KANSAS STATE AGRICULTURAL COLLEGE.

Agricultural Experiment Station.

Bulletin No. 193.

CORN.

MANHATTAN, KANSAS.
DECEMBER, 1913.

KANSAS STATE PRINTING OFFICE.
W. C. AUSTIN, State Printer.
TOPEKA. 1914.
5-1482

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Summary.

The foundation work in the improvement of any crop is the selection of the best variety under existing conditions. Variety tests with some eighty different samples of corn were started by the Kansas Experiment Station in 1903. The varieties tested included those grown locally within the state and also standard varieties secured from corn breeders and seedsmen of other states, The total number of varieties or strains tested from 1903 to 1909, inclusive, was 226.

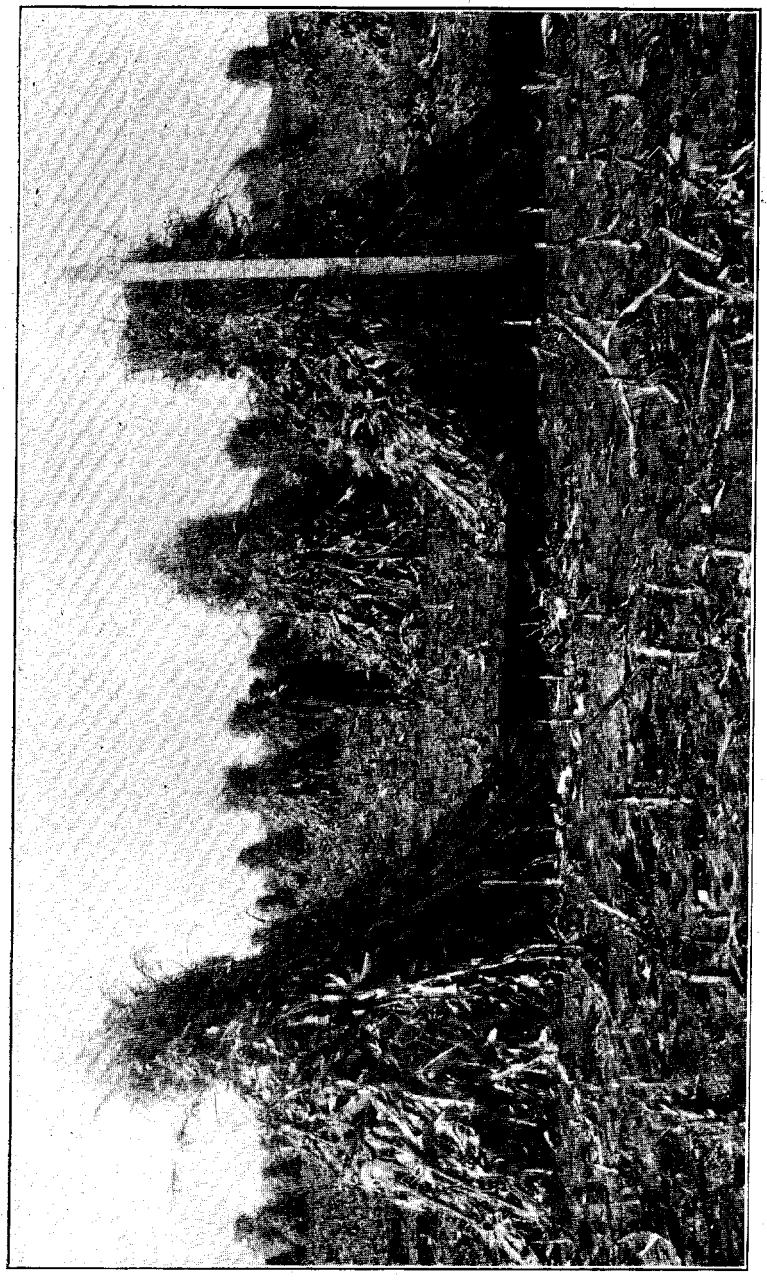
The yields of most of the principal varieties are summarized and averaged for a period of years in tables I and II. No one variety of corn is best under all conditions. The high-yielding varieties varied with the year. High yields are a matter of "breed" or variety rather than a matter of color or maturing season.

In the more favored sections of the state, on the better farming lands, the medium- or late-maturing varieties may be expected to produce the largest yields. In less favored sections of the state, or on less fertile and more poorly watered lands, the early- or medium-early-maturing varieties will make the surest corn crop.

Home-grown seed is best. The average of seven years' tests shows that Kansas-grown seed produced 6.47 more bushels per acre each year than the same varieties grown from imported seed.

Kansas-grown seed usually made a lighter yield of stover than seed from other sources.

A brief history and the principal characteristics of the leading varieties of the state are given as a matter of educational value as well as general information.



No. 1.—Field of Kansas Sunflower corn in the shock.

Variety Tests of Corn.

BY A. M. TEN EYCK,* *Agronomist.*

THE beginning or foundation work in the improvement of any crop is the selection of the best variety under existing conditions. Variety tests of corn with this object in view were started by the Kansas Experiment Station in the season of 1903, when some eighty different samples or varieties were planted in test plots. The corn tested included a number of varieties of "native" Kansas corn, secured from Kansas farmers, and many of the standard varieties grown in other states and offered for sale by corn breeders and seedsmen. This work with varieties has been continued from year to year, the least desirable varieties being dropped from the test, while new ones secured from various sources have been added. Bulletin No. 147 of the Kansas Experiment Station is a report of this work with corn during the four years 1903, 1904, 1905, and 1906. The total number of different varieties planted and tested during the interval of seven years, 1903 to 1909, inclusive, amounts to 226.

Table No. I gives the yields and other data for several of the best-producing sorts which have been tested from 1906 to 1909, inclusive, while tabIe No. II is a summary of the variety tests of corn at the Kansas Experiment Station, 1903 to 1909, inclusive. It will be observed that the number of varieties published in this table constitutes only a small part of those which have been grown during the seven years' trials. The experiments reported in this bulletin were carried on under the direction of the author while agronomist at the Kansas State Agricultural College and Experiment Station.

The nine best-producing varieties which have been tested for the full period of seven years ranked in yield in the order in which they are given, It will be noted that the Kansas Sunflower, a "native" Kansas corn, made the highest average yields; while a Nebraska variety, the Hogue's Yellow Dent, ranked second.

* This bulletin was prepared by A. M. Ten Eyck, and is based upon the results obtained in the department of agronomy of the Kansas State Experiment Station during the years he was professor of agronomy. Mr. Ten Eyck resigned in June, 1910.

TABLE I.—Results obtained in variety tests of corn; 1906 to 1909, inclusive.

Bulletin No.	Variety.	Type.	Where from.	Height of stalk (feet), 1908.	Days to maturity.		1906.		1907.		1908.		1909.		Average yield, 1906–1909.
					1905.	1908.	Yield, (bu).	Rank in yield.	Yield, (bu).	Rank in yield.	Yield, (bu).	Rank in yield.	Yield, (bu).	Rank in yield.	
98	Pride of Saline	W. D.	Hays Br. Exp. Sta., Hays, Kan.	11	.....	117	74.89	11	67.11	2	61.78	6	53.00	3	64.14
5	Kansas Sunflower	Y. D.	College farm	10.3	132	116	86.25	5	54.01	14	58.03	10	52.99	4	62.81
84	Dyche's	Y. D.	C. M. Dyche, Ogden, Kan	10.5	132	113	91.59	1	44.45	20	63.00	4	47.77	9	61.96
105	Hiawatha	Y. D.	J. T. Martin, Hanover, Kan	11.4	.....	117	90.26	2	44.42	21	65.09	2	47.18	10	61.74
25	Hogue's	Y. D.	College farm	9.8	125	106	75.81	9	46.44	18	63.03	3	58.08	1	60.84
102	Conable's	W. D.	W. J. Conable, Axtel, Kan.	9.8	.....	115	80.40	7	54.51	12	55.60	15	51.72	6	60.56
3	Leaming	Y. D.	College farm	11	123	119	87.96	4	52.74	14	52.94	18	43.30	17	59.24
108	White Wonder	W. D.	Miller Bros., Bliss, Okla.	10.8	.....	116	62.00	18	69.45	1	59.55	9	44.30	15	58.82
86	Legal Tender	Y. D.	College farm	10.1	127	110	88.91	3	56.90	9	47.05	23	34.51	20	56.85
107	Farmer's Interest	W. D.	J. D. Ziller, Hiawatha, Kan	9.2	.....	111	62.41	17	54.87	11	56.34	13	46.57	13	55.05
28	Reid's	Y. D.	College farm	11	125	114	63.83	16	56.00	10	51.82	20	46.83	12	54.62
59	Boone County White	W. D.	College farm	10.8	126	114	60.73	20	51.70	15	52.35	19	50.73	7	54.24
29	Pride of the North	Y. D.	Barteldes Co., Lawrence, Kan.	9.5	121	96	54.16	21	47.21	17	60.99	7	50.12	8	53.20
97	Roseland White	W. D.	College farm	10	.....	126	74.10	12	54.52	13	55.95	14	45.08	14	51.85
11	Hildreth	Y. D.	College farm	10.9	136	123	82.28	6	33.49	23	47.43	22	41.65	18	51.21
110	Coffman's Bloody B	R. D.	E. B. Coffman, Manhattan, Kan.	9.1	.....	114	41.35	23	51.19	16	60.05	8	44.23	16	49.21
71	Griffing's Calico	C. D.	College farm	10	131	116	45.00	22	42.16	22	57.41	11	47.17	11	47.94
95	McAuley	W. D.	College farm	10.5	131	117	75.75	10	63.57	4	66.87	1	.....	.....	.....
44	Hickory King	W. D.	Barteldes Co., Lawrence, Kan.	10.5	127	108	68.54	14	58.40	7	51.69	21	.....	.....	.....
58	Forsythe's Favorite	W. D.	Barteldes Co., Lawrence, Kan.	9.3	127	114	73.64	13	62.71	5	57.32	12	.....	.....	.....
55	Hammett	W. D.	P. A. Hammett, Marysville, Kan.	.....	127	.....	65.28	15	60.78	6	.....	.....	53.06	2	.....
91	St. Charles White	W. D.	J. Warner, Manhattan, Kan.	11	124	120	61.79	19	65.22	3	52.96	17	.....	.....	.....
45	Iowa Silvermine	W. D.	U. S. Dept. of Agriculture	9	125	111	77.86	8	45.96	19	.....	.....	.....	.....	.....
119	Commercial White	W. D.	P. E. Crabtree, Hannon, Mo.	10.5	111	118	.....	.....	.....	.....	62.37	5	52.09	5	.....
116	Johnson Co White	W. D.	Johnson county Indiana	9.7	....	115	.....	.....	.....	.....	55.02	16	41.29	19	.....

TABLE II.—Summary of variety tests of corn; 1903 to 1909, inclusive.

