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Nebraska Corn Book

E. C. BISHOP

Published for

**The State of Nebraska
Department of Public Instruction**

by

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Lincoln**

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NEBRASKA CORN BOOK

INCLUDING

A BRIEF TREATMENT OF THE PRINCIPAL CORN PLANTS, POTATOES
AND SUGAR BEETS, WITH SOMETHING ABOUT DOMESTIC
SCIENCE, MANUAL WORK, AND ANNOUNCE-
MENTS CONCERNING THE 1906
CORN CONTEST AND
CONVENTION

BY

E. C. BISHOP

DEPUTY STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

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PUBLISHED FOR
THE NEBRASKA BOYS AND GIRLS' ASSOCIATIONS
THE UNIVERSITY PUBLISHING CO., LINCOLN
1906

SB 181
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INTRODUCTORY

THE LAND OF CORN

Far inland from the raging sea,
And its boom and rush and roar,
There lies a land, wide, wide and green,
As flat as a dancing floor—
'Tis Nebraska, the land of corn.
The sun just seems to love the land,
For it shines the whole year through,
And the skies smile down upon her plains,
Serenely, calm and blue—
O'er Nebraska, the land of corn.
—Will Reed Dunroy in Corn Tassels.

NEBRASKY

Great fields of emerald bladed corn,
That swishes in th' breeze;
An' here and thar are little clumps,
Of supple willer trees—
An' that's Nebrasky.

—Dunroy.

OUR HOMES, OUR PEOPLE, OUR MEMBERS, AND OUR ORGANIZATIONS

There may be homes as dear	There may be lands as fair
But none are dearer,	But none are fairer,
Than in Nebraska.	Than in Nebraska.
There may be hearts as true	
But none are truer,	
Than in Nebraska.	

—Will Reed Dunroy.

TO OUR MEMBERS

Our organizations had their beginning in the spring of 1905, with a membership of five hundred Nebraska boys who entered the corn growing contest. At the first state meeting, December 14-16, 1905, we added "corn cooking" and initiated an equal number of Nebraska girls. This year our work includes corn, wheat, potato and sugar-beet growing; corn cooking, and other branches of cooking; hand sewing, and manual training, with work in county clubs in other lines of Agriculture, Domestic Science, and Manual Training.

Since our organizations had their beginning in the production and use of corn, and since corn is Nebraska's greatest and favorite crop; at the meeting of the executive committees held at York, July 27 and 28, when the question of the title of our 1906 "guide book" was presented, it was unanimously agreed that it should be named "The Nebraska Corn Book."

In this booklet we have given liberal space to the discussion of corn, and have treated briefly other subjects of interest to our members. We hope that brief mention here will lead to investigation and study, and to profitable experimental work on the part of our membership.

The object of our organization is to provide suggestion and direction rather than instruction. The boy who carefully cultivates and studies the growth of a patch of corn, sugar beets, potatoes, wheat, or other plants, will gain a new interest and a better appreciation of the value of careful thought applied in the study and the adaptation of seed selection, soil fertility, and the intelligent culture of plants. Further, he will become interested in the best methods of marketing, and of the use of these plants as food for man and animal. This will direct him to study, to discussion, and to investigation, leading to a knowledge of systematic feeding and caring for live stock, to a study of animal adaptation and needs, and to a careful consideration of the financial problems involved. This is education.

The girl who learns by actual experience to successfully cultivate one flower, one vegetable, or any plant in which she becomes interested; who learns to bake a loaf of bread, to prepare an edible dish for the table, to can a jar of fruit, to make an apron for the use of herself or a member of the family, to neatly darn or patch a garment;—if she seeks to know and to perform these simple yet important duties the best way; if she combines with her work, cheerfulness, careful thought and intelligent study; she will ere long become expert in home duties, and will become such a student of nature, of the home and of the foundation of social life, that she will be led to a proper growth and development, into the student, the business woman, the home-maker, and the home-keeper,—the highest of all womanly callings.

"Earth's noblest thing,—

A woman perfected."—Lowell.

"To reason firm,

The temperate will,

Endurance, foresight, strength and skill

A perfect woman, nobly planned,

To warn, to comfort, and command."—Wordsworth.

"A woman should be good for everything at home."—Euripides.

We expect each of our members to learn to do something worth doing,—
"something the world wants done," to learn to do it well; to acquire skill with the hands, to combine brain and muscle; to answer so far as possible his own questions, by experiment and by study; each thus to become his own teacher, and to lead himself into an education that will bring the fullest development of the triunity,—the hand, the head, the heart.

E. C. BISHOP,
State Manager.

Lincoln, Nebraska, Sept. 20, 1906.

NEBRASKA CORN BOOK

THE CEREALS

Webster tells us that a "cereal" is "any grass cultivated for its edible grain or the grain itself; as wheat, rye, maize, rice, etc." The Standard dictionary says that the word "cereal" means "a plant yielding grain or farinaceous seeds used for food; as wheat, maize, rye, oats, barley, and millet."

Cereal Crops.—Cereal crops include those crops of the grass family that are cultivated primarily for their grass or seed. They are the most important group of farm crops. They are adapted to the widest possible range of climatic and soil conditions, being grown the world around from the equator almost to the polar circles. They are annuals and have been developed from wild plants by selection, breeding and careful tending. This class of plants have tall jointed stems, either hollow or solid, long slender leaves and usually a shallow fibrous root system.

***Corn Plants.**—Corn plants are called **cereals** or **cereal grains**. The word **cereal** comes to us from the myths of the Roman people. The Roman story of Ceres and Prosperine tells of the beginnings of agriculture, in which the "cereals" received their name from the goddess of agriculture, Ceres.

The ancient Romans held Cereal Festivals each year at springtime and harvest. At the first festival, the people thruout the country marched in procession around their fields, imploring the favor of Ceres upon the growing grain. On the last day of the festival, elaborate games were held in honor of Ceres. The second festival came in August and was a feast of thanksgiving, at which time the first fruits of the harvest were brot as an offering to Ceres. These gifts to Ceres were called "*cerealia munera*" (Ceres' gifts) or simply "*cerealia*." It is thus that the corn plants became known as *cerealia* or cereals.

The Assyrians and Babylonians who dwelt in the fertile valleys of the Tigris and Euphrates, also left evidences of their appreciation of the value of corn plants. One of their ancient monuments recently discovered shows a king offering an ear of wheat for a sacrifice. Rice, the principal corn plant of the Chinese, has been held in high estimation by the people of China for centuries. The ancient Peruvians almost worshipped the maize plant. Corn (maize) has been found buried with the mummies of Mexico, Peru, and Chili. When the first settlers came to this country they found "Indian corn" largely cultivated by the Indians of North America.

"Far back through history's shadowy page
It shines, a power of boundless good,
The people's prop from age to age,
The one unfailing wealth of food."

—Celia Thaxter.

*"Corn Plants, Their Uses and Ways of Living," by Sargent, published by Houghton, Mifflin & Co., Boston, presents corn plants in a most interesting manner and is a very complete text on this subject.

The cereal grains are our most useful food plants. Wandering nomadic tribes and savages who obtain their living by hunting, fishing, and by gathering seeds and fruits of wild plants and who make but little use of domestic animals, cultivate the cereal grains to a very limited extent; but people who live in settled communities where wild fruits, seeds and roots cannot supply the increased and continued demand for vegetable food, and where hunting and fishing no longer yield the necessary amount of animal food, and whose tastes and habits lead them to appreciate the benefits and luxuries of a more varied diet and of well prepared food, make extensive use of the cereals; first, as food prepared directly from the cereals, and second, the seeds of cereals and the stover, or forage, of cereal plants as food for domestic animals which, in turn, supply a civilized community with beasts of burden, motive force, and meats as food. As the nations have advanced in culture, their dependence upon corn plants has increased until now we must look to corn plants, principally, for our daily bread.

Cereals or corn plants are thus held in high favor by all civilized people; first on account of their abundant yield according to the care given them, and second, on account of the form in which they store the nutriment, making it convenient to harvest and preserve the parts used as food.

The study of proper methods of cultivation, seed selection, and propagation of these plants has become one of the most important subjects that occupy the attention of our people. In the study of scientific and practical agriculture, we have a field so wide, so important, and so interesting, that it is not only a fascinating study but one which yields most profitable returns.

Frederick LeRoy Sargent, in his book called "Corn Plants," in classifying the important cereals, appropriately designates them as "Maize, the Corn of the West," "Wheat, the King of Cereals," "Oats, the Grain of Hardiness," "Rye, the Grain of Poverty," "Barley, the Brewer's Grain," "Rice, the Corn of the East." These are the corn plants in which we are principally interested.

ROSALIE SHERMAN

Student at the Indian School, Genoa,
Neb.

INDIAN "TEPEE"

Sioux Indians, Pineridge Agency

A CORN ESSAY BY A DESCENDANT OF THE ORIGINAL CORN GROWERS OF AMERICA

Rosalie Sherman is an Indian girl at the Genoa Indian School, Genoa, Nebraska. Her mother is a Rosebud, South Dakota, Sioux Indian, who was educated at the Carlisle, Pennsylvania, Indian School. Her father is half Sioux. They were married at Genoa,

where both were employed at the Indian School. Rosalie is 17 years of age. This composition was a part of her regular school work. It constituted a part of the Indian School Educational Exhibit at the close of the school year June 17, 1906. The Indians are proud of the fact that maize, or Indian corn, which has become such a prominent world product, was first raised in America by Indians.

MAIZE

By Rosalie Sherman, Tribe, Sioux, Rosebud Reservation, Genoa Indian School, Genoa, Nebr., May 7, 1906.

Corn is a common name for Indian corn or maize. It was first grown in the New-world, and the United States. Corn is the principal crop of the United States, and needs a warmer climate than wheat does, and is therefore grown in the states, south of the wheat belt.

The Navajo Indians say that they got maize from a Turkey-hen that came flying to them from the morning star, and shook an ear of corn from her feathers.

The Indians of Massachusetts have a saying that a crow brought them a grain of corn in one ear and a bean in the other.

Corn is an Anglo Saxon word and means any kind of grain. Corn, or maize, is the principal food supply of the people of Mexico, Central and South America, and is an important element of diet in Southern Europe as well as in the United States.

Maize is used in fattening cattle and swine for market, and is also used in the manufacture of alcohol and alcoholic liquors, starch and glucose. Corn starch is a common article of diet in the United States and is extensively exported.

Three-fourths of the world's supply of Indian corn is raised in the United States. The farm value of our corn crop in 1902 was estimated at \$1,017,017,349.

CORN RAISED BY DRY FARMING METHODS IN WESTERN NEBRASKA

MAIZE

Upon a hundred thousand plains
Its banners rustle in the breeze,
O'er all the nation's wide domains
From coast to coast betwixt the seas.
It storms the hills and fills the vales,
It marches like an army grand,
The continent its presence hails,
Its beauty brightens all the land.

—Celia Thaxter.

HISTORY

Maize, or Indian corn, the term by which it is known in the Western continent, is a native of America. It was not known in the Old World until after the discovery of America by Columbus. Corn, the most important of the cereal grains, belongs to the great Grass family, the most abundant and varied of all vegetable life.

The Term "Maize."—When Columbus wrote letters from the West Indies to Spain, he told of a kind of bread which the natives gave him. This bread was made from a grain which the natives, or "Indians," as Columbus named them, called "mahiz." This grain has become known as maize, Indian corn, or simply, as "corn."

Distribution.—Columbus took some seed of this Indian corn with him on his return to Europe, but until the 19th century it was there regarded more as a curiosity than as a valuable food plant. Its use has now spread from America and Europe to Africa and Asia even into China and the East Indies.

Maize, or Indian corn, to which we shall refer, generally, in this publication, as "corn," was first grown in Mexico and Central America; from there it was carried both north and south by the Indians. The familiar story of Captain John Smith's trips up the James River for the purpose of trading for Indian corn that the colonists might have food thru the long cold winter days; the saving of his life by Pocahontas, and his return to the colony to again make other trips of like nature; and the adventures of Roger Williams in his numerous expeditions among the Indians to secure a supply of this, then most precious grain, are reminders of the dependence of the early settlers upon Indian corn, and how many times they would have suffered for lack of food had not the original corn raisers of America used their simple methods of raising corn and preserving it for use during the winter months. It is for this reason that in the celebration of Thanksgiving Day, special prominence was given in earlier times, and is yet given in many localities, to corn, for use in decoration.

Corn is not so widely distributed as other cereal crops. The warmer countries of Europe and Argentina, Mexico and Egypt being the only places it is grown to any extent outside of the United States. The United States produces more than two-thirds of the total amount of corn raised in the world.

CORN

Meaning of the Word.—The word "corn" has various meanings by different people. In England corn means either wheat, barley, rye, and oats, collectively, or more specifically, wheat. In Scotland the word corn is generally restricted

to mean "oats." In America the word corn means maize, or Indian corn. In northern Europe when "a corn field" is mentioned, it is generally understood to mean a "field of rye." The Englishman, unacquainted with our maize, thinks of a "head of wheat" when we speak of an "ear of corn."

The word "corn" is used in the Bible in referring to various kinds of grain. The Mosaic law provides that "if a fire break out and catch in thorns so that the stalks of corn and standing corn of the field be consumed—" and "when thou comest into the standing corn of thy neighbor, thou mayest pluck the ears with thine hand; but shall not move a sickle—."

The words of Jesus: "except a corn of wheat fall to the ground and die, it abideth also" plainly indicate the meaning of the word "corn" to be "kernel." The direction of Moses: "Thou shalt not muzzle the ox when he treadeth out the corn," is understood to apply to all grain plants harvested by the Israelites. We are told how Sampson in the time of the "wheat harvest" tied fire brands to the tails of three hundred foxes and "let them go into the standing corn of the Phillistines and burnt up both the shocks and also the standing corn."

On the plains of Jerico, the Israelites "did eat of the old corn of the land." Jesse told his son David to take an ephah of "parched corn" and run to the camp of his brethren. Abigail "took five measures of parched corn." When David came to Mahanam, they brot him "wheat and barley flour and parched corn." When Jonathan hid from his enemies by going into a well "the woman spread a covering over the well's mouth and spread ground corn thereon." The disciples "were an hungered and began to pluck the ears of corn and eat.

Ruth asked permission of her mother-in-law to go to the field and glean "ears of corn." She went to the field of Boaz who invited her to "glean and gather after the reapers among the sheaves." He further invited her: "at meal time come thou hither and eat of the bread," and when she sat beside the reapers, "he reached her parched corn and she did eat—." After dinner "she gleaned in the field until even, and beat out that she had gleaned; and it was about an ephah of barley." The story concludes with: "And she kept fast by the maidens of Boaz to glean unto the end of the barley harvest and the wheat harvest." The Psalms tell us "the valleys also are covered over with corn." In Genesis, we are told that "Joseph gathered corn as the sand of the sea" during the seven plenteous years in Egypt"; and in Deuteronomy, that "the fountain of Jacob shall be a land of corn and wine."

Which cereal is meant in the following lines by Milton?

"In one night, ere glimpse of morn
His shadowy flail had thrashed the corn."

And what grain is meant by the words of Jones Very?

"Ere near thee rises green the bladed corn."

Types of Corn.—The nearest relatives to Indian corn, such as broom corn and sugar cane,—resemble corn quite closely, except that in them, the seed is borne at the top,—not upon an ear at the side, as with corn, altho corn frequently bears seeds upon the tassel,—sometimes as scattered grains, often as a real ear without a husk. Few plants vary so much either in size or in the character of the seed. There is great variation in the grain, in color, size, form and composition. There are six types of corn. Four types; dent, flint, sweet and pop corn are common in Nebraska. Sixty-one varieties of field corn are grown in this state.

Pod Corn.—Pod corn, sometimes called primitive corn, is very leafy, hence called "Cow Corn." Each kernel is enclosed in a pod, or husk, and the whole ear enclosed in husks. This type is grown only in southern countries. Pod corn is supposed to be the original form of corn.

Soft Corn.—Soft corn is mealy like wheat or rye. It is grown only in southern countries. It is called soft corn because of the lack of firmness in the kernel, as found in the dent and flint corns.

Pop Corn.—In the pop corns, the external covering of the kernel is so dense that when the kernel is heated, the moisture in the kernel expands into steam and the steam is held from escaping until the pressure becomes intense, when the kernel suddenly bursts with a minute explosion. Fifteen varieties of pop corn are grown in Nebraska. The best varieties that may be grown to advantage are white rice, pearl, and red rice. Nebraska is a large producer of pop corn for the general trade. The principal productive area, on a large scale, is on the north and middle Loup Rivers where sometimes 100 bushels to the acre are grown.

