



— Grau photo

Threshing scene at Beltsville Turf Gardens, July 1951. The crop is Japanese lawngrass. This is one of the Green Section's principal projects in working toward better turf.

Turf Round-up of 1951

By **FRED V. GRAU**

Director, USGA Green Section

Nature has continued to sift the wheat from the chaff all along the line. Extremes of moisture and the lack of moisture, and unexpected extremes of temperatures, disease attacks and weed infestations have clearly indicated the weak points in the existing grasses and in various systems of management. The small band of scientists who study the intricacies of Turf Management from the technical standpoint has not been able to evaluate in sufficient detail the true relationships of the many inter-related factors that determine success or failure. Certain trends, however, become steadily more significant.

Because they were there others will be able better to tell the story of how the floods damaged turf in Kansas City and other river cities, or of how first the big freeze and then the prolonged drought and terrific heat in Texas ruined bermuda turf and how unusual weather hurt the grass seed crops in the Northwest. These and other unusual and unexpected pranks of Nature place a high premium upon resourcefulness and sheer ability on the part of the golf course superintendent. The observational powers of the individual become of paramount importance in discovering and evaluating clues to satisfactory recovery of damaged turf and to the development of a sound program of

renovation and of preventions for the future. Never before has it been so important for the turf superintendent to develop to the full his faculties for sifting every disappointment for avenues of improvement. Every failure of a turf area contains the elements of success if we will read the signs accurately, interpret them correctly, and put into action the lessons learned. Most important, then, is the need for the practical man to work even more closely with the technical worker and to reveal for the good of the profession as a whole the true facts back of successes and failures.

Hats Off To GOLFDOM

It becomes a particular privilege to write the 1951 Turf Roundup for GOLFDOM on the 25th Anniversary of its founding. The world of Turf Management is infinitely richer for the unparalleled contributions made through the pages of GOLFDOM. The far-sighted planning of Herb and Joe Graffis has been uncanny. The distinctive flavor which they lend to every gathering they attend can not be duplicated anywhere. Hats off, then to GOLFDOM and to the Graffis clan for everything they have done for Golf and for Turf.

Orchids

Joe Valentine, dean of golf course superintendents, progressive, energetic czar at

Merion Golf Club, Ardmore, Pa., receives a golf bag full of orchids for spotting the patch of bluegrass twenty years ago which has come to be known as Merion bluegrass. Joe's keen powers of observation have not lessened. Fifteen years ago he designed and made a set of rakes or combs to fit on the fairway mowers to reduce crabgrass — and they worked. As Chairman of the Turf Advisory Committee ever since it was formed he has been a vital factor in helping to build the turf program in Pennsylvania. It was through his efforts that the State Legislature appropriated \$10,000 for turf research at Penn State about 1928. And for a beautiful set of records just glance through his books. He was among the first to aerify championship turf. His zeal for perfection is second to none. Recognition for his matchless contribution is richly deserved and long overdue. Hi, Joe!

A Report on the Green Section

Because the USGA Green Section is playing such an active part in developing the National Coordinated Turf Program, we beg your indulgence while we bring to the readers of GOLF'DOM the latest on Green Section Activities. We would like to have it clearly understood that anything we say concerning technical advances is not to be construed as a recommendation for local action. It is one privilege to encourage and to record progress, not to make recommendations for individual cases through these columns. We like the adage, "You'll never know how good it is until you try it."

The 1951 staff of the Green Section has consisted of:

Dr. Marvin H. Ferguson, Research Agronomist, on leave to MATS

Charles G. Wilson, Extension Agronomist

Alexander M. Radko, Research Agronomist

Fred H. Williams, Executive Secretary

Anne L. Drennan, Clerk

Fred V. Grau, Director

William Knight helped on the plots until September. Robert Elder, a student from Penn State, is helping now. With this staff we have been able to attend almost every turf conference and field day in the United States and Canada, to attend to all requests for advisory service, to handle an unprecedented volume of mail and phone calls, to conduct greenhouse research on nutrition of Merion bluegrass, and to maintain several acres of test plots. More articles have been written in 1951 than in any previous year.

In July the Green Section office was moved from the South Building to the Administration Building. We now occupy four rooms overlooking the big front lawn on U. S. Highway 1. The move was advantageous for efficiency and elbow room.

Turf Research Review (second edition) was published early in the summer of 1951. It is a nearly complete compilation of research in Turf in the United States, including conferences, field days, workers, financial aid, and a listing of current publications. At \$1.25 a copy the reserve supply is dwindling fast. We hope that every progressive superintendent will have one in his library.

USGA's book, Turf Management (McGraw-Hill, \$6) by H. Burton Musser has filled a real need. Inquiries on simple fundamental problems have slowed to a walk since green chairmen and superintendents have read the book and discussed the various points. Many books are in use by turf superintendents other than golf, particularly athletic fields. Many clubs still are without the book, a serious oversight.



