UNIVERSITY OF ILLINOIS,

Agricultural Experiment Station.

CHAMPAIGN, FEBRUARY, 1890.

BULLETIN NO. 8.

FIELD EXPERIMENTS WITH CORN, 1889.

Experiment No. 1. Corn, Testing of Varieties.

The tests of dent corn here reported are a repetition, with certain variations, of tests made in 1887 and 1888. In 1887, 25 plats were planted; in 1888, 176. A large number of the varieties planted in 1888 were not planted this year — mostly those which did not promise any special merit. Besides certain varieties planted in 1887 and 1888, tests were made of varieties offered for sale by the leading seedsmen of the United States.

For a report of the tests made in 1888, and for many details of the methods employed, the reader is referred to bulletin No. 4.

The land used this season was tracts (*a*) and (*b*) of that used las season. Tract (*a*) was divided into 25 plats, each 2 x 10 rods; tract (*b*) into 64 plats, each 2 x 2 rods.

The land on both tracts was fall-plowed 6 to 7 inches deep without removing stalks of the previous season. Just before planting, the land was disked twice, harrowed and planked once. The plats were planted in hills 3 ft. 8 in. apart each way, four kernels to a hill, covered with one to two in. of mellow soil.

Tract (*a*) was planted May 4th; tract (*b*) May 3d, except plat 85 planted May 8th, and plats 86 and 87 planted May 11th. Between May 28th and July 5th, tract (*a*) was cultivated four times, one-half of each plat being cultivated a fifth time; tract (*b*) was cultivated five times. The weeds remaining in the hills were removed from both tracts July 9th to 11th. All cultivation was with a shallow cultivator.

Discussion of Methods.

In 1888 the space of one row was left about each plat. The figures of that season's work showed that the yields per acre from small plats under those circumstances were somewhat greater than would be obtained in field culture, and that the smaller the plat the greater the chance for error. Where the plats were unequal in size, or when on plats of equal size varieties of widely different habits of growth were raised, as those maturing at different dates, it was shown that an appreciable error might occur. It was shown that on tracts (*a*), (*b*), and (*c*) the yield was increased 3, 4, and 5 per cent., respectively, on account of the vacant land about each plat from which extra food was obtained. This season the plats were so planted that all the land was occupied, an extra row being planted around the tracts. As the two tracts occupied five acres, the average yield of all the varieties is no greater than that which might be obtained in ordinary field culture.

Duplicate Plats.

It was pointed out in bulletin No. 4 that it is essential to know what would be the difference in results between two plats planted with the same variety of corn before we can judge of the merits of two varieties from the results obtained under such conditions. It was shown that there was a difference in 1888 of over 9 bu. per acre between the two plats of Leaming on tract (*a*) and of 2½ bu. on tract (*b*). The difference between two plats of Burr's white on tract (*a*) was nearly 6 bu., and on tract (*c*) nearly 7 bu. per acre.

Leaming and Burr's white were again selected for a duplicate test. As in 1888, the plats of each tract were more than usually uniform to all appearances, and care was taken to have the conditions as nearly alike as possible.

The following table gives the results:

TABLE showing Yield per Acre of Air-dry Corn upon Duplicate Plats.

Variety.	Tract (*a*).			Tract (*b*).		
	Plat.	Bu. per acre.	Average.	Plat.	Bu. per acre.	Average.
Leaming	4	78.6	74.3	26	86.5	86.8
	10	66.6		48	84.4	
	16	77.9		53	89.6	
Burr's white. ...	19	64.3	63.5	64	74.4	87.9
	25	62.8		67	101.4	
	.....	.....	68.9	.....	.....	87.3

With Leaming the differences ran on tract (*a*) from less than 1 bu. to 12 bu.; on tract (*b*) from about 2 to over 5 bu. With Burr's white on tract (*a*) the difference was 1½ bu., but on tract (*b*) 27 bu. This last is unusual, and was due to the number rather than the size of the ears produced, as may be seen in table 4, page 245. Differences of 5 to 10 bu.

per acre may arise from uncontrollable variations in conditions, while greater variations may occur from such sources.

In the averages of the two varieties there was a difference of about 18½ bu. in favor of tract (*b*); in 1888 there was a difference of 6½ bu. in favor of the same tract. This season, the corn, on tract (*a*) especially, came up very slowly on account of the unusually dry weather from April 1st to May 20th, but 0.99 of rain falling in that time. Following this were heavy rains and low temperature which did further injury to the corn. The night of May 30th the lowest temperature was 33° F. May 21st to June 21st, 11.95 inches of rain fell. For further details see table, page 219. These conditions seem to have affected tract (*a*) more unfavorably than tract (*b*). Doubtless the differences above given represent, in a general way, the productiveness of the two plats the present season, and should be considered in comparing the merits of the two varieties grown on separate tracts.

Results.*

A summary of the results obtained from the varieties on 82 plats in 1888 and in 1889 on tracts (*a*) and (*b*) is given in an article following this. For 1888 the varieties were divided into *early maturing*, which ripened that season in 125 or less days from date of planting; *medium maturing*, which ripened in from 125 to 135 days; *late maturing*, which ripened in from 135 to 145 days; and *non-maturing*. This season the time of ripening for each class was prolonged about 10 days. The classes in table 5, page 246, were made strictly upon the date of ripening for each plat; so that in 1889 the same varieties on different tracts were sometimes placed in different classes, and a variety which was put into the early maturing class in 1888 may have been put into the medium maturing class in 1889.

The vitality of the seed was good in the maturing varieties. It was rather better in the medium maturing than in either the early or late maturing varieties. The percentage of kernels producing plants in two weeks in 1888 and in three weeks in 1889 was largest in the early maturing, and became constantly less the later the corn was in maturing. In general the same was true of the stand at maturity.

For the purpose of comparison, four stalks to the hill, the number of kernels planted, is considered a full stand. The average in each division was about ⅞ of a full stand in 1888, and, suckers included, rather less than .8 in 1889. In giving yields no correction has been made for differences in stand; for there is no constant relation between the number of stalks per acre and the yield.

For four years past the per cent. of barren stalks has been determined in a varying number of varieties. In 1886, in seven varieties, the average was 14 per cent., the greatest 25, the least, 6; in 1887, the average was 35; the largest 63, the least 22; in 1888, the average with the varieties of 82 plats was 10; the largest 28; several varieties had no barren stalks;

*In the tables, pages 238-246, are given in detail the results obtained from the varieties tested.

in 1889, the average was less than 2; the largest 9, while 37 plats had no barren stalks, or practically none. The experiments point to the conclusion that barrenness is to a very slight extent, if at all, an hereditary characteristic of any variety. It seems rather to be largely, if not entirely, the result of the conditions under which the corn is grown from season to season. Two causes have been observed which it is believed affect the result; (1) a season which is not favorable to the production of corn, as in 1887; and (2) a season which is favorable to the production of corn and also to suckers, as in 1888. In *Experiment No. 5, Thickness of Planting*, it was found that more suckers were produced in 1888 than in 1889. The general tendency, probably, would be for suckers to be barren. If this reasoning is correct, more barrenness may be expected in a poor or in an exceptionally good season. The results so far obtained do not indicate that the selection of varieties with regard to the lack of this characteristic will be of great practical benefit.

There was considerable difference in the height of stalks between the seasons of 1888 and 1889. The average height on 82 plats in 1888 was 11.2 ft.; in 1889, 9.7 ft. Similar differences were observed in the height of the ears on the stalk. There was more difference this year in the height of stalks ripening at the different dates than there was last.

Both the size and weight of the ear increased from the early to the late maturing varieties. Both seasons, while the length of the ears in the non-maturing was greater than in the late maturing, neither the diameter of the ear nor of the cob was so large. The average weight, as husked, however, was larger, markedly so in 1889.

In 1888, the average per cent. of water in the shelled corn when husked was, in the early maturing varieties, approximately, 18 per cent.; medium maturing, 22; late maturing, 27; non-maturing, 36. In 1889 the average per cent. was 17, 24, 29, and 38, respectively. The increase in the per cent. of water with the later maturing is very marked. The difference in the loss of weight is more than is usually recognized. For purposes of comparison corn containing 11 per cent. of water is considered air-dry, for reasons given in bulletin No. 4, p. 44. On this basis the average loss in weight of shelled corn per acre by drying would be, in the early maturing, 5 bu.; in the medium maturing, 13 bu.; in the late maturing, 18½ bu. There was one variety, No 69, Helms improved, which was considered mature enough to cut, although barely so, in which the loss in weight per acre on drying would be equivalent to 35 bu. Taking an average of the two seasons, the loss in weight of the shelled corn from the time the crop was gathered until it became thoroughly air-dry would be, in 1,000 bu. of the early maturing varieties, 75 bu.; in the medium maturing, 130; and in the late maturing, 190.

To make a bushel of thoroughly air-dry corn — that is, shelled corn containing 11 per cent. of water — it took, when the corn was husked, October 20th to November 13th, 72 lb. of ear corn in the early maturing, 80 lb. in the medium maturing, and 89 in the late maturing. As

most of the corn produced in central Illinois this season was late, 80 lb. evidently would not have been sufficient to produce a bushel of air-dry corn. Much shrinkage is often caused by vermin, but, doubtless, shrinkage is often charged to this cause which in reality is due to drying.

Both seasons the medium maturing varieties, that is, those varieties which were ripe ten days to two weeks before frost, gave the largest yield of air-dry corn,—about 4 bushels per acre more than the late maturing, and 17 more than the early maturing varieties.

The average yield, as husked, in 1888, of the medium and late maturing varieties was substantially the same, 102 bu., while the yield of air-dry corn was 90 and 83 bu., respectively. In 1889 the average yield as husked, of the medium maturing varieties was 89 bu., and of the late maturing 92 bu. per acre, while of air-dry corn it was 75 and 73.5 bu., respectively. These yields are considerably higher than is usual with the better class of corn raisers and much above the general average for the state, notwithstanding some poor varieties are included. Neither the appearance of the crop nor the conditions under which it was raised were such as to preclude the possibility of obtaining equal yields in field culture in favorable seasons on good soil with no very unusual cultivation.

While no one of the varieties tested stands far above the average of the better varieties of its class, doubtless a large number of the varieties are better than the average raised by the farmers of the state, and might be introduced on their farms with profit. Not to exclude other meritorious varieties, the following medium maturing dent varieties may be safely recommended for general culture in central Illinois: Yellow—Leaming, Clark's Iroquois, legal tender, Riley's favorite, Fisk. White—Champion white pearl or Burr's white, gourd-seed, Clark's premium 110 day. The following, which are desirable early maturing varieties in this latitude, may be recommended for general culture in northern Illinois: Yellow—Murdock, Edmonds or Kane county pride, grange favorite, king of the earliest (for very early). White—Wisconsin white dent, champion of the north.

The following, which are almost too late for this latitude, would probably be desirable farther south: Yellow—Improved orange pride, Steward's improved yellow, Swengel. White—Helms improved, Parrish.

Results for 1887, 1888, and 1889 Compared.

On eighteen plats of tract (*a*) the same varieties of corn have been grown three years successively. Fresh seed from original sources was obtained for each year's planting with three exceptions in 1889, Nos. 18, 22, and 23, on which, owing to our inability to get the seed as in other cases, seed grown by the Experiment Station in 1888 was substituted.

The average yield per acre when the corn was husked in 1887 was 32 bu.; in 1888, 94; in 1889, 82. The yield of air dry corn for the three years was 29, 83, and 66 bu., respectively. The largest yield of air-dry

corn in 1887 was 36½ bu. from Murdock; in 1888 and 1889, from Leaming, 93 and 79 bu., respectively.

The per cent. of water in the shelled corn of the 18 varieties in 1887 was 18.35; in 1888, 21.39; in 1889, 28.27. As the corn was husked at about the same time each season, these figures give a good idea of the difference in the maturity of the corn in the respective seasons.

The Seasons Compared.

From the results just given it is evident that for the production of Indian corn, the past three seasons have been widely different; that of 1887 exceptionally poor; of 1888, especially good; of 1889, somewhere between the extremes in yield but with the crop very late in maturing. These differences in results are chiefly due to differences in meteorological conditions, and a comparison of these conditions will be pertinent.

The following tab'e gives some of the meteorological conditions during the corn-growing season of 1889, for each week ending on the dates given. Reference will be made to this table in succeeding experiments.

TABLE Showing Meteorological Conditions April 21—October 13, 1889.

For week ending	Temperature.					Mean humidity.	Rainfall, inches.
	Maximum.	Minimum.	Mean.	Bare soil, depth 3 in.	Corn field, depth 3 in.		
April 21	73	33	56 7	58 4	.....	71 8	0.54
28	74	28	53.2	59.1	.....	69.2	.02
May 5	78	28	50.8	59.1	.....	61.5	.00
12	91	47	69.8	72	.....	72 7	.38
19	88 5	46	66 4	70.1	.....	72.1	.00
26	71.	35	55 6	62.6	.....	79 4	1.24
June 2	69	33	48.2	52 9	.....	88	3.90
9	77	45	61 9	62 1	61	82 8	3.47
16	83	46	65 7	67.3	67 2	83 9	84
23	86	48	67 2	71 7	70 6	81 9	2.38
30	88	51.5	71 5	72	72.6	79 1	.00
July 7	89	52	72.9	76.3	77 7	77.3	.06
14	90 5	63.5	75.6	81 4	79.3	82.7	2.34
21	90	50	72.4	77	74.5	83	.78
28	88	54.5	71 8	75.5	74 4	78 9	2 66
Aug. 4	83	54 5	68 8	74 4	72 9	78 2	.00
11	83	49 5	67.9	75 9	73	77.8	.03
18	84	51	67 3	73 4	70.1	82.2	.57
25	87	49.5	69 1	72 8	72 7	79.3	.00
Sept. 1	89	55	73.3	74.2	74 7	71 8	.10
8	83	45.5	66	72.9	69 9	84 1	1.20
15	88	55	69	77 7	70.6	82.5	.00
22	70	35	52.3	63 5	58.8	78 6	.00
29	83	32	54 9	61 5	57.7	83.4	1.00
Oct. 6	74	34	58 8	58 8	55.1	79 7	.44
13	82	25	50.8	57.6	53	68 7	05

The following table gives the two principal meteorological conditions, agriculturally considered, for the years, 1887, 1888, and 1889. Unfortu-

nately a strict comparison can not be made between 1889 and the two preceding years because the figures for 1889 were taken from the Station record and those for 1887 and 1888 from the records of the Illinois Weather Service for central Illinois. The Station record begins September 1, 1888, and the Illinois Weather Service was discontinued at the end of 1888.

TABLE SHOWING MEAN TEMPERATURE AND RAINFALL FOR 1887, 1888, 1889; AVERAGE TEMPERATURE FOR 10 YEARS, 1878—1887.

Month.	Mean temperature, F.				Rainfall, inches.			
	1887.*	1888.†	1889 ‡	Average 1878-87.*	1887.*	1888.†	1889.‡	Average 1878 87.*
May	67.9	59.4	59.2	64.6	3.84	6 84	5.52	4.45
June	73.6	71.3	65.5	71	1.62	5.75	6.81	5.04
July	80.4	77	72.7	77.5	1.65	5.34	5.84	2.75
August	75.2	72.4	69.2	74.6	2.56	3.14	0.60	3.45
September	66.4	62.4	61.3	66.5	3.68	1.95	2.74	3.27
	72.7	68.5	65.6	70.8	13.35	23.02	21.51	18.96

*. Statistical Report, Illinois State Board of Agriculture, December, 1887.
†. Monthly Weather Review of Illinois State Weather Service, December, 1888.
‡. Station record.

CLASSIFICATION AND DESCRIPTION OF A PORTION OF THE VARIETIES OF DENT CORN TESTED.

The classification here attempted is an arbitrary one, based upon three obvious characteristics, the date of maturity, the color of the kernels, and the relative roughness of the ears. It is adopted that the corn raiser may find all those varieties possessing any particular combination of these characters grouped together. If a medium maturing yellow, rough variety, or an early maturing, white, smooth variety is desired, the varieties tested possessing these characteristics will be found grouped so that the searcher may easily determine which one of those described most nearly meets his wishes.

The classification into early, medium, late, and non-maturing varieties, is, of course, for this latitude. It has been found in practice that what is an early maturing variety here becomes, when planted in the extreme northern portion of the state, a late maturing variety; and that varieties which mature readily in southern Illinois, often will not mature here. The classification in regard to maturity which follows is based upon the judgment of two and sometimes three seasons' tests, and indicates what may be expected in an average season.

In the description and measurements, three specimen ears were used. The best of the type were always sought. If large ears were the special characteristic of a variety, large ears were sought. If a compact, medium sized ear, evenly rounded at butt and tip, was the type, ears possessing these characteristics were sought. The descriptions were made with a

view to their usefulness to those wishing to determine the relative merits of the different varieties. The purity, as indicated by conformity to a given type; the length and diameter of the ear; the size and color of cob; the relative roughness of ear; its shape, cylindrical, or more or less tapering; whether butt is evenly rounded, or compressed rounded, that is, becoming distinctly smaller as it rounds over, or not rounded; shape of tip, whether filled or not filled; the difficulty in breaking the ear from the stalk, as indicated by the size of the ear stalk; the firmness of the kernel on the ear; the shape of the kernel, whether wedge-shaped, rectangular, or polygonal (five or more sides in outline); size (it may help the reader to know that an average sized dent kernel is 5/8-inch long and 3/8 inch wide); color; manner of denting, whether dimple or crease, whether, in the latter case, the sides of the crease are pinched together, or whether there is more or less of a ragged projection from the chit side; the usual number of rows, their regularity and the quantity of space between them, are all of importance in forming a judgment of a variety and have received attention in the description. In addition some of the principal field results have been given. For a fuller statement of results see tables.

In the description, as well as in the classification, the results of both seasons' work have been considered. The field results for 1889 only. For those of 1888, and 1887, the reader is referred to bulletin No. 4.

The endeavor has been to bring together the results of the season's work in such a manner that each reader may form his own opinion of the value of the different varieties as indicated by this season's test. The suggestions made as to the relative merits are impresssions based upon two or three seasons' tests.

Specimens having like characteristics, although bearing dissimilar names, have been grouped together. This grouping is tentative, and changes may be expected with succeeding tests. No special refinement is attemped in the grouping. It is intended merely to aid the practical corn raiser in selecting varieties for use.

No description is given of the three flint varieties tested, which are of no general practical value in this state. Of the three varieties, the so-called self-husking is much the poorest. The habit of partially shedding its husks is a disadvantage, as the ears often drop to the ground. The much-advertised Brazilian flour corn, a soft variety, is utterly worthless in this latitude, and the characteristics displayed in this season's test do not indicate that it will be found valuable for general culture any where in the United States.

EARLY MATURING VARIETIES—*Kernels, yellow*—Ears, smooth.

No. 13, Murdock; seed grown on University farm. *No. 14, Murdock;* seed grown by Wm. T. Lamb, Ridott, Stephenson Co., Ill. *Synonyms—No. 12, Prairie queen;* seed grown by Nathaniel Pease, Quincy, Ill. *No. 29 Queen of the prairie;* seed from Peter Henderson & Co., New York.

Type, uniform. Ears, 7½ to 8½ in. long, 1.75 to 2.1 in. in diameter. Cobs, red, rather small, 1 to 1.3 in. in diameter. Ears, smooth, tapering; butt and tip, evenly rounded. Juncture, small, ½ in. in diameter. Kernels, firmly fixed; thick, perfectly wedge-shaped; 7-16 to ⅝ in. long, ¼ to 5-16 in. wide; yellow above, orange below; long dimple-dented; tip kernels, not dented, Rows, usually 16 to 18, regular; no space between; often compacted like the cells of honey-comb.

An average of the four plats gave height of stalk, 9½ ft.; of ear, 4½ ft. The average weight of 100 ears was 52 lb. The yield per acre of shelled corn, as husked, was (good ears, 55; nubbins, 17) 85 bu., with 76 per cent. of a full stand, and of air-dry corn, 62 bu. There was 23 per cent. of water in the shelled corn and it required at that time 80 lb. of ear corn to produce a bushel of thoroughly air-dry corn.

Excellent as an early variety for central Illinois, and for general culture in northern Illinois.

No. 9, Golden rod; seed grown by E. Morris, Decatur, Van Buren Co., Mich.

Type, moderately uniform. Ears, 8 to 9½ in. long, 2 to 2.3 in. in diameter. Cobs, usually red; medium, 1.2 to 1.4 in. Ears, smooth, tapering; butt, sometimes swollen, tip, filled. Juncture, medium, ⅝ to ⅞ in. in diameter. Kernels, wedge-shaped to nearly rectangular; 7-16 to 9-16 in. long, 5-16 to ⅝ in. wide; yellow above, orange below; round to long dimple-dented, sometimes crease-dented. Rows, 14 to 20; some space between.

The average height of stalk was 7½ ft; of ear, 2½ ft. One hundred ears weighed 45 lb. The yield of shelled corn per acre, as husked, was (good ears, 38; nubbins, 29) 67 bu., with 79 per cent. of a full stand, and of air-dry corn, 56 bu. There was 25 per cent. of water in the shelled corn when husked, and, at that time, it took 82 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 30, North star; seed from J. C. Vaughan, Chicago.

Type, uniform. Ears, 6 to 7½ in. long, 1.6 to 2 in. in diameter. Cobs, red, rather small, 1 to 1.2 in. in diameter. Ears, smooth, tapering; butt and tip evenly rounded and filled. Juncture, small, ⅜ to ½ in. in diameter. Kernels, wedge-shaped; 7-16 to ½ in. long, ¼ to 5-16 in. wide; yellow above, orange below, long dimple-dented. Rows, 16 to 18; space between, slight or none,

The height of stalk was 8 ft.; of ear, 3¾ ft. One hundred ears weighed 43 lb. The yield per acre of shelled corn, as husked, was (good ears, 54; nubbins, 14) 68 bu., with 93 per cent. of a full stand, and of air-dry corn 64 bu. There was 16 per cent of water in the shelled corn when husked, and, at that time, it took 70 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A well-known and good extra-early variety.

No. 33, Wisconsin yellow dent; seed from J. C. Vaughan, Chicago.

Type, uniform. Ears, 6½ to 7½ in. long, 1.9 to 2.1 in. in diameter. Cobs, red, medium, 1.1 to 1.2 in. in diameter Ears, smoothish, tapering; butt and tip, evenly rounded and well filled. Juncture, small, ⅜ to ½ in. in diameter. Kernels, perfectly wedge-shaped; 7-16 to ½ in. long, ¼ to 5-16 in. wide; yellow above, orange below; long dimple-dented, sometimes creased and slightly ragged. Rows, usually 18; space between, slight.

The average height of stalk was 8 ft.; of ear, 3½ ft. One hundred ears weighed 50 lb. The yield per acre of shelled corn, as husked, was (good ears, 57; nubbins, 11) 68 bu., with 87 per cent. of a full stand, and of air-dry corn 60 bu. There was 21.5 per

cent. of water in the shelled corn, when husked, and, at that time, it took 77 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A good early variety, but rather small for this latitude.

No. 34. Woodworth's yellow dent; seed from J. C. Vaughan, Chicago.

Type, somewhat variable. Ears, 9 to 10½ in. long, 2 to 2.15 in. in diameter. Cobs, red, large, 1.3 to 1.4 in. in diameter. Ears, smooth, tapering; butt, enlarged, not well rounded; tip, blunt, not always filled. Juncture, large, ¾ to 1 in. long. Kernels, thick, rectangular; corners, rounding; ½ in. long, ⅜ in. wide; yellow above, orange below; long dimple dented; tip kernels, not dented. Rows, 16 to 18; space between rows, often considerable.

The average height of stalk was 8 ft.; of ear, 3¾ ft. One hundred ears weighed 57 lb. The yield per acre of shelled corn, as husked, was (good ears, 70; nubbins, 15) 85 bu., with 84 per cent. of a full stand, and of air-dry corn, 76 bu. There was 21 per cent. of water in the shelled corn when husked, and, at that time, it took 81 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 35, Minnesota king; seed from Northrup, Braslan & Goodwin Co., Minneapolis.

Type, uniform. Ears, 8 to 8½ in. long, 1.75 to 2 in. in diameter. Cobs, white, relatively large, 1 to 1.2 in. in diameter. Ears, smooth, tapering; butt, compressed; tip, blunt. Juncture, medium, ⅝ to ¾ in. in diameter. Kernels, thick, polygonal, wider than long; ½ in. long, ⅝ in. wide; top, rounding; light yellow above, orange below; shallow crease-dented. Rows, 8 to 10; space between, often very large.

The average height of stalk was 6 ft.; of ear, 1¾ ft. One hundred ears weighed 38 lb. The yield per acre of shelled corn, as husked, was (good ears, 42; nubbins, 8) 50 bu. with 67 per cent. of a full stand, and of air-dry corn 46 bu. There was 18 per cent. of water in the shelled corn when husked, and, at that time, it required 75 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A very early variety, but probable not desirable so far south as this state.

No. 39, Grange favorite; seed grown by Swanzey Bros., Ridott, Stephenson Co., Ill. *Synonym—No. 38, Blakeway;* seed grown by H. Blakeway & Son, same place.

Type, fairly uniform. Ears, 7 to 9 in. long, 2 to 2.4 in. in diameter. Cobs, red, rather large, 1.3 to 1.5 in. in diameter. Ears, smooth, nearly cylindrical; butt and tip evenly rounded, filled. Juncture, medium, ¾ in. in diameter. Kernels, wedge-shaped to rectangular; ½ in. long, 5 16 to ⅜ in. wide; dimple- to crease dented; yellow above, orange below. Rows, 18 to 22; space between, slight or none.

An average of the two plats gave height of stalk, 9½ ft.; of ear, 4¼ ft. One hundred ears weighed 69 lb. The yield per acre of shelled corn, as husked, was (good ears, 77; nubbins, 18) 95 bu., with 84 per cent. of a full stand, and of air-dry corn, 81 bu. There was 24 per cent. of water in the shelled corn when husked, and, at that time, it took 84 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Probably desirable in northern half of state.

EARLY MATURING VARIETIES—*Kernels, yellow*—Ears, rough.

No. 1, Edmonds; seed grown by H. P. Edmonds, Taylor, Ogle Co., Ill. *Synonym—No. 27, Kane Co. pride;* seed grown by R. Shedden, Pingree Grove, Kane Co., Ill.

Type, uniform. Ears, 7 to 8 in. long, 2 to 2.2 in. in diameter. Cobs, red, medium, 1 to 1.3 in. in diameter. Ears, very rough, almost cylindrical; butt and tip, well rounded and filled. Juncture, small, ½ to ⅝ in. in diameter. Kernels, narrowly wedge-shaped; 9 16 to 11-16 in. long, ¼ to 5-16 in. wide; yellow above, orange below; crease-dented, pinched and ragged. Rows, 16 to 24; space between slight.

An average of the two plats gave height of stalk, 8½ ft.; of ear, 3¾ ft. One hundred ears weighed 57 lb. The yield per acre of shelled corn, as husked, was (good ears,

60; nubbins, 24) 84 bu., with 79 per cent. of a full stand, and of air-dry corn, 72 bu. There was 23 per cent. of water in shelled corn, when husked, and, at that time, it took 78 lb. of ear corn to make a bushel of thoroughly air dry corn.

This variety is to be recommended for general culture in northern, and as an early variety for central Illinois. Some will consider its roughness objectionable.

No. 28, King of the earliest; seed grown by A. L. Goddard, Waucoma, Ia.

Type, uniform. Ears, 7 to 7½ in. long, 1.9 to 2.1 in. in diameter. Cobs, red, small, .9 to 1.1 in. in diameter. Ears, rough, tapering rather strongly; butt, rounded; tip, rather pointed, not always filled. Juncture, very small, ⅜ to ½ in. in diameter. Kernels, wedge-shaped; ⅝ in. long, 5-16 in. wide; yellow above, orange below; crease-dented, ragged. Rows, 14 to 20; space between, slight.

The height of stalk was 6¾ ft.; of ear, 2¾ ft. One hundred ears weighed 37 lb. The yield per acre of shelled corn, as husked, was (good ears, 41; nubbins, 19) 60 bu., with 91 per cent. of a full stand, and of air-dry corn, 57 bu. There was 16 per cent. of water in the shelled corn when husked, and at that time, it took 67 lb. of ear corn to make a bushel of thoroughly air-dry corn. There was less of cob to corn in this variety than in any other tested.

To be recommended as an early variety in the extreme northern portion of the state.

No. 31, Pride of the north; seed from G. S. Haskell, Rockford, Ill. *No. 32, Pride of the north;*, seed from W. W. Barnard & Co , Chicago.

Type, uniform. Ears, 6½ to 8 in. long, 2 in. in diameter. Cobs, red, small, 1 in. in diameter. Ears, rough, tapering; butt and tip, rounded and filled. Juncture, small, ½ in. in diameter. Kernels, broadly wedge-shaped; corners, slightly rounded; ⅝ in. long, ⅜ in. wide; yellow above, orange below; crease-dented, pinched. Rows, 14 to 18; some space between.

The average of the two plats gave height of stalk, 8 ft.; of ear, 4 ft. One hundred ears weighed 49 lb. The yield per acre of shelled corn, as husked, was (good ears, 59; nubbins, 9) 66 bu., with 76 per cent. of a full stand, and of air-dry corn, 60 bu. There was 20 per cent. of water in the shelled corn, when husked, and, at that time, it took 75 lb. of ear corn to make a bushel of thoroughly air-dry corn.

EARLY MATURING VARIETIES—*Kernels, white*—Ears, smooth.

No. 20, Princeton; seed grown by Wm. T. Lamb, Ridott, Stephenson Co., Ill.

Type, uniform. Ears, 7½ to 8½ in. long, 1.9 to 2.2 in. in diameter. Cobs, red or white, 1 to 1.4 in. in diameter. Ears, smooth, very compact, tapering; butt, compressed rounded; tip, blunt, filled. Juncture, small, ½ to ⅝ in. in diameter. Kernels, thick, wedge-shaped; ⅜ to ½ in. long, ¼ to 5-16 in. wide; white above, white to orange below; round to long dimple-dented. Rows, generally regular, 16 to 20; no space between.

The average height of stalk was 8¼ ft.; of ear, 3½ ft. One hundred ears weighed 44 lb. The yield per acre of shelled corn, as husked, was (good ears, 41.5; nubbins, 15.5) 57 bu., with 73 per cent. of a full stand, and of air-dry corn, 51 bu. There was 21 per cent. of water in the shelled corn, when husked, and, at that time, it took 75 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 59, White cap; seed grown by C. Leete & Son, Moorheadville, Pa.

Type, uniform. Ears, 7 to 9 in. long, 2.1 to 2.3 in. in diameter, Cobs, red, large, 1.35 to 1.45 in. in diameter. Ears, smooth, tapering; butt, slightly rounded; tip, blunt, fairly filled. Juncture, large, ¾ to 1 in. in diameter. Kernels, thick, wedge-shaped to rectanguler; ½ to 9-16 in. long, 5-16 to 7-16 in. wide; white above, white to orange, usually the latter, below; long dimple-dented. Rows, 16 to 22; no space between.