Sweet Corn.—Nebraska grows twenty varieties of sweet corn. On account of its sweetness, this type is often called "sugar" corn. A portion of the starch in sweet corn is converted into sugar, which gives a shriveled appearance to the kernel. The vitality of sweet corn is very low. It is exceedingly difficult to secure a "good stand" of sweet corn without very careful testing and sorting of seed. This type of corn is common in the gardens of nearly the whole of the United States. There are many factories where sweet corn is canned. In Nebraska, there are corn canning factories at Blair, South Sioux City, Fremont, Grand Island, St. Paul, Auburn, and Nebraska City. Nebraska is the first state in the Union in the production of sugar corn for seed purposes and produces more than all the other states combined.

The two general types of field corn which are most common are the flint and dent types.

Flint Type.—Flint corns are mostly grown in northern climates where the season is short. The kernel has a very hard and smooth outer surface and is oval in form. Flint corn generally matures earlier than dent corn. It is, therefore, best adapted to only the higher latitudes in western and northwestern Nebraska.

Dent Type.—Dent corn is the most common and the best type raised in this country. It gets its name from the dented or hollow crown. Dent corn produces large ears and is generally preferred in the corn belt where the greatest yield is sought. It can be grown in all parts of Nebraska but does not do so well in northern and western Nebraska where the altitude is high. Ried's yellow dent and Leaming's yellow dent are the types furnished to our state contestants this year.

Other common dent varieties are: Nebraska White Prize, Mammoth White Pearl, Mammoth Golden Yellow, Hogue's Yellow Dent, Riley's Favorite, Golden Eagle, Pride of the North, Boone County White, Silver Mine, Johnson's White, St. Charles' White, Bloody Butcher, Chase's White Dent, Golden Row, and Calico.

Other than sugar corn, the sugar yielding varieties of corn are,—sugarcane, bearing crystallizable sugar; and common sorghum, bearing uncrystallizable sugar. The non-saccharine sorghums are: Kaffir corn of South Africa, Millet of China and India, Milo-maize, Guinea corn and Broom corn.

Kaffir Corn.—Kaffir corn is a native of South Africa. It takes its name from the African tribe known as Kaffirs. It was introduced into the U. S. 20 years ago by the United States Department of Agriculture. It was first sent to the Southern states where it did well, and the following year was distributed in the North where it has done well. It has proved to be a valuable stock food in Nebraska and its cultivation is rapidly increasing. Its drought resisting qualities make it especially valuable to farmers living in dry localities.

There are many varieties of kaffir corn. The three principal varieties grown in this country are:—Red kaffir corn; White kaffir corn; and a variety which goes by the three names: Black-hulled White Kaffir Corn; White Kaffir Corn, and African Millet. Each of the contestants who exhibited at the 1905 Nebraska Corn Contest was furnished a seed package of the last named variety of Kaffir corn for planting this season.

Indian corn is generally regarded as the standard feed for pigs in this country. In regions where there is not sufficient moisture for Indian corn, Kaffir corn is a very valuable substitute. For a period of eleven years, the average yield at the Kansas Experiment Station has been: Kaffir corn, 46 bushels; Indian corn $34\frac{1}{2}$ bushels per acre. Pigs tire of kaffir corn when it is fed alone more quickly than they do of Indian corn, but do not tire of it when fed with alfalfa, soy beans, or skimmed milk. Experiments at this station also show that Kaffir corn, when combined as above mentioned, compares well in results with Indian corn in the development of the pig and in fattening him for market. A Kansas farmer is credited with saying: "Kaffir corn waits for the farmer." The seeds ripen early but the stalks and leaves remain green until frost comes. This is one reason why kaffir corn is a favorite forage crop.

CORN AS A FOOD.

God's gift to the New World's great need
That helped to build the nation's strength,
Up thru beginnings rude to lead
A higher race of men at length.

—Thaxter.

Corn has played a very important part in the development of the New World. The methods of planting and cultivation were so simple that early settlers could grow corn in the clearings made in the forests; they could grow corn in their patches of cultivated land on the plains; and the ears of corn were easily harvested and stored for winter's use. Corn yields with little labor more than twice as much food per acre as many other kinds of grain.

The value of Indian corn, to man, in furnishing a great variety of food products for himself, and in supplying his domestic animals with food, is now so well recognized that the study of maize has become one of great interest and importance. The early American settlers learned from the natives their crude methods of raising corn and the best ways of making use of it.

The early Spaniards found the native Mexicans using Indian corn by first soaking the whole kernels in hot water, adding a little lime to soften the hulls, then cleaning and crushing the grains until they were made into paste. This paste was spread in thin layers over heated stones and when cooked became the corn cakes which the Spaniards called "tortillas," which is yet a popular food in Mexico.

The Indians of southeastern United States, who generally preferred the blue variety of corn, ground the corn into a meal by the use of a stone mortar, made a thin batter by mixing it with water, and then baked it on a hard slab of iron or stone, making large thin sheets of bread which the Moqui Indians called "guagava." Other manners of cooking corn are followed by Indians of other tribes. From these various methods we have the "Ash-cake," the "Hoe-cake," and "Corn-pone," so much used and written of in the southern states.

The early American pioneers adopted some of the methods of the Indians in preparing corn for food and retained the Indian names for some of the dishes thus prepared. The mixture of green corn with beans which the Indians called "msickquatash" is known now as "succotash." The Indian word for what is now our hominy was "auhumine." Roger Williams tells of the native Indian "Nasuamp," a sort of meal, powdered, which the colonists called "somp." Benjamin Franklin tells of a custom borrowed from the Indians who parched a certain kind of corn until the grains would "burst and throw out a sort of white substance of twice its bigness." We may quite correctly guess that this must have been what is now known as pop corn.

Corn Products.—Altho the chief value of corn is as food for man and domestic animals, it is used in the preparation of more than one hundred different articles. First, the entire plant is used either as it comes from the field or as prepared in various ways to minimize waste. The fibers are woven into fabrics and the leaves, husks, and stalks are used in making paper. The husks are valuable in making coarser articles, for stuffing mattresses, and for packing. The pith is used in making gun cotton and other high explosives, and is also used in the construction of war vessels where compressed blocks of it are placed behind the outer armor plate to absorb the water and close the aperture in case the plate is pierced by a projectile. The cobs are often ground up for feed, are used for fuel, and in the manufacture of tobacco pipes. In a few counties in Missouri a variety of corn with a very large cob is grown especially to supply the trade in corn-cob pipes.

Corn starch, so much used in this country, also laundry starch, is made largely from the kernels of maize. The starch from corn is also turned into sugar and used in the manufacture of candy. Whisky and alcohol are made extensively from corn.

In manufacturing the various principal substances a number of "by-products" are obtained. Gluten meal and gluten feed, made from the starch of the corn kernel, are used largely as feeding stuff for farm animals. Gluten feed is the entire residue of the kernel, including the germs and hulls. Gluten meal, cream gluten, and similar material, sold under various names, do not contain the corn hulls. Gluten meal and feed are very digestible animal foods and are valuable, especially for dairy cows and for fattening cattle and hogs.

Maize oil, or "corn oil," is obtained from the germ which is extracted from the kernel in the manufacture of starch and glucose. This is a light, clear, amber colored fluid, used for culinary, mechanical and lighting purposes. It is also used in the manufacture of soap and as a substitute for rubber.

The leaves, tassel, and stalk of the corn plant constitute what is known as "forage," "stover," or sometimes commonly designated with other hay foods as "roughness." The stalks, after the leaves and pith have been removed, are known as "corn shives."

Various kinds of breakfast foods are made from corn. Glucose or corn sirup is a common product, and the many forms of cracked and crushed corn, as

hominy and the different varieties of meals, are well known. The finest white corn flour is made by grinding the grain after the germ and some of the outer envelope have been removed from the kernel. Altho often stated to the opposite, there is no marked difference in the feeding value of white and yellow corn, or of dent corn and flint corn.

Corn is the most general feed for pigs in the United States. A bushel, when fed alone, will produce, on an average, eleven pounds of pork. Corn ranks high in comparison with other cereal grains as a food for man. Corn meal, made into corn bread, mush, and other foods, is one of our most wholesome and nutritious foods.

Green sweet corn, either fresh, canned, evaporated, or dried, is a favorite food. Our best canned corn is grown in New York and Maine, altho Illinois, Nebraska, and Kansas can large quantities.

It is expected that the new law, which removed the tax from "denatured" alcohol, will result in an increased consumption for three Nebraska products. These products are corn, potatoes, and sugar beets; the three farm products which can be used with greatest profit in producing denatured alcohol.

One writer estimates that an acre of corn—50 bushels—will furnish 130 gallons of absolute alcohol; that the corn stalks, which contain large quantities of sugar and starch, if harvested before they dry out, will produce 100 gallons of commercial alcohol per acre.

Dr. Wiley states that the fermentable material in the corn stalk can be removed by the presses now used to extract the juice of sugar cane. He also states that twenty times more power can be obtained by burning the alcohol which exists in corn than in burning the corn itself.

It is estimated that the by-products of corn after the industrial alcohol has been extracted, would pay the cost of distillation. At the time of this writing, September 20, some Eastern capitalists are considering the erection of a denatured alcohol plant at Lincoln at a cost of \$350,000.

STRUCTURE AND COMPOSITION.

1. The corn kernel is made up of the following parts: The germ, located in the depression of the upper side of the kernel containing the young plant or embryo, the central loose white floury starch surrounding the germ and extending to the crown in dent varieties, the hard horny starch on the lower side and along the edges and the hull or covering of the entire grain.

2. Corn contains the following substances in about the given amounts when analyzed chemically:

	Grain	Stover
Water	10.	40.
Protein	10.5	4.
Nitrogen Free Extract (Starch).....	70.	32.
Crude Fiber	2.	20.
Ether Extract (Fats)	5.	1.
Ash	1.5	3.

3. Stalks vary from two to twenty feet in height.

4. Cobs vary from one to eighteen inches in length and may have from six to forty rows of kernels.

5. The stalk is solid with a pithy fibrous interior and a hard casing outside.

STUDENTS JUDGING CORN BY THE SCORE CARD AT THE UNIVERSITY FARM

6. The female part of the flower grows on the side of the stalk (the ear) while the male part grows on top (the tassel).
7. The ovaries or grains grow in pairs so there is always an even number of rows on the cob.
8. Each kernel must be fertilized in order to produce a grain.
9. The pollen is carried from the tassel to the silks which protrude from the outer end of the ear.
10. There is a silk for each kernel.
11. The pollen finds lodgment at the end of the silk and grows down the hollow tube of the silk until it reaches the rudimentary kernel before fertilization takes place.
12. Silks do not all come out at the same time, hence it takes several days for corn to become completely fertilized.

SEED CORN

Selection.—The judicious selection of seed increases the yield of corn per acre by increasing the amount of corn on the ear. A cylindrical ear bears more corn than a tapering ear. A tapering ear may decrease the corn on the ear from five to ten per cent. A rough ear with deep kernels produces the greatest yield of corn. A smooth kernel is usually shallow. A deep rough kernel goes with late maturity, therefore cannot be used in a region having a short growing season. A tapering tip with shallow kernels is a sign of degeneration. The shank should be smooth but large enough that there will be no danger of the ear blowing off. The shape of the kernels should be such that they fit snugly from tip to crown. Square, round, or too pointed kernels cannot be fitted on round cobs. It is impossible to make a machine drop the same number of kernels per hill unless the grains are uniform in size. In order to secure nearly uniform kernels for planting it is necessary to either screen the corn or sort the ears according to size of kernels.

Corn must be acclimated before it can give its maximum yield. Well bred corn from a distance may not yield well at first, but pure bred seed corn, if of the right type, will prove better in the end than scrub corn. It is important to get the type or variety of corn adapted to the soil and climate. No one variety of corn is best suited to all parts of the state. There is no need of a variety of corn "running out." "Running out" is due to careless seed selection, deteriorating soil, or poor cultivation. Remember that the largest ear is not always the best seed ear. Select seed in the fall before freezing weather. Seed corn suffers great damage by being frozen while containing considerable moisture—as it usually does when first taken from the field. Keep seed corn in a dry, well ventilated room where it can be well dried before freezing.

Other things being equal, home-grown seed is to be preferred to that grown in another locality and under different environment.

The best plan is to have a special seed corn field which has been planted with selected ears and select the best ears from this field.

Another plan, but not so good, is to go through the field before the general harvest and select ears from good healthy stalks, bearing in mind the standard of the variety you are growing.

Select ears of good average size in length and diameter, sound and vigorous and well filled at butt and tip. Stalk, medium size. Kernels should be close and even. Cob should be firm and rigid.

This illustration shows a desirable seed ear with another desirable ear broken into pieces to show the butt, tip and depth of kernel. It will be noticed that the kernels are of uniform size and shape, of good length and well compacted together from the crown to the base of the kernels. The rows fit closely, leaving no wasted space. Such an ear yields a large per cent of grain to cob.

All good seed should be tested as to vitality before planting. It should test at least 95 per cent and germinate strongly. See score card and rules for judging corn.

TESTING CORN FOR VITALITY

Standard for Germination 90-95 per cent.

Sampling.—The importance of making germination tests of corn cannot be emphasized too strongly, since seed corn will often have a fair outward appearance and yet germinate poorly.

When the germinating power of corn is very low, and reliable seed is hard to select, it is often desirable to make germination tests of each ear separately.

To do this, first number the ears by slipping a piece of cardboard containing the number between two rows. Then remove one grain from the butt, middle and tip of each ear. Then taking your germinator, as described below, mark off the blotting paper in the bottom into inch squares, numbering each. Now put the grains from each ear in their respective square, and allow to germinate. In this way several hundred ears may be tested at once.

For testing a large lot of corn in the ear, select 100 ears at random and take one grain from each of these about two inches from the butt. More corn seems to germinate poorly near the butt than at any other point. Place seed in germinator. Germination should begin in about two days and be complete in six.

For best results keep temperature as near 80° to 90° F. as possible, and never let it fall below 60° F.

A YORK COUNTY CONTESTANT WHO GOT "TOO GOOD A STAND"

HOME MADE GERMINATOR

One of the simplest and most practical germinators can be made by taking two common dinner plates, and placing in the bottom one, two or three layers of filter paper, blotting paper or other absorbent and thoroly wetting it. Place the seeds to be tested on top of this. If the seeds are as large as corn or wheat you may cover them with blotting paper or a cloth, tho this is not necessary. Small seeds, such as clover or grass, do better if not covered.

Now invert the second plate over the first, being careful that the edges touch evenly. This makes a moist chamber, and gives the most favorable conditions for germination.

Similar moist chambers may be fixed up by using any shallow bucket or pan having a cover, or tin or wooden boxes may be used such as tobacco and cigar boxes, all of which, when used properly, will give satisfactory results.

THICKNESS OF PLANTING CORN

In 1903, and again in 1904, experiments were made at the Nebraska Experiment Station farm to determine the effect of different rates of planting corn upon the yield of grain, size of ear, quality of the grain, number of barren stalks and suckers, and upon the yield of stover. The hills were placed forty-four inches apart each way. The following table shows the average results for two years:

No. stalks per hill	Yield per acre	Average weight of ears	Good ears	No. of ears per 100 plants	No. o suckers per 100 plants
	Bushels	Ounces	Per cent		
1	55	10.7	64	174	198
2	68	10.5	68	119	76
3	78	9.2	55	98	25
4	78	8.	42	82	8

In plantings made in 1903, the best yield came from the planting of four stalks to the hill, while in 1904 three stalks to the hill produced the most grain. The average for the two years for the plats containing three stalks to the hill and for the plats containing the four are the same, owing to the fact that the first year, being wet and a good corn season, favored the heavy planting, and 1904, being dry, favored the lighter. The rate of planting that gives the best yield will vary according to soil and season.

In Nebraska the rate of planting should be heaviest in the east, not less than three kernels per hill. The rate should gradually decrease westward, two grains per hill probably being sufficient for the best average results on the western edge of the corn belt.

A few other results noted are: One stalk per hill produced the largest ears but the least number of bushels and produced a greater number of ears per 100 plants, also a greater number of suckers and had the least number of barren stalks; four stalks and three stalks per hill, respectively, produced the larger ears, the larger percentage of good ears, a greater number of bearing stalks and also an increased number of suckers over the four stalks per hill planting.

