

### Searching in the Orient for New Turf Grasses

Practically all of the important grasses used on golf courses in the United States have been introduced into the country from some foreign continent. Most of them were introduced in early colonial days and have become so generally distributed throughout the country as to give the general impression that they are native grasses. There is actually only a small proportion of golf course turf in the United States which represents the growth of strictly native species of grass. Early colonial introductions were no doubt accidental, since the seed came with bedding, packing material, as weed seeds in farm crop seeds, and through similar agencies. For centuries wild plants have been transferred from their native lands to other sections of the



Korean youngsters are eager to assist in gathering seed of a grass which may possess special value on golf courses in the northern half of the United States, particularly on fairways and tees

globe and have occasionally been developed as very valuable crops in their new surroundings. In recent years there has been increased interest in the introduction of new plants from foreign countries. As a result there has been a systematic search of different parts of the globe by agricultural explorers in the hope of finding some plant that would serve a useful purpose in a new home. As is to be expected, a large proportion of the plants that are so introduced prove to be of no value. However, the occasional introduced plant that proves to be of value may much more than repay the cost of finding and caring for the large number of unsuccessful introductions. In golf course work the most recent introduction which has some promise for golf course turf is centipede grass for the South.

October, 1930



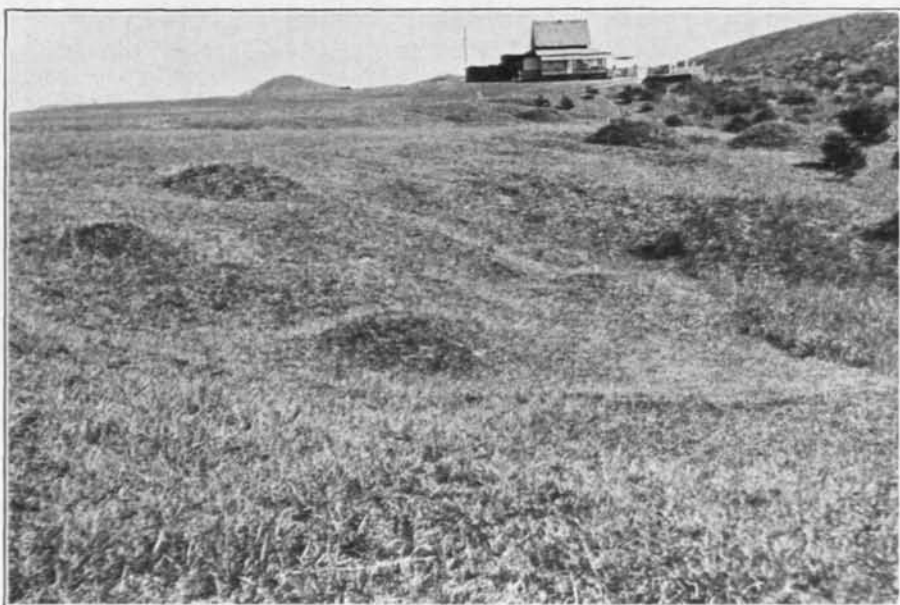
**Along northern Korean rivers. Here a hardy variety of *Zoysia* grass is abundant**

Above—Looking across the Seinonko River from Kokai, Korea. The dark areas bordering the bank on the opposite side of the river are covered with *Zoysia pungens* var. *Japonica*.

Below—A road along the river bank near Kisen, Korea. The dark patches on each side of the road are covered with this variety of *Zoysia*, which forms an excellent sod though on a rather coarse, sandy soil.

179

In the past two years P. H. Dorsett and W. J. Morse, of the United States Department of Agriculture, have been searching in different sections of the Orient for new plants of possible agricultural importance. In recent letters written by these agricultural explorers to the Department of Agriculture there is a report of collections of seed of a variety of grass of the genus *Zoysia* which is said to have some promise for the production of turf. The seed which they are harvesting in the Orient is being shipped to this country in small lots for experimental purposes. None of this will be immediately available to golf clubs, since it will be necessary to test the grass under a variety of conditions in several parts of the country before it will be advisable for any golf club to use it.