Bulletin No.	Variety.	1907–1909.		1906–1909.		1906–1908.		1904–1908.		1903–1907.		1903–1909
		Average yield. (bu.)	Rank in yield.	Average yield. (bu.)	Rank in yield.	Average yield. (bu.)	Rank in yield.	Average yield. (bu.)	Rank in yield.	Average yield. (bu.)	Rank in yield.	Average yield. (bu.)
5	Kansas Sunflower	55.01	4	62.81	2	66.08	5	58.59	3	61.01	2	58.01
25	Hogue's Yellow Dent	55.85	3	60.84	5	61.76	11	54.69	6	57.04	6	57.45
3	Leaming	49.66	14	59.24	7	64.55	7	57.75	4	58.03	5	55.36
11	Hildreth Yellow Dent	40.86	17	51.21	15	54.40	16	50.99	9	58.85	4	54.76
28	Reid's Yellow Dent	51.55	13	54.62	11	57.22	15	52.42	7	53.44	7	52.27
59	Boone County White	51.59	12	54.24	12	53.88	18	51.82	8	52.31	9	52.10
71	Griffing's Calico	48 92	15	47.94	17	48.19	21	47.10	11	50 94	10	51.28
86	Legal Tender	46 15	16	56.85	9	64.29	8	56.50	5	53.04	8	50.97
29	Pride of the North	52.87	6	53.20	13	54.12	17	48.65	10	48.77	11	50.75
98	Pride of Saline	60.63	1	64.14	1	67.93	2	.....	.....	.....	.....	.....
105	Hiawatha Yellow Dent	52.23	9	61.74	4	66.59	3	.....	.....	.....	.....	.....
108	White Wonder	57.76	2	58.82	8	63.66	9	.....	.....	.....	.....	.....
102	Conable's White Dent	53.94	5	60.56	6	63.50	10	.....	.....	.....	.....	.....
107	Farmer's Interest	52.59	7	55.05	10	57.87	14	.....	.....	.....	.....	.....
97	Roseland White	52.33	8	51.85	14	51.25	19	.....	.....	.....	.....	.....
110	Coffman's Bloody B	51.82	10	49.21	16	50.86	20	.....	.....	.....	.....	.....
58	Forsythe's Favorite	.....	.....	.....	.....	64.56	6	58.78	2	61.82	1	.....
84	Dyche's Yellow Dent	51.75	11	61.96	3	66.37	4	.....	.....	.....	.....	.....
95	McAuley's White Dent	.....	.....	.....	.....	68.73	1	61.87	1	.....	.....	.....
55	Hammett	.....	.....	.....	.....	.....	.....	.....	.....	60.70	3	.....
91	St. Charles White	.....	.....	.....	.....	59.99	12	.....	.....	.....	.....	.....
44	Hickory King	.....	.....	.....	.....	59.54	13	.....	.....	.....	.....	.....
45	Iowa Silvermine	.....	.....	.....	.....	.....	.....	.....	.....	46.49	12	.....

For the five-year period 1903 to 1907 nine of the best-producing varieties ranked in yield as follows: Forsythe's Favorite, Kansas Sunflower, Hammett, Hildreth, Leaming, Hogue's Yellow Dent, Reid's Yellow Dent, Legal Tender, and Boone County White. The average annual yields of these varieties, as shown in table I, ranged from 61.82 bushels per acre for the Forsythe's to 52.31 bushels per acre for the Boone County White—a difference of 9.51 bushels per acre.

For the shorter intervals of two and three years a number of more recently introduced varieties have been exceeded in yield by the older standard sorts. For instance, for the three-year period 1907 to 1909 twelve of the best-producing varieties ranked in the order named below: Pride of Saline, White Wonder, Hogue's Yellow Dent, Kansas Sunflower, Conable's White Dent, Pride of the North, Farmer's Interest, Roseland White, Hiawatha Yellow Dent, Coffman's Bloody Butcher, Dyche's Yellow Dent, Boone County White, and Reid's Yellow Dent. The average annual yields varied from 60.63 bushels for the Pride of Saline to 51.55 bushels for the Reid's Yellow Dent—a difference of 9.08 bushels per acre.

For the years 1907, 1908 and 1909 it will be observed that the earliest-maturing varieties have ranked high in average yield, while the late-maturing varieties have given much smaller yields. This is largely due to the crop of 1909, when the late-maturing corn was severely injured by very hot, dry weather in August, and did not complete its growth, hence making a relatively low yield, while the early-maturing varieties to some extent escaped the unfavorable conditions by being more advanced in maturity.

It is rather remarkable that the Pride of Saline, a western Kansas corn, seed of which was secured each year from the Fort Hays Branch Experiment Station, has given the largest average yield for the three years in which the early corn has had the advantage.

The high-yielding varieties for the three-year period 1906 to 1908 rank as follows: McAuley, Pride of Saline, Hiawatha, Dyche, Kansas Sunflower, Forsythe's Favorite, Leaming, Legal Tender, White Wonder, and Conable's.

For the four-year period 1906 to 1909 as follows: Pride of Saline, Kansas Sunflower, Dyche, Hiawatha, Hogue's Yellow Dent, Conable's, Leaming, White Wonder, Legal Tender,

Farmer's Interest, Reid's Yellow Dent, and Boone County White.

For the five-year period 1904 to 1908 as follows: McAuley, Forsythe's Favorite, Kansas Sunflower, Leaming, Legal Tender, Hogue's Yellow Dent, Reid's Yellow Dent, Boone County White, and Hildreth.

It will be thus observed that the best varieties of corn vary in productiveness, and it is rather difficult to decide on any particular variety as being superior to other good-producing varieties when the yields are compared for different seasons or different groups of seasons. Of the best varieties tested, five to seven years, ten may be named which seem to be preferable to others, as follows:

Variety.	Type.	Maturing season.
Kansas Sunflower	Yellow dent.....	Medium late.
Hogue's Yellow Dent.....	Yellow dent.....	Medium early.
McAuley	White dent	Medium late.
Forsythe's Favorite	White dent	Medium to medium late.
Hammett	White dent	Medium early.
Leaming	Yellow dent.....	Medium early.
Hildreth	Yellow dent.....	Late.
Boone County White.....	White dent	Medium to medium early.
Reid's Yellow Dent.....	Yellow dent.....	Medium early.
Legal Tender	Yellow dent.....	Medium to medium early.

Of these varieties, six are yellow dent and four are white dent, One is late, requiring about 136 days to mature; three are medium to medium late, requiring 120 to 130 days to mature, while six are medium to medium early, requiring 110 to 120 days to mature. None of these better producers are extra early in maturing, although the Pride of the North (Kansas-grown seed), a variety which may mature in 100 days or less, has produced more than 50 bushels per acre as an average for seven years (see table I), which is only 1½ bushels less per acre per year than the yield secured from Reid's Yellow Dent and Boone County White. Also, the Pride of the North corn has received no special attention looking towards its improvement, being simply *Kansas-grown* seed, while the Reid's and Boone County have been carefully bred by the agronomy department for several years, and only the choicest ears have been used for seed each year,

Comparing varieties tested for a shorter period, two or four years, seven other varieties appear among the best pro-

No. 2.—Field of well-bred Hildreth corn, grown for seed.

ducers, which may be named as preferable along with the first ten named above, as follows:

Variety.	Type.	Maturing season.
Pride of Saline.....	White dent.....	Medium to medium early.
Commercial White.....	White dent.....	Medium late.
Conable's White Dent.....	White dent.....	Medium late.
Hiawatha Yellow Dent....	Yellow dent....	Medium late.
Dyche's Yellow Dent.....	Yellow dent....	Medium late.
White Wonder.....	White dent.....	Medium to medium early.
Roseland White.....	White dent.....	Late.

Five of this second list of varieties named are white dent; two are yellow dent; two are medium to medium early, requiring 110 to 120 days to mature; and five are medium late to late, requiring 120 to 130 days to mature.

Of the seventeen preferred varieties named, nine are white dent, eight are yellow dent, eight are medium or medium early in maturing, seven are medium to medium late in maturing, and two may be placed in the late-maturing group.

Taken as a whole, these tests of varieties show little or no advantage to the color or maturing season of the corn. The preferred varieties are about equally divided between the white and yellow types and between the earlier- and later-maturing sorts. As an average for the longer periods, it appears that the later-maturing varieties have the advantage, although for certain seasons the earliest-maturing sorts have exceeded them in yield. It should be observed also that in the longest test, seven years, a medium-late-maturing variety ranked first and a medium-early variety ranked second in yield.

The high rank attained by certain varieties appears, therefore, to be a matter of variety or breed rather than of color or maturing season, but the best-producing varieties vary in rank and place according as the season or soil conditions are more or less favorable to the early or late maturing corn. Since this is true, a farmer may safely use a high-yielding, early-maturing variety, and plant part of his corn early and part later, to compete with variations in seasons.

The conclusions reached as a result of this variety test are: that in the more favored sections of the state, on the better farming lands, the medium- or late-maturing varieties may be expected to produce the largest yields as an average for several seasons. In less favored sections of the state, or on less fertile and more poorly watered lands, the early- or medium-early-maturing varieties will evidently make the surest crop.

Kansas-grown Seed versus Seed Corn of the Same Variety from Other Sources.

The comparison of Kansas-grown seed with seed of the same variety from other sources was not always undertaken as a regular experiment, but the testing of varieties for several years has afforded several examples, which are given in table III. While the "College-grown" seed may not have come originally from the same source as the sample with which it was compared, yet the samples used in comparison with Kansas-grown seed were in each case good representatives of their respective varieties. The seed corn was secured from the same sources each year, and the tests were fairly and carefully made.

In forty tests, covering a period of seven years, including the comparison of seed corn of seven different varieties from seven different states with Kansas-grown seed of the same varieties, the resulting yields of corn have favored the Kansas seed at the rate of 6.47 bushels of corn per acre each year. The Boone County White seed from Indiana yielded, as an average for five trials, 2.33 bushels more per acre each year than the College-bred Boone County. This was the only exception to the rule that the Kansas-grown seed always gave larger yields of corn than seed from other sources. The greatest variatian in yield was between the Kansas-grown and the Minnesota-grown seed of the Pride of the North variety. The Kansas-grown seed yielded 31 bushels more per acre each year, as an average for seven years, than the northern-grown seed.

Kansas-grown seed usually gave a little less yield of stover or stalks than the seed from other sources, the exception being for northern-grown seed from Minnesota, Ohio, and Iowa, which made a smaller growth of stalks than Kansas-grown seed. As an average for all trials, the seed from other sources yielded 145 pounds more stover per acre than the Kansas-grown seed. This is not a point in favor of importing seed corn, however, since Kansas corn is apt to make too great a growth of stalks rather than too little. Altogether, the comparisons favor very markedly the planting of Kansas-grown seed in this state.

TABLE III.—A comparison of yields from Kansas-grown seed *versus* seed corn of the same variety from other sources.

Bulletin No.	Name of Variety.	Source of seed.		Date of crops reported.	Average yields, per acre.		Difference in favor of Kansas-grown seed.
		Name.	Address.		Stover. (lbs.)	Corn. (bu)	
3	Leaming*	F. Barteldes & Co	Douglas county, Kansas	'03 '07	3,535	58.03	
42	Leaming	U. S. Department Agri.	Ohio	'03–'07	3,029	50.59	7.44
	Hogue's Yellow Dent.*	College farm	Riley county, Kansas	'08	4,170	64.66	
25	Hogue's Yellow Dent	Nebraska Exp. Sta.	Nebraska	'08	4,348	61.09	3.87
28	Reid's Yellow Dent*	College farm	Riley county, Kansas	'03–'07	2,997	53.44	
40	Reid's Yellow Dent	U. S. Department Agri.	Illinois	'03–'07	3,139	48.80	4.64
29	Pride of the North*	Barteldes Seed Co	Douglas county, Kansas	'03 and '09	4,289	54 32	
30	Pride of the North	Northrup, King	Minnesota	'03 and '09	2,052	23.23	31.09
92	Iowa Silvermine*	College farm	Riley county, Kansas	'04 and '07	2,941	56.13	
45	Iowa Silvermine	U. S. Department Agri.	Illinois	'04 and '07	3,141	49.64	6.49
59	Boone County White*	College farm	Riley county, Kansas	'03–'07	2,918	52.31	
47	Boone County White	U. S. Department Agri.	Tennessee	'03–'07	3,750	51,94	.37
59	Boone County White*	College farm	Riley county, Kansas	'03–'07	2,918	52.31	
46	Boone County White	U. S. Department Agri.	Indiana	'03–'07	3,529	54.64	−2.33
59	Boone County White*	College farm	Riley county, Kansas	'04–'07	2,894	51.64	
87	Boone County White Special	U. S. Department Agri.	Illinois	'04–'07	3,614	49 31	2.33
59	Boone County White*	College farm	Riley county, Kansas	'08 and '09	3,602	51.54	
117	Johnson County White†	Johnson county	Indiana	'08 and '09	4,743	48.30	3.24
81	Farmers' Alliance*	Edd F. Elton	Waldo, Kansas	'04 and '05	2,050	48.03	
21	Farmers' Alliance	Iowa Seed Co.	Iowa	'04 and '05	1,680	40.07	7.96
Average for 40 crops from Kansas-grown seed					3,194	54.25	
Average for 40 crops from seed not Kansas-grown					3,339	47.76	
Difference in yield in favor of Kansas-grown seed					−145	6.47	

* Kansas-grown seed. † Similar to Boone County White.

