MARTHA'S AFTERNOON PROGRAM
3:15 WEDNESDAY JULY 3, 1946
15 MINUTES

MISS ADA HAYDEN, BOTANY DEPARTMENT
NATIVE IOWA PRAIRIE LAND

RIGLIN: This afternoon we have a program particularly appropriate for Iowa's Centennial celebration, for it's about Iowa's early prairie land. Miss Ada Hayden, of the Botany Department here at Iowa State, has done a great deal of work with locating the prairie and photographing it. So I've invited Miss Hayden to tell us about the flowers and grasses that grew in Iowa more than 100 years ago--well, really just to give us a picture of the state as our ancestors found it when they rolled across the prairies in their covered wagons. How about it, Miss Hayden, are there many tracts of virgin prairie land left in Iowa?

HAYDEN: There are few large areas, but in northern Iowa nearly every farmer has a little scrap of hayland. In the past 25 years, during which time most of Iowa's state parks and preserves have been acquired, repeated efforts have been made to obtain prairie. But the prairie acreage in Iowa has steadily diminished until there are few tracts of a 100-acre size left in the state, that we know about at any rate. And those are part of estates whose owners have a lingering sentiment for these fragments (of acreages). We of the Botany Department are very anxious to know of these tracts and have them reported to us since every year several kinds of plants new to the State are found.

RIGLIN: Yes, I should think you would be interested in knowing about these prairies, for I imagine they furnish valuable specimens of early flowers and grasses and virgin soil, isn't that right?

HAYDEN: That's right, Rosalie. But we have another reason for hoping that the owners will preserve the remaining land and not plow it under, other than for its educational value. And that's as a soil conservation measure. Throughout the years, the Iowa farmer has steadily transformed the rich prairie soil

into farmland. Because of our limited knowledge of soil conservation, much of the rich top soil has slipped away while we weren't looking and now lies in considerable quantity at the bottom of Iowa lakes, or is clogging once navigable streams. The priceless soil was formed through the centuries----now it's washed away in a few short years.

RIGLIN: A ride through the countryside after a hard rain certainly proves your point, Miss Hayden. I recall seeing several deep cuts, really deep ones, in hillside and lowland fields in central Iowa last week. The loam had washed away and all that remained was clay. But tell us about the way Iowa looked 100 years ago.

HAYDEN: All right, but first I'd like to say one more thing about soil erosion. Conservationists state that both the resources of the Mississippi and the Missouri Valley are endangered by erosion and that many cultivated areas should be returned to grass cover, which is a strong argument for leaving virgin prairie as it is and not plowing it up in response to a blind pressure for production. Once it's destroyed, it can never be replaced by man, and some prairie is needed for field laboratories to use as a measuring stick for comparison with depleted cultivated soils .....Now for the story of the prairies as our ancestors saw it. In the early days of spring when the last snowbank had melted away from the reddish-brown grassland, many lavender pasque flowers lent a bluish cast to gravelly knolls of the rolling northern prairies. When our grandparents saw these flowers, they knew that winter had ended. Throughout the summer season--the growing season, that is--this prairie exhibited constant change. On a breezy July day, waving grasses rhythmically rose and fell with the wind. On a still day, the pioneers looked out across a prairie that resembled a mosaic pattern because of spots of various shades of green. These spots marked the boundaries of different types of vegetation. And throughout the season a changing panorama of rainbow-hued flowers colored the grassland. By seeds and vegetative parts, many American native plants were introduced by explorers and grown in famous European gardens where they were greatly admired, as well as studied by European scientists. Americans have been slow to protect and preserve their own native flowers.

RIGLIN: Won't you describe some of these flowers more fully for us, Miss Hayden. I was looking through your pictures of prairie flowers, but very few of them were even vaguely familiar to me, even though I've tried to remember the kinds I've seen at the Ledges.