The grass on this Korean golf course is mostly *Zoysia*. Part of the course extends over a burying ground; the mounds seen in the illustration are graves. Heijo Golf Club, Jidori, Chosen (Korea)

Many of our readers who closely follow the most recent developments and possibilities of turf production will no doubt be interested in reading some of the observations reported by Messrs. Dorsett and Morse. We are therefore quoting from their letter of July 14, 1930, from Dairen, Manchuria, and printing some of their photographs. Our readers will have an opportunity to see the grass to which they refer growing in some of the Green Section turf gardens during the next few years, but none of the seed will be available for distribution to clubs in the near future. Under the present system the large Green Section experimental gardens and the many demonstration turf gardens scattered throughout the country provide an excellent opportunity for putting such new grasses immediately to test in the production of golf course turf. Without such a system of turf gardens it would be extremely difficult to give such importations an adequate trial in a short period of time. Some *Zoysia* grasses have already been tested in this country, but have not been hardy enough to with-

stand the winters even in our southern States. The particular strain of *Zoysia* reported in their letter is supposed to have greater possibilities for winter hardiness due to the fact that it thrives in a climate with severe winters.

They write from Dairen:

"The Kokai region of northern Korea has been visited and information, seed, plants, and pictures secured of *Zoysia pungens* var. *Japonica*. This grass was observed by Dr. Mills during a visit to Kokai and he thought it might have possibilities in the United States for airports, golf fairways, and possibly lawns. Our visit to Korea last fall was so late that we did not think it advisable at that time to make the journey, as there was no possibility of securing seed or making any observations that would be of value. We thought that during our stay in Manchuria one of us would find opportunity to visit Kokai at the proper time to secure data and seed of this grass.

"Mr. Suyetake, our interpreter, and Mr. Morse left Dairen, Manchuria, at 9 o'clock in the morning on Tuesday, and arrived at Shinanshu, Korea, shortly after noon the following day. They left Shinanshu at once by bus and reached Kisen, Korea, at about 6 o'clock in the evening (a distance of 66 miles), where they had to remain over night. They left Kisen at 9 in the morning and arrived at Kokai about 3.30 that afternoon (100 miles from Kisen). The 166-mile trip over rough mountain roads, mostly in old Ford cars, was by no means a very pleasant one, but in our opinion the results obtained were well worth the trouble.

"Kokai was found to be a rather large Korean village snuggled in a very mountainous country along the right bank of the Seimonko River, which flows into the Yalu River, the boundary between Chosen and Manchuria. The village is in 41 degrees north latitude. Its temperature during December and January goes as low as 40 degrees below zero. The ground is said to freeze to a depth of 2½ to 3 feet. There is a considerable snowfall during the winter months. The field crops are planted the first week in May, and consist mostly of corn, soy beans, sorghum, and millet. Most of the farms have one or two small fields of white potatoes.

"A general survey was made of the range of this variety of *Zoysia* about Kokai, the grass being found in abundance on both banks of the Seimonko River both up and down the stream for considerable distances from Kokai. It is growing on a rather sandy soil and forms a rather compact sod. The blades grow to an average length of about 3 inches and the spikes to a height of about 5 inches; it is therefore a rather short or low-growing grass.

"As to the effect of trampling or pasturing on *Zoysia* sod, little information could be obtained. Here and there a horse or an ox was tethered, but the animal apparently had not been left long enough in one place to give any idea as to the possible effect of hard usage. As the grass grows quite thickly it has possibilities for pasture, and with its compact sod on rather sandy soil may have possibilities for airports and as a grass for sand binding and for embankments.

"A visit was made to the village agricultural society, and two of their agricultural experts went with us to look over the possibilities of collecting seed. The seed was just beginning to mature and would be fully mature within the next 10 days. Arrangements were made with the agricultural society to collect 50 pounds of seed when it

reached full maturity. The seed is to be furnished to us at 35 cents a pound, which is the price quoted us also by a seed house in Dairen. The director of the village seed and nursery experiment farm also promised to send us some plants of the grass in the fall.

