

Turf Round-up of 1948

By FRED V. GRAU

Director, USGA Green Section, Plant Industry Station, Beltsville, Md.

As this is written there is a considerable part of the 1948 growing season yet to be experienced. It is to be recorded, however, that in spite of floods, droughts, insect and disease epidemics, and weed invasion, there is a decided optimistic attitude among turf superintendents the country over. For the most part it has been a good season and there have been fewer urgent and insistent calls for help in cases of emergency. There has been far more of the "self-help" and "help-one-another" attitude in every section of the country. Superintendents and greenkeepers generally have reached a fuller recognition of the fact that, in their profession, they are not in direct competition but that they gain in stature and recognition as they exchange ideas and as they spread the knowledge which they have gained. The principal way in which this is done is through the meetings of the local associations.

Cooperation

It is heart-warming to learn how the appropriate committees of local associations unselfishly assist a less fortunate member to solve his problems. The USGA Green Section staff frankly admits its physical incapability to visit all of its member clubs which are in trouble and repeatedly has suggested that the club seek the advice of the technical committee of the local greenkeepers association. The Green Section has complete confidence that the advice will be the best that it is possible to get. In many cases a copy of the recommendations are sent to the Green Section office which is deeply appreciated because it effects the coordination which is so urgently needed in a cooperative program. This "help-one-another" program has developed rapidly since it has been repeatedly demonstrated that good greenkeeping is based on sound scientific principles and not on "secrets of the trade."

Green Section Program and Policies

A word of explanation is in order concerning Green Section affairs. With only two members on the technical staff, the Director and his assistant, Marvin Ferguson, it is necessary that one member remain in the office while the other travels, in order to keep abreast of the correspondence, the research work at the Beltsville Turf Gardens, and the many inquiries

on lawns which come in to the Green Section and the USDA.

The development of the Green Section's national program of cooperative work hinges to a large degree upon the staff's occasional visits to the cooperating experiment stations and to a sufficient number of turf projects so that the program is kept on an intensely practical basis to meet current needs. It is inevitable that the golf courses near the experiment stations or on the route to and from them are favored more by visits from the Green Section staff than those at a distance. In inspecting the work at the station, it is only natural to run out and visit a few courses to keep in touch with developments and conditions.

Insofar as possible the Green Section staff is represented at every turf conference in the country because it is considered a part of the service to which USGA member clubs are entitled. The staff attends a number of local superintendents' meetings and also has been active in developing educational meetings where no local organization exists.

The development of the "help-one-another" program in the local associations has relieved the Green Section staff of a heavy load of correspondence and has greatly reduced the number of visits to clubs in trouble. Consequently, the Green Section staff has had more time to devote to the planning and to the development of cooperative work with state experiment stations which is so necessary to continued progress. As a result, today there are many more capable workers devoting their time to a study of current problems. The results already are beginning to show and soon will astound the skeptics.

Aeration and Drainage

The Green Section repeatedly has found that the underlying causes of most turf disorders are improper drainage and aeration. This subject was discussed in detail at every turf conference in the country and turf superintendents and architects were made more conscious of the glaring lack of these important principles, especially in putting greens and other highly-specialized turf areas.

Taylor Boyd, in his paper presented before the American Society of Agronomy

entitled "Building a Practical Putting Green," said, "Over-sand the topsoil and over-drain the base and you will have a good green." It is so discouraging to see a new golf course being constructed and to see the troubles and headaches built into the course that could be avoided. The valuable lessons to be learned from the Green Section are not available to a new club because the club has not had access to the literature. In most cases the existence of the Green Section is not known. Later, when troubles begin and when the club is a USGA member, calls for help will begin. How much better it would be to prevent the troubles at their source.

On the way home from the Agronomy Meetings at Fort Collins, the writer stopped to look at a new course under construction in Western Iowa. The greens had been shaped and were ready to be planted. The stolons were to be delivered that afternoon. After examining the soil there was only one recommendation possible. "Add sand and more sand and work it in well before planting." The soil was from good Iowa corn land that would grow 150 bushels of corn to the acre. Peat had been added to lighten it but it was obvious that, after two years of watering and traffic, the compaction would be such that roots could not breathe. The quantity of sand required for 9 greens was about 375 tons or 10 carloads—more than a carload to a green.

