test". Some of the coarse, grainy strains we have eliminated by plugging with fine strains from our nursery.

We encouraged the bents by light feedings often during the growing season, using sulfate of ammonia as the source of nitrogen, and applied ground limestone as a conditioner as often as we thought necessary. The Poa annua received very little feed in the cool weather of spring and fall.

Greens allowed to develop a thick mat or grain will eliminate Poa annua quicker than anything but they are not good putting greens, to my way of thinking.

Poa annua makes inroads when the turf is not healthy, from lack of good drainage, proper feeding, or too much organic top-dressing at the wrong time, especially in the fall months.

In our locality, bent seed from existing sources does not produce turf which keeps out Poa annua unless cut too high for good putting. Best results have been obtained by introducing some good varieties of stoloniferous bent by vegetative planting. We hold out on the Poa annua with fertilizer at the height of its season. We use steel brushes in front of the mowers, or a Parker Sweeper before cutting, then feed the bents a little and often during the growing season. I feed all summer using quite a bit of Milorganite or Agrinite about every three weeks. Spraying the Poa annua with sulfate of ammonia at \( \frac{1}{2} \) lb per 1000 sq. ft. on a bright sunny morning during the flowering period has helped me. Greens should be watered after the burning of the surface vegetation has taken effect.

Spraying with sodium arsenite at the time of active growth, especially during flowering and seeding, is very good. Plugging in with good strains of bent which will stand close cutting is another big help. We changed bad greens to good ones in two years using the old hollow tine Roto-Con spiker. Small pieces of bent were inserted in the holes. Lately we have used the Aerifier to make the holes with good results. I have also used a 1 1/2 inch diameter by 2 inch deep plugger to replace clover and Poa annua with good bent from the nursery. Plugs are spaced 3 to 4 inches apart. The work is done during the off season and does not interfere with play.

In conclusion, I would say good strains of bent grass, good drainage, and proper feeding practices are a "must" in helping to control Poa annua. A new course in a virgin territory has little trouble, but as the years go by Poa annua seems to come out of nowhere, and if soil conditions are in its favor—rich in organic matter—it will soon take over. It is best to get a head start with the best bents for greens and the best grasses for fairways.

June 1952
Test PC Wet, Dry and With Sludge for Weed Control

By W. E. ZIMMERMAN*

Since 1948, potassium cyanate, (KOCN), for many years useful in industry as a reagent, has performed excellently in experiments as a crabgrass, chickweed and other turf weed eradicator. Results in 1949 and 1950, at experiment stations throughout the United States and Canada, substantiated the early results (with potassium cyanate) when applied as a spray. KOCN, or PC as it became known during 1950, was sold to formulators who manufactured potassium cyanate crabgrass killers under their brand names.

Preliminary research at experiment stations in 1950 showed PC solutions with wetting agent added could be effective as a crabgrass and chickweed killer when applied with an ordinary watering can. Also, it was found in preliminary studies, potassium cyanate was effective as a crabgrass killer when applied in dust form and when mixed with some forms of organic fertilizers.

Due to conflicting reports on chemical crabgrass control in previous years, standardized trials were carried out in 1951, coordinated by the USGA Green Section, under the supervision of Fred V. Grau. Al Radko, Agronomist for the Green Section, supervised this trial which included comparisons of sodium arsenite, PMAS and PC. Applications, wetting agents, dosages, etc., were standardized in all tests.

The trial was made up of three treatment series, (1) Spring, (2) Summer (3) Fall and a comparison of a Fall series superimposed over a Spring series of treatments.

Indications are that mid-Summer applications of PC are not as effective as Spring, late Summer or Fall applications. Three applications of eight pounds of PC with Igepon wetting agent gave good results applied as a spray in these trials.

Nine experiment stations remained in the program until the trials were completed. These were: Los Angeles, Calif.; Lafayette, Ind.; Ames, Ia.; Manhattan, Ks.; Beltsville, Md.; St. Paul, Minn.; Wooster, O.; Kingston, R.I.; and College Station, Tex.