The average height of stalk was 7½ ft.; of ear, 2½ feet. One hundred ears weighed 48 lb. The yield per acre of shelled corn, as husked, was (good ears, 55; nubbins, 15)

70 bu., with 78 per cent. of a full stand, and of air-dry corn, 64 bu. There was 19 per cent. of water in the shelled corn, when husked, and, at that time, it took 74 lbs. of ear corn to make a bushel of thoroughly air-dry corn.

EARLY MATURING VARIETIES—*Kernels, white*—Ears, rough.

No. 23, Champion of the north; seed grown by the Station.

Ears, 7 to 8½ in. long, 1.9 to 2.1 in. in diameter. Cobs, white, small, 1.1 to 1.3 in. in diameter. Ears, rough, nearly cylindrical; butt and tip evenly rounded, and especially well filled. Juncture, small, ⅝ in. in diameter. Kernels, wedge-shaped; ⅝ in. long, ⅜ in. wide; white, crease-dented, pinched, ragged. Rows, 14 to 18; no space between.

The average height of stalks was 8 ft.; of ears, 4 ft. One hundred ears weighed 49 lb. The yield per acre of shelled corn, as husked, was (good ears, 56; nubbins, 16) 72 bu., with 77 per cent. of a full stand, and of air-dry corn, 63 bu. There was 22 per cent. of water in the shelled corn, when husked, and, at that time, it took 77 lb. of ear corn to make a bushel of thoroughly air dry corn. Last year this variety was classed as a smooth variety; but this season it was distinctly rough.

A good early variety for the extreme northern part of the state. Almost too early, and hence too small, for this latitude.

No. 60. Wisconsin white dent; seed from J. C. Vaughan, Chicago.

Type, uniform. Ears, 8 to 8½ in. long, 2.1 to 2.25 in. in diameter. Cobs, white, rather large, 1.3 to 1.4 in. in diameter. Ears, rough, tapering; butt, sometimes slightly swollen; tip, blunt, filled. Juncture, large, ⅞ to 1 in. in diameter. Kernels, wedge-shaped; ⅝ in. long, ⅜ in. wide; white above, white to orange below: crease-dented, pinched, ragged. Rows, 16 to 18; no space between.

The average height of stalk was 7½ ft.; of ear, 2½ ft. One hundred ears weighed 55 lb. The yield per acre of shelled corn, as husked, was (good ears, 55.4; nubbins, 19.1) 74.5 bu., with 80 per cent. of a full stand, and of air-dry corn, 65 bu. There was 21 per cent. of water in the shelled corn, when husked, and, at that time, it took 79 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A promising early variety for Central Illinois and probably good for general culture in northern Illinois.

EARLY MATURING VARIETIES—*Kernels, colored, not yellow*—Ears, rough.

No. 18, Smith's mixed dent; seed grown by Experiment Station.

Type, uniform, except color. Ears, 7½ to 8½ in. long, 2 to 2.3 in. in diameter. Cobs, red or white, medium, 1.2 to 1.4 in. in diameter. Ears, roughish; nearly cylindrical; butt and tip, evenly rounded and well filled. Juncture, medium, ½ to ⅞ in. in diameter. Kernels, wedge-shaped; ⅝ in. long, ⅜ in. wide; crease-dented, pinched, sometimes ragged; variable in color—in some ears, white above, white to yellow below; in other ears, striped, red and white above, and red, white, and yellow below. Rows, 14 to 20; no space between in best specimens.

The average height of stalk was 9½ ft.; of ear, 4½ ft. One hundred ears weighed 56 lb. The yield per acre of shelled corn, as husked, was (good ears, 61; nubbins 17) 78 bu., with 79 per cent. of a full stand, and of thoroughly air-dry corn, 68 bu. There was 23 per cent. of water in the shelled corn when husked, and, at that time, it took 80 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety is raised by Allen E. Smith, Marengo, Ill., and is an excellent variety for early planting in central Illinois, and for general culture in northern Illinois.

MEDIUM MATURING VARIETIES—*Kernels, yellow*—Ears, smooth.

No. 2, Legal tender; seed grown by Nims Bros., Emerson, Iowa.

Type, uniform. Ears, 8½ to 10½ in. long, 1.9 to 2 25 in. in diameter. Cobs, red, rather small, 1 to 1.3 in. in diameter. Ears, smooth, almost cylindrical; butt, compressed;

tip, blunt, not well filled. Juncture, rather small, ½ to ¾ in. in diameter. Kernels, thick, broadly wedge-shaped; ½ in. long, ⅜ in. wide; yellow above, orange below; crease-dented. Rows, 14 to 18; space between, slight.

The average height of stalk was 9¾ ft.; of ear, 4¾ ft. One hundred ears weighed 59 lb. The yield per acre of shelled corn, as husked, was (good ears, 73; nubbins, 11) 84 bu., with 80 per cent. of a full stand, and of air-dry corn, 69 bu. There was 27 per cent. of water in the shelled corn, when husked, and at that time, it took 97 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety is to be recommended for general culture in central Illinois.

Nos. 4, 10, 16, 26, 48, 53, Leaming; seed grown on University farms. *No. 44, True Leaming;* seed from V. H. Hallock & Sons, Queens, N. Y. *No. 45, True Leaming;* seed from Samuel Wilson, Mechanicsville, Pa. *No. 46, Leaming;* seed from U. S. Department of Agriculture. *No. 47, Leaming;* seed grown by E. E. Chester, Champaign, Ill.

Type, somewhat variable. Ears, 8 to 10 in. long, 2.1 to 2.5 in. in diameter. Cobs, red, large, 1.2 to 1.5 in. in diameter. Ears, smooth, tapering, rapidly in tip fourth; cross-section, sometimes oval; butt, usually well rounded, sometimes swollen; tip, pointed and filled. Kernels, wedge-shaped to rectangular; corners, often rounded; sometimes nearly as thick as wide; ½ to ⅝ in. long, ¼ to 5-16 in. wide; round to long dimple-dented; toward tip, usually not dented; yellow to orange above, orange below. Rows, 18 to 22, usually with less number on tip fourth and irregularly placed; a tendency to some openness between, especially towards tip end.

The following table gives the principal results from each plat:

TABLE SHOWING RESULTS WITH 10 PLATS OF LEAMING.

Plat.	Source.	Per cent. full stand.	Height of		Lb. in 100 ears.	Per cent. water in shelled corn, husked.	Lb. ears, as husked, for bu. air-dry.	Bu. hskd. per a.			Total air-dry
			Stalk, ft.	Ear, ft.				Good ears.	Nubbins	Total.	
4	University	82	9.75	4.5	61	25.2	82	68	25	93	77
10	"	80	9	4	65	27.6	88	54	28	82	67
16	"	80	9	4.25	61	24.3	83	74	18	92	78
26	"	82	9.5	4	73	24.9	83	83	20	103	87
48	"	78	10	4.75	74	25.3	81	72	29	101	84
53	"	84	9.5	4.5	70	25	84	89	18	106	90
44	Hallock	70	8	3	71	26.7	87	69	14	83	68
45	Wilson	74	9 25	4	77	26.5	86	81	14	95	78
46	Dep't of Agriculture	77	9 75	4.5	74	26.7	86	77	19	96	79
47	E. E. Chester	80	9.75	4.25	82	26.4	86	95	18	113	93
	Average	79	9.25	4.25	71	25.9	85	76	20	96	80

A well known and deservedly popular variety.

No. 5, Clark's Iroquois; seed grown by H. H. Clark, Onarga, Iroquois, Co., Ill.

Type, somewhat variable. Ears, 8 to 9 in. long, 2.2 to 2.4 in. in diameter. Cobs, red, rather large, 1.3 to 1.4 in. in diameter. Ears, rather smooth, tapering, sometimes strongly in tip fourth; butt, well rounded, sometimes slightly swollen; tip, variable, but fairly well filled. Juncture, medium, ¾ to ⅞ in. in diameter. Kernels, narrowly wedge-shaped; ⅝ to 11-16 in. long, ¼ to 5-16 in. wide; yellow above, deep orange below; crease-dented. Rows, sometimes irregular, 20 to 24; space between, slight.

The average height of stalk was 9¼ ft.; of ear, 4½ ft. One hundred ears weighed 61 lb. The yield per acre of shelled corn, as husked, was (good ears, 62.2; nubbins, 36.3) 98.5 bu., with 86 per cent. of a full stand, and of air-dry corn, 82 bu. There was 26 per

cent. of water in the shelled corn, when husked, and, at that time, it took 84 lb. of ear corn to make a bushel of thoroughly air dry corn.

This variety yielded the most of any of the varieties on tract (*a*). It may be strongly recommended for general culture in central Illinois. Many ears closely resemble Leaming.

No. 49, Seeknofurther; seed grown by G. W. Hartsock, Gifford, Champaign Co , Ill.

Type, variable. Ears, 8½ to 9½ in. long, 2 to 2.2 in. in diameter. Cobs, red, medium, 1.1 to 1.4 in. in diameter. Ears, smooth, slightly tapering; butt, rounded; tip, blunt, not always well filled. Juncture, variable, ½ to ⅞ in. in diameter. Kernels, thickish, nearly rectangular; ½ to ⅝ in. long, ⅜ in. wide; yellow above, deep orange or reddish below; long dimple-dented. Rows, 14 to 18; space between, considerable.

Tne average height of stalk was 9¼ ft ; of ear, 4¼ ft. One hundred ears weighed 68 lb. The yield per acre of shelled corn, as husked, was (good ears, 81.5; nubbins, 13.5) 95 bu., with 90 per cent. of a full stand, and of air-dry corn, 81 bu. There was 25 per cent. of water in the shelled corn, when husked, and, at that time, it took 82 lb. of ear corn to make a bushel of thoroughly air-dry corn.

In many respects like Leaming—generally more variable.

No. 41, Fisk; seed grown by Eli Fisk, Havana, Mason Co., Ill.

Type, uniform. Ears, 8½ to 10½ in. long, 2.2 to 2.3 in. in diameter. Cobs, red, medium, 1.2 to 1.3 in. in diameter. Ears, smooth, nearly cylindrical; butt and tip, evenly rounded; latter, especially well filled. Juncture, medium, ¾ in. in diameter. Kernels, broadly wedge-shaped; ½ to ⅝ in. long, ⅝ to 7 16 in. wide; yellow above, orange below; long dimple-dented. Rows, 14 to 18; space between, slight.

The average height of stalk was 9¾ ft.; of ear, 4½ ft. One hundred ears weighed 66 lb. The yield per acre of shelled corn, as husked, was (good ears, 84; nubbins, 14) 98 bu., with 94 per cent. of a full stand, and of air-dry corn, 80 bu. There was 28 per cent. of water in the shelled corn, when husked, and, at that time, it took 88 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Probably desirable on this latitude and further south.

No. 40, Ridott pride; seed grown by J. E. Taggart, Ridott, Stephenson, Co., Ill.

Type, variable. Ears, 8 to 9½ in. long, 2.2 to 2.5 in. in diameter. Cobs, red, large, 1.3 to 1.4 in. in diameter. Ears, smooth, tapering rather strongly; butt, enlarged, not well rounded; tip, rather pointed, fairly well filled. Juncture large, ¾ to 1 in. in diameter. Kernels, wedge shaped; ⅝ in. long, 5-16 to ⅜ in. wide; long dimple dented; tip kernels, not dented; yellow above, orange below. Rows, 18 to 20; space between, slight or none.

The average height of stalk was 9¼ ft.; of ear, 4½ ft. One hundred ears weighed 59 lb. The yield per acre of shelled corn, as husked, was (good ears, 67; nubbins, 20) 87 bu., with 75 per cent. of a full stand, and of air-dry corn, 71 bu. There was 27 per cent. of water in the shelled corn, when husked, and, at that time, it took 87 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 42, Smedley; seed from W. W. Barnard & Co., Chicago.

Type, very variable. Ears, 8½ to 9½ in. long, 2.2 to 2.5 in. in diameter. Cobs, rather large, red, 1.3 to 1.4 in. in diameter. Ears, smoothish, nearly cylindrical; butt, compressed; tip, variable, often not well filled. Juncture, large, 1 in. in diameter. Kernels, broadly wedge-shaped; ⅝ in. long, ⅜ in. wide; yellow above, orange below; crease-dented. Rows, 16 to 18; some space between.

The height of stalk was 8¼ ft.; of ear, 4 ft. One hundred ears weighed 66 lb. The yield per acre of shelled corn, as husked, was (good ears, 67.5; nubbins, 20) 87.5 bu., with 70 per cent. of a full stand, and of air-dry corn, 74 bu. There was 25 per cent. of water in the shelled corn, when husked, and, at that time, it took 83 lb. of ear corn to make a bushel of thoroughly air dry corn.

No. 52, Arleus; seed from Samuel Wilson, Mechanicsville, Pa.

Type, very variable. Ears, 8½ to 9½ in. long, 2 to 2.4 in. wide. Cobs, red, rather large, 1 2 to 1.5 in. in diameter. Ears, smooth, tapering; butt, compressed; tip, fairly well filled. Juncture, medium, ⅜ in. in diameter. Kernels, rather thick, rectangular; ½ to ⅝ in long, 5-16 to ⅜ in. wide; yellow above, orange below; long dimple-dented. Rows, somewhat irregular, 14 to 18; space between, considerable.

The average height of stalk was 8¾ ft.; of ear, 4¼ ft. One hundred ears weighed 68 lb. The yield per acre of shelled corn, as husked, was (good ears, 69; nubbins, 12) 81 bu., with 67 per cent. of a full stand, and of air-dry corn, 68 bu. There was 25 per cent. of water in the shelled corn, when husked, and at that time it took 83 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 55, Paulin dent; seed grown by J. K. Paulin, Tuscola, Douglas Co., Ill.

Type, very variable. Ears, 10 to 11 in. long, 2.1 to 2.3 in. in diameter. Cobs, red, rather large, 1.3 to 1 4 in. in diameter. Ears, smoothish, tapering; butt, compressed; tip, not filled. Juncture, rather small, ⅝ to ¾ in in diameter. Kernels, thickish, rectangular; corners, rounding; ½ in. long, 5-16 to ⅜ in. wide; white to yellow above, bright orange to pink below; dimple-dented, sometimes slightly ragged. Rows, somewhat irregular, 16 to 18, space between, considerable.

The average height of stalk was 9½ ft.; of ear, 4½ ft. One hundred ears weighed 69 lb. The yield per acre of shelled corn, as husked, was (good ears, 89; nubbins, 18 5) 107.5 bu., with 72 per cent. of a full stand, and of air-dry corn, 87 bu. There was 28 per cent. of water in the shelled corn, when husked, and, at that time, it took 88 lb. of ear corn to make a bushel of thoroughly air dry corn.

This variety has been produced by mixing several varieties.

MEDIUM MATURING VARIETIES—*Kernels, yellow*—Ears, rough.

No. 6, Hogue's yellow dent; seed grown by R. Hogue, Crete, Neb.

Type, fairly uniform. Ears, 8½ to 10 in. long, 2.2 to 2.4 in. in diameter. Cobs, usually red, large, 1.2 to 1.5 in. in diameter. Ears, rough, slightly tapering; butt, compressed rounded; tip, blunt, only fairly filled. Juncture, rather large, ⅞ in. in diameter. Kernels, broadly wedge-shaped; ½ to 11-16 in. long, 5-16 to ⅜ in. wide; crease-dented, somewhat pinched and ragged; yellow above, orange below. Rows, 16 to 22, less towards tip; space between, slight.

The average height of stalk was 10¼ ft.; of ear, 4¾ ft. The average weight of one hundred ears, 62 lb. The yield per acre of shelled corn, as husked, was (good ears, 51; nubbins, 25) 76 bu., with 68 per cent. of a full stand, and of air-dry corn, 60 bu. There was 29 5 per cent. of water in the shelled corn, when husked, and, at that time, it took 91 lb. of ear corn to produce a bushel of thoroughly air-dry corn.

No. 11, Riley's favorite; seed grown by J. Riley, Thorntown, Ind.

Type, uniform. Ears, 8 to 9 in. long, 2.2 to 2 4 in. in diameter. Cobs, red, medium, 1.2 to 1.4 in. in diameter. Ears, rough, nearly cylindrical; butt and tip, well rounded, and especially well filled. Juncture, medium, ¾ to ⅞ in. in diameter. Kernels, narrowly wedge shaped; ⅝ in long, ¼ to 5 16 in. wide; light yellow above, orange below; crease-dented, pinched, and ragged. Rows, 16 to 22; space between, slight.

The average height of stalk was 10 ft.; of ear, 4¾ ft. One hundred ears weighed 62 lb. The yield per acre of shelled corn, as husked, was (good ears, 53; nubbing 26) 79 bu., with 84 per cent. of a full stand, and of air-dry corn, 66 bu. There was 26 per cent. of water in the shelled corn, when husked, and, at that time, it took 84 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety may be recommended for general culture in central Illinois.

No. 15, Champaign; grown on the University farms.

Type, variable. Ears, 8 to 9 in. long, 2 to 2.4 in. in diameter. Cobs, red, medium, 1.1 to 1.3 in. in diameter. Ears, rough, sometimes smooth, slightly tapering; butt and

tip, evenly rounded, well filled. Juncture, ½ to ⅞ in. in diameter. Kernels, wedge-shaped; ½ to ⅝ in. long, 5-16 in. wide; light yellow above, yellow to orange below; crease-dented, usually pinched and somewhat ragged. Rows 14 to 18; space between, slight.

The average height of stalk was 9 ft.; of ear, 4½ feet. One hundred ears weighed 58 lb. The yield per acre of shelled corn, as husked, was (good ears, 72.5; nubbins, 23) 95.5 bu. with 85 per cent. of a full stand, and of air-dry corn, 78 bu. There was 27 per cent. of water in the shelled corn when husked, and, at that time, it took 85 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A good variety for central Illinois.

No. 43, Log cabin; seed grown by C. N. Butts, Knoxville, Knox Co., Ill.

Type, variable. Ears. 9 to 10½ in. long, 2.1 to 2.5 in. in diameter. Cobs, red, large, 1.4 to 1.5 in. in diameter. Ears, roughish, nearly cylindrical; butt, compressed, tip. blunt, not filled. Juncture, large, 1 in. in diameter. Kernels, wedge-shaped; ⅝ in. long, 5-16 to 7-16 in. wide; yellow above, orange below; crease-dented; pinched, sometimes ragged. Rows, 16 to 20, usually the latter; space between, slight.

The average height of stalk was 9½ ft; of ear, 4½ ft. One hundred ears weighed 82 lb. The yield per acre of shelled corn, as husked, was (good ears, 71; nubbins, 14) 85 bu., with 69 per cent. of a full stand, and of air-dry corn, 67 bu. There was 29.5 per cent. of water in the shelled corn when husked, and, at that time, it took 96 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No 86, Eclipse; seed grown by F. C. Pickard, Piasa, Madison Co., Ill.

Type, uniform. Ears, 8 in. long, 2.2 to 2.5 in. in diameter. Cobs, red, rather small, 1.2 to 1.35 in. in diameter. Ears, rough, nearly cylindrical; butt, well-rounded; tip, not filled. Juncture, small, ½ to ⅝ in. in diameter. Kernels, broadly to narrowly wedge-shaped, rather thin; ⅝-in. long, ¼ to ⅜ in. wide; crease-dented, pinched, and ragged; light yellow above, orange below. Rows, 16 to 20; space between, slight.

The average height of stalk was 10½ ft.; of ear, 6 ft. One hundred ears weighed 64 lb. The yield per acre of shelled corn, as husked, was (good ears, 78; nubbins, 28) 106 bu., with 84 per cent. of a full stand, and of air-dry corn, 87 bu. There was 28 per cent. of water in the shelled corn when husked, and, at that time, it took 86 lb. of ear corn to make a bushel of thoroughly air dry corn.

A promising variety for central and southern Illinois.

MEDIUM MATURING VARIETIES—*Kernels, white*—Ears, smooth.

Nos. 19, 25, 64, 67, Burr's white; seed grown on University farms. *Synonyms—No. 66, Champion white pearl;* seed grown by J. C. Suflern, Voorhies, Piatt Co., Ill. *No. 63, Champion early white pearl;* seed from United States Department of Agriculture. *No. 70, Hickory king;* seed from Samuel Wilson, Mechanicsville, Pa.

Type, somewhat variable. Ears, 8 to 10½ in. long, usually 8½ to 9½ in.; 2.1 to 2.5 in. in diameter. Cobs, usually red, medium, 1.1 to 1.4 in. in diameter. Ears, rather smooth, nearly cylindrical; butt, well-rounded; tip, bluntly-rounded, usually well filled. Juncture, medium, ¾ to ⅞ in. in diameter. Kernels, broadly wedge-shaped; ½ to ⅝ in. long, ⅜ to 7-16 in. wide; white, crease-dented, sometimes pinched. Rows, 14 to 16; space between, slight; in best specimens, none.

Average of the eight plats gives height of stalk, 6¾ ft.; of ear, 4½ ft. One hundred ears weighed 64 lb. The yield per acre of shelled corn, as husked, was (good ears, 75.5; nubbins, 21) 96.5 bu., with 81 per cent. of a full stand, and of air-dry corn 80 bu. There was 26.5 per cent. of water in the shelled corn when husked, and, at that time, it took 85 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety is to be recommended for general culture in central Illinois. *Hickory king* is a misnomer.

No. 61, Common early white; seed grown by E. E. Chester, Champaign, Ill. *Synonym—No. 65, White pearl;* seed from W. W. Barnard & Co., Chicago.

Type, uniform. Ears, 9 to 10 in. long; 1.8 to 2.2 in. in diameter. Cobs, white, small, 1.1 to 1.3 in. in diameter. Ears smooth, distinctly tapering; butt, compressed; tip, pointed, fairly filled. Kernels, thick, wedge-shaped to rectangular; corners, slightly rounding; ½ in. long, ⅜ in. wide; white; long dimple-dented. Rows, 12 to 16; some space between.

An average of the two plats gives height of stalk, 10 ft.; of ear, 4½ ft. One hundred ears weighed 55 lb. The yield per acre of shelled corn, as husked, was (good ears, 72; nubbins, 28) 100 bu., with 91 per cent. of a full stand, and of air dry corn, 84 bu. There was 25 per cent. of water in the shelled corn when husked, and, at that time, it took 85 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 65 was a little later and did not yield so well as No. 61.

MEDIUM MATURING VARIETIES.—*Kernels, white*—Ears, rough.

No. 62, Gourd seed; seed grown by E. E. Chester, Champaign, Ill.

Type, uniform. Ears, 8½ to 9 in. long; 2.2 to 2.5 in. in diameter. Cobs, white, medium, 1.3 to 1.35 in. in diameter. Ears, rough, nearly cylindrical; butt and tip evenly rounded. Juncture, rather small, ½ to ¾ in. in diameter. Kernels, narrowly wedge-shaped; ⅝ to ¾ in. long, ⅜ in. wide; white; crease dented, pinched, and ragged. Rows, 16 to 18; space between, slight.

The average height of stalk was 9¾ ft; of ear, 5 ft. One hundred ears weighed 63 lb. The yield per acre of shelled corn, as husked, was (good ears, 79; nubbins, 25) 104 bu., with 95 per cent. of a full stand, and air dry corn, 93 bu. There were 22.5 per cent. of water in the shelled corn when husked, and, at that time, it took 75 lb. of ear corn to make a bushel of thoroughly air-dry corn.

A desirable variety for central Illinois.

MEDIUM MATURING VARIETIES—*Kernels, colored, not yellow*—Ears, smooth.

No. 76, Bloody butcher; seed grown by E. E. Chester, Champaign, Ill.

Type, somewhat variable. Ears, 8½ to 9½ in. long, 1.75 to 2.1 in. in diameter. Cobs, white, usually small, 1 to 1.35 in. in diameter. Ears, smooth tapering; butt, compressed; tip, pointed and filled. Juncture, small, ½ to ⅝ in. in diameter. Kernels, thick, rectanguler; ½ in. long, ⅜ to 7-16 in. in diameter; yellow, surrounded with red above, light to dark red below; long dimple-dented. Rows, 12 to 16, usually 12; space between, rather large.

The average height of stalk was 9 ft.; of ear, 3¾ ft. The weight of one hundred ears was 58 lb. The yield per acre of shelled corn, as husked, was (good ears, 80.4; nubbins, 18.1) 98.5 bu., with 84 per cent. of a full stand, and of air-dry corn, 86 bu. There was 23 per cent. of water in the shelled corn, when husked, and, at that time, it took 79 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 78, Calico; seed from J. C. Vaughan, Chicago.

Type fairly uniform, except color. Ears, 8 to 9 in. long, 2.1 to 2.4 in. in diameter. Cobs, red or white, large, 1.3 to 1.5 in. in diameter. Ears, smooth, nearly cylindrical; butt, well rounded; tip, blunt, not filled. Juncture, large, ¾ to 1 in. in diameter. Kernels, wedge shaped, thick; ½ in long, ⅜ in. wide; long dimple-dented; ground color, white to yellow; striped lengthwise with red; some kernels solid red, others white. Rows, 16 to 20; space between, slight.

The average height of stalk was 8¾ ft.; of ear, 4 ft. One hundred ears weighed 57 lb. The yield per acre of shelled corn, as husked, was (good ears, 66; nubbins, 22) 88 bu., with 77 per cent. of a full stand. There was 19 per cent. of water in the shelled corn, when husked, and, at that time, it took 77 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 79, Cranberry; seed from J. C. Vaughan, Chicago.

Type, fairly uniform, except color. Ears, 7½ to 8½ in. long, 2.1 to 2.2 in. in diameter. Cobs, red or white, small, 1.1 to 1.2 in. in diameter. Ears, rather smooth, tapering; butt, not rounded; tip, blunt, filled. Juncture, medium, ¾ in. in diameter. Kernels, narrowly wedge-shaped; 9 16 in. long, 5-16 in wide; dimple-dented; ground color, white, but the top half of the kernel, peculiarly covered with pink in varying quantities and shades, producing handsome effect. Rows, 16 to 18; considerable space between.

The average height of stalk was 10½ ft.; of ear, 5¾ ft. One hundred ears weighed 58 lb. The yield per acre of shelled corn, as husked, was (good ears, 76.5; nubbins, 36.5) 113 bu., with 84 per cent. of a full stand, and of air-dry corn, 85 bu. There was 27 per cent. of water in the shelled corn, when husked, and, at that time, it took 83 lb. of ear corn to make a bushel of thoroughly air-dry corn.

MEDIUM MATURING VARIETIES—*Kernels, colored, not yellow*—Ears, rough.

No. 17, Lape's mixed dent; seed grown by H. T. Lape, Roseville, Warren Co.

Type, variable. Ears, 8 to 10½ in. long, 2.1 to 2.5 in. in diameter. Cobs, red, large, 1.1 to 1.5 in. in diameter. Ears, rough, distinctly tapering; butt, often swollen; tip, pointed, usually filled. Juncture, large, ⅝ to 1 in. in diameter. Kernels, wedge-shaped; ⅝ in. long, ⅜ in. wide; yellow to red above, orange to red below; crease-dented, pinched and ragged. Rows, fairly regular, 16 to 18; some space between.

The average height of stalk was 9¾ ft.; of ear, 5 ft. One hundred ears weighed 66 lb. The yield per acre of shelled corn, as husked, was (good ears, 64; nubbins, 25) 89 bu., with 76 per cent. of a full stand, and of air dry corn, 73 bu. There was 27 per cent. of water in the shelled corn, when husked, and, at that time, it took 86 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This was classed in 1888 as smooth, but as grown this season it was distinctly rough.

No. 77, Calico; seed grown by E. E. Chester, Champaign, Ill.

Type, uniform, except color. Ears, 8 to 9 in. long; 2.1 to 2.4 in. in diameter. Cobs, red, medium, 1.3 in. in diameter. Ears, roughish, sometimes smooth; butt and tip, evenly rounded. Juncture, medium, ⅝ to ⅞ in. in diameter. Kernels, wedge-shaped; ½ to ⅝ in. long, ⅜ to 7-16 in. wide; crease-dented, sometimes ragged; ground color yellow to white; striped lengthwise with red; some ears solid red. Rows, 16 to 20; space between, slight.

The average height of stalk was 9 ft; of ear, 4¼ feet. The weight of one hundred ears was 58 lb. The yield per acre of shelled corn, as husked, was good ears, 70; nubbins, 24) 94 bu., with 81 per cent. of a full stand, and of air dry corn, 83 bu. There was 21 per cent. of water in the shelled corn, when husked, and, at that time, it took 77 lb. of ear corn to make a bushel of thoroughly air-dry corn.

LATE MATURING VARIETIES—*Kernels, yellow*—Ears smooth.

No. 7, Improved orange pride; seed grown by J. H. McConnell, Rigdon, Grant Co., Ind.

Type, fairly uniform. Ears, 8½ to 10½ in. long, 2.1 to 2.3 in. in diameter. Cobs, red, medium, 1.2 to 1.4 in. in diameter. Ears, rather smooth; sometimes roughish, nearly cylindrical; butt, not rounded; tip, pointed, fairly filled. Juncture, medium, ¾ in. in diameter. Kernels, thick, wedge-shaped; 9-16 to ⅝ in. long, and ⅜ in. wide; yellow above, orange below; crease-dented, pinched. Rows, 14 to 18; space between, slight.

The average height of stalk was 10¾ feet; of ear, 5 ft. One hundred ears weighed 60 lb. The yield per acre of shelled corn, as husked, was (good ears, 56; nubbins, 21) 77 bu., with 76 per cent. of a full stand, and of air-dry corn, 55 bu. There was 36 per cent. of water in the shelled corn when husked, and at that time, it took 102 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Probably worthy of a trial in southern central and southern Illinois.

No. 3, Howard's improved yellow; seed grown by H. Howard, Marshall, Saline Co., Mo.

Type, somewhat variable. Ears, 9½ to 11 in. long, 2.1 to 2.5 in. in diameter. Cobs, red, medium to large, 1.2 to 1.4 in. in diameter. Ears, rather smooth, cylindrical; butt, compressed, sometimes not well covered; tip, blunt, not filled. Juncture, large, 1 in. in diameter. Kernels, rectangular to broadly wedge-shaped; ½ to 9-16 in. long, ⅜ to ⅞ in. wide; light yellow above, yellow to orange below; crease-dented, sometimes pinched. Rows, 14 to 16; space between, slight.

The average height of stalk was 10 ft.; of ear, 4½ ft. One hundred ears weighed 75 lb. The yield per acre of shelled corn, as husked, was (good ears, 67; nubbins, 25) 92 bu., with 75 per cent. of a full stand, and of air-dry corn, 64 bu. There was 38.5 per cent. of water in the shelled corn when husked, and, at that time, it took 109 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety is too late for general culture in this latitude.

No. 56, Feeders' favorite; seed grown by H. and L. K. Seymour, Payson, Adams Co.

Type, fairly uniform. Ears, 8½ to 10½ in. long, 2.1 to 2.3 in. in diameter. Cobs, red, small to medium, 1.1 to 1.3 in. in diameter. Ears, rather smooth, cylindrical; butt, compressed; tip, blunt, generally well filled. Juncture, medium, ½ to ⅞ in. in diameter. Kernels, rather thin, wedge-shaped; ⅝ in. long, 5-16 to ⅜ in. wide; light yellow above, orange below; crease-dented, sometimes pinched. Rows, 14 to 20; some space between.