We cite here the unpublished results of a research project financed by the Green Section and conducted by Dr. Roger Humbert of Saratoga Laboratories, Saratoga Springs, N.Y. Mechanical analyses of soil cores from the "best" greens and from the "worst" greens on 22 golf courses indicated that the "best" greens were those which had the highest proportion of sand. The organic matter content seemed to be of little significance. Conclusions drawn were that the mineral fraction of a putting green soil should contain a minimum of 65% sand of various sizes and a maximum of 25% silt and clay combined. The complete report and the supporting data with conclusions will be published soon and will be available from the Green Section office to every USGA Member Club.

Rebuilding Greens

There is a greatly reduced tendency for golf clubs to spend their money in rebuilding greens simply because the turf is poor. Many must (or should be) rebuilt because of poor architectural features but turf quality can be maintained today even where the soil is extremely unfavorable. This is true because, for the cost of rebuilding one green, a golf club can own a machine which will do the job. Several hundred aerifier owners will attest to this statement. The aerifier will remove plugs

of poor soil and will leave holes in the green of sufficient size and depth so that porous sandy material can be worked into the green to greatly increase water absorption and root growth. Lime and fertilizer material are carried into the root zone by water action where they feed the plant from below. Layered greens are renovated so that water movement and proper root growth are restored. All of this is accomplished without taking the green out of play and without interfering with good putting which is impossible when a green is rebuilt by removing the sod and incorporating new materials. New grasses can be planted in the aerifier holes at the same time.

Topdressing

On many golf courses topdressing the greens is remembered by only a few of the old-timers. It is destined to become less and less of a major operation on bent greens and on Bermuda greens alike. Many superintendents found that by close frequent mowing, it was not necessary to topdress. Some greens have had no topdressing in 15 years and they rate A+ in our book. Topdressing is very costly. Several clubs estimate that it costs \$500 for each topdressing on 18 greens. Many clubs actually cannot afford this expense. Certainly the expense cannot be justified where the system of daily close mowing and frequent brushing has not been tried.

It is known that a green that has good subdrainage and a porous sandy topsoil under it does not need topdressing to the same extent as a poorly-drained green on heavy soil. Some strains of grass appear to require more topdressing than others because they have a tendency to produce surface runners. It has been discovered that close daily mowing greatly discourages these runners and reduces the need for topdressing. Here again we are forced to recognize the aerifier. Its action brings soil to the surface which acts as a topdressing and reduces or eliminates the need for additional material.

Where topdressing is used, the well known 1-1-1 mix of sand, soil, and humus gradually is being modified to a 2-1-1 mix which contains more sand. The sand being used is coarser which promotes better drainage and aeration.

Weeds

Top honors for the worst weed in turf still go to crabgrass. It is still the unsolved problem so far as the rank and file are concerned. A few have resolved their crabgrass difficulties by intelligent use of fertilizer and herbicides. Sodium arsenite as a spray or in combination with a good turf fertilizer is a favorite in many sections of the country where crabgrass is difficult

to control. Phenyl-mercury compounds have done a good job where crabgrass is not particularly severe. Some newer materials which showed promise in the northern crabgrass limits have not been successful in the heart of the crabgrass region.

Cultural and mechanical methods continue to show the greatest promise at lowest cost. It is within reason to expect that the final solution of crabgrass control will lie in the agronomic and the mechanical field rather than in the chemical field. Our chief reason for making this statement is the fact that, at the Beltsville Turf Gardens, crabgrass has been entirely absent in closely-clipped turf of certain grasses and combinations of grasses under ordinary care. The same thing has been observed on golf courses and lawns all over the country where these grasses are being tested. The only reason why we cannot come out with definite recommendations on this phase of work at present is because it is too new and because seed and planting material of these new grasses and combinations are not as yet available to the general public. Research programs which must operate on shoestring budgets necessarily must consume more time in the development of sound usable recommendations. When only one-fifth of the nation's golf courses support the USGA and its Green Section program, it will take five times as long to get the work done.

Progress in Cooperative Decentralized Research

A great deal of the turf research work in the country was discontinued during World War II. Lessons learned during the war have proven that a sound coordinated turf research program will not only be of tremendous saving to taxpayers but actually is a military necessity. The studies under way by the Turf Committee of the American Society of Agronomy, although incomplete, have shown the real need for additional research work on the specialized (non-agricultural) uses of grass. Golf and the golf course superintendents, as usual, have pioneered and have headed the procession. Virtually all other turf interests now are joining hands and are supporting the various coordinated research stations scattered over the country.

