

The Changing Scene



(Right) "Let's cut the rough today!" was the order and, in 1922, this was the easiest way to do it. (Above) In contrast to yesteryear, today's nine-gang unit includes a hydraulic lifting system.

ALL PROGRESS comes in steps. Those who would make advances in any field must first know what has come before and where things stand at present. Though each step taken is important, some prove more pivotal than others. The following is a selection of developments that have been made in the golf course management field in the 60 years since the founding of the USGA Green Section.

Greens

For many years Dollar Spot and Brown Patch were the most feared diseases, especially of bentgrass greens. And there was but one reliable fungicide, corrosive sublimate, which could quite readily cause turf damage itself. To maintain current standards, more than a half dozen other diseases must be managed as well. Today, however, some 20 distinct control materials, plus many combinations, are available.

"Pushed-up" greens were the norm, generally using unmodified soil scavenged from the site. After 10 years of intensive research, the Green Section published Specifications for a Method of Putting Green Construction in 1960. These have since been refined.

From the first, Green Section efforts were directed to developing improved bentgrasses for greens. By 1924 the Washington and Metropolitan strains had been selected. At the close of World War II, five more Green Section selections were in commercial production, and Dr. Burton Musser's Green Section-supported breeding program was underway at Penn State. This was to produce by the early 1950's the first improved bentgrass that could be grown from seed, Polycross (Pencross) creeping bentgrass. From this same program, now directed by Dr. Joseph Duich, another improved seed-propagated strain was released in 1978, Penneagle.

In 1946 turf research began under Dr. Glenn Burton at the Georgia Coastal Plain Experiment Station in Tifton. This Green Section-supported program developed the bermudagrass hybridization work that has completely changed the nature of southern golf courses — on tees, fairways and roughs as well as greens. The first release in the early 1950's was Tiflawn (Tifton-57), followed by Tiffine (T-419) in 1960, and Tifdwarf in 1965. Work is continuing to develop a fine-

textured bermudagrass with greater cold tolerance for the transition zone conditions.

Topdressing in the 1920's was an arduous task, being distributed either by hand with shovels or by manually drawn spreaders. Today's equipment is motorized. With some, 18 greens can be topdressed by a crew of three in a morning. Materials and rates have changed. At one time the Green Section discouraged topdressing because excessively high rates of silt and clay caused layering problems and drastically reduced water and air infiltration. Today's light and frequent applications of materials have been a great help in producing excellent putting surfaces and healthy turf.

Attempts to monitor putting green speeds began as early as 1929 with the Arnott Mechanical Putter, a pendulum mounted on an adjustable tripod. But it was not until the USGA modified a device made by Edward Stimpson, a former Massachusetts Amateur Champion, and undertook to develop it that a reliable way to categorize green speeds existed. With the help of the Stimpmeter, the USGA has been able to help clubs to achieve uniformity in the putting characteristics of all greens.

Tees

In the 1920's teeing grounds were small, often only several hundred square feet in size, and wet sand from tee boxes was mounded up as a perch on which to tee the ball; now we have wooden pegs for tees. We also have much heavier play; consequently today's tees are built much larger.

Standards of tee maintenance have drastically changed. In former years tees at many courses were cut by the fairway mowing units. Today most are cut with green-type mowers, and otherwise managed with nearly the same intensity as are putting surfaces. One of the steadily growing practices is the periodic overseeding of divot scars on tees. Many different grasses are used.

Fairways

Fairways used to be established mostly with common bermudagrass (south) or with common Kentucky bluegrass and some fescue. No more. The Tif-series of bermudas now



provide the measure of excellence in fairway turf, but they cannot be grown everywhere. The first improved grass for northern fairways was Merion Kentucky bluegrass. Today nearly 50% of this country's fairways have Merion or one or more of the 50 elite bluegrasses that have since been developed.

Along with the inferior grasses in use before 1950, weed problems were tremendous. In the 1920's crabgrass was even considered by some as desirable in fairways. Many cultural manipulators were researched by the Green Section in those early years to maximize the competition ability of the turf in this unending battle with aggressive weeds. These investigations achieved considerable improvements in turf culture, and formed the scientific foundation from which have come today's techniques in areas such as mowing, turf fertilization, and pest control. Perhaps of greatest significance was the recognition in 1944 by Acting Green Section Director Dr. Fanny-Fern Davis of the potential for selective broad-leaf weed control in turfgrass of the chemical 2,4-D, being investigated as a growth regulator at the time. Within just a few short years it was no longer necessary for golf courses to fight their worst enemies, dandelions and plantain, with an assortment of chemicals almost as likely to "burn out" the turf as the weeds.