DEPTH OF PLANTING

The Nebraska Experiment Station carried on experiments in 1904 relative to depth of planting. Corn was planted at depths of 1, 2, 3, and 4 inches. That planted at a depth of one and two inches came up readily, and gave a good stand, while only a small per cent of that planted four inches deep came up. The weather was quite cold and wet just after this planting, which doubtless caused a large per cent of the deep planted corn to rot. Whatever be the depth of planting, the main root system which develops at the base of the plant, branches out about three-fourths of an inch below the surface. This is the normal depth under average conditions, but planting should be deeper to secure moisture for the seed. Mr. Lyon concludes: "There is no object in planting corn at a greater depth than enough to insure germination; in fact, it is a positive detriment to plant deeper. Listing permits the roots to be deeply covered with soil, although the seed when dropped is not too deep."

RELATION OF SIZE OF EAR TO YIELD

In order to get the relation between the average size of ear and the yield per acre of the varieties of corn tested at the Nebraska Experiment Station farm, one hundred ears of each variety, taken as they came in the row, were weighed and measured. The interesting fact developed that the heaviest yielding varieties are of medium size. The average weight per ear of the five highest yielding varieties was .705 pounds. The most desirable size of ear varies according to locality, season, soil, climate and elevation. The best type of corn for western and central Nebraska should be a smaller ear type than for the eastern part of the state.

TILLERS, OR "SUCKERS"

Botanically, a tiller is simply a side branch arising from one of the lower nodes or joints of the corn plant. The early progenitor of corn was undoubtedly a much branched plant with many ears. But through proper seed selection and cultivation, the number of tillers has been gradually reduced. The development of the tiller varies according to the variety of corn, the rate of planting, fertility of the soil, relative moisture, climatic conditions and manner of cultivation. Listed corn usually develops fewer tillers.

The young tillers are first attached to the main plant and draw their subsistence from it (hence the name "sucker"), but they soon develop their own roots and finally become independent plants, sometimes becoming entirely separated from the main plant. Experiments at the Nebraska State Experiment Station have shown that if the tillers are removed when the plants are from 20 to 25 inches high no more will develop.

Value of Tillers.—Tillers thicken a deficient stand of corn and when well developed produce ears. Experiments made in 1903 and 1904 at the Nebraska Experiment Station showed an average loss of 17 bushels per acre in the field where tillers were removed. These were years of plentiful rainfall.

As many tillers start on corn planted thick, as on corn planted thin, but in thick planted corn they make only feeble growth and usually die and dry up later in the season. Mr. Lyon concludes that tillers "serve a purpose whenever the stand is thinner than the soil or season will support. In regions of sufficient rainfall it would not seem advisable to remove the tillers in the hope of improving the yield."

VIEW SHOWING SOME OF THE BUILDINGS AT THE UNIVERSITY FARM

CORN BILL-BUGS AND THE CORN ROOT-LOUSE

Corn bill-bugs and the corn root-louse have long been recognized as serious enemies of corn. Mr. S. A. Forbes, Illinois State Entomologist, found that in timothy fields badly infested with corn bill-bugs 50 to 75 per cent of the timothy bulbs were injured to some extent. He found that at least 33 per cent of hills of corn infested by these insects failed to form ears or filled out very imperfectly. A test of the value of fall plowing in controlling these insects showed that the injury from the corn bill-bugs is due almost entirely to planting after timothy and spring plowing.

The corn root-aphis is an insect which, like many other aphids, is cared for by certain special ants. The ants construct their nests in the soil and care for these insects the year round. In one experiment for exterminating them it was found that where the soil was disked three times and harrowed once the number of ants and aphids was reduced by 92 per cent. In one instance the insects were reduced 89 per cent by single treatment of the soil with the disk and harrow. It will be noted that the treatment most effective for the root-aphis in spring is in a great measure that which will be found most useful as a thorough preparation of the soil for corn. This method will not entirely eradicate the corn root-louse, but will reduce the numbers to such an extent that they will be of little injury to the crop.

WIND IN THE CORN

I love to lie in the prairie-grass
As the sun's noon heat is born,
And list to the lisp of the lashing leaves,
As the wind blows through the corn.
For the sound of the wind is soft and sweet
As the sigh of a child in sleep;
As soothing and calm as the drifting dark
That falls from the bluey deep.
It does not moan as it does in the pines,
Nor wail as it does on the sea,
But sings a song, faint, far, and low—
A marvelous melody.

—Will Reed Dunroy in "Tumble Weeds."

SOME CORN STATISTICS

Since corn is Nebraska's greatest and also favorite crop; exceeds in amount the sum of all other grain crops of the United States, and is produced in greater amount than any other product of the Western hemisphere; some facts relative to its production are of interest to us. Statistics are generally considered "dry" reading matter; but specific facts relative to matters in which we are much interested, when properly compared, become valuable information which appeals to us because of its relation to our environment.

Hon. James Wilson in his report of 1905, the 9th annual report as the Secretary of Agriculture, says that corn, in 1905, reached its highest production, 2,708,000,000 bushels being raised in the United States in the year 1905. This is 42,000,000 bushels more than raised in the year 1899, the next lower record.

The total value of last year's crop is estimated at \$1,216,000,000. Mr. Wilson adds, "No other crop is worth more than one-half as much." The statistics herein given for cereals, unless otherwise stated, are taken from the Year Book of the Department of Agriculture, 1905.

Production.—Only "round" numbers are given except in a few cases. Total world production of corn, 1904, 3,105,000,000 bushels. Of this North America produced 2,578,000,000 bushels, of which the United States produced 2,467,000,000 bushels. Last year (1905) the United States produced 2,708,000,000 bushels, of which Nebraska produced nearly 263,000,000 bushels. This gives us proper reason for declaring that the United States is the "Corn Field of the World."

Last year corn was raised on 93,000,000 acres in the United States. In Nebraska 8,000,000 acres were planted to corn. (The Nebraska report shows 6,472,487 acres. The state report for 1906 gives 6,840,905 acres planted to corn).

The United States report gives the following rank of states in the number of acres planted to corn in the year 1905: Illinois, 9,607,000; Iowa, 8,767,000; Nebraska, 8,035,000; Kansas, 6,977,000; Texas, 6,532,000; Missouri, 6,000,000; Indiana, 4,600,000; Georgia, 4,000,000; Kentucky, 3,195,000; Tennessee, 3,138,000. Wyoming is lowest with 2,107 acres.

The Nebraska state report for 1906 shows that Lancaster county, with 243,000 acres planted to corn, stands first. Custer county is second, with 232,000 acres. Knox county is third with 224,000 acres. Gage is fourth with over 188,000. Buffalo is fifth with 181,000. Then follow Saunders with 180,000; Otoe, 143,000; Platte, 136,000; Dawson, nearly 132,000; and Harlan county is tenth with nearly 130,000 acres. Only one county, McPherson, reports no acreage planted to corn. Grant county has 42 acres, the lowest number. Kimball county, the second lowest, has 828 acres. Thomas county is third with 1,925 acres.

Total Yields.—In the amount of production, in 1905, the rank of the ten leading states differ somewhat from that in acreage. It is as follows: Illinois, 383,000,000 bushels; Iowa, 305,000,000; Nebraska, 263,000,000; Missouri, 202,000,000; Kansas, 193,000,000; Indiana, 187,000,000; Texas, 139,000,000; Ohio, 112,000,000; Kentucky, 95,000,000; Tennessee, 77,000,000; Wyoming raised only 56,678 bushels; Georgia, which ranks eighth in the number of acres, produced only 47,000,000. This offers us a suggestion as to the relative results in corn raising as affected by climate, soil, and cultivation.

Yield Per Acre.—The average yield per acre of corn raised in the United States in 1905 was 28.8 bushels. The highest yields per acre, by states, are as follows: Connecticut, 42.7 bushels; Indiana, 40.7; and Ohio, 37.8. The lowest yield per acre is in Florida, where the average yield was 10.1 bushels. South Carolina was next lowest with 10.9 bushels per acre; Georgia next, with 11 bushels per acre. The average in Nebraska for 1905 was 32.8 bushels per acre (State Record, 37.65 bushels per acre). Our immediate neighboring states have the following average: Iowa, 34.8; Kansas, 27.7; South Dakota, 31.8; Colorado, 23.8; and Wyoming, 26.9.

The entire corn crop of the world for the year 1904 was nearly three billion bushels. Last year the United States alone produced nearly 2,708,000,000 bushels. Of this 70 per cent was contributed by eight states in the following order: Illinois, Iowa, Nebraska, Missouri, Kansas, Indiana, Texas, and Ohio. The average yield per acre in the United States last year was 28.8 bushels. In the eight states above mentioned the average was 33.6 bushels per acre. The

largest yield of corn on record is 237 bushels per acre. This was grown in South Carolina.

Value Per Acre.—The average value per acre of corn in the United States, based upon farm value, December 1, 1905, was \$11.88 per acre. The highest values per acre by states are as follows: Connecticut, \$30.32; Massachusetts, \$26.25; New Hampshire, \$25.53. These values continue to decrease in the different states to \$6.67 per acre in Florida. Georgia has the second lowest value, \$7.70 per acre. The average value per acre in Nebraska was \$10.50. Our neighbors ranked as follows: Kansas, \$9.14; South Dakota, \$9.86; Colorado, \$11.19; Iowa, \$11.83; Wyoming, \$20.17.

Farm Price Per Bushel.—The average farm price of corn per bushel in the United States, December 1, 1905, was \$.288. The highest average prices at this time in the different states were as follows: Arizona, 97c; California, 76c; Wyoming, 75c; South Carolina, 74c; Rhode Island, 71c; Georgia, 70c.

The lowest value per bushel was in South Dakota, where it was 31c per bushel. In Nebraska the value was 32c per bushel, the same as in Oklahoma; in Kansas, 33c; Iowa, 34c; Missouri, 37c; Colorado, 47c. A comparison of these values per bushel will make a profitable study in commercial and industrial geography and in agriculture.

Nebraska is the third state in the Union in the number of acres planted to corn and in the number of bushels produced, but the average price per bushel is lower in only one other state, South Dakota. The quality of Nebraska corn is good. Why this low price? Is it over-production, transportation facilities, distance from market, lack of local consumption as compared with other states, or—what?

CULTIVATION FOR CORN

The climate and the soils of Nebraska are so varied that proper specific instructions as to methods of cultivation cannot here be given. A few general suggestions only are offered. The Nebraska corn grower should study well the soil and climate of his locality and then govern his selection of seed and his method of cultivation accordingly. The essential points to be observed in growing corn are good seed and good tillage.

Conservation of Moisture.—To prevent undue loss of water by evaporation is one of the important objects of tillage in Nebraska.

Movement of Soil Water.—Soil water has two principal movements: percolation, the soaking downward of water after rains; and capillary, the slow upward movement of water between rains, to supply that lost by evaporation or that taken up by growing plants. A loose open structure favors percolation, as it permits the water to run into the soil more readily. A close compact structure favors the upward capillary movement.

What is desired, then, is a loose surface to catch and allow rain to soak in, and a compact sub-surface, so that there will be a strong upward movement to supply the roots of growing plants. The loose mulch will prevent water loss from the surface.

Plowing.—Early summer plowing breaks up the compact surface and puts a loose surface layer at the top, which breaks the capillary upward movement of the soil water and thus checks evaporation. The loose plowed soil catches the rain better than a compact surface and thus gets more of the rainfall. The trash turned under also has a much better chance to rot and help render available fertility.

Fall plowing is sometimes an advantage. It prevents further evaporation of soil water and makes a roughened surface to catch winter snows and rains. But summer or fall plowing is not advised on soils liable to blow and drift, or on soils that become very loose during the winter, when fall plowed.

Early spring plowing is one of the most effective ways of preventing evaporation. Early plowing may be done deep as there will be no clods or lumps formed to bother and make the formation of a good seed bed difficult. Then there will be plenty of time for the sub-surface to become settled and compact. The later the plowing the shallower it should be as the time left to get the sub-surface compacted is very short.

Cultivation.—Cultivation should be frequent enough to keep the soil mulch from compacting and becoming wet from the lower soil water brought upward by capillary movement.

Cultivation should always follow a rain as soon thereafter as the ground is workable, to prevent the formation of a crust. Water moves more rapidly through a moist than through a dry soil. Consequently a rain, if not followed by cultivation, may actually cause a soil to lose water.

The depth and frequency of cultivation should vary with the season. The deepest cultivation should be done at first because there are few roots to injure at this time and aeration is more needed. Evaporation is also less early in the season. Cultivation should become shallower and less frequent as the season progresses. It is desirable for the plant to develop as many of the surface feeding roots as possible.

JUDGING CORN

The productiveness of corn can be greatly increased by the selection of ears having certain desirable qualities for seed. The well known varieties of corn have been developed by years of careful selection of seed ears. The principle involved is that an ear of corn when planted reproduces more or less closely its own characteristics in the resulting ears. By selecting for seed, ears of uniform size, deep kernels and other desirable characters, we largely avoid the production of nubbins, shallow kernels and other objectionable points, and thus increase the yield.

SCORE CARD FOR CORN.

Variety name.....

	VALUE	STUDENT'S SCORE	CORRECTED SCORE
Uniformity of exhibit.....	10	.....	.....
Shape of ears.....	10	.....	.....
Color of cob.....	5	.....	.....
Color of kernels.....	5	.....	.....
Market condition.....	10	.....	.....
Tips of ears.....	5	.....	.....
Butts of ears.....	5	.....	.....
Uniformity of kernels.....	10	.....	.....
Shape of kernels.....	10	.....	.....
Space between kernels.....	5	.....	.....
Proportion of corn on ear.....	10	.....	.....
Weight of grain.....	15	.....	.....

Student's name.....

RULES FOR JUDGING EXHIBITS OF CORN

Uniformity of Exhibit.—The ears in an exhibit should be similar in size, shape, color and indentation. In other words, each ear should look as much as possible like every other ear. In considering this point the judge is not called upon to decide as to the desirability of the characters possessed by the different ears, but solely as to their similarity.

The judge places the ten ears side by side on a table or bench with the butts toward him. He then, by removing one ear and replacing it by another, sorts over the exhibit until he has the similar ears lying side by side. If there are six similar ears of one type and four of another, he credits the exhibit with six similar ears, even should these not be so desirable as those of the other type. For each ear deficient in these respects, cut the exhibit one point.

Shape of Ears.—Leaving the exhibit arranged as before, count the number of ears that are cylindrical or nearly so. Cut the exhibit one point for each ear deviating from this requirement.

Reid's Yellow Dent seed corn was furnished to contestants in districts 1, 2, 3 and 4, Leaming's Yellow Dent, to contestants in districts 5 and 6.

Color of Cob.—The cobs should be uniformly red or uniformly white. For each white cob in an exhibit in which the red predominate, cut the exhibit one-half point. Do the same for each red cob in an exhibit of white cobs.

Color of Kernels.—A yellow kernel on a white ear or a white kernel on a yellow ear shows that the corn has been fertilized by pollen from corn of another color. In other words, it shows that the variety is not strictly pure. For each white crowned kernel in a yellow or red variety, cut the exhibit one-tenth point. For each yellow kernel in a white variety, give the same cut.

Market Condition.—The corn should be well matured, firm and sound. For each ear deficient in these respects, cut the exhibit one point.

Tips of Ears.—The tips of the ears should be covered with regular, uniform kernels. Add together the lengths of protruding cobs on all ears of the exhibit, and cut at the rate of one-half point for each inch.

Butts of Ears.—As the ideal ear is cylindrical in shape, the butt should be uniform in diameter with the rest of the ear. It should be well rounded and symmetrical. The rows of kernels should be even and swell out evenly beyond

This illustration shows a great variety of differently shaped kernels found on differently shaped ears of the same strain of corn. The pairs of kernels Nos. 1, 2 and 5 are the most desirable. Their shape is that of a wedge, tapering gradually from crown to point, permitting a close fitting together. It is much more desirable to select for increased length of kernel than for small cob; selecting for small cob will result in a decrease in size of ears.

This illustration represents ears of various types. No. 7 is the best. A carload, or 800 bushels, of ears like No. 1 would yield but 728 bushels shelled, while a carload of ears like No. 2 would yield 893 bushels shelled. No. 3 does not shell out well. No. 4 is preferable to No. 5, because no space is wasted. No. 6 is undesirable because of the light, chaffy nature of the kernels. No. 8 has irregularly shaped kernels, which waste space and do not work well in a planter. No. 9 is less desirable than ears of the cylindrical shape, because the small point makes it necessary for some of the rows to drop out or the kernels to become smaller.

the end of the cob. Cut the exhibit one-half point for each poorly filled butt, and one-fourth point for each flat butt.

Uniformity of Kernels.—The kernels should possess similar characters. Cut the exhibit one-half point for each deficient ear.