At this time we wish to extend thanks and deep appreciation to those experiment stations and to their faithful workers in this specialized field who have made this splendid progress in turf research possible. Similarly, in the USGA Journal, we have recognized the various groups which actively have supported the program financially. We can do little more here than to name the stations and the workers who actively are prosecuting the work. Future publications will describe in detail the various phases of the work.

Beltsville Turf Gardens, Plant Industry Station, Beltsville, Maryland

U. S. Golf Association Green Section

Fred V. Grau, Director
Marvin H. Ferguson, Agronomist
Charles G. Wilson, Student Assistant
Alexander M. Radko, Student Assistant
James M. Wilfong, Maintenance Foreman

U.S.D.A., Bureau of Plant Industry, Division of Forage Crops & Diseases, Beltsville, Maryland

O. S. Aamodt, Head Agronomist
Ian Forbes, Jr., Assistant Agronomist

Florida Agricultural Experiment Station, Gainesville, Florida

Harold A. Mowry, Director

Everglades Experiment Station, Belle Glade, Florida

R. V. Allison, Director
Roy A. Bair, Agronomist

Georgia Coastal Plain Experiment Station, Tifton, Georgia

George H. King, Director
Glenn W. Burton, Agronomist, U. S. D. A.
Burdette Robinson, Graduate Assistant

Pennsylvania Experiment Station, State College, Pa.

F. W. Liniger, Director
H. R. Albrecht, Head, Department of Agronomy
H. B. Musser, Agronomist
A. E. Cooper, Extension Agronomist
James R. Watson, Graduate Assistant
John Stanford, Graduate Assistant
L. Neal Wright, Graduate Assistant

New Jersey Experiment Station, New Brunswick, New Jersey

W. H. Martin, Director
G. H. Ahlgren, Head, Agronomy Department
Ralph W. Engel, Agronomist

Rhode Island Experiment Station, Kingston, Rhode Island

M. H. Campbell, Director
J. A. DeFrance, Agronomist
Frank Howard, Pathologist
T. W. Kerr, Entomologist
J. B. Rowell, Pathologist
Charles Allen, Foreman

Connecticut Experiment Station, New Haven, Connecticut

John C. Schread, Entomologist

**Massachusetts Agricultural College,
Amherst, Massachusetts**

L. S. Dickinson, Associate Professor of Agrostology
Geoffrey Cornish, Instructor in Agrostology

Cornell University, Ithaca, New York

C. E. F. Guterman, Director
John F. Cornman, Professor of Ornamental Horticulture
Eugene G. Nutter, Assistant

**Purdue University,
West Lafayette, Indiana**

G. O. Mott, Agronomist
Willis Skrdla, Graduate Assistant
Richard Davis, Graduate Assistant
Kenneth Payne, Graduate Assistant
Ethan Holt, Graduate Assistant

**Michigan Experiment Station,
East Lansing, Michigan**

V. R. Gardner, Director
C. E. Millar, Head Soils Department
James Tyson, Soils Department
Carter M. Harrison, Crops Department
William H. Daniel, Graduate Assistant