History and Breed Characteristics of Standard and "Native" Varieties of Dent Corn.

When Columbus discovered America, he found just corn. It was a mongrel type. There were no distinct varieties. The colonists and early settlers of the states largely adopted the corn of the Indians, and made little improvement. Even as late as 1814, we are told that "there were only five varieties of corn *(Zea mays)* known, *i. e.,* Big Yellow, Big White, Little Yellow, Little White, and Gourd-seed. Both the large and small varieties were flinty, corresponding to the old type of flint corn. The Gourd-seed corn represented, perhaps, the first step in the development of the dent corn of to-day. It was characterized by a deep, pointed, soft kernel of either white or yellow color." (The Book of Corn, by Bowman and Crossley.)

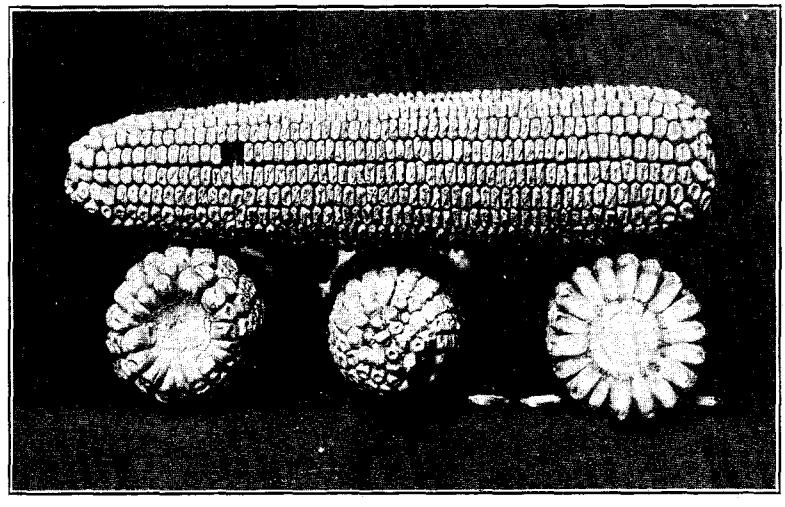
In 1840 the number of varieties had reached nearly forty, but these were not very pure or distinct in type; only one of our present standard varieties, the Leaming, had its origin previous to that date. Since 1840 there has been a wonderful development in corn varieties. One authority, Dr. E. L. Sturtevant (Bulletin No. 57, U. S. Department of Agriculture), has examined nearly 800 varieties, and has classified *Zea mays* into six distinct subgroups. Each of these subgroups includes many distinct varieties, the varieties of *Zea indentata,* or dent corn, being by far the more numerous.

The following is a brief history of several standard varieties and better-producing "native" varieties of dent corn grown in Kansas and adjoining states. This information has been drawn from various sources. Much of the data regarding the origin and history of the older standard varieties of corn was taken from The Book on Corn, by Bowman and Crossley. The difference between standard and "native" local varieties can not always be closely drawn, hence no attempt was made to classify the varieties in that way, but have grouped them somewhat according to age and length of breeding period.

LEAMING.

HISTORY. Leaming is the oldest known variety of corn. It was originated by Mr. J. S. Leaming, Wilmington, Ohio, in 1826, from selected seed of the ordinary yellow corn, grown

extensively at that time on bottom land in Hamilton county. This yellow corn was a large, rather late, slow-maturing variety. Mr. Leaming selected for early maturity and uniform ripening, He choose seed ears which tapered slightly from but to tip, well filled at ends, with straight rows, and rather large, rectangular, blocky kernels, of medium depth and "dimple" dent. For fifty-six years Mr. Leaming followed this method of selection, and his son and others have continued his work, but the breeders in later years have lengthened the kernel, reduced its blockiness, evolved a deeper indentation and an ear which is more cylindrical in shape.



No. 3.—Leaming.

CHARACTERISTICS. Leaming corn in Kansas is a medium-early variety, maturing in 110 to 120 days. The stalks are medium in size and length, and not very leafy and quite free from suckers. A field of this variety has a uniform appearance, indicating good breeding. The corn matures evenly and quickly, the result of its careful early breeding, but this may not be a desirable character in Kansas corn. It is not so valuable for fodder as other ranker-growing, more leafy varieties. The writer has observed that the Kansas Leaming corn grows ranker and matures later than that from more recently imported seed of the same variety.

The tapering ear of the Leaming is its most marked charac-

teristic. The ears of a good crop are uniformly large, with rather large shanks and large cobs. The kernels are inclined to be thick and only medium in depth, a little square at the tip, with less taper to the sides than is found in other standard varieties. This causes rather wide furrows between the rows of kernels at the crown, and the pairing of rows is less distinct than with other varieties. The germs are large and the kernels contain a high percentage of horny starch and a relatively small proportion of crown starch. Hence the Leaming and varieties closely related to it are good feeding corn and the seed is usually strong in vitality.

Being the oldest improved variety, the Leaming corn has been widely distributed, and has no doubt furnished the foundation stock for several of our native Kansas varieties.

Reid's Yellow Dent.

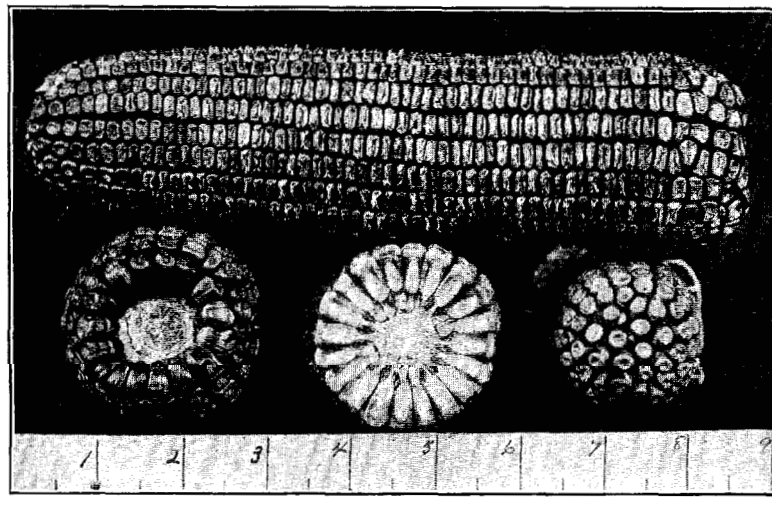
History. Reid's Yellow Dent is the purest and most highly bred variety of corn in America. So carefully has it been bred, and so true is its type when grown under favorable conditions, that it has become the greatest prize winner among yellow varieties of corn throughout the corn belt. This corn was originated by Robert Reid, in Tazewell county, Illinois, in 1847, from a natural cross between a large, rather late-maturing red corn, known as "Gordon Hopkins" corn, which Mr. Reid brought with him to Illinois from Brown county, Ohio, and the "Little Yellow" corn, a rather early-maturing variety grown at that time quite generally in Tazewell county. The cross was accidental and came from replanting the missing hills in a field of the red corn with the early yellow variety. Mr. James L. Reid, son of Robert Reid, recognized the value of this cross-bred corn and at once began to improve it. He continued its careful breeding for more than fifty years, until its characteristics were firmly fixed.

The Reid's corn has been more widely distributed than any other variety. It is probably grown in every state in the Union and in every corn country in the world.

There are now many contemporary breeders of this corn in all parts of the corn belt. These breeders have developed somewhat different types of the Reid corn, adapted to different climatic and soil conditions. The variety readily adapts itself to new environments, but as long as it is kept pure no

amount of selection appears to destroy the old Reid characteristics of color, form of ear and shape of kernel which were established by fifty years of continued careful selection.

CHARACTERISTICS. The Reid's corn is a medium-early variety, maturing in 110 to 120 days. It is not so regular or uniform in its maturing habit as Leaming, but it is quite similar in type of stalk, producing stalks of medium size and height on the Station grounds, with few suckers. It has rather more abundant foliage than Leaming, and makes a little better fodder, but its distinctive purpose is the production of a good ear on every stalk, whenever the conditions are favorable.



No. 4.—Reid's Yellow Dent.

The well-developed ears of this variety are nearly cylindrical or slightly tapering near the tip, with deeply rounded, symmetrical butts, and rounded, well-covered tips. The shanks are small and the cobs are medium in size and dark red in color. The rows of kernels are straight and distinctly paired and very closely spaced. This close spacing is due to the wedge-shaped kernel and the triangular outline of the kernel edges, which dovetails together. The kernels are rather narrow and medium deep and the germs are inclined to be narrow and long. As originally bred the indentation was dimpled or slightly creased. The best breeders are to-day se-

lecting for a deeper indentation and a broader, more rectangular kernel, with more space at the crowns. Reid's corn has a lighter yellow color than Leaming and the kernels are a little softer and more starchy. In the judgment of the writer, this variety has not left as strong an impression upon the local varieties of the state as Leaming, Legal Tender, Silvermine, Boone County White, and St. Charles White.

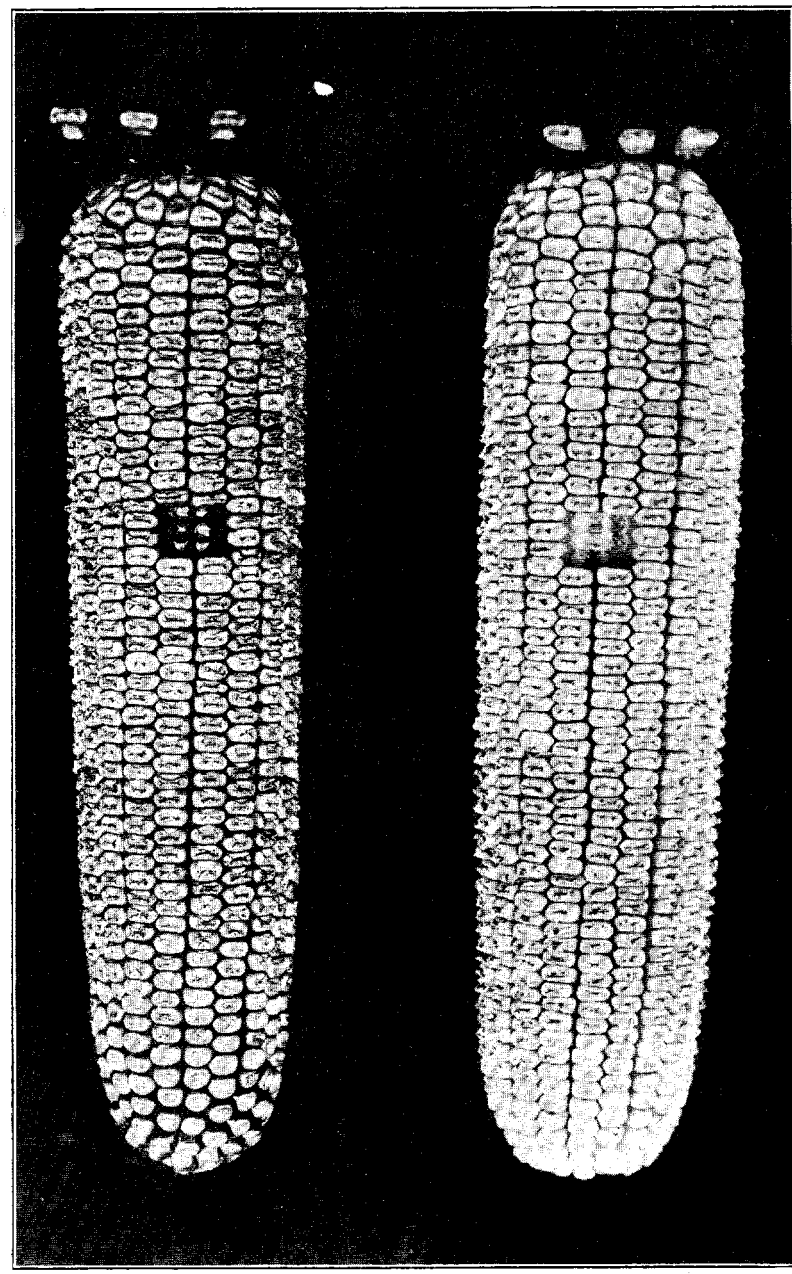
BOONE COUNTY WHITE.