Materials for the trials were supplied by American Cyanamid Co., Chipman Chemical Co. and O. E. Linck Co. Wetting agent was supplied by General Dye-stuff Co.

PC Treatments with a Watering Can

Rates selected for watering can tests were 5, 10 and 15 level teaspoons of KOCN in 1 1/2 to 3 gallons of water per 100 sq. ft. — with wetting agent added.

Material was sent to experiment stations and to American Cyanamid Co. field agriculturists and sales representatives. The area involved most of the United States and Canada. Reports indicate this method is effective for crabgrass control. Rates most effective were 10 and 15 teaspoons of PC in 2 gallons of water per 100 sq. ft. This corresponds to approximately 0.6 and 0.9% solution strength. Ten teaspoons, or 0.6% solution was less damaging to turf grasses. Five teaspoons or 0.3% did not give effective control. The 10 teaspoon rate required two applications.

This method of treatment was also effective for chickweed and several other common turf weeds. It was noted that late Summer and early Fall treatments with a watering can were less severe on turf grasses than mid-Summer treatments. Favorable reports were received from the Ontario Agricultural College, Purdue University, University of Minnesota, and the Alabama Polytechnic Institute on the watering can technique for applying PC.

More information is desirable on time of application, height of cut etc. but from observations during 1951, it appears to be a promising method of application.

PC Dust Formulations

Both 10 and 20 per cent PC dust formulations were used in 1950 preliminary turf weed control trials. Comparisons were made of 8, 16 and 32 lbs. of actual potassium cyanate per acre in single and double applications. Sifters and shaker type devices were used in making these applications.

Preliminary results were encouraging enough to warrant further study. A 25% dust formulation was distributed to the American Cyanamid staff, experiment stations, and PC Formulators’ Research Departments. Eight-ounce containers of the 25% dust were distributed for application on 150 sq. ft. — equal to a 32 lb.
At this year's tournaments watch for
Dunlop Maxfli

Of course not all of the good scores this year will be made with the Dunlop Maxfli, but you can rest assured that a large proportion of the top notch pros and amateurs will be playing this great ball. It combines all the qualities that leading players look for in a ball.

As one of the leading pros put it, "The Dunlop Maxfli gives me the greatest click and feel of any ball I have ever used. It takes everything you can give it off the tee or on the fairway for greater distance and retains its accuracy for round after round of play."
This will look like a great new course in a few months. Wilbur Clark looks over some of the watering equipment that's making the desert back of his Desert Inn at Las Vegas, Nev., bloom with fairways, greens, tees, trees and shrubs.

per acre rate of PC. Previous years' results showed the dust was about 50% as effective as a spray solution of PC with wetting agent. The 32 lb. rate of dust, therefore, was equivalent to about 16 lbs. of PC in solution. Experimenters were encouraged to compare the effectiveness of the dusts with equivalent solutions of PC.

Results of these studies conducted at experiment stations in New Jersey, Pennsylvania, Alabama, and Minnesota, indicated that turf weeds could be satisfactorily controlled by dust formulations. More detailed studies at New Jersey (which included 10 and 20% blends), showed that a 10% dust was more effective when a wetting agent was added. The results showed that the 25% dust was too severe on turf grasses. The 1951 PC dust studies again indicated solutions of PC with a wetting agent superior to an equal dosage of PC dust. However, the New Jersey Station reported at the Northeastern Weed Control Conference that they thought the 10% dust used several times during a season would give adequate control of crabgrass.

Another important observation from the Georgia Coastal Plain Station at Tifton and the Green Section Trials at Beltsville, was that applications early in the morning or late in the evening gave best results with PC dusts. Pre-watering of the turf before treatment did not increase the efficiency of the dust. Kentucky Bluegrass is exceptionally resistant to PC dust injury.

There is sufficient information on this method to further expand the testing program during 1952.