**Missouri Experiment Station,
Columbia, Missouri**

E. Marion Brown, Head, Agronomy Department
R. B. Livingston, Agronomist

Iowa Experiment Station, Ames, Iowa

H. L. Lantz, Department of Horticulture

**Wisconsin Experiment Station,
Madison, Wisconsin**

H. L. Ahlgren, Head, Department of Agronomy
F. V. Burcalow, Extension Agronomist

**Texas A & M College,
College Station, Texas**

R. D. Lewis, Head, Department of Agronomy
Richard Potts, Agronomist

**Oklahoma A & M College,
Stillwater, Oklahoma**

L. E. Hawkins, Director
H. F. Murphy, Head, Agronomy Department
W. C. Elder, Graduate Assistant

**Kentucky Experiment Station,
Lexington, Kentucky**

E. N. Fergus, Head, Agronomy Department
J. T. Spencer, Agronomist

Ohio Experiment Station, Wooster, Ohio
F. A. Welton, Agronomist

**Illinois Experiment Station,
Urbana, Illinois**

R. C. Fuelleman, Agronomist

**Washington Experiment Station,
Pullman, Washington**

E. G. Schafer, Head, Agronomy Department
E. V. Kreizinger, Associate Director of Extension

**Oregon Experiment Station,
Corvallis, Oregon**

E. R. Jackman, Extension Agronomist
H. A. Schoth, Agronomist, U.S.D.A.

**University of California,
Los Angeles, California**

V. T. Stoutemyer, Horticulturist

This is virtually a complete listing of active work in progress at the present time. Interest recently has been expressed for cooperative work in Colorado, Utah, Nebraska, North Carolina, and Tennessee. When these programs are in progress it will mean that over half of the states will be participating actively in the coordinated program. It is plain to see that the Green Section staff (two men) can do little more than to visit cooperating experiment stations, attend turf conferences, and to carry on correspondence relative to coordination of the work and compilation and distribution of results. More and more the educational features of the work will be carried by the states and by local associations so far as individual requests are concerned. Extension agronomists, working closely with the research men, will carry the lessons to the turf groups through meetings of the local associations.

Without a doubt, the secret of strength and harmony in any state program rests in two factors:

1. Strong local associations.
2. A representative Turf Advisory committee recognized by the college administration.

Green Section service today is best accomplished through cooperative work with the experiment stations and through active participation at turf conference and at Turf Field Days. With only two staff members it is impossible to make more than a few individual visits to golf courses during the year. It is unfortunate that, as there is more service developed in a state, there is a tendency for golf clubs to say "Why should we support the Green Section—they don't even come around and do anything for us." Greenkeepers don't feel that way but uninformed club officers often do.

(Continued on page 84)

ville, Nashville, Jackson, Miss., Paducah, Ky., and Arkansas. Mr. Elmer Michaels from Oak Hill CC, Rochester, N.Y., was present. The National Amateur is to be held at his club next year.

The evening meeting was devoted to a discussion of turf problems on southern courses with O. J. Noer as leader. At the start many nice things were said about the excellent turf on the fairways and greens at Memphis Country Club, and J. E. Hamner was praised highly for the excellent job he did in conditioning the course. Fertilization prior to seeding rye grass for winter play came in for much discussion. Those present agreed that phosphate and potash should be used generously before seeding, but that fertilization with nitrogen should wait until two to three weeks after the rye grass appeared above ground.

Charlie Danner, Secretary of the organization, reported that over \$125.00 of the \$200.00 yearly contribution for the turf experimental work at Tifton, Georgia, had been collected and that the balance would be obtained.

The meeting was an enthusiastic one and evidence of the increasing interest in turf development throughout the South. Until recently there was no concerted effort to solve maintenance problems in that section of the country. The next decade is sure to see vastly improved turf and better golf courses.

TURF ROUND-UP

(Continued from page 70)

They fail to see the entire picture. It is our conception that support of the Green Section is more essential than ever before.

Advances in 1948

We invite the attention of our readers to GOLFDOM's "Turf Roundup of 1947" for a thorough discussion of "new" things in turf maintenance. The basic principles discussed there are still good. We can, however, point to some advances and some results during 1948.

We are learning that bentgrass requires MUCH LESS irrigation than we had ever believed before. The regrettable tendency is to overwater bentgrasses on both greens and fairways. This is particularly true in the arid regions where water is critical. We need to learn a lot more about how to irrigate turf.

There is still a marked tendency to mow putting greens too high. The best greens in the country are mowed at 3/16-inch every day. Some bent fairways are in danger of being ruined by cutting too high. Bentgrasses grown at Beltsville without

artificial irrigation were better at 1/4-inch than at 1/2-inch. One must see this to believe it. The same can be said of Bermuda grass fairways and tees.

Bluegrass is being used less and less on golf courses except where it grows naturally in the roughs. Some courses are able to grow good bluegrass turf by cutting 1 1/4 to 1 1/2-inches high but golfers do not want to play out of that kind of turf. The trend on northern fairways definitely is toward bentgrass.

Bentgrass

Confusion is the rule, rather than the exception, where bentgrasses are concerned. Three types are available commercially as seed:

1. Seaside creeping bent. This grass is most useful in arid and semi-arid regions for putting greens. It is susceptible to snowmold but with careful treatment and close frequent mowing, it produces excellent turf. At the higher cuts it produces an undesirable matted fluffy turf.

2. Astoria Colonial bent. This grass is upright in growth and is most useful on fairways and tees and for lawns that are cut closely.

3. Highland Colonial bent. This grass is similar in many respects to Astoria Colonial bent but has a more bluish cast. It blends well with other grasses.