Shape of Kernels.—In general, the shape of the kernel should be that of a wedge, as this shape permits the greatest amount of corn on the cob. The kernels should be of such shape that they fit snugly from tip to crown. The length and indentation of the kernels should also be noted. A deep indentation generally goes with a deep grain. The kernels should have a wedge shape on the broad side, and on the narrow side the edges should be parallel. Cut one point each for each objectionable ear.

Space Between Kernels.—The rows of kernels should not be more than one-thirty-second of an inch apart at any part of the row. If more than one-sixteenth of an inch apart, cut one-half point, if less than that but more than one-thirty-second, cut one-fourth point for each ear.

Proportion of Corn on Ear.—The proportion of corn on the ear should not be less than 85 per cent. For every per cent below eighty-five, cut the exhibit one point.

Weight of Grain.—The weight of grain on an average ear should come up to the following requirements:

Length of ear 12 inches and over; weight of grain 17 ounces.

Length of ear 11 to 12 inches; weight of grain 15 ounces.

Length of ear 10 to 11 inches; weight of grain 14 ounces.

Length of ear 9 to 10 inches; weight of grain 13 ounces.

Length of ear 8 to 9 inches; weight of grain 11.5 ounces.

Length of ear 7 to 8 inches; weight of grain 9.5 ounces.

Length of ear 6 to 7 inches; weight of grain 8 ounces.

For each ounce below the number required by an ear of given length, cut the exhibit one point.

Section of corn exhibit in Agricultural Hall, 1905 Corn Contest

DIRECTIONS TO CONTESTANTS CORN EXHIBIT

Each contestant in Classes A and B (see "Classes in the Corn Exhibit") will exhibit ten ears of corn raised from the seed corn which was furnished him. The contestant should carefully select the ten ears which will score highest according to the score card and directions given herein. The largest ten ears are not always the best ten seed ears.

1. Place the good ears raised from your prize seed corn on a board or table with the tips all pointing one way.

2. Select the most nearly perfect ear you can find,—the ear which is nearest the ideal type.

3. With this ear in your left hand, go over all the ears of corn upon the table. Discard those showing too great a variation from your type ear in size, length, shape, roughness, form of kernel, etc.

4. From the score card and the directions given, score your exhibit (see score card and rules for judging). Then see, if by exchanging any ears in the ten you have selected, with the ears not selected, you may raise the percentage of the score.

5. When your ten ears have been finally selected, put them in the best possible appearance. Remove all husks, silks, and the shank, but do not mutilate the ear itself in any way. Do not remove any bad kernels. The ears should be handled carefully that no kernels be knocked off. In judging, missing kernels are regarded as mixed kernels or bad kernels and the usual cut is made in the scoring.

A YOUNG DODGE COUNTY CONTESTANT WHO RAISED GOOD CORN LAST YEAR

WRITTEN REPORT

6. Each ear should be carefully wrapped in paper or other protection and firmly packed.

7. Each contestant is expected to exhibit with his ten ears of corn a neatly written, well arranged report, covering the points noted below. This account will be considered by the judges in awarding prizes. The merit of the written report will be judged,—not by the success of the contestant in corn growing—but by the completeness of the report and the care exercised in making it. The contestant having least success with his corn may make as good a report of his experience as contestants who are more successful with their corn.

OUTLINE FOR WRITTEN REPORT

1. Kind of soil in which seed was planted.
2. Location—field, garden, level, slope or hill, etc.
3. Kind of crop raised on same ground last year.
4. How ground was prepared for seed.
5. Planting—date, depth, number of kernels per hill, distance apart of hills, number and length of rows.
6. Cultivation—tools or machinery used, dates of cultivation, how cultivated, etc.
7. Date crop was gathered; number of ears, number of pounds of husked corn.
8. Expense in time, labor and money.
 - a. Total number of hours of work by contestant.....
 - b. Value per hour of contestant's work at 10c per hour..... \$.....
 - c. Value of work by team of horses or other force required in raising corn (at 10c per hour for each horse)..... \$.....
 - d. Amount of other expenses..... \$.....
 - e. Total cost of crop..... \$.....
 - f. Value of corn at market price..... \$.....
 - g. Amount of loss or gain..... \$.....
9. State what difficulties, if any, were encountered with weather, disease, insects, squirrels or other pests, and results.
10. Statement of what has been learned by contestant in raising this corn.
11. Name, address, age, and school district of contestant.

CLASSES IN THE CORN EXHIBIT

Class A. Ten ears of corn and written report by contestants who received the 1,000 kernels of seed corn from the state manager.

Class B. Ten ears of corn and written report by contestants who received seed corn from the county superintendent or other person acting as county manager.

Class C. Ten ears of corn. This class includes all not included in classes A and B. It provides for exhibits of corn raised by any Nebraska boy regardless of where he secured his seed corn. Open to any Nebraska boy not over 21 years of age, the only condition being that he himself planted, cultivated, and harvested the corn. A written report of his work must accompany the exhibit of ten ears of corn. Boys desiring to enter Class C should write to the manager for a blank report and entry card.

DIVISIONS IN CLASS C

- Division 1. Best ten ears of corn of any variety.
- Division 2. Best ten ears of sweet corn.
- Division 3. Best ten ears of pop corn.
- Division 4. Best ten ears of squaw corn.
- Division 5. Best ten ears of kaffir corn.
- Division 6. Ten longest ears of corn of any variety.
- Division 7. Ten largest ears of corn of any variety.
- Division 8. Ten ears having greatest number of rows of kernels.

Class D. Best ten ears of corn by boys in the "acre" contest.

Note: See "Collective Exhibits," Class X.

FREE BULLETINS

Write to the "Department of Agriculture," Washington, D. C., for bulletins as follows: No. 199, "Corn Growing"; No. 229, "The Production of Good Seed Corn"; and to the "Agricultural Experiment Station," Lincoln, Nebraska, for bulletins as follows: No. 25, "Corn"; No. 54, "The Corn Crop"; No. 91, "Experiments with Corn."

A BEAUTIFUL PLANT

"How straight and tall and stately stand
 Its serried stalks upright and strong!
 How nobly are its outlines planned,
 What grace and charm to it belong!
 "What splendor in its rustling leaves!
 What richness in its close-set gold!
 What largess in its clustered sheaves,
 New every year, tho ages old!"

—Celia Thaxter.

Corn is used largely for ornamental purposes. The corn plant appears on certain coins, the United States dime bears the representation of a corn plant. Ears of Indian corn appear on some of the late five-cent pieces. Corn appears with wheat in the design of the Trans-Mississippi postage stamps issued in 1898.

OUR NATIONAL EMBLEM

The National Grains' Convention at Portland, Oregon, last October enthusiastically adopted corn as our national floral emblem. Edna Dean Proctor, author of "Columbia's Emblem," the poem which appears below, in her letter in which she granted our associations the use of her poem in this publication, said: "Indigenous to America and peculiar to it—a part of all the tradition and history of the Western continent—pre-eminent in value and beauty—corn is our most distinguished plant and must be,—is our national floral emblem." In her poem, "Maize in Norway," account is given of a visit in "wildest Norway," among the peaks, "in a waste of gleaming snow," where the writer saw one "August morn" a "cluster of Indian corn" and when she asked the "blue-

eyed gleaner," the maid with the "flaxen hair," why they planted "the tropic Maize," "when frost the harvest bans, and snows fall cold," and told her that,

" . . . the stately Maize, the grain of the sun,
Will never yield its gold,"

the maid answered:

" 'Tis true that frost our harvest bans,
But we plant the beautiful waving Maize,
To please the Americans."

COLUMBIA'S EMBLEM

Blazon Columbia's emblem,
The bounteous, golden Corn.
Eons ago, of the great sun's glow
And the joy of the earth, 'twas born.
From Superior's shore to Chili,
From the ocean of dawn to the west,
With its banners of green and silken sheen
It sprang at the sun's behest;
And by dew and shower, from its natal hour,
With honey and wine 'twas fed,
Till on slope and plain the gods were fain
To share the feast outspread:
For the rarest boon to the land they loved
Was the Corn so rich and fair,
Nor star nor breeze o'er the farthest seas
Could find its like elsewhere.

In their holiest temples the Incas
Offered the heaven-sent Maize—
Grains wrought of gold, in a silver fold,
For the sun's enraptured gaze;
And its harvest came to the wandering tribes
As the god's own gift and seal,
And Montezuma's festal bread
Was made of its sacred meal.
Narrow their cherished fields; but ours
Are broad as the continent's breast,
And, lavish as leaves, the rustling sheaves
Bring plenty and joy and rest;
For they strew the plains and crowd the wains
When the reapers meet at morn,
Till blithe cheers ring and west winds sing
A song for the garnered Corn.

The rose may bloom for England,
The lily for France unfold;
Ireland may honor the shamrock,
Scotland her thistle bold;
But the shield of the great Republic,
The glory of the West,
Shall bear a stalk of the tasseled Corn—
The sun's supreme bequest

The arbutus and the goldenrod
 The heart of the North may cheer,
 And the mountain laurel for Maryland
 Its royal clusters rear,
 And jasmine and magnolia
 The crest of the South adorn;
 But the wide Republic's emblem
 Is the bounteous, golden Corn.

—Edna Dean Proctor.

From "Songs of America."
 By courtesy of
 Houghton, Mifflin & Co.

"MAIZE, THE NATION'S EMBLEM"

"America, from thy broad breast
 It sprang, beneficent and bright,
 Of all thy gifts from heaven the best,
 For the world's succor and delight.
 "Then do it honor, give it praise!
 A noble emblem should be ours;
 Upon thy fair shield set thy Maize,
 More glorious than a myriad of flowers.
 "And let thy states their garland bring,
 Each its own lovely blossom-sign,
 But leading all let Maize be king,
 Holding its place by right divine."

—Celia Thaxter.

THE ROYAL CORN.

(Speech of ex-Governor Richard Oglesby before the Fellowship Club, Chicago, September 9, on the occasion of the Harvest Home Festival.)

Mr. Chairman and Gentlemen: The corn, the corn, the corn, that in its first beginning and its growth has furnished aptest illustration of the tragic announcement of the chiefest hope of man. If he die he shall surely live again. Planted in the friendly but sombre bosom of the Mother Earth it dies. Yea, it dies the second death, surrendering up each trace of form and earthly shape until the outward tide is stopped by the reacting vital germ which, breaking all the bonds and ceremonies of its sad decline, comes bounding, laughing into life and light, the fittest of all the symbols that make certain promise of the fate of man. And so it died and then it lived again. And so my people died. By some unknown, uncertain and unfriendly fate, I found myself making my first journey into life from conditions as lowly as those surrounding that awakening, dying, living, infant germ. It was in those days when I, a simple boy, had wandered from Indiana to Springfield, that I there met the father of this good man (Joseph Jefferson) whose kind and gentle words to me were as water to a thirsty soul, as the shadow of a rock to weary man. I loved his father then, I love the son now.

Two full generations have been taught by his gentleness and smiles, and tears have quickly answered to the command of his artistic mind. Long may

he live to make us laugh and cry, and cry and laugh by turns as he may choose to move us.

But now again my mind turns to the glorious corn. See it! Look on its ripening, waving field! See how it wears a crown, prouder than monarch ever wore, sometimes jauntily; and sometimes after the storm the dignified survivors of the tempest seem to view a field of slaughter and to pity a fallen foe. And see the pendant caskets of the cornfield filled with the wine of life, and see the silken fringes that set a form for fashion and for art. And now the evening comes and something of a time to rest and listen. The scudding clouds conceal the half and then reveal the whole of the moonlit beauty of the night, and then the gentle winds make heavenly harmonies on a thousand-thousand harps that hang upon the borders and the edges and the middle of the field of ripening corn, until my very heart seems to beat responsive to the rising and the falling of the long melodious refrain. The melancholy clouds sometimes make shadows on the field and hide its aureate wealth, and now they move, and slowly into sight there comes the golden glow of promise for an industrious land. Glorious corn, that more than all the sisters of the field wears tropic garments. Nor on the shores of Nilus or of Ind does nature dress her forms more splendidly. My God! to live again that time when for me half the world was good and the other half unknown! And now again, the corn, that in its kernel holds the strength that shall (in the body of the man refreshed) subdue the forest and compel response from every stubborn field, or, shining in the eye of beauty make blossoms of her cheeks and jewels of her lips and thus make for man the greatest inspiration to well-doing, the hope of companionship of that sacred, warm and well-embodied soul, a woman.

Aye, the corn, the Royal Corn, within whose yellow heart there is of health and strength for all the nations. The corn triumphant, that with the aid of man hath made victorious procession across the tufted plain and laid foundation for the social excellence that is and is to be. This glorious plant, transmuted by the alchemy of God, sustains the warrior in battle, the poet in song, and strengthens everywhere the thousand arms that work the purposes of life. Oh that I had the voice of song, or skill to translate into tones the harmonies, the symphonies and oratorios that roll across my soul, when standing sometimes by day and sometimes by night upon the borders of this verdant sea, I note a world of promise, and then before one-half the year is gone I view its full fruition, and see its heaped gold await the need of man. Majestic, fruitful wondrous plant! Thou greatest among the manifestations of the wisdom and love of God, that may be seen in all the fields or upon the hillsides or in the valleys!

WHEAT

And the prairies are clad for many a mile—
With the tossing plumes of corn,
And the fields of wheat wave like a sea
Of green, on a summer morn—
In Nebraska, the land of corn.

—Dunroy.

Mr. Sargent designates wheat as the "King of Cereals." This is because of its extensive cultivation throughout the world and because it holds the foremost place as a food among civilized people, who recognize in it "the staff of life."

A WHEAT FIELD NEAR VERDON

AN OAT FIELD NEAR FAIRMONT

History.—It is supposed that wheat first grew wild in the region of Mesopotamia and that it was first cultivated in the valleys of the Tigris and Euphrates rivers. The people who lived in Egypt in the valley of the Nile river more than five thousand years ago, grew wheat. Wheat is found buried with mummies in tombs. From Egypt wheat was carried across the Mediterranean Sea to Greece and Rome. The Romans carried wheat all over Europe. It was introduced into England about two thousand years ago, and came to the United States a short time after the discovery of America by Columbus. The United States now produces more wheat than any other nation.

Types of Wheat.—There are several different types of wheat which are classified according to the appearance of the spikes and the seeds. There are two classes of wheat,—the winter wheat and the spring wheat, the appearance of which is quite similar, but the winter varieties must be planted in the fall and the spring varieties in the spring. The types most commonly grown in Nebraska among the fall wheats are what are known as "Turkey Red," "Red Russian," the "Red Mediterranean" and a variety grown, especially in the southeastern part of the state, known as "May Wheat." The principal type of spring wheat grown in Nebraska is called "Velvet Chaff."

"Macaroni" or Durum Wheat.—Durum wheat, or what is commonly known as "macaroni" wheat, is becoming a valuable spring wheat in Nebraska. Durum wheat was first introduced into the United States from South Russia in the spring of 1899. The next year some varieties were introduced from North Africa. Since that time the production of Macaroni wheat has rapidly increased. Last year (1905) the United States produced 20,000,000 bushels of this kind of wheat, which was raised mostly in the Dakotas, Minnesota, Kansas, Nebraska, Colorado, and in a few of the Rocky Mountain and Pacific Coast States.

The Durum ("Macaroni") seed wheat supplied to our contestants this year will enable us to make a fair test of this variety in the western and northwestern parts of the state to which it is especially adapted.

Wheat Bread.—"White" bread is always wheat bread. It is only from wheat that raised white bread can be made. This is due to the presence in wheat of "gluten." The Macaroni wheats contain a large amount of gluten which makes them valuable, especially in the manufacture of macaroni and other pastes. Macaroni wheat is very hard. For this reason most of the flouring mills now established in Nebraska are unable to properly grind it. Therefore Macaroni wheat is mostly exported.

GRAHAM, ENTIRE WHEAT, AND STANDARD PATENT FLOUR

Graham flour is simply wheat meal, that is, the entire grain ground to a powder. Graham flour is now commonly made by crushing and grinding the whole of the kernel without bolting or sifting. Such flour is coarse. To overcome this objection bolting is frequently resorted to. Much of the flour sold as Graham has been thus treated. Such a product is not really Graham flour.

Entire Wheat or Whole Wheat.—These terms suggest flour practically identical with the Graham. Whole-wheat flour is not so coarse as Graham, nor so fine as the white flour. It is supposed to be made by removing the branny outer covering of the grain and grinding the remainder,—thus some of the outer portion of the wheat kernel is retained in the flour. But some of the so-called whole-wheat flour is not so ground, being made by mixing with the

patent grades the middling and low grade flours with considerable of the kernel germ.