Fred V. Grau

The new USGA policy to render advisory service for travel expenses and a fee has been accepted by a few clubs but has been viewed with a tongue-in-cheek attitude by most. Clubs would like Green Section staff to meet with local groups and to make friendly visits without charge. This arrangement would be most acceptable to the Green Section and to superintendents except for the fact that travel funds are lacking and no satisfactory substitute for money has been discovered. Reimbursement for travel to turf conferences has been most welcome but some groups find it rather costly and have started to pull in their horns.

State and regional stations more and more are developing their own advisory service to Turf interests. This development has the full support of the Green Section because (1) they can do a better job knowing local people and conditions more intimately, (2) it costs the clubs less money and, (3) it builds a stronger local program and thus a stronger national program.

Cooperative Research

Cooperative research with the USDA Bureau of Plant Industry continues. Contrary to popular opinion the USGA Green Section receives no government subsidy. Actually, the shoe is on the other foot with the Green Section paying its full share of "rent" for using government facilities. With recent heavy cuts in the Bureau of Plant Industry budget, all USDA turf personnel has been transferred to outlying stations. Ian Forbes goes to Tifton, Georgia, about October 1, leaving most of

the cooperative work in the hands of the Green Section staff. Some of the pilot research projects may be dropped. Certainly no new projects can be contemplated unless a new source of revenue can be tapped to augment the Green Section labor force (one man, to date). This is just about enough help to keep the plots mowed and fertilized.

Cooperative research with state experiment stations has developed beyond our fondest dreams. The program is on a sound level foundation now under a plan of friendly coordination which is producing

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FROM ANOTHER VETERAN

Twenty-five years of GOLFDOM have meant 25 years of service to the business side of golf.

For this service all golfers are grateful.

You always have stood for the best in the game and cooperated in all worthwhile promotions.

Congratulations and may GOLFDOM continue for many years to come.

JAMES D. STANDISH, JR.
Pres., USGA

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excellent results efficiently. Three major achievements can be cited as the direct result of the Green Section cooperative decentralized program:

1. Many scientists are participating. Seven years ago about 10 people were active in Turf work in the United States. Today the number is close to 100.

2. A growing pool of vital research data is accumulating for use by extension people to give to the practical user. The Green Section's Turf Research Review lists all known projects.

3. A group of keen young men has been trained in Turf Management. They are accepting positions of trust and responsibility in research, teaching, extension and industry. These men had to be trained first before there could be developed an effective plan of SERVICE.

Green Section Service Subscriptions have grown steadily without fanfare or high-pressure propaganda. Nearly 200 firms dealing in Service To Turf belong to the Green Section's official family at \$35 a year. Twenty-four dollars and fifty cents of each subscription goes into the Green Section education fund to support cooperative research and extension activities. Ten dollars and fifty cents goes to the USGA general fund to help cover Green Section costs incurred in servicing the subscribers. Many seedsmen have discovered that a Green Section service subscription helps them to keep ahead of their customers in the "new" things. Several golf

course superintendents associations have given a helping hand. USGA member clubs are beginning to realize that a Green Section service subscription, in addition to their \$35 membership dues, doesn't hurt but really helps. Piping Rock on Long Island was the first USGA club to take a subscription. Thanks, Jim Baldwin.

Turf Research Fellowships and Research Grants are established as the need is felt and as approved projects are presented. The problem today is to find qualified men to take the several fellowships that are vacant. The Green Section will entertain requests for grants-in-aid to develop better service to member clubs and to subscribers. If research must wait for more settled world conditions we can develop more fully the information at hand to present in useable form for the practical man who is faced with every-day problems of turf maintenance.

The Turf Advisory Committees have been major factors in providing a strong link between the college and the field. Success in every state or regional turf program very nearly can be measured on the basis of the strength of the advisory committee. The committee, properly constituted and recognized officially by the college administration, has power far beyond its original purpose of helping to designate needed research projects. It can lend valuable support to the research staff by making requests for money and equipment to the responsible parties and, when needed, it can become a powerful friend of the college in official circles. Any research staff that operates without a strong officially-designated Turf Advisory Committee lacks an essential part of the working mechanism. Cooperative projects in which the Green Section participates financially are easier to plan and to execute with the backing and the counsel of the Committee — and the project usually is developed on a sounder basis. Some of the more active committees operate in connection with Penn State, Tifton, Purdue, Oklahoma, and California.

Problems to be Solved

Many unsolved technical and practical problems confront the superintendent who must produce satisfactory turf in spite of — well, everything. Before we go further into these problems let us quickly review some of the major accomplishments and see if some problems still exist.

Weed Control. No need for weeds to exist in turf when existing knowledge of good management, chemicals and equipment is applied. Some Exceptoins: Dallasgrass and sandspur, in roughs; bent in athletic fields.

