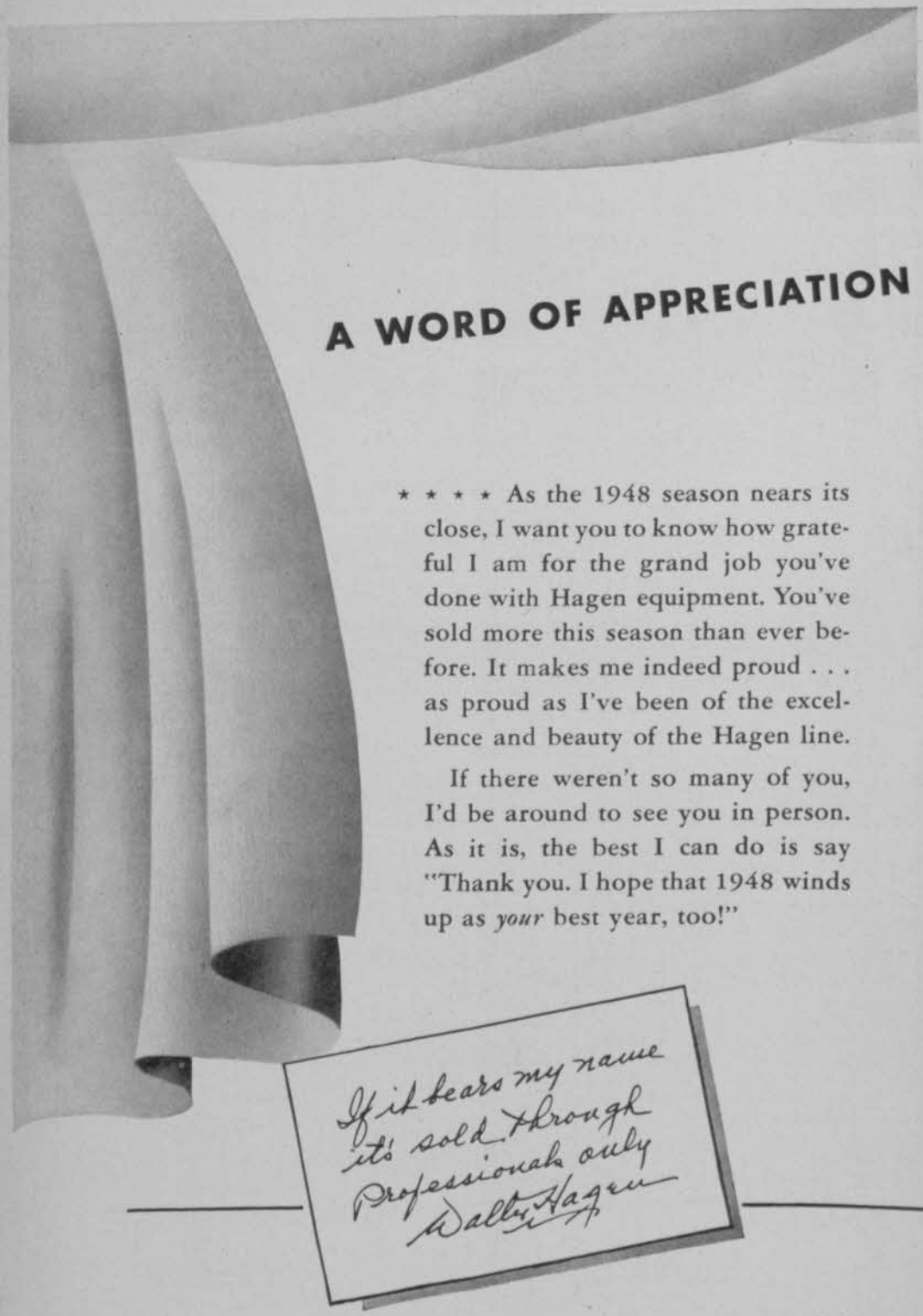
The USGA has had no experience with this system but it is an interesting idea which handicappers and tournament committee chairmen may find useful. We know of no way in which it could be adapted for match play tournaments, and it is in no way a substitute for the USGA Golf Handicap System.