The average height of stalk was 10 ft.; of ears, 4¾ ft. One hundred ears weighed 71 lb. The yield per acre of shelled corn, as husked, was (good ears, 78.9; nubbins, 23.6) 102.5 bu., with 84 per cent. of a full stand, and of air-dry corn, 77 bu. There was 33 per cent. of water in the shelled corn, when husked, and, at that time, it took 94 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 85, Swengel corn; seed grown by Swengel Bros., Neoga, Cumberland Co.

Type, fairly uniform. Ears, 10 to 11½ in. long, 2 to 2.2 in. in diameter. Cobs, red, medium, 1.1 to 1.4 in. in diameter. Ears, rather smooth, cylindrical; butt, compressed; tip, filled. Kernels, thick, broadly wedge-shaped; 9-16 to ⅝ in. long, 7-16 in. wide; light yellow above, yellow to orange below; crease-dented. Rows, 12 to 16; space between, slight.

The average height of stalk was 11¾ ft.; of ear, 5½ ft. One hundred ears weighed 74 lb. The yield per acre of shelled corn, as husked, was (good ears, 95; nubbins, 22) 117 bu., with 85 per cent. of a full stand, and of air-dry corn, 79 bu. There was 39 per cent. of water in the shelled corn, when husked, and, at that time, it took 109 lb. of ear corn to make a bushel of shelled corn.

Apparently desirable for south-central and southern Illinois.

No. 37, Chester Co. early dent; seed from Samuel Wilson, Mechanicsville, Pa. *Synonym—No. 56, Cloud's early;* seed from I. V. Faust, Philadelphia, Pa.

Type, uniform. Ears, 9 to 10 in. long, 2.3 to 2.6 in. in diameter. Cobs, red, large, 1.3 to 1.5 in diameter. Ears, generally smooth, although not unfrequently rough, strongly tapering; butt, not rounded: tip, rather pointed, well filled. Juncture, large, ⅞ to 1 in. in diameter. Kernels, wedge-shaped; ⅝ to 11-16 in. long, ⅜ in. wide; usually shallow crease-dented, but sometimes ragged; very light yellow to white above, yellow to orange below. Rows, regular; no space between; often compacted like the cells of a honey-comb.

An average of the two plats gave height of stalk, 9 ft.; of ear, 3½ ft. The average weight of one hundred ears was 86 lb., the ears of No. 37 being much larger than those of No. 36. The yield per acre of shelled corn, as husked, was (good ears, 74; nubbins, 18) 92 bu., with 60 per cent. of a full stand, and of air-dry corn, 77 bu. There was 30 per cent. of water in the shelled corn, when husked, and at that time, it required 93 lb. of ear corn to produce a bushel of thoroughly air-dry corn.

LATE MATURING VARIETIES—*Kernels, yellow*—Ears, rough.

No. 8, Steward's improved yellow dent; seed grown by L. W. Steward, Amanda, Pickaway Co., Ohio.

Type, uniform. Ears, 8 to 9 in. long, 2 to 2.4 in. in diameter. Cobs, red or white, rather small, 1.1 to 1.2 in. in diameter. Ears, rough, nearly cylindrical; butt and tip, evenly rounded and well filled. Juncture, rather small, 5/8 to 7/8 in. in diameter. Kernels, rather narrowly wedge-shaped; 5/8 in. long, 1/4 to 3/8 in. wide; yellow, crease dented, pinched and ragged. Rows, 16 to 22, usually about 20; space between, generally slight.

The average height of stalk was 11½ ft.; of ear, 5½ ft. One hundred ears weighed 54 lb. The yield per acre of shelled corn, as husked, was (good ears, 64; nubbins 21) 85 bu., with 87 per cent. of a full stand, and of air dry corn, 69 bu. There was 28 per cent. of water in the shelled corn, when husked, and, at that time, it took 87 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Probably desirable for south-central and southern Illinois.

LATE MATURING VARIETIES—*Kernels, white*—Ears, smooth.

No. 69, Helms improved; seed grown by F. Helms, Belleville, Ill.

Type, uniform. Ears, 9 to 11 in. long, 2 to 2.3 in. in diameter. Cobs, red or white, medium, 1.1 to 1.4 in. in diameter. Ears, smooth, tapering; butt, compressed, rounded; tip, pointed and filled. Juncture, rather small, 1/2 to 7/8 in. in diameter. Kernels, thick, wedge-shaped to rectangular; 7-16 to 9 16 in. long, 3/8 in. wide; white; long dimple-dented. Rows, 16 to 18; some space between.

The average height of stalk was 10½ ft.; of ear, 5½ ft. One hundred ears weighed 67 lb. The yield per acre of shelled corn, as husked, was (good ears, 102; nubbins, 36) 138 bu., with 91 per cent. of a full stand, and of air-dry corn, 103 bu. There was 34 per cent. of water in the shelled corn, when husked, and, at that time, it took 97 lb. of ear corn to make a bushel of thoroughly air-dry corn.

This variety gave the largest yield this season. Although almost too late for general culture in this latitude, it is worthy of an extended trial further south, especially on the more fertile lands.

LATE MATURING VARIETIES—*Kernels, white*—Ears, rough.

No. 24, Smith's premium white dent; seed grown by M. H. Smith, DeSoto, Neb. *Synonym—No. 21, Clark's premium 110-day;* seed grown by H. H. Clark, Onarga, Iroquois Co., Ill.

Type, fairly uniform. Ears, 8½ to 9½ in. long, 2 to 2.5 in. in diameter. Cobs, white, medium to large, 1.1 to 1.5 in. in diameter. Ears, varying from smooth to rough, tapering to nearly cylindrical; butt and tip, evenly rounded. Juncture, medium, 3/4 to 7/8 in. in diameter. Kernels, wedge-shaped; 5/8 in. long, 5-16 to 3/8 in. wide; white; crease-dented. Rows, 16 to 20; space between, slight.

An average of the two plats gives height of stalk, 10 ft.; of ear, 5 ft. One hundred ears weighed 58 lb. The yield per acre of shelled corn, as husked, was (good ears, 54; nubbins, 27) 81 bu , with 75 per cent. of a full stand, and of air-dry corn, 64 bu. There was 30 per cent. of water in the shelled corn, when husked, and at that time, it took 93 lb. of ear corn to make a bushel of air-dry corn.

A good variety, although almost too late for this latitude.

No. 72, Maryland gourd seed; seed from V. H. Hallock & Sons, Queens, N. Y.

Type, fairly uniform. Ears, 10 in. long, 2.3 to 2.6 in. in diameter. Cobs, white, rather large, 1.3 to 1.5 in. in diameter. Ears, rather rough, nearly cylindrical; butt, not rounded; tip, blunt, not filled. Juncture, large, 1 to 1¼ in. in diameter. Kernels, wedge-shaped, 5/8 in. long, 3/8 in. wide; white; crease-dented, pinched, but not usually ragged. Rows, 16 to 20; some space between.

The average height of stalk was 11¼ ft.; of ear, 5 ft. One hundred ears weighed 77 lb. The yield per acre of shelled corn, as husked, was (good ears, 68; nubbins, 22) 90 bu., with 75 per cent. of a full stand, and of air-dry corn, 71 bu. There was 30 per cent. of water in the shelled corn when husked, and, at that time, it required 95 lb. of ear corn to make a bushel of thoroughly air-dry corn.

NON-MATURING VARIETIES—*Kernels, yellow*—Ears, smooth.

No. 51, Piasa queen; seed from United States Department of Agriculture.

Type, uniform. Ears, 10 to 12 in. long, 2.1 to 2.4 in. in diameter. Cobs, red, medium, 1.3 to 1.4 in. in diameter. Ears, rather smooth, tapering; butt, compressed; tip, pointed, not filled. Juncture, large, ⅞ to 1 in. in diameter. Kernels, narrowly to broadly wedge-shaped; ⅝ in. long, 5-16 to ⅜ in. wide, yellow to whitish above, deep orange below; crease dented, sometimes pinched. Rows, 16; some space between.

The average height of stalk was 9¾ ft.; of ear, 4½ ft. One hundred ears weighed 86 lb. The yield per acre of the shelled corn, as husked, was (good ears, 91.5; nubbins, 19 5) 111 bu., with 75 per cent. of a full stand, and of air-dry corn, 83 bu. There was 34 per cent. of water in the shelled corn when husked, and, at that time, it took 101 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 54, Farmers' favorite; seed from Peter Henderson & Co., New York.

Type, uniform. Ears, 9 to 11 in. long, 2 to 2.2 in. in diameter. Cobs, red, medium, 1.3 to 1.35 in. in diameter. Ears, smooth, nearly cylindrical; butt, compressed; tip, pointed, fairly filled. Juncture, medium, ¾ to ⅞ in. in diameter. Kernels, broadly wedge shaped to rectangular; ½ to 9-16 in. long, ⅜ to 7-16 in. wide; yellow above, orange below; long dimple-dented. Rows, 12 to 14; some space between.

The average height of stalk, 9¾ ft.; of ear, 4¾ ft. One hundred ears weighed 87 lb. The yield per acre of shelled corn, as husked, was (good ears, 63.5; nubbins, 18.5) 82 bu., with 64 per cent. of a full stand, and of air-dry corn, 59 bu. There was 35.5 per cent. of water in the shelled corn when husked, and, at that time it took 103 lb. of ear corn to make a bushel of throughly air-dry corn.

No. 57, Golden beauty; seed from Peter Henderson & Co., New York.

Type, fairly uniform. Ears, 9 to 10 in. long, 2.5 to 2 7 in. in diameter. Cobs, white, large, 1. 6 to 1.75 in. in diameter. Ears, smoothish, nearly cylindrical; butt, not rounded; tip, blunt, not well filled. Juncture, large, 1 in. diameter. Kernels, wedge-shaped, ⅝ in. long, ⅜ to 7-16 in. wide; crease-dented, sometims pinched; yellow above, orange below. Rows, regular, 16 to 20. space between, slight.

The average height of stalk was 9½ ft.; of ear, 4½ ft. The average weight of one hundred ears was 86 lb. The yield per acre of shelled corn, as husked, was (good ears, 71; nubbins, 14) 85 bu., with 64 per cent. of a full stand, and of air-dry corn, 58 bu. There was 39 per cent. of water in the shelled corn when husked, and, at that time, it took 105 lb of ear corn to make a bushel of thoroughly air-dry corn.

This is not at all like either of the two types tested in 1888 under the same name.

No. 58, Chester Co. mammoth; seed from Peter Henderson & Co., New York.

Type, fairly uniform. Ears, 8½ to 11½ in. long, 2 4 to 2.7 in. in diameter. Cobs, red, very large, 1.5 to 1.7 in diameter. Ears, generally smooth, though often rough, tapering rather strongly; butt, not rounded; tip, often not well filled. Juncture, very large, 1 to 1¼ in. in diameter. Kernels, wedge-shaped, ⅝ in. long, 5-16 to ⅜ in. wide; usually shallow crease-dented, but sometimes pinched and ragged; light yellow to white above, yellow to orange below. Rows, regular, 18 to 22; no space between; compacted like the cells of honey-comb.

The average height of the stalks was 9¼ ft.; of ears, 4¼ ft. The weight of one hundred ears was 96 lb. The yield per acre of shelled corn, as husked, was (good ears,

68.5; nubbins, 9.5) 78 bu., with 46 per cent. of a full stand, and of air-dry corn, 60 bu. There was 31.5 per cent. of water in the shelled corn when husked, and, at that time, it took 96 lb. of ear corn to make a bushel of thoroughly air-dry corn.

In 1888 it was classed as a rough variety, and although it is distinctly neither rough nor smooth, the smooth ears are believed to be in the majority.

NON-MATURING VARIETIES—*Kernels, white*—Ears, smooth.

No. 71, Old cabin home; seed from V. H. Hallock & Sons, Queens, N. Y.

Type, fairly uniform. Ears, 7½ to 8½ in. long, 1.6 to 1.8 in. in diameter. Cobs, white, small, .85 to 1 in. in diameter. Ears, smooth, distinctly tapering; butt, compressed, not rounded; tip, pointed, fairly filled. Juncture, rather small, ½ to ⅝ in. in diameter. Kernels, thick, polygonal; ½ in. long and wide; white; long dimple-dented. Rows, 8 to 10; space between, very large.

Average height of stalk, 11 ft.; of ear, 5¼ ft. One hundred ears weighed 53 lb. The yield of shelled corn per acre, as husked, was (good ears, 55; nubbins, 28) 83 bu., with 66 per cent. of a full stand, and of air-dry corn, 56 bu. There was 40 per cent. of water in the shelled corn when husked, and, at that time, it required 101 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Would not be desirable even if it matured.

No 73, Hiwassee mammoth; seed from I. V. Faust, Philadelphia.

Type, variable. Ears, 9 to 10½ in. long, 2.2 to 2.3 in. in diameter. Cobs, white, large, 1.35 to 1.6 in. diameter. Ears, smooth, tapering; butt, compressed rounded; tip, rounding and well filled. Juncture, medium, ⅝ to ⅞ in. in diameter. Kernels, thick, polygonal; ½ in. long, 7 16 in. wide; white; dimple-dented; tip kernels, not dented. Rows, 12 to 16; space between, large.

The average height of stalk was 13¼ ft.; ear, 7¼ ft. One hundred ears weighed 93 lb. The yield per acre of shelled corn, as husked, was (good ears, 71; nubbins, 35) 106 bu., with 91 per cent. of a full stand, and of air-dry corn, 69 bu. There was 42 per cent. of water in the shelled corn, when husked, and, at that time, it required 126 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 74, Mammoth white surprise; seed from Peter Henderson & Co., New York.

Type, somewhat variable. Ears, 9½ to 10½ in. long, 2.2 to 2.5 in. in diameter. Cobs, red or white, large, 1.3 to 1.5 in. in diameter. Ears, varying from smooth to rough, usually smooth, nearly cylindrical; butt and tip, evenly rounded. Kernels, thickish, wedge-shaped; corners, slightly rounding; ½ to ⅝ in. long, ⅜ to 7-16 in. wide; long dimple- to crease dented, sometimes pinched and ragged; white. Rows, 16 to 18; some space between.

The average height of stalk was 12½ ft.; of ear, 7 ft. The weight of one hundred ears was 85 lb. The yield per acre of shelled corn, as husked, was (good ears, 62.5; nubbins, 28.5) 91 bu., with 63 per cent. of a full stand, and of air-dry corn, 61 bu. There was 40 per cent. of water in the shelled corn, when husked, and, at that time, it required 120 lb. of ear corn to make a bushel of thoroughly air-dry corn.

NON-MATURING VARIETIES—*Kernels, white*—Ears, rough.

No. 22, Piasa king; seed grown by Experiment Station. *No. 87, Piasa king;* seed grown by F. C. Pickard, Piasa, Madison Co., Ill.

Type, fairly uniform. Ears, 9 to 11¾ in. long, 2.2 to 2.6 in. in diameter. Cobs, red or white, usually red, 1.2 to 1.6 in. in diameter. Ears, usually roughish, tapering to nearly cylindrical; butt, not rounded; tip, blunt, not filled. Juncture, medium, ⅞ in. in diameter. Kernels, wedge-shaped; ⅝ in. long, ⅜ in. wide; white; crease dented, pinched, Rows, 18 to 22; space between, slight.

The average of the two plats gave height of stalk, 11½ ft.; of ear, 6 ft. One hundred ears weighed 69 lb. The yield per acre of shelled corn, as husked, was (good ears, 61; nubbins, 32) 93 bu., with 94 per cent. of a full stand, and of air-dry corn, 62 bu. There was 41 per cent. of water in the shelled corn, when husked, and, at that time, it required 117 lb. of ear corn to make a bushel of thoroughly air-dry corn.

The yield from plat No. 87 was in every way better than that from No. 22. This variety is probably worthy of a trial on the fertile bottom lands south of Alton.

No. 68, Parrish; seed from J. C. Vaughan, Chicago.

Type, fairly uniform. Ears, 9 to 11 in. long, 2.5 to 2.8 in. in diameter. Cobs, red, large, 2.5 in. in diameter. Ears, roughish, usually tapering; butt, not rounded; tip, pointed, filled. Juncture, large, ⅞ to 1 in. in diameter. Kernels, wedge-shaped, ⅝ to 11-16 in. long, 7-16 in. wide; white; crease-dented, pinched, but not ragged. Rows, 14 to 16; space between, slight.

The average height of stalk was 11 ft.; of ear, 6¼ ft. One hundred ears weighed 80 lb. The yield per acre of shelled corn, as husked, was (good ears, 91; nubbins, 32) 123 bu., with 79 per cent of a full stand, and of air-dry corn, 84 bu. There was 39 per cent. of water in the shelled corn, when husked, and, at that time, it required 108 lb. of ear corn to make a bushel of thoroughly air-dry corn.

No. 75, Burrell and Whitman ensilage corn; seed from Cornish, Curtis, & Greene, Ft. Atkinson, Wis.

Type, fairly uniform. Ears, 8 to 9 in. long, 2 to 2.4 in. in diameter. Cobs, white, small, 1.2 in. in diameter. Ears, roughish, tapering; butt, and tip, evenly rounded and well filled. Juncture, small, ½ to ⅝ in. in diameter. Kernels, rather broadly wedge-shaped; ⅝ to 11-16 in. long, ⅜ to ⅞ in. wide; crease-dented, pinched, but not ragged; white. Rows, 14 to 16; considerable space between.

The average height of stalk was 11¾ ft.; of ear, 7 ft. The weight of one hundred ears was 66 lb. The yield per acre of shelled corn, as husked, was (good ears, 67; nubbins, 33) 100 bu., with 73 per cent. of a full stand, and of air-dry corn, 71 bu. There was 37 per cent. of water in the shelled corn, when husked, and, at that time, it required 101 lb. of ear corn to make a bushel of thoroughly air-dry corn.

Results in Detail—Explanation of Tables.

Table 1.—The germinating power of fifty kernels of each of the varieties of seed planted, with the exceptions noted in the table, was tested in a Geneva apparatus at an average temperature of 66.5° F. [For description of Geneva apparatus, see bulletin No. 3, p. 30.]

The number of plants growing in 90 hills planted on plats 1 to 25, and in 81 hills on plats 26 to 87, was ascertained at 3 weeks, and at 9 weeks after planting. The per cent. of kernels producing plants at the dates specified is given in the table.

September 9th to 12th, the number of stalks and the number of barren stalks on the same area was ascertained. For comparison, a full stand is considered to be four stalks to a hill, which was the number of kernels planted.

The height of stalk, and of the butt of the ear from the ground was ascertained by selecting and measuring what appeared to be an average hill, usually of four stalks each bearing an ear, and taking an average of the measurements thus obtained. Observations were made upon the ripeness of the corn September 11th, September 24th, and October 7th.

The date given in the table indicates that maturity was reached during the two weeks preceding the observation.

Table 2. — For plats 1 to 25 there is given the yield in pounds of ear corn on each of the nine rows, 10 rods long; for plats 26 to 87, the yield on each third of the plat from west to east. Plats 1 to 9 were husked November 12th, 13th; plats 10-25 November 5th, 6th; plats, 26-37 October 21st; plats 38 to 59, October 24th; and plats 60 to 87 October 28th to 29th.

Table 3. — In plats 1 to 25, one row, always the middle row 10 rods long, 1-72d of an acre, and in plats 26 to 87 the west ⅔ of the plat 1-60th of an acre was used to ascertain the number and weight of good ears and nubbins, and of the shelled corn from each. The weights were taken in the field, as given in table 2, and the corn used for this purpose was reweighed just before shelling. In shelling, any corn remaining on the cobs was removed by hand. The cobs were then weighed. The difference was the weight of the shelled corn. From these data the yield of corn per acre was calculated from the field weights as given in table 2. An average pint-sample of the shelled corn of each variety was sent to the Station laboratory, and the per cent. of water ascertained. From these data, there were calculated the yield per acre of corn containing 11 per cent. of water and the pounds of ear corn, as husked, that it would take to make a bushel of corn containing 11 per cent. of water, which is the per cent. of water, approximately, in thoroughly air-dry corn. [See bulletin No. 4, p. 44.]

The corn was usually shelled within two days of the time it was husked. The per cent. of shelled corn in ear corn was calculated from the field weights, thus obviating any error in statement of yield per acre which might otherwise have arisen from the drying of the corn before shelling.

Table 4.—A division into good ears and nubbins was made, and the calculated number per acre and the average weight of one hundred of each is given in the table. What constituted a nubbin was a matter of judgment, and varied with the character of each variety.

Table 5.—Gives the summary of the results obtained from the dent varieties on 82 plats in 1888, and on the same number in 1889. The division was made strictly upon the observed date of ripening for each plat. Different divisions sometimes contain the same varieties grown on different tracts or in different seasons.

TABLE 1. VARIETY; GERMINATION IN APPARATUS; STAND; BARREN STALKS; SIZE OF EARS; OF COBS; DATE OF TASSELING; OF MATURITY.

No. of plat.	Name of Variety.	From whom received.	Seed grown.	Page of description.	Per cent. germinating in Geneva apparatus.	Per cent. of full stand.			Per cent. of barren stalks.	Height, feet.		Av. 3 spec. ears.			Week ending.		Ripe in 2 weeks ending.
						May 25.	July 5.	Sept. 9-12.		Stalks.	Ears.	Length, in.	Circumference, in.	Circum. 3 cobs, in.	First tassel.	Full tassel.	
	Tract (a)—Yellow dent	*varieties.*															
1	Edmonds corn	H. P. Edmonds	Taylor, Ill.	223	100	69	77	75	3	9	3.5	7.5	6 92	3 67	7-15	8-5	9-24
2	Legal tender	Nims Bros.	Emerson, Ia.	225	100	64	81	80	1	9.75	4.75	10	6 33	3 58	7-22	8-5	10-7
3	Howard's imp. yellow	H. Howard	Marshall, Mo.	232	...	63	78	75	0	10	4.5	10.33	7	4.33	7-30	8-19	*
4	Leaming	University farm	Champaign, Ill.	226	92	49	79	82	0	9.75	4.5	.....	....	.....	7-22	8 5	10-7
5	Clark's Iroquois	H. H. Clark	Onarga, Ill.	226	...	50	84	86	0	9.25	4.5	8.58	7.25	4.33	7-22	8 5	10-7
6	Hogue's yellow dent	R. Hogue	Crete, Neb.	228	100	64	69	68	0	10.25	4.75	10	7.17	4 42	7-30	8-12	10-7
7	Improved Orange pride	J. M. McConnell	Rigdon, Ind.	231	100	61	79	76	1	10.75	5	10 08	7	4 08	7-30	8-12	*
8	Steward's imp. yellow	L. W. Steward	Amanda, Ohio	233	100	55	88	87	1	11.5	5.5	8.83	7.17	3.67	7-30	8-12	10-7
9	Golden rod	E. Morris	Decatur, Mich.	222	100	51	79	79	0	7.5	2.5	8.25	6.92	4.17	7-30	8-5	9-24
10	Leaming	University farm	Champaign, Ill.	226	92	63	79	80	1	9	4	.....	.....	....	7-22	8-5	10-7
11	Riley's favorite	J. Riley	Thorntown, Ind.	228	98	58	78	78	0	10	4.75	8.5	7.42	4	7-22	8-5	10-7
12	Prairie queen	Nathanial Pease	Quincy, Ill.	222	100	84	80	86	0	9 25	4.5	8	6.42	3.67	7-22	8-5	9-24
13	Murdock	University farm	Champaign, Ill.	222	100	83	87	87	0	9.75	5	8.17	6 08	3.5	7-22	8-5	9 24
14	Murdock	Wm. T. Lamb	Ridott, Ill.	222	90	77	61	66	0	10	4.75	7.83	6.08	3 75	7-22	8-5	9-24
15	Champaign	University farm	Champaign, Ill.	228	100	77	86	85	0	9	4.5	8.77	6 43	3.92	7-22	8-5	10-7
16	Leaming	"	" ...	226	92	70	76	80	0	9	4.25	9 42	7	4 17	7-22	8-5	10-7
	Tract (a)—Mixed dent	*varieties.*															
17	Lape's mixed dent	H. T. Lape	Roseville, Ill.	231	98	70	73	76	0	9.75	5	9.58	7.58	4.58	7-22	8-5	10-7
18	Smith's mixed dent	Experiment Station	Champaign, Ill.	225	98	78	78	79	0	9.5	4.5	8.08	7.08	4.08	7-22	8-5	9 24
	Tract (a)—White dent	*varieties.*															
19	Burr's white	University farm	Champaign, Ill.	229	100	76	78	83	0	9.75	4.5	9 08	6.92	4.17	7-30	8-5	10-7
20	Princeton	Wm. T. Lamb	Ridott, Ill.	224	100	71	70	73	0	8.25	3.5	8	6.17	3 58	7-30	8-5	9-24
21	Clark's premium 110-day	H. H. Clark	Onarga, Ill.	233	...	74	77	80	0	10	5	9.33	7.25	4.33	7-30	8-12	10-7
22	Piasa king	Experiment Station	Champaign, Ill.	235	...	60	84	92	3	11	5	9	7 25	4.25	8-5	8-19	*
23	Champion of the north	"	" ...	225	...	63	81	77	1	8	4	7.83	6.75	3.75	7-22	8-5	9-24

24	Ohio white dent	M. H. Smith	De Soto, Neb	233	98	79	72	69	2	9.75	4.75	9	7	4.17	7-30	8-12	*	
25	Burr's white	University farm	Champaign, Ill	229	100	82	80	78	0	10.5	5.5				7 30	8-5	10-7	
	Tract (b)—Yellow dent varieties.																	
26	Leaming	University farm	Champaign, Ill	226	92	72	86	82	7	9 5	4	9.25	7.25	4.33	7-15	8 5	9-24	
27	Kane county pride	Robert Shedden	Pingree Grove, Ill.	223	100	81	88	82	4	8	4	7 58	7 5	4	7-15	7-30	9-24	
28	King of the earliest	A. L. Goddard	Waucoma, Iowa	224	90	79	84	91	1	6.75	2.75	7.25	6 42	3.25	7-15	7-22	9-11	
29	Queen of the prairie	Peter Henderson	New York	222	100	65	67	64	2	9.25	4	7 83	6 25	3.58	7-22	8-5	9-24	
30	North star	J. C. Vaughan	Chicago	222	96	72	86	93	3	8	3.75	6.83	6 8	3 5	7-15	7 30	9-11	
31	Pride of the north	G. S. Haskell	Rockford, Ill.	224	96	72	75	81	1	7.5	3 5	7.25	6 33	3.25	7-15	7-30	9-24	
32	Pride of the north	W. W. Barnard	Chicago	224	98	63	76	71	0	8.75	4.5	7.33	6.8	3 25	7-22	7-30	9-24	
33	Wisconsin yellow dent	J. C. Vaughan	"	222	96	71	86	87	0	8.	3.5	6.92	6 25	3.58	7-15	8-5	9-24	
34	Woodworth yellow dent	"	"	223	100	80	75	84	1	8	3.75	9 92	6.67	4.17	7-15	7-30	9 24	
35	Minnesota king	N. B. & G. Co	Minneapolis,	223	...	60	74	67	1	6	1.75	8 25	6	3.5	7-15	7 22	9-11	
36	Cloud's early	I. V. Faust	Philadelphia	232	92	64	67	62	0	9	4	9 42	7 58	4 42	7-22	8-5	10-7	
37	Chester Co. early dent	Samuel Wilson	Mechanicsv'le, Pa	222	68	44	55	58	3	9	3	10.8	7 42	4 33	7-22	8-5	10-7	
38	Blakeway	H. Blakeway & Co.	Ridott, Ill	223	94	72	83	80	0	8 75	4	8 17	7	4 08	7-15	7 22	9 24	
39	Grange favorite	Swanzey Bros	"	223	96	77	85	87	0	10	4.5	8.42	6.83	4.42	7-15	7-22	9 24	
40	Ridott pride	J. E. Taggart	"	227	100	82	88	75	1	9.25	4.5	8 75	7.42	4.5	7-15	8 5	9-24	
41	Fisk	Eli Fisk	Havana, Ill	227	100	81	89	94	2	9.75	4.5	9 75	7.08	3 83	7 15	8-5	10-7	
42	Smedley	W. W. Barnard	Chicago	227	96	60	72	70	1	8.25	4	9.42	7.42	4 33	7-22	8 5	9-24	
43	Log cabin	C. N. Butts	Knoxville, Ill	229	92	59	72	69	0	9.5	4 5	10.42	7 5	4 58	7-22	8 5	10 7	
44	True Leaming	V. H. Hallock	Queens, N. Y	226	98	57	71	70	1	8	3	9 25	6.5	3.75	7 22	8-5	9 24	
45	True Leaming	Samuel Wilson	Mechanicsv'le, Pa	226	100	62	83	74	4	9.25	4	8 67	7	4 25	7-22	8-5	9 24	
46	Leaming	Dept. of Agriculture	Washington	226	98	64	79	77	2	9.75	4.5	8.67	7.08	4.17	7-22	8-5	9-24	
47	Leaming	E. E. Chester	Champaign, Ill	226	100	63	89	80	2	9.75	4 25	9.58	6 92	4.08	7-22	8-5	9 24	
48	Leaming	University farm	"	226	92	64	79	78	3	10	4.75	9 17	7	4	7-22	8-5	9-24	
49	Seeknofurther	G. W. Hartsock	Gifford, Ill	227	90	71	81	90	2	9.25	4.25	9 5	7 08	3 92	7-22	7-30	9 24	
50	Golden dent	James King	Chicago	...	96	67	74	69	3	9 5	4.5	...	.....	...	7-15	8-5	9 24	
51	Piasa queen	Dept. of Agriculture	Washington	234	98	31	77	75	0	9.75	4 5	11.08	7.08	4.17	7-22	8-12	*	
52	Arleus	Samuel Wilson	Mechanicsv'le, Pa	228	94	50	64	67	1	8.75	4.25	9.17	6 92	4.25	7-22	8-5	9 24	
53	Leaming	University farm	Champaign, Ill	226	92	67	84	84	1	9 5	4 5	9.17	6 92	3.83	7-22	8-5	9 24	
54	Farmers' favorite	Peter Henderson	New York	234	88	38	60	64	3	9.75	4.75	10.58	6.58	4.17	7-30	8-12	*	
55	Paulin dent	J. K. Paulin	Tuscola, Ill	228	100	72	78	72	1	9.5	4.5	10.42	6.92	4 33	7-22	8-5	9-24	
56	Feeders' favorite	H. & L. K. Seymour	Payson, Ill	232	98	78	85	84	1	10	4 75	9.25	7.17	3 92	7-30	8-12	*	
57	Golden beauty	Peter Henderson	New York	234	74	41	54	64	1	9 5	4.5	9.67	8.33	5.25	7-22	8-12	*	
58	Chester Co. mammoth	" "	"	234	70	31	47	46	2	9.25	4.25	10.83	8	5.08	7-30	8-12	*	
85	Swengel corn	Swengel Bros	Neoga, Ill	232	.....	23	98	85	0	11.75	5.5	10.67	6.67	4.08	7-30	8-12	10-7	
86	Eclipse	F. C. Pickard	Piasa, Ill	229	.....	50	92	84	1	10.5	6	8.08	7.25	3.92	7-30	8-5	9-24	

* Did not mature.