For closely-clipped turf (1/2 to 3/4-inch) a blend of the three bentgrasses has given better results than any one alone. It is outstanding that throughout the country, bentgrass thrives under the closest cutting it is possible to give it, whether it is on greens, tees or fairways. It is doubtful that bent requires any more irrigation than do many other turf grasses. It has been extremely disappointing to see much good bent turf ruined by overwatering.

Among the vegetated creeping bents, for which no seed is available, these strains continue to be outstanding wherever they are grown and are properly managed:

Arlington (C-1)
Congressional (C-19)
Washington
Old Orchard
Toronto (C-15)
Cohansey (C-7)
Collins (C-27)

The combination of Arlington and Congressional mixed in equal parts when the vegetative planting is made is one of the top combinations in the country. Another is Arlington, Congressional and Collins mixed together, one-third of each. The others named usually are grown alone and each has individual characteristics. Of these strains Arlington continues to be the most resistant to disease and to drought.

Cohansey is a heat-tolerant grass but requires careful management because of its susceptibility to disease. Toronto is very susceptible to dollarspot but when this disease is kept under control Toronto produces a beautiful turf. Old Orchard has not received the recognition it merits. It is a sturdy grass which takes a lot of punishment and recovers well.

New bentgrasses are in the offing in development from the breeding and testing programs at Pennsylvania, Rhode Island, Beltsville, and Purdue. One of the aims of the plant breeders is to produce a grass that will have high resistance to disease, drought and insects; will produce a tight desirable turf under a wide variety of conditions; and can be planted from seed.

Bentgrasses are being more widely used on tees than ever before, primarily because they have the power of rapid recovery and are the only important northern turf grasses that can stand close clipping.

Bluegrasses

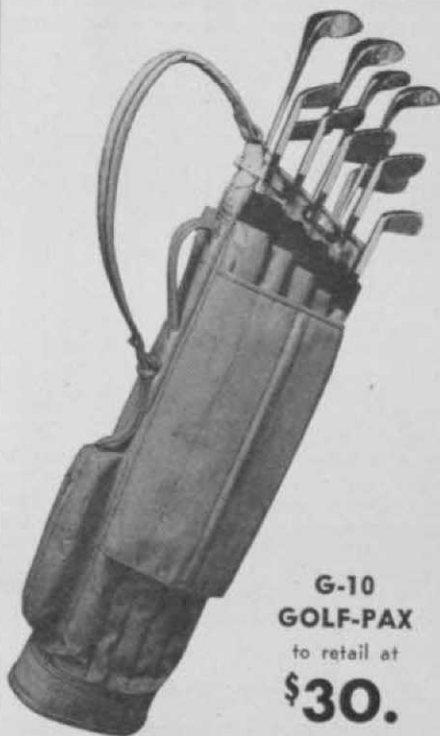
Last year we named B-27 bluegrass as the one receiving top honors in this field. The situation has not changed. Wide-scale tests with experiment stations and golf courses are in progress. Commercial production of B-27 bluegrass seed is increasing. It is entirely possible that within two years seed can be purchased on the market. This will represent a period of 14 years from the selection of the grass on a tee at the Merion GC, Ardmore, Pa., until the public can begin to realize the benefits of a new grass. Other bluegrasses are being tested which some day may prove to be superior to B-27. No possibility is being overlooked.

It appears to us, particularly in the Mid-Atlantic area, that bluegrass will find its greatest use in combination with a warm-season grass like Bermuda or Zoysia. The Bermudas and the Zoysias will be selected on the basis of their ability to allow cool-season grasses to grow with them uninterrupted. The demand for a green turf in fall, winter and spring is so great that it is useless to consider growing any warm-season grass by itself. To date it appears that B-27 bluegrass is much better than common bluegrass in this respect. The fact that it will stand closer clipping than commercial bluegrass is very much in its favor.

Fescues

The fescue testing program still is incomplete but a more complete report can be given at this time than last year. Tests at Beltsville indicate that Illahee creeping red fescue and Penn State Chewings fescue were the two at the top in our trials in 1948. At Purdue the creeping red fescue from Oregon, which now tentatively is being called "Prince Georges" (at one time

Tufhorse



**G-10
GOLF-PAX**
to retail at
\$30.

CHRISTMAS PROFITS

Line up profit making out of season sales. Go after your share of the tremendous Christmas gift business.