PC - Activated Sludge Combination

Some preliminary experiments with potassium cyanate in combination with one of the commercial activated sludges, indicated the possibility of applying PC mixed with such materials. Several late season applications of PC dust mixed with an activated sludge were made at the Winged Food GC, Mamaroneck, N.Y. for crabgrass and knotweed control during the Fall season of 1949. One pound of 2,4-D was added to the first mixture of 16 pounds of PC and 600 pounds of activated sludge, per acre. Second and third applications of PC and activated sludge without 2,4-D were applied 10 to 14 days apart on a selected fairway. The area was heavily infested with clover, crabgrass and knotweed. Warren Lafkin, White Plains, New York and Harold Lefurgey, G. Supt. at Winged Foot, cooperated with American Cyanamid Co. in this study.

These trials showed promise for fairway renovation and turf weed control. In 1951 tests were made in cooperation with the Milwaukee Sewerage Commission. 16 different lawns, parks, turf plots, golf courses and cemeteries were treated with
Once your customers compare Power-Bilts with any other club, regardless of price, Power-Bilts will be preferred. For Power-Bilts are made right to play right. They look right and feel right too.

This year in our national advertising we remind your customers that there’s good reason for this Power-Bilt preference, because Power-Bilts are made by the makers of famous Louisville Slugger bats, and are backed by over 68 years of manufacturing excellence.

Pride of ownership and performance will go hand in hand with your new '52 Power-Bilts. They inspire confidence because they look right. And they deliver more distance because they're designed right. Go to your Pro Shop and handle them! You'll feel their perfection of balance and built-in power. Power-Bilts are backed by over 36 years of golf club manufacturing "know how."

Remember too, that Power-Bilts are made by the makers of the famous Louisville Slugger Bat.

The ad shown here is just one in a series of Spring ads running in The Saturday Evening Post, The New Yorker, Golfing, Fortune, Sport and Golf World whose aim is to create preference for, and confidence in, Power-Bilts, thus making your selling job easier.

SOLD ONLY BY GOLF PROFESSIONALS

HILLERICH & BRADSBY CO.
Louisville, Kentucky
a combination of PC blended with activated sludge from the Milwaukee Sewerage Commission. In addition, many cooperators throughout the country including home owners, country clubs, commercial agencies and state and federal workers, made PC-activated sludge combination trials at various timings and rates. Dr. O. J. Noer, Agronomist with the Milwaukee Sewerage Commission, deserves most of the credit for organizing this series of tests. His cooperation was outstanding.

It was suggested that an 8 lb. rate of PC spray solution be compared with 8, 16 and 32 pounds per acre of PC, applied with the sludge. The sludge-blend was 5% PC, 5% fine sludge and 90% regular commercial activated sludge, applied 15 lbs. to 1000 sq. ft. of area with a fertilizer spreader. The various rates of PC were obtained by adding sludge to make up the 15 lb. rate per 1000 sq. ft.

The majority of the cooperators in this trial reported favorably and want to continue this experiment again in the 1952 season.

Treatments as high as 32 lbs. of PC, applied as many as five times at weekly intervals, did not injure the turf. Many cooperators reported the turf in better condition at the end of the treatment period than it was when the tests began.

It appears that 12 to 16 pounds of PC applied with activated sludge several times during the latter part of the growing season, gives excellent crabgrass control. From experience in 1949, one pound of the amine form of 2, 4-D per acre added to the mixture in the first treatment, controls not only crabgrass but knotweed, some clover, goosegrass and several other common turf weeds. The success of the PC-sludge combination presents new promise in turf weed control.

Other Dry Applications

Work by Dr. B. P. Robinson at the Tifton Research Center indicates PC at 8 lbs. per acre can be applied with a dry sandy soil for topdressing and crabgrass control on Georgia putting greens without turf injury. Laboratories indicate there are other dry materials that can be combined with PC for application with shaker type applicators and fertilizer spreaders, and these will be available for testing in 1952.

DELBERT DEWEY HEADS FINGER LAKES SUPTS.