TABLE 1—*Continued.*

Plat.	Name of variety.	From whom received.	Seed grown.	Page of description.	Per cent. germinating in Geneva apparatus.	Per cent of full stand. May 25.	Per cent of full stand. July 5.	Per cent of full stand. Sept. 9-12.	Per cent of barren stalks.	Height, feet. Stalks.	Height, feet. Ears.	Av. 3 spec. ears. Length, in.	Av. 3 spec. ears. Circumference, in.	Av. 3 spec. ears. Circum. 3 cobs, in.	Week ending First tassel.	Week ending Full tassel.	Ripe in 2 weeks ending.
	Tract (b)—White dent varieties.																
59	White cap	C. Leete and Son..	Moorheadville, Pa	224	94	64	83	78	0	7.25	3	7.38	7	4.42	7-15	7-30	9-24
60	Wisconsin white dent	J. C. Vaughan	Chicago	225	100	45	80	80	2	7.5	2.5	8.33	7.08	4 25	7-22	7-30	9-24
61	Common early white	E. E. Chester	Champaign, Ill...	230	100	62	90	89	1	10	4.5	9.67	6	3.75	7-22	8-5	9-24
62	Gourd seed	"	" ...	230	96	65	90	95	0	9.75	5	8 58	7.42	4.08	7-22	8-5	9-24
63	Champion early white pearl	Dept. of Agriculture	Washington	229	96	49	77	76	0	10	4.75	8.58	7.c8	4.08	7-30	8-5	9-24
64	Burr's white	University farm	Champaign, Ill...	229	100	44	83	79	2	10	4.5	9 33	6.67	4.08	7-30	8-5	9 24
65	White pearl	W. W. Barnard	Chicago	230	96	69	82	93	0	10	4.5	9.17	6.25	3.83	7-22	8-5	9-24
66	Champion white pearl	J. C. Suffern	Voorhies, Ill	229	98	79	87	83	0	9.75	4	9.58	7	4	7-22	8-5	9-24
67	Burr's white	University farm	Champaign, Ill...	229	100	77	94	86	2	9.5	4.5	10	6.58	3.83	7-22	8-5	9-24
68	Parrish	J. C. Vaughan	Chicago	236	98	69	90	79	2	11	6.25	10.27	8	4.75	7-30	8-12	*
69	Helms improved	F. Helms	Belleville, Ill	233	100	88	99	91	1	10.5	5.5	10.08	7	4.5	7-22	8-12	10-7
70	Hickory king	Samuel Wilson	Mechanicsv'le, Pa	229	100	74	90	82	2	9.5	4.25	9.42	6.75	4	7-15	8-5	9-24
71	Old cabin home	V. H. Hallock	Queens, N. Y	235	78	44	65	66	0	11	5.25	8	5.5	2.92	7-22	8-12	*
72	White gourd seed	"	"	233	98	64	80	75	0	11.25	5	10.25	7.67	4.42	7-22	8-5	10-7
73	Hiwassee mammoth	I. V. Faust	Philadelphia	235	96	81	96	91	0	13.25	7.25	9.92	7.17	4.67	7-30	8-19	*
74	Mammoth white surprise	Peter Henderson	New York	235	84	43	64	63	1	12.5	7	10.08	7.33	4.42	7-30	8-19	*
75	Ensilage	C., C. & G	Ft. Atkinson, Wis.	236	78	52	79	73	2	11.75	7	8.42	7.08	3.75	7-30	8-19	*
87	Piasa king	F. C. Pickard	Piasa, Ill	235	.....	47	97	96	0	12.25	6.75	9.33	7	4.17	7-30	8-19	*
	Tract (b)—Mixed dent varieties.																
76	Bloody butcher	E. E. Chester	Champaign, Ill...	230	100	75	93	84	0	9	3.75	8.68	6	3.67	7-15	7-30	9-24
77	Calico	"	"	231	98	76	86	81	0	9	4 25	8.42	7.08	4	7-15	7-30	9-24
78	Calico	J. C. Vaughan	Chicago	230	94	65	85	77	1	8.75	4	8.83	7	4.42	7-15	7-30	9-24
79	Cranberry dent	"	"	231	100	74	89	84	0	10.5	5.75	8.08	6.67	3.67	7-22	8-5	9-24
	Tract (b)—Flint and soft varieties.																
80	Early Dutton	G. S. Haskell	Rockford, Ill	221	94	52	140	96	9	7.5	2.75	10.58	6	3.92	....	7-15	9-11
81	King Philip	"	"	221	92	60	129	131	7	8	3	10.58	5.16	3.08	....	7-15	9-11
82	Self husking	Peter Henderson	New York	221	86	62	136	85	1	5.75	2	9.83	4 17	2.42	....	7-15	9-11
83-4	Brazilian flour corn	Samuel Wilson	Mechanicsv'le, Pa	221	94	63	169	186	8	10.75	5.5	7.25	5.25	3.25	8-5	9-2	*

* Did not mature.

TABLE 2.—Field Weights, Ear Corn, Pounds.

Tract (a); Plats, ⅛ acre.

Plat	Row 1.	Row 2.	Row 3.	Row 4.	Row 5.	Row 6.	Row 7.	Row 8.	Row 9.	Total.
1	74·5	73	73·5	73	66·5	64	72·5	66·5	78	641·5
2	97	90	94·5	87·5	92·5	96·5	99	86	92	835
3	93·5	96·5	99·5	99	94	102·5	86·5	90	104	865·5
4	94·5	86·5	87·5	87	89	86·5	94	92	89·5	804·5
5	99	98·5	92·5	102	94·5	90	91	95	98·5	861
6	77	75·5	71	70	78	82·5	75	76	75·5	680·5
7	89·5	82	81	86	72	81·5	77	58·5	75	702·5
8	89·5	83·5	88·5	84	80·5	82	75·5	68·5	90·5	742·5
9	66	67	68·5	62	57	66	66	64·5	62	579
10	85·5	82	87·5	81	82	84	77·5	78·5	76	730
11	77	76·5	78·5	76·5	75·5	80·5	77·5	77·5	77·5	697
12	70	70·5	78	70·5	73	71·5	69·5	73	71	647
13	83·5	71	79	76·5	78·5	86	75	75	85	709·5
14	68	57·5	64	57	63	65·5	67·5	62	64	568·5
15	102	91	90·5	91	87·5	83·5	90·5	87	106·5	829·5
16	85	93	91	85	94·5	92	84·5	84	98·5	807·5
17	88	90	87·5	83	86	79·5	86	85·5	96	781·5
18	74·5	74	75	77·5	76	77	73·5	73	75	675·5
19	83·5	89·5	80	76	80	68	80	79	87	723
20	51	54	52·5	52·5	55	52	50	55	56·5	478·5
21	84	80	90·5	79	76	81	81	82	85·5	739
22	86·5	77·5	78	77	85	90	95·5	105	.....	694·5
23	60·5	69·5	72	68	70·5	65·5	66	74	64	610
24	92	82	81·5	75·5	86·5	76·5	78	79·5	87·5	739
25	83·5	80	79	80	74·5	80	77	83·5	80	717·5
	2055	1990·5	2021	1956·5	1965·5	1984	1965·5	1950·5	1975	17863·5

Tract (b); Plats, 1·40 acre.

Plat.	Each ⅓ of plat.			Total.	Plat.	Each ⅓ of plat.			Total.
	1	2	3			1	2	3	
26	62·5	57	60	179·5	57	55·5	45·5	53	154
27	57	52	43	152	58	45·5	52·5	46	144
28	30	33·5	31·5	95	59	39	45	35	119
29	45·5	43	27·5	116	60	41·5	50·5	39·5	131·5
30	37·5	37·5	37·5	112·5	61	58·5	61	63	182·5
31	39	34	32·5	105·5	62	57·5	62	55·5	175
32	39·5	36·5	42	118	63	57·5	55	52	164·5
33	43·5	40·5	32	116	64	60·5	49	51	160·5
34	44	52	55·5	151·5	65	57·5	61	54·5	173
35	27·5	27·5	30·5	85·5	66	57	69	65	191
36	57	53	61	171	67	69·5	68	72	209·5
37	56	51	56·5	163·5	68	76	67·5	84·5	228
38	59·5	55	48·5	163	69	85	80	83·5	248·5
39	65·5	63·5	49	178	70	56·5	60	57	173·5
40	53	45	57	155	71	46·5	47·5	46·5	140·5
41	59·5	63·5	52·5	175·5	72	59·5	52	56	167·5
42	46·5	56·5	49	152	73	79	68·5	70	217·5
43	52	57	52	161	74	61	55·5	66·5	183
44	52	54·5	41	147·5	75	58·5	58	62	178·5
45	57·5	55·5	54	167·5	76	57	53·5	58	168·5
46	55	56·5	58	169·5	77	52	56·5	51·5	160
47	68	70·5	62	200·5	78	49	52	53	154
48	54·5	61	55·5	171	79	57	59·5	60·5	177
49	51	60·5	55	166·5	80	39·5	36·5	40·5	116·5
50	53	53·5	57	163·5	81	46·5	47·5	37	131
51	68	65	76	209	82	18	24	18·5	60·5
52	47	47·5	47	141·5	83	49	49·5	53·5	152
53	64	63·5	60·5	188	84	47	50·5	54·5	152
54	52	50	51·5	153·5	85	71	68	77	216
55	55	63	73·5	191·5	86	62·5	62	61	185·5
56	58·5	59	64	181·5	87	73	67	75·5	215·5
						3353·5	3352	3326	10031·5

TABLE 3. No. of Plat; Name of Variety; From whom Received; Where Grown; Percentage of Water; Pounds of Ear Corn to a Bushel; Bushels, Shelled, Per Acre; Total Air-Dry Corn; Loss in Drying.

Plat.	Name of Variety.	From whom received.	Where grown.	Percentage of water in shelled corn when husked.	Pounds ear corn per bushel when husked.	Pounds when husked to make bushel shelled corn when air dry.	Bu. of shelled corn per acre.				
							Good ears.	Nubbins.	Total as husked.	Total air-dry (containing 11 per cent of water).	Loss in drying.
1	Edmonds corn	H. P. Edmonds	Taylor, Ill	23 2	66 8	77.4	50.3	26.5	76.8	66.3	10 5
2	Legal tender	Nims Bros.	Emerson, Iowa	26 9	79.7	97	73	10.8	83 8	68 9	14 9
3	Howard's improved yellow	H. Howard	Marshall, Mo.	38 5	75 2	108 8	67.2	24.9	92.1	63.6	28 5
4	Leaming	University farm	Champaign, Ill	25.2	68.9	81.9	68	25.4	93 4	78.6	14 8
5	Clark's Iroquois	H. H. Clark	Onarga, Ill	26.1	69 9	84.1	62.2	36.3	98.5	81 9	16.4
6	Hogue's yellow dent	R. Hogue	Crete, Neb.	29 5	71.9	90 8	50.8	24.9	75.7	60	15.7
7	Improved orange pride	J. M. McConnell	Rigdon, Ind	36	73.3	101.8	55.8	20.9	76 7	55.2	21.5
8	Steward's improved yellow	L. W. Steward	Amanda, Ohio	28 1	69.9	86.5	64	21	85	68.7	16 3
9	Golden rod	E. Morris	Decatur, Mich.	25.2	69	82.1	37.7	29 4	67.1	56.4	10.7
10	Leaming	University farm	Champaign, Ill	27.6	71.8	88.1	54.3	27.5	81.8	66.6	15.2
11	Riley's favorite	J. Riley	Thorntown, Ind.	26	70.2	84.4	53.1	26.3	79 4	66.1	13.3
12	Prairie queen	Nathaniel Pease	Quincy, Ill.	25	69.9	83.1	49.7	24.5	74.1	62.3	11.7
13	Murdock	University farm	Champaign, Ill.	21.6	68.9	77.9	66.5	15.9	82 4	72.9	9 5
14	Murdock	Wm. T. Lamb	Ridott, Ill	22.1	69 9	79.8	43.8	21.2	65	57	8
15	Champaign	University farm	Champaign, Ill	27.1	69.5	84.9	72 5	23	95 5	78.2	17.3
16	Leaming	" "	" "	24 3	70.6	82.9	73.6	17 9	91 5	77.9	13.6
17	Lape's mixed dent	H. T. Lape	Roseville, Ill	27.2	70	85.7	64.3	25	89 3	73	16.3
18	Smith's mixed dent	Experiment Station	Champaign, Ill	22.9	69 2	79.8	61.4	16 7	78.1	67.7	10.4
19	Burr's white	University farm	" "	29.6	71.1	90	58	23.3	81.3	64 3	17
20	Princeton	Wm. T. Lamb	Ridott, Ill	20.6	67	75.1	41.6	15.5	57.1	51	6 1
21	Clark's premium 110-day	H H. Clark	Onarga, Ill.	29.1	71.8	90.2	52.1	30.2	82.3	65.5	16.8
22	Piasa king	Experiment Station	Champaign, Ill	45.3	77.7	126.6	42.2	29 3	71.5	43.9	27,6
23	Champion of the north	" "	" "	21.7	67.8	77.1	55 9	16 1	72	63.3	8 7
24	Ohio white dent	M. H. Smith	De Soto, Neb.	31.2	73 4	95	56.3	24.2	80.5	62.2	18.3

25	Burr's white	University farm	Champaign, Ill	28.9	71.9	90.1	64.8	15	79.8	62.8	17
26	Leaming	" "	" "	24.9	70	83	82.5	20.1	102.6	86.5	16.1
27	Kane county pride	Robert Shedden	Pingree Grove, Ill	23.5	67.4	78.4	68.9	21.3	90.2	77.5	12.7
28	King of the earliest	A. L. Goddard	Waucoma, Iowa	15.7	63.5	67.1	41.1	18.7	59.8	56.6	3.2
29	Queen of the prairie	Peter Henderson	New York	23.2	69.6	80.6	60.3	6.3	66.6	57.6	9
30	North star	J. C. Vaughan	Chicago	16	65.9	69.8	54.1	14.2	68.3	64.4	3.9
31	Pride of the north	G. S. Haskell	Rockford, Ill	19.9	66.7	74.2	55.3	7.9	63.2	56.8	6.4
32	Pride of the north	W. W. Barnard	Chicago	20.4	67.3	75.2	59.3	10.8	70.1	62.8	7.3
33	Wisconsin yellow dent	J. C. Vaughan	"	21.5	68.2	77.2	57.2	10.8	68	60.1	7.9
34	Woodworth yellow dent	"	"	20.7	71.7	80.5	69.5	15	84.5	75.8	8.7
35	Minnesota king	N. B. & G. Co	Minneapolis	18	68.8	74.8	42.2	7.5	49.7	45.7	4
36	Cloud's early	I. V. Faust	Philadelphia	30.7	71.4	91.7	73.6	22.2	95.8	74.6	21.2
37	Chester county early dent	Samuel Wilson	Mechanicsville, Pa.	30.2	74.4	95	75.2	12.7	87.9	68.8	19.1
38	Blakeway	H. Blakeway & Son	Ridott, Ill.	23.2	71.2	82.5	75.3	16.3	91.6	79	12.6
39	Grange favorite	Swanzey Bros.	"	24.6	71.9	84.9	79.5	19.5	99	83.8	15.2
40	Ridott pride	J. E. Taggart	"	26.9	71.3	86.8	66.9	20	86.9	71.4	15.5
41	Fisk	Eli Fisk	Havana, Ill	28.1	71.4	88.3	84.4	13.9	98.3	79.5	18.8
42	Smedley	W. W. Barnard	Chicago	25.2	69.5	82.6	67.5	20	87.5	73.6	13.9
43	Log cabin	C. N. Butt	Knoxville, Ill	29.5	75.8	95.7	71.3	13.7	85	67.3	18.7
44	True Leaming	V. H. Hallock	Queens, N. Y	26.7	71.4	86.7	68.6	14	82.6	68	14.6
45	True Leaming	Samuel Wilson	Mechanicsville, Pa.	26.5	70.7	85.6	80.6	14.2	94.8	78.2	16.6
46	Leaming	Dep't of Agriculture	Washington	26.7	70.6	85.8	77.4	18.6	96	79	17
47	Leaming	E. E. Chester	Champaign, Ill	26.4	71.2	86	95.1	17.6	112.7	93.2	19.5
48	Leaming	University farm	" "	25.3	67.9	81	72	28.8	100.8	84.4	16.4
49	Seeknofurther	G. W. Hartsock	Gifford, Ill	24.6	69.8	82.1	81.7	13.7	95.4	81.1	14.3
50	Golden dent	James King	Chicago	26.5	70.2	85	66.9	26.3	93.2	76.9	16.3
51	Piasa queen	Dep't of Agriculture	Washington	33.9	75.2	101.3	91.7	19.5	111.2	82.9	28.7
52	Arleus	Samuel Wilson	Mechanicsville, Pa.	25.2	69.6	83.3	68.8	12.5	81.3	68	13.3
53	Leaming	University farm	Champaign, Ill	25	70.7	83.9	88.5	17.9	106.4	89.6	16.8
54	Farmers' favorite	Peter Henderson	New York	35.5	74.9	103.3	63.5	18.5	82	59.4	22.6
55	Paulin dent	J. K. Paulin	Tuscola, Ill	28.1	71.2	88.1	89.1	18.5	107.6	86.9	20.7
56	Feeders' favorite	H. & L. K. Seymour	Payson, Ill	33.2	70.8	94.3	78.9	23.6	102.5	77	25.5
57	Golden beauty	Peter Henderson	New York	39.2	72.1	105.5	70.7	14.7	85.4	58.4	27
58	Chester county mammoth	"	"	31.5	73.7	95.8	68.5	9.6	78.1	60.1	18
59	White cap	C. Leete & Son	Moorheadville, Pa.	18.9	67.9	74.4	55.1	15	70.1	64	6.1
60	Wisconsin white dent	J. C. Vaughan	Chicago	20.9	70.6	79.4	55.4	19.1	74.5	66.4	8.1
61	Common early white	E. E. Chester	Champaign, Ill	21.8	69.5	79.2	87	18	105	92.1	12.9
62	Gourd seed	"	" "	22.5	67.5	75	78.7	25.1	103.8	93.3	10.5
63	Champion early white pearl	Dep't of Agriculture	Washington	27.5	71.8	88.1	70.6	21	91.6	74.7	16.9
64	Burr's white	University farm	Champaign, Ill	27.5	70.3	86.2	70.7	20.6	91.3	74.4	16.9

TABLE 3.—*Continued.*

Plat.	Name of Variety.	From whom received.	Where grown.	Percentage of water in shelled corn when husked.	Pounds ear corn per bushel when husked.	Pounds when husked to make bushel shelled corn when air-dry.	Bu. of shelled corn per acre.				
							Good ears.	Nubbins.	Total as husked.	Total air-dry (containing 11 per cent. of water.)	Loss in drying.
65	White pearl	W. W. Barnard	Chicago	28.7	72.3	90.3	58.3	37 4	95.7	76 6	19.1
66	Champion white pearl	J. C. Suffern	Voorhies, Ill	25.3	69.5	80.6	84.2	25.7	109 9	94 8	15.1
67	Burr's white	University farm	Champaign, Ill	25.2	69.2	82.6	98.6	22 5	121.1	101.4	19 7
68	Parrish	J. C. Vaughan	Chicago	39 3	73.9	108 3	90 9	32 5	123 4	84.2	39.2
69	Helms improved	F. Helms	Belleville, Ill	33.9	71.9	96 9	101.8	36.4	138 2	102.6	35.6
70	Hickory king	Samuel Wilson	Mechanicsville, Pa	22.3	69	79.1	81.9	18 7	100.6	87 7	12.9
71	Old cabin home	V. H. Hallock	Queens, N Y	39.8	67.9	100.5	54.7	28 1	82 8	55.9	26.9
72	Maryland white gourd seed	"	" "	30	74.6	94.7	67 6	22 2	89 8	70.7	19.1
73	Hiwassee mammoth	I. V. Faust	Philadelphia, Pa	42.2	82.2	126 4	71	34 8	105.8	68.8	37
74	Mammoth white surprise	Peter Henderson	New York	40.2	80 3	119 5	62 6	28.5	91.1	61.2	29 9
75	B. & W. ensilage	Cornish, Curtis & Greene	Fort Atkinson, Wis	37 2	71.3	101	67.3	32 8	100.1	70.6	29.5
76	Bloody butcher	E. E. Chester	Champaign, Ill	22.7	68 4	78.7	80.4	18.1	98 5	85.6	12.9
77	Calico	"	" "	21.4	68.2	77.3	70	23.8	193 8	82 8	11.0
78	Calico	J. C. Vaughan	Chicago	19.2	69.8	77	66	22.2	88.2	80	8.2
79	Cranberry dent	"	"	26 7	68.5	83.4	76.6	36.7	113.3	84.9	28 4
80	Early Dutton	G. S. Haskell	Rockford, Ill	18.5	85.5	98.3	40	14.5	54 5	47.4	7.1
81	King Philip	"	" "	18.6	71.1	77.8	60.6	13.1	73 7	67.3	6 4
82	Self-husking	Peter Henderson	New York	15.3	68.2	74.2	25 7	9.8	35.5	32.6	2.9
83-4	Brazilian flour corn	Samuel Wilson	Mechanicsville, Pa	48.3	85.5	147	28.5	41.6	70.1	41 4	28.7
85	Swengel corn	Swengel Bros	Neoga, Ill	39.4	74.1	108.9	94 7	21.9	116.6	79 3	37 3
86	Eclipse	F. C. Pickard	Piasa, Ill	28 2	69 7	85.8	78.3	28.1	106 4	86.5	19.9
87	Piasa king	"	" "	37 4	75.4	107.1	78.8	35.5	114 3	80.5	33.8

TABLE 4.—Number of Ears per Acre, and Weight of One Hundred Ears.

No. of plat.	Number of ears per acre.			Weight of 100 ears, lb.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lb.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lb.		
	Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Average ears.		Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Average ears.		Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Average ears.
1	6,400	4,176	10,576	57	41	50	30	7,200	3,300	10,500	49	29	43	59	6,900	3,600	10,500	57	30	48
2	6 840	4,248	11,088	72	40	59	31	7,200	2,220	9,420	52	26	46	60	6,000	4,020	10,020	68	36	55
3	4,968	3,888	8,856	93	51	75	32	6,300	2,700	9,000	60	28	51	61	8,400	3,300	11,700	70	38	61
4	5,832	4 392	10,224	77	39	61	33	7.200	2,760	9 960	57	31	50	62	7,200	4,200	11,400	75	41	63
5	5,760	5,328	11,088	74	47	61	34	6,900	3,180	10,080	67	34	57	63	6 360	3,360	9,720	81	46	69
6	4,680	4,392	9.072	78	43	62	35	6.360	2.400	8,760	44	21	38	64	6,300	3,480	9,780	80	44	67
7	5,040	3 600	8,640	74	40	60	36	5.700	3.000	8,700	88	52	76	65	7,800	6,300	14.100	62	36	50
8	6,480	4,176	10,656	66	35	54	37	4,800	1,800	6,600	112	55	96	66	7.020	4.440	11.460	82	41	66
9	3,600	5,472	9.072	64	33	45	38	7.080	2,760	9,840	79	46	70	67	8,400	3 660	12,060	79	43	68
10	5,040	4.032	9,072	77	50	65	39	7,560	3.900	11,460	81	41	67	68	6.420	4 320	10,740	97	54	80
11	4,680	4,032	8,712	76	46	62	40	6,000	3,960	9.960	75	35	59	69	8.400	4.560	12,960	94	45	76
12	5,400	4.680	10,080	65	37	52	41	7.860	3,240	11,100	79	35	66	70	7.200	3,360	10,560	79	39	66
13	7.776	3,600	11,376	58	32	49	42	6,000	3.300	9 300	79	44	66	71	5.400	5,100	10,500	68	38	53
14	5,040	4,392	9.432	60	34	48	43	5.220	2,700	7.920	102	42	82	72	4.020	3 780	8,700	99	47	77
15	6,840	4,032	10,872	68	40	58	44	6,660	2,280	8.940	78	50	71	73	4.800	4,620	9.420	119	67	93
16	7.488	3.528	11,016	72	39	61	45	6,600	2.160	8.760	86	49	77	74	4.200	3,900	8.100	109	60	85
17	5,400	3,960	9,360	82	45	66	46	6.480	2,580	9.060	82	51	74	75	5.400	5,100	10.500	81	46	66
18	6,480	3,312	9,792	65	36	56	47	7,860	2,280	10,140	89	58	82	76	7.440	3.960	11,400	72	32	58
19	5,832	4.536	10,368	69	38	55	48	6,000	3.360	9,360	84	55	74	77	6.720	4,440	11,160	72	38	58
20	5,400	3.528	8,928	53	31	44	49	7,260	2.580	9,840	78	38	68	78	6.000	4,560	10,560	74	34	57
21	4.536	5,256	9,792	75	39	56	50	5.100	3,360	8,460	90	54	76	79	7,200	4 740	11,940	71	39	58
22	4,320	5,184	9,504	71	50	64	51	6,180	3,000	0.180	102	51	86	80	6.540	4 860	11.400	44	22	35
23	6.552	3,744	10.296	60	30	49	52	6,060	2.220	8,280	78	41	68	81	9,360	5,880	15,240	48	18	37
24	5,400	4,752	10,152	79	41	61	53	7.800	3,120	10 920	81	42	70	82	6 000	4.980	10,980	31	14	28
25	6,192	3.528	9,720	69	30	55	54	4.500	2.520	7,020	103	58	87	83	5.100	14,220	19,320	42	26	30
26	6,780	3,000	9,780	84	48	73	55	6,900	3.360	10.260	83	38	69	84						
27	6,900	3,300	10.200	80	48	64	56	6.300	3.540	9 840	85	47	71	85	7,500	3.240	10,740	89	50	77
28	6,000	4,380	10,380	44	27	37	57	4,560	2,400	6,960	107	48	86	86	7.200	4 440	11,640	75	46	64
29	7,020	2,040	9,060	68	27	58	58	4,500	1,620	6,120	114	46	96	87	6,420	4,800	11,220	93	49	74

TABLE 5. SUMMARY OF RESULTS WITH THE FOUR CLASSES — EARLY, MEDIUM, LATE, AND NON-MATURING — FOR 1888 AND 1889.

	Average of plats, 1888.				Average of plats, 1889.			
	27 early maturing.	32 med. maturing.	15 late maturing.	8 non-maturing.	3 early maturing.	42 med. maturing.	22 late maturing.	15 non-maturing.
Per cent. kernels germinating in Geneva apparatus	96	97	90	78	93	97	96	88
Per cent. full stand, 4 stalks per hill, May 25	84	80	74	71	70	68	65	57
Per cent. full stand, 4 stalks per hill, July 5					81	82	80	75
Per cent. full stand, 4 stalks per hill, Sept. 9–12	88	87	85	86	84	80	78	74
Per cent. of barren stalks	8	11	13	90	1.7	1.2	0.5	1.2
Average height of stalk, ft	9.8	11.5	12.2	12.7	6.9	8.9	9.9	10.8
Average height of butt of ear from ground, ft	4.5	5.5	6.2	7	2.8	4 2	4.7	5.4
Average length of 3 specimen ears, in	8.3	9	9 7	9.9	7.44	8.15	9 57	9.72
Average circumference of 3 specimen ears, in	6.33	6.97	7.22	4.06	6.17	6.37	7.24	7.16
Average circumference of 3 specimen cobs, in	3.71	3.97	4.17	7.06	3.42	3 86	4 32	4.27
Number of good ears per acre	7,597	7,482	6,263	5,678	6,520	6,695	6,055	5,227
Number of nubbins per acre	2,948	2,741	2.745	2,710	3,360	3,535	3,840	3,890
Total number of ears per acre	10,545	10,223	9,008	8,388	9,880	10,230	9,895	9,117
Weight of 100 good ears, lb	60	74	93	100	46	72	81	93
Weight of 100 nubbins, lb	35	43	51	50	26	40	43	50
Weight of 100 average ears, lb	53	68	80	84	39	61	67	76
Lb. of ear corn to make bu. when husked	67.2	68.4	71.4	73 5	66.1	69 6	72	74.5
Lb. of ear corn when husked to make bu. air-dry	73.3	78.1	87.8	102 4	70.6	81.1	90 2	106.3
Yield per acre from good ears, bu	67 5	84	81.2	77.7	45.8	68.8	70	68
Yield per acre from nubbins, bu	15.1	18	20.4	16.4	13.5	19 7	22.2	25.2
Yield per acre, total when husked, bu	82.6	102	101.6	94.1	59.3	88.5	92.2	93.2
Yield per acre of air-dry corn, bu	75 6	89 8	83.2	67.8	55.6	75.4	73.5	65.6
Loss in drying, bu	7	12.2	18.4	26.3	3.7	13.1	18.7	27.6
Per cent. water in corn when husked	18.33	21.8	27.2	35.95	16.6	23.8	28 8	37.7

Experiment No. 3. Corn, Time of Planting.

This experiment has been conducted during the past two seasons to determine whether a variation in the date of planting, within certain limits, would materially affect the yield of the corn.

The corn was grown on the same tract both seasons under very much the same conditions, as detailed in bulletin No. 4, p. 93. In 1888 there were seven, and in 1889, eight weekly plantings. As nearly equal cultivation with the hoe and the cultivator was given as the different dates of planting would permit. There was considerable inequality, however, as the following table will show:

TABLE SHOWING DATE OF PLANTING; DATE OF CULTIVATION; IMPLEMENTS USED.

Plat.	Date of planting.	Dates of cultivation.					
		With hoe.	With cultivator.				
			1st time.	2d time.	3d time.	4th time.	5th time.
1	Apr.l 22	May 20 ...	May 27..	June 13..	June 24..	June 27..	July 6.
2	April 29	May 27 ...	June 5...	June 13..	June 24..	June 27..	July 6.
3	May 6	June 5	June 13..	June 24..	June 27..	July 6...	.....
5	May 13....	June 5	June 13..	June 24..	June 27..	July 6...	.....
6	May 20.....	June 13 ...	June 24..	June 27..	July 6...	.....	.....
7	May 27.....	June 13 ...	June 24..	June 27..	July 6...	.....	.....
8	June 5.....	June 14 ...	June 24..	June 27..	July 6 ..	July 18 ..	.....
9	June 13.....	June 24 ...	June 27..	July 6...	July 18..	.....	.....

All the plats were hoed once. Three plats were cultivated three times, three, four times, and two, five times. The necessity for more cultivation in the earlier plantings was especially marked this year. *Experiment No. 8, Corn, Frequency of Cultivation*, page 254, indicates clearly that the different quantities of cultivation would not materially affect the result so long as the land was kept equally free from weeds, and this was done.

The table below gives the stand of corn on the various plats at the dates specified. It will be noticed that plats 2 and 3 started slowly, especially the latter. Two weeks previous to the time of planting this plat, there was practically no rain, and in the two weeks following less than two-fifths of an inch. Two weeks following this over five inches of rain fell, accompanied by very low temperature. See table page 219. This seems to have affected plats 2 and 3 more unfavorably than plat 1. It was noticeable throughout the season that plat 3 was greener than plats 5 and 6, and when husked contained more water; that is, was less mature. Early planting does not always, therefore, cause early maturity. In all cases the difference in the date of maturity is much less than the difference in the date of planting.

TABLE SHOWING NUMBER OF HILLS AND NUMBER OF PLANTS ON EACH PLAT AT DATES GIVEN.