There is no finer, more useful gift than a smartly styled Tufhorse-MacGregor golf bag. Prices go from \$3.50 to \$105 to fit each buyer's taste and budget.

order from

MacGregor
THE GREATEST NAME IN GOLF

made by —

Des Moines Glove & Mfg. Co.
Des Moines, Iowa

the name "Trinity" was attached to the grass but because "Trinity" is a trade name it cannot be used as a strain name) and Penn State Chewings fescue have given the best performance over a period of several years. Both Illahee and the Oregon red creeper ("Prince Georges") are in large-scale commercial production. This phase of the program is just getting under way with Penn State Chewings.

Records are incomplete but it appears that the value of these fescues lies in the fact that they are more disease-resistant and that they withstand close clipping better than do others. For the greater part of the summer, the fescue plots at Beltsville were maintained under $\frac{1}{2}$ -inch cutting (the mowers were set at $\frac{1}{2}$ -inch on a smooth surface). In the tests at Purdue the fescues were subjected to three heights of cut— $\frac{1}{2}$ ", 1" and $1\frac{1}{2}$ ".

Alta fescue continues to command attention because of its sturdiness, its ability to start growth quickly (it germinates in the same length of time as ryegrass), its drought-tolerance, its ability to stay green during a drought when bluegrass and fescue are brown, its ability to withstand close clipping when soil conditions are good, and its companionability with other turf grasses such as bents, bluegrasses and the red fescues.

Since the Turf Committee of the American Society of Agronomy has recommended that ryegrass be eliminated from all mixtures of perennial turf grasses and since redtop is short in supply and out of sight in price, Alta fescue assumes new importance as a so-called "nurse", "companion", or "filler grass" in mixtures. In spite of its apparent coarse texture it blends well with all other turf grasses under good management. It is considerably more tolerant of poor soil conditions than many other grasses.

During the past two summers Alta fescue turf has been attacked by rhizoctonia (brownpatch) and by some other diseases which for a time damaged the appearance of the turf. Except in a few instances the damage has been neither severe nor permanent. Apparently this weakness is most evident in the first year of growth.

Bermuda Grasses

U-3 Bermuda grass continues to win new friends in the northern part of the Bermuda region and the southern fringe of the bluegrass-bent-fescue region, where crabgrass is the prevailing turf grass. Indifferent management of U-3 Bermuda grass usually results in disappointment. With good management, frequent close cutting, and heavy nitrogen fertilization (particularly during the summer) this grass is able to produce a dense, firm, green turf with the very minimum of irrigation (at Belts-

ville no irrigation at all) on soils so compact that only knotweed and goosegrass normally will grow.

U-3 Bermuda grass appears to be combining satisfactorily with B-27 bluegrass and with a mixture of Seaside, Highland, and Astoria bents. The bent-Bermuda plot and the B-27 bluegrass-Bermuda plot have been the freest of crabgrass, and have provided more delightful year-round green color than any other combination tried to date.

Leo Bauman and Al Linkogel, of St. Louis, reported that at the end of the baseball season in that city the square yard of U-3 Bermuda sod placed on the infield remained green and thriving when all other grasses in the infield had been ground to dust. Telecasts of the games caused people at the television sets to wonder what that spot was in the infield.

Where U-3 Bermuda has been placed on sunny one-shot tees (where play is extremely heavy) the results have been more than anybody dared hope for. Most greenkeepers and superintendents hesitate to plant U-3 Bermuda grass on the approaches to their greens for fear that the invasion into their bentgrass greens will be more than they can handle. At Beltsville we have deliberately planted U-3 Bermuda in a path between the two ranges of bentgrass being tested for putting green and fairway use. Invasion and control is being studied seriously at Oklahoma as well as at Beltsville. Many greenkeepers report that Bermuda grass invasion is one of their least serious worries on the course.

New selections of Bermuda grass developed at Tifton, Ga., appear to bid fair to revolutionize Bermuda greens throughout the southern part of the United States. In a cold-blooded "mass-murder" program of $\frac{3}{16}$ -inch daily mowing with the minimum of irrigation, little fertilizing, and no topdressing, two or three of the new strains at Tifton were outstanding. Common "cottonpatch" Bermuda or Bermuda grass developed from seed failed almost completely. The new selections were dense, green and thriving.

Centipede Grass

Considerable hope lies ahead for those turf areas where management and fertilization are insufficient to meet the rigid demands of Bermuda grass. No grass goes downhill so quickly as does Bermuda grass under a program of neglect. Centipede grass thrives remarkably well under a program where Bermuda grass fails. Seed supplies are not yet available but great strides have been taken in the past year to insure commercial stocks of seed. For drought-tolerance, insect and disease resistance; ability to stand close cutting; and

to develop a desirable turf for many purposes, Centipede grass has no equal.