HISTORY. The Boone County White corn was developed by selection from a variety of corn known as "White Mastodon" by Mr. James Riley, of Boone county, Indiana. The White Mastodon corn, grown quite extensively at that time in southern Indiana, was a large, coarse, late-maturing variety. Mr. Riley made his first selections in 1876, choosing the earlier-maturing ears with white cobs. This selected seed was planted in a separate field and developed by selection without crossing with any other variety.

Little appears to be known of the origin of the Mastodon corn. The writer believes that it is probably closely related to the St. Charles White corn, developed in southern Missouri. The samples of Mastodon corn which he has seen contain many red cobs; also the form of the ear and kernel resembles the St. Charles. It is quite probable that the original "Big White" corn mentioned in early history was a red-cob variety, and that our large white-cob varieties have been developed from the original red-cob varieties by selection.

CHARACTERISTICS. Boone County White corn grows a somewhat larger, ranker stalk than the Leaming or Reid's corn, and matures a little later, its average season in eastern Kansas being about 120 days. It is said to require a strong soil, and is considered to be well adapted only to bottom lands. I have not found this true in eastern Kansas, where it succeeds well on any good corn land, but it grows too rank and matures too late for western Kansas growing. The stalks do not sucker much, but are fully as leafy as the Reid's corn and will yield more fodder per acre. Altogether the typical Boone County ear is very well balanced in all the essential points,

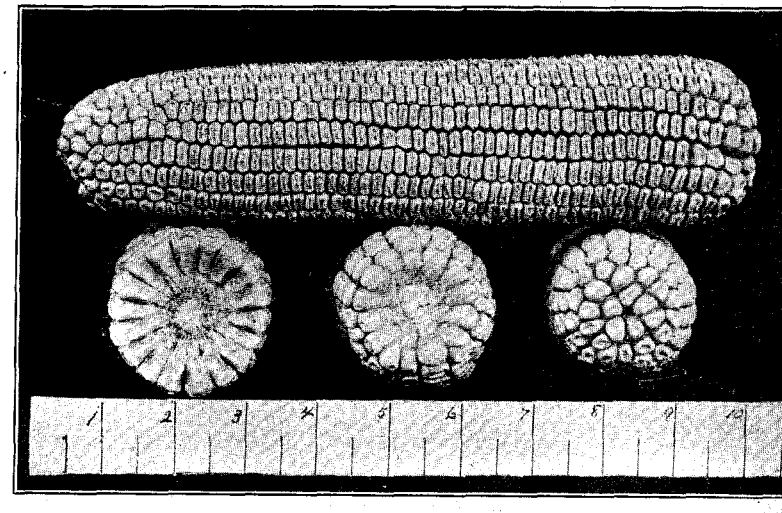
This variety should have a large ear, ten and one-half to eleven inches long and seven and one-half to seven and three-fourths inches in circumference. The ears should be cylindrical



No. 5.—Ear on the right is an ear of Reid's Yellow Dent, which took first premium in the Capper contest in 1907. The ear on the left is the Boone County White ear, considered to be the best among several hundred prize Boone County White ears which were secured by the agronomy department at the National Corn Exposition in 1907. These ears were planted in the 1908 ear test.

or nearly so; a slight taper near the tip is allowable. The shank is rather large and butts are moderately rounded. Good kernels carry well out to the tips of the ears. The cobs are large and somewhat spongy.

The kernels are medium as regards size, width, thickness, and depth. The shape approaches that of Leaming, but the edges are somewhat more tapering, and the kernels dovetail together in distinct pairs as in the Reid's corn. The kernels fit closely at the tips, and the crown space is medium. The indentation should be medium rough, but this varies with different localities and different strains; a smoother type is



No. 6.—Boone County White.

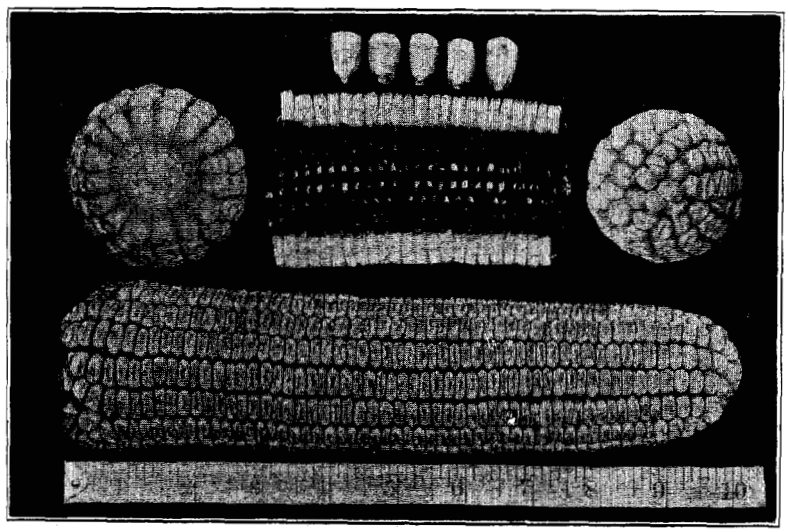
preferred farther north. The typical Boone County corn should not be rough or pinch dented. The germs are large and strong when the corn is well saved and dried. The kernels contain a large proportion of horny gluten and little crown starch. The smoother type may be a little hard for feeding whole, hence some feeders prefer a softer corn for fattening hogs and cattle.

Boone County White corn is probably grown more extensively than any other variety of white corn in Indiana, Missouri, and Kansas. It is also well distributed throughout Arkansas, Oklahoma and the northern part of Texas, and is grown in other Southern States, and everywhere through the

Middle and Southern States. It has given good results when grown under favorable conditions. In the states north of Missouri and Kansas it is not so well adapted, because it grows too rank and matures too late to produce good, sound grain every year.

ST. CHARLES WHITE.

HISTORY. The St. Charles White corn was developed in St. Charles county, Missouri. It is a corn with an obscure history. It has been grown in St. Charles county for a "great many years." "The oldest inhabitants do not know from whence it came." It is quite possible that it originated somewhere in the Eastern States, but its large-growing habit and



(*Courtesy Missouri Experiment Station.*)

No. 7.—St. Charles White.

late-maturing character point to a more southern origin. The S. Charles White is no mean corn. It is said to be grown more widely in the Southern States than any other variety. It was formerly grown more extensively in central and south eastern Kansas than any other variety of white corn, and several of the better "native" sorts are descended from this vigorous, hardy variety. It was a large yielder under favorable conditions in Kansas, but had the fault of being rather too late in maturing to make a safe crop in the drier years. It is the writer's opinion that all of our larger, later-maturing

varieties of white corn have been developed from the St. Charles White, such as McAuley, Roseland White, Forsythe's Favorite, and White Wonder. It is known that the Commercial White, described in these pages, was developed from the St. Charles White, without crossing, by a systematic selection of the white-cobbed ears.

CHARACTERISTICS. This is a late variety, requiring 125 to 130 days to mature. It is a vigorous grower; the stalks are large and leafy and also sucker freely. It is an excellent silage corn. Hundreds of bushels of seed are shipped north and east every year, where it is planted for silage.

The Missouri standard for varieties requires that the ears be ten to ten and one-half inches long and seven and one-fourth to seven and one-half inches in circumference. The ears should be nearly cylindrical for the best type, but generally taper slightly from butt to tip, with rows straight and only slightly paired. Butts and tips are fairly well finished. The cobs are medium large and blood red in color. This is the most marked characteristic of this remarkable variety, since nearly all varieties of white corn have white cobs.

The kernels are larger and wider than those of Boone County White. They are quite deep and more rectangular in shape, approaching the Leaming type; hence the furrows at the crowns are wide and there is some tendency for the corn to be loose on the cob. The kernels are deeply dented, but the crowns are not rough or sharp. The grain is of good quality and well favored by feeders.

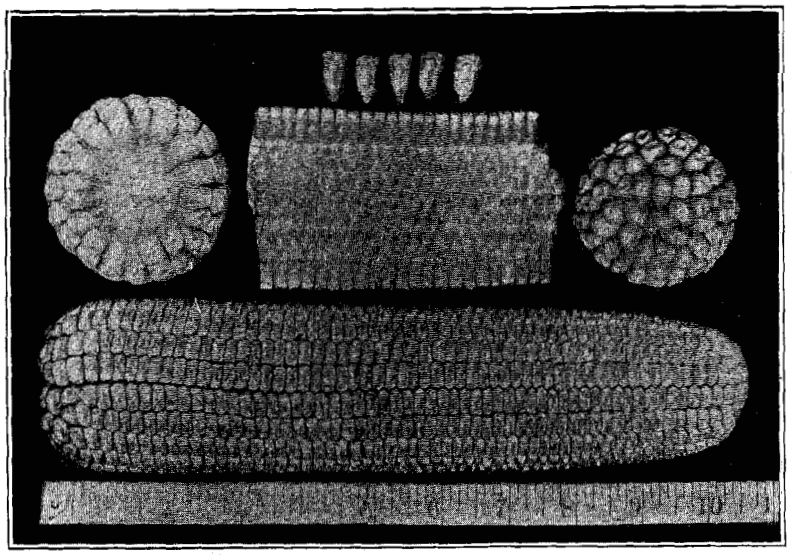
JOHNSON COUNTY WHITE.

The Johnson County White has won more premiums in the last five years in the national and international corn shows, and in the states where it is most successfully grown, than any other variety. Five times in succession this corn has won the grand champion sweepstakes at the United States National Corn Show for the best ten ears of corn of any breed or variety. It took first place at the St. Louis World's Fair and has won most of the premiums for years in the Indiana and Illinois state corn shows.

HISTORY. This variety was originated in Johnson county, Indiana, in 1890-'92 by three different men, Mr. J. D. Whitesides, Mr. L. B. Clore, and Mr. J. R. Overstreet, who combined their interests in 1899 and gave the new variety its present

name. It is a cross between Boone County White and Forsythe's Favorite. Not much is known about the latter variety. Mr. Clore, in writing of it, says: "The Forsythe's Favorite had rather short, thick, very heavy ears, with extremely long kernels. It required a long season to develop, and I decided that the cross with Boone County, with the proper selection, would make a profitable variety to grow, and my aim has been to select ears for seed which will mature under average conditions."

CHARACTERISTICS. Johnson County White is a variety of medium-maturing season in Kansas about five days later than



(*Courtesy Missouri Experiment Station.*)

No. 8.—Johnson County White.

Boone County White. Its stalk growth is somewhat more rank and it is more inclined to sucker under very favorable growing conditions.