Delbert Dewey, supt., Canandaigua (N. Y.) CC, was elected pres., Finger Lakes Greenkeepers' Assn. at the organization's May 13 meeting. Carl A. Lawer, Durand Eastman GC, Rochester, N. Y., was elected vp., and Lester L. Bixler, Seneca Lake CC, Geneva, N. Y., was elected sec-treas.

Renovate Fairways to Eliminate Poa Annua

By FRANK P. DUNLAP

Supt., The Country Club, Cleveland District

(GCSA Paper)

We are still grogging for the right answer to this problem of poa and what is best to do about it.

We are of course carrying on an adequate fertilizer program to give our permanent grasses as much chance to compete with the poa as possible during the poa's off seasons. The permanent grasses in our fairways are predominantly Seaside and Astoria bent. Soil tests are made regularly and the program is carried out in accordance with the needs as shown by these tests. Agrico of various analyses, Milorganite and lime have been used. The fertility of our soil is now good.
Golfers take to rules this easy way

More than 60,000 "Easy Way to Learn Golf Rules" books have been distributed to golf clubs, leagues, schools and individuals since the beginning of the year, according to Rex McMorris, dir. of the National Golf Foundation. The book containing 80 pages presents the rules in an entertaining way made more easily understood by 60 cartoons and illustrations. Major changes made in the Official Rules of Golf effective Jan. 1, 1952 are included. The book is published with the permission of the USGA by the Foundation as an aid to the beginner and the uninitiated and has become popular with the more experienced. Special discounts are made on quantity lots.

Inconvenience of closing part of the course while the work is being done.

The renovation of No. 1 fairway was entirely based on the well established fact that poa is an annual. This fairway went very thin in July and remained so the rest of the summer. Treatment of any kind was held off until this year's crop of poa seed had germinated and reached a height of about ¼ in. We then on September 8 sprayed the entire fairway with sodium arsenite at 3 lbs. per acre. This application was allowed to burn until September 15 when the treatment was repeated at 4 lbs. per acre. Again on September 18 another application at the 3 lb. rate was put on. I think it is needless to tell you that virtually nothing remained alive on this fairway by September 21.

We were now ready to start in the other direction. September 22 was a fine day and the tractors went to work; two tractors with fairway aerifiers, one with a Dunham spike disc and one with the drag mat. The tractors with the aerifiers ran one behind the other and each made three trips over the same area, which means the fairway got six aerifyings to a depth of 2 in. The main purpose of the spike disc was to tear up the mat of dead grass and as it also made six trips I need not tell you that the old grass was well torn up. We then went over the fairway with the drag mat until all cores were well pulverized.

The fairway was then fertilized and seeded. We used equal parts of Seaside, Colonial and Highland bent with 25 lbs. of B27 to make a total of 175 lbs. of seed. The seed was applied at the rate of 75 lbs. per acre. After the seed was on it was dragged in and rolled in three directions. The sprinklers were then turned on and the fairway thoroughly watered. It was never allowed to dry out from then on until it was ready to cut.

The seed was germinated and showing by September 29 and was cut at ¼ of an inch for the first time October 22.

The catch of grass was very good and I am quite sure will be a fine fairway this year.

Jaycees Expect 25,000 to Enter Junior Championship

Extensive pre-tournament activity being conducted by local organizations throughout the country have led U. S. Junior Chamber of Commerce Sports and Recreation director Don Neer to believe the 1952 National Jaycee Junior Amateur Golf Championship will be the biggest yet held.

Tournament is to be held August 11-16 at the Eugene (Ore.) CC. Byron Nelson will conduct the pre-tourney clinic for more than 200 boys gathered for championship play.

With many more local Jaycee organizations scheduling local Jaycee Junior golf events, Neer believes that more than 25,000 boys will play in regional qualifying rounds for the event, exceeding by 5000 the number of boys 18 or under who battled for the 1951 title won by Doug Sanders, Cedartown, Ga.
"How about a fast six holes after lunch?" I beat him on the first 12 but he took me to pieces on the second 12.

Sound screwy?