Since the initiation of a full-scale breeding and testing program by the USGA Green Section and the Division of Forage Crops and Diseases cooperating, much has been learned about *Zoysia* grasses. *Zoysia japonica* continues to claim our attention because of its potentialities for producing commercial supplies of seed. None as yet has been developed and it will be several years before this is possible. For the present, then, our efforts in developing and spreading *Zoysia japonica* will be from the standpoint of seed production.

Already information is available on how and when to plant *Zoysia* seed and at what rate per acre for best results. No serious effort will be made to encourage vegetative plantings of *Zoysia japonica* because U-3 Bermuda grass apparently has roughly the same climate adaptations as has *Zoysia japonica* and it can be established much more easily and will spread and heal much more rapidly than *Zoysia japonica* vegetatively planted.

Our principal efforts with the *Zoysia* grasses are in the direction of determining their companionability with the cool-season grasses (bents, bluegrasses and fescues). It has been demonstrated to our satisfaction that the very coarsest type of *Zoysia japonica* will produce a completely acceptable turf which will stand the closest cutting necessary to produce a good fairway. It is unlikely therefore that a great deal of effort will be expended in the direction of finding finer-bladed types because the combination of *Zoysia japonica* with bluegrass, with bent, and in some cases with Alta fescue, is so outstandingly good with the common coarse material that companionability stands out as the chief requirement.

Poa Annua

Much remains to be learned about the most desirable management and fertilization of combinations of *Zoysia* with cool-season grasses. Progress is limited by our inability to establish large areas of *Zoysia* turf for further study. It has been outstanding, however, that *Zoysia* turf at Beltsville apparently has not been affected by the heavy population of Japanese beetle grubs which has nearly completely ruined many other types of turf. Similarly, *Zoysia* turf alone and in combination with cool-season grass has maintained perfect playing surfaces at Beltsville without any supplemental irrigation. Moreover, *Zoysia* turf has fought crabgrass on its own terms and crabgrass has lost in every case. Our *Zoysia* turf remains crabgrass-free without special treatments.

Poa annua is prevalent on many turf areas where overwatering and compacted

The BURTON

"SHAFT-SAVER"

A Distinctly Better Compartmented Golf Bag. Ideal For Any Club Arrangement!

14

FULL LENGTH
Separate Club
Compartments!

S-P-A-C-I-O-U-S
Ball Pocket!



Detachable
Hood!

Room To Spare!
View of spacious
boot pocket at
bottom of FULL-
LENGTH zipper.



TWO POPULAR MODELS!

In Topgrain Russett
Steer-hide.

In Leather Trimmed
VYLAN Fabric.

Write For Prices & Full Details

**BURTON MANUFACTURING
COMPANY**

JASPER

ALABAMA

soil discourage the growth of other cool-season grasses. Where *Poa annua* normally "melts" out in the summer it is predicted that Bermuda grass or *Zoysia* grasses will thrive and eventually will become the dominant summer turf in these areas. When this occurs *Poa annua* will be blessed where formerly it was reviled.

Zoysia tees in Louisville, Ky., and Bermuda greens in Atlanta, Ga. and other places are thoroughly dominated by *Poa annua* throughout the fall, winter and spring, providing a dense, compact turf which is highly desirable for playing surfaces. With the advent of summer's heat and drought (or heavy rains) the *Poa annua* disappears as the strong summer-growing grasses come into active growth.

Unfortunately *Poa annua* turf is found in many areas where water is critically short in supply. By thoroughly cultivating the soil and by reducing the quantities of water applied we are confident that *Poa annua* turf can be replaced by more permanent species. Detailed studies on this subject are being pursued under the USGA Green Section fellowship at the Pennsylvania State College.

Clover in Greens

Clover has ceased to be troublesome on putting greens on well-managed golf courses. The "secret" appears to be better physical soil conditions, less overwatering, and better feeding practices. In some cases stronger grasses are indicated but the physical soil conditions seem to be the dominant factor.

Weeds in General

There are more weed-free golf courses today than ever before in history. 2, 4-D has done an outstanding job in ridding turf of the broadleaf weeds. Today there is little excuse for dandelions, plantains and buckhorn on any golf course.