Aerification. Compaction of soils can be corrected with minimum inconvenience to players. Problem exists of learning most efficient use of equipment and "selling"

the principle of soil cultivation to apprehensive officials.

Disease Control. Generally adequate (except for pythium) where proven principles are applied intelligently. Some diseases, like leafspot on bluegrass, can be overcome only by developing and using resistant varieties.

Insect Control. Very close to 100% with modern insecticides and practical research on control methods. "Insect control is the first step in weed control." Moles and skunks quit, too!

Better Grasses. Better bent grass strains have been in use for years—now polycross bent seed is the latest achievement. New bluegrasses, fescues, bermudas, zoysias and tall fescues are knocking at the door. The problems here are (1) to raise funds to put more plant breeders to work on developing strains under the worst possible soil and climatic conditions (Washington, D. C.; and St. Louis, Missouri; for example and (2) to test thoroughly each new grass before releasing it for increase and use.

Now, in the UNSOLVED category come a number of "toughies" which deserve attention. Here are a few:

Annual Bluegrass. Annual bluegrass, known as *Poa* annual or, more often as just plain *Poa*, now occupies the No. 1 spot in the unsolved category, replacing crabgrass and its odious henchman, goosegrass. Several experiment stations cooperating in the National Coordinated Turf Program have increased their emphasis on the *Poa* problem each working for the time being somewhat independently on pilot investigations and a field survey. It is expected

that these efforts soon will be coordinated so that we do not waste scarce manpower and insufficient funds in unnecessary duplication.

Three principal avenues of approach are apparent at this time:

1. Destroy it completely with chemicals and replace it with a strong competing grass which will prevent its return.

2. Stop seed production by controlled use of chemicals, thus breaking the cycle.

3. Make use of it by providing a suitable summer companion grass which is strong when *Poa* is weak. Other methods quite likely will be discovered.

More Nurseries Needed. Nurseries of replacement sod and of new or improved types of grasses can be found at only a small percentage of golf clubs. There is a real need for more intensive local study of new developments. Regardless of how enthusiastic we become about improved turf grasses which someday will make the superintendent's work easier we are continually reminded that there is a lot of day-to-day maintenance on just ordinary grasses which needs doing. We must continue to try to improve what we have, discouraging though it may be at times. But, while this is going on there is no good reason why nearly every superintendent should not have a nursery of every improved grass which becomes available. Only in this way can one gain knowledge of performance under local conditions. Each nursery in effect becomes another experiment station, particularly if it is associated closely with the research and extension personnel of the state college or of the Green Section.



—Mascaro photo

Merion bluegrass seed production gets a trial in 10-acre patch on T. L. Gustin's farm, Buckingham, Pa.

How to Aerify. Needed cultivation of soil under turf often is neglected because of reluctance to disturb playing surfaces (even temporarily) when turf looks good. Cultivation at right time may mean good turf through a bad period vs. possible loss of turf. The demonstration in October 1946 on the fairways at Lu Lu Temple in Philadelphia was the turning point in the approach to the problems of soil compaction, runoff, puddling and improved methods of renovation and seeding, etc. We still don't know all the answers to When, How Often, How Deep, etc.

Problem of Mistaken Identity. Positive identification of insects, diseases, weed grasses, etc., brings the scientists of all agricultural fields into play in turf management. Sod web damage has been diagnosed erroneously as dollarspot with disastrous results. The control of one type of grub may be quite different from another type. Know your grasses, your weeds, your diseases. The big problem is to bring these questions to the attention of the research and extension men in each field.

Sensible Watering. Proper watering of turf is a subject that is getting a lot of attention in research as well as on the turf. In all too many cases water is applied faster than the soil can absorb it. It is known that increasing the quantity of water applied per minute actually can result in less water entering the soil. Research on this subject is progressing satisfactorily. The Green Section has been active in supporting three 3-year turf research fellowships leading to the Ph. D. degree and has established one additional research grant on the subject. Now comes the more difficult task of getting the research data applied to the golf course. Will superintendents use the information available to them? Are there enough trained extension men who are qualified to plan result demonstrations and to evaluate present watering schedules? Well-fed turf of perennial grasses growing on well-drained soil of good structure can get along better on infrequent irrigations "as needed" than starved turf on compacted soils with poor drainage.

Height of Cut. Height of cut of turf playing surfaces presents a particularly difficult problem because it is associated with so many varying degrees of individual opinions. It is affected by the kind of grass present, the climate, the soil, water management, fertility level, density of the turf, frequency of cutting, and so on. It is affected by the proficiency of the many people who play golf, from the playing professional to the highest handicap player in the club. But surely there must be some middle ground.

The teeing ground is most satisfactory when it is cut short and often so that no

grass blades can come between the club face and the ball. It may be further said that a dry, firm turf is very desirable. Most good tees today are cut one-half inch or less. Many bent tees are cut 4/16-inch to 5/16-inch.

