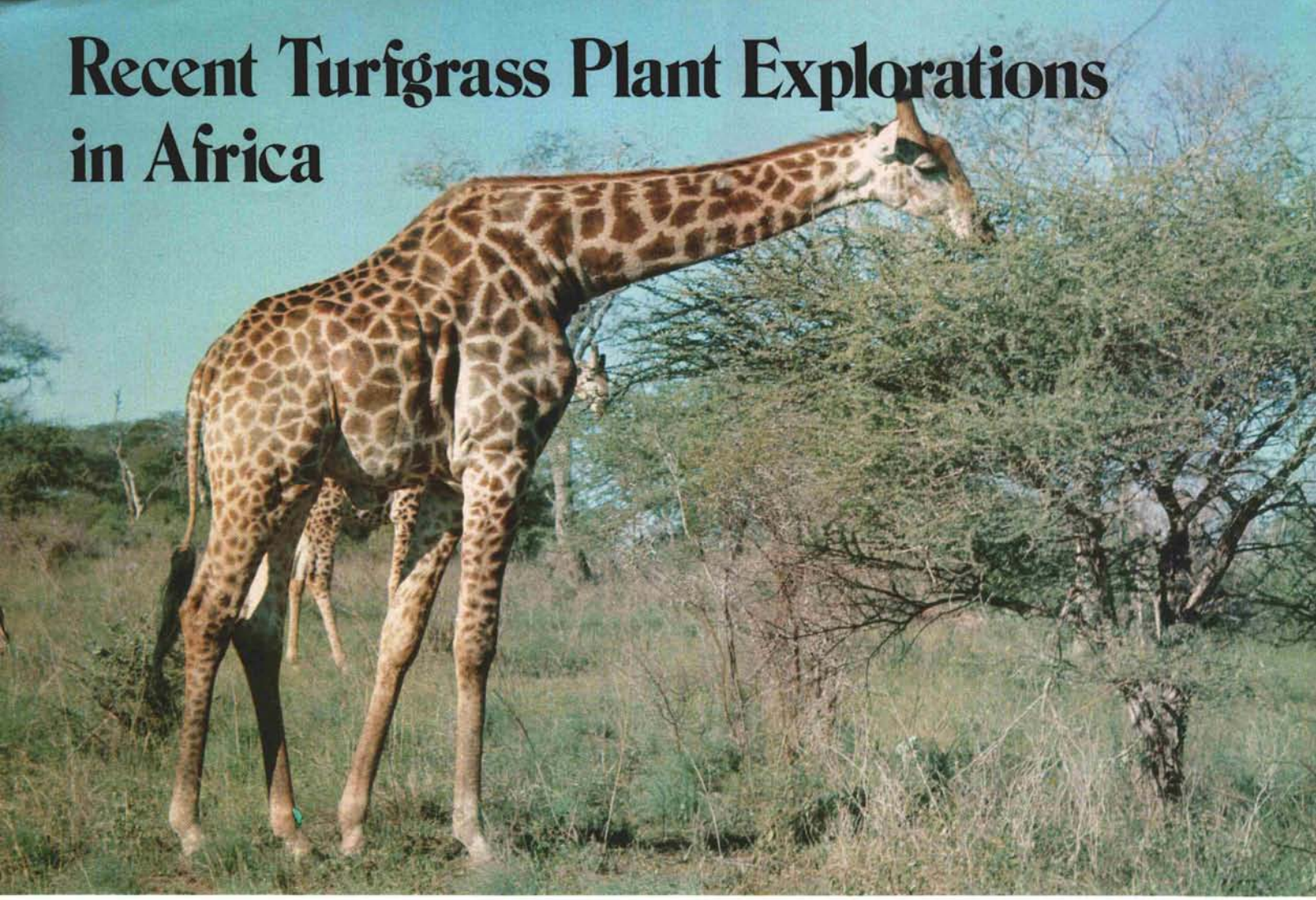
Recent Turfgrass Plant Explorations in Africa



by DR. JAMES B. BEARD and DR. JAMES R. WATSON

SURPRISINGLY, all but one of the major turfgrass species used in North America originated in other parts of the world. The one notable exception is buffalograss. It has been determined that the greatest genetic diversity within a species can be found near its geographical center of origin.

In the case of bermudagrass (*Cynodon* spp.), lower East Africa is generally recognized as the center of origin. Thus, in attempting to develop improved turfgrass cultivars possessing low water use rates, drought tolerance, salt tolerance, and a minimal maintenance requirement in terms of labor and energy savings, the logical approach was to initiate a plant exploration trip to the center of origin of this particular species. Plants from this area would provide a diverse range of germplasm for possible use in North American breeding programs. It is surprising to note that efforts to collect turf-type *Cynodon* species from South Africa have been limited. Dr. Glenn Burton visited there briefly on one occasion. A scattering of materials have been introduced by others, especially in the 1950s.

However, this introduced plant material represented only a small portion of the potential germplasm that exists in South Africa, based on earlier assessment visits by Drs. James B. Beard and James R. Watson in 1974.

Drs. Beard and Watson conducted plant exploration activities in South Africa during March, 1982. The exploration effort was jointly funded by the South African Department of Sport, South African Golf Course Superintendents Association, Texas Agricultural Experiment Station, The Toro Company, and the United States Golf Association.

Dr. Beard was invited by the South African Department of Sport and the Turfgrass Association to advise on the establishment of the first turfgrass research program sponsored by the Department of Sport, at the University of Potschefstroom, under the direction of Professor H. Harsme. In addition, lectures were given by Drs. Beard and Watson at a series of one-day seminars, conducted in the major cities throughout South Africa.