Well, those remarks may well be a part of golf course parlance in the not too distant future. And, if you thumb through musty record books over in the corner room at the Royal and Ancient Golf Club at St. Andrews, you will find that they were used in golf chatter long before nine and 18-hole remarks got into the language of golf.

Golf is fast outgrowing its available acreage, particularly in the fast-growing close-in sections in any metropolitan area. More are fighting a losing fight against the tractors and steam shovels of the mass real estate subdivider and home developer.

It is becoming increasingly difficult in metropolitan districts to find suitable acreage in plots of 120 acres and up for private golf club development.

One hundred acres of suitable land represents at least 4000 building lots. These lots are worth all the way from $1000.00 and up. Probably a mean average in most metropolitan areas would be around $2000.00 — so any given 100-acre plot represents a potential selling value of around $800,000.00. An investment in land alone of that amount makes golf land for a private course almost an unknown quantity, at least, in any close-in location.

There is one possible answer to the problem that is now being explored by public golf officials on the West Coast. That is shorter courses. Six-hole and 12-hole courses.

No Old Standard

There is nothing wrong with golf courses shorter than the now accepted standard of nine and 18 holes, except their smaller capacity to handle traffic. History will prove that.

On a recent trip to England, Scotland and on the continent the writer found many people playing golf on anything from the three hole affair on the Isle of May to some installations of as high as 24 holes. This is today. Back in the musty records way back when this game of golf first started, you will find many more.

Nine or eighteen holes is not traditional. Golf didn’t start that way. Bruntsfield Links, near Edinburgh, said to be the oldest course in the world, where golf is still played, had only six holes; North Berwick had seven; Musselburgh had five and later eight. At Blackheath, three rounds over the seven-hole layout made up an official match. Lanark started play in 1851 with six holes, then added four more, making it ten, and still later stretched itself out to 13.

The first British Open was played at Prestwick in 1861 on a 12-hole golf course. The championship test was three rounds, totaling 36 holes.

Poking around at St. Andrews and chatting with men whose golf memory and family golf connections go back more than 100 years, we were able to substantiate the belief that the nine-hole unit and the 18-hole round got its historical backing at St. Andrews. They used to play out nine holes and back nine holes, using the same greens. Three or four of the double-greens are still in use. With St. Andrews and the Royal and Ancient, formed in 1754, gradually taking a top-spot in golf history and tradition, the nine-hole and 18-hole round and match just ‘grew like Topsy’ and became the official recognized unit for golf.

So there is nothing basically wrong with a six-hole layout, or a 12-hole course.

Golf in crowded areas has become a five-hour game, plus added time wasted getting to and from the course and waiting for a starting time. It takes an 8-hour day to enjoy metropolitan golf nowadays. No more working until noon, running out to the golf course for lunch and 18 holes before dark. No more playing 18 holes and getting back to the office for the afternoon business. Oh, you can do it once in a while if you are lucky. But usually you find the course so crowded at these choice times that it cannot be done.

Maybe, then, shorter courses may provide the answer.

Physically, 12 holes are about right for many people in the older age brackets. Much study is being made in recreation circles on ways of keeping the man on retirement busy. Golf is a favorite sport for the retired man. But, some 18-hole rounds over our more rugged championship golf courses is too much for the older golfer.

The six-hole course has some other good sound reasoning back of it. You can build
AND here's why! They like their longer Sweet Shot tee and fairway shots . . . more accurate putts. The Sweet Shot makes the most of any golfer's skill, providing that extra bit of confidence that means better scores—greater satisfaction—and repeat business for you!

This added performance is built right into the Sweet Shot. Its super-charged power center means extra distance. New, exclusive dyna-tension winding—using F-239 vita-life pure rubber thread—gives greater accuracy, longer life. It adds up to an ultra-high compression ball that is in a class by itself!

National advertising tells 90% of your golfers of Sweet Shot's superior construction and amazing performance. It also tells them where to buy—only at your Pro Shop. So feature and recommend Sweet Shot—and you, too, will find that Sweet Shot customers keep coming back! The Worthington Ball Company, Elyria, Ohio.