The putting surface must be true and "reasonably fast." There is no standard specification—it must always remain a matter of judgment. In some cases the putting surface is slow, it is not mowed often enough, it is cut too high. But here again "height of cut" is a relative term whereas "good putting quality" is the desired end result. Matted, stringy turf, with lots of "grain" is not a satisfactory putting surface. It may be "beautiful" in color but unless it putts well the job hasn't been done right.

The most bitter controversy rages over the proper height of cut on the fairways. Again, there is no standard specification but any player good enough to be on the fairway is entitled to a "premium" shot. Too often the ball nestles deep in lush soggy turf which, for its condition, may be cut too high. In many cases we find players hoping that the ball finds the fescue rough (which may be dirt-brown) where they will get a better shot than in the fairway. When this situation exists something is wrong! Maybe it isn't height of cut but something needs improving. The proper height of cut is that which makes players come in saying, "Jim, I'll bet we've got the finest fairways in the country. They really play swell!" Time and time again we have inspected the regular fairways about which the players have been complaining bitterly because of soft, deep lies and their inability to play a clean shot when they are forced to dig the ball out of the turf. Then we would walk over the practice fairway which never gets any water (just natural rainfall) and we find the ideal playing turf where a bad lie can't be found and every shot is a clean, crisp one. (Note: This doesn't hold in arid regions). Sure, the turf gets brown now and then during drought but it still plays well! What is the answer?

Maybe our talk is all academic. If the water supply of the nation keeps dropping we may have to maintain golf courses without artificial watering. Much of the work of the Green Section at Beltsville is designed to learn how this can be done. We don't say that we know yet but we're learning how to produce good playing turf at Beltsville under close mowing with little or no artificial watering. We still maintain that turf should be cut so that it is fun to play golf! If the turf can be cut closely to provide a good firm lie for the ball and still delight the non-golfing member who judges quality by the color of the golf course, then the superintendent has done a real job worthy of highest praise.

Some of the other problems lie somewhat

in the future but deserve mention for the record.

Vacuum Cleaners for Fairways. As the density of fairway turf increases, clippings on the surface present a problem of disposal. Clippings tend to harbor diseases. Some types of fairway turf may be better with clippings removed.

An accelerated program of seed increase of improved grasses is needed. The Green Section has been severely criticized for creating a demand for improved grasses before adequate supplies of seed or sod exist. In defense of this criticism we explain that growers are reluctant to produce a new grass until a demand is felt and until a ready market is assured. Merion bluegrass is the classic example.

Fertilization of Turf. Results of many field experiments designed to evaluate fertilizers and fertilizer materials on turf have been discarded because grass diseases have ruined the turf so that weeds (crabgrass, broadleaf, etc.) made up most of the population. Classic examples have occurred at Penn State and at Beltsville where tests on common bluegrass had to be terminated because the bluegrass failed. In general, future field tests will be established only on improved turf of disease-resistant varieties which will yield dependable results. As new grasses are released, each must be studied for fertilizer response.

The problem of fertilizer placement seems to be diminishing as aerifying equipment allows material to penetrate into the root zone. We still lack accurate measurements but practical results are apparent and are encouraging.

Research continues on the ureaform fertilizers with commercial production coming a step closer to reality. Results indicate that they perform about like the good organic nitrogen fertilizers and may be expected to supplement the limited supply of organics.

Something About the Turf Grasses

Zoysia research continues to expand with the major portion of it still concentrated under the USGA Green Section and the Bureau of Plant Industry at Beltsville, Maryland. Cooperating stations which are conducting zoysia research include Rhode Island, Massachusetts, New Jersey, Pennsylvania, Tifton, Purdue, Texas, Oklahoma, Iowa, Nebraska, Kansas, Kentucky, Michigan, Wisconsin and California. A great deal of interest centers around the development of the Z-52 strain of zoysia which currently is under imminent official release by the Department of Agriculture and the USGA Green Section for clonal or vegetative increase. Incidentally, Z-52 zoysia makes a good crop of seeds at Beltsville after the second or third year in solid nursery stand. Again, strangely enough,

this seed, when planted, produces a turf which has almost the same texture as the parent plant.

This is the kind of turf that brings exclamations of pleasure from people who walk on it the first time even when it has had no rain or artificial water for six weeks or more. Placed side by side, alone and in combination with the better cool-season grasses, the Z-52 strain presents a much more acceptable appearance than the common Japanese lawngrass (*Zoysia japonica*) for many years.

Recommendations to date are based mainly on technical considerations of method, time, and rate of planting, height of cut, introduction of cool-season grasses, and other details. So far as choice of strains or species is concerned this is pretty much a local proposition.