The ears are large and do not differ much from the best type of Boone County White, except that the tips have a sharper taper and the kernels are a little longer and more deeply dented. The rough indentation gives the corn a rather starchy color, but this characteristic "rough indentation" favors uniformity in ears, which is the strongest advantage which this variety has over others in the show ring. It is true

however, that the corn is softer and more starchy in composition than Boone County White. The area of successful growing of this variety is limited. It does not have so wide an adaptation as Boone County White, since it matures a little later. Also, it succeeds well only on the more fertile land. It is grown to perfection in the fertile bottom lands of southern Indiana, and will succeed well under favorable conditions in Missouri and eastern Kansas.

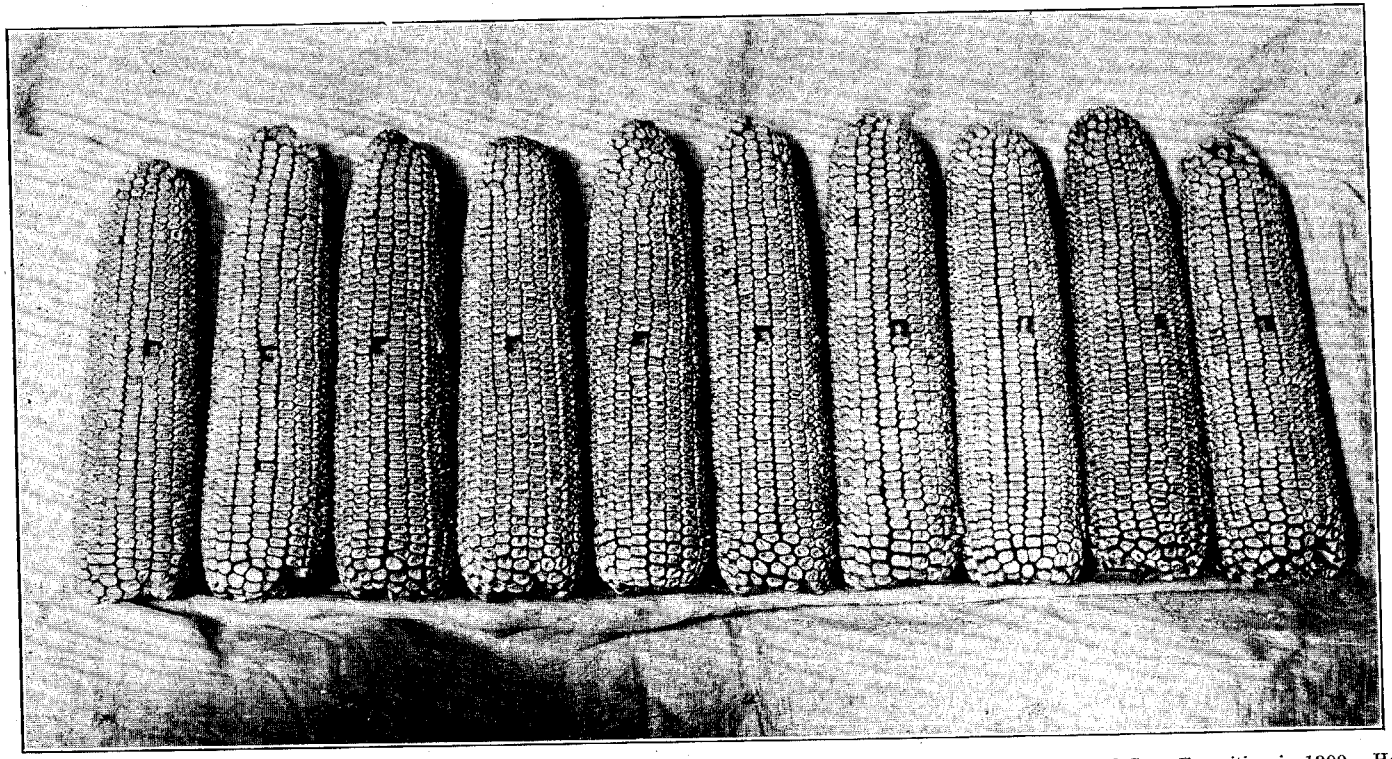
SILVERMINE.

HISTORY. Mr. J. A. Beagley, of Sibley, Ill., originated the Silvermine corn by selection from seed of a prize-winning white corn which he bought at the Ford County Farmers' Intitute in 1890. After several years of careful breeding enough seed was selected to plant twenty acres. This entire crop was bought by the Iowa Seed Company in 1895 for $1000. It was then named Iowa Silvermine.

CHARACTERISTICS. This corn is one of the early-maturing standard varieties, requiring only 100 to 110 days to mature. It has, therefore, a wide adaptation, and through efficient advertising and because of its good qualities it has been distributed very widely throughout the corn belt. It is grown in the Northern States for main crop and as an early-maturing crop in the Middle and Southern States. Several of the hardy, early-maturing, local varieties grown in central and western Kansas have doubtless been developed from Silvermine by adaptation and selection.

Silvermine is not a rank grower, and will not make the yields on fertile soil which may be secured from Boone County or other larger and later-maturing varieties, but is more capable of growing and producing a fair crop on poor soil and under unfavorable climatic conditions. The stalks are rather short and not very leafy, but sturdy and not inclined to sucker.

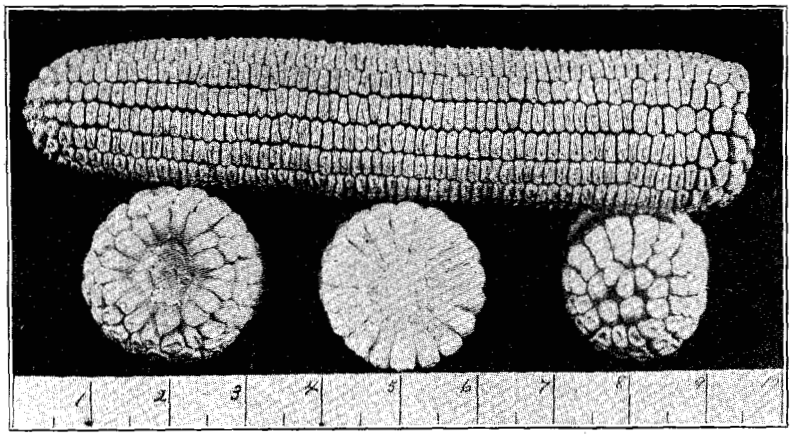
The type of ear required in eastern Kansas is medium in size, ten inches long, and seven to seven and one-fourth inches in circumference, but this is a larger ear than may usually be produced. In the central and western parts of the state the ears are smaller, well-developed ears ranging from seven to nine inches in length and six to seven inches in circumference. It is said of this variety that the ears are inclined to be thick in proportion to their length, but this has not been the writer's observation. Rather, the ears are inclined to be slender with



No. 9.—Mr. Arthur Capper, Topeka, Kan., purchased the bushel of corn which won the highest premium at the National Corn Exposition in 1909. He donated ten of the best ears in this bushel to the Kansas Experiment Station to be used for breeding purposes. This is a photo of the ten ears selected.

small cobs. The form should be cylindrical, or very slowly tapering near the tip. The good kernels carried well out to the tip. The shank is medium or small in size and the butt is rather flat.

The rows of kernels average sixteen to eighteen in number, and some western strains show fourteen to sixteen rows. The rows are more wavy and not paired so well as in the Reid's. The kernels are rather thin, but broad and deep, medium wedge-shaped, and fit very snugly to the ear. The furrows between the crowns are medium wide, due to the depth of



No. 10.—Silvermine.

kernels, The germs are medium large and the kernels have a fair proportion of horny starch, the rougher type inclining to a softer, more starchy kernel. The standard indentation is a medium pinch dent, but many ears are rougher, and this is a fault of the variety.

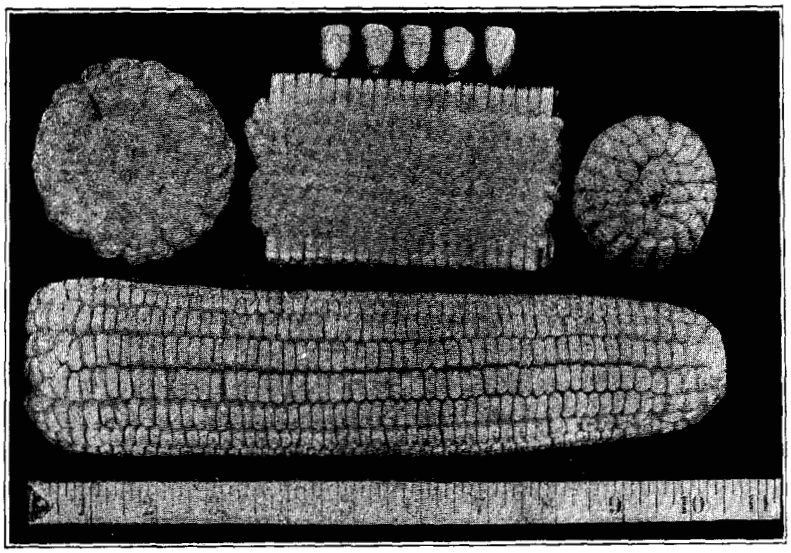
The deep grain and small cob in the Silvermine and the close packing of the kernels give this variety a very high shelling percentage, ranging close to 90 per cent. The western varieties developed from Silvermine have a shallower grain, with a medium indentation, and appear more vigorous and much hardier than the original,

Commercial White.

HISTORY. The Commercial White corn was originated by P. E. Crabtree, in Barton county, Missouri, by a systematic selection of the white-cobbed ears of the St. Charles White

variety. The St. Charles White corn, when bred pure, has red cobs; hence the ears chosen as foundation stock must have contained some cross with other white corn. Mr. Crabtree began his work with this variety in 1902. "Within three generations," he writes, "I found that I had practically no trouble with the color of the cob. The new strain began to reproduce itself with white cobs almost to a certainty."

In the breeding of the corn Mr. Crabtree has had in mind not only purity in type, but the development of a hardy, vigorous-growing variety having high yielding qualities, with large, well-developed and uniform kernels of medium depth and size, with large germs and a small percentage of crown starch.



(*Courtesy Missouri Experiment Station.*)

No. 11.—Commercial White.

This variety has proven to be one of the very highest-yielding varieties in the state of Missouri, as shown in the tests at that station as reported in Missouri bulletin No. 87. At the Kansas Experiment Station the Commercial White has yielded well, ranking as one of the ten best-producing varieties in 1908-'09.

CHARACTERISTICS. This corn has been selected for leafy stalks, large at base, of medium height, with an abundant growth of roots, and quick-maturing qualities. While this variety tassels and silks later than others in its class, it ma-

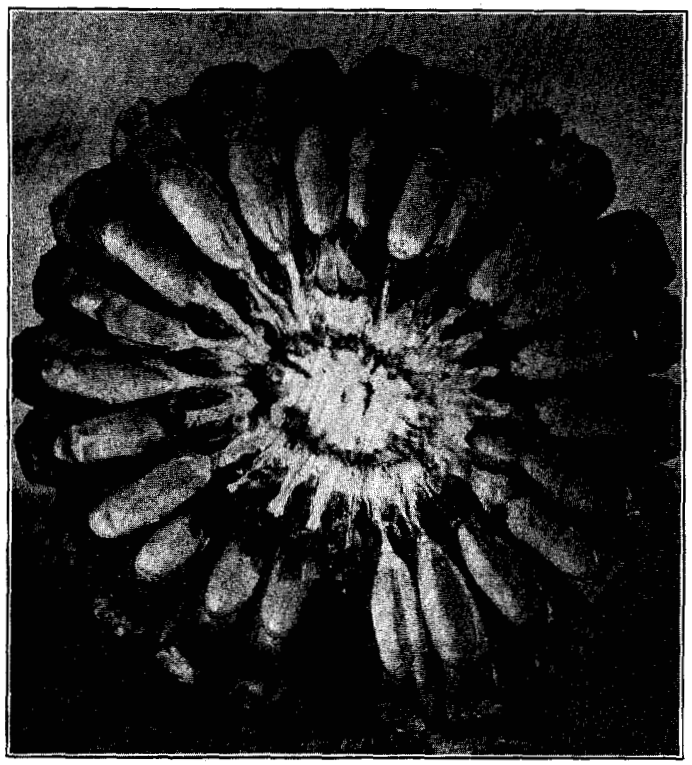
tures ears very rapidly after fertilization has taken place. The ear has been selected for cylindrical type and medium-sized shank and cob, containing not less than sixteen or more than twenty rows of kernels. . This corn has been bred to produce kernels of rather shallow but uniform indentation, a little thicker kernel and of less depth than characterizes the St. Charles White; also more rounded at the top, giving wider space between the rows at the crown than in the parent variety. "The grain shows a large proportion of transparent material, and analyzes chemically high in oil and protein, but comparatively low in starch." The kernels have very large, well-developed germs, and are very sound and strong in vitality, producing thrifty, strong stalks. The variety is late in maturing, requiring a growing period of 125 to 130 days. The ears are larger in circumference and more cylindrical than those of the St. Charles White, but often taper quite abruptly at the tip. The rows are straight and distinctly paired. The butts have a tendency to be too flat, and the shanks are often, too large. The standard of perfection adopted in Missouri for this variety requires a length of ten to ten and one-half inches and a circumference of seven and one-half to seven and three-fourths inches.