South Africa is a very sports-oriented nation. Turfs are extensively used in a wide range of recreational activities. Cricket, golf, lawn bowling, rugby, and soccer are the main sports. The running surfaces for track and field are turfed, as are the horse race courses. Lawn bowling is a widespread recreational activity, especially for older citizens in urban areas. Bermudagrass and kikuyugrass are the two main species grown. Bermudagrass is called kweekgrass in Africa.

Richard Adderly, Superintendent of Wanderers Club, one of the largest sports clubs in South Africa. Richard attends the GCSAA Conference and Show on a regular basis and has toured many golf clubs in the USA. He assisted in locating and collecting several bermudas from Wanderers and from Trankenwold, an abandoned turf research location.

An abandoned bowling green is inspected by Dr. J. R. Watson, USA, and John Weinberg, South Africa. This green has not been fertilized or irrigated in over two years. Three fine-leafed, green, vigorous, low-growing types of bermuda were collected from this location.

(Below) John Weinberg, one of the founders of Reading Country Club, looking over the site of "Outineeka," a shade-tolerant bermuda that has colonized a large portion of this partially shady location.

PRIMARY EMPHASIS during the trip was the collection of superior strains that have evolved under low fertility, minimal irrigation, closely mowed, droughty conditions. Many parks, golf courses, bowling greens, and lawns in South Africa have been maintained under constant mowing for as long as most of those in the United States. The typical bermudagrass strain is a local selection from a particular district or municipality which has been found to perform well under prevailing conditions. There are no major named cultivars that are sold and widely used throughout South Africa, as is the case in the United States. Thus, an effort was made to collect many of these superior local strains for assessment. In this effort the two plant explorers were aided by a number of South African turfgrass managers and turf agronomists with private companies who were knowledgeable in turfgrass conditions and the performance of these local ecotypes.

Although the exploration effort emphasized the collection of bermuda-

grasses, other promising species were not neglected. In addition to the *Cynodon* species, selections were made of *Paspalum vaginatum, Stenotaphrum secundatum, Digitaria* spp., and *Dactyloctenium* spp. The southwestern region around Capetown, including Fishhook, Georgetown, and Stellenbosch, produced some very promising minimal-maintenance, drought-tolerant *Cynodon* species that were collected on closely mowed turfs. They had been growing on unirrigated, deep sandy soils for many decades and on old abandoned bowling greens.

On several golf courses immediately adjacent to the Atlantic Ocean, a number of very superior *Paspalum vaginatum* turf-types were collected. They were growing constantly in salt water-flooded lowlands under continuous close mowing. Some of them were superior in turf quality to our more widely used hybrid bermudagrasses.

Southeastern Africa, along the Indian Ocean, around Durban, including Tongaat, Pietermaritzburg, and Cedara, has a very hot, humid climate. It is interesting that on many of the better closely mowed golf course fairways, St. Augustinegrass constitutes a major component in polystands with bermudagrass, especially under high salt conditions. Some very interesting minimal-maintenance, low water-use St. Augustinegrasses (*Stenotaphrum secundatum*) were collected along with some unique turf-types, such as *Digitaria* and *Dactyloctenium* species.

Finally, in the area of Johannesburg, Pretoria, and Potschefstroom, the primary emphasis was to collect low-maintenance, drought-tolerant bermudagrasses, especially *Cynodon transvaalensis* and *C. magenisii* and hybrids thereof.

THE PLANT materials collected during this African trip will now be subjected to intense assessment as to their nitrogen requirement, water use rate, drought tolerance, salt tolerance, and mowing requirement, as well as the key agronomic characteristics needed for use on lawns, sport fields, and greens. After this assessment is completed, this material may prove a new source of germplasm for breeding programs emphasizing water-conserving, minimal-maintenance turfgrasses. Furthermore, the possibility always exists that a few of these selections might prove sufficiently well adapted and perform so well that they will merit release as a new cultivar without incorporation into a breeding effort.

*A green at Reading Country Club, South Africa. Many types of bermudagrasses (*Cynodon *spp.) are found at this long-established golf club.*

James Moncrief Retires

FOR THE PAST 29 years, golf course superintendents and green chairmen alike throughout the South have had the pleasure of working with a most remarkable man. On the national and international level, his ready smile, distinguished bearing and soft accent (always with something significant to say) added immeasurably to the color, knowledge and value of turfgrass meetings. On July 1, 1982, James Burton Moncrief retired from the USGA Green Section. He has had an extraordinary career and will be more conspicuous by his absence.

"Monty" came to the Green Section in 1954 from the Dallas, Texas, Parks Department. A graduate of Texas A&M, he was at home across the nation's southern tier; from the Carolinas to the Arizona deserts. He also traveled extensively in South America and the Caribbean. He was among the first to recognize and collect samples of a very fine-leafed bermudagrass from southern putting greens. It was later to be called Tifdwarf.

He was indeed a collector! He brought samples of grasses, diseases, insects, soils, ideas — everything imaginable for university researchers to probe and investigate. If there was anything new in turfgrass research or management, Monty either instigated it or was well aware of the goings-on. There is no greater tribute for an extension teacher, and there have been few, if any, to equal his caliber.

It's a long way from B-25s in New Guinea early in World War II to today's whoosh of a 5-iron on the fairways of Athens Country Club, Georgia. Monty Moncrief has navigated the course well. But he will never really retire. "Mr. Bermooda" will still be collecting — this time pars, birdies and possibly and eagle or two. Of the latter, he deserves doubles. His world of friends would cheer for that!