The Green Section makes no specific recommendations as to the type of zoysia that anyone should plant but suggests making trial plantings and making haste slowly. A nursery bed of different types of zoysia quickly will tell anyone which type they would like to continue. From observations to date across the country it is clear to us that most golf courses will prefer to wait for seed or planting material of the finer-bladed, improved strains of zoysia



—Mascaro photo

Joe Valentine examines turf in his Merion bluegrass on No. 15 fairway at Baltusrol GC, Springfield, N. J.

which is coarse-bladed, does not tolerate close mowing well, and becomes dormant much more quickly in the fall.

There is a tremendous need for the common type of Japanese lawngrass on airfields, roadsides, industrial lawns, embankments, and many other areas where fine texture is not essential. Common zoysia falls into about the same class as Alta and Kentucky 31 fescues so far as turf is concerned. Leaf width is about the same, color and texture are similar, and in many cases they make excellent companion grasses. Under some circumstances of

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— Grau photo

Members of the group who made turf history by participating in the first Eastern Athletic Field Tour, July 23-24, 1951. (L to R) front row: Nutter, Hallowell, Cornman, Wilson, Noer, Mascaro, Glowa, Mascaro, Evaul, Zimmerman, Musser. Standing: (L to R) Laffin, Wood, Farnham, Benguefield, Steiniger, Wilcox, Twombly, Wistrand, Engel, Smith, Smith.

TURF ROUND-UP

(Continued from page 49)

good fertility they can be mowed quite closely and will make certain types of acceptable turf. It will be several years before seeds of improved strains of zoysia will be available in quantity. Interest in the improved types, however, is running so high that producers are starting now to develop planting stock which some day soon will be producing seed. Our chief problem in the Green Section today is talking to people who have enjoyed Z-52 zoysia turf, who have farms, and who now want to go into production. The pressure is mounting.

Launching of New Project

The year 1951 marks the launching of a new project — the marketing of Z-52 sod plugs for planting into home lawns. Truly, pioneering is still a popular subject. To make the story even more exciting, one local lawn service company guaranteed the lawns where they were allowed to plant the plugs and to care for them the first year. The two-inch plugs were set on one-foot centers at 10 cents each. This is considered cheap or expensive depending upon the viewpoint. On the viewpoint. On the basis of first cost per unit area it is expensive. On the basis of permanence and satisfaction, it is cheap. Time will tell as to the public acceptance but the nurserymen are enthusiastic over future prospects. At this writing one nurseryman even plans to sell sods of Merion bluegrass for sprigging into weak spots in the lawn. His argument — few people know how to seed properly — anyone can do sprigging. We observe that

seed can be sown only at certain seasons for best results — sprigging can be done anytime the soil is not frozen or baked rock-hard by the sun. Perhaps this is a trend of things to come — and it may have considerable merit. Many homeowners long ago have become disgusted over the kind of lawn turf that they have not been able to grow from seed. There is a tremendous market for good lawns, either from the right kind of seed or from the right kind of plugs, sprigs, or sod. Both can be developed. Seedsmen have the greatest challenge ahead of them in history. Homeowners have ahead of them more hope for good lawns.

The Green Section claims another "first" in the development of seed of new grasses at Beltsville. Pilot tests show that seed of certain turf grasses can be produced on lawn areas with only minor temporary disfigurement of the lawn. This has been done with Merion bluegrass and with zoysia thus far. Yields of seed make the venture quite promising. This has been a pet project of mine since 1935 but seed production on nursery plots on golf courses has not progressed far. It may get renewed attention now with seed prices and supplies as they are.

In the American Rose Annual for 1951 in an article on "Lawns, Nothing But the Best," the author made the statement to the effect that 50 million pounds of common bluegrass were sold in 1950. The statement should have read "72 million pounds of rough-cured seed were processed, resulting in some 28 million pounds of clean seed." The error is regretted. But, regardless of actual tonnage, we still have too few

good bluegrass lawns, fairways, cemeteries, parks, and airfields to show for all that seed.

The story of manilagrass (*Zoysia matrella*) is familiar to many in the South. It has filled a real need where bermuda has failed to produce the desired turf. Now Z-52 promises a turf of pleasing texture to turf lovers north of the zone of adaptation of manilagrass as well as further south.

Merion (B-27) Bluegrass

Many users of Merion bluegrass are disappointed because they expected a "miracle" to happen. Merion is not a miracle grass — it is just an improved low-growing bluegrass which thrives under close mowing (one-half inch or even less under good management), which is highly resistant to leafspot, which is more resistant to crabgrass and other weeds than commercial bluegrass, which forms a firm resilient turf with minimum irrigation, and which produces a heavy growth of rhizomes. Merion bluegrass takes about as long to germinate as commercial and it still requires good seedbed preparation and good fertilization. It competes slowly but surely with most existing turf grasses — too slowly for many users. It appears to suffer when treated with phenyl mercuric acetate — no one knows why or how. It still has a summer weakness characteristic of common bluegrass but it is not quite so pronounced. When it gets hungry for nitrogen it seems to suffer from dollarspot in some areas. Some users say that it does not heal divots fast enough to suit them — others claim that it is vastly superior in this respect.

