

# Where We've Been, Where We Are, Where We're Going

by FRED V. GRAU, Turfgrass Consultant, College Park, Md.

We've come a long, long way since the early days of golf and the first recorded turf garden in America. Mr. Olcott developed his plots at Manchester, Conn., in 1885. They consisted mainly of collected strains of bentgrasses and fescues that appeared to have desirable qualities. Later he sold the garden to Fred Taylor, of Philadelphia. All was lost when Mr. Taylor died in 1910. Meanwhile, turfgrass research was begun at Kingston, R.I., in 1895, and the work has continued there ever since.

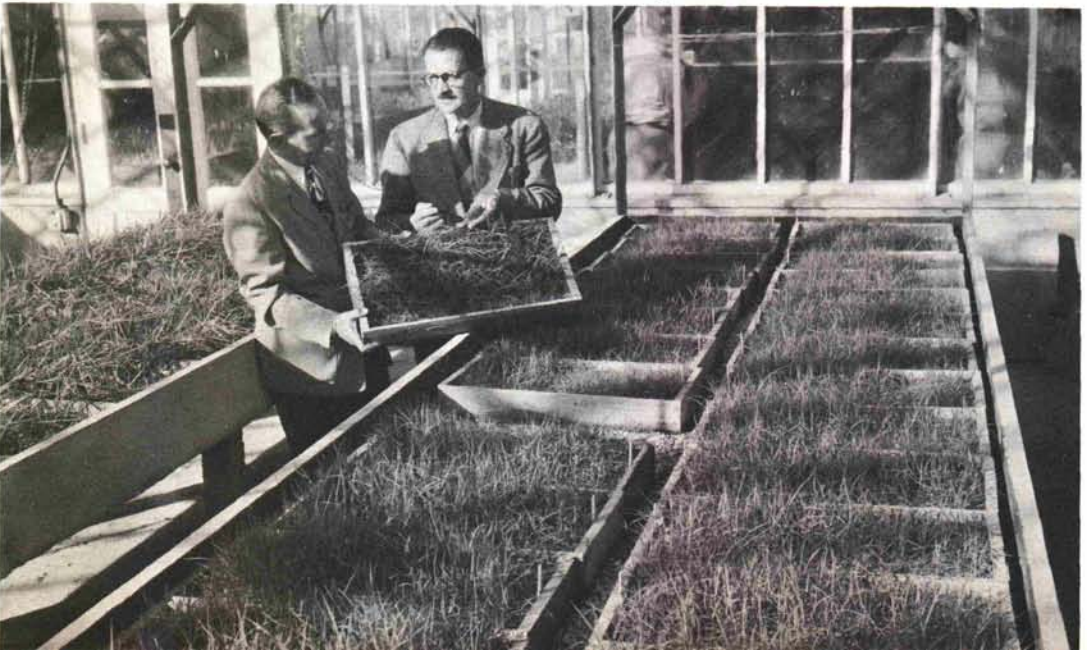
In 1917 turfgrass knowledge took a giant step forward when Piper and Oakley, United States Department of Agriculture scientists, published their book, *Turf for Golf Courses*. They told what they knew at that time. It is interesting that they had called attention to the nefarious practice of substitution wherein 10 cent redtop was sold in bags labelled Colonial bent which brought 25 cents a pound. Colonial bent later was sold in bags labelled Velvet bent, which brought twice as much. Much to our sorrow, and to the detriment of the turfgrass profession, the same thing happened when Penncross bent seed came on the market in

1953. Today, due to the efforts of Dr. Duich of Penn State, all Penncross produced is true to name.

1920 saw the formation of the USGA Green Section, and its growth was stimulated by the disaster on the greens of the Columbia Country Club, of Chevy Chase, Md., just prior to the Open Championship. Generous quantities of sulfate of ammonia applied to produce brilliant green grass accomplished the desired result until high humidity, rains, and high temperatures encouraged disease, which thoroughly killed the soft, lush grass. The Championship was played on "sanded browns."