It took a while longer to mount a successful campaign against crabgrass. Even though many courses were doing well with cultural programs, establishing better grasses and pest control to minimize crabgrass germination opportunities, it was not until 1952 that investigation of pre-emergence control materials began in Ohio and at Purdue under Dr. William Daniel, who was only the second man to have earned a Ph.D. degree in turfgrass management. (The first was Dr. James Watson, from Penn State in 1949.)

In the early 1950's, Dr. Fred Grau, then the Green Section Director, once commented that to grow good turf the insect pests must be controlled and that "with the excellent insecticides available . . . there is no excuse for permitting insects to bring crabgrass into otherwise good turf." He was speaking primarily about mole crickets in bermudagrass, chinch bugs in many areas, cutworms, sod webworms and the rapidly spreading Japanese beetles. The insecticides were lead arsenate, DDT and chlordane — none of which are any longer available for use on turfgrass. Today's turf insecticides are predominantly organo-phosphates, which in general have a higher acute mammalian toxicity, higher cost and shorter effective life span than their predecessors.

In the manufacturing boom which followed World War II, machinery specially designed for golf course use began to

appear and by 1947 a machine for "tubular time forking" and the "motorized caddie cart" had made the scene. The first was badly needed for improving rootzone aeration and the penetration of water and fertilizer and for relieving the surface compaction that was already a serious problem. Today most courses have at least one aerifier.

Roughs

In the early 1920's roughs often grew up to three feet high in the spring and it was common for them to be cleaned of accumulated organic debris through controlled burning every couple of years. In order to ease maintenance and stem the complaints about lost golf balls, roughs began to be cut more often and shorter through World War II. Today most roughs are predominantly an "improved" turf species, usually receive some irrigation, occasionally are fertilized or limed, and are mowed regularly.

Undoubtedly the changing nature of roughs has been greatly influenced by developments in various aspects of turf management, most especially in mowing equipment. The first tractor-drawn mowers replaced horse power for fairway mowing in 1921 but were not, for a time, able to cope with the roughs. Today multiple gang units cut most turf areas. For higher heights of cut and improved maneuverability, heavy-duty riding rotary mowers have come into use.

Irrigation & Annual Bluegrass (*Poa annua*)

These subject areas are linked together here because, in reviewing the history of turfgrass management, the development of irrigation is strikingly paralleled by the development of annual bluegrass problems. The earliest fairway irrigation systems date from 1931, long after supplemental watering for greens was utilized. Discussions of annual bluegrass problems then begin to appear some 10 years later. In 1946, O. J. Noer is quoted as saying, "Lessons learned during the war indicate that fairway watering in the future will be less frequent to avoid excessive encouragement of clover and *Poa annua*." In 1948, Fred Grau observed, "It is obvious that the demands of golfers to have green turf have greatly encouraged *Poa annua* by virtue of the large quantities of water applied to turf Once a water system is installed, the tendency is to use it to excess. Green Committee Chairmen have been known to say, 'Why do we have this \$30,000 water system if we don't use it?' This is the first step to a *Poa annua* turf" The first Ph.D. program in turf management involved a study of irrigation and compaction. In discussing Dr. Watson's thesis results, Professor Musser in 1950 summarized, "We cannot escape the task of re-examining our watering programs in the light of the capacity of our soil and the rate at which it can take the water we apply. At least we will recognize that good watering practice must be based on something more than the capacity of our system and the size of the sprinkler heads."

Today irrigation systems are considerably more sophisticated and may easily cost 10 times more, but the more things change, the more they remain the same. The anonymous conclusion to a May 1946 treatment of this subject in the Green Section's *Timely Turf Topics* is probably still accurate: "There is no simple, direct answer at present to the problem as a whole." As Professor Lawrence Dickinson, of the University of Massachusetts, is reputed to have said many years ago, "When we do learn how to control *Poa annua*, we will have to learn how to grow grass." The Green Section has been helping people to do just this for 60 years and looks forward to continuing to play a vital role in the future.