In some cases Merion has been seeded into existing fairway turf at 20-22 pounds to the acre and there are complaints that it can't be found or identified. In other cases it dominates the turf after two years. The fifteenth fairway at Baltusrol is the best-known example of pure turf of Merion under play established alone after renovating with Cyanamid. Players are highly complimentary about the turf and many say that it is the best they've played from. Other large areas of Merion turf include Michie Stadium at West Point, N. Y., and half the lawn at American Cyanamid's Stamford, Connecticut plant.

There is a tendency to renovate and seed Merion earlier than with other grasses. Some fairways were seeded this year in June just as the Poa was melting. It is too early to measure results but the prediction is for success. Spring seedings of Merion at Beltsville have been uniformly successful. Spring seedings of commercial bluegrass uniformly have been failures.

While we are on the subject of bluegrasses some mention should be made of the one known as Delta, an upright strain produced by and released from the Central

Experimental Farms, Ottawa, Canada. It was released as a fodder or forage plant because it yielded more forage than commercial. No claim was made for resistance to leafspot but it resisted mildew better than commercial. In turf it has acted like commercial by failing to produce a turf on the plots at Ottawa. During the winter of 1950-51 the Delta disappeared. Merion bluegrass was the only one to survive satisfactorily in adjacent plots. Delta has an appeal to seed producers because it is a good seed yielder. No information is offered as to the degree of apomixis. Merion is highly apomictic. It is significant that the originators of Delta bluegrass apparently are not recommending it for use. It may possibly be superior to other types of bluegrass in other parts of the country but, to date, no such evidence has been presented from cooperators in the National Coordinated Turf Program. Conclusion to date for turf indicates, "Delta about as good as commercial." More information is being gathered.

Other bluegrasses under limited test at a few locations include strains known as Arboretum, Beverly, and Tam-O-Shanter. Very little is known about any of them and data is virtually non-existent on their performance in turf. We hope, and fully expect to find bluegrass which will be better than Merion. Since Merion has been the first improved bluegrass ever to become a major factor in the seed trade, we can only expect that it shall be the first in a series of improved bluegrasses. Until that time we shall use Merion as the standard against which all other bluegrasses are tested, to stand or fall on their own merits based on impartial, unbiased performance records in turf.

Bermudagrass Improvement

Bermudagrass improvement under the skillful hand of Glenn Burton continues to make significant advances. Tifton 57 still holds the spotlight but promising new strains from crosses with fine-leaf types are threatening the supremacy of 57. We are not in the best position to evaluate the progress of the improved bermuda strains. This can be done much better by B. P. Robinson who is doing such a good job in the southeastern states. We would call also upon Verne Stoutemyer in Southern California; Roy Chessmore at Stillwater, Oklahoma; Jim Watson at College Station, Texas; as well as Bill Daniel at Purdue; all of whom are helping to evaluate the new strains of bermuda. Suffice it to say in this report that the world of turf is richer by far as the result of the interest of all these men in improvement of bermudagrass.

A brief report on U-3 bermuda is in order particularly since it has received publicity in areas outside its area of adaptation. Many tests by golf course superintendents

and others in northern areas have quite clearly indicated its practical limits. It has been most successful in southern California, Oklahoma, southern Kansas, and up to Kansas City, St. Louis, Louisville, Washington, D. C., and into New Jersey. Its supremacy fades further south at points where Tifton 57 is winter hardy. Planted and managed well, with a knowledge of its characteristics, it is filling a need for many turf uses where crabgrass usually is the dominant grass when common turf grasses are used. Areas such as Chicago, Rhode Island, and Cleveland have given U-3 a fair trial and the conclusions are, "We're too far out of its range." Failures have been recorded further south especially where material was planted late in fall or where drainage was poor. We even lost some U-3 at Beltsville where water stood most of the winter on turf mowed at putting green height. Gradually U-3 is finding its place principally in the zone where cool-season grasses meet warm-season grasses and where, until now, neither has done well.

Fescues

Most golfers would prefer to play a fairway lie from (1) a good bermuda turf or (2) from a good fescue turf. The chances for both are better than ever. We've discussed the bermudas briefly but the fescues deserve attention. Red fescues developed in the Pacific Northwest have failed to stand up under diseases which develop under high temperatures and high humidity. New types developed in Pennsylvania and tested also under the rugged conditions at Beltsville are giving golf course superintendents some hope for fescue fairways in the future. Seed production will start soon. The new disease-resistant fescues may become an important item on putting greens where (1) drainage is excellent, (2) the emphasis is on putting quality, (3) warm-season grasses predominate for summer play. Worst enemy of good fescue turf has been diseases, encouraged by irrigation.