The Green Section was organized to conduct research and to disseminate information among member clubs. Essentially this is the goal of the Green Section today. The first Bulletin was published in February, 1921, the same year I graduated from the University of Nebraska's School of Agriculture (high school). These were the days when a soil test was made with a strip of litmus paper, soil acidity was considered desirable in order to reduce weeds, and *Poa annua* was considered a good grass.

*Zoysia* research in Beltsville, Md., greenhouse has paid dividends. Alexander M. Radko, USGA Green Section, left, discusses potential of seedlings with Dr. Fred Grau.



Rosette weeds were killed by dipping an ice pick in a pickle jar of sulfuric acid and plunging it into the heart of the weed. One club with bermudagrass fairways embarked on a program of improvement that involved fencing in several fairways, turning in a carload of steers and feeding them generously with hay and cottonseed cake. When the area was generously coated with manure, the steers were sold and everything was incorporated by disking. The bermuda grew vigorously and, presto, with the course out of play only a year, the fairway turf was greatly improved.

1929 was a significant year in turf. Penn State, under H. B. Musser, and New Jersey, under H. B. Sprague, began their programs of research and teaching in turfgrass management. The National Greenkeepers Association was organized with John Morley as the first President. John Monteith had been employed by the USGA to conduct the affairs of the Green Section and to bring his training in plant pathology to the USGA Member Clubs. B. R. Leach found that arsenate of lead controlled Japanese beetles. An important side effect was that chickweed and *Poa annua* were reduced and often eliminated. Demonstration gardens had been established on golf courses in strategic locations over the United States. They had an important function in testing strains of grasses, fertilizers, disease control and other features of management. Garner and Allard, at Arlington Farms, had discovered and demonstrated the length-of-day principle.

1931 was a year of decision for me. I had lost both my parents and was graduated from the University of Nebraska. Dr. Monteith made a place for me on the Green Section Staff, first at the Midwest Turf Gardens, Chicago, later in Washington, D.C., where I helped to edit *The Bulletin* and worked with Dr. Reid, Dr. Dahl, Kenneth Welton and others at Arlington Gardens, where the Pentagon now stands.

The emphasis these days was on chemical weed control. At Nebraska I had worked with iron sulfate. At Maryland sodium arsenite and sodium chlorate came into prominence. Now we were in a great depression. Money was extremely tight. The USGA lost Member Clubs by the hundreds. Green Section employees lost their jobs. *The Bulletin* was discontinued. Through Dr. Jacob Metzger, at the University of Maryland, I was able to pursue my Ph.D. work.

This was the era of Green Section "pie greens" where on many golf courses bentgrasses were planted and compared for suitability, texture, putting quality and other characteristics. Some of these greens and several of the grasses still are in existence.

1935 saw the depression easing. Leaders in

Pennsylvania had convinced the University officials that an extension agronomist in turf was needed. I was chosen, and in February, I began my duties. In June I stumbled on crownvetch near Virginville in Berks County. Today, this variety is called Penngift and is a world leader.

In 1937 several of us attended the Fourth International Grasslands Congress in Europe. It is significant that turf was not a part of the official proceedings; it had not yet been recognized. The war threat in Europe sharply curtailed travel and conversation. Shortages of nitrogen were anticipated, and as a precautionary measure, Dr. K. G. Clarke was assigned to "Project Ureaform" at Beltsville, Md. His successful findings are well known today.

The first crude "hydroseeder" was operated in 1939 on the original Pennsylvania Turnpike. It blew on the slopes a thin mud which carried fertilizer, lime, organic matter, soil and seed (FLOSS). It worked! Now the hydraulic seeder often is seen on golf courses.

*Turf Culture* was launched in 1939 to try to bring a general publication before the public. It ran for about three years, then disappeared. At this same time fertilizer manufacturers from Michigan, Ohio, and Indiana agreed on a 10-6-4 analysis which would be designated a "turf" fertilizer. They admitted that it was not the best formula, but it was one that they could agree on.