Date of observation.		Number of plat and date of planting.							
		1	2	3	5	6	7	8	9
		Apr. 22	Apr. 29.	May 3	May 13	May 20	May 27	June 5	June 13.
May 6	Hills....	130	.....	.....	.....	.....	.....	.....	.....
	Plants ..	223	.....	.....	.....	.....	.....	.....	.....
May 13....	Hills....	293	49	.....	.....	.....	.....	.....	.....
	Plants ..	912	97	.....	.....	.....	.....	.....	.....
May 20....	Hills....	317	154	27	42	.....	.....	.....	.....
	Plants ..	1,035	334	69	91	.....	.....	.....	.....
May 27....	Hills....	318	257	94	273	.....	.....	.....	.....
	Plants ..	1,063	686	233	757	.....	.....	.....	.....
June 5 ...	Hills....	317	280	196	307	226	.....	.....	.....
	Plants ..	932	742	480	897	469	.....	.....	.....
June 13, 14	Hills. ..	318	297	320	312	315	315	213	.....
	Plants ..	1,001	804	1,035	1,009	879	907	462	.....
June 21 ...	Hills....	309	296	320	307	317	319	306	324
	Plants ..	1,022	780	1,020	976	901	991	852	1,228
July 9.....	Hills....	315	291	318	312	320	320	305	307
	Plants ..	998	800	997	1,004	928	1,036	871	1,074

July 22d, plat 1 was pretty fully in tassel; plat 2 had an occasional tassel; the other plats had none. August 1st, plat 1 was fully in tassel; plats 2, 3, and 5, about one-half in tassel; plats 6, 7, and 8, about one-third in tassel; plat 9 had an occasional tassel. September 26th, plat 1 was ripe; plat 2, nearly ripe; plat 3 contained considerable soft corn, more than plats 5 and 6; plat 7 had considerable soft corn; on plats 8 and 9 the corn was mostly soft. At this date plats 1 to 6 would not have been severely injured by frost. October 9th, plats 1, 2, 5, and 6 were ripe; plats 3 and 7 barely ripe; plats 8 and 9 were not ripe. The frost of October 7th prevented their maturing.

November 23d, the corn was husked and weighed. A 50-lb. sample of ear corn was taken from each plat and shelled to determine the per cent. of shelled corn, and a sample of this was taken to determine the per cent. of water.

The following table gives the yield in comparison with that of last year:

TABLE SHOWING YIELD OF CORN AND PER CENT. OF WATER — 1888 AND 1889.

1888.						1889.					
No. plat.	Date of planting.	Ear corn per plat, lb.	Bu. per acre, actual.	Per cent. of water in shelled corn.	Bu. per acre, air-dry.	No. plat.	Date of planting.	Ear corn per plat, lb.	Bu. per acre, actual.	Per cent. of water in shelled corn.	Bu. per acre, air-dry.
1	April 27	580	85.4	16 89	80	1	April 22.....	497	59	21 4	52
2	May 4	625	92 6	16 59	86 7	2	April 29.....	460	53	25 9	44
4	May 11.....	630	92 8	17.48	86 1	3	May 6.....	554	63	28.2	51
6	May 19.....	630	92.3	15.85	87 3	5	May 13.....	602	68	26.1	56
7	May 26.....	600	88.4	16.88	82 5	6	May 20.....	549	61	27	50
8	June 1	620	86.9	17.28	80 8	7	May 27.....	591	68	27.8	55
9	June 8...	470	59.6	24 85	50.3	8	June 5.....	568	64	30.2	50
						9	June 13.....	645	70	36.2	50

Both seasons, Burr's white, a medium maturing variety, planted on good soil and given good culture, matured when planted on, or prior to, June 1st. Planted after this date it failed to mature. Both seasons, six weekly plantings matured in 1888, from April 27th to June 1st, and in 1889 from April 22d to May 27th; and, with the exception of plat 2 in 1889, the yields from the several weeks' plantings were strikingly uniform.

In 1888, the average yield per acre of air-dry corn from the six maturing plats was a little less than 84 bu. The least yield, 80 bu., was from the first week's planting, April 27th and the largest, 87 bu., was from the fourth week's planting, May 19th; while the second and third weeks' plantings, May 4th and 11th, were essentially as large. In 1889 the average yield was a little more than 51 bu. The plat yielding the least, 44 bu. per acre, was planted within two days of the same date as the plat which gave the least yield in 1888. The plat giving the largest yield was planted a week earlier than the plat giving the largest yield in 1888; and the plat planted week later also gave nearly as large a yield.

The results of two seasons' experiments indicate that the yield of corn is not appreciably affected by a variation of five weeks, prior to June 1st, in the time of planting. Some differences occur which seem to be due to certain variable conditions of weather rather than to the time of planting. Sometimes the later plantings may be properly cultivated with less labor than the early plantings.

Experiment No. 4. Corn, Depth of Planting.

May 4, 1888, six rows, each 8 rods in length, were planted with corn at depths varying from 1 to 6 in. May 6, 1889, six rows were planted in the same manner and an extra row was planted on each side, so that all the rows under test might be equally surrounded by corn.

The land was similar in every respect to that used in *Experiment No. 3*, and its prior culture had been the same. There were 36 hills in a row, and hills and rows were 3 ft. 8 in. apart. Four kernels of Burr's white were planted in each hill. The cultivation of all the rows was the same. In 1888, they were hoed once, May 26th, and cultivated with a shallow cultivator three times, June 1st, 16th, 26th. In 1889, they were hoed June 5th, and cultivated four times, June 13th, 24th, 27th, July 6th.

In 1888, the shallower the corn was planted the quicker it came up and the more evenly did every kernel grow, with the possible exception of the row planted 3 in. deep. In 1889, the deep planted rows started to grow quicker but after four weeks they were overtaken by the shallower planted rows. This is directly the result of the weather. The conditions were unusual. Some of these have already been pointed out. The general fact was that the ground was so excessively dry, until May 21st, that much of the corn on the shallow planted rows was unable to get sufficient moisture for germination.

In 1888, the corn which was planted from 1 to 4 in. deep was somewhat more forward than that which was planted 5 and 6 in. deep. August

1, 1889, the corn which was planted 4, 5, and 6 in. deep was more forward than the shallower planting, but at later dates no difference in maturity was discernable.

In 1888, the corn was husked November 20th and weighed November 26th; in 1889, it was husked November 16th, and weighed November 18th.

The following table gives the results for 1888 and 1889:

TABLE SHOWING DEPTH OF PLANTING; EARS AND BUSHELS PER ACRE; EARS PER BUSHEL—1888 AND 1889.

	1888.							1889.						
	Ear per acre.			Bushels per a.			Ears in bushel.	Ears per acre.			Bushels per a.			Ears in bushel.
Depth, in.	Good.	Nubbins.	Total.	Good.	Nubbins.	Total.		Good.	Nubbins.	Total.	Good.	Nubbins.	Total.	
1	7.290	3.780	11,070	84	25.7	109.7	101	5,850	4.680	10.530	59	24	83	127
2	6 210	3,420	9 630	67.5	20 9	88.4	109	5.400	4,680	10,080	56	27	83	121
3	6 570	3,870	10,440	73.5	27.3	100.8	104	4,050	4.140	8,190	28	23	51	161
4	5.850	3,780	9.630	63 1	24 9	88.	109	5,400	4,140	9 540	58	29	87	110
5	4.770	3,510	8,280	50.6	22.5	73.1	113	5,400	3.420	8,820	58	23	81	109
6	4 320	1,620	5.940	49 4	10 9	60.3	98	5 940	4.500	10.440	63	29	92	113

In 1888, the largest yield was from the row planted 1 in. deep; in 1889, from the row planted 6 in. deep. In 1888, the decidedly smallest yield was from the row planted 6 in. deep, while in 1889, it was from the row planted 3 in. deep. In 1888, the latter depth gave the next to the largest yield. In 1888, the smaller yield was due to the smaller number of ears produced; In 1889, it was due both to the smaller number of ears, and to their smaller size.

In neither year was there any direct relation between the depth of planting and the yield obtained.

One fact referred to under *Experiment No. 54, Corn, Root Growth*, is worthy of mention here. It was found upon examination that at whatever depth planted, 1, 3, or 5 in, the crown roots start to grow usually at between 1 to 2 in. deep. No roots start at a lower depth, except those growing directly at the seed, and these die after the crown roots are established. With this soil and its last year's conditions, it seemed that nature required that the roots which were to support the plant should start to grow within, 2 in. of the surface. The reason for deeper planting, except to reach moisture sufficient to sprout the corn, is, therefore, not apparent and some disadvantages are manifest. Of course the corn raiser understands that, practically, it is often necessary on uneven land to plant deep lest some of the corn may be left uncovered.

Experiment No. 5. Corn, Thickness of Planting.

This experiment was conducted to determine not only the best thickness at which to plant corn, but also the best manner of distributing the

corn at a given thickness—whether, for instance, to plant 3 kernels every 42 in. or 1 kernel every 14 in.

The land used was the same both seasons. Each plat contained three rows about six rods long and five rods of each was harvested. No space was left between plats, and extra rows were planted at the ends of the tracts.

In 1888, the tract was spring-plowed just before planting, which was after stable manure, at the rate of 30 tons per acre, had been applied. In 1889, it had been fall-plowed. May 8, and 9, 1888, and May 2, 1889, Burr's white was planted on the twenty-four plats, in quantity and manner indicated in the tables, pages 255–6, with the exception that in 1888, instead of plats of like thickness of planting being adjacent, plats containing the same number of kernels per hill were planted adjacent. The cultivation of all the plats was the same. In 1888, they were hoed twice, May 24th, and June 21st, and cultivated once with a shallow cultivator; in 1889, they were hoed once, May 22d to 25th, and cultivated twice, June 14th and 26th.

October 8 to 13, 1888, and October 4, 5, 1889, the plats were cut and shocked. October 13 to 27, 1888, the corn-fodder on each plat was weighed, the corn husked and weighed, and other data obtained as given in tables, pages 255–6. In 1889, the corn was husked from the shock, November 14th to 16th, and the corn weighed and shelled November 18th, 19th. The stover was not weighed until December 6th, with the exception of plat 1, the corn of which was husked and the stover weighed October 29th. A sample of shelled corn taken October 20, 1888, contained 22.7 per cent. of water; a sample taken November 19, 1889, contained 24.4 per cent. of water. The corn on the different plats ripened equally so far as could be observed, and the corn of the different plats was assumed to contain an equal per cent. of water.

The plats were planted at six different degrees of thickness, as follows: at the rate of 47,520, 23,760, 15,840, 11,880, 9,504, and 5,940 kernels per acre; and for the sake of brevity and clearness will be spoken of in the discussions which follow, as the first, second, third, etc., plantings.

Number of Stalks Harvested. The yield depends upon the number of stalks harvested rather than upon the kernels planted. The seed was of extra quality, its germinating power being nearly perfect. The number of stalks harvested per acre is given for both seasons in the table below. In 1888, for every one hundred kernels planted, for the six plantings, from first to sixth, there were 62, 72, 88, 104, 121, and 138 stalks harvested; in 1889, 77, 84, 84, 93, 96, and 105.

There were more stalks harvested in the first two plantings and less in the last four, in 1889, than in 1888. There was very much less variation in the ratio of stalks harvested to kernels planted in 1889 than in 1888. Apparently there was less tendency to stool this season than last. There was a general tendency to produce more stalks for the number of

kernels planted as the planting was less thick, but this tendency was not so marked in 1889 as in 1888.

In 1888, with the same rate of thickness there were somewhat more stalks harvested for every one hundred kernels planted, where one kernel was planted, than where two, three, or four kernels were planted to a hill; but in 1889 there was substantially no difference in the ratio of stalks harvested to kernels planted, whether one, two, three, or four kernels were planted in a hill.

The weight of stalks and ears. The size of stalk and ear for the different plantings as indicated by their weight, may be compared in the following table, giving the summaries for the two seasons.

TABLE SHOWING STALKS HARVESTED; WEIGHT OF STALKS, STOVER, EARS; POUNDS OF EARS TO 100 POUNDS OF STOVER—1888 AND 1889.

Plantings.	1888.					1889.				
	Stalks harvested per acre.	Weight 100 stalks corn-fodder.	Weight 100 stalks stover	Weight 100 ears.	Lb. ear corn to 100 lb. stover.	Stalks harvested per acre.	Weight 100 stalks corn fod'er	Weight 100 stalks stover.	Weight 100 ears.	Lb. ear corn to 100 lb. stover.
First.	29,460	61	40	33	52	36,700	35	23	24	50
Second	17,100	92	54	51	69	19,820	59	30	40	99
Third	13,940	107	63	60	69	13,270	84	36	54	129
Fourth. ...	12,350	119	70	64	70	11,100	100	44	63	134
Fifth	11,540	118	74	63	60	9 170	114	52	67	120
Sixth	8,200	150	97	70	54	6,260	115	54	67	116

In both seasons there was a nearly constant increase from the thickest to the thinnest plantings in the weight of 100 stalks of stover and of 100 ears, the ears increasing in weight faster than the stalks. The ears were much heavier in the intermediate plantings than in the thickest plantings, but they were not much heavier in the thinnest plantings, than in the intermediate plantings, while the increase in weight of stalk was fairly uniform from the thickest to the thinnest.

The development of the plant seems to have depended mostly upon the thickness of planting and but little upon the method of distribution. In 1888, the ears were slightly larger when 2 or 3 kernels were planted than when 1 or 4 kernels were planted to a hill; while in 1889, the ears were slightly larger where 1, 2, and 3 kernels were planted than where 4 kernels were planted. These differences were very small, probably entirely within the limits of experimental variation.

Numbers of ears. The number of ears per acre materially affects the cost of harvesting when husked, and, unless the yield is larger, the larger number is manifestly objectionable.

In 1888, the average number of ears per acre from the first planting was, approximately, 18,400; from the second, 12,750; from the third, 10,000; from the fourth, 9,400; from the fifth, 7,600; and from the sixth, 6,050. In 1889. there were 17.175, 14.500, 11,600, 10,100, 8,400, and

5,760 ears per acre, respectively. For every 100 good ears, there were, in 1888, 370, 97, 51, 33, 43, and 28 nubbins; in 1889, there were 2,335, 271, 87, 44, 34, and 37 nubbins, respectively. The very large proportion of nubbins in the thicker plantings will be noticed, especially in 1889.

In 1888, there were more ears produced where there was but 1 kernel to the hill, while with 2, 3, and 4 to the hill, there was but little difference in the number produced. In 1889, the more kernels to the hill, the thickness remaining the same, the more the number of ears produced.

In 1888, for every 100 stalks there were in the first planting, 62 ears; in the second, 74; in the third, 72; in the fourth 76; in the fifth, 66; in the sixth, 75; while in 1889 there were 47, 73, 87, 91, 91, 92 ears, respectively, for every 100 stalks. In general the thinner the planting the fewer the barren stalks, and there were less in 1889 than in 1888.

Yield. The following table gives the average yield for the different degrees of thickness in planting:

TABLE SHOWING FOR 1888 AND 1889—YIELD PER ACRE OF CORN-FODDER, OF STOVER, OF GOOD EARS, NUBBINS, AND POUNDS OF EAR CORN PER 100 POUNDS OF STOVER.

Plantings.	1888.						1889.					
	Tons corn-fodder per acre.	Tons stover per acre.	Bu. shelled corn per acre.			Lb. ear corn to 100 lb. stover.	Tons corn-fodder per acre.	Tons stover per acre.	Bu. shelled corn per acre.			Lb. ear corn to 100 lb. stover.
			Good ears.	Nubbins.	Total.				Good ears.	Nubbins.	Total.	
First	9	6	32	57	89	52	6 3	4 2	6	55	61	50
Second	8	4.8	64	31	95	69	5 9	2 9	36	50	86	99
Third	7.5	4.4	71	16	87	69	5.5	2.4	62	29	91	129
Fourth	7 5	4.3	74	13	83	70	5 5	2.4	76	17	93	134
Fifth	6.8	4.2	61	11	72	60	5 2	2.4	71	11	82	120
Sixth	5.8	4	55	5	60	54	3.6	1.7	48	8	56	116

The total yield of corn-fodder—corn and stover—was greatest in the thickest planting and gradually decreased as the stand became thinner. The same was true also of the stover; that is, the residue left after the corn is husked. In 1888, the largest yield of corn was from the second planting—1 kernel every 6 in., 2 every 12 in., etc.—while the largest yield of corn in 1889 was from the third and fourth plantings. Both seasons, the largest yield of corn from good ears was from the fourth planting, 1 kernel every 12, 2 every 24 in., etc. This season the difference in favor of planting at the third and fourth thickness over planting at the first and second thickness is very marked.

In 1888, the second planting produced 8 bu. more than the fourth, but the fourth produced 10 bu. more corn from good ears. To harvest an acre of the second planting would require the husking of 12,700 ears; and to harvest an acre of the fourth planting, 9,400 ears, approximately. In 1889, the third planting yielded 5 and the fourth 7 bu. more than the second

planting, while there were 26 and 40 bu. more from good ears. To harvest an acre of the second planting would require the husking of 14,500 ears; to harvest the third, of 11,600 ears; and to harvest the fourth, of 10,100 ears per acre.

With the same rate of planting, there was, in 1888, a little more corn and considerably more corn from good ears where two kernels were planted to a hill. The total yield of corn-fodder was a little greater where 1 or 2 kernels were planted to a hill, but the yield was greater where 4 kernels were planted, than where 3 kernels were planted to a hill. In 1889, with 1 to 4 kernels per hill, the larger the number of kernels per hill the greater the yield of corn to a slight extent. The average yield in order of largest to smallest number of kernels per hill was 83, 82.5, 82, and 79 bu. per acre. The yield of corn-fodder was about the same whatever the number of kernels per hill.

In these experiments planting *at the rate* of 1 kernel every 6 in. gave better results than planting *at the rate* of 1 kernel every 3 in., if the crop was grown for fodder purposes. Planting *at the rate* of 1 kernel every 9 in. or 1 kernel every 12 in. gave better results, if kernel was the main object, than thicker or thinner planting.

Neither for fodder purposes nor for the production of corn merely do these experiments show any material advantage in planting in drills over planting in hills, and this where the cultivation was such as to keep the land equally free of weeds, whatever the method of planting. Taken as a whole, there was very little difference in the results, whatever the methods of distribution of the seed, so long as the rate of seeding was the same. [See tables on two following pages.]

Experiment No. 8. Corn, Frequency of Cultivation.

The land used in this experiment is the same as that used in the two succeeding experiments, and all that relates to the nature of the land, its preparation, the planting of the seed, and the cultivation of the crop will be discussed here once for all.

In the season of 1887, the land was in mammoth clover. In 1888, this experiment, *Experiment No. 9, Depth of Cultivation* and *Experiment No. 10, Effect of Root-pruning*, were conducted on the tract in the same manner as this year, with the few exceptions noted below. The tract was plowed late, December 5, 6, 1888. The stalks were not removed. May 1, 1889, the tract was cultivated with disk harrow twice, harrowed, smoothed, with a plank, and marked. May 2d, eight plats, each 2 x 8 rods, or one-tenth acre each, were planted, four kernels to the hill, with Burr's white.

In order to observe the results of different amounts of cultivation on the yield of corn it was arranged to cultivate very frequently plat 8 with a deep cultivator, the "John Deere" being ordinarily used, and plat 7 with a shallow cultivator, the "Tower" being ordinarily used; to cultivate plat

TABLE SHOWING FOR 1888 AND 1889 – KERNELS IN A HILL; DISTANCE BETWEEN HILLS; KERNELS PLANTED PER PLAT; NO. EARS, GOOD EARS, AND NUBBINS PER ACRE; AVERAGE WEIGHT OF STALKS AND EARS, OF STALKS, AND OF EARS; EARS TO 100 STALKS; EAR CORN TO 100 POUNDS OF STOVER.

Kernels in a hill.	Inches between hills.	Kernels planted per plat.	Number per acre, 1888.			Number per acre, 1889.			Average weight, 1888.			Average weight, 1889.			Ears harvested to 100 stalks.		Wt. ear corn harvested for 100 lb. stover.	
			Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Total.	100 stalks and ears.	100 stalks.	100 ears.	100 stalks and ears.	100 stalks.	100 ears.	1888.	1889.	1888.	1889.
1	3	990	3,312	15,620	18,932	672	15,120	15,792	58	41	30	35	25	24	57	42	41	41
2	6	990	5,520	12,240	17,760	672	15,840	16,512	68	43	38	32	22	23	64	44	56	46
3	9	990	4,128	14,208	18,336	720	16,416	17,136	58	35	35	35	23	25	65	47	63	53
4	12	990	3,360	15,024	18,384	720	17,760	18,480	58	38	37	37	24	24	63	52	53	51
5	15	990	3,216	15,360	18,576	768	17,784	17,952	62	42	32	34	21	26	63	48	48	61
1	6	495	6,768	7,200	13,968	4,080	9,936	14,016	95	57	50	59	30	40	77	71	67	93
2	12	495	6,960	6,000	12,960	4,176	9,360	13,536	98	59	52	60	30	42	76	71	67	98
3	18	495	5,760	6,096	11,856	3,840	10,224	14,064	81	47	49	56	28	40	70	70	73	102
4	24	495	7,200	5,232	12,432	3,600	11,760	15,360	92	56	51	60	30	40	71	75	64	101
5	30	495	6,528	6,000	12,528	3,840	11,664	15,504	92	52	53	62	31	40	78	78	75	102
1	9	330	6,816	4,512	11,328	6,480	4,896	11,376	102	61	58	89	41	55	71	88	68	120
2	18	330	9,576	3,024	9,600	6,240	5,616	11,856	109	64	62	89	39	55	72	90	71	127
3	27	330	6,768	3,072	9,840	6,480	5,040	11,520	101	57	60	84	36	55	72	86	77	130
4	36	330	7,200	3,456	10,656	5,760	5,520	11,280	106	63	60	75	32	51	71	83	67	132
5	45	330	5,904	2,736	8,640	6,000	6,000	12,000	118	73	62	81	34	52	72	90	60	137
1	12	248	7,344	2,544	9,888	6,480	3,072	9,552	117	72	65	100	45	63	70	88	63	125
2	24	248	7,056	2,640	9,696	7,440	2,736	10,176	122	71	64	101	43	64	79	90	71	133
3	36	248	6,336	2,496	8,832	6,720	3,264	9,984	117	68	67	97	44	63	73	90	73	140
4	48	248	6,768	2,352	9,120	7,488	3,264	10,752	118	68	60	100	42	60	83	95	73	136
1	15	198	6,096	2,400	8,496	6,288	1,824	8,112	118	75	66	109	52	66	64	85	57	111
2	30	198	5,040	2,160	7,200	5,760	2,880	8,640	125	79	68	115	55	66	67	92	58	110
3	45	198	4,848	2,304	7,152	6,720	1,632	8,352	110	67	63	117	49	70	68	97	64	139
1	24	*124	5,088	1,344	6,432	4,800	1,152	5,952	138	92	69	119	55	70	67	91	50	116
2	48	*124	5,040	1,344	5,664	3,600	1,968	5,568	161	102	70	111	52	64	83	93	57	115

* An error in this figure led to some minor errors in calculating results in bulletin No. 4.

TABLE SHOWING FOR 1888 AND 1889—KERNELS IN A HILL; DISTANCE BETWEEN HILLS; KERNELS PLANTED PER PLAT; NO. STALKS HARVESTED; RATIO OF KERNELS PLANTED; YIELD OF STALKS AND CORN, OF STOVER, OF SHELLED CORN, AND OF AIR DRY CORN.

No. kernels in a hill.	Inches between hills.	No. kernels planted per plat.	Number of stalks harvested.		Ratio of kernels planted to stalks harvested.		Pounds per acre, stalks and corn.		Pounds per acre of stover.		Bu. shelled corn per acre as husked.			Bu shelled corn per acre as husked.			Bu. per acre of air-dry corn.	
											Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Total.		
			1888.	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1888.	1888.	1889.	1889.	1889.	1888.	1889.
1	3	990	691	779	.70	.79	19,200	13,008	13,584	9,240	24 9	57.8	82.7	6	48.6	54.6	73	46.4
2	6	990	574	775	.58	.78	18,720	11,856	11,976	8,112	46 7	52.3	99	6.2	47.4	53.6	87.4	46.2
3	9	990	591	752	.60	.76	16,320	12,486	9,984	8,160	35.1	51.5	92 6	6 4	56 6	63	81.7	53.5
4	12	900	609	741	.62	.75	17,040	13.033	11,036	8,640	27	59.6	86 6	6	57 9	93 9	76.5	45.3
5	15	990	614	776	.62	.78	18.240	12,480	12,336	7.728	27	59 1	86.1	6.8	62 8	69.6	76	59.1
1	6	495	379	409	.75	.83	17,280	11,496	10,368	5.952	63 4	36.9	100.3	34 7	46.3	81	88.5	68.8
2	12	495	356	398	.72	.80	16,800	11.472	10,080	5,808	70.3	28.3	98.6	38.1	45	83.1	87.3	74
3	18	495	353	420	.71	.85	13.680	11,232	7,896	5,568	53.1	32.1	85.2	34.9	48	82 9	75.2	70.4
4	24	495	363	424	.73	.86	16,080	12,168	9.768	6,048	69	23.1	92.1	34 3	55.7	90	81.3	76.4
5	30	495	349	414	.71	.84	15.360	12,288	8,736	6,096	63.4	32 6	96.9	35.6	55.3	90.9	85.5	77.2
1	9	330	331	270	1.00	.82	16,320	11.592	9,720	5,280	72	23.6	95.6	66.9	25.7	92.6	84.4	78.7
2	18	330	276	274	.84	.83	14,400	11,664	8,424	5,136	70.3	15 8	86.1	63.8	32.6	96.4	76	81.9
3	27	330	283	278	.86	.84	13,680	11,160	7,728	4,848	70.7	15	85 7	64.9	27.9	92.8	75.6	78.8
4	36	330	311	283	.94	.86	15,840	10,128	9,480	4,368	76.7	15 9	92.6	54.9	29.1	84	81.7	71.4
5	45	330	251	277	.76	.84	12,160	10,704	8,832	4,512	63.4	13 3	76 7	58.1	32.5	90.6	66.8	77
1	12	248	294	226	1.19	.91	16,560	10,896	10.176	4,848	80.1	12.5	92.6	70.3	17.3	87.6	81 7	74 4
2	24	248	255	235	1.03	.95	14,880	11,424	8,712	4,896	76.7	13.3	90	80.6	15.4	96	79 5	81 5
3	36	248	251	230	1.01	.93	14,160	10,728	8,208	4.464	71.6	14.5	86.1	74 3	17.4	91 7	76	77 9
4	48	248	228	234	.92	.94	12,960	11,208	7,488	4,752	68.1	11.6	79 7	77.8	17.1	94 9	70 4	80.6
1	15	198	275	198	1.39	1.00	15,600	10,320	9,960	4,896	69 9	11.5	81 4	70.3	9	79 3	71 9	67 2
2	30	198	224	195	1.13	.98	13.440	10,800	8,520	5,136	58.3	11.6	69 9	66.4	15.4	81.8	61 7	69 6
3	45	198	219	180	1.11	.91	11,520	10,080	7,008	4,224	53 6	12	65.6	76.3	9.4	85.7	57 9	72.8
1	24	124	199	136	1.60	1.10	13,200	7,778	8,760	3,600	58.3	5.6	63.9	54 6	5.8	60 4	56 4	51.3
2	48	124	143	125	1.15	1.01	10,040	6,696	7,032	3,120	51	6	57	41.1	10 5	51.6	50.3	43.8

6 with the deep, and plat 5 with the shallow cultivator, the ordinary amount being given; and to cultivate plats 3 and 4 as plats 5 and 6, except that the cultivation was to be continued past the ordinary time of laying corn by. For the purposes of comparison in *Experiment No. 9, Depth of Cultivation*, the weeds were removed from plat 2 without any cultivation and with the least possible disturbance of the soil; plat 1 was hoed in the ordinary way but not otherwise cultivated.

The following table gives the quantity and kind of cultivation of the different plats. The cultivation of these plats was all one way, as cross-cultivation was not practicable, since the plats receiving different kinds and quantities of cultivation were adjacent.

TABLE SHOWING THE CULTIVATION OF PLATS IN EXPERIMENTS 8, 9, 10, 1889.

Date.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
May 25	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
May 28	.....	.....	Shallow.	Deep ...	Shallow.	Deep ...	Shallow.	Deep ...
June 5	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
June 13	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
June 22	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
June 24	Hoed ..	Scraped.	Shallow.	Deep ...	Shallow.	Deep ...	Shallow.	Deep ...
June 25	.....	.....	Hoed in row	Hoed in row	Hoed in row	Hoed in row	Hoed in row	Hoed in row
June 27	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
June 29	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
July 1	Hoed ..	Scraped.	Shallow.	Deep ...	Shallow.	Deep ...	Shallow.	Deep ...
July 3	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
July 6	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
July 8	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
July 11	.....	.....	.....	.....	.....	.....	Shallow.	Deep ...
July 16	Hoed ..	Scraped.	Hoed in row	Hoed in row	Hoed in row	Hoed in row	Hoed in row	Hoed in row
July 17–18	.....	.....	Shallow.	Deep ...	Shallow.	Deep ...	Shallow.	Deep ...
August 2	.....	.....	Shallow.	Deep ...	.....	.....	.....	.....

From this table it will be seen that plat 5 was cultivated shallow and plat 6 deep, four times,—the usual amount. Plats 3 and 4 were cultivated the usual amount, except they were cultivated once, August 2d, after the usual time of laying corn by, while plats 7 and 8 were cultivated 14 times,—three and one-half times the usual amount.