Tall fescues are destined to play an increasingly important part in turf management. Disease-resistant types are being selected at Beltsville from turf mowed at $\frac{1}{2}$ -inch over a period of five years. High seed yielding plants are given preference with the seedsmen in mind. Most turf men agree that breeding, selection and testing should be done under the most rigorous conditions so as to eliminate disease-susceptibility before a new strain is produced and marketed. Kentucky 31 fescue is showing degrees of superiority over Oregon-bred Alta primarily because of disease resistance. The tall fescues are not likely to find favor for turf in pure stand but, as a cool-season grass in warm-season turf this fescue shows remarkable staying power. A lot of people don't like tall fescue but don't sell it short just yet. Improved types will change the picture.

In spite of its toughness, the Alta fescue on the front lawn at Beltsville has had a rough time this year with disease and drought. Where Japanese lawngrass seedlings were planted into the worst gravel pockets in the spring of 1949 they have succeeded and they have helped the fescues by covering the soil. Gradually, as we produce our own zoysia seed at Beltsville, it will be introduced into all our lawn areas.

Education in Industry

There is wholesome development whereby sound, accurate information on specific phases of turf management are being incorporated as a part of the firm's advertising copy in leading turf magazines. We have long applauded this trend and have been encouraged to see it spread. Some firms are distributing special leaflets and newsletters on some of the newer developments in turf. The Green Section has enjoyed the privilege of reviewing copy prior to publication for some firms where the copy contained only factual information no brand names. The Green Section can not approve the use of its name, or of any of its staff members, in brochures or advertising of any kind in such a way as to imply to prospective purchasers that the Green Section endorses that product. Where this has occurred it is unauthorized.

Personnel

Several changes occurred during the year which should be recorded. We will miss recording some for which we are sorry.

Dr. Marvin H. Ferguson, who did his Ph.D. Thesis on "Nutrition of Z-52 Zoysia in Relation to Seed Yields," left the Green Section on a year's leave-of-absence to work as a civilian agronomist for Military Air Transport Service. Marvin's work has taken him over a large part of the earth's surface in even this short a time.

Dr. Gene Nutter, who has done such a good piece of work at Cornell on weed control, and study under the USGA Green Section's research on mole drain studies, has accepted a position as agronomist at University of Florida at Gainesville. He will have charge of the turf program in the state. He will have strong support from Burton and Robinson at Tifton.

William Bengueyfield, who has been doing a great job as assistant county agent in Westchester County, New York, has gone back to the navy. Extension service was getting a great boost when Bill was operating.

John Gallagher, energetic right-hand man of Stoutemyer's at U.C.L.A., has taken leave-of-absence to get his bachelor's degree at Penn State under Musser.

Roy Chessmore has taken the reins from W. C. Elder on the turf project at Stillwater, Oklahoma. Roy stopped at

Beltsville to see the turf plots on his way home from the Agronomy Meetings at Penn State the end of August.

Ian Forbes, Jr., USGA agronomist, has left the cooperative turf project at Beltsville to work at Tifton, Georgia. Drastic budget cuts in Bureau of Plant Industry have caused reshuffling of personnel to make ends met. Scotty will continue work on the zoysia grasses.

W. L. Garman is now extension agronomist at Cornell. Dr. Garman had been working on project 669 at Stillwater, Oklahoma, learning what makes putting green soils tick. His report at American Society of Agronomy meetings at Penn State was excellent.

L. Neal Wright who studied at Penn State on fescue breeding project under the Wagner fellowship is now located with H. L. Wagner & Sons at Imbler, Oregon. He and Don Wagner visited at Penn State and Beltsville recently.

The passing of Howard Wagner was a blow to all of us. He was one of the most progressive seed growers we have ever known. His financial support of research on improved turf grasses has been a major lift to the seed industry and to turf lovers everywhere. We shall miss him.

Conclusion

It has not been easy to write this 1951 Roundup. Pressures and counterpressures have been active in many directions. Many important items have been left out, we are sure, and we will hear about them. Any omission has been entirely unintentional.

These "late but important" items which follow are but a few of hundreds which occur to us at odd times but which are extremely difficult to gather together at one time. Brevity of the item is not related to its importance.

The first Eastern Athletic Field Tour was well organized and conducted by the Committee of Ralph Engel, Charles Hallowell, and Warren Lafkin. West Point Lawn Products hired a bus which took the group of 25-odd from Philadelphia through West Point, Pa., to West Point, N. Y. This tour will have far-reaching effects.

Turf on TV is gaining ground. In 1950 there were several appearances on WNBW-TV in Washington with Maynard Speece and Green Section Staffers Grau and Ferguson. In 1951 several turf men including Davis (Rutgers), Lafkin (White Plains), and Grau were guests of Phil Alampi on WJZ-TV, who was working with American Cyanamid telling homeowners how to knock crabgrass.

Congressional (C-19) bent is growing in popularity in Canada where Jim Boyce has proven that it suffers least from snow-mold of all the bentgrasses tested.

The data is startling. Canadians like it also because it is green earliest in spring, holds green color late in fall and resists Poa invasion well.