HAYDEN: There aren't many of these prairie flowers at the Ledges, or in other state parks for that matter, Rosalie, for most of the state parks represent woodland. However, Stone Park at Sioux City, Gitchiemanitou in Lyon County and Waubonsie in Fremont County all have a considerable acreage of prairie in which the native grasses and prairie flowers may be seen. Many of these are typical of the Western Plains Flora and are not seen in eastern Iowa.

RIGLIN: What about plants in other parts of Iowa?

HAYDEN: Among the notable conspicuous plants of western Iowa are the loco weed, the beard tongues, the prairie trefoil, Maximilian's Sunflower, the white Mentzelia and the Spanish bayonet or yucca. These are all handsome plants which would grace any garden and which add great distinction and charm to the wild, natural gardens of the prairie.

RIGLIN: I notice you divide the plants into different sections of the state--what determines where a flower grows, after all Iowa is pretty much the same throughout the state--No mountains or steep cliffs to vary the land.

HAYDEN: The location of some plants is partly determined by the kind of soil. For instance, the large-flowered pink Pentstemon or beard tongue, which grows in great profusion on the rough, rocky hillsides south of Cherokee and on the wind-deposited soils on the bluffs of the Missouri River, occurs also in colorful abundance on the sand dunes along the Mississippi near Muscatine. Some of these plants which are associated with certain types of soils or other local features have been called indicator plants because they are a living illustration of conditions which have been found favorable for the maximum yield of certain crop plants.

RIGLIN: That's interesting news to me--probably every farmer has known it for years in fact it probably helped our pioneering grandparents decide where to lay out their farms. But go on with the story, Miss Hayden.

HAYDEN: Some plants are limited in their distribution by climatic factors such as rainfall which is greater in southeastern Iowa than in the northwest., and also by the length of growing season--which is shorter in the northwest than in the southeast. So these plants are climatic indicators and they are very useful in predicting what crops may be grown. For instance, the great grass, corn, is well-suited to the grasslands of Iowa where the rainfall is 32 inches or more per year. But its maturity cannot be predicted in the Dakotas, which have a lesser and more variable rainfall. It is also less productive as an indicator in cleared woodlands. These facts have been learned by years of experience in agricultural pursuits including many failures when crops have been planted in unsuitable soils and climates. That's why specimens of natural vegetation should be saved and protected as field laboratories in which to study the native plants which have through thousands of years become conditioned to the various climatic zones of Iowa.

RIGLIN: Then our pioneering grandparents didn't have the advantage of these indicators when they were laying out their farms. But we started to talk about flowers, Miss Hayden. And when I was looking at your pictures I saw the prairie white fringed orchid--and it looked like a fringed blue gentian to me. Are they related?

HAYDEN: Well, rather distantly in spite of the fact they do look somewhat alike. The orchid belongs to the orchid family, closely related to the lily--the gentian is next door to the sunflower species. The prairie orchid is found in wet prairie and grows about 2 feet high among the grasses and sedges. In dry years it is found infrequently, but in wet seasons the plants increase in numbers. [illegible] to 25 in three years.

RIGLIN: Well, I'd like to ask about a weed right here, among the flowers, Miss Hayden.

We occasionally find weeds among our flowers if we don't stoop over often enough to pull them. Anyway, ever since I was a kid I've heard about the loco-weed. Why is it called that? Do cows really go loco if they eat it or is that just superstition like walking under a ladder? Where did it get its name?

HAYDEN: Loco, in Spanish, means made. The name loco weed is applied to plants of the genera Astragalus and Oxytropus of the Bean family, which cause poisoning of cattle and horses if they eat it. The poison affects the brain causing slowness of gait, loss of flesh, defective vision, delirium and eventually death. So you see, that isn't just superstition, Rosalie. The loco weed grows in the western third of Iowa and is nevertheless a handsome plant. It would make a colorful garden flower. It's pea-like flowers, which grow in red spikes, turn blue as the plant grows older, just before its seeds mature.