The war years saw turfgrass work abandoned. Research workers joined the war effort trying to convince army engineers that grass had a place in erosion control and dust abatement. Agronomists simply were not recognized. The Green Section of the USGA published *Timely Turf Topics*, a mimeographed series of sheets, that tried bravely to keep the few remaining Member Clubs advised on how to produce useable turf under wartime restrictions and shortages of nearly everything. As the country recovered from the war, I became Director of the Green Section in August, 1945. The Arlington Turf Gardens had been moved to Beltsville. Mitchell and March, USDA, had proved the value of 2,4-D for broadleaf weed control.

Green Section Service Subscriptions were begun (\$35 a year), and for the first time in USGA history, commercial firms and individuals could share with Member Clubs in the benefits of Green Section findings. The plan was to build a fund that would support Turfgrass Fellowships for training leaders.

In 1946 the American Society of Agronomy recognized turf, and the Turf Committee held its first meeting in Omaha.

The first aerator was built and demonstrated in 1946. Today this is a standard piece

of equipment on nearly every turfgrass area. In this same year I found Jim Watson at a meeting in Texas, sent him to Penn State along with money, and he became the first to receive a Ph.D. in turf.

The Tifton project received recognition and support from USDA and USGA, and Dr. Glenn Burton began his excellent work of developing new turf-type bermudagrass. Zoysia investigations were going on at Beltsville in this same period.

B-27 bluegrass was released as Merion in 1950 and became the first improved turfgrass in history to be established from seed. Significantly, it was Merion that started the sod industry on its way.

The publication of "Grass," the 1948 USDA yearbook, was an outstanding event and it remains a classic today. Turf took a giant step forward with this recognition.

In 1952, when the sixth International Grasslands Congress came to the Penn State campus, turf was on the program. It was my privilege to present a paper on "Turf—A World Concept." This was significant recognition.

The book *Turf Management* by H. Burton Musser, published by the USGA in 1953, has been a powerful tool in teaching and in the education of golf course superintendents and all turfgrass managers. I left the USGA the same year.

Penncross bent was released in 1953 by Penn State. This was the first polycross seed of a turfgrass ever produced. It is one of the elite grasses for putting greens and is popular over a wide range. An excellent feature of a polycross is its ability to adapt to an environment by virtue of the multiplicity of minute individual variations in its broad genetic base.

The Interstate Highway System was started in 1955. Little did anyone dream that we would see 25 acres of turf in every mile of highway. New vistas were opened!

The first authentic turfgrass surveys were completed in the 1960's, providing an accurate picture of the size and scope of the industry. Surprisingly, turf was nearly the number one crop in every instance.

The newest book *Turfgrass Science*, published by the A.S.A., was on display for the first time at the Detroit meetings in 1969.

Last June the Joseph Valentine Turfgrass Research Center was dedicated as a memorial to the contributions made by this man who was the first golf course superintendent to receive the USGA Green Section Award. His name is linked with Merion bluegrass.

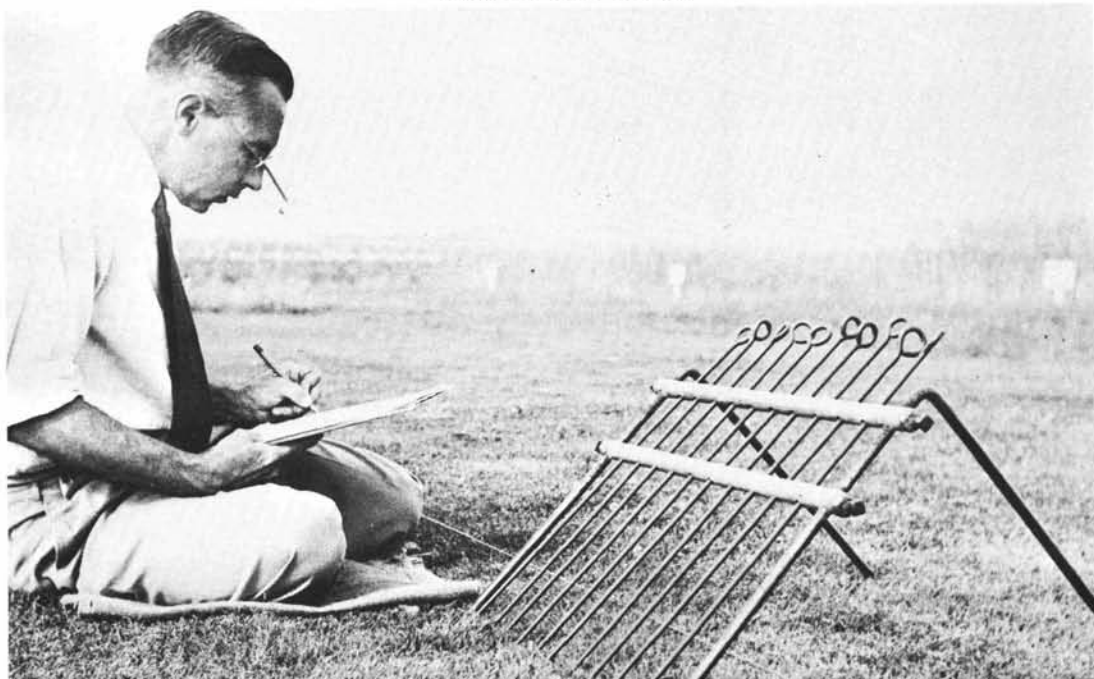
The past is prologue. That which has been accomplished to-date is only a beginning. We must learn from our own mistakes and the mistakes of others. We just do not have the time to make them all ourselves.