Patent Flours.—The finer grades of patent flour contain neither the bran nor the germ of the wheat. In some of the lower grades the germ is retained. The germ is somewhat richer in protein than the remainder. It is for this reason that lower grade flours are considered more nutritious. The chief reason for removing the germ in milling the higher grades is that because of the presence of oil, which is more abundant in the germ than in the remainder of the wheat, flour in which it is retained has a tendency to become rancid (sour) and to deteriorate in bread-making properties. The bran is left out because of its coarse nature and because it darkens the flour. The grade of wheat flour most common is known as "white patent," "standard patent," or "family grade."

THE NUTRITIVE VALUE OF WHEAT BREAD

Bread contains from 35 to 40 per cent of water. Since the remainder, about 60 per cent, is nutritive material, bread is one of the most nutritious of the common foods. Bread supplies a large amount of carbohydrates, a moderate amount of protein, a small amount of mineral matter and almost no fat.

Write to the Department of Agriculture, Washington, D. C., for free bulletin No. 112, "Bread and Bread Making."

WHEAT STATISTICS

The total wheat crop of the world in 1905 was three and a half billions of bushels. Of this the United States produced 693,000,000 bushels. In the year 1905 Kansas, our leading state in the production of wheat, produced 77,000,000 bushels. Other great wheat producing states in their order are, North Dakota, Minnesota, Nebraska, South Dakota, Indiana, and Washington.

The total production of Nebraska for this year was 41,343,000 bushels. The leading counties in the production of fall wheat in their order are, Clay (1,796,000), Hamilton, Kearney, York, Harlan, and Red Willow counties. In spring wheat for the year 1905, Lancaster county ranked first with 398,000 bushels, Sheridan second, and Cuming county third. The average farm value price per bushel in the United States December 1, 1905, was \$.748 per bushel. The highest average price per bushel in Nebraska was \$.66; 1,852,085 acres were planted to winter and spring wheat in Nebraska this year.

WHEAT EXHIBIT

Each contestant who received the Durum (Macaroni) seed wheat last spring will exhibit a small sheaf of wheat, not to exceed four inches in diameter at the band, and one pint of threshed wheat, all grown from the wheat furnished. The sheaf of wheat should be carefully wrapt and cared for and neatly bound and trimmed so that it will make a good appearance in the contest. A written report telling of the experience of the contestant should accompany each exhibit.

FREE BULLETINS

Write to the Department of Agriculture, Washington, D. C., for bulletin No. 250, "Prevention of Wheat Smut," and to Agricultural Experiment Station, Lincoln, Nebraska, for bulletins Nos. 72 and 89, "Winter Wheat."

OATS

History.—The original home of oats is supposed to be in central and eastern Europe, possibly extending into western Asia. Oats are extensively cultivated in northern United States and in Canada. Oats are a favorite food in Iceland. The Scotch Highlander and his oat porridge are the very best of friends. The Scotch people depend very much for food upon the hulled kernel of oats, known as "grots."

Oat Products.—Since good raised bread cannot be made from oats, the meal is generally cooked as a porridge, or baked in plain cakes. The "oatmeal," so much used in our country for food, corresponds to the Scotch "Grots" or "Grits." The straw of the oat plant is valuable as fodder for horses and cattle and for use in making paper and pasteboard. In southern states where the kernel of oats does not develop well, oats are sometimes grown and cut green for hay. Oats are called "the grain of hardiness" because it is the hardiest of grain plants and because it forms the main food supply of hardy northern people.

Oats are a very valuable grain food for horses, especially during the spring, summer, and fall seasons, when horses are worked or driven hard. Oats are most valuable as an animal food when fed to growing animals and as a nourishing food, especially in warm weather when corn is not so desirable.

Statistics.—In the year 1905, the total world production of oats was three and one-half billion bushels, of which the United States produced 953,000,000 bushels. Illinois, our leading state, produced nearly 133,000,000 bushels. Iowa was second with 131,000,000 bushels. Nebraska produced fifty-eight and one-half million bushels. This year our state has 2,442,768 acres planted to oats. Knox county, with 93,858 acres, is the leading county. Madison and Boone counties rank next with over seventy-five thousand acres each.

The "Kherson" oats imported eight years ago from Russia is proving a valuable variety for Nebraska. "Swedish Select" oats are also a new variety recently introduced and tested with excellent results in Wisconsin and Montana. This variety is especially adapted to our northern states. The "sixty-day" oat, which was introduced from southwestern Russia four years ago, is now giving good results in the middle-western states. It is a much earlier variety than ordinary oats, and often escapes rust and other fungous and insect pests when other varieties are affected. Its early maturity also enables it to often escape a drouth.

RYE

On either side the river lie

Vast fields of emerald nodding corn,

And waving seas of wheat and rye.

—From "The River Platte." Dunroy.

History.—Rye has been called the "grain of poverty" because it will produce a crop where the soil is too poor or the climate too hot and dry for other cereals to do well, and because of its extensive use as the chief food of the peasant classes of the people of Europe and Asia and of poor people of our country. Rye is supposed to have been cultivated first in southern Russia and Siberia, and from there to have been extended to Europe and then to America by the early settlers.

The peasants of Germany and Russia make a dark colored, coarse bread of rye meal which is used extensively as a food. In Sweden rye is also a favorite food. In the United States wheat and maize are much more popular for bread making. Rye is used extensively in making whisky.

Production and Products.—Rye grows well on wornout soils and is grown considerably as a green forage crop. The straw of the rye plant is extensively used for commercial purposes in making cheap straw hats and paper. In some places rye is raised more for the straw than for the grain.

Statistics.—The total world crop of rye in 1905 was one and a half billion bushels. Of this the United States produced twenty-eight and a half million bushels. Pennsylvania, our leading state, produced nearly six million bushels. Wisconsin was second with nearly five million. Nebraska was third with two and one-quarter million bushels. The average yield per acre in the United States was 16.5 bushels. The highest average per acre was 25 bushels in Idaho; the lowest 7.7 in Georgia. The average in Nebraska was 18 bushels. The average farm price December 1, 1905, in the United States was \$.611; the highest price, \$1.19 per bushel, was in South Carolina. The lowest price, 48c, was in Nebraska. Nebraska this year had 83,131 acres planted with rye.

BARLEY

History.—Southwestern Asia is thot to be the native country of barley. It was grown from very early times by ancient people who dwelt about the Mediterranean sea. History tells us of the cultivation of barley among the Egyptians and Assyrians, the Greeks and other ancient people. It was used for a food more by the ancient people than at the present time. It was used principally for a food by the poor classes, instead of wheat. The ancient people believed that barley bread was especially strengthening to the body. They, therefore, used to feed their athletes on bread. This gave the name of "barley boys" to the Roman gladiators. For similar reasons the name "beef eaters" is applied to the yeoman of the royal guard in England, and is also sometimes applied to football teams in America, the members of which during the training season, in perfecting themselves for football practice, eat a large amount of meat. Barley was also used in the ancient armies largely as a food for both man and beast. Mr. Sargent in his book, "Corn Plants," suggests that Nebuchadnezzar's horses and Solomon's dromedaries were doubtless fed on barley.

The Arabs fed their horses on unground barley and it is yet so used by the Berbers of North Africa, but barley does not make so good a feed for horses in general as do oats and other foods.

"The Brewer's Grain."—Barley is now used very little as food. Its extensive use by brewers in making beer is the reason for its being known now as the "Brewers Grain." In preparation the kernels of barley are first soaked in water for a while and then spread out to sprout. As they germinate, the starch of the seed is turned into sugar. At the proper moment when the largest amount of sugar possible is present, the brewer heats the grain sufficiently to kill the germ. The grain thus sprouted is known as "malt."

After the malt has been soaked and the sugar dissolved from it, yeast is added, which brings about fermentation in which the sugar is changed to alcohol and carbon-dioxide gas. Barley is used principally by brewers in making malt because it germinates so readily and also, perhaps, because it grows best in some climates where other corn plants that might be used for this purpose will not grow well. Malt liquors other than beer are also made from barley. Were it not for the use of barley by brewers, only a very small amount would be raised in this country. Barley, therefore, has been transformed from a food-producing, life-sustaining grain to a grain used principally for producing intoxicating liquors.

"Barley, once a food for man,
Likewise, for his beast,
Now has yielded in her 'malt'
Virtues which succumb to 'yeast.'
"No longer mankind's 'staff of life'
Nor beast's—as 'n days of yore,
Barley, now 'the brewer's grain,'
Is a favorite food no more."

Varieties.—Chevalier barley, one of the standard varieties in the United States, was introduced by the National Department of Agriculture about 1871. This variety, by being crossed with others, has given us some of our most valuable hybrid varieties. Manshury barley is the standard variety for our northwestern states. New Zealand barley is being introduced in Montana, where first tests have shown it adapted to that state.

Statistics.—The United States produced 136 million bushels of barley last year out of a total world production of over one billion bushels. The average yield per acre in the United States, 1905, was 26.8 bushels; the average farm price \$.403 per bushel. Minnesota with 29 million bushels is the leading state; California is second with 26 million. Nebraska produced nearly 2 million bushels last year, an average yield of 27.5 bushels per acre. This year Nebraska has nearly 110 thousand acres planted to barley. Hitchcock county leads with 16 thousand acres. Red Willow is second with over 13 thousand acres.

RICE

History.—Rice, "The Corn of the East," forms the chief food of the poor classes in China, Japan, and in many parts of India. It is also used extensively in nearly all other countries, especially in regions that have a hot, moist climate. The native home of rice is southeastern Asia. It has been cultivated in eastern countries for more than four thousand years. In the United States rice

THE POTATO HARVEST ON THE T. G. FERGUSON FARM NEAR BEAVER CROSSING
Ten artesian wells on this farm supply water when a dry season makes irrigation necessary

is grown principally in the low parts of the South Atlantic and Gulf States. Its yield in the United States is less than that of any other of the cereals mentioned.

Varieties and Cultivation.—While rice is chiefly grown on lands that are low and easily irrigated, there are varieties which are grown on fertile uplands without irrigation. The principal varieties of lowland rice grown in the United States are "gold seed" rice, which has a golden yellow husk when ripe, and "white rice," the original rice introduced into this country in 1694. It resembles the rice commonly grown in China. The principal variety grown in Louisiana is the Honduras. The Kiushu or Japan rice, which has a thick kernel and a thin hull, recently introduced in this country, is now being largely cultivated.

Red rice, a wild variety, causes rice growers much annoyance and loss. A few red grains in milled rice lowers the grade and reduces the price. If red rice once gets a foothold in the field it increases rapidly and finally destroys the value of the crop.

Reaping machines in harvesting are used very little except in prairie districts in Louisiana and Texas. This is because the ground is not sufficiently dry in harvest time to support heavy machinery. The sickle is the implement commonly used in harvesting rice.

Statistics.—The commercial standard weight of "rough" rice is 45 pounds to the bushel. Rice is usually put up in sacks or barrels of 162 pounds each.

The total world production of rice in the year 1904 was ninety-nine billion pounds. Of this the United States produced one billion one hundred sixty-three million pounds, which is only about one-half the amount consumed in the United States yearly. The chief rice-producing states are Texas, Louisiana, and South Carolina. Texas and Louisiana each produced more than six million bushels in the year 1905.

The average yield of rice per acre in the United States in 1905 was 28.8 bushels. Thirteen and one-half million bushels were raised in the United States last year. The average farm price December 1, 1905, was \$.952.

A remarkable example of the value of plant introduction, as carried on by our National Department of Agriculture, is illustrated in the introduction of the Japanese Kiushu rice. Since the introduction of this variety of Japanese rice the area devoted to this crop has increased from 210,396 acres in 1899 to 610,700 acres in 1904, and has raised the value of land in the coast sections of Louisiana and Texas from between \$1.00 and \$2.50 per acre to from \$35 to \$50 per acre. The output of cleaned rice has been increased from 180 million bushels in 1899 to 549 million bushels in 1904.

THE POTATO

History.—The potato is a native of Chili, Peru and Mexico. Altho a native of America, it is widely known as the "Irish" potato because of its general use in Ireland. Potatoes constitute 13.7 per cent of the total food consumed by the average American family. The potato was introduced into Virginia during the latter part of the sixteenth century. The colonists returning from Virginia took the potato with them to England. The Spanish had previously carried it to Europe. By the year 1722 it was a common article of food among the white people and among the Indians in Virginia. In Europe, with the exception of Ireland, potato growing made little progress until the middle of the eighteenth century.

Adaption.—The potato is grown in every state and territory and on a great variety of soils. Yet the selection of the kind of soil best adapted is of importance if a good crop would be secured. The soil should be light enough that it offers no great resistance to the enlargement of the tubers, should be moist without being wet, and rich enough to furnish sufficient fertilizing ingredients. Well drained soil is preferable. Potatoes grown on sandy land are generally of a better quality than those grown on a stiffer soil.

The soil considered best for growing potatoes is a deep, mellow, free-working loam, grading either to a sandy or clay loam. Good potato soils are silicious, containing considerable organic matter. They are also reasonably rich in lime, magnesia and potash. The potato is largely dependent on the crops preceding it. Clover, cow-peas, and other leguminous plants are good. Corn after a sod is a good crop to precede potatoes. One year or at most two years is as long as a field should be devoted to continuous potato culture, altho potatoes are sometimes successfully grown more than two years in succession on the same land.

A clean crop of potatoes, as a rule, cannot be grown on land which produced scabby potatoes the preceding year, as the germ of the disease remains until starved out by other crops.

Selection of Seed.—The seed potato should be uniform and of a medium size. The skin should be netted or corky in appearance rather than smooth and clear. The presence of lenticels usually indicate normal growth and development in a healthy environment which promises good cooking quality. Potatoes with numerous deep eyes are objectionable because they carry much dirt, and the labor, time and waste in preparing them for cooking are much greater than with potatoes of even surface. The same objections apply to potatoes of non-uniform or irregular shape. Tubers having deep notches and quick curves in the surface are usually avoided, while those of oval, flat-round and elongated-oval shape are most desirable.

Cutting of Seed.—Experiments indicate that it is more important to cut the tuber into compact pieces than to shape the pieces so as to have a definite number of eyes on each set. No piece should be entirely devoid of eyes and the majority of the seed pieces should be large enough to support two or three eyes. These cuttings are made by first cutting the potato into halves through its long axis and then crosswise, a little nearer the seed end than the stem end.

Preparation of the Ground.—Potatoes require a deep seed bed, which is usually prepared by deep plowing in the fall of the year. If this has been neglected until spring, cultivate the ground to be planted to potatoes as early as it is in right condition. Then plow the ground about six inches deep, following soon after with the harrow.

Planting.—The furrows into which the seed potatoes are planted may be made with the lister. The furrows should be about four inches deep so that the seed pieces will be at least seven inches below the top of the ridges made by the cultivator in covering the potatoes.

If the potato tubers are cut so that each piece contains two or three eyes plant the cuttings about fifteen inches apart in the row; should they be single-eye pieces plant them about a foot apart.

Cultivation.—About a week after planting the harrow should be run over the ground. This destroys the young weeds and causes other seed to germinate which may be killed by another harrowing a week later. The weeder is a very serviceable implement for holding the weeds in check and maintaining the

mulch from the time the potatoes begin to appear until the potatoes are nine or ten inches high. The first cultivation should be from four to six inches deep. The subsequent cultivations, however, should be reduced to a depth of one or two inches.

Combatting the Potato Bug.—The leaf should be treated with a poison as soon as the bugs hatch, because the younger the bugs the more easily are they destroyed. Various compounds are used—as Paris green, arsenate of lead, and others. The former is in common use. The whole of the plant should be covered, because if badly sprayed the bugs live on the unsprayed foliage. The standard application is one-half pound of Paris green to fifty gallons of mixture. About fifty cents per acre should cover the cost of one application.

HARVESTING POTATOES IN WESTERN NEBRASKA

Harvesting.—The potatoes for storage should not be dug until the tubers have attained full size, the leaves have died, the tubers come freely from the stem and the skins are firm. They should be dug when dry, picked up at once, and kept cool.

Storage.—Ventilation and temperature are the most important factors in storing potatoes. The potato must be kept cool. About 33 deg. F. is a favorable temperature. The place in which the potatoes are stored must be constructed so as to allow a complete circulation of air at all times.

Potatoes intended for the table should not be exposed to strong light or be allowed to sprout. A poisonous substance called "solanin" sometimes develops when potatoes are allowed to sprout or have grown exposed to the sun or a strong light.