LEGAL TENDER.

HISTORY, This variety of corn was originated by Nims Brothers, Emerson, Iowa, in 1876, by crossing two distinct types of yellow corn—a short ear with deep kernels, twenty to twenty-four rows; and a long ear with well-formed kernels, twelve to sixteen rows. The resulting cross was carefully bred by D. B. Nims for thirty years. He bred largely for yield, and gave little attention to form of ear and uniformity and shape of kernels.

The Nims Brothers won some premiums on this corn in the eighties at the state fairs and at the Chicago Fat-stock Show in 1886; and by efficient advertising much seed was distributed through the middle corn-belt states, including Kansas and Missouri. While it has proven to be a heavy yielder under favorable conditions of soil and climate, its lack of uniformity has given it a low place in competition with more highly bred varieties. The Nims Brothers are continuing the breeding of this variety, and will doubtless improve it in uniformity and type.

CHARACTERISTICS. The Legal Tender is a late-maturing corn in Iowa, and of medium season in Kansas, requiring 120 to 125 days to mature. It is a vigorous grower, producing an abundance of foliage, and it suckers freely. Few varieties produce a larger yield of fodder. It is a good silage corn, and in favorable seasons it will yield a large crop of grain. It



(*Courtesy of Bowman and Crossley.*)

No. 12.—Cross section Legal Tender ear.

requires a plentiful supply of moisture to mature, and is not well adapted for western growing.

The ears are cylindrical and inclined to be long for their width. Tips are blunt and not well covered, and the butts are often poorly filled out.

The kernels are deep and rather narrow, and in some samples incline to a shoe-peg type. They are rectangular in shape, and their length causes them to spread at the crowns, leaving deep furrows. Notwithstanding this space, the kernels are

firm on the cob and the ears give a high percentage of shelled corn. The indentation is quite rough, inclining to the pinch dent in the deeper-kerneled strain. The germs are broad and thick. The horny layer is somewhat deficient. The crowns are starchy and the kernels are readily crushed. The corn is well adapted for feeding whole.

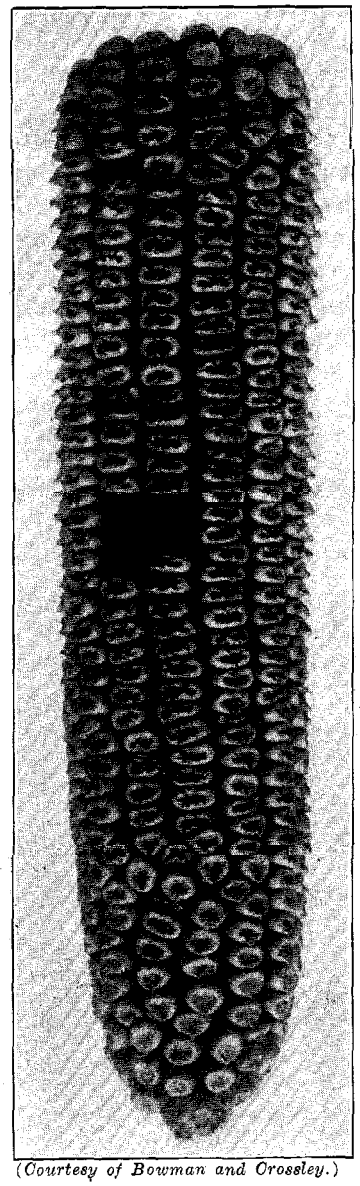
HOGUE'S YELLOW DENT.

HISTORY. This is the leading variety of yellow corn in Nebraska, outyielding all other varieties in a five years' trial at the Nebraska Experiment Station. It is also a corn of pure type and excellent breeding, and has won many prizes at the Nebraska corn shows. This variety has been grown and bred pure since 1885 by Mr. R. Hogue, of Crete, Saline county, Nebraska. He obtained the seed from a Mr. Shrader, from the southern part of Lancaster county, Nebraska. The history of the corn previous to that time is not known. Mr. Hogue has bred the corn by careful selection and has not intentionally crossed it with any other variety.

CHARACTERISTICS. The Hogue's Yellow Dent is a medium-late-maturing variety in Nebraska, but classes as medium early in Kansas, requiring only about 110 to 115 days to fully mature at the Kansas Experiment Station. It grows a medium-sized stalk with a large amount of foliage Typical ears are slightly tapering, eight to nine inches long and seven to eight inches in circumference, containing sixteen to twenty rows of kernels. Mr. Hogue has bred the corn, having particularly in view obtaining a deep kernel. The kernels are deep, wedge-shaped, deeply indented, and light yellow in color, and inclined to be starchy.

PRIDE OF THE NORTH.

HISTORY. One of the most widely distributed and most popular varieties of corn in the northern corn-belt states is Pride of the North. The variety was originated and developed by H. J. Goddard, Fort Atkinson, Iowa. He began breeding the corn in 1870. In 1875 the Adams Seed Company, Decorah, Iowa, purchased forty bushels of seed. In 1876 the Hiram Sibley seed firm of Chicago purchased Mr. Goddard's entire crop. This firm gave the corn great publicity and distributed it very widely. In 1886 a sample of this corn of Mr. Goddard's own breeding was awarded first premium at the Chicago



(*Courtesy of Bowman and Crossley.*)

No. 13.—Pride of the North.

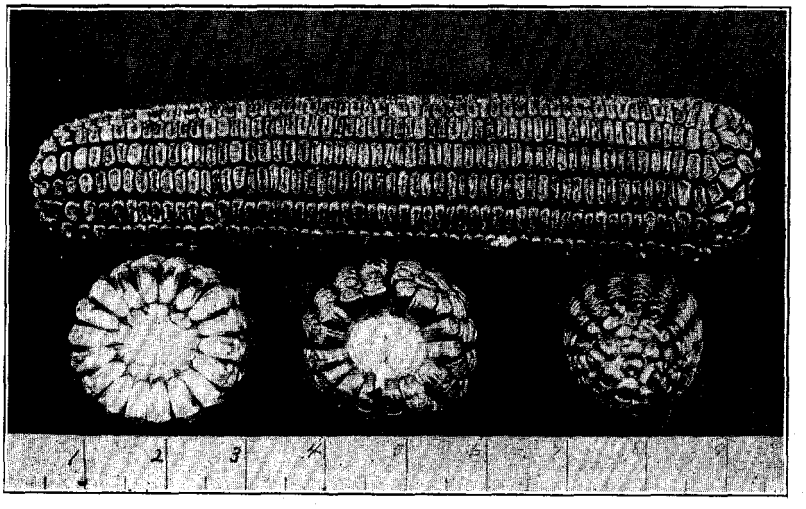
exposition. In later years this variety has not competed so successfully in the corn shows with other improved sorts, but it has continued to hold a favored place among the farmers, because of its hardiness and early-maturing qualities. It is

also an excellent producer for an early corn, as shown by the tests at the Kansas Experiment Station, where its average yield for seven years was over fifty bushels per acre.

CHARACTERISTICS. The Pride of the North is one of the earliest-maturing standard varieties of dent corn, requiring a growing season of only 90 to 100 days to mature, The stalks are medium in size and leafy. It makes good fodder. The ears are rather small and slightly tapering, containing twelve to sixteen rows of kernels. The kernels are bright yellow in color and of medium depth and indentation, but often a little rough, due to a point or hook on the crown. This corn gives a high percentage of shelled corn to cob, but its "strongest points are its early maturity and its vigorous growth."

KANSAS SUNFLOWER.

HISTORY. One of the best-known and most widely cultivated varieties of "native" Kansas corn—that is, varieties which have been developed or originated in this state-is the Kansas



No. 14.—Kansas Sunflower.

Sunflower. This variety was developed by John Moody, Eudora, Kan. He first planted the corn on his farm in Douglas county in 1890, securing the seed from a neighbor. The original sample is described as "a little 90-day corn, the seed of which came from Iowa in the 'grasshopper year.' " In 1895 the Barteldes Seed Company bought Mr. Moody's crop and

advertised the seed corn for sale under the name of Kansas Sunflower. This firm continued to sell the seed of this variety for several years, and the corn became widely distributed throughout the state.

In 1903 seed of the Kansas Sunflower corn was secured by the writer from the Barteldes Seed Company and planted in comparison with many other varieties at the Kansas Experiment Station at Manhattan. It proved to be a remarkable yielder, ranking first or second in yield for several years in comparison with some sixty or seventy other varieties. As an average for seven years' trials it has ranked above all other varieties, making an average yield of over fifty-eight bushels per acre. After the first year's trial the Station secured more seed direct from Mr. Moody, and began a systematic course of breeding and selection of this variety, which has resulted in producing, a more uniform type of corn with distinctly marked characteristics and of high-yielding quality.

CHARACTERISTICS. Kansas Sunflower corn is a very hardy, vigorous grower, maturing medium-late, requiring about 125 days to mature in the average season, which is rather strange when we consider that it has descended from an early-maturing variety. Under favorable conditions it makes a rank growth of stalks and suckers profusely. This suckering habit is counted as a fault when the corn is grown on poor soil or under drouthy conditions. The ears are rather small or medium in size and cylindrical or slightly tapering in shape, with fourteen to eighteen rows of kernels. The rows are straight, but inclined to be a little irregular at the butts and tips. The tips are often rather blunt and not fully covered, while the butts incline to be too flat; however, the best specimens show a fairly well-rounded butt.

The kernels are only medium in depth, quite rectangular in shape, and a little broader and thicker than the average typical kernel of Reid's Yellow Dent. In fact, the kernels resemble those of the Commercial White variety in size and shape, but have a little deeper indentation, which may be described as medium, being neither rough nor smooth. The kernels have large germs and strong vitality. The furrows between the rows of kernels are rather wide according to generally accepted standards. Also the kernels are not as firm on the cob as they should be. Kansas Sunflower corn has a very bright

yellow color, which is its most distinctive characteristic. A large pile is a pleasing sight.