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WORLD'S LARGEST EXCLUSIVE GOLF BALL MAKER
six good golf holes on about the same acreage used by a pitch-and-putt golf course. It seems to many that six regulation length holes will provide better golf than 9-holes pitch and putt.

As a standard division of holes for a six-hole golf course, three four-pars, one five-par and two threes would give a good balance. If there is less room, two threes and the rest all four-pars would be O.K. You can get any variety you want from an equal number of threes and fours up to two fives, two fours and two threes. Yardage would run from 1700 to 2100 yards, par 21 to 24. Three times around a six-hole par 21 course is 63 and around a par 24 course 72. Double this and you maintain the same balance for a 12-hole layout.

**Considering Shorter Courses in L.A.**

Paul Gruendyke, director of the County Department of Parks and Recreation, in a recent conference on golf, came up with the interesting discovery that there are in the county several locations where six and nine and 12 holes could be built.

These are in locations where all our future golf courses must come—that is, acreage that is not available for home development. It is becoming more and more evident that it is foolish to try and compete with the subdivider for land in large 100-acre or up parcels. It is questionable to sink a lot of money in a golf course which in a few short years will be surrounded by homes bringing up a safety angle, or which will eventually be taken over by residences.

Where then is metropolitan golf course land coming from? Los Angeles County is making a study of land in flood control basins, around oil leases, along new freeways, around county institutions, approaches to newly developed airports and other spots where golf courses can be built with the knowledge that they can remain forever and not, as previously, use land which is badly needed for the development of homes for our rapidly growing population.

There are now certain Federal Controls on recreation building, but when these controls are lifted, work will start on several new courses, and all of these, as far as Los Angeles County is concerned, will be built on land where they can remain forever, and some of them may well be short courses!

**Los Angeles County Six-Holer**

The site of the Los Angeles County proposed 6-hole course is a part of a large regional park, set aside around a County Flood Control dam. The acreage is in two parcels, one a forty-acre upper bench, and the other a 100-acre site in the low lands below the dam. The two sites are connected by a 100-yard wide vineyard bisected by several flood control ditches, a spreading basin, and a power right-of-way.

The original plans called for an 18-hole championship course of rather rugged proportions. New flood control ditches and the rather unsatisfactory method of routing due to flood ditches and power right-of-ways started the County Department of Parks and Recreation officials seeking for some new plan of development.

There is additional acreage which may some day become available which might allow for better routing to connect the two parcels of land.

At the present time, the thinking is to build a six-hole layout in the upper acreage, a twelve-hole in the lower area. If additional acreage becomes available, new holes could be added to the lower twelve-holes, making it a good solid eighteen-hole affair.

The six-hole layout will probably remain separate from the lower eighteen-holes to give the County an eighteen-hole and a six-hole layout in the same area, operated as separate units.

Rough grading on the six-holer is slated to start this summer.

The course as planned calls for two four-pars and the rest three-pars. All holes are good solid golf holes and on terrain which has a gradual up-grade of more than 100 feet from the low end to the upper area. The feasibility of starting with two three-pars is probably debatable, but is done here in order to preserve a natural location for a No. 2—a feature one-shotter.

A number of years ago a road contractor, seeking for soil to build a fill on a nearby highway, sent a team of tractors and steam shovels into a side hill and dug out a natural saucer-like setting for a golf hole which is too good to lose.

There is nothing in the book that says you can't start golf players on a three-par. In fact, it has been done many times. It will slow the cash register a little in getting players off the first tee but it may also save "ganging up" on subsequent three-pars.

The first hole is 150 yards to a large green tucked in the corner of the property. Trees line the right and form a background for the tee shot.

No. 2, is the feature hole to an elevated saucer-like green, well surrounded by timber and a shrub-filled bank. The green will be approximately twenty-five feet above the tee calling for a semi-blind approach. Two large traps are planned on the approach which will call for all carry from the tee.

No. 3, is only 365 yards—but all up hill. An old ranch road with two miles of