**Leadership**—The future of the entire turfgrass industry will rise or fall on our ability to develop leaders, without which all technical developments can only limp along to an imperfect conclusion—a future more and more devoted to artificial turf which requires only janitorial service.

**Communications**—Until all segments of the turfgrass industry learn how to communicate, we will lack the unity that we need so desperately. More taxpayers are concerned with better turf than with any other agricultural enterprise.

**Tax Support**—Turfgrass is not a money crop such as corn, wheat, soybeans, rice, and others, and yet it is nearly equal in value to the

*Turfgrass quality used to be measured with the Point Quadrat. Here tabulating results is the late Professor H.B. Musser.*







*Twenty years ago we had only this version of plugging vegetative grasses (Zoysia here). Now there are improved planting machines that can plant 18 fairways in a matter of days using sprigs of superior grasses.*

highest farm income in Pennsylvania (Turfgrass Survey 1966). Turfgrass is far behind in tax benefits, and it owes a large part of its progress to private funds. Through a unified voice we can increase our tax benefits.

**Turfgrass Surveys**—More authentic statewide surveys are needed to establish our position in the national economy. Without facts and figures we have little to talk about.

**Measurements**—The metric system is inevitable. We have been tardy in accepting it. Inches, feet, yards, pecks, bushels, miles, and all other English measurements are awkward when compared to the convenient decimal system based on tens, as our monetary system. The next generation will wonder why we struggled so long with an archaic, mixed-up system.

**Specifications**—Many who prepare them know not what they are doing. Many who interpret and apply them compound the felony. Those who manage the result often help to bring synthetic turf into greater prominence. Unified turfgrass interests must concentrate on this aspect of the industry to provide the guidelines that are so essential to success. Why leave an expensive installation to the whims of a caretaker who easily can be swayed by a convincing salesman.

**Pollution**—One great problem is people—the very ones on whom we rely to play our golf courses, build houses and install lawns; whose children need schools, playgrounds, athletic fields, colleges and universities. Each year farmland loses more than a million acres to industry and urban living, equivalent to  $\frac{1}{2}$  to  $\frac{3}{4}$  million acres of turf.

**Information**—Turfgrass users everywhere deserve a source of reliable, unbiased information on every phase of management. These sources now are stratified and fragmented. Communications are vital to the objective of everyone telling the same story. It is disconcerting to receive one recommendation from a supplier, another from the extension specialist, and a third from yet another source. Mutual exchange of information will help to eliminate this problem.

**Sod**—As the sod industry matures, we can anticipate having available to us elite sod of the best varieties ready for rapid installation. More efficient methods in the fields have stabilized sod prices at an acceptable level.