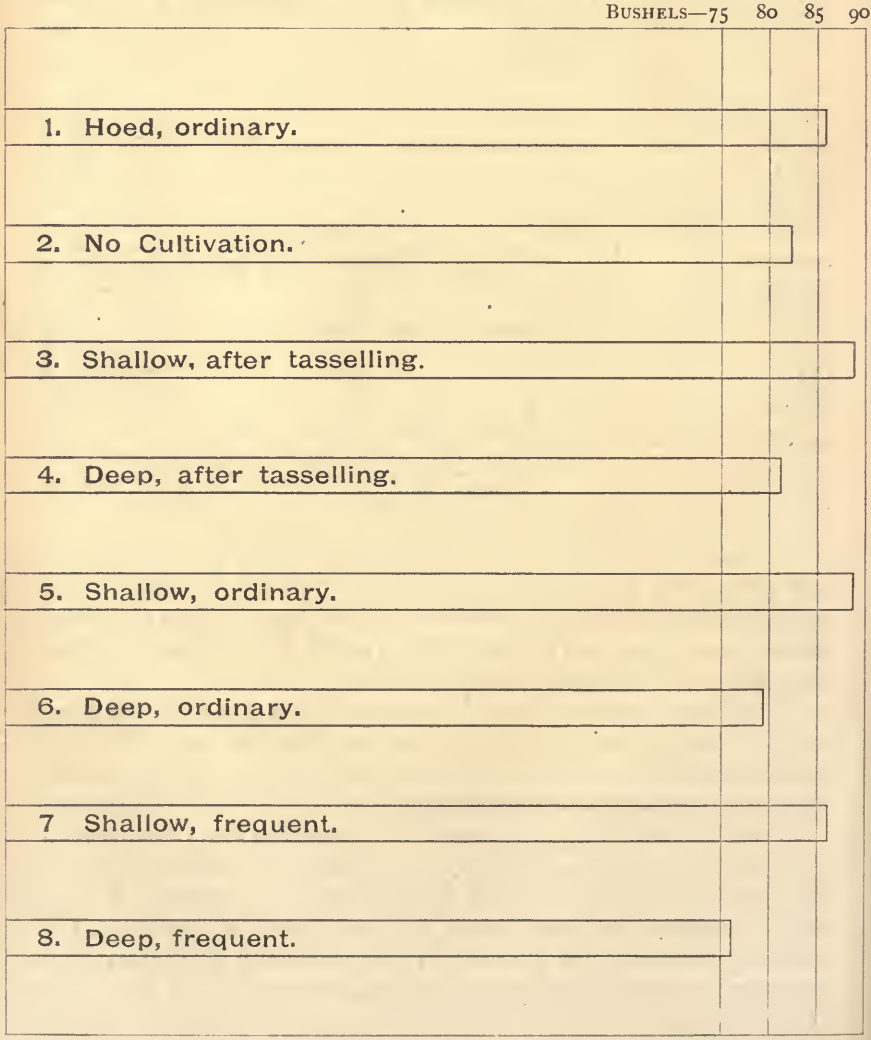
The latest pattern of the "Tower" cultivator was used this year, by which it was possible to get nearer the corn than last year. At the first cultivation the inner blades of the cultivator were but 6 in. apart, and, as the corn grew, the blades were widened to 8 in. The ground was stirred from one to two in. deep, and some of this loosened earth was forced into the rows thus ridging the ground somewhat, often considerably, the amount of course depending on the way the machine was handled. The space midway between the rows is often left almost bare of loose dirt, and to those accustomed to the work of the deep cultivator this seems very undesirable. The deep cultivation would probably average four in. deep, and left the ground in the usual ridged and uneven condition. The shal-

TABLE SHOWING FOR 1888 AND 1889—CULTIVATION; YIELD.

Plat.	Kind of cultivation.	1888.		1889.	
		Bu. per acre.	Average	Bu. per acre.	Average
1	Hoed, ordinary	96	.....	77.8	.....
2	None, weeds scraped from surface	90	.....	77.1	.....
3	Shallow, twice after tasseling	94.1	89.7	*83.8	*81.6
4	Deep, twice after tasseling	85.2		*79.3	
5	Shallow, ordinary	93.8	89.4	84.6	79 4
6	Deep, ordinary	84.9		74.2	
7	Shallow, frequent	94.6	89.6	80.9	74.9
8	Deep, frequent	84.5		68.8	

* Once after tasseling.

DIAGRAM SHOWING FOR 1888 AND 1889—CULTIVATION; AVERAGE YIELD PER ACRE.



low cultivator was more successful in destroying the weeds than last year. The deep cultivator, however, removed the weeds more thoroughly. To remove effectually the weeds, the shallow cultivator needs to be handled with more care and skill than the deep cultivator.

On account of the cultivation being in but one direction, a few weeds were left in the row by both machines. These were removed with a hoe June 24th and July 16th, with as little cultivation as possible.

Field notes. May 25, corn was up fairly, but unevenly on account of the preceding dry weather. June 25th, corn was about equal on the different plats but rather variable on each plat. General variation from 12 to 24 in. with an average of about 18 in. July 17th, the apparent height of corn was 3 to 4½ ft.; height to tip of leaves was 5 to 7 ft. The corn was rather high to cultivate especially on the shallow cultivated plats, which was unquestionably thriftier and larger than on the deep cultivated plats. August 2d, all the plats are from one-half to two-thirds in tassel with occasional silks. The shallow cultivated plats Nos. 3, 5, and 7 are distinctly better than plats 4, 6, and 8, which were deep cultivated. Plat 3 was cultivated with a one-horse "Planet Jr." cultivator with shallow shovel attached, and plat 4 with ordinary deep shovels attached. All the plats have but few weeds. Plat, 2 the least of any. September 26th, corn would not be materially injured by frost. The corn on the different plats at this time looked much alike, except that on plats 7 and 8 it was the smallest, as compared with that on other plats receiving the same kind of cultivation.

Yield. November 16th, each of the 36 rows of 9 hills, or two rods long, of each plat was husked and weighed so that the yield of the pruned and unpruned rows might be determined as explained under *Experiment No. 10, Effect of Root-Pruning.* The table on page 262 gives the weights in detail. The table on the opposite page gives a summary of the results for 1888 and 1889, and the diagram represents the average yield per acre for the two seasons on each plat.

In 1888, there was, practically, no difference in yield between the two plats which were given the ordinary amount of cultivation, and those which were given three times the ordinary amount of cultivation; neither was there any better yield from those plats which were cultivated twice after the usual time of laying corn by. This season, 1889, those plats which were given the ordinary amount of cultivation yielded 4½ bu. more than those that received 3½ times as much cultivation; while those that were cultivated once after the ordinary time of laying corn by, yielded a little over 2 bu. more than the ordinarily cultivated plats. It was evident throughout the season that plats 7 and 8 were less thrifty, apparently on account of the too frequent cultivation. There were no less weeds on plats 3 and 4 this season on account of their later cultivation last year.

Experiment No. 9. Corn, Depth of Cultivation.

Everything relating to the care of the crop in this experiment has been discussed under *Experiment No. 8.*

In 1888, the three plats which were cultivated with a shallow cultivator, one, four times during the season; one, four times during the season and twice after tasseling; and one, twelve times during the season, yielded about 94, 94, and 94.5 bu. per acre, respectively; while the plats cultivated with the ordinary deep cultivator with corresponding frequency, yielded 85, 85, and 84.5 bu. per acre, respectively. An average of 9 bu. per acre more grew on the shallow cultivated plats than on the deep cultivated plats. Plat 2, which received no cultivation, but had the weeds removed by scraping the surface with a sharp hoe with the least possible disturbance of the soil, yielded at the rate of 90 bu. per acre, 4 bu. below the yield of the shallow cultivated plats, and 5 bu. above the deep cultivated; and plat 1 hoed in the ordinary manner yielded 96 bu. to the acre, or a little more than the plats which were cultivated shallow with the machine; that is, the shallow cultivation in this case, was better than no cultivation, and no cultivation was better than deep cultivation.

This season, 1889, although the yields are not so high on account of the less favorable weather, the average yield of shallow cultivated plats exceeded that of the deep cultivated almost exactly the same amount as in 1888—9 bu. The three plats which were cultivated with a shallow cultivator, one, four times; one, four times during the season and once after tasseling; and one, fourteen times during the season, yielded about 85, 84. and 81 bu. per acre, respectively, an average of a little more than 83 bu.; while the plats cultivated with the ordinary deep cultivator with corresponding frequency yielded about 74, 79, and 69 bu., respectively, average of a little more than 74 bu. per acre. Plat 2, this season, which again received no cultivation, yielded 77 bu. per acre, which is 3 bu. more than the deep cultivated plats, and 6 less than the shallow cultivated plats; and plat 1, hoed in the ordinary manner, yielded less than a bushel per acre more than plat 2, which received no cultivation. Last season the plat hoed in the ordinary manner, but receiving no other cultivation, gave the largest yield; this season the plat cultivated shallow the ordinary number of times gave the largest yield.

The fact that both seasons 1–10 of an acre plat, which had no cultivation after the corn was planted, the weeds being removed by scraping the surface with a sharp hoe, yielded more than the average of the deep cultivated plats, and with one exception, more than any one of the deep cultivated plats, is a matter worthy of careful consideration. One-half of each of the plats under discussion was root-pruned, from the effect of which, as explained under *Experiment No. 10*, the plat receiving no cultivation suffered most. An examination of the table, page 262, will show that comparing the unpruned half of each plat, the uncultivated plat makes even a better showing. In 1888, this portion of the uncultivated plat yielded

94 bu. per acre; the average yield of that of the deep cultivated plats was 87 bu.; and that of the three shallow cultivated plats 96 bu. per acre. In 1889, the yield from this portion of the uncultivated plat was about 86 bu. per acre, from that of the three deep cultivated plats, 80.5 bu.; and from that of the three shallow cultivated plats, 89 bu.

It is evident, therefore, that in this soil very good crops of corn may be raised with no stirring of the soil after the corn is planted, if the weeds are thoroughly removed. Ordinary cultivation stirs the ground and kills the weeds. These experiments strongly indicate that for this soil at least, the thorough destruction of weeds is the most important.

Experiment No. 10. Corn, Effect of Root-Pruning.

Every other row of the thirty-six rows, two rods long, of each of the 8 plats described in *Experiment No. 8*, was root-pruned 4 in. deep.

The object was to cut the corn roots at the distance from the hill and to the depth which an ordinary so-called deep cultivator would break them, but without disturbing the soil, so that it might be determined whether such mutilation of the roots by the cultivator, without reference to the stirring of the soil, was harmful.

After some observation and measurements, it was decided that 6 in. from the hill would be a fair distance at which to sever the roots. A frame one foot square, therefore, was placed over the hill and a knife, to which was attached a guage, was drawn along the edge of the frame. In 1888, the root-pruning was only 3 in. deep, and it was found that although the unpruned portion gave the largest yield in every instance, the average difference was not very large, being 4 bu. per acre in favor of the unpruned portion. A careful examination of the roots of several growing corn plants showed that three-fourths of the roots would not have been broken by root-pruning or cultivating 3 in. deep. It was decided, therefore, to root-prune 4 in. deep this season.

The corn was root-pruned three times, at about the time of the first, second, and fourth, or last, ordinary cultivations. At the first pruning, May 28th, the corn was just fairly started. At the second pruning, June 25th, 26th, the corn would average about 18 in. high. At the third pruning, July 11th to 15th, the height of the corn was 3 to 4 ft. The growth of the corn being unusually slow, the season of cultivation was much prolonged.

The first difference between the pruned and unpruned rows was noted July 5th, at which time the pruned rows were plainly smaller, although the difference was not great. July 18th, the pruned rows were distinctly smaller than the unpruned rows. August 2d, the difference between the pruned and unpruned rows was not so distinct as July 5th, or 18th.

September 26th, when the corn was practically ripe, the pruned rows could not be distinguished from the unpruned with any certainty.

Difficulty was experienced in root-pruning to the proper depth plats 3 to 8 on account of the ridging of the soil along the row by the cultivator.

In these plats the last root-pruning was undoubtedly somewhat less than 4 in. as compared with the general level of the ground. On the other hand, the ordinary deep cultivator would have a tendency to go somewhat deeper than usual at the last cultivation on account of the space between the rows being somewhat lowered by previous cultivation. The results plainly indicate that the root-pruning was less effective—less fully accomplished—on plats 3 to 8 than on plats 1 and 2 where the surface was level throughout the season.

The yields of eighteen pruned and unpruned rows are compared in detail below. A careful examination of this table by those interested in this subject is asked. The uniformity with which the unpruned exceeds in yield the pruned is proof of the direct effect of the root-pruning. A summary of the results of both seasons' work is given further on.

TABLE SHOWING EFFECT OF ROOT-PRUNING, YIELD, POUNDS OF EAR CORN.

	Row.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
1	Pruned	11.25	10.75	12.5	16.5	16	13	15.25	9 5
	Unpruned	19.25	20	20.25	18.25	19.25	14.75	15.25	14
2	Pruned	13	15 5	13.75	17	13.5	13.5	13.5	11.5
	Unpruned	19.5	19.5	19.75	18.5	18.5	17	14.25	15.5
3	Pruned	13.5	14.25	14.75	14.25	15 5	14.5	12	11
	Unpruned	15.75	18	18	19.25	19.25	18 5	16	14
4	Pruned	15.25	13.75	18.25	13.75	16.5	15.5	12.75	12
	Unpruned	18 5	18 75	17.5	19.25	16.5	15.25	17.25	14.5
5	Pruned	15.75	13.5	12.5	15	17.25	13.5	11.5	13
	Unpruned	15.75	18.25	16.75	18.75	19.75	15.75	15	14
6	Pruned	16.5	15	18	16.5	15.75	12	14	13
	Unpruned	19.25	22	18.25	18	19.25	15.25	19.25	15
7	Pruned	14.75	15.25	20	14 25	14	13	14.75	11 5
	Unpruned	17.5	14.5	16.75	16.75	17.5	14	16.75	13.25
8	Pruned	9	11.5	12.75	13	16.25	11.5	14	15.25
	Unpruned	15	18.5	15	13.75	17.25	16	18	12 75
9	Pruned	14.25	16.5	15.75	15	18	13.5	15.5	14
	Unpruned	20.75	18.5	21.75	17 25	19.25	16.5	15	17.5
10	Pruned	16.25	11.5	13	16	14	13	15.75	13.5
	Unpruned	18.25	14.5	15	16.25	18.5	14 25	17.75	13
11	Pruned	14.25	13.5	13.25	12	16.5	12.25	14.5	10.75
	Unpruned	15	11.75	16.75	16.75	14.75	14	14.75	14.75
12	Pruned	14 25	11.25	13.5	12	14	13.75	15.75	12
	Unpruned	17.25	17.5	19.25	15.25	18.75	14	17	15.25
13	Pruned	13.75	14.5	14.75	14 25	14 5	14.75	14.25	12.5
	Unpruned	15.5	18.25	17.75	15.5	20.25	16	17.5	15
14	Pruned	11	14	16.75	12 75	15	12	15.5	12.5
	Unpruned	14.75	13	13.5	14 75	18	17.25	18.5	16
15	Pruned	13.25	12	14.5	15	14 75	12.25	17 75	10.5
	Unpruned	18.5	15.75	23.25	16 75	20	18	20	14.5
16	Pruned	13.75	15.75	16 5	15.5	14.5	14.25	17.75	12.5
	Unpruned	14.5	13.5	18	16.5	18.5	15.75	15.75	15.5
17	Pruned	13.75	10.25	14.5	12.25	14.25	11.75	17.5	12.5
	Unpruned	15.25	15.25	14.5	14.25	17.5	14.75	15.75	16 25
18	Pruned	11.75	12.25	15.75	12.75	15 5a	14	15	12.5
	Unpruned	13.25	15.25	17.75	15.25	17.25	18	19	14
	Total, Pruned	244 25	241	270.75	257.75	275.75	238	267	220
	Unpruned	303.5	302.25	319.75	301	320.25	285	302.75	264 75

TABLE SHOWING EFFECT OF ROOT-PRUNING; YIELD IN BUSHELS PER ACRE FROM PRUNED AND UNPRUNED PARTS OF PLATS WITH DIFFERENCE.

Plat.	Kind of cultivation.	1888.			1889.		
		Pruned.	Unpruned.	Difference.	Pruned.	Unpruned.	Difference.
1	Hoed, ordinary	92.3	98.2	5.9	69.4	86 2	16.8
2	None, weeds scraped from surface	85.5	94	8.5	68.4	85.8	17.4
3	Shallow, twice after tasseling	93.4	95.3	1.9	*76.9	*90.8	13.9
4	Deep, twice after tasseling	85.2	86 6	1 4	*73.3	*85.4	12.1
5	Shallow, ordinary	91	97	6	78.3	90.9	12.6
6	Deep, ordinary	83.2	87	3.8	67.6	80.9	13.3
7	Shallow, frequent	92.8	95.5	2.7	75.8	85.9	10.1
8	Deep, frequent	83.2	86.9	3.7	62.4	75.2	12.8
	Average.	88 3	92 5	4.2	71.5	85.1	13.6

* Once after tasseling.

It has already been pointed out that owing to the root-pruning being but 3 in. deep in 1888, which only severed a small portion of the roots, the difference between the pruned and unpruned parts was not large, but that it was always in favor of the unpruned part. This season, with the pruning 4 in. deep, the average difference in favor of the unpruned portion was 13.6 bu. The least difference in any plat, the frequently-shallow cultivated plat, was 10 bu.; while the greatest difference in any plat, the one that had no cultivation, was nearly 17.4 bu. The greatest decrease in yield from root-pruning was about one-fifth, the least about one-eighth, and the average about one-sixth. There can be no doubt that this decrease in yield was directly due to cutting the roots. There can be no doubt, also, that on account of the levelness of the surface the pruning to the desired depth (4 in.) was more fully accomplished on plats 1 and 2 than on the other plats; and on these the decrease in the yield this season was one-fifth.

Experiment No. 54. Corn, Root Growth.

As stated in bulletin No. 4, the particular object of inquiry in this experiment was to ascertain the number of the roots of corn, and their depth at the points where they are likely to be disturbed by cultivation, and what proportion of all the roots was likely to be so injured.

A detailed account of the roots of nine plants examined in 1888 was given in bulletin No. 4, of which the following is a summary:

Nine plats which averaged 12 in. high to tip of highest leaf had altogether 94 roots, or an average of over 10 apiece. The longest root traced was 35 in., the plant being 22 in. high. A plant 4½ in. high had a root 13 in. long. Twenty-four roots were examined at 6 in. from their base. One was 4½ in. deep; five, 4 in.; twelve, 3½ in.; one 2½ in.; four, 2 in.; and one, ¾ in., at this distance from the base of the root. Three-fourths of the roots, therefore, would not have been broken by root-pruning or cultivating 3 in. deep; but all except one would have been, at 4 in.

April 29, 1889, 75 kernels of Burr's white were planted in a row on a black prairie loam which had been rather deeply spring-plowed: The kernels were planted singly 3 ft. apart, at depths—⅓, 1 in.; ⅓, 3 in.; ⅓, 5 in. The corn came up slowly, especially that shallower planted. May 14th, no plants were up when planted 1 in. deep, 11 were up at 3 in., 19 were up at 5 in.

Seven plats were examined with the results as given in the table. In numbering roots of each plant the primary root is marked 0. The following are additional data.

Plant 1. Examined May 21st. Planted 1 in. deep. Three inches high to tip of leaf. Two leaves expanded, the third showing. This plat had seven roots, besides a whorl of three roots just starting. This last whorl was about 1¼ in. above the other whorl or whorls.

Plant 2. Examined May 21st. Planted 1 in. deep. One in. high. Leaves not sprouted. This plant had 5 roots.

Plant 3. Examined May 21st. Planted 3 in. deep. Apparent height, 5 in. Height to tip of tallest leaf, 9 in. Four leaves expanded, fifth showing. Roots, 14. Four were clustered about primary root, and 9 were in a whorl or whorls ¾ in. above.

Plant 4. Examined May 22d. Planted 5 in. deep. Apparent height, 5 in. Height to tip of tallest leaf, 9½ in. Five leaves expanded, sixth leaf showing. Roots, 12. Three were clustered about primary root, and 8 were in a whorl or whorls 2½ in. above lower whorl.

Plant 5. Examined June 15th. Planted 1 in. deep. Height to tip of leaf, 9 in. Roots, 15. The primary root was dead at 1½ in. from base. The 4 roots of the first or seminal whorl [not given in table] were traced 10½, 8, 3½, and 1 in , respectively, at which point they were broken. The crown or first nodal whorl was ¼ in. above the seminal whorl and the stem between these whorls was about 1-16 in. in diameter, while above the first nodal whorl, the stem was 3-16 by ⅜ in. in diameter.

Plant 6. Examined June 15th. Planted 3 in. deep. Height to tip of tallest leaf, 15 in. Primary root dead at 3 in. from base. Seminal whorl had four roots which were only partially traced. There were 15 roots at the crown, which is 1½ in. above the seminal whorl. The stalk between these points is about 1-16 of an in. in diameter, while above the crown the stalk is ⅜ by ½ in. in diameter. The roots at the crown seem to be distributed into about 4 whorls. Counting from the bottom, the first and second whorls have 4 each; the third, 5; and the fourth, 2,—the latter just starting. Ten of the crown roots were traced as given in the table.

Plant 7. Examined June 15th. Supposed to have been planted 5 in. deep, but seed was found 4 in. below surface. Height to tip of tallest leaf, 21½ in. Primary root, 14 in. long, went almost straight down, and had a large number of rootlets. Seminal whorl had, besides, 3 roots, all broken. The distance between the seminal whorl and the crown or nodal whorls was 2½ in. The stalk between these points was about 1-16 of an in. or about the size of an average root. Above the crown the stalk was ⅜ by ⅝ in. in diameter. There were 21 roots at or above the crown, which seemed to constitute 4 to 5 whorls, and occupy a vertical space of ½ in. The roots of the upper whorls were considerably larger than those of the lower. Nineteen roots were traced as given in the table.

Plant 8. Five roots of a corn plant, the seed of which was planted 5 in. deep, were traced September 20th, when the corn was nearly mature. Their lengths were 30, 42, 55, 52, and 48 in., respectively. The depth at the end of the first four was 19, 11, 12, and 27 in., while the last mentioned went downward 48 in.

TABLE SHOWING THE LENGTH, THE DEPTH AT THE END, AND AT 6 IN. FROM THE PLANT, OF 78 ROOTS BELONGING TO 7 CORN PLANTS EXAMINED IN 1889.

No. of plant.	Height of tip of tallest leaf, in.	Depth of seed, in.	No. of root traced.	Length of root, in.	Depth at end of root, in.	Depth at 6 in. from base of root, in.
1	3	1	0	13	5	4
			1	6	3·5	3·5
			2	3	2	.....
			3	2	.....	.....
			4	2	....	.....
			5	·5	.....	.....
			6	·5	.....	.....
2	1	1	0	4·5	4	.....
			1	5	3	.....
			2	5	2	.....
			3	6	3	3
			4	4	3	....
3	9	3	0	*6	4	4
			1	18	8	4
			2	*11	7	6
			3	*15	7	6
			4	.....	.....	.....
			5	12	6	4
			6	7	4·5	4·5
			7	5	3	.....
			8	3	3	.....
			9	2·5	3	.....
			10	·5	.....	.....
			11	·5	.....	.....
			12	·5	.....	.....
			13	·5	.....	.....
4	9·5	5	0	*24	18	5
			1	5	7	.....
			2	4	7	.....
			3	20	6	5
			4	6	6	6
			5	3·5	4	.....
			6	*3	4	.....
			7	2	4	.....
			8	8	5	5
			9	8	7	5·5
			10	12	7	5
			11	1	.....	.....
5	9	1	0	†1·5	.....	.....
			1	13	3·5	3
5	9	1	2	16	7	4
			3	9	4	3
			4	18	7	4
			5	16	7	5
			6	7	4	4
			7	5	3·5	.....
			8	6	2·5	2·5
			9	7	3·5	3·5
			10	9	3·5	3·5
6	15	3	0	†3	.....	.....
			1	13	5	4
			2	8	2 5	2
			3	14	6	5·5
			4	21	9	4
			5	28	13	4
			6	10	3	2
			7	9	3	2
			8	6	3	3
			9	11	5	4
			10	10	5	3
7	21·5	5	0	14	18	10
			1	18	3	3
			2	4 5	....	.....
			3	23	10	4
			4	13	10	8
			5	20	10	6
			6	25	11	4
			7	*17·5	6	4
			8	12 5	6·5	4·5
			9	16	9	4
			10	*26	8	4
			11	*12	6	4
			12	9·5	7	7
			13	5	5	.....
			14	5	5	.....
			15	4	3	.....
			16	15·5	8	6
			17	15·5	7	3
			18	5	9	.....
			19	5	5	.....

*Broken at that point. †Dead at that point.

Summary.—In 1889, of the seven corn plants planted April 29th, 4 averaging from 5 to 6 in. high were examined May 21st and 22d, and 3, averaging 15in. high were examined June 15th. These 7 plants had 97 roots of which 78 were traced, with a few exceptions, throughout their entire length. Forty-eight roots were examined at 6 in. from their base. At this point the depths were three, 2 in. deep; one, 2½ in.; seven, 3 in.; three, 3½ in.; seventeen, 4 in.; two, 4½ in.; five, 5 in.; two, 5½ in.; five, 6 in.; three went straight down.

Rather more than three-fourths of the roots would not have been broken by root-pruning or cultivating 3 in. deep; nearly two-thirds would have been broken at 4 in. deep. Over one-third were 4 in. deep at 6 in. from their base.

Another point brought out by these examinations was that the roots (except the seminal ones, those at the seed, which afterwards die) start usually at from 1 to 2 in. from the surface without reference to the depth at which the seed has been planted. In case the seed is planted deeper than this, the stem issimply elongated between the first or seminal whorl and the second or first nodal whorl. The stem between these points is usually about 1-16 in. in diameter, while above the second whorl the stem is oval, and in plants 15 in. high is about ½ in. in diameter. It would seem from this that, unless necessitated by dryness, nothing would be gained by planting over, say, 3 in. deep. Deeper planting would only require of the plant extra force and time to reach a position where the roots which eventually nourish the plant will grow.

Experiment No. 23. Rotation with Corn, Oats, and Meadow; Corn and Oats compared with continuous culture of Corn.

This experiment is introduced here, on account of its bearing upon the question of the application of fertilizers for the production of corn.

Briefly, ten half-acre plats, 5 x 16 rods, have been cropped during the past 14 years as follows. Plats 1, 2, and 3 have been in corn continuously; plat 4 in corn and oats alternately; and plats 5, 6, 7, 8, 9, and 10 have had this rotation: Corn, 2 years; oats, 1 year; meadow, clover, timothy, or both, three years.

From plats 1, 2, and 3 both corn and stalks have been removed. Plat 1 has had a liberal application of stable manure each year. There was applied per acre in 1888, about 20 tons of stable manure, and in 1889, a little over 28 tons. Plat 3 has had no fertilizer of any kind applied. Up to 1881, plat 2 had an occasional application of commercial fertilizers, but none since. May 17, and 18, 1888, two weeks after corn was planted, and after it was well up, the following fertilizers were applied along the row, care being taken not to have them come in contact with the corn.

Dissolved bone-black.....	150 lb.
Muriate of potash.....	50 "
Sulphate of ammonia.....	62.5 "

In 1889, a similar application of fertilizers was made with the exception that sulphate instead of muriate of potash was used. It was applied broadcast May 3d, four days after the corn was planted.

The half-acre which had been manured thirteen years successively with stable manure, yielded in 1888 about one-fourth, and in 1889, after another liberal application of stable manure, about three-fourths more than the unfertilized half-acre which has raised corn continuously for 14 years. Plat 2, to which the commercial fertilizers were applied, yielded

in 1888, about one-twentieth, and in 1889, one sixteenth more than the unfertilized plat.

The following table gives the results for 1888 and 1889:

TABLE SHOWING FOR 1888 AND 1889 RESULTS IN ROTATION EXPERIMENT.

Plat	Crop grown, 1888.	Bushels per acre.	Stover, straw, hay, p'r acre, lb.	Crop grown, 1889.	Bushels per acre.	Stover, straw, hay, p'r acre, lb.
1	Corn.....	68.7	4,640	Corn.....	77.4	.....
2	Corn.....	57.4	3,840	Corn.....	45.9	.....
3	Corn.....	54.3	2,575	Corn.....	43.2	.....
4	Corn.....	49.5	3,070	Oats.....	37.4	1,775
5	Oats	48.6	2,145	Medium clover. ...	.....	8,080
6	Oats	48	1,665	Medium clover.....	.....	6,665
7	Mammoth clover...	.....	3,030	Mammoth clover....	.....	3,060
8	Medium clover.....	.....	3.045	Corn.....	56.4	.....
9	Corn.....	61.2	3,120	Corn.....	50.3	.....
10	Corn..	.....	3.750	Oats.	59	3,650

At 35.7 cents per bushel, the average farm price* of corn in Illinois during 12 years (1876–1887), the increase in yield per acre of the half acre treated with stable manure would be worth $5.14 in 1888, and $12.21 in 1889. From the plat treated with commercial fertilizers the increase in yield per acre would be worth $1.11 in 1888, and 96 cts. in 1889. The cost per acre for such an application of commercial fertilizers at business centers, such as Chicago, would be about $10.

Experiment No. 11. Corn, Effect of Fertilizers. [*Large Plats.*]

The trials reported under this number are substantially similar to those reported under *Experiment No. 24*, except that these were on a larger scale, being on half-acre plats while those under *Experiment No. 24* were on 1-10th and 1-20th-acre plats. It is the belief of the writer that the results from the smaller plats are the more accurate, because the conditions of the soil, planting, cultivation, and harvesting were altogether more uniform; and the results, therefore, from whatever point of view, are more useful. Obviously the size of the plat is immaterial so long as the conditions under which the experiment is conducted are uniform. While it depends somewhat on the nature of the experiment, in the judgment of the writer more accurate results can be obtained with 1-10th acre plats in most cases than with acre plats.

Three tracts were used in this experiment. Tracts (*a*) and (*b*) each contain nine plats 2 x 76 rods and are on the south University farm. Tract (*c*) contains six plats each 4 x 20 rods and is on the farm of Mr. W. W. Bowler, Flora, Clay Co., Ill.

Tract (*a*) was fertilized in 1888 only, after having raised corn two years previously. Tract (*b*) was adjacent to tract (*a*) and was fertilized in 1889, after having raised corn three years. The land was uneven, being high in some places and low in others. The high and low places were

*See Report U. S. Dep't of Agriculture, 1887, p. 536.

distributed somewhat, though not altogether, regularly throughout the different plats.

The tracts were spring-plowed. The stable manure was applied on both tracts before plowing and the commercial fertilizers after plowing. In 1888, plats 1 and 3 of tract (*a*) and in 1889, plat 1 of tract (*b*), unfortunately, were plowed somewhat later than the other plats. The seed-bed on plat 1, tract (*b*), was appreciably better than on the other plats, which may have had an effect on the result. The cultivation of these tracts was poor.

An inspection of the table, which shows fertilizers used and results on tracts (*a*) and (*b*), will show that in the three trials (two on tract (*a*) and one on tract (*b*)) the average yield was a little less in each trial on the plats treated with commercial fertilizers than on those having no manure. In no case did any one of the plats treated with the various kinds of commercial fertilizers give an appreciable increase in yield over the plats not treated.

The two plats on tract (*a*) in 1888 on which stable manure was used yielded about 10 bu. more than those having no manure. The opinion was ventured in bulletin No. 4, p. 117, that a more marked increase in yield in 1889 was not improbable. This has not been the case. The yield in 1889 from these plats was no greater than from those not fertilized. It should be mentioned, however, that in cross-cultivation sufficient care was not taken in turning so that the outer two rows of plat 1, tract (*a*), were somewhat injured. There is no evidence that any very marked decrease was occasioned thereby. On tract (*b*) the yield from the plat on which stable manure was used was about 17 bu. per acre more than the unmanured and 19 bu. more than from the average of the other 8 plats.

Tract (*c*) was spring-plowed and fertilizers were applied broadcast before the corn was planted, May 2d and 3d, the tract was planted with check rower. A fair, but not perfect, stand was secured. The corn was cultivated three times, but was decidedly weedy (mostly smartweed), more so, apparently, on plats, 1, 4, and 6, than on plats 2, 3, and 5. August 8th, the tract was visited and the indications were as follows: plat 6, decidedly best; plat 1, next; plat 2, next; plats 3, 4, and 5, much alike, and but little below plats 1 and 2.

December 20, 1889, Mr. Bowler writes; "Gathered corn about the 1st of the month. Finished husking corn on plat 5 late in the evening and it rained on it, so we thought that under the circumstances we could estimate by the other loads with more accuracy than to weigh it. The light weights of plats 3 and 4 must have been caused by a sag in the ground. The whole piece was too flat for this season. Our corn on the north side of the road, on more rolling ground, made an average of about 40 bu. per acre."