"With the aid of some Korean boys we were able to collect a fair-sized sample of mature seed, and we also obtained some plants. The seed and plants were sent to Washington. As to the germination of *Zoysia* seed, we have received more or less conflicting statements. In Japan one authority stated that the seed would not germinate and that for propagating the grass plants should be used. Another advised that the seed would germinate, but that it should be sown at once, as it would lose its viability after a few months and should never be held over from one year to another. Still another authority informed us that a friend of his in Tokyo had sown seed more than a year old and had obtained over 80 per cent germination. With these various statements there is need for experimental work on the longevity of *Zoysia* seed. We thought that by sending both plants and seed you would have a better chance of obtaining a start with this grass.



Sod of *Zoysia pungens* var. *Japonica* on the bank of the Seinonko River in northern Korea, where the grass forms a rather compact sod on a sandy soil. It has possibilities as a soil-binding grass

"While on our return to Shinanshu we made observations along the way. *Zoysia* was found growing along the roadsides to some extent, but was most abundant along the sandy river banks. At some places we saw several cattle pasturing on good-sized areas on the river banks; it is therefore apparent that the Koreans use it more or less for pasture. From Shinanshu to Shingishu, Korea (on the Yalu River across from Antung, Manchuria), large areas of *Zoysia* were noticed along the river banks. It was also observed that the grass is used quite extensively for binding railroad embankments. As we journeyed from Antung, Manchuria, we saw some *Zoysia* well towards Mukden. At Kungchuling, Manchuria, we found no *Zoysia*, and the forage-crop expert at the experiment station advised that it did not occur that far north. In our stop at Kaiyuan we were unable to find *Zoysia*, and we did not observe it again until we were a short distance south of Liaoyang, below Munkden.

"Another interesting thing we have observed is that there is a white-flowered form of the grass and also a purple-flowered form.



The first has a lighter green foliage and light straw-colored seed, while the latter has a purple-tinged foliage and a brown seed tinged with purple. These forms were found near Chinchou and seed of both has been collected. Professor Matsushima, of the South Manchuria railway agricultural bureau, has advised us that there are several strains of *Zoysia pungens* var. *Japonica* in South Manchuria. We have been collecting seed at various places and shall try to obtain seed from as many sources as possible.

"To sum up briefly our general and specific observations on the grass, we have seen it in northern Korea and in southern Manchuria, and we find it a hardy grass, forming a compact sod and of possible value in the United States as a grass for airports, athletic fields, golf fairways, and embankments requiring a binder. In nearly all cases the grass has been found on rather sandy soil; experimental work is therefore necessary to determine its adaptability to the heavier types of soil."

---

### Plant Patents

One of the dreams of the late Luther Burbank has finally come true with the passage of an act to provide for plant patents, passed by the 71st Congress and approved May 23, 1930. Many are familiar with Burbank's extensive work in obtaining new varieties of plants, but remunerations for such contributions were comparatively small. Other than what personal interest an individual had in regard to breeding new types and varieties of plants there was little stimulus, especially of a monetary nature, for intensive or extensive investigation; consequently "plant inventors" were comparatively few. This directly affected the number of desirable plant varieties introduced on the market, because there was no incentive to procure new varieties and even if they were procured there was no protection or rights guaranteed to those responsible for the breeding or propagation of these new varieties.

Congress has at last recognized that discoveries in the plant world justify as much protection to the plant inventor as discoveries in the industrial world justify protection to the mechanical inventor. This recognition is clearly set forth in Section 4886, which reads, "Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor."

The protection afforded by this act should stimulate a greater interest in the reproduction of newer and finer varieties of plants. The procedure of having new plants patented promises to be rather complicated at first because of the necessity of differentiating between the established varieties and the new varieties. In the botan-