Royal Canadian Golf Association is actively sponsoring a Field Day at Ottawa's Central Experimental Farm, and a Winter School at O.A.C. in Guelph. Requests now coming in for a turf school in Saskatchewan. Bill Hamilton and "Robbie" Robinson are great boosters, ably assisted by new Chairman of the R.C.G.A. Green Committee, Melville Rogers.

Plans are being considered for an International Turf Conference in 1952 when the 6th International Grasslands Congress convenes in the United States in June. State College, Pa., most likely choice for location but not settled yet. The 1951 National Turf Field Days at Beltsville were international in scope with Canada and South Africa represented. Mexico is keenly interested and may participate soon. Charles Smith of Guadalajara is ready to participate.

The new turf disease bulletin from Rhode Island sparked by Frank Howard deserves a place in every turf superintendent's library and is a welcome addition to turf management literature.

Sodium arsenite at one pound to the acre is looking good on greens, tees, and



—Grau photo

Joe Valentine's home made combs for fairway mowers.

fairways at Lehigh Country Club where Paul Weiss has been using the stuff for a number of years.

Saucon Valley Country Club, scene of USGA's 51st playing of the Amateur, was conditioned to the peak of perfection by Leonard Strong, Superintendent, under the watchful eye of Bethlehem Steel's Eugene Grace and the Green Committee headed by "Pat" Pazetti. How the course was prepared will make interesting read-

ing for years to come and interesting watching through the color film which Leonard narrated so well at the USGA Green Section Meeting in New York last January and at many other meetings.

Close working relationship between Golf Course Superintendents of America and the USGA Green Section was further developed and strengthened last winter at Chicago. Full development will take time but all clubs will benefit. Exchange of editorial views between Golf Course Reporter and USGA Journal is first material evidence of how it works.

Too many good men, including Jim Watson, Richard Davis, and Willis Skrdla, are being buried under terrific load of pasture research or teaching or both. These men have lacked full support of turf interests in states which can change the picture whenever world conditions permit.

The Turf Committee of the American Society of Agronomy continues to produce vigorous reports which reflect the policies of the ASA. Acceptance of Turf Management by ASA as a part of agriculture has made it easier to convince state college administration officials that they've been passing up a good bet for the majority of their taxpayers. The 1951 report will make good reading. Turf superintendents may join the ASA.

We can refrain no longer from complimenting the Advisory Committees and local groups who assist the colleges in developing Turf Conferences and the Turf Field Days. Their contributions to the development of the National Turf Program have been outstanding. Golf still dominates, as it should and no doubt always will, but all other turf interests are welcomed and all are benefiting. Some day soon all will support the program more energetically.

Al Radko, USGA Green Section's research agronomist, has done a masterful job of conducting National Coordinated Crabgrass Trials at 17 stations, each as nearly identical in many respects as possible. Look for this report soon. Charlie Wilson, Green Section's extension turf specialist, had a more difficult time with the National Coordinated Fungicide Trials, which may be discontinued until more basic research has been done at the experiment station level.

Midwest Golf Course Superintendents have a Research Committee which is doing an outstanding job. Mid-Atlantic's Education Committee operating just as vigorously but on a different tack, rendering a "Constructive Suggestion Report" to the host club after each meeting. Clubs like it.

Combs on fairway motors are beginning to "catch on." The way they catch on to crabgrass, lifting the seed heads to be cut

off, deserves attention by every committee chairman. Superintendents have long admired the principle.

Latest developments in turf research are at Logan, Utah, and at Lisle, Illinois. Local groups finally have achieved the start of programs designed to study the needs of specialized turf. Tax funds, primarily, are involved.

The Weed Division (BPI) at Beltsville is cooperating with the Green Section in a study of weed control in turf of zoysia (Z-5 primarily) which is designed to produce seed on Station lawns. Roy Lovvorn and Warren Shaw have splendid equipment for experimental studies.

The Green Section's insistence on studies of cool-season and warm-season grasses is paying off. Other stations are finding that combinations have something. Look to local authority for recommendations.

Summary

Study failures to find essence of success.

Work more closely with technical men.

Keep weather eye open for better grasses.

Order Turf Management and Turf Research Review.

Support your local, State and regional program.

Ask your college for assistance to keep them interested.

Is your dealer a Green Section Service Subscriber?

How strong is your Turf Advisory Committee?

The application of existing knowledge will result in greatly improved turf.

Better grasses are inevitable—all it takes is time, labor and money.

Annual bluegrass rated in No. 1 turf weed spot.

Proper identification essential even among friends.

Proper height of cut makes it FUN to play golf.

Seed production on lawn areas possible.

Fescues more prominent than for many years.

Zoysia grasses appear to have great future.

More good students needed for graduate work.

Expansion Service and Resident Teaching in Turf are providing expanded opportunities.

International Turf Conference and Field Day next likely step forward.