RIGLIN: I'm sure there must be hundreds of other kinds of flowers on our prairies, but how about the grasses, we haven't mentioned them yet.

HAYDEN: According to their size and climatic location, grasses have been classified as: the Tall grasses, the mid grasses and the short grasses. The tall grasses are illustrated by big blue stem and slough grass which reach a height of 6 to 8 feet. They grow in the wetter eastern portions of Iowa when precipitation is 35 or more inches. This grass may also be found in central and western Iowa but not very often on level prairie and up the ravines between the hills.

RIGLIN: Now, how about the middle-between grass?

HAYDEN: Mid grass, if you want to be technically correct, Rosalie. Mid grass grows on the uplands of Iowa although it mingles with the tall grass and is able to withstand its shade. It grows in areas of 23 to 34 inches of precipitation. The short grasses occur only in traces on dry hilltops. Short grass includes buffalo grass and blue gamma grass and it's only 1/2 to 1 and 1/2 feet tall. There are more than a hundred species of grasses in Iowa. The grassland of Iowa once covered approximately 5/6 of the state.

RIGLIN: We've been chatting along here about Iowa prairie, Miss Hayden, but we haven't told our listeners a single word about you, how long you've been working on the project, and how you became interested in prairie land.

HAYDEN: I've been interested in this prairie conservation program for 25 years. I became interested because I was born on the prairie, near Ames, and walked to country school every day along a road bordering prairie, where I could watch the changing sequence of flowers during the seasons.

RIGLIN: How do you learn about tracts of land?

HAYDEN: Two years ago we sent out questionnaires to county agents in various counties. They reported the location of what they thought was prairie land--native hayland the farmer calls it.

RIGLIN: I take it you gave them a brief description of what they were hunting for so they didn't report just any old cow pasture--

HAYDEN: Well, you know, Rosalie, a cow pasture may have virgin soil but not always virgin cover when grazed. Virgin soil is that which has never been cultivated, but it may not retain the native cover--

RIGLIN: Well, not after a cow has had breakfast on it for several years, no.

HAYDEN: There are some very fine ranches in NW Iowa - 1/4 section in size - which are not overgrazed. I was down in Clarke County, near Murray, just last week, however, and found some virgin prairie in the southwest corner of a cemetery. And that reminds me, cemeteries are frequently some of the best examples of prairie land. There is a beautiful prairie cemetery at Ruthven -- the Highland cemetery -- where the caretaker doesn't mow the native grass and flowers. He leaves it as a tribute to the pioneers who lay there.

RIGLIN: Has the Conservation Commission been able to obtain any tracts of prairie to be used as preserves for wild fowl and game?

HAYDEN: Yes, they have--and in time for the Centennial celebration, too. This event constitutes a real accomplishment in the 25-year plan made by the commission in 1933. This plan provided for establishing of some prairie preserves, where, under control of the state, the characteristic landscape, the wild flowers and wildlife of the native prairies could be preserved. In May, of 1945, they purchased a 200 acre tract of native grassland in Howard County near Lime Springs. This is the first preserve which is exclusively prairie. It was the home of the prairie chicken for many years and we hope that the fowl will again make their home there.

RIGLIN: Does this preserve have many of Iowa's native flowers and grasses.

HAYDEN: Yes, the principle grasses of the state are found here but the wild flowers are typical of eastern Iowa. They include shooting star, old man's whiskers, or prairie smoke, wild heliotrope, birdfoot violet and blazing star-- a colorful prairie carpet of the eastern meadow pattern. This picturesque native grassland serves as a measuring stick where the physical characteristics and fertility of the virgin soil may be compared with the nearby cultivated soil in order to maintain the health of the cultivated soils. Citizens of different parts of the state would be wise to preserve a piece of representative virgin prairie so that comparisons with the local cultivated soils might be made with undepleted virgin soils by the soil scientists.