Varieties.—Among the most widely grown varieties are Early Ohio, Early Rose, Beauty of Hebron, Triumph, Medium and Red Burbank, Rural New Yorker, No. 2 Empire State, Mammoth Pearl, White Star, and Dakota Red. In

America and England the white mealy varieties are most popular. On the continent of Europe the "Yellow Holland" is a favorite. The Early Ohio variety seems the most general favorite in Nebraska. The yellow potato generally has a richer flavor than the white and is most popular for use in salads, ragouts, hash, and for the fried potato, known as "pommes de terre soufflee," which is like a Saratoga chip except it puffs up like a little sack filled with air.

Statistics.—Since Sir Walter Raleigh's discovery of the potato over three hundred years ago, its production has increased until the world now produces annually nearly four and one-half billion bushels of potatoes. The potato was the fourth crop in value in the United States for the year 1905. The total world crop of potatoes for 1904 was 4,297,000,000 bushels; of this the United States produced 330,000,000 bushels. The average yield per acre in the United States in 1905 was 87 bushels. The average farm price in the United States December 1, 1905, was \$.617. The value of the annual potato crop in the United States is nearly 100 million dollars. The average yield per acre in Nebraska, 1905, was 93 bushels. The highest average price in any state December 1, 1905, was \$1.20 per bushel, in Georgia. The lowest average price in any state at this time was \$.37, in Nebraska. Can you give a reason for this low price in Nebraska where potatoes of such excellent quality are raised?

In 1905 Nebraska exported four times as many potatoes as in 1901. In 1904 we had a surplus of 721,756 bushels of potatoes. The total number of acres planted to Irish potatoes in Nebraska in 1905 was 89,271. Of this Sheridan county had 5,518 acres and Box Butte 5,252 acres. The total yield, 1905, was 9,819,810 bushels.

A Paying Industry.—Potato growing is a profitable industry in many parts of Nebraska. Potatoes have yielded as high as six hundred bushels per acre in this state. The average yield for the United States, 1905, was 87 bushels per acre. The following quotation is from an article on "Growing and Marketing Potatoes" by Mr. T. G. Ferguson:

"It is a fact that an acre planted to potatoes will yield on an average fifteen times as much food material as will one acre upon which wheat, rye, or corn is grown. To show that this rule holds substantially true in this country, we might refer to numerous comparisons, one of which is as follows: A 160-acre farm, all of it of equal fertility, was planted half to potatoes and half to wheat and oats. The 80 acres planted to potatoes produced 27,500 bushels and sold for \$17,500. Of the other 80 acres, 65 were put to wheat and 15 to oats. There were produced 4,170 bushels of wheat and 1,532 bushels of oats, both worth \$2,960. All received equal care and culture, yet the 80 acres planted to potatoes yielded five times the number of bushels and sold for six times the amount in cash that the 80 acres planted to grain did."

The seed potatoes furnished our contestants this year are of the Early Ohio variety, grown in Minnesota in the Red River Valley. The potatoes were secured and furnished to contestants by Mr. T. G. Ferguson of Beaver Crossing, Nebraska.

THE POTATO EXHIBIT

Class A. Each contestant will exhibit ten potatoes raised from the seed potatoes furnished by the manager last spring. The contestant should carefully select the ten potatoes which will score highest according to the following score card. A written report similar to that for the corn exhibit should be sent with the exhibit.

Class B.—The best ten potatoes raised by any boy or girl regardless of the source of securing seed, the only condition being that the potatoes were raised by the contestant. A written report should accompany the exhibit.

Select your best ten potatoes, observing directions given on the score card. Wash them, wrap each potato separately in a piece of paper and pack so that they will not rub in transit to the contest.

SCORE CARD FOR POTATOES

Variety name.....

	VALUE	SCORE
Uniformity of potatoes.—The potatoes should be similar in size, shape, and color.....	25	
Surface.—The surface of the potatoe should have, (1) a corky appearance and touch, (2) network of lenticels, and (3) eyes that are not too deep and numerous.	25	
Size.—The potatoes should not be too small. Not less than three and one-half inches long and weighing at least twelve ounces.....	25	
Shape.—The potatoes should have an oval, flat-round and elongated-oval shape.....	25	
	100	

Student's name.....

FREE BULLETINS

Write to Department of Agriculture, Washington, D. C., for Bulletin No. 35, "Potato Culture."

THE SUGAR BEET

History.—In the year 1905 the United States produced more than 625,000 tons of beet and cane sugar. Of this nearly one-half was made from sugar beets. Colorado is the leading state in the sugar beet production. Our leading counties in the production of beets last year were Lancaster, Dawson, Hitchcock, Hall, Scotts Bluff, Keith, and Dodge; 15,548 acres were planted to sugar beets in fifty-one counties.

Until about 1850 nearly all sugar used in this country was produced in other countries. We are indebted to France and Germany for the development of the sugar beet industry. Margraf, a chemist of Berlin, first discovered in 1747 that beets contained crystallizable sugar similar to that of sugar cane. The first sugar beet manufactory was erected in 1891. At first only two or three per cent of sugar could be extracted from beets. By improvement in the culture of sugar beets, and by application of improved scientific methods in extracting sugar, the sugar beet of good quality now yields fifteen per cent of sugar, with some sugar beets ranking much higher.

Production.—In addition to their sugar-producing value sugar beets make an excellent addition to food for cattle, sheep, and pigs. The varieties of beets that have been most widely tested and have given most satisfactory results in the United States are the "Kleinwanzlebener" and the "White Improved Vil-morin." The estimated production of sugar in the United States for 1906 is 1,803,000,000 pounds, of which cane sugar contributed 766,000,000 pounds, and beet-sugar contributed 1,037,000,000 pounds. The estimated consumption of sugar west of the Mississippi river in 1900 was 1,434,000,000 pounds. It will thus be seen that we are providing by home production more than enough sugar for our people who live west of the Mississippi river.

The total acreage of sugar beets in Nebraska last year was 15,548. Lincoln county is the leading county with 3,864 acres. Dawson county is second with 2,688; Hitchcock county is third with 1,763 acres; Hall county fourth with 1,020 acres; Scotts Bluff had 961 acres; Red Willow, 864 acres; Keith county 644 acres; Dodge, 522 acres; Buffalo, 389 acres.

BEET SUGAR FACTORY AT LEAVITT

Beet-Sugar Factories.—Nebraska was the second state to produce sugar from beets. The first factory was established at Grand Island, in 1890, with a capacity of 350 tons daily; a second factory was established at Norfolk in 1891, with a capacity of 350 tons. In 1899 a third factory was established at Leavitt, with a daily capacity of 500 tons. The factory at Norfolk was recently removed to Lamar, Colorado, on account of the possession by the owners of a tract of land along the Arkansas river which they wished to develop by a series of factories in Colorado. Several other places in Nebraska are being considered as locations for sugar beet factories. Plans are under way for the establishment of a plant this year at or near North Platte. McCook and Culbertson are favorably mentioned as desirable points of location.

Cultivation.—A soil which is quite level, well drained and which will produce a good crop of corn, wheat, or potatoes will generally, under ordinary conditions and proper cultivation, produce a good crop of sugar beets. For sugar beets the soil should be especially well prepared and cultivated in order that the plants may receive proper nourishment and development. For a complete discussion on sugar-beet culture, send to Department of Agriculture, Washington, D. C., for (free) "Report No. 82, Progress of the Beet-Sugar Industry in the United States."

SUGAR BEET EXHIBIT

Class A.—This class includes all contestants who received sugar beet seed last spring from the state or county managers. The contestants will exhibit the **best three sugar beets** with a written report of his or her work.

Class B.—Three sugar beets raised by any Nebraska boy or girl without regard as to the source of securing seed. A written report should accompany the exhibit.

DIRECTIONS TO CONTESTANTS

The written report should contain the same general principles as given in the outline report on corn raising. The beets selected for exhibit should be carefully cleaned and cared for and properly packed to avoid bruising when sent or brot to the State Contest.

FREE BULLETINS

Write to the Department of Agriculture, Washington, D. C., for Report No. 82, "Progress of the Beet-Sugar Industry in the United States," and for bulletins as follows: No. 52, "The Sugar-beet"; and to the Agricultural Experiment Station, Lincoln, Nebraska, for bulletins Nos. 27, 36, 44, 60, 73, and 81, which treat of the Sugar-beet.

A GROUP OF DOMESTIC SCIENCE CLUB GIRLS

Who entertained the state president at Bradshaw. Their "raffia" hats were all hand-made by the owners

DOMESTIC SCIENCE

The purpose of the organization of the Nebraska Girls Domestic Science Association is to help the individual to become healthier, happier, and to do her part toward contributing to the making of a happy home; to help every girl to become a greater power for good in the intellectual and moral life of the community in which she lives.

House keeping is one of the essentials of home making. To be a good home maker should be the ambition of every girl.

Nor need we power or splendour,
Wide hall or lordly dome;
The good, the true, the tender,
These form the wealth of home.—Hale.

The girl who learns the value of wholesome food, and how to prepare it; who appreciates the results of the application of the skilled hand in the making and care of wearing apparel; whose taste has been cultivated to the love of beauty in home adornment; whose heart has been touched and whose mind has been broadened by observation of the laws of nature in the culture of flowers and other plant life; whose mind has been cultivated, whose tastes and talents have been developed; she who has had this training, is prepared to undertake the responsibilities of home making.

Our aim is toward individual development: Each girl is to become her own teacher in acquiring the skill and in appropriating the genuine enjoyment of successful effort. While we offer a few suggestions, we urge our members to original thought and action in experiment in cooking, needle-work, and the various branches of domestic science and art.

To those who have almost reached womanhood's sphere and find themselves unskilled in domestic art and science, yet who appreciate the value of this attainment, also what it means to continue thru life thus unskilled and unfamiliar with the many little duties that contribute toward making the home of happiness and contentment, we quote Shakespeare:

"An unlesioned girl
Unskilled, unpractised,
Happy in this, she is not yet so old
But she may learn."

And as a kindly warning to those who are deceiving themselves with the supposition that personal beauty or ethical culture alone will always satisfy, we repeat the words of Cobbett:

"Women, so amiable in themselves, are never so amiable as when they are useful; and as for beauty, though men may fall in love with girls at play, there is nothing to make them stand to their love like seeing them work."

Many a girl who has been educated thru the high school, thru the college, and the university, returns to her home, welcome, it is true, and appreciated for her accomplishments, yet, because she must fail, from lack of earlier training, to contribute her share in some of the simplest duties of the home, she is nevertheless a disappointment to the loved ones there. Not always,—but seldom,—is this disappointment expressed, or even its source fully realized, yet it is there. Certain it is that the possession of the skilled hand in domestic science and art, in addition to scholastic training, is a very much desired and much appreciated talent.

Our state president giving an illustrated lesson in mowing weeds and grass to a School Improvement Club member at Bradshaw

WHEN THE DAUGHTER GETS HOME FROM SCHOOL

"Soon as she turned in and got
 Supper fer us—smokin' hot—
 And the 'dishes' all wuz through.
Sich a supper! W'y, I set
 There and et, and et, and et!
 Jes et on, *tél* Jonas he
 Pushed his chair back, laughed, and says,
 'I could walk *his* log!' and we
 All laughed then, *tel* 'Viry she
 Lit the lamp—and I give in!
 Riz and kissed her: 'Heaven bless
 You!' says I—'you're home ag'in—
 Same old dimple in your chin,
 Same white apern,' I—says-ee,
 'Same sweet girl, and good to see
 As your *mother* ust to be,—
 And I got you home ag'in—
 Home ag'in with me!'"

—James Whitcomb Riley, in "Home Folks."

THE STATE CONTEST

The object of our state contest is to stimulate girls to *try*. Our schools of Domestic Science have demonstrated the fallacy of the expression "cooks are born not made." Almost without exception girls in domestic science classes in our schools and girls at home, if they follow carefully and explicitly the directions given, are successful in their work. Many times the fault is in the

recipe. Recipes are too often written for practiced cooks who know how to "fill in" the omission of detail. When in doubt as to procedure ask some one who knows, or carefully decide on what seems a reasonable method of procedure, then experiment until you know.

The recipes given herein have been thoroly tested. You may have better or may secure better recipes. After trying these recipes as given you may alter them and get results that may please you.

Do not let failures discourage you. Note carefully what you do, the results,—and then try again. A few disappointments, burns, and failures test your true metal and develop a degree of patience, perseverance, and control of self necessary to character building. You cannot fail if you proceed intelligently,—and persevere. Success is worth more than it costs.

A SECTION OF THE CORN COOKING EXHIBIT AT THE 1905 CONTEST

READ "GENERAL DIRECTIONS TO CONTESTANTS" COOKING EXHIBIT

- Class A. Corn Bread.
- Class B. Corn Products.
- Class C. Wheat Bread (one loaf).
- Class D. Brown Bread (one loaf).
- Class E. Cake (fruit, chocolate, coconut, and sponge cakes).

- Class F. Ginger Cookies, $\frac{1}{2}$ dozen.

- Class G. Sugar Cookies, $\frac{1}{2}$ dozen.

- Class H. Doughnuts, $\frac{1}{2}$ dozen.

Note: Class B includes any cooked article or dish made in whole or in part from a corn product.

CANNED FRUITS AND JELLIES

- Class J. Canned Pears.
- Class K. Canned Peaches.
- Class L. Canned Cherries.
- Class M. Canned Plums.
- Class O. Canned Strawberries.
- Class P. Canned Blackberries.

- Class R. Canned Raspberries.
- Class S. Canned Apples.
- Class T. Apple Jelly.
- Class U. Grape Jelly.
- Class V. Peach Jelly.
- Class W. Currant Jelly.

NEEDLE WORK

Class A. Hand-made Work Apron.	Class E. Dressed Doll (garments all hand-made).
Class B. Hand-made Fancy Apron.	
Class C. Hand-made Sofa Pillow Cover.	Class F. Any hand-made house ornament or article for use about the home.
Class D. Specimen of Patching or Darning.	

A York county Domestic Science Club having a good time with needle and thread.

BOYS' COOKING EXHIBIT

Last year after opening the cooking contest to girls, we received numerous requests from boys asking that they might likewise enter. We have a boys' cooking department in our exhibit this year. Any Nebraska boy of school age may enter. The classes of exhibits will be the same as for girls, but in the arrangement of the prize list, boys will compete only with each other. We are pleased to encourage the boys to become useful about the home. Cooking is a science and an art which requires careful thought and application. The art of cookery is useful to whomsoever masters it. Boys who are interested may be pleased to quote the words of Burton:

"Cookery is become an art,
A noble science;
Cooks are gentlemen."

Our boys may demonstrate, also, that gentlemen can be cooks.

MANUAL TRAINING EXHIBIT

Class A. Any article for use about the home.
Class B. Any article for ornament about the home.
Class C. Any hand-made models of machinery of any kind, buildings, bridges, boats, etc., may be entered in this class.

CHARLES METZGER, PAWNEE COUNTY

Winner of the first prize in the 1905 boys' corn cooking contest

COLLECTIVE EXHIBITS

Class X. Individual.

Div. 1. Collective Corn Products, Made or Grown by Contestants.—The exhibitor may enter in this division any number of different corn products whether they be cooked corn products, articles made by hand from corn products or different varieties of corn grown by the exhibitor.

Div. 2. General Collection of Varieties of Corn.—In this division any boy or girl may exhibit as many varieties of corn as they can secure, without regard as to by whom the corn was grown. The prizes in this division are offered for **collecting**, not for growing corn. For this exhibit the contestant should secure the best six ears he can of each of as many varieties of corn as possible. This may include all the kinds and varieties of corn grown in the state.

Div. 3. General Agricultural Collective Exhibit.—This class includes any and all agricultural products grown in the county. The contestant may enter any agricultural product without regard as to by whom it was grown except that it be grown in the county represented. The prizes offered are **not for the growing** of these products but **for collecting** them. Contestants should enter only one specimen of large vegetables, not to exceed three of the ordinary vegetables, six ears of corn of each variety, and the bundles and sheaves of grain or grass should not exceed four inches in diameter at the band and should be neatly trimmed.

Div. 4. Hand Made Articles.—In this division any boy or girl may exhibit hand made articles of any kind, the only restriction being that the articles all be made by the contestant.

Class Y. School Collective Exhibits.—All articles entered in all other classes by all contestants from the school entering this collective class will constitute the school collective exhibit. This class will have three divisions.

PRIZE WINNERS IN THE 1905 CONTEST FROM DISTRICT 20, THE LOWER WEST BRANCH SCHOOL, PAWNEE CO.

This school is located 8 miles southwest of Pawnee City. The school won the first prize offered for collective exhibits by rural schools

Div. 1. Rural Schools.

Div. 2. Village or Town Schools.

Div. 3. City Schools.