**Soil Testing**—Each year we see refinements that increase accuracy that is hard to believe. It isn't too far out to visualize a soil sample being dropped into a hopper at one end of a system, with a computer print-out at the far end specifying the exact fertilizer/lime program that is needed.

**Irrigation**—Automation is the trend, along with improvements in equipment and controls. The rub will come when water supplies become inadequate. We will learn how to use sewage effluent water on our turfgrass areas. We will learn how to conserve water and how to grow quality turf with minimum water. Excessive use of water has been a major factor contributing to turfgrass troubles.

**Grasses**—Merion Kentucky bluegrass 20 years ago started the trend toward improved varieties. Each new variety must have characteristics that render it undeniably superior in one or more factors to those that preceded it. We

need more disease and insect resistance, more drought tolerance, better color under stress, increased wear resistance. We need varieties that can recover from management mistakes and from long, dry periods.

**Mowing**—Methods of cutting grass have not changed very much in the last 50 years. We have bigger mowers and different designs, but the grass blade is pinched off or flailed off with more or less physical damage where diseases may enter. Ultrasonics or laser beams one day might keep grass at a playable height with no damage to the blades and with the potential of a high degree of control of diseases, weeds and insects. The possibility exists of treating turf with improved growth regulators to reduce mowing costs. This has been accomplished in the horticulture industry.

**Year-round Green**—We've had subterranean electric heat demonstrated and it has a future. Infra-red heat may have a place, particularly in open stadiums. In closed arenas where light is the limiting factor, we admit that synthetic turf has its place. With scientifically-prepared soil, excellent drainage and intelligent management of selected grasses, natural turf can be produced

at a fraction of the cost of artificial, and it will have the natural feel.

**The Environment**—Evidence is mounting that grass, shrubs and trees have a highly beneficial effect on pollution prevention. A natural grass turf is one of the most effective filters known to science. Air-borne toxins are absorbed and nullified; oxygen is released as carbon compounds are absorbed. Turf reduces erosion, gives a lift to the spirit. As pollution increases, we need to keep pace with turf, shrubs and trees.

The future promises only an increasing need for better turf. As we plant and grow hardy grasses that need no chemical pesticides, we can begin to harvest the grass that we tend and convert it to feed and food. The chlorophyll, the fat, the protein and the fiber in grass has sustained life on earth since Biblical times. Now our turfgrass areas might come into a new concept of usefulness.

"Nothing great ever was accomplished without enthusiasm" someone once said. I would add that courage and imagination also are cardinal virtues. Our place in the turfgrass industry is being challenged every day, but we've come a long way, baby!

## *Your Budget—Fact or Fiction*

by WILLIAM BRYANT, President, California Country Club, Whittier, Calif.

**W**hat is a budget?

It is an estimate of itemized expenses of operation for a given future period. It is a plan of operation based on such an estimate and an itemized allotment of funds for a given period. The budget for your golf course is an important function. Did you know there was in excess of \$375 million spent last year, not to mention the cost of water, repair and equipment purchases, on the 10,000 golf courses in the United States? This represents an investment in a business that must be carefully planned. No one can afford not to have some guide lines or not to plan the direction in which he must successfully operate. You must have a planned program to know what to buy, when to buy, how to buy, and what it costs.

The following are three different basic Golf Course Operations:

1. Private club golf courses are basically interested in a well-conditioned golf course. Their maintenance budget while important, is secondary to high quality maintenance. Those

clubs that are non-profit adjust their monthly dues, guest fees and other sources of revenue to meet their budget. Naturally, in addition to the normal maintenance costs, funds must be developed and set aside for capital improvements, such as major golf course construction, new greens, new sprinkler systems, new tree plantings, etc., as well as for emergencies, such as storm damage.

2. Budgets for privately owned public or semi-private club golf courses and resort courses are prepared with other considerations in mind. The quality of the golf course must be good, or at least acceptable. These golf courses must not only pay for maintenance, operation, taxes, but also make a reasonable profit in order to exist.

These golf courses must invariably operate on a "tight" program which includes minimum manpower, maximum efficiency of staff, new automation where possible, such as automatic sprinkler system, and more mechanized equipment, including scooters for the men. Usually,