RIGLIN: I've always been interested, Miss Hayden, in how Iowa was formed in glacial days. In books you see charts of the soil formations and around the state you see interesting rock formations, such as at the Ledges, the Backbone State Park, and up around McGregor. Have your studies of the prairie delved back that far?

HAYDEN: Oh yes, indeed. The prairie of Iowa is the product of the condition which produced it working over a vast period of time. The parent materials, chiefly of mineral origin, were brought in by the glaciers. The geologists tell us that the glacial topography of Iowa is the work of two agencies, the depositional and the erosional, brought about by a combination of ice sheet, wind and water. The rocks you mentioned and which many of our listeners have seen, are unconsolidated surface rocks underlaid by bed rock deposited by preglacial seas.

RIGLIN: Seas???? That's a new idea to me. I've thought of Iowa as once covered by a glacier, but never by a sea. Did this sea cover all the United States?

HAYDEN: It covered wide areas and there were a succession of oceans alternating with uplifts of the land. These seas smoothed the bedrock at the opening of the glacial period thousands of years ago, so that their surface contour was a broad level plain with shallow valleys in which no elevation was more than 200 feet. Then from our four great ice sheets came the rock mantle. The ice sheets are now

known as the Nebraskan, the Kansan, the Illinoian, and the Wisconsin. It was the last, the Wisconsin Age, which had the most bearing on the composition of the prairie soil now. The Wisconsin deposit extended across the state from Minnesota to Des Moines. That includes 29 counties.

RIGLIN: Let me interrupt you just a minute, Miss Hayden, do you find fossil forms in your work,too?

HAYDEN: We are dependent on paleontologists for our knowledge of fossil plants and animals found in the state. The trained eye may read from the imprints of animals and plants preserved in the rocks of Iowa's past. Large collections of shells and early forms of marine life have been taken from the Burlington limestone in the vicinity of Keokuk, Ft. Madison, and Burlington. Coal plants occur in Marion County. Bones and teeth of ancient fishes and corals have been found in Iowa City, Sponges, clam-like, and snail-like fossils may be seen at Dubuque. In the sand and gravel beneath the glacial drifts, fossils of the great Ice Age have been unearthed. These bones show that hairy elephants, camels, the musk-ox and giant beavers once roamed over Iowa. The skull of one of these beavers found near Avoca indicated that the animal must have been more than 9 feet long.

RIGLIN: I'm not sure I'd like to have lived in those days--cave dwellers must have had an unhappy time of it, stearing clear of the big animals, long enough to catch a small animal to eat. What do people, fortunate enough to have prairie land, do with it, Miss Hayden. They don't let cattle graze on it, do they?

HAYDEN: Oh yes, some is used for pasturage--other tracts are used for hay. The farmer goes out to cut the hay, preferably near the end of the season, since late cutting permits all the plants to see themselves for next year. Some is left in its natural state for the owners to enjoy. And that reminds me, prairie land shouldn't be improved in any way, other than fenced. It should be left in its natural state.

RIGLIN: This has certainly been an interesting time, Miss Hayden, finding out how Iowa looked to our ancestors. Have you a parting word for our listeners?

HAYDEN: Yes, I have. That is that it seems to me during this centennial birthday of Iowa, it would be an especially appropriate to give the state a present of virgin prairie land if you have some. Much woodland has already been donated to the state. Then there'll be a preserve for your grandchildren and great-grandchildren to enjoy -- not as a picnic area -- but as a cathedral, a monument to the past. If you would like to present prairie land to the state, write the secretary of the Iowa Academy of Science, Mathematics Department, Beardshear Hall, Iowa State College. Then if you have what you think is prairie land and it hasn't been reported before, I'd like to know about it so perhaps we may be permitted to study it. You may write me, Ada Hayden, Botany Department, here at Iowa State.

RIGLIN: Thank you, Miss Hayden, for telling us this story.