Class Z. General County Collective Exhibit. This class includes all articles entered in all classes by all contestants from the county.

Discretionary Class. In this class any contestant may enter any exhibit of special merit which cannot be entered in other classes. This may include any especially fine specimens of vegetable or plant grown by the contestant or any article prepared by the contestant.

RECIPES

Use level measurements in all recipes here given.

BAKED CORN BREAD OR GOLDEN CORN CAKE

R. B.

$\frac{3}{4}$ cup corn meal	$\frac{1}{2}$ teaspoon salt
$1\frac{1}{4}$ cups flour	1 cup milk
$\frac{1}{4}$ cup sugar	1 egg
4 teaspoons baking powder	1 tablespoon melted butter

Mix and sift dry ingredients; add milk, egg well beaten and butter; bake in shallow buttered pan in hot oven twenty minutes.

The above amount will make a cake about 2 inches thick, if baked in pan 6 x 8 inches. Level measurements should be used.

STEAMED CORN BREAD

R. B.

4 cups of sour milk	$\frac{1}{2}$ cup raisins seeded
2 cups molasses	3 teaspoonsful salt
$2\frac{1}{2}$ cups corn meal	5 teaspoonsful soda
2 cups Graham flour	

Steam four hours. The level measurement should be used. The soda should be thoroly dissolved.

One-half of this recipe may be used to advantage.

CORN BREAD, LIKE MOTHER USED TO MAKE

2 cups corn meal	$\frac{1}{4}$ cup (creamed or melted) butter or fresh lard
1 cup flour	1 cup milk
$\frac{1}{2}$ cup sugar	1 teaspoon salt
6 teaspoons baking powder	2 eggs well beaten

Mix dry ingredients thoroly, stir in butter, eggs and liquids; put in a well buttered pie tin or shallow pan, and bake 23 minutes in a hot oven. Use level measurements.

GRAHAM-CORN BREAD

L. M. B.

1 egg. $\frac{1}{2}$ cup sugar.

1 teaspoonful soda (2 if milk is quite sour).

1 pint sour milk and cream (about $\frac{1}{3}$ cream). 1 cup graham flour.

Enough corn meal to make a batter. 1 teaspoonful salt.

Beat egg well in mixing dish.

Add salt. If put in with egg, it makes egg lighter.

Add sugar.

Dissolve the soda thoroly in the sour milk, then pour into mixing dish.

Stir in graham flour, then add corn meal gradually.

Bake in two pie tins in a rather quick oven twenty minutes.

JUST CORN BREAD

L. M. B.

1 egg.	$\frac{1}{2}$ cup sugar	2 cups flour
$1\frac{1}{2}$ cups	sweet milk	5 teaspoons baking powder
1 cup	corn meal	2 tablespoons melted butter

Use level measurements.

Break egg into mixing dish and beat well, then add sugar and milk.

Sift together baking powder, flour, and meal.

Melt butter and stir in last.

Bake twenty minutes in a rather quick oven in two shallow pie tins.

KENTUCKY SOFT CORN BREAD

Miss Atholene Peyton, Louisville, Ky.

1 cup scalded corn meal.

$\frac{1}{2}$ teaspoon salt

1 tablespoon lard and butter mixed; $\frac{1}{2}$ cup of flour.

Yolks of three eggs and enough milk to make a batter like griddle cakes.

Beat the whites of eggs; add 2 teaspoons of baking powder to some dry meal, and put in last. Sugar may be added if desired.

Butter a deep pan or dish; bake a golden brown in a moderate oven. This is delicious and liked by those who like a soft bread.

KENTUCKY ALL-CORN BREAD

Atholene Peyton

2 cups	of corn meal	2 eggs
1 tablespoon	of sugar	2 full tablespoons of butter (melted)
2 teaspoons	of baking powder	1 cup milk
$\frac{1}{2}$ tablespoon	of salt	Bake in a narrow pan 20 minutes

CORN MEAL MUFFINS

Atholene Peyton

2 cups	of corn meal	1 teaspoon of baking powder
1 pint	milk	1 full tablespoon of lard
1 egg;	$\frac{1}{2}$ cup of flour	1 teaspoon of sugar

Grease muffin rings with lard and fill $\frac{3}{4}$ full. Bake in a moderate oven.

CORN PONE

L. M. B.

1 cup corn meal.

$\frac{1}{2}$ teaspoon salt.

1 scant cup water.

$\frac{1}{2}$ tablespoon melted butter.

Mix thoroly; spread thin in well buttered pie tins. Put in hot oven and bake until crisp (about thirty minutes). The oven should be allowed to gradually cool to medium heat.

Serve hot.

DOMESTIC SCIENCE LABORATORY, UNIVERSITY OF NEBRASKA

SPONGE CAKE

Note: All cake recipes are taken from "Peytonia Cook Book" by Miss Atholene Peyton.

Sponge cakes, or butterless cakes, depend on the well-beaten whites of eggs for lightness. You must get enough air in the dough to make it light, and bake slowly but thoroly. The shape, too, decides in the quality of the cake. Layer cakes or small cakes require less flour than a loaf. When the whites are put into the mixture they must be folded in and not stirred, or the cake will be tough.

YELLOW SPONGE CAKE

Yolks of five eggs	Grated rind of half lemon and juice
1 cup of sugar	Whites of five eggs
1 tablespoon of lemon juice	1 cup of flour
$\frac{1}{4}$ teaspoon of salt	

Beat yolks until thick and lemon colored; add sugar gradually and continue beating, using Dover egg beater. Add lemon juice, rind, whites of eggs beaten stiff, and bake an hour.

WHITE CAKE

A. P.

Whites of 12 eggs	$3\frac{1}{2}$ cups flour sifted three times
1 full teacup butter	$2\frac{1}{2}$ teaspoons baking powder
$\frac{1}{2}$ cup cream	Speck of salt
$2\frac{1}{2}$ teacups sugar	

Cream, butter and sugar until light. Add the beaten stiff whites of eggs, then the flour, flavoring, cream and baking powder. Bake in a solid loaf for an hour. When cold, ice with lemon frosting or chocolate.

SPONGE CAKE

A. P.

5 eggs	$1\frac{1}{2}$ cups flour
$1\frac{1}{2}$ cups granulated sugar	$\frac{1}{2}$ teaspoon cream of tartar

Cream eggs and sugar, add flour, cream of tartar and flavoring. Bake in a moderate oven.

GINGER COOKIES

R. B.

1 cup molasses	$\frac{1}{2}$ teaspoon soda
$\frac{1}{2}$ cup shortening	1 tablespoon ginger
$3\frac{1}{4}$ cups flour	$1\frac{1}{2}$ teaspoons salt

Heat molasses to boiling point and pour over shortening. Add dry ingredients mixed and sifted. Chill thoroly. Toss one-fourth of mixture on floured board and roll as thinly as possible; shape with a small, round cutter, first dipped in flour. Place near together on a buttered sheet and bake in a moderate oven. Gather up the trimmings and roll with another portion of dough. During rolling, the bowl containing mixture should be kept in a cool place or it will be necessary to add more flour to dough which makes cookies hard rather than crisp and short.

KITCHEN IN THE MCKINLEY BUILDING, LINCOLN PUBLIC SCHOOLS, WHERE EIGHTH GRADE GIRLS LEARN TO COOK

SUGAR COOKIES WITH EGGS

R. B.

$\frac{1}{2}$ cup butter	$2\frac{1}{2}$ cups flour
1 cup sugar	2 teaspoons baking powder
2 eggs	$\frac{1}{2}$ teaspoon lemon extract
1 tablespoon milk	$\frac{1}{2}$ teaspoon grated nutmeg

Cream the butter, add sugar, eggs well beaten, milk and lemon extract. Mix and sift dry ingredients and add to the first mixture. Proceed as with ginger snaps.

SUGAR COOKIES, WITHOUT EGGS

R. B.

$\frac{1}{2}$ cup butter	$2\frac{1}{2}$ cups flour
1 cup sugar	$2\frac{1}{2}$ teaspoons baking powder
$\frac{1}{2}$ cup milk	flavor to taste

Mix and bake as cookies with eggs, except that more flour may be needed to make dough stiff enough to roll.

Many varieties may be made by using the above recipes as a basis and adding one or more of the following ingredients: Chopped raisins, nuts, spices, cocoanut or chocolate. Sprinkle sugar over top of cookies.

DOUGHNUTS

R. B.

1 cup sugar	$\frac{1}{4}$ teaspoon cinnamon
$2\frac{1}{2}$ tablespoons butter	$\frac{1}{4}$ teaspoon grated nutmeg
3 eggs	$1\frac{1}{2}$ teaspoons salt
1 cup milk	$3\frac{1}{2}$ cups flour
4 teaspoons baking powder	

Cream the butter and add one-half sugar. Beat eggs until light, add remaining sugar and combine mixtures. Add flour, mixed and sifted with baking powder, salt and spices; then enough more flour to make dough stiff enough to roll. Toss one-third of mixture on floured board, knead, slightly pat and roll out to one-fourth thickness. Shape with a doughnut cutter, fry in deep fat, take up on a skewer and drain on brown paper. Add trimmings to one-half remaining mixture, roll, shape and fry as before. Repeat. Doughnuts should come quickly to top of fat, brown on one side, then be turned to brown on the other; avoid turning more than once. The fat must be kept at a uniform temperature. If too cold, doughnuts will absorb fat; if too hot will brown before sufficiently risen.

Fat should be of such a temperature that it will change a cube of soft bread to a golden brown color in 40 seconds.

Recipes for Ginger cookies, cookies with eggs, and doughnuts are adapted from the Boston Cooking School Cook Book by Miss Fannie M. Farmer.

RECIPES FROM SUCCESSFUL CONTESTANTS, 1905

Corn-cob Sirup

One-half dozen red corn-cobs; add two quarts of hot water and boil three hours. Strain thru cloth; add two cups of sugar and boil until it becomes a thick sirup.

Annabelle Turnbull. Pawnee County.

Corn Starch Pudding

One quart sweet milk; sweeten to taste. Put on stove and allow to come to a boil, then stir in one-half cup corn starch, one teaspoon vanilla and a few drops of fruit coloring; top off with whipped cream. Allow to cool thoroly before putting on cream.

Lizzie Burnham.

Lancaster County.

Corn Salad

I took twelve ears of sweet corn, not too hard, cut it from the cob and run it thru a food grinder. I then took a small head of cabbage, run it thru the food grinder and mixed the corn and cabbage together. I then added two quarts of vinegar, one-fourth pound of mustard, one teaspoonful of salt, two tablespoonsful of sugar with the above mixture, and cooked twenty minutes.

Grace Heiderstadt,

Fillmore County.

The Eighth Grade at the Bancroft school, Lincoln, served a dinner "all cooked by ourselves"

CANNING OF FRUIT

Rosa Bouton

Killing the Bacteria.—The decay of fruit is due to microscopic organisms called bacteria, which are always present on fresh fruit. Canned fruit will not keep unless these bacteria are killed and the admission of others prevented. This result may be secured by two processes.

Method I. The fruit is cooked before putting it into the cans, thereby killing the tiny organisms present, and then closing the cans air tight so that no more may enter.

Method II. This differs from the first in that the fruit is cooked after it is put in the cans before they are tightly closed.

Methods Compared.—So far as the preservation of the fruit is concerned the methods are equally good, provided the same amount of care is used in each. The first method is quicker if small amounts of fruit are to be put up. The second method breaks the fruit less.

In cooking the fruit by the second method the glass cans must not be placed on the bottom of the kettle or boiler in which they are to be cooked as such treatment is likely to result in cracked cans. Some material which will allow the water to pass freely under the cans must be placed on the bottom of the boiler. Sometimes cloth is used for this purpose. If much canning is to be done by the second method it is better to have made a perforated support of metal or wood, which will fit in the bottom of the vessel, be it boiler or kettle, in which the boiling is to be done. On this support the cans may be placed, care being taken that they do not touch each other.

Partitions an inch high may be made on the upper surface of the support in which the cans may be placed. If it is not convenient to make these partitions the cans may be kept from touching each other by means of cloth or thin pieces of wood. The cans filled with fruit and loosely covered are placed on the support and surrounded with water two-thirds of the way to the top of the can. The vessel is then covered and the water brought to the boiling point and boiled for an hour or more according to the nature of the fruit.

Preparation of Cans.—Care should be taken to use covers which fit the cans tightly. Always use new rubbers as rubber becomes porous when kept a long time. Wash thoroly the cans and covers. Sterilize them, that is, kill all the bacteria on them by placing them in a pan of cold or warm—not hot—water, and gradually bringing the water to the boiling point. In this water allow them to remain until ready to fill with fruit.

Preparation of Fruit.—Berries should be carefully looked over and washed. The washing may be easily done by placing them in a colander in a pan of water or by putting the colander containing them under running water. Cherries may be canned with or without the pits. Plums are canned with or without the skins. Apples, pears and peaches are pared for canning. Tho these fruits are sometimes pickled without paring and put up in cans.

Sugar Used in Canning.—The amount of sugar to be used in canning fruit varies according to the kind of fruit and the result desired. Some people can fruit without using sugar—adding it whenever the fruit is served. The flavor is, however, much better if the sugar be cooked with the fruit when it is canned. Sour fruit, like gooseberries, require a larger amount of sugar than peaches. The difference between preserves and ordinary canned fruit is that the former contains much more sugar than the latter. Large amounts of sugar hinder the growth of bacteria, hence, preserves are not always canned.

Perhaps the best general rule as to the amount of sugar to be used is one cup of sugar to one quart of uncooked fruit. This amount should be increased or decreased according to the nature of the fruit and the taste of the individual.

Cooking the Fruit.—If method I be used, the fruit should be measured and put into a porcelain or granite iron kettle, the proportionate amount of sugar added, and enough water put in to just cover the fruit. The whole should then be brought to the boiling point and gently cooked until the fruit is tender. Care should be taken to stir no more than is necessary to keep the fruit from burning on the bottom of the kettle, as stirring breaks the fruit. When the cooking is complete place a warm sterilized can, on which the rubber has been placed, on a damp cloth and fill with hot fruit to the brim. Screw on cover.

If method II be used, fill sterilized cans with uncooked fruit. Place on support in boiler of warm water. Pour over the fruit in these cans a hot syrup, the sweetness of which varies according to suggestions made above. Fill the cans nearly full, leaving a little space for the expansion of the fruit as it be-

comes hot. Put the covers of the cans on loosely, as there is danger of the cans breaking if the covers be screwed on tightly, because of lack of room for expansion due to the heating of the fruit. All fruit should be heated until it is thoroughly cooked or until tender. The more difficult the fruit is to keep the longer it should be cooked. When the cooking is finished and the water no longer boils the covers may be screwed down tightly.

After the Fruit is Canned.—Take care not to set the hot can of fruit on a cold surface, as there is danger of breaking the can. Turn the cans upside down and leave in that position over night. If no juice comes out they are air tight. Tighten the covers, label, and put in a cool place.

Write to Department of Agriculture, Washington, D. C., for free bulletin No. 203, "Canned Fruits, Preserves, and Jellies"; No. 94, "The Vegetable Garden"; No. 154, "The Home Fruit Garden"; No. 256, "Preparation of Vegetables for the Table"; No. 255, "The Home Vegetable Garden"; and to the Agricultural Experiment Station, Lincoln, Nebraska, for free bulletin No. 80, "Garden Vegetables."

WORK APRON OR SEWING APRON

Nellie Lynch, Columbus, Nebr.

Take three-fourths yards of gingham 27 inches wide and turn it up at the bottom 6 inches. This makes a large pocket at bottom of apron, which we divide into four parts which makes four pockets at bottom of apron. Use check gingham and sew with the plain cross stitch, filling each check.

FANCY APRON

Nellie Lynch

Fancy or white aprons are made by using three-fourths yards of India muslin. Cut out a round apron 15 inches long. Around the edge sew a ruffle made from four widths of the muslin hemmed by hand stitching. Finish where ruffle sews to apron with a felled seam or overseam. Edge ruffle with lace and put on belt, using button hole and button for fastening, in order to show hand work better; make fancy pocket for apron.

FANCY WORK APRON

Lily A. Wilkinson, Kimball

Note: This apron is very attractive in appearance. The author of these directions, Miss Lily Wilkinson, when first seen by the manager, at her home, was wearing one of these aprons made by herself. He asked her to write out directions for making the apron, that thru the "Corn Book" other girls might learn to make the same kind of an apron. A distinctive feature of this apron is the side extension of the pocket. The inner side of the top piece of the pocket is extended to the waistband. The outer side of the top of the pocket, extending about half way across the top of the pocket, is the same depth as the ordinary pocket. The long inner side of the pocket reaches to the waistband. It gives the top piece of the pocket somewhat the appearance of a long pipe.