The solution to Dallis grass control throughout the South has not been found. Certain preliminary trials indicate that perhaps a mechanical method may be found to be the answer.

Weeds in Bermuda greens can be ascribed to the same causes as clover in bent greens; that is, compacted soil; overwatering; weak, thin stands of grasses; and under-fertilization. I have seen so-called Bermuda greens which contained not more than 10% of Bermuda grass by the most generous evaluation.

Stinkworm or Tropical Earthworm

So far the tropical earthworm or so-called stinkworm is the unsolved problem on putting greens from Florida to Maine. Insecticides which adequately control all other turf insects have been unavailing

against the stinkworm. A coordinated attack on this pest is being made, spearheaded by the New York-Connecticut Turf Improvement Assn. in cooperation with the appropriate research departments of the Connecticut Experiment Station and the New Jersey Experiment Station, the USGA Green Section cooperating. Contributed funds are being accepted by Warren E. Lafkin, chairman of the research committee. It is planned to establish a research fellowship to study practical methods of control of this highly undesirable pest.

Insects in General

With the advance in knowledge of the use of the newer insecticides there appears to be little immediate danger of any widespread damage to turf where the insect is recognized in time to prevent the rapid destruction of turf. It is highly important that proper identification of the insect causing the damage be ascertained at the outset. State entomologists have been extremely helpful to superintendents all over the country in assisting them with their insect problems.

Diseases

The newer fungicides are providing a measure of protection against turf diseases heretofore unknown. New fungicides rigidly are examined for their possible toxicity to grasses. A complaint in 1948 has been that the cadmium fungicides seemingly are not always effective under certain conditions. In most cases this apparent ineffectiveness can be traced to a lack of mercury in the soil.

Where mercury applications have been discontinued for a period of two years or more these newer fungicides seem to be somewhat less effective than where inorganic mercuries are applied in the early spring and late fall, when toxicity to grass is minimized. In many cases small amounts of inorganic mercury are applied simultaneously with Tersan and with the cadmium fungicides, with excellent results. These statements may not be substantiated by carefully-controlled experiments and data but the observations of many of the leading superintendents indicate the soundness of this explanation.

Personnel

The Mascaro team of West Point, Pennsylvania, (Tom, Althea and Tony) are nominated for outstanding service in the field of turf. Their machine, the Aerifier, has opened a new chapter in the history of turf management and through its use many turf ills are being corrected on large scale at low cost. Their "West Pointers" have induced many a chuckle in an otherwise serious business. They believe in fun

in addition to hard work. The turf world will have cause to long remember them for their contributions.

New Book on Turf Management for Golf Courses

The USGA has approved the preparation of a book on Turf Management for Golf Courses and copy is being prepared by H. B. Musser, Pennsylvania State College, Editor. In this volume it is intended to bring up-to-date greenkeeping practices and developments in turf management since Piper and Oakley published their book "Turf for Golf Courses" in 1923.

This book may well serve as a textbook for college work.

Summary

More "self help" and "help-one-another" programs.

Green Section staff undermanned to handle individual service calls in addition to Beltsville research and administrative duties in cooperative decentralized program.

Putting green soils to get more sand, less clay, for proper drainage and aeration.

Poor turf no excuse for rebuilding green if architecture is good.

Topdressing putting greens on way out.

Crabgrass still worst turf weed but its doom is sealed with better grasses on the way.

Only one-fifth of nation's golf courses assisting in turf research work.

List of workers in turf research growing steadily.

Bent grasses thrive under closer cutting and less irrigation than most people think possible.

U-3 Bermuda grass promising for "north-meets-south" belt where crabgrass, knotweed, and goosegrass prevail on compacted soils.

Better Bermuda grass for southern putting greens on the way.

Centipede grass seed production being pushed.

Zoysia research in full swing.

Poa annua may prove to be a blessing.

Tropical earthworm in danger of extinction.

USGA's new book on Turf Management in preparation.

Brains still the best ingredient in any management program.



Locker Room Mats that NEVER GIVE UP!

Get Pneu-Mat runners for your locker-room aisles . . . and then relax for years and years to come! Many of America's finest clubs have been using sturdy, spike-resistant Pneu-Mats for the past 12 years . . . and the first ones sold are still going strong!

Write for free catalogue on Pneu-Mats, Shower Room Mats, and Entrance-Hall Mats (in color, with club name!)

A.N. BRABROOK SAFETY MATS
424 MADISON AVE. NEW YORK 17, N. Y.