TABLE SHOWING KIND AND QUANTITY OF FERTILIZER USED; YIELD OF CORN PER PLAT AND PER ACRE.

Tract (a)—1888 and 1889.

Plat	1888.				1889.	
	Fertilizers.	Quantity.	Lb. ear corn.	Bu. per acre.	Lb. ear corn.	Bu. per acre.
1	Stable manure	* 30 loads	4,446	71	2,360	31
2	None		4,173	66	2,520	33
3	Stable manure	* 30 loads	4,404	70	2,580	34
4	Hog tankage	350 lb	3,628	58	2,465	32
5	Muriate of potash	100 lb	3,454	55	2,320	31
6	Hog tankage Muriate of potash	350 lb. 100 lb.	3,551	56	2,200	29
7	Dissolved bone-black	300 lb.	3,682	59	2,540	33
8	Sulphate of ammonia	125 lb.	4,014	64	2,600	34
9	None		4,465	55	2,470	33
10	None		4,040	64		
		Tract (b)	*1889.*			
1	Stable manure	28 loads	3,510	46		
2	None		2,440	32		
3	Superphosphate Muriate of potash Sulphate of potash Sulphate of ammonia	400 lb. 50 lb. 100 lb. 125 lb.	2,160	28		
4	Guano	400 lb.	2,265	30		
5	Hog tankage	400 lb.	2,310	30		
6	None		1,860	25		
7	Muriate of potash	100 lb.	1,670	22		
8	Sulphate of ammonia	100 lb.	1,700	22		
9	None		2,340	31		
	Tract (b), on farm of W.	*W. Bowler, Flora, Clay Co., Ill.,*			*1889.*	
1	Superphosphate Muriate of potash Sulphate of ammonia	400 lb. 100 lb. 125 lb.	1,210	30		
2	Muriate of potash	100 lb.	950	24		
3	Sulphate of ammonia	125 lb.	1,060	27		
4	Superphosphate	400 lb.	650	16		
5	None		†1,120	*28		
6	Stable manure	20 loads	1,485	37		

* Approximately. † Estimated. See explanation above.

Experiment No. 24. Corn, Effect of Fertilizers. [*Small Plats.*]

Two tracts have been used in this experiment, both upon the Experiment Station grounds.

Tract (*a*) was used in 1888 and 1889. The tract consists of twelve plats each 9 x 35 hills or, approximately, one-tenth acre, except plats 11 and 12 which in 1889 were 9 x 36 hills. The preparation of the seed-bed and the planting of corn was both years the same as described in *Experiment No. 8.*

The stable manure was applied the day before the land was plowed, being in the spring, in 1888, and on December 6, 1888, for 1889. The other fertilizers were applied after the corn was plowed. In 1888, they were applied about the hills of corn and mixed with the soil with a hoe,

nine days after the corn was planted and about two days after it was up. In 1889, they were sown broadcast, two days after the corn was planted.

The corn was cultivated with a shallow cultivator five times in 1888 and four times in 1889. Any weeds remaining in the hills were removed with a hoe or by hand.

No difference was observable in date of tasseling, or maturity, or in vigor of growth at any time that could be attributed with any certainty to any of the fertilizers used, with the exception of plat 1 on which, in 1889, the corn made a somewhat stronger growth than on the other plats.

October 20, 1888, the corn was husked on each plat, and thrown on the ground. That on plats 1 to 7 was weighed and 78 lb. taken for a sample. October 24th, the corn from plats 8 to 12 was weighed and 80 pounds taken for a sample. November 14th, the 78-lb. sample yielded 63.75 lb. of shelled corn, and the 80-lb. sample yielded 62.5 lb. The difference in the per cent. of dry corn between the two samples was due to a rain, which occurred between the weighing of plats 1 to 7 and plats 8 to 12.

November 20–22, 1889, the track was husked and corn weighed. November 23d, a 50-lb. sample yielded 40.5 lb. shelled corn containing 24.6 per cent. water. It would, therefore, require 81.6 lb. of ear corn to make one bushel of air-dry corn.

The following table gives the results of the years 1888 and 1889:

TABLE SHOWING KIND AND QUANTITY OF FERTILIZER USED, AND YIELD OF CORN PER PLAT AND PER ACRE.

Plat.	Fertilizers applied in 1888 and in 1889.	Pounds per acre.	Yield in 1888.		Yield in 1889.	
			Ear corn, lb. per plat.	Bu. per acre.	Ear corn, lb. per plat.	Bu. per acre.
1	[1]Stable manure	40,250	650	97	652	82
2	Hog tankage	350	665	99	546	69
3	Muriate of potash	100	665	99	592	75
4	Hog tankage Muriate of potash	350 100	665	99	590	74
5	None		665	99	555	70
6	Cattle tankage	200	645	96	535	67
7	[2]Bone meal	200	635	95	587	74
8	Superphosphate	400	600	95	577	73
9	[3]Dissolved bone-black	300	660	95	597	75
10	None		655	94	591	74
21	Sulphate of ammonia	125	625	90	563	69
12	Nitrate of soda	160	655	94	571	70

1 In 1889, 51,650 lb. 2 In 1889, superphosphate 400 lb., muriate of potash 100 lb., sulphate of ammonia 125 lb. 3 In 1889, muriate of potash 100 lb., sulphate of ammonia 125 lb.

The trials with commercial fertilizers, heretofore given, have been with the quantities ordinarily recommended—such quantities, that if an appreciable increase in yield was obtained, their application might be profitable. On tract (*b*), however, a much larger quantity than would be profitable was used to determine whether under the conditions here

given of soil, season, etc., any result whatever, good or bad, could be obtained.

A tract of land was selected which was considered relatively poor. The tract was divided into seven plats, each 2 x 4 rods. May 4th the tract was plowed, harrowed, marked, and planted with Burr's white, four kernels to a hill; and fertilizers were applied broadcast on four plats, as indicated in the table. May 13th corn was well up. May 20th to July 1st, the tract was cultivated four times with a shallow cultivator. July 11th, weeds remaining were removed with a hoe.

October 4th, plats were cut and shocked, each half of each plat being shocked separately. No difference was observable in size or ripeness of plats. October 30th, the south half of each plat was husked, and November 4th, the north half. December 15th and 16th, the stover was weighed. It will be noticed that the yield of stover from plat 1 was greater than from any other of the plats. This is due to the fact that the south half of plats 2 and 7 was cut higher than the rest, and hence the stover weighed less, as the following will show, giving the weight of stover in pounds:

Plat.....	1	2	3	4	5	6	7
South half.....	154	106	107	105	113	106	111
North half.....	141	152	128	126	131	122	135

A 50-lb. sample of ear corn taken November 1st yielded 40.75 lb. of shelled corn and contained 22.9 per cent. of water; hence it took 79.4 lb. of ear corn to make a bushel of air-dry corn.

The following table gives the results obtained on this basis:

TABLE SHOWING KIND AND QUANTITY OF FERTILIZER USED; NUMBER OF EARS; YIELD OF CORN AND STOVER PER PLAT AND PER ACRE.

Plat.	Fertilizer.	Pounds per acre.	Yield, per plat.			Yield, per acre.		
			No. ears.	Lb. ear corn.	Lb. stover.	No. ears.	Lb. ear cn	Lb. stover.
1	Dissolved bone-black. Sulphate of potash. Sulphate of ammonia.	2,000 600 600	497	335.5	295	9,940	85	5,900
2	None	.....	531	354	258	10,620	89	5,160
3	Dissolved bone-black.	2,000	513	340	235	10,260	86	4,700
4	None	.....	557	352	231	11,140	89	4,620
5	Sulphate of potash...	600	514	338.5	244	10,280	85	4,880
6	None	.....	527	337	228	10,420	85	4,560
7	Sulphate of ammonia.	600	507	357	246	10.140	90	4.920

Both seasons, the plats on tract (*a*) upon which commercial fertilizers were used yielded on an average a trifle less than those to which nothing had been applied. No one of the plats so treated either season, yielded appreciably more than those having no manure. In 1888, the plat upon which was spread stable manure yielded no more than those having no manure, while in 1889 the yield was 10 bu. more, and it was 7 bu. more than that of any other plat.

On tract (*b*) the application of commercial fertilizers was purposely excessive. The cost per acre in the principal markets for fertilizers, as applied, was, for plat 1, $56; for plat 3, $26; for plat 5, $9; and for plat 7, $21. The average yield per acre of the plats so treated was 86.3 bu; for the three plats receiving no manure, it was 87.5 bu.

Nothing can be more conclusive than that in the nine trials made during the past two seasons, no practical benefit was obtained from the use of commercial fertilizers when applied to corn; and, moreover, but very little effect of any kind. The conditions of soil, climate, and culture under which these trials were made, it may be said, were not very different from those under which the bulk of this great crop is raised.

The increased yields from the use of stable manure, taken as a whole, probably repaid the cost of application and left some profit. Clearly the value of stable manure was not equal to the estimates often made, based upon the cost of commercial fertilizers. It should be recognized that the overwhelming testimony derived from experiments so far conducted is that for those states which raise one-half or more of the corn of the United States the application of commercial fertilizers for the production of corn is not generally profitable at the present time; and that to base the value of stable manure for those states on the price of the constituents of commercial fertilizers is misleading. Every corn raiser in those states knows that it takes 15 to 25 tons of stable manure per acre to produce a material increase in the yield of corn; and he knows that experiments which make the value of stable manure several dollars per ton can have no application in regard to his land.

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Assistant Agriculturist.

Summary of the Results of Field Experiments With Corn.

In the preceding pages is given a careful report of a series of experiments on field corn tried in 1889, duplicates of experiments tried in 1888 and reported in bulletin No. 4 of this Station; some also having been tried in 1887. These experiments include a comparison of a large number of varieties; a comparison of the effects of planting at different times, depths, and thicknesses; of cultivating with greater or less frequency and at different depths; a study of the effects of root-pruning, and of the rate and direction of root-growth; of the effect of rotation of crops; and the effect of fertilizers. The results are reported with much detail and many tables. No brief summary can have the value of these details, if they be carefully studied. Even with the fullest study, the results are to be considered indications rather than demonstrations of what will be found true in general practice.

These experiments were made on good prairie soil, in eastern Illinois, just north of the 40th parallel of latitude. The year 1888 was an unusually favorable one for the corn crop: 1889 was much less favorable, there being deficient rainfall in April and May, excessive rain in June, and an average temperature below normal during the summer months.

Following are some of the more obvious results of the two years' trials:

There are many good varieties of Indian corn for this latitude. No one variety tested was noticeably superior to all others.

Such phrases as "90-day" or "100-day" corn are misleading, if meant to teach that ordinary field corn will fully mature in average seasons in this latitude in the number of days named. The early maturing varieties required 125 days or more to mature fully.

The medium maturing varieties, or those maturing about September 25th, gave larger yields of well dried corn than either earlier or later varieties.

Thoroughly air-dried corn contains about 11 per cent. of water in the shelled grain. The loss in weight after husking is greater than is generally recognized. It may be from 10 to 20 per cent. Eighty pounds of ear corn, as husked, of the medium maturing varieties would not make more than a bushel of air-dry corn.

Barrenness of the stalk seems to depend much more on the conditions under which the crop is grown, as thickness of planting and the season, than on the variety.

The date of planting, within the limits ordinarily fixed for corn planting in this latitude, had little influence on the yield of a medium maturing variety. The yields from plants planted at intervals of a week, for five weeks, not later than June 1st, varied little. In some seasons the cost of cultivating later planted fields would be lessened.

Depth of planting did not materially affect the yield either in 1888 or 1889. In the latter year the roots which supported the plant during most of its growth, usually started within two inches of the surface, whatever the depth of planting. Unless the soil near the surface has not sufficient moisture, there seems to be no good reason for planting corn in this region more than about three inches deep. Drill-planting was not found materially better than hill-planting, either for the production of corn or fodder. The quantity of seed planted controlled the yield, rather than planting one or four kernels in a place. For corn alone, planting at the rate of one kernel every nine or twelve inches, gave better results than thicker or thinner planting. For fodder, planting at the rate of one kernel every six inches gave better results than planting twice as many kernels.

Stirring or cultivating the soil while the crop is growing was not essential in either 1888 or 1889. Good yields of corn were obtained where there was no cultivation after planting, except to remove the weeds by scraping the surface.

Preventing the growth of weeds was more important than stirring the soil.

Root-pruning injured the crop. Stirring the soil to a depth of four inches or more will injure many roots of the corn. Comparatively few roots will be affected if the soil is not stirred more than two inches deep.

Shallow-working cultivators gave better results than deep-working ones, but required more care and skill in their use. The deep-working shovel-cultivators killed the weeds more thoroughly than the shallow-working ones, but the latter injured the roots less. Usually, frequent cultivation did not repay the extra cost.

Commercial fertilizers failed to increase materially the yield of either corn or fodder in any one of nine trials. The soil apparently had a sufficient supply of plant-food that these fertilizers furnish.

Stable manures increased the yield of corn and fodder in most cases, but not always enough in one year to repay certainly the cost. Fair crops were produced on land which had been in corn for fourteen years without manure of any kind. For like soils in Illinois, the estimates often m ade of the value of either commercial or barn-yard fertilizers, based on the price at which the elements of plant-food contained by them can be bought, are misleading.

The yields of all the varieties in 1887, which was a season of severe and long-continued drought, were small. The experiment in that year was a test of varieties, and not of methods of culture.

The yields of most varieties, and the average yields of all, in 1888 and 1889 were above the average reached by good farmers in field culture. Probably the chief reasons for this result were that the varieties were better than the average; that more than usual care was taken to secure a good seed-bed and to plant well, thus securing a good and uniform stand; and that the cultivation was more careful than in average field culture.

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Agriculturist.

GARDEN EXPERIMENTS WITH SWEET CORN, 1889.

Experiment No. 49. Sweet Corn, Testing Varieties.

CLASSIFICATION AND DESCRIPTION OF VARIETIES NOT DESCRIBED IN BULLETIN NO. 4.

In the classification of sweet corn the plan adopted for bulletin No. 4 is followed. The varieties are first divided according to the time of reaching edible maturity after planting into *early*, *medium*, and *late*. A further division is made on color into *yellow*, *white*, and *other colors*. The season of 1889, from planting to ripening, was much cooler than that of 1888, which caused a difference in the time of reaching edible maturity of from 18 to 22 days; so that the varieties will be classed as early which reached edible maturity in 81 days or less from planting, instead of 63 days

or less, as in bulletin No. 4; medium will include those reaching edible maturity in 82 to 90 days, instead of 64 to 71 days; and late, those requiring 91 days, or more, instead of 72 days or more.

In the descriptions, where the same variety has been received under different names, it is not assumed that one is correct, that question being left still undecided. Further study may make changes in the grouping of names or in the classification. Frequently, where two or more names have been placed together they do not represent exactly the same thing; but either the names indicate that they are meant to be the same, or the term of growth and other characteristics are so nearly the same that it is not thought worth while to separate them. The variation may be caused by difference in method of selection or from mixing varieties. Many varieties, and especially the newer ones, vary greatly in the appearance of individual ears or stalks, so greatly that not unfrequently two, or three, or even more lots of ears could be selected from the same lot, each differing enough from the others to be classed as a distinct variety.

The earlier varieties were planted in plats of 3 rows, each 2 rods long. The late varieties were in plats of 5 rows, each 2 rods long. Each plat, whether 3 or 5 rows, had planted in it 50 hills. Four stalks to a hill is counted a full stand.

The plats were planted May 3d. They received the ordinary cultivation. The numbers used in the descriptions are the same as the plat numbers in table, p. 283.

EARLY VARIETIES—*White.*

Nos. 1, 2, and 3, Northern pedigree; Haskell, Salzer, Vaughan. The earliest ears of these were fit for use in 75, 76, and 77 days from planting, respectively.

Stalks, 3 to 4 ft. high; blades, small; tassels, not much branched, stiff, short; suckers, very few. Ears, 8 to 12 in. from the ground, white, cylindrical, sometimes tapering, 4 to 5½ in. long, 1.1 to 1.6 in. in diameter; kernels, even at the butt; tip, fairly well filled; rows, 8, nearly regular; pairs of rows, distinct, sometimes separated toward the butt; cob, white, .7 to .9 in. in diameter. Kernels, solid, rounded over the top, rather small but thick, crimped or smooth, about three-fourths as deep as broad. This is the smallest variety grown the past season, and is not enough earlier than the other better varieties to recommend it.

No. 6, Burbank's early; Vaughan. Corn first fit for use in 75 days from planting.

Stalks, 3½ to 4½ ft. high, rather stout, short jointed; tassels, short, stiff, not much branched; husks, with medium sized blades. Ears, from 10 to 14 in. from the ground with two shades of dull white, tapering, usually enlarged at the butt, 4 to 6½ in. long, 1.3 to 1.5 in. in diameter; kernels even at the butt; tip, fairly well filled; rows, 8, not very regular; pairs of rows distinct or entirely separated toward the butt; cob, white, .7 to 1 in. in diameter. Kernels, medium size, thick, irregular in shape, two thirds as deep as broard, very rough to nearly smooth. A rough, irrregular looking ear.

No. 17, Pratt's early; Gregory. Corn first fit for use in 79 days from planting.

Stalks, 4 to 5 ft. high, long jointed; blades rather small; tassels, not much branched, stiff or drooping; suckers, few; husks, with small to medium sized blades. Ears, from 12 to 16 in. from the ground, dull white to flesh color, cylindrical, tapering rather bluntly

at tip, sometimes enlarged at the butt, 4½ to 6½ in. long, 1.1 to 1.7 in. in diameter; kernels, even at the butt; tip, fairly filled; rows, 8, regular; pairs of rows, distinct, sometimes entirely separated toward the butt. Cob, white, or light red, .7 to .9 in. in diameter. Kernels, solid, rounded over the top, crimped, or smooth, below medium size, thick, about three-fourths as thick as broad. Resembles Minnesota somewhat in color, but is smaller.

No. 24, Early Boynton; Ferry. First fit for use in 80 days from planting.

Stalks, 3½ to 4½ ft. high, stout, short jointed; tassels, not much branched, stiff or drooping; suckers, few; husks, with small to medium sized blades. Ears, 10 to 14 in. from the ground, very dull white, tapering from the butt; tip, bluntly pointed, or rounded; 4½ to 6½ in. long, 1.4 to 1.7 in. diameter; kernels, scarcely even at the butt; tip, fairly well filled; rows, 8, regular or nearly so, pairs of rows, distinct, sometimes entirely separated at the butt; cob, white, .7 to 1.1 in. in diameter. Kernels, solid, rounded over the top, three-fourths as deep as broad, medium sized, crimped or nearly smooth.

No. 22, Ford's early; Vaughan. Corn first fit for use 80 days from planting.

Stalks, 4 to 5 ft. high, rather slender, and long jointed; blades, small; tassels, mostly drooping; suckers, few; husks, with small blades. Ears, 14 to 18 in. from the ground, clear, creamy white, sometimes approaching flesh color, cylindrical, either tapering, or bluntly rounded at the tip, sometimes enlarged at the butt by added kernels, 4½ to 7 in. long, 1.3 to 1.6 in. in diameter; kernels even at the butt; tip, well filled; rows, 8, usually white, .8 to 9. in. in diameter. Kernels, flatly rounded over the top, broad, rather solid, about three-fourths as deep as broad, thick, medium size, wrinkled and crimped. Somewhat similar to Minnesota, but seems to be an improvement on that variety in quality.

No. 23, Extra early dwarf; Bridgeman. Corn first fit for use in 80 days after planting.

This seems to be the same as Minnesota. See bulletin No. 4, p. 129.

No. 35, Original Crosby; Gregory. Corn first fit for use in 80 days from planting.

Stalks, 5 to 6 ft. high, pale green, slender, long jointed above the ear; tassels, slender and drooping, not much branched; suckers, numerous; husk blades, small. Ears, 14 to 18 in. from the ground, dull white, cylindrical or tapering; tip, blunt to long tapering; 4½ to 7 in. long, 1.3 to 1.7 in. in diameter; kernels, even at the butt; tip, fairly filled; cob, white, .8 to 1 in. in diameter. Kernels, not very solid, not fully rounded over the top, irregular in shape, thick, about as deep as broad, below medium size, crimped; rows, 10 to 14, not very regular, sometimes spirally arranged; pairs of rows scarcely distinguishable. Does not produce enough good ears in proportion to nubbins.

No. 52, Hawaii sugar; Wilson. Corn first fit for use in 81 days from planting.

Stalks, 4½ to 5½ ft. high, rather long jointed, blades of medium size; tassels, not much branched, drooping: suckers, few; husks, with small to medium sized blades. Ears, 12 to 16 in. from the ground, cylindrical, tapering bluntly at the tip, sometimes enlarged at the butt, 5 to 7 in. long, 1.3 to 1.6 in. in diameter; kernels, even at the butt; tip, fairly filled; rows, 8, regular, or nearly regular; pairs of rows, distinct, sometimes separated toward the butt; cob, white; .7 to 1.1 in. in diameter. Kernels, solid, rounded or broadly rounded over the top, three-fourths as deep as broad, rather thick, crimped. This resembles Minnesota, and is scarcely worthy of being classed as a distinct variety.

No. 25, Early Boston market; Gregory. Corn first fit for use 81 days from planting.

Stalks, 4 to 5 ft. high, heavy, large leaved, suckers, few; tassels, small, stiff; husk blades, small to medium. Ears, 12 to 14 in. from ground, very dull white, sometimes nearly cylindrical, usually tapering from the butt, 5½ to 7 in. long, 1.4 to 1.7 in. in diameter; kernels, even at the butt; tip, not well filled out; rows, 10 to 12, regular; pairs of rows,

not distinct; cob, white, .9 to 1.1 in. in diameter. Kernels, not solid, flatly rounded over the top, crinkled and wrinkled, very thick, as deep as broad.

No. 33, Leet's early; Ferry. Corn first fit for use 81 days from planting.

Stalks, 5 to 6 ft. high, stout, rather short jointed, blades large, dark green; tassels, much branched, rather stiff; suckers, few; husks, with small to medium sized blades. Ears, 18 to 24 in. from the ground, very dull white or brownish white, cylindrical to strongly tapering, bluntly pointed or rounded at the tip, 5½ to 8 in. long, 1.4 to 1.7 in. in diameter; kernels, barely even at the butt, usually well filled at the tip; rows, 8 to 12, somewhat irregular; pairs of rows, not very distinct, except in the 8-rowed ears, in which they are sometimes entirely separated toward the butt; cob, white or red, .9 to 1.1 in. in diameter. Kernels, fairly solid, very large, thick, broadly rounded over the top, not very regular in shape, crimped. Ears, coarse looking.

EARLY VARIETIES—*Colored, not Yellow.*.

No. 4, No. 48; Salzer. Corn first fit for use 75 days from planting.

Stalks, 3 to 4 ft. high. The stalks are smaller than Cory, and the first ears were fit for use 2 days earlier than Cory; otherwise there is no apparent difference. Sent out as being 10 to 15 days earlier than any other known variety.

No. 10, Early La Crosse; Salzer. Corn first fit for use in 77 days from planting.

Same as Cory. For description, see bulletin No. 4, p. 130.

No. 14, New England orange; Wilson. Corn first fit for use in 78 days from planting.

This looks like a simple mixture of Cory and Narragansett in which Cory predominates, and will not be described as a distinct variety.

No. 5, Early Rockford market; Shumway. Corn first fit for use 78 days from planting.

Appears to be a selection from Cory and only differs from that in being of a lighter color, and with a little smaller ear. There is not enough difference to entitle it to be classed as a distinct variety.

MEDIUM VARIETIES—*White.*

No. 53, Western queen; Shumway. Corn first fit for use 83 days from planting.

Stalks, 5 to 6½ ft. high, short jointed, leafy; tassels, stiff or drooping, much branched, not many suckers; husk blades, of medium size. Ears, 16 to 20 in. from the ground, very dark color when ripe, cylindrical or slightly tapering; tip, bluntly pointed; 5½ to 8 in. long, 1. 6 to 1.8 in. in diameter; kernels, even or scarcely even at the butt; tip, fairly well filled; rows, 10 to 14, regular, sometimes spiral; pairs of rows, not very distinct; cob, white, .8 to 1.2 in. in diameter. Kernels, fairly solid, medium size, regular in shape, about as deep as broad, flatly rounded over the top, crimped. A rather smooth, regular ear.

No. 55, Early Des Moines; Iowa Seed Co. Corn first fit for use 85 days from planting.

This is not different in any essential character from Crosby. See bulletin No. 4, p. 129.

No. 34, Durkee; Gregory. Corn first fit for use 84 days from planting.

Stalks, 5½ to 7 ft. high, light green, rather slender; tassels, much branched, slender, drooping; not many suckers; husk blades, medium size. Ears, 18 to 24 in. from the ground, dull white, commonly tapering; tip, rather bluntly rounded; 5 to 7½ in. long, 1.4 to 1.9 in. in diameter; kernels, even at the butt; tip, filled or nearly filled; rows, 12 to 14, not very regular, sometimes spirally arranged; pairs of rows not distinct; cob, white, .9 to 1.2 in. in diameter. Kernels, fairly solid, little rounded over the top, not very regular

in shape, thick, below medium size, as deep as broad, crimped. Very similar to original Crosby except in size and season.

No. 41, Extra early Tom Thumb; Dreer. Corn first fit for use 84 days from planting.

This appears to be identical with the one grown under the name of early sugar, in 1888, and described in bulletin No. 4, p. 134.

No. 56, Early southern sugar; Ferry. Corn first fit for use 85 days from planting.

Stalks, 5 to 6 ft. high, heavy, leafy; tassels, stiff; husks, with small blades. Ears, dull white, cylindrical, or tapering; tip, bluntly tapering; 16 to 20 in. from the ground, 5 to 8 in. long, 1.5 to 1.9 in. in diameter; kernels, even or rounded past the butt; tip, not well filled; rows, 8 to 10, not regular; pairs of rows, not very distinct; cob, white, .8 to 1 in. in diameter. Kernels, loose, irregular in shape, above medium size, wrinkled and crimped, many of them showing starch and inclining to dent. This variety is evidently the result of a cross between a sweet and a dent corn and is of very poor quality.

No. 48, Roslyn hybrid; Dreer. Corn first fit for use 86 days from planting.

Stalks, 7 to 8½ ft. high, heavy, leafy, light green; tassels, much branched, heavy, rather stiff; suckers, few; husks, with small to medium sized blades. Ears, 24 to 30 in. from the ground, cream to dull white, nearly cylindrical to abruptly tapering, 7 to 10 in. long, 1.9 to 2.4 in. in diameter; kernels, even at the butt; tip, well filled; rows, 12 to 16, regular; pairs of rows, not distinct; cob, white, 1.2 to 1.4 in. in diameter. Kernels, loose or very loose, rather flatly rounded over the top, one and one-fourth times as deep as broad, wrinkled and crimped, above medium size.

No. 74, Mammoth early; Faust, and *No. 79, Marblehead mammoth;* Gregory. Corn from the first was fit for use 86 days, and from the second 91 days after planting.

These are the same as early mammoth, described in bulletin No. 4, p. 134.

No. 64, Early bonanza; Wilson. Corn first fit for use 89 days from planting.

Stalks, 6 to 8 ft. high, short jointed, stout, leafy; tassels stiff, not much branched; suckers, few; husks, with small blades. Ears, 24 to 30 in. from the ground, dull white, nearly cylindrical, tapering bluntly at the tip, sometimes enlarged at the butt, 5½ to 8 in. long, 1.6 to 1.9 in. in diameter; kernels, even at the butt; tip, fairly well filled; rows, 10 to 14, very regular; pairs of rows, not very distinct; cob, white, 1.03 to 1.1 in. in diameter. Kernels, solid, large, not deep, crinkled to nearly smooth, strongly rounded over the top. Much resembles Squantum.

No. 66, Sonyea intermediate; Barnard. Corn first fit for use 90 days from planting.

This appears to be the same as Landreth's sugar, described in bulletin No 4, p. 133.

Nos. 67 and 68, Sweet fodder; Bridgeman and Vaughan. Sent out to be grown for stock feeding. The first ears were fit for table use in 89 and 87 days, respectively. Each seemed to be a mixture of two or more different but large-growing varieties. The sweet fodder corn grown in *Experiment No. 2, Test of Varieties for Ensilage*, from seed bought of Henderson, was a mixture of several kinds, and varied in size and season from the smallest and earliest to the largest and latest.

Nos. 28 and 29, Early Adams; Haskell and Vaughan. Corn from the first was fit for use in 84, and from the second in 85 days from planting.

Stalks, 5 to 6½ ft. high, strong, short jointed, leafy; tassels, short, stiff, bunchy. Ears, 24 to 30 in. from the ground, white, cylindrical, tapering bluntly at the tip, 5½ to 7 in. long, 1.4 to 1.9 in. in diameter; kernels, rounded over the butt, not filling out at the

tip; rows, 10 to 14, regular; pairs of rows, not very distinct; cob, white, .7 to 1.1 in. in diameter. Kernels, very solid, rounded over the top, dented or nearly smooth, about as deep as broad. This is not a sweet corn, but is used for the table. It is entirely distinct from the one described in bulletin No. 4, p. 130, though seedsmen seem to send this and the other out indifferently.

Late Variety—Yellow.

No. 120, Gold coin; Vaughan. Corn first fit for use in 103 days from planting.

Stalks, 8 to 9 ft. high, very strong, leafy; joints, short; not many suckers; tassels, large, full, stiff; husks, with small blades. Ears, 2½ to 3½ feet from the ground, clear, light yellow, cylindrical or tapering, 7 to 10 in. long, 2 to 2.4 in. in diameter; kernels rounded past the butt; tip, fairly filled; rows, 16 to 24, regular; pairs of rows, not distinct, cob, white, 1 to 1.4 in. in diameter. Kernels, very loose, rather flat on top, above medium size, nearly twice as deep as broad, wrinkled. This is said to be a cross between a yellow dent and Stowell's evergreen, and is advertised as 10 days earlier than Stowell's.

Late Varieties—White.

No. 86, Ruby; Vaughan. Corn first fit for use 91 days from planting.

Stalks, 6 to 8 ft. high, heavy, short jointed, large leaved; tassels, large, full, drooping; suckers, many; husk blades, large. Ears, 24 to 30 in. from the ground, a rich, creamy white, nearly cylindrical to strongly tapering, rounded at the tip, 6½ to 10 in. long, 1.9 to 2.3 in. in diameter, slightly rounded over the butt, filling out or nearly filling out the tip; rows, 12 to 20 not very regular; pairs of rows not distinct; cob, white, 1.2 to 1.6 in. in diameter. Kernels, loose, flatly rounded over the top, wrinkled, very thick, deeper than broad, large. Type not uniform; stalks vary in color from dark green to dark purple. A promising new variety.

No. 85, Creedmoor; Hallock. Corn first fit for use 93 days from planting.

Stalks, 6½ to 7 ft. high, heavy; blades, large; tassels, either stiff or drooping; suckers, few; husks, with rather small blades. Ears, 20 to 24 in. from the ground, cylindrical or tapering, usually rounded at the tip, dull white color, 6½ to 8½ in. long, 1.6 to 2.1 in. in diameter. Kernels, even at the butt; tip, well filled out; rows, 12 to 14, not very regular, sometimes spirally arranged, pairs of rows, not distinctly separated; cob, white, .9 to 1.2 in. diameter. Kernels, rather solid, large, broader than deep, thick, irregular, wrinkled and crimped, broadly rounded over the top.