Directions

Three widths, any desired length, are used in the skirt of this apron. Front width is gored slightly on both sides, side widths on one side. After hemming gored sides of side widths sew selvedge to front width.

After facing outside edge of pocket with bias strip, or hemming, turn under about a quarter of an inch of remaining edge (except end of long strip which is to be fastened into the waist band). Place long inside edge of pocket over right seam of skirt, then baste and sew edge in place. A pocket may be placed on left side if desired.

Make flounce of five straight widths seven inches wide. Make a 1½-inch hem on bottom and gather at top. Sew gathered edge to bottom of skirt and face under with strips of goods two inches wide, cut same way in goods as flounce.

Gather top of skirt ready to put in band. For band cut two strips, waist measure, about two inches wide—same way in goods as flounce. Turn under about ¼-inch on edges of each strip. Place edge of one strip over gathered top of skirt on right side and one on the wrong side. Baste and sew in place. Leave top edges open until bib is inserted.

Hem bib on both sides; gather top and bottom.

Yoke of bib and straps are made in one. The facing is cut the same as the outside. Turn under about ¼-inch on edges of yoke and straps; lay the two—the outside side and facing—together (“wrong side to”) and baste and sew, first placing the lower edge of the yoke over the upper gathered edge of the bib. After the yoke and straps are securely stitched around, insert lower gathered edge of the bib into open waistband, being careful to place the center of the bib on the center of the band. Baste the band and facing together and sew.

Work button holes in ends of straps and one side of waistband. Sew on buttons.

In cutting out the apron always place center of the front width of skirt, the center of bib, and center of the yoke on the lengthwise fold. Straps should cross in back.

THE 1906 CORN CONTEST AND CONVENTION

The Second Annual Nebraska Corn Contest and Convention of the Nebraska Boys' Agricultural Association and the Nebraska Girls' Domestic Science Association will be held at Lincoln, December 11, 12, 13, 14, and 15, 1906.

WHO MAY ENTER

Any Nebraska boy or girl under 21 years of age may enter the contests as herein specified. Members who have become 21 years of age since joining one of the associations are retained as members, but they may not compete in the contests. No entrance fee will be charged for exhibits.

OFFICIAL BADGE

The official badge is an enameled ear of corn in colors on a badge pin. The official badge is presented to each contestant who is present at the state meeting and to other members (not contestants) who attend the state meeting. The wearer of the official badge is admitted free to all meetings of the convention and privileged to view the contest exhibition. The official badge will be issued to members on registration at headquarters.

HEADQUARTERS

Headquarters this year will be at the Lindell hotel, 13th and M Sts. On arrival in the city each contestant or member should come directly to headquarters, register, receive the official badge, and see that his exhibit is properly placed at once.

One of the three sections of the "Corn Banquet" where 700 Nebraska boys and girls and a few of their friends were served, Dec. 15, 1905

EXHIBIT BUILDING

The city of Lincoln has generously provided for our use during the entire week, the city auditorium. This building provides sufficient space for exhibit purposes with a large seating capacity in the galleries. The building is directly across the street from the Lindell hotel, our headquarters. All members will be given free admittance to the exhibit.

NOTICE TO EXHIBITORS

Read all directions to contestants. See that your exhibit is in proper shape; that it reaches the exhibit building at the proper time; and that the proper entry is made. Special directions to contestants are given under each department. Read carefully "Directions to Contestants."

STATE OFFICERS

State Manager, E. C. Bishop, Lincoln

Nebraska Boys'

Nebraska Girls'

Agricultural Association.

Domestic Science Association.

Pres., Jas. Loomis, Ord.

Pres., Margaret Whitley, Normal.

V. Pres., Lester Moore, Seward.

V. Pres., Grace Aldrich, Ord.

Sec., Hugh Garrett, Geneva.

Sec., Eva Bolton, Geneva.

Treas., Patrick Hickey, West Point.

Treas., Hattie Thompson, Clay Center.

Executive Committees: The officers of the two associations comprise the respective executive committees.

Advisory Council. The advisory council is composed of the officers of the various county organizations.

MEMBERSHIP

Active. Any Nebraska boy or girl of school age may become a member.

Honorary Member. Any teacher or other person whose interest and activity makes his services valuable to the organizations may become an honorary member.

Club Membership. Any county or school boys' or girls' club may become an active club member by complying with the regulations of the state associations.

County Manager. The county superintendent, or a person appointed by him, is ex-officio manager of the county club.

School Improvement Clubs. The teacher or some person appointed by him is ex-officio manager of the School Improvement Club.

Membership Dues. The annual membership fee is 10c for regular members. The payment of this membership fee entitles the member to a copy of the "Corn Book," prize list, program and other printed announcements; and on registration at the state meeting an official badge which admits the bearer to all regular meetings of the associations. This applies only to persons who become members before the date of the state meeting.

Local Membership Fee. Any boy or girl eligible to membership who does not become a member previous to the date of the state meeting, December 11, 1906, may share the privileges of the convention and contest program on payment of the local fee of 25 cents.

JAMES LOOMIS, PRESIDENT N. B. A. A.

LESTER MOORE, VICE-PRESIDENT N. B. A. A.

MARGARET WHITLEY, PRESIDENT N. G. D. A.

GRACE ALDRICH, VICE-PRESIDENT N. G. D. A.

HUGH GARRETT, SECRETARY N. B. A. A.

PATRICK V. HICKEY, TREASURER N. B. A. A.

EVA BOLTON, SECRETARY N. G. D. A.

HATTIE E. THOMPSON, TREASURER
N. G. D. A.

Honorary Membership Fee. Honorary members who attend the state convention and contest will be entitled to all the general privileges of the program on payment of the local honorary membership fee of 25 cents.

Contestants are Members. Each contestant who last spring entered one or more of the agricultural contests, having paid the fee of 22 cents therefor, is a paidup member of the association and will be furnished free a copy of the "Corn Book," prize list, program, and such other literature as is issued to members; and on registration at the state convention and contest will be issued an official badge.

Other Contestants. Contestants entering exhibits in either the agricultural, the domestic science, or the manual training contests become members without the payment of membership dues, and on registration at headquarters will receive the official badge.

Prize List

The prize list for the various contests will be published and sent to all registered contestants before the date of the state meeting.

Railway Rates.

We expect to secure the usual one fare round trip railway rates on all lines in Nebraska leading to Lincoln.

OUR HEADQUARTERS

The Lindell, Lincoln's leading hotel, will be **official headquarters**. It is well fitted to entertain hundreds of corn contestants and their friends. The regular rates at this hotel are from \$2.00 to \$3.50 per day. For our meeting an exceedingly low special rate has been made of \$1.50 per day. The hotel is just across the street from the City Auditorium where the exhibit and contest will be held.

LOCAL EXPENSES

Local expenses while in attendance at the contest and convention need not exceed that of the individual at home. Meals are served in the city from 15c, up and rooms may be secured from 25c, up. The very generous special rate of \$1.50 per day granted by the Lindell hotel, "Our Headquarters," is exceedingly low for the excellent service given. The principal places of holding the different sessions of the program are close to headquarters. All points of interest in and about Lincoln are reached by street car.

Delegates

Any school may be represented at the state meeting by as many delegates as desired. Each school is requested to choose and send **one authorized delegate** who will represent the district in the **business meeting** and who should be instructed to **make report** to the school on return from the state meeting.

County Delegations

The county superintendent in each county is authorized to organize the county delegation. Special cars will be provided from points where the delegations are sufficiently large.

THE UNIVERSITY OF NEBRASKA MANDOLIN AND GLEE CLUB
A part of the program at our 1906 convention

CONVENTION PROGRAM

The program this year will be a combined "School of Instruction" and entertainment course. The School of Instruction will include section meetings each day, in which instruction will be given in various lines of agriculture and domestic science by special instructors from the University of Nebraska and from abroad. The City Auditorium, Representative Hall in the Capitol Building, Memorial Hall, Agricultural Hall and other rooms at the University of Nebraska and State Farm, and St. Paul's church will be the principal places of holding meetings.

Two general sessions will be held each day. For these meetings we are now arranging for some of the best talent in the country.

The National Department of Agriculture will be represented by Mr. Dick J. Crosby of Washington, D. C., the government specialist in agricultural education, who, in addition to conducting classes in the School of Instruction during the convention, will give an illustrated lecture on agricultural education in connection with the public schools as conducted in the United States and other countries.

Mr. Alfred Montgomery of Illinois, "The Farmer Painter of the World" and Chautauqua entertainer, will be present during the entire time of the convention to instruct and entertain. Mr. Montgomery is the leader in his art. In recognition of his work and for use in a text book for the public schools of the city of Washington, D. C., Mr. Montgomery recently received \$10,000 for a single painting showing a farm scene. His "Living Corn Picture," that so deceived Congressman Dickson, was later bought by President McKinley. The original "Bunch of Corn" picture, a cut of which appeared on the menu card at the Omaha Corn Banquet, was later searched out and bought by President Roosevelt.

Mr. Montgomery will bring with him and have on exhibition in the city auditorium, where the contest exhibits will be on display, his collection of paintings valued at \$60,000. In his letter accepting the invitation to be at our convention he writes in relation to his part of the program, "When I am not talking, I shall be painting." We shall see him paint. Mr. Montgomery is recognized as the greatest "Farm Painter" of our time. He is an artist and an entertainer alone worth the entire cost of coming to Lincoln to hear and see.

Mr. C. S. Harrison, the "Plant Wizard" of Nebraska, who so delightfully entertained the girls' section last year, will be with us again this year, and will conduct classes in the School of Instruction in both boys' and girls' sections.

Negotiations are pending with other talented persons who will appear on the program. We have already engaged the services of the Peru State Normal Male Quartet, which will be with us during the entire convention, and the University of Nebraska Mandolin and Glee Club. The University Military Band, the largest and best band organization of its kind in the state, will again furnish music for our convention.

The program is designed to provide instruction in lines of agriculture and domestic science that will be of much value to every member attending, and in addition will give each member the benefit of the best entertainers that can be brought to our meeting. The program in full will be published before the date of the state meeting and will be sent to all members and others applying for the same.

UNIVERSITY OF NEBRASKA MILITARY BAND

This band will give a concert one evening

LOCAL EXCURSIONS

Trolley excursions to the many interesting points in and about Lincoln will be planned as last year. Capital Beach, Epworth Lake Park, Lincoln Park, Antelope Park, College View, Fairview, (Bryan's Home) Wyuka Cemetery, University Place, Havelock, the State Penitentiary, the Insane Asylum, Home for the Friendless, Tabitha Home, and Bethany are included in the points of interest in the suburbs of Lincoln. The Capitol Building, the State Farm, the various buildings and departments of the University of Nebraska, and Lincoln's varied and numerous other educational institutions, visits to some of the large department stores, and the fire run exhibits by the city fire department are among the attractions that will provide profitable entertainment to supplement the regular program of the convention. More real education will be crowded in one short week than the study of books alone can bring in a much longer time.

MCKINLEY CHIMES

The McKinley chime of bells will be rung each day for the entertainment of visitors.

EXCUSED ABSENCE FROM SCHOOL

It is recommended that school boards grant leave of absence to teachers who accompany their pupils to this convention and that pupils be excused from school duties during the time of attendance at the convention.

THE PERU STATE NORMAL SCHOOL QUARTET
Will sing each day during the convention

GENERAL DIRECTIONS TO CONTESTANTS AGRICULTURAL EXHIBITS

A report blank and entry card will be sent to each contestant who was furnished seed in any of the four agricultural contests. Any such contestant who fails to receive these should notify the manager. Any Nebraska boy or girl of school age who has raised, by his own effort, corn, potatoes, or sugar-beets may enter Class C, Corn Exhibit; Class B, Potato Exhibit; or Class B, Sugar-

CAMPUS VIEW UNIVERSITY OF NEBRASKA

beet Exhibit. See also "Discretionary Class." Report blank and entry card will be sent to any boy or girl desiring to enter any of these contests. In applying for entry card and report blank give name and address plainly and state which contest or contests it is desired to enter.

Photographs.—Much interest was added to our exhibit last year by the appearance of photographs. Each agricultural contestant is requested, tho not required, to send a photograph of him or herself, or a photograph relating to the exhibit. This is not necessary, but we shall be glad to have photographs, large or small, of all contestants who can conveniently furnish them.

A YOUNG SALINE COUNTY AGRICULTURIST

DOMESTIC SCIENCE EXHIBITS

Great care should be exercised in sending or bringing exhibits in cooking. Neatness and orderly arrangement has much to do with the appearance of the exhibit. The name of the contestant should be attached somewhere to the exhibit so that it will not easily be lost. Exhibits in sewing and house ornaments should be carefully packed so as to prevent bad results from wrinkling and other disorder in transit. The name of the article and address of the contestant should appear upon each article. Each exhibit of canned fruit or jelly should have the name of the exhibit and the name and address of the exhibitor securely fastened to it.

MANUAL TRAINING EXHIBITS

Exhibits in manual training should be carefully packed if sent to the exhibit. The name of the article and the name and address of the contestant should appear upon each article.

ROBERT ENGEL,
Winner of the \$100 prize in class A,
Corn Contest, 1905

GRACE ODELL,
Winner of first prize for corn bread,
1905 contest

ANNABELLE TURNBULL,
Winner of the sweepstakes prize for col-
lective exhibits, corn cooking, 1905

MILTON HARTWIG,
Our youngest prize winner in class B,
1905 Corn Contest

NOTICE TO EXHIBITORS

Some exhibits were not shown or judged last year on account of reaching the exhibit building too late. Contestants who are unable to be present at the State Contest may send their exhibits by some other person who will bring them to the exhibit building and enter them, or contestants may send exhibits by mail, prepaid express or freight, directed to the State Manager, E. C. Bishop, Lincoln, Nebraska.

All exhibits sent by mail, express or freight (with the exception of cooking exhibits which should not be prepared so long before the time of the exhibit) should be forwarded in time to reach Lincoln not later than December 8. All exhibits should be entered the first day of the exhibit, as the judging will be done the evening of the first day and in the morning of the second day.

HOW TO ENTER EXHIBITS

We desire, if possible, to have all entries recorded and entry cards made out before the date of the contest.

(1) Contestants who are not provided with entry cards should ask the teacher, county superintendent, or send to the state manager for the same.

(2) Contestants who bring their exhibits to Lincoln should come directly to "headquarters," where further directions will be given them.

(3) Contestants who are unable to bring their exhibits to the contest should secure entry cards to accompany their exhibits and follow directions as given under "Notice to Exhibitors."

CERTIFICATE AND AFFIDAVIT

In entering, each contestant will be required to certify in writing that his or her exhibit is the product of his or her own effort and that all the conditions of the contest have been met.

In order that all contestants may know that they are protected against competition with ineligible entries, before the most valuable prizes will be awarded, the winning contestants will be required to furnish affidavit from parent or guardian testifying that the exhibitor has complied with all requirements of the contest.

INDIVIDUAL AND COLLECTIVE EXHIBITS

Each individual exhibit in any one of the contests may comprise a part of the collective exhibit of the school or of the county.

CARE OF EXHIBITS

The management will exercise all possible care in receiving, placing and returning exhibits, but each exhibitor is responsible for his own exhibit. Great care should be taken in packing exhibits and in seeing that they are properly labeled so that they will reach the contest in good condition, and that proper credit will be given the exhibitor.

DISPOSAL OF EXHIBITS

All exhibits are at the disposal of the exhibitors at the close of the contest, with the exception of a few exhibits in the agricultural and cooking contests which win the most valuable prizes. These exhibits will be auctioned to the highest bidder.

Exhibitors desiring the return of their exhibits should either call in person at the close of the exhibit or delegate some person to care for their exhibits.

FREE BULLETINS

If you wish to receive regularly the free bulletins issued by the Department of Agriculture send your name and address to the Department of Agriculture, Washington, D. C., and ask that your name be placed on file to receive the monthly publication giving list of available bulletins. If you desire the bulletins from the Nebraska Experiment Station, University of Nebraska, send your address to the University of Nebraska, Lincoln, requesting that your name be listed for bulletins on such subjects as you may desire.

PRINTED MATTER

Premium lists, entry blanks, and program of the state convention and contest will be forwarded before the time of the state meeting to all contestants whose names and addresses are filed in the manager's office. Any other person desiring such supplies should send name and address to the manager.

THE LINDELL HOTEL

13th & M Sts., Lincoln

This hotel will be OFFICIAL HEADQUARTERS

The City Auditorium where the contest is held is directly across the street

E. C. Bishop, Manager.

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