The Calloway System Automatic Handicap deductions follow:

Score	Deduct
Class A	
Par or less	Scratch
One over par to 75	½ Worst hole
76 to 80	Worst hole
81 to 85	Worst hole plus ½ next
86 to 90	Two worst holes
91 to 95	Two worst holes plus ½ next
96 to 100	Three worst holes
Class B	
101 to 105	Three worst holes plus ½ next
106 to 110	Four worst holes
111 to 115	Four worst holes plus ½ next
116 to 120	Five worst holes
121 to 125	Five worst holes plus ½ next
Class C	
126 to 130	Six worst holes
131 to 135	Six worst holes plus ½ next
136 to 140	Seven worst holes
141 to 145	Seven worst holes plus ½ next
146 to 150	Eight worst holes

Note: Worst hole equals highest hole score.

—USGA Journal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Grand Rapids 2, Michigan

Professional Coaching Brings Winning Golf to College

By VERNE WICKHAM

When wiry little Bobby Harris of San Jose State college nursed his long putt dead to the hole on the eighteenth at Stanford University golf course for a gimme-putt and the National Collegiate championship it gave San Jose a grand slam in the 1948 NCAA event, something that has happened only once before since the event was started in 1897. Ohio State had done the trick in 1945 when John Lorms, son of the veteran Columbus (O.) CC pro, won the individual title.

The San Jose feat sent gallerites and sport writers scurrying around for more information on Eddie Duino, coach of the San Jose State team.

For Eddie had taken a group of California youngsters from San Jose to Ann Arbor, Mich., the year before and the team finished a good fourth. San Jose had been known for its high-scoring football teams; its boxers had done well in the national picture and so had some of its track stars but it was the first time San Jose State college had shown at the top in the national golf picture.

Now with Bobby Harris winning the championship, the team setting a new team record of 579 for the team championship and Morgan Fottrell, Jr. taking the medalist honors with a 70-69—139 San Jose State had very definitely scored in the national golf picture. So this Eddie Duino must know something about coaching college golf. If you think differently you'll have to settle with the whole San Jose State golf squad and most all of San Jose. They like Eddie Duino.

Eddie is a fixture in San Jose. He has been golf professional at the San Jose G&CC for 17 years and was assistant to Arthur Brooks for five years before that. He has been president of the Northern California section of the PGA since 1940.

Teaching and executive duties of the PGA take a lot of time and so last year Eddie welcomed the opportunity offered him to accompany the San Jose State college team back to Ann Arbor for the national varsity championship. It was his first experience as a full-fledged golf coach of a college team and his tips and wise counsel turned a gang of California youngsters into a team that just missed first place by a few shots and supplied the co-medalist (Bobby Harris). His success on that trip prompted officials to ask him to coach the team this year on a part time basis, so he devoted one afternoon each week to the college team.

Gets Pro-trained Kids

Eddie is the first to tell you that he is very lucky in the type of youngsters he gets at San Jose. The great California golf center of Del Monte is just over the coast range and the golf centers on the Monterey peninsula and Northern California send him good material. He knows that and will tell you that the many fine professionals in the Northern California sector are more responsible for his success than he is—Eddie is that kind of a guy.

But many a strong-backed boy with a good swing needs the kind of advice and sage golf supervision that Eddie Duino or any good golf professional can give them.

Eddie checks the swing of the candidate and if the boy has a fairly sound swing Eddie doesn't try to make it over but may give such advice as maybe a little straighter left arm, or maybe hitting more against the left side through the ball or better balance in weight shifting—or tips on timing.

He tests to see if the boy knows how to play various lies. In wind shots he teaches them how to punch the ball low to the green or how to get the elevation needed for high shots.

Makes Them Gentlemen Golfers

Then Eddie drills on the finesse that a young fellow needs in good tournament play. Gives tips on the proper clothes and conduct—after all there is more to this tournament golf than just hitting the golf ball. He teaches good golf etiquette at all times.

Youth always wants to slug the ball—take an 8-iron and hit a 6-iron shot with it. They brag about getting terrific distances with their lofted clubs. Eddie likes to have a boy hit a firm strong shot at all times but not to force distance out of his clubs. There is a club made for every shot, Eddie tells the boy—use it!

The San Jose State golf squad numbers about 30 at the start of the season. They hold medal play ladder events and cut the