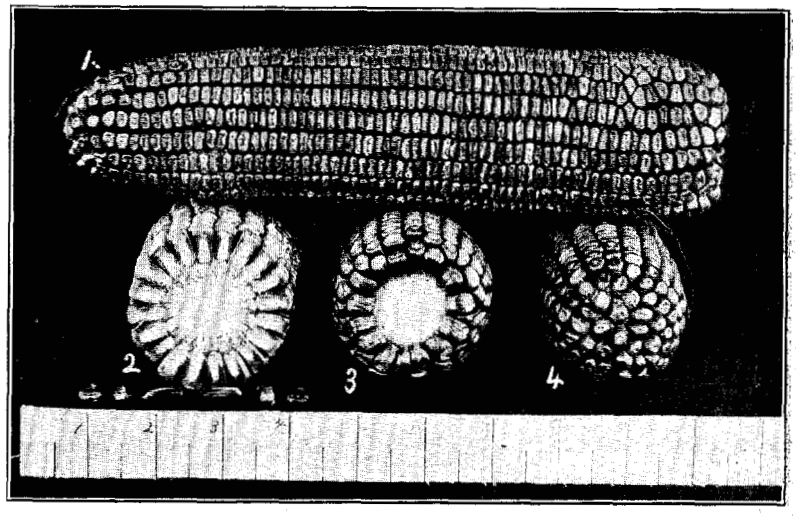
In spite of its apparent defects, this variety is a heavy yielder under average conditions, and may be recommended for growing in the central, northern and eastern sections of this state. The large yields produced by this variety, in the writer's judgment, are due to its native hardiness and vigorous growing habit, also to the fact that the ears are not over large. This corn has the habit of producing one good ear per stalk under rather severe conditions, and if the conditions are above normal, two good ears are likely to develop on many stalks, and under very favorable conditions the suckers each bear a good ear; hence, compared with other varieties, Kansas Sunflower usually "makes good," whatever the condition of the soil or season.

The ears should be from nine to nine and one-half inches in length and seven to seven and one-half inches in circumference. The corn is valuable for fodder and for grain. Considerable seed of this variety has been distributed by the College.

HILDRETH.

HISTORY. This is a "native" Kansas corn which has proven to be one of the largest yielders under favorable conditions of soil and climate of any variety which has been tested at the Kansas Experiment Station. In 1903, 1904, and 1906 it gave the largest; average yield per acre of any variety tested, yielding as high as eighty-nine bushels per acre one season, and making an average yield of more than sixty bushels per acre three seasons. In the drier years and under less favorable conditions, Hildreth has not stood so high in the test as other earlier-maturing, smaller-growing varieties. The Hildreth corn takes its name from the man who first brought it to public notice, Mr. C. E. Hildreth, of Altamont, Labette county, Kan. Mr. Hildreth has an upland farm. In the dry year of 1901 little corn was produced on the upland farms in Labette county, and the next spring Mr. 'Hildreth secured seed corn from a river-valley. farmer who had produced a fair crop. This was a large yellow corn of rather mixed type, which Mr. Hildreth says had been grown for a number of years in Labette county. The year of 1902 was favorable, and Mr. Hildreth produced a large crop from this bottom-land seed. He was so well pleased

with the corn that, observing the published bulletin asking for samples of Kansas corn to be tested at the Experiment Station, he selected a bushel of the choice ears and sent the corn to the writer. The large, well-formed ears attracted favorable notice, and a breeding field of Hildreth was planted at the Station in 1903, and a comparative test was also made, which resulted in the Hildreth taking first place in yield among some sixty-odd varieties. This record really established this variety and brought it before the public. The Experiment Station immediately began to improve the corn by breeding and selection, and Mr. C. E. Hildreth and his nephew, W. R. Hildreth, also started improvement work in Labette county. Hildreth corn



No. 15.—Hildreth corn.

has been much improved in uniformity, type and appearance of ears and kernels.

The original sample contained some white cobs, and there were many red and calico ears. The red shade in some ears still remains and is not considered an undesirable marking. Mr. Hildreth and his nephew sold and distributed a large quantity of seed of this variety, and other growers grew and distributed much seed. The Kansas Experiment station has bred and distributed several hundred bushels of high-grade Hildreth seed corn.

During the last five years this variety has taken a prominent place in the corn shows, winning many premiums and

much attention and praise. The writer is impressed with the resemblance between the Hildreth and the St. Charles Yellow, developed in southern Missouri, and described in Missouri Bulletin No. 87, both as regards type and maturing season. It is possible that these varieties were derived from the same original source.

CHARACTERISTICS. The Hildreth corn is a very large, rank-growing, late-maturing variety, requiring 130 to 135 days to mature in favorable seasons. The ears range high on the stalks, sometimes being almost too high to reach at husking. This fault has been largely overcome in the strain of Hildreth developed by the College. The ears are large, cylindrical or slightly tapering in shape, with deep, closely set kernels. The Hildreth resembles a large type of Reid's Yellow Dent, both in color and form of ear and kernel. The cobs are rather large and red in color. The corn has a deep yellow color, the kernels often showing a tinge of red. Like the Reid's corn, the kernels incline to be too much peg-shaped, and also there is a tendency to chaffiness in some ears. The desirable indentation is medium deep without roughness. The most desirable number of rows is eighteen to twenty, but the ears vary in this respect, ranging from sixteen to twenty-four rows. This makes an undesirable variation in size and shape of kernels, which is, however, being improved by selection for a medium type.

The late-maturing character of the Hildreth makes it not desirable for northern Kansas planting, but in the southern and central sections of the state it is well adapted for growing on bottom lands. It is a heavy yielder on fertile soil in a favorable season. Since it matures late, unless gathered from the field before heavy frost the seed corn is likely to be injured in vitality, but when saved in good condition it makes strong seed. The germs are large, and the corn, when well cured, is excellent in quality.

HAMMETT WHITE DENT.

HISTORY. The Hammett corn takes its name from the Hammett family, located near Marysville, Marshall county, Kansas, who have grown and bred this variety for more than twenty years. The first sample secured by the Experiment Station was sent by P. A. Hammett, who has, therefore, been credited in the Station publications with originating the va-

riety. According to a letter recently received from Mr. C. A. Hammett, it appears that the corn was first grown in Kansas near Marysville by a Mr. Pennington, in about 1890, and was known as "White Maryland Dent," indicating that the seed came originally from Maryland. Mr. C. A. Hammett, the eldest son in the Hammett family, secured some of the seed and raised a "fine crop," samples of which he exhibited at the World's Fair at Chicago in 1893, winning the first medal and chart for the corn "best in quality" exhibited at that exposition. This gave the variety a standing and reputation which brought it to public notice. The Hammetts continued to grow the corn, carefully selecting their seed from year to year and taking special care to maintain its purity.

Its performance in later years in the tests at the Kansas Experiment Station has served to bring it again to public notice as one of the best-producing medium-early-maturing varieties of "native" white corn which has been discovered in this state. For the five years 1903 to 1907 Hammett corn ranked third in yield among a large number of other high-producing varieties, producing an average yield of more than sixty bushels per acre.

CHARACTERISTICS. The Hammett corn resembles the Boone County White somewhat, having about the same maturing season and similar shape and color of grain, but the ears are shorter and proportionally larger in circumference than Boone County.

The Hammett is remarkable for its firmness on the cob and excellent quality of grain. It seldom produces chaffy ears. The kernels have large germs and are strong in vitality. The corn is medium hard in texture and may require grinding in order to get the best results in feeding.

FORSYTHE'S FAVORITE.

HISTORY. Forsythe's Favorite is a notable variety of corn, not only because of its own performance and good qualities, but also because it figures as one of the progenitors of the famous Johnson County White, and it is also concerned in the improvement of other varieties. In spite of its importance and prominence, however, its origin and history are obscure.

This variety was first called to the attention of the writer in 1903, when seed was obtained from Barteldes Seed Company, Lawrence, Kan., and planted in the trial of varieties at the

Kansas Experiment Station, where it has made a remarkable record, ranking as the highest-yielding variety in the five years' test, 1903 to 1907, and credited with an average yield of nearly sixty-two bushels per acre. The Barteldes company handled and sold seed of this variety for several years, securing the seed, they say, from "one of our growers, who has since moved out of the state, and we do not know the origin of this variety." Prof. M. F. Miller, of Missouri, writes: "My impression is that it is an Indiana corn." Mr. L. B. Clore, of Franklin, Ind., reports that the variety was grown in Franklin county by J. P. Forsythe during the nineties, at which time he distributed large quantities of seed. He believes that the variety was originated by Mr. Forsythe. There is some reason for believing that Forsythe's Favorite was developed in Kansas or Missouri, and that it may be closely related to the St. Charles White. The first samples of the corn grown at the Kansas Station resembled St. Charles White in having many red cobs, also the late-maturing character of the corn, its large ears, large cobs and deep kernels point to the St. Charles as one of its progenitors.

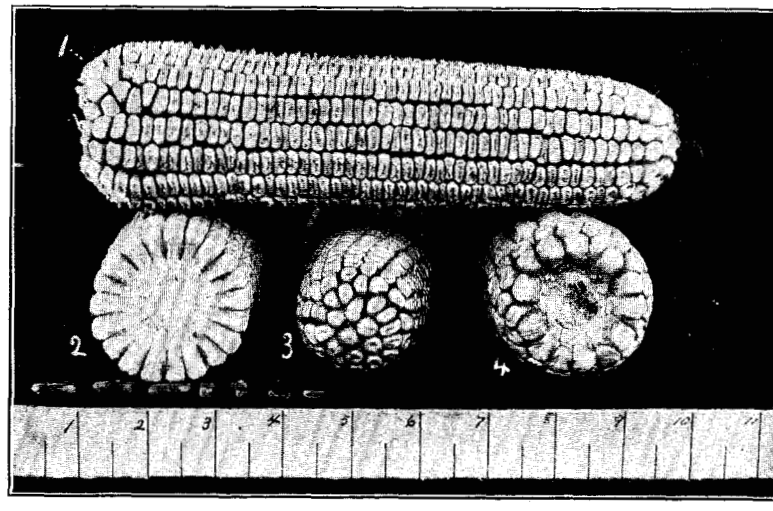
CHARACTERISTICS. Forsythe's Favorite is a large, rank-growing, medium-late-maturing variety, requiring about 125 days to mature. The ears are large and thick and cylindrical or slowly tapering in shape, with large cobs, which are usually white. The kernels are long and medium in size and white in color, having a good proportion of horny gluten. The corn grown at this Station was noted as being very firm on the cob and of extra quality. The first samples secured were not very pure in type, and this variety has not recently been improved by breeding, either at this Station or by breeders in the state, so far as the writer is informed. In fact, the variety has been dropped from the seed-house catalogues, and it is doubtful if pure seed of Forsythe's Favorite can now be obtained.

MCAULEY.

HISTORY. The McAuley corn was originated by W. S. McAuley, Americus, Lyon county, Kansas. Mr. McAuley states that he produced this corn by crossing a "native" variety of Silvermine corn with another variety of white corn known as "Mortgage Lifter." He used three ears of Silvermine and eighteen ears of Mortgage Lifter, and mixed the seed, plant-

ing the mixed seed in 1896 in a separate field. From the produce of this cross he chose the larger, better-developed ears, selecting especially for weight of ear and soundness of grain. Mr. McAuley sent a sample of this corn to the Experiment Station in 1903, and it was planted in comparison with other varieties for several years, proving to be a heavy producer. The McAuley ranked first in yield in the five-year period 1904 to 1908.

This variety was given some attention and carefully bred and selected for several years at the Kansas Experiment Station, but its breeding has been discontinued, partly because the



No. 16.—McAuley.

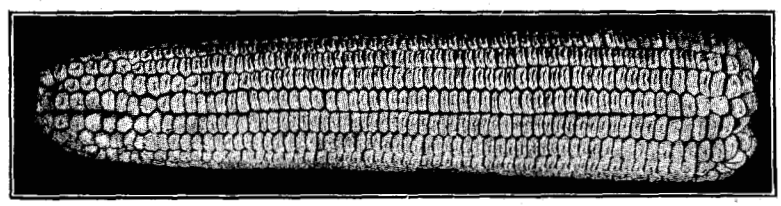
seed corn was often found to be low in vitality, but whether this was the result of close breeding or an inherent character in the corn has not been determined. The corn is still grown by Mr. McAuley, who has continued his selection and breeding independent of the Experiment Station.