No. 96, Rochester 8-rowed; Barnard. *No. 97, New England 8-rowed;* Currie Bros. Corn first fit for use in 92 and 94 days, respectively.

These are the same as large 8-rowed, etc., described in bulletin No. 4, p. 134.

No. 84, Henderson; Henderson. Corn first fit for use 94 days from planting.

Stalks, 6½ to 8 ft. high, heavy, leafy, short jointed; tassels, much branched, rather stiff; suckers, few; husks, with medium sized blades. Ears, 28 to 30 in. from the ground, dull white; mostly tapering, sometimes compressed at the butt; sometimes enlarged; tip, blunt or round pointed, 6½ to 11 in. long, 1.6 to 2 in. in diameter; kernels, even at the butt; tip, fairly filled; rows, 10 to 16, not very regular; pairs of rows, not distinct; cob, white, 1 to 1.4 in. in diameter. Kernels, not solid, rounded or flatly rounded over the top, somewhat irregular in shape, above medium size, as deep as broad, wrinkled and crimped, or smooth. A large, coarse ear similar to Hickox.

No. 87, The honey; Storrs & Harrison. Corn first fit for use 94 days from planting.

Stalks, 6 to 7½ ft. high, short jointed, stout, leafy; tassels, rather stiff; husks, with many medium sized blades; suckers, numerous. Ears, 20 to 28 in. from the ground, dull

or bleached white color; cylindrical, or slightly tapering at the tip; 6 to 8 in. long, 1.4 to 1.8 in. in diameter; kernels, slightly rounded over the butt; well filled at the tip; rows, 10 to 12, regular; pairs of rows, not distinct; cob, white, .9 to 1.2 in. in diameter. Kernels, rather solid, rounded over the top, nearly as deep as broad, crinkled. A very prolific variety, producing two or three ears to the stalk.

No. 76, Early mammoth; Landreth. *Nos. 77. 78, and 81, Mammoth;* Bridgeman, Hallock, Storrs & Harrison; and *No. 82, Mammoth sugar;* Salzer. Corn first fit for use 94 to 98 days from planting.

These are the same as late mammoth, described in bulletin No. 4 p. 136.

LATE VARIETY—*Colored, not Yellow.*

No. 73, Black sugar; Cowan. Corn first fit for use 92 days from planting.

This is the same as black Mexican, described in bulletin No. 4, p. 133.

YIELD.

In calculating the yield per acre (see table, p. 283) from the plat yields, no attention has been paid to the per cent. of stand, because the yield and stand do not bear any definite relation to each other, and although the yield varies greatly, as in 8-rowed corn, plats 95 and 99, which gave a yield of 100.7 and 51 bu., respectively, yet the same variety, if "corrected" for stand would give on plats 96 and 98 a yield of 159.8 and 74.4 bu., respectively, per acre, which would be a greater proportionate difference than in the first case. An examination of the table below will further illustrate. In making up the per cent. of stand, as seen in table, no attention was paid to suckers; the stalks had been counted before the suckers started. If the suckers had been counted as stalks, the number would in some cases be more than doubled.

TABLE SHOWING STAND; YIELD; AND THE YIELD AS "CORRECTED" FOR STAND.

Plat.	Seedsmen.	Per cent. of stand.	Yield per acre bu.	
			Actual.	'Corrected' for stand.
	8-rowed corn.			
95	Station	92	100.7	109.4
96	Barnard	44	70.3	159 8
97	Currie Bros.	47	67.9	144.4
98	Haskell	74	55.1	74.4
99	Vaughan	49	51	104
	Stowell's evergreen.			
107	Station	91	86.1	94 5
105	Haskell	66	74 7	113 1
102	Vaughan	77	72.3	93 9
104	Hallock	45	69.5	154.4
103	Storrs & Harrison	55	62.6	113 8
106	Wilson	52	59.2	113.8
	Crosby.			
37	Haskell	81	67.2	82.9
40	Station	94	66	70.2
36	Wilson	65	63.6	97.8
38	Vaughan	72	52.9	73.4
39	Landreth	64	51.7	80.7
	Mammoth.			
81	Storrs & Harrison	78	91.2	116.9
83	Station	90	82.9	92.1
77	Bridgeman	68	79.9	117.5
82	Salzer	43	79 9	185.8
78	Hallock	60	69	115
80	Vaughan	66	63.6	96.3
	Triumph.			
91	Vaughan	58	76.1	138.3
92	Station	88	75.8	86.1
	Egyptian.			
111	Station	89	80.9	90.8
110	Salzer	37	63 6	171 8
109	Vaughan	40	58.4	146
	Marblehead.			
11	Haskell	80	45.5	56.8
13	Vaughan	92	41 1	44.6
12	Landreth	78	25.9	33.2

While some of the calculated yields may appear excessive, others are below what might reasonably be expected. A table showing the average yields of all the plats of the same variety might give a more correct idea of yield. The following is a list of all the varieties, of which three or more plats were grown, with the average yield of each.

TABLE SHOWING AVERAGE YIELD ON PLATS PLANTED WITH SAME VARIETY.

Variety.	No. plats.	Av. yield per a., bu	Variety.	No. plats.	Av. yield per a., bu.
Northern pedigree..	3	28	Concord	3	57.7
Cory	3	39 4	Black Mexican.....	3	71
Marblehead	3	37.5	Early mammoth....	3	48.7
Minnesota	3	48.1	Late mammoth.....	6	76.1
Chicago market....	3	47 7	8 rowed	5	69
Crosby	5	60.2	Stowell's evergreen..	6	70.7
Perry's hybrid.... .	3	36.9	Egyptian	3	67 6

VITALITY OF SWEET CORN.

Sweet corn for seed should be gathered before there has been any extremely cold weather. As soon as gathered, it should be thoroughly dried, and kept dry until planted the following season. To get at the vitality of the seed we were using the past season 100 kernels of each of the varieties given in the accompanying table, were planted in the greenhouse May 24th, and the sprouted kernels counted, May 29th. The temperature in the meantime had ranged from 48° to 80° F. As the results did not seem very satisfactory, a duplicate lot (except No. 86) was put in June 2d, and taken out and counted June 7th. Range of temperature for last trial, 51° to 82° F. June 13th the stalks of corn in the field were counted. The conditions in the greenhouse were only fair for the germination of corn, while the conditions in the field were bad. When the corn was first planted the ground was excessively dry and remained so until May 21st. The heavy rains and cold weather of the latter part of May and early part of June came before the corn had all sprouted and some of it was destroyed. Probably a few stalks were destroyed before they were counted, but as all the plats were equally exposed that would make no material difference with the result. The test of seeds seems not only to give the per cent. that will grow under the conditions in which they are tried, but in general it indicates the vital power, or the power in the living seeds to resist adverse circumstances. This will be more clearly brought out by an examination of the table below. The first lot includes 32 varieties, of which 90 to 100 per cent. sprouted when planted in the greenhouse. The second, 37 varieties, of which 75 to 89 per cent. sprouted. In the third lot, 24 varieties, of which 60 to 74 per cent. sprouted. The last lot, 17 varieties, of which 35 to 59 per cent. sprouted.

TABLE SHOWING THE RELATION OF VITAL POWER TO PER CENT. OF LIVE SEEDS.

No. of varieties in each lot	32	37	24	17
Average per cent. of live seeds, as shown in greenhouse tests.....	94.74	83.2	68.78	52.18
Per cent. of live seeds growing when planted in the				

Conclusions.

Among so many varieties it would be presumptious to name any one as the best. But for general planting any of the following varieties mentioned in the order of earliness may be recommended: Early—Cory, Narragansett, Ford's early, Minnesota, Leet's early. Medium—Crosby, Concord, Stabler's early, Landreth sugar, Black Mexican. Late—Amber cream, ruby, Stowell's evergreen, eight-rowed, triumph, Egyptian, late mammoth. The early small-growing varieties do best planted, if in hills, 1½ to 2 ft. apart; the medium 2½ ft. apart; and the large, late varieties, 3 to 3½ ft. apart.

It will not do to depend implicitly on catalogue statements in regard to new varieties. Two illustrations will suffice. No. 48 (No. 4 of table p. 283) was sent out as 10 to 14 days earlier than any other known variety. As grown here the past season it was no earlier than two other varieties; and within a week from the time when it was fit for use, sixteen other varieties had come into season. Gold coin was said to be 6 to 10 days earlier than Stowell's evergreen. It proved the present season to be 6 to 16 days later, there being 10 days difference between the earliest and latest plats of the latter. With the exception of gold coin, the greatest difference in time betwen the earliest and latest plats the past season was 23 days; including gold coin, the difference is 28 days. In the tests for 1888, the greatest difference found was 25 days. The earlier varieties, as a rule, not only produce fewer ears in proportion to the number of stalks, but they also produce fewer good ears in proportion to the number of nubbins.

The following table gives the results of the tests of germinating power, and the details of the field work:

TABLE SHOWING VARIETY; PAGE OF DESCRIPTION IN BULLETIN No. 4, OR IN THIS BULLETIN; PER CENT. GERMINATING; DATE OF FIRST BLOOM, OF FULL BLOOM, OF FIRST EDIBLE MATURITY, AND WHEN CUT; DAYS FROM PLANTING TO FIRST EDIBLE MATURITY; HILLS AND STALKS IN EACH PLAT, WITH PER CENT. OF STAND; SALABLE EARS; NUBBINS; POUNDS OF CORN; WEIGHT OF 100 SALABLE EARS; YIELD PER ACRE, BU.

Plat.	Variety.	Seedsmen.	Description in bulletin No. 4, p....	Description in this bulletin, p....	Per cent. germinated. Gr'nh'se. 1st trial.	Gr'nh'se. 2d trial.	Field.	Date of First bloom	Date of Full bloom.	Date of First edible ears.	Date of Cutting.	Days, planting to edible maturity.	No. hills per plat.	No. stalks per plat.	Per cent. of stand.	No. salable ears.	No. nubbins.	Total lb. corn.	Wt. 100 ears, lb.	u. per acre.
1	Northern pedigree	Haskell	...	275	94	93	59	6-30	7-8	7-17	8-29	75	50	155	77	68	87	14.8	13 9	25.5
2	Northern pedigree	Salzer	....	275	60	45	28	7-1	7-8	7-18	8-29	76	39	70	35	48	88	12	13.9	20.6
3	Northern pedigree	Vaughan	....	275	96	83	71.6	7-2	7-8	7-19	8-29	77	50	177	88	80	129	22	13.9	37.9
4	No. 48	Salzer	..	277	92	89	75	7 1	7-8	7-17	8-29	75	50	186	93	64	118	22.7	19	39.1
5	Early Rockford market	Shumway	..	277	...	....		7-1	7-14	7-20	8-29	78	25	98	49	52	45	14.1	18.3	23.3
6	Burbank's early	Vaughan	....	275	87	95	60	6-30	7-9	7-17	8-29	75	50	162	81	75	109	22.6	18.5	38.9
7	Cory	Station	130	..	94	100	64.6	6-29	7-8	7-19	8-29	77	48	170	85	120	93	26.8	18 6	46 3
8	Extra early Cory	Haskell	130	..	97	97	59.3	6-30	7-10	7-19	8-29	77	50	154	77	77	95	20	19	34 3
9	Cory	Vaughan	130	....	83	94	59.3	7-4	7-10	7-22	8-29	80	49	158	79	72	90	21.8	18 3	37.5
10	Early La Crosse	Salzer	...	277	93	90	78	6-30	7-9	7-19	8-29	77	50	185	92	77	112	24.2	16.9	41 6
11	Early Marblehead	Haskell	130	....	93	98	70.6	7-2	7-13	7-19	8-29	77	50	161	80	78	107	26 5	18.8	45.5
12	Marblehead	Landreth	130	...	82	76	59.6	6-28	7-9	7-18	8-29	76	48	157	78	52	85	15.1	15.1	25.9
13	Marblehead early	Vaughan	130	.	88	97	72.3	6-28	7-9	7-18	8-29	76	50	185	92	78	106	23 9	16 9	41 1
14	New England orange	Wilson	....	277	59	55	23.6	7-1	7-13	7-20	8-29	78	36	75	37	50	67	14 8	18.1	25.4
15	Extra early red Narragansett	Landreth	130	...	65	71	56 6	7-2	7-14	7-21	8-29	79	50	160	80	127	73	32.4	20 4	55 7
16	Narragansett	Station	130	....	96	100	79	7-2	7-10	7-22	8-29	80	50	189	94	137	96	35.4	19 7	60.8
17	Pratt's early	Gregory	...	275	64	72	57	7-2	7-13	7-21	8-29	79	49	153	76	100	130	26.2	14.9	45
18	Early Minnesota	Haskell	129	...	88	88	67.6	7-2	7-12	7-22	8-29	80	50	171	85	105	97	30.8	18 8	52.9
19	Early Minnesota	Vaughan	129	....	69	80	50 6	7-4	7-16	7-23	8-29	81	49	146	73	106	112	27.8	17.9	47.6
20	Extra early Minsesota	Landreth	129	....	87	88	48.6	7-4	7-13	7-23	8-29	81	48	138	69	97	91	25 5	19 3	43 8
21	Dolly Dutton	Landreth	129	...	69	66	46	7-4	7-10	7-22	8-29	80	50	128	64	117	107	29.6	17 2	50 8
22	Ford's early	Vaughan	....	276	93	88	67.3	7-2	7-10	7-22	8-29	80	50	170	85	114	137	32.8	17	56 4
23	Extra early dwarf	Bridgeman	....	276	76	64	46.3	7-3	7-14	7-22	8-29	80	47	134	67	88	119	29.4	20.7	50.6
24	Early Boynton	Ferry	....	276	84	83	52 3	7-4	7-10	7-22	8-29	80	50	141	70	32	107	16.5	16.5	28.5
25	Boston market	Gregory	....	276	92	95	75	7-4	7-10	7-23	9-10	81	50	183	91	95	92	35.8	25.7	61.5
26	Early Landreth	Landreth	129	....	93	94	78.3	7-2	7-13	7-22	8-29	80	50	195	97	123	120	52.4	28	90.1

TABLE—*Continued.*

Plat.	Variety.	Seedsmen.	Description in bulletin No. 4, p....	Description in this bulletin, p.....	Per cent. germinated. Gr'nh'se 1st trial.	Gr'nh'se 2d trial.	Field.	Date of First bloom.	Date of Full bloom.	Date of First edible ears.	Date of Cutting.	Days, planting to edible maturity.	No. hills per plat.	No. stalks per plat.	Per cent. of stand.	No. salable ears.	No. nubbins.	Total lb. corn.	Wt. 100 ears, lb.	Bu. per acre.
27	Extra early Adams	Hallock	130	....	98	95	79 3	7-1	7-8	7-20	8-29	78	50	192	96	45	137	31.2	23 9	53 6
28	Early Adams	Haskell	133	278	99	97	79.3	7 8	7-15	7-26	9-10	84	50	191	95	113	72	56.1	36 3	96 4
29	Early Adams	Vaughan	133	278	83	74	55	7-10	7-17	7-27	9-10	85	48	150	75	112	61	42.8	32.6	73 6
30	Chicago market	U. S. Dep't.	130	....	84	93	61 3	7-4	7-14	7-23	8-29	81	49	164	82	88	125	28.3	19 5	48.6
31	Chicago market	Leonard	130	....	84	87	57.3	7-1	7-9	7-20	8-29	78	50	183	91	75	108	26 2	18.6	45
32	Chicago market	Haskell	130	....	93	95	73.3	7-2	7-10	7-21	8 29	79	50	188	94	88	107	28.9	20.4	49.7
33	Leet's early	Ferry	....	277	93	96	73 6	7 4	7-13	7-23	8-29	81	50	184	92	127	84	41 4	25 7	71.2
34	Durkee	Gregory	....	277	..	..	....	7-8	7-14	7-26	8-29	84	50	178	89	88	84	30.3	22.3	52 1
35	Original Crosby	Gregory	....	276	81	81	41.6	7-4	7 13	7-22	8-29	80	46	144	72	58	91	17.7	19 5	30.4
36	Crosby	Wilson	129	....	77	74	48.6	7 8	7-15	7-26	9-10	84	48	131	65	114	80	37	24 8	63.6
37	Crosby	Haskell	129	....	99	92	63 3	7-8	7-15	7-26	9-10	84	48	162	81	115	100	39.1	24 1	67.2
38	Crosby	Vaughan	129	....	96	70	52 3	7 8	7-14	7-26	9-10	84	49	145	72	97	108	30.8	21.1	52.9
39	Extra early Crosby	Landreth	129	....	61	66	44	7-8	7-15	7-26	9-10	84	49	128	64	96	98	30 1	22 3	51.7
40	Crosby	Station	129	....	98	92	79 6	7-7	7-15	7-25	9-10	83	50	189	94	118	95	38 4	23 6	66
41	Extra early Tom Thumb	Dreer	129	278	84	88	63	7 7	7-14	7-26	9-10	84	49	165	82	121	72	39 1	26 2	67 2
42	Perry's hybrid	Hallock	131	....	84	70	58.3	7-7	7-14	7-24	9-10	82	49	157	78	108	125	45.5	27.1	49 5
43	Perry's hybrid	Vaughan	131	....	90	82	43.3	7-8	7 18	7-27	9-10	85	47	128	64	63	41	24	28.5	26 1
44	Perry's hybrid	Salzer	131	....	62	60	37.3	7-6	7-18	7-26	9-10	84	47	112	56	86	56	32.3	30 3	35 2
45	Breck's premier	Station	131	....	...	...	....	7 8	7-18	7-27	9-10	85	45	83	41	35	45	13 3	27.1	14.5
46	Pee & Kay	Vaughan	132	....	72	77	44 3	7 9	7-16	7-27	9-10	85	46	97	48	54	82	22.8	24 4	24 8
47	Shaker's early	Barnard	132	....	63	70	43 6	7-8	7 20	7-27	9-10	85	47	124	62	127	77	35.4	23 6	38.5
48	Roslyn hybrid	Dreer	135	278	49	54	37	7-10	7 25	7-28	9-24	86	40	102	51	93	59	51.1	39.4	55 6
49	Early orange	Cole & Bro.	128	...	44	65	37.6	7 9	7-18	7-27	9 10	85	44	105	52	73	122	24.6	18 8	26.7
50	Early orange	Dreer	128	....	95	89	55.6	7-10	7 18	7-28	9-10	86	47	145	72	104	137	32 6	17 9	35.5
51	Early orange	Vandercook	133	....	77	42	20	7-10	7-21	7-28	9 10	86	34	55	27	101	66	31.9	23 4	34.7
52	Hawaii sugar	Wilson	....	276	58	72	43 3	7 6	7 10	7-23	9-10	81	49	127	63	60	98	21	19 4	22.9
53	Western queen	Shumway	....	277	..	...	.. ..	7-9	7-16	7-25	9 10	83	50	193	96	131	135	49 1	25.8	53.5
54	Golden sugar	Station	133	....	....	....	.....	7 10	7 17	7 28	9-10	86	50	186	90	118	144	45.5	24.1	49.5
55	Early DesMoines	Ia. Seed Co.	....	277	84	82	66.3	7-7	7-14	7-27	9-10	85	50	179	89	90	189	38.6	21.6	66 3

56	Early southern sugar	Ferry	..	278	94	91	82.6	7-8	7-15	7-27	9-10	85	53	197	98	103	90	40	26.2	68.8
57	Early Concord	Landreth	131	....	56	52	35	7-10	7-19	7-29	9-10	87	44	102	51	85	66	32 6	28 2	56
58	Concord	Hallock	131	....	61	54	33.6	7-8	7-16	7-27	9-10	85	45	98	49	86	66	32.2	27 6	55.3
59	Concord	Vaughan	131	....	95	100	70.3	7-10	7-17	7-29	9-10	87	50	173	86	114	68	36.1	28 2	62
60	Stabler's	Station	132	....	97	99	76	7-10	7-21	7-29	9-10	87	50	182	91	176	92	62.1	28	107
61	Stabler's early	Dreer	132	....	88	90	72.6	7-11	7-18	7-29	9-10	87	50	186	93	154	84	54	29.9	92.8
62	Squantum	Station	132	....	94	95	74	7-9	7-16	7-27	9-10	85	50	183	91	129	70	45	28.9	77.4
63	Squantum	Landreth	132	....	46	47	21	7-12	7-26	7 31	9-10	89	40	65	32	111	52	37.4	27.8	64 2
64	Early bonanza	Wilson	....	278	83	83	47	7-10	7-18	7-31	9 10	89	50	133	66	133	90	53.3	30.5	91.6
65	Landreth's sugar	Landreth	133	....	77	65	45.3	7-10	7-22	7-29	9-10	87	48	129	64	115	90	50.3	33.8	86.5
66	Sonyea intermediate	Barnard	133	278	79	80	45	7-12	7-23	8-1	9 17	90	48	129	64	166	108	70.2	31.7	73.2
67	Sweet fodder	Bridgeman	....	278	74	74	60	7-13	7 23	7-31	9-10	89	50	169	84	109	117	43.4	23.3	74.6
68	Sweet fodder	Vaughan	....	278	92	85	45.6	7-12	7-23	7-29	9 10	87	49	131	65	125	78	48	31.7	82.5
69	Asylum	Vaughan	133	....	64	65	50.6	7-13	7 24	7-31	9 17	89	47	141	70	113	81	47.5	32.1	51.8
70	Red cob	Station	133	....	95	94	86.6	7-8	7-19	7 28	9-10	86	50	195	97	106	73	38	27.1	41.4
71	Black Mexican	Station	133	....	98	99	81.6	7-8	7-15	7-26	9-10	84	50	191	95	253	153	79.3	23.9	86.4
72	Black Mexican	Vaughan	133	....	85	83	41	7-14	7-22	8-2	9-17	91	45	119	59	200	133	58.1	21.6	63.4
73	Black sugar	Cowan	133	280	84	81	40.6	7-15	7-23	8-3	9-17	92	48	120	60	193	151	58.1	22.3	63.4
74	Mammoth early	Faust	134	278	78	65	40	7-11	7-18	7 28	9-10	86	49	111	55	70	100	35.6	29.4	38.7
75	Early mammoth	Vaughan	134	....	58	68	39	7-12	7-23	7-31	9 17	89	47	115	57	142	85	54.7	31.5	59 6
76	Early mammoth	Landreth	136	280	86	46	27.6	7-19	7 24	8 9	9 17	98	37	75	37	93	67	42	34	45.8
77	Mammoth	Bridgeman	136	280	85	81	47.3	7-18	7-25	8 8	9-24	97	48	138	69	133	94	73.3	48	79.9
78	Mammoth	Hallock	136	280	84	75	44 4	7-18	7-25	8 9	9-24	98	48	121	60	131	60	63 4	40 7	69
79	Marblehead mammoth	Gregory	134	278	58	55	28.3	7-15	7-23	8-2	9-17	91	45	82	41	118	58	44	32.3	48
80	Late mammoth	Vaughan	136	....	80	79	47	7-16	7-24	8-5	9-24	94	49	133	66	116	60	58 4	40.7	63.6
81	Mammoth	Storrs & H	136	278	95	64	59.3	7-17	7-25	8-7	9-24	96	49	156	78	152	93	83.8	47.3	91.2
82	Mammoth sugar	Salzer	136	278	68	35	31	7-17	7-25	8 8	9 24	97	44	86	43	123	90	73.3	44.8	79.9
83	Mammoth	Station	136	....	....	....	.....	7-13	7 23	8 2	9-17	91	50	181	90	156	81	76.1	38.5	82.9
84	Henderson	Henderson	....	279	62	65	29	7-14	7 23	8-5	9-17	94	45	88	44	89	55	35.5	32.6	38 7
85	Creedmoor	Hallock	....	279	52	53	37	7-13	7 23	8-4	9-17	93	45	111	55	86	118	44.3	31.7	48.2
86	Ruby	Vaughan	....	279	56	....	19	7 14	7-27	8-2	9-24	91	34	58	29	92	69	40.7	37.1	47.3
87	The honey	Storrs & H	....	279	80	79	31	7-15	7-23	8-5	9-17	94	41	91	45	145	119	55.4	24.9	60.5
88	Amber cream	"	136	....	77	77	57	7-15	7-24	8-4	9-24	93	48	160	80	174	130	82.8	33.9	90 2
89	Amber cream	Landreth	136	....	76	71	39.3	Amber cream and Cory mixed										53 3	31	58.1
90	Amber cream	Station	131	....	97	97	76 6	7-14	7-22	8 2	9-17	91	50	183	91	202	95	83	32.4	90.5
91	Triumph	Vaughan	135	....	84	88	39	7-15	7-25	8-5	9-17	94	46	116	58	154	119	69.9	35.4	76.1
92	Triumph	Station	135	....	99	99	70.3	7-15	7-24	8 5	9-17	94	50	176	88	144	89	69.6	36.8	75 8
93	Excelsior	Hallock	135	....	80	85	36	7-15	7-24	8 5	9 17	94	42	102	51	122	171	56 3	23 9	61.3
94	Potter's excelsior	Vaughan	135	....	54	76	32.6	7-12	7-26	8-1	9-17	90	45	98	49	81	77	30.5	28	33.2
95	8-rowed	Station	134	....	96	99	77.3	7-15	7-22	8 3	9-17	92	50	185	92	227	123	91.5	32.6	101

TABLE.—*Continued.*

Plat.	Variety.	Seedsmen.	Description in bulletin No. 4, p....	Description in this bulletin, p....	Per cent. germinated. Greenhouse. 1st trial.	Greenhouse. 2d trial.	Field.	Date of. First bloom.	Full bloom.	First edible ears.	Cutting.	Days, planting to edible maturity.	No. hills per plat.	No. stalks per plat.	Per cent. of stand.	No. salable ears.	No. nubbins.	Total lb. corn.	Wt. 100 ears, lb.	Bu. per acre.
96	Rochester 8-rowed	Barnard	134	279	82	66	29.3	7-16	7-25	8 3	9-24	92	43	84	44	142	73	64.6	27 6	70.3
97	New England 8-rowed	Currie Bros.	134	279	66	72	33.6	7-17	7-25	8 5	9-24	94	44	95	47	151	52	62.3	35.8	67 9
98	8-rowed sugar	Haskell	134	....	89	85	54	7-12	7-23	7-30	9-17	88	50	148	74	165	118	50.6	23	55.1
99	8 rowed sugar	Vaughan	134	....	52	48	33	7-13	7-23	8-4	9-24	93	45	99	49	117	65	46.9	32.2	51
100	Darling's sugar	Cowan	131	....	74	73	34	7-10	7-24	7-30	9-17	88	45	97	48	175	63	65.3	30.5	71.1
101	Livingston's evergreen	Vaughan	133	....	93	86	56.6	7-13	7-24	8-2	9-17	91	48	15	79	199	111	77.9	31.7	84.8
102	Stowell's evergreen	Vaughan	134	....	96	89	54.3	7-17	7-24	8 8	9-24	97	50	154	77	156	63	66.3	34 8	72.3
103	Stowell's evergreen	Storrs & H.	134	....	83	83	39.3	7-13	7-24	8-1	9-17	90	46	111	55	113	68	57.5	39 6	62 6
104	Stowell's evergreen	Hallock	134	....	78	83	30.3	7-17	7-25	8-6	9-24	95	41	90	45	120	59	63.8	42.3	69.5
105	Stowell's evergreen	Haskell	134	....	88	71	43.6	7-12	7-24	8-1	9-24	90	50	133	66	147	65	68.6	39 4	74.7
106	Stowell's evergreen	Wilson	134	....	76	75	36.6	7-13	7-22	8-2	9-24	91	44	105	52	115	87	54.3	35.5	59.2
107	Stowell's evergreen	Station	134	....	95	97	74.6	7-8	7-23	7-29	9-24	87	49	183	91	179	80	79.2	38.5	86.1
108	Improved evergreen	Salzer	135	...	85	56	55	7-15	7-24	8-5	9-24	94	49	150	75	159	146	77	34.4	83.9
109	Egyptian	Vaughan	136	....	76	71	25.6	7-14	7-28	8-3	10-1	92	36	81	40	123	67	53.6	34.8	58.4
110	Egyptian	Salzer	136	....	38	73	25.6	7-17	7-28	8-5	10-1	94	35	74	37	136	74	58.4	34.4	63 6
111	Egyptian	Station	136	....	90	91	68	7-17	7-27	8-5	9-24	94	50	178	89	179	91	74.2	31.4	80.9
112	Little gem	Dreer	.....	.....	49	52	20.6	7-21	7-25	8-9	9-24	98	33	61	30	86	155	37.2	21.1	63 9
113	.....	Station	135	....	.....	...	.....	7-17	7-26	8-5	9-17	94	50	185	92	207	122	65.3	23 4	71.4
114	Old Colony	Vaughan	135	....	82	88	50.3	7-13	7-22	8-1	9-17	90	49	138	69	147	117	58.8	39.1	64
115	Hickox	Vaughan	134	...	35	42	18	7-17	7-24	8-6	9-17	95	31	52	26	60	28	22.1	31.7	24.1
116	Hickox	Station	134	....	93	98	68	7-13	7-22	8-2	9-17	91	50	174	87	125	62	45.9	31.7	50
117	Hickox	Salzer	134	....	49	57	29	7-15	7 22	8-4	9-17	93	40	87	43	114	72	45.9	32.6	49 9
118	Hickox	Hallock	134	....	42	47	33.3	7-15	7-23	8-5	9-17	94	44	96	48	105	82	43	31.9	46.8
119	Eruda	Station	136	....	.....	.....	.....	7-18	7-27	8-8	9-24	97	50	187	93	153	65	62	33.7	67.6
120	Gold coin	Vaughan	.....	279	78.8	77.8	51.2	7-24	8-2	8-14	9-24	103	4	11	5	13	9	7.7	45.3	.....

TABLE giving a Summary of the Tests of Germinability of Seed Sweet Corn from Leading Seedsmen.

Seedsmen.	First trial, greenhouse.		Second trial, greenhouse.		In field.	
	No. of varieties.	Per cent. germinated.	No. of varieties.	Per cent. germinated.	No. of varieties.	Per cent. germinated.
Station	13	95.53	13	96.15	13	75.1
Haskell	9	93.33	9	90.66	9	63.37
Ferry	3	90 33	3	90	3	69 75
U. S. Dep't Agriculture	1	84	1	93	1	61.33
Iowa Seed Co	1	84	1	82	1	66 33
Leonard	1	84	1	87	1	57 33
Storrs & Harrison	4	83.75	4	75.75	4	47 16
Cowan	2	79	2	77	2	37.33
Bridgeman	3	78.33	3	73	3	51.33
Vaughan	25	78.36	24	79.5	25	48.74
Faust	1	78	1	65	1	40
Vandercook	1	77	1	42	1	20
Barnard	3	74.66	3	72	3	36.33
Gregory	4	73.75	4	75.75	5	54.73
Dreer	5	73	5	74.6	5	49.8
Landreth	11	72.54	11	67.54	11	45.3
Hallock	8	72.37	8	70 25	8	40.04
Wilson	5	70 6	5	72.2	5	39.86
Salzer	8	68.37	8	63.12	8	44.87
Currie Bros.	1	66	1	72	1	33.66
Henderson	1	62	1	65	1	29
Cole & Bro	1	44	1	65	1	37.66

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