CHARACTERISTICS. The McAuley is a medium-late-maturing corn, requiring a growing season of about 125 days. The stalks are sturdy, of medium height, and fairly leafy. The ears are medium in size or inclined to be somewhat short and thick. The kernels are medium in depth and set very firmly on the cob. The indentation is medium. The better ears of this corn are very firm and heavy and the grain is of excellent

quality. It seems to mature fully and there are few chaffy ears, and yet at this Station, for some reason, the College-bred seed corn has shown a relatively low vitality even when it has been carefully gathered and saved.

ROSELAND WHITE.

HISTORY. The Roseland White corn was developed by Thomas D. Hubbard, Kimball, Kan. Mr. Hubbard writes concerning this corn: "I started it from some rather good white corn which I bought by the wagonload from a neighbor in 1894, I planted and saved the better ears each season, and graded it up in this way. After a few years I crossed the original corn with a still larger white corn which I bought from another neighbor, who said that he brought it from Mis-



(Courtesy of T. D. Hubbard.)

No. 17.—Roseland White.

souri. He called it the St. Charles White. This was the largest corn I have ever seen, but it had mostly red cobs. I preferred a white cob as a pure-bred corn, and I proceeded from year to year to exclude from my seed selection all ears which had a red cob, until I finally secured a pure white corn with a pure white cob, with sufficiently large ears for almost any purpose."

Mr. Hubbard has bred this corn for the last ten years by selection only, and he reports that he has never grown any other corn that would produce more bushels per acre than the Roseland White.

This variety was first planted at the Experiment Station in 1906, the seed being secured from Mr. Hubbard, who sent the Station several very large ears, which were nearly twelve inches in length and well proportioned, with very deep, rather large kernels. On the upland soil of the Station farm this variety has not made so good a showing as earlier-maturing varieties with smaller ears; but its high-yielding qualities un-

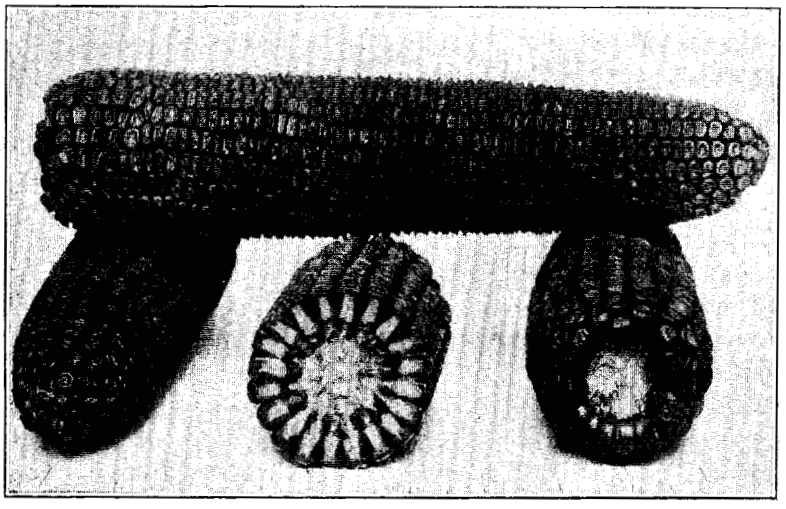
der fertile soil conditions, as reported by Mr. Hubbard, are not questioned.

CHARACTERISTICS. This is a late-maturing, rank-growing variety, The stalks are large and thickly covered with large, broad leaves. Its rank growth, large ears and abundance of foliage make it a desirable silage corn for southern planting.

The ear resembles the St. Charles White in general form and appearance, except that the Roseland has white cobs; also, the ears are more cylindrical in shape and show more breeding and uniformity in type. The kernels are somewhat larger and longer than those of the St. Charles, and are deeply indented but not rough. The corn seldom produces chaffy ears, and is usually quite firm on the cob and of good quality. This is doubtless one of the best well-bred varieties of corn for growing in southern Kansas.

HIAWATHA YELLOW DENT.

HISTORY. This variety was first brought to public notice by John D. Ziller, Hiawatha, Brown county, Kansas, who has continued the breeding and distributing of this corn until the pres-



No. 18.—Hiawatha Yellow Dent.

ent time. Mr. Ziller's sample of Hiawatha Yellow Dent took the first premium for the best ten ears of yellow corn at the Kansas State Corn Show, January 22-24, 1906. This sample was bought by Mr. J. T. Martin, Hanover, Marshall county,

Kansas. Mr. Martin planted the ears in separate rows and selected seed from the product of the three highest-producing ears, which he has used as foundation stock for the further improvement of this variety, The samples grown at the Kansas Experiment Station in the trial of varieties were secured from Mr. Martin,

Mr. Ziller describes the origin and history of the corn in a recent letter, as follows: "I secured the original seed of Hiawatha Yellow Dent corn at the New Era Exposition at St, Joseph, Mo., in 1889. I bought the corn from Adam Rankin, of Olathe, Kan." He stated that the seed came originally from Monmouth, Ill., and was called the "Mammoth Yellow Dent." Mr. Ziller further states that this sample was "the finest ten ears of corn which I ever saw. It won the $600 prize for the best ten ears in the show." Mr. Ziller found this corn rather too late in maturing to be grown in Brown county successfully, and according to his statement he crossed it twice with an earlier-maturing type of Legal Tender. He chose from this cross the earlier-maturing ears, selecting carefully for a "very deep kernel and well-developed ears."

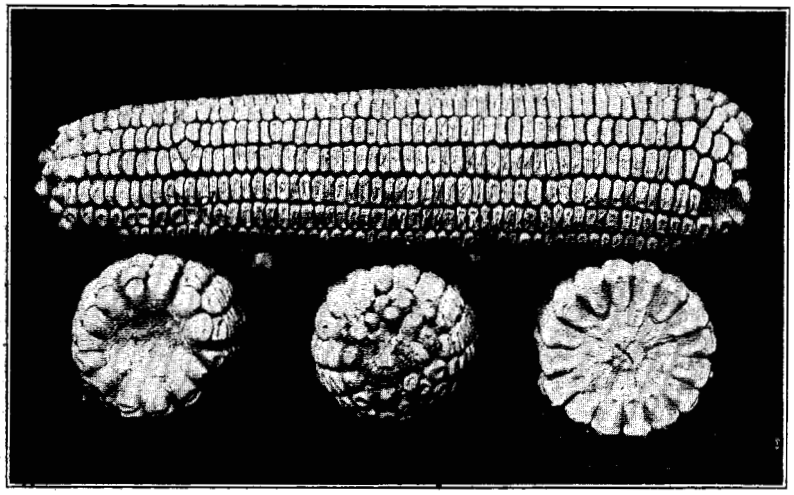
CHARACTERISTICS. The Hiawatha is a large, late corn, requiring about 130 days to fully mature at the Kansas Station. It requires early planting to mature in Brown county, and can not be recommended for planting much farther north. It resembles Hildreth corn in producing large stalks and large ears, but it grows and matures better than Hildreth in northern Kansas.

The Hiawatha has proven to be a heavy yielder at the Kansas Station under favorable conditions. It will not stand drouth well and should be planted only on fertile land. The ears resemble the larger, later type of Legal Tender, being somewhat more tapering in shape, with large cobs and rather large shanks. The kernels are very deep and set closely on the cob in the well-matured samples, but the corn is apt to be immature and loose on the cob, often inclining to a rough, chaffy ear. The indentation is rather too deep and rough, but this fault is being largely overcome in Mr. Martin's strain, which has been selected for a smoother, earlier-maturing type, with broader, less deep kernels. The color of the kernels is a medium yellow and the cobs are red. The kernels often contain rather small germs and too much crown starch.

PRIDE OF SALINE WHITE DENT.

HISTORY. This corn was first bred and developed by Mr. C. H. Kellogg, a Russell county, Kansas, farmer, who secured the seed from Barney Bradt, of Gorham, Kan., in the spring of 1891. No other information is given regarding the original sample except that it was white corn, but it is the writer's judgment that this variety is related both to the Silvermine and White Pearl varieties, containing perhaps also other crosses or mixtures.

Mr. Kellogg bred the corn for several years with the primary object of lengthening its period for fertilization. He had observed that in western Kansas a period of unfavorable



No. 19.—Pride of Saline.

weather sometimes ruined the corn crop, when it occurred just at tasseling and silking time. His plan was to select the earliest-, medium- and latest-maturing ears for seed, and by this method he believes that he lengthened the fertilizing period of the variety from one week to three weeks. Mr. Kellogg named the variety Pride of Saline White Dent.

In 1904 Mr. J. G. Haney, then superintendent of the Fort Hays Branch Experiment Station in western Kansas, secured some seed of Mr. Kellogg's corn and planted it on the Station farm. The corn proved to be an excellent producer, and the Hays Station has continued growing it to the present time,

also making some further improvement in the variety by ear-row breeding, which has improved its type and purity. The Station has distributed a large amount of seed corn of this improved strain to the farmers in western Kansas.

CHARACTERISTICS. Pride of Saline corn is a medium-late-maturing variety at the Hays Branch Experiment Station. At the State Experiment Station at Manhattan it classes as medium early, requiring about the same season as Leaming, Silvermine, or Reid's Yellow Dent. It is a rather rank, large-growing variety for western planting, and succeeds well only on bottom land. On fertile soil in a favorable season it produces many suckers. The variety is well adapted for growing on upland in middle and eastern Kansas, and has proved to be especially hardy and productive in the drier seasons at the State Experiment Station at Manhattan. For the three seasons 1907-'09 it produced more corn per acre than any of the other varieties tested. (See table I).

The ears are medium in size. A large standard size at the Hays Station is eight to nine inches in length and six and one-half to seven inches in circumference. The corn is a pearl white in color, with white cobs, which average rather large for the size of the ear. The shanks are rather large, a necessary characteristic in a windy climate. The kernels are medium short and quite rectangular in shape, fitting tightly on the cob at the tip, but some space at the crowns. The indentation is medium to rather smooth. The kernels usually have large germs and are strong in vitality. This corn contains a relatively small proportion of crown starch and a large proportion of horny matter. The grain is rather hard and requires grinding to secure the best results in feeding.

This is an excellent variety in western Kansas, for both fodder and grain, when planted under the more favorable conditions. It is a good western silage corn. The western-grown seed of this variety may be recommended for eastern Kansas planting as an early corn and under the more severe conditions of soil and climate.

OTHER VARIETIES.

The seed of Dyche Yellow Dent has been lost. This variety resembles a large type of Kansas Sunflower.

White Wonder is a highly advertised variety of white corn, which has been introduced and widely distributed by Miller

Brothers, of the 101 Ranch, Bliss, Okla. It is a medium-late variety, and has proven to be a good yielder in the Experiment Station tests.

Griffing Calico has been grown by the farmers in Riley county, Kansas, in the vicinity of the Experiment Station, for a number of years. It is a large, late-maturing variety of the Calico type, but not very pure.

The following interesting information was received from C. A. Moores, agronomist at the Tennessee Experiment Station, regarding Hickory King, a southern-grown variety of corn, which has succeeded well at the Kansas Experiment Station:

"Hickory King corn was originated by A. O. Lee, Bartee, Va. I understand that there is a railroad station called Hickory near his place, which furnishes the name of this reliable variety." "We value Hickory King as an upland variety for grain. The Station has given some attention to the improvement of this variety." The Hickory King corn is remarkable for having the largest kernels and the smallest cob in proportion to depth of kernels of any of the varieties tested at the Kansas Experiment Station.

Acknowledgments.

Acknowledgments are due Mr. C. W. Nash of the agronomy department for working up a part of the data given in this bulletin. I wish also to thank the seedsmen, corn breeders and farmers who have so kindly supplied the information which has permitted me to give the history of many important corn varieties.

Special acknowledgment is due Messrs. Bowman and Crossley for the free use of valuable information regarding the origin and history of certain of the older standard varieties, which is given in their book on "Corn."

A. M. TENEYCK.