UNIVERSITY OF ILLINOIS,

Agricultural Experiment Station.

CHAMPAIGN, FEBRUARY, 1889.

BULLETIN NO. 4.

FIELD EXPERIMENTS WITH CORN, 1888.

Under this caption is given the record of the twelve field experiments with the common dent corn which were undertaken by the Station during the season of 1888, except No. 7, in regard to the effect of the depth and time of planting, which was not carried to a successful conclusion. The record of Experiment No. 24, relating to fertilizers, is also given here, since they were used with corn.

Field experimentation is beset with many difficulties. Much of it is, indeed, experimental. In each investigation attention must be given to many small details; and a slight neglect, or a slight error, may vitiate the whole experiment and stop further investigation on the particular point of inquiry until another season.

Much space has been given to details; first, because they are of importance to others pursuing similar lines of investigation; second, in order that those for whom the results are designed may know what value to give them, and may come to feel a confidence in the methods employed, so far as they deserve it. After the methods of investigation become somewhat settled and understood, doubtless, much of the detail of these first bulletins of the Experiment Station may be omitted to advantage.

The attempt has been made to state the facts as they appeared in each experiment, and to give the conditions under which the results were obtained; to point out the possibilities and probabilities of error, and the relative weight and importance of the results. Further than this it is not deemed advisable to go. Any general conclusion that might be drawn from this season's results may be reversed by those of next season. As Dr. Fream, speaking of agricultural experimentation, pointedly remarks "In this field of research—more, perhaps, than in any other—those who 'learn to labor' must also learn 'to wait.'"

Experiment No. 1. Corn, Testing of Varieties.

The land used in this experiment—about eight acres—was in three tracts, (*a*), (*b*), and (*c*), as shown in diagrams on page 70. In the seasons of 1886 and 1887, tract (*a*) was in mammoth clover. In the spring of 1887, it received a medium heavy coating of stable manure and was planted to corn. In the fall of 1887, it was plowed six inches deep. Tract (*b*) had been occupied for several years with raspberries and blackberries. The briars were gathered and burned, and April 18–21, 1888, stable manure was put on at the rate of thirty loads per acre. April 27th to 30th, the tract was plowed six inches deep. Tract (*c*) was in corn during the seasons of 1886 and 1887, and had been in grass for several years previously. It was plowed in the fall of 1887.

The preparation of the seed-bed was similar on the three tracts. The fall-plowed land was disked twice and harrowed once, and the spring-plowed land was disked and harrowed once. The plats were laid off in hills 3 feet 8 inches each way in the ordinary manner. The planting was done by hand, four kernels to a hill, and covered with one to two inches of mellow soil with a hoe. The space of one row was left between the successive plats in this as in all the plat experiments with Indian corn detailed in this bulletin, when not otherwise stated. Tract (*a*) was planted May 10th, 11th; tract (*b*), May 14th, 15th; tract (*c*), May 22d.

Tracts (*a*) and (*b*) were cultivated four times between June 1st and 25th, and the weeds remaining in the hills were removed with a hoe June 25th to 30th. Tract (*c*) was cultivated five times between June 6th and July 4th. All cultivation was done with a shallow cultivator—the Tower.

The test made on tract (*a*) is, in the main, a repetition of one made during the season of 1887. Fifteen varieties of corn which had taken premiums at the *Prairie Farmer* Corn Exhibit, at the Fat Stock Show in 1886, together with nine other varieties, were tested during that season. This season the same varieties were planted on nearly the same plats, seed for the purpose having been obtained from the original sources, so as to obviate, as far as possible, difficulties from cross-fertilization arising from continuous tests of different varieties upon adjacent plats. In a few cases, the Station was unable to obtain fresh supplies of seed, and other varieties were substituted, as is shown by comparing tables, pages 71 and 88.

The varieties planted on tracts (*b*) and (*c*) were 82 in number, furnished by the *Farm, Field and Stockman*, Chicago, Ill.; 39 furnished by Thaddeus Chester, Champaign, Ill ; and 15 sent by different parties, as noted in table, page 71. Certain duplicate plats were planted to determine the relative merits of the different tracts and different portions of the same tract.

PLAT EXPERIMENTATION.

The relative merits of the different tracts and of the different portions of the same tract are, obviously, a subject of prime importance.

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. Leaming, a yellow variety, and Burr's white, were selected for duplicate tests. Leaming was planted on plats 4, 10, 16, 26, 48, and 98, and Burr's white, on plats 19, 25, 64, 143, and 162. The following table gives the result in bushels per acre of air-dry corn:

TABLE SHOWING YIELD PER ACRE OF AIR-DRY CORN UPON DUPLICATE PLATS.

Tract (*a*).			Tract (*b*).			Tract (*c*).		
No. Plat.	Bushels per acre of each plat.	Av. yield per acre of each variety. bu.	No. at.	Bushels per acre of each plat.	Av. yield per acre of each variety. bu.	No. Plat.	Bushels per acre of each plat.	Av. yield per acre of each variety. bu.
4	93.	88.	26	86.	87.3	98	81.2	81.2
10	83.7		48	88.5				
16	87.4							
19	85.2	88.1	64	101.7	101.7	143	69.4	72.8
25	91.0					162	76.3	
		88.1			94.5			77.

The plats of each of these tracts were more than usually uniform, to all appearances, and care was taken to have the conditions as nearly alike as might be.

There was a difference of over 9 bushels per acre between two plats of Leaming on tract (*a*), and of 2½ bushels on tract (*b*). The difference between two plats of Burr's white on tract (*a*) was nearly 6 bushels, and on tract (*c*), nearly 7 bushels per acre. These are greater differences than are often found between quite unlike varieties, especially this year when most of the varieties give a uniformly high yield. With the present knowledge, differences of 5 to 10 bushels per acre should be considered within the possibility of error arising from uncontrollable variations in conditions, especially with plats of 1-10 of an acre or less.

Taking an average of the two varieties, there was a difference of about 6½ bushels per acre between tracts (*a*) and (*b*), and between tracts (*b*) and (*c*), of 17½ bushels, in both instances in favor of tract (*b*). These averages are probably not sufficient for any general conclusions; but, doubtless, some such differences exist between the productiveness of the three tracts.

[NOTE.—It was intended in this experiment to use tracts (*a*) and (*b*) only, which were both put into good condition and planted in good season. After all the land best suited for the purpose had been used, and after it was too late in the season for the best results, the seed of the many varieties planted on tract (*c*) was unexpectedly received. Tract (*c*) is a uniform piece of land, but considerably less fertile than tracts (*a*) and (*b*).]

Another phase of this subject is the size of the plats used. Other things being equal, there is a greater chance of variations on small plats than on large plats. Obviously, an accident to one hill on a plat of a sixtieth of an acre produces sixty times the difference in yield per acre that it would, if a hill were destroyed on an acre plat. By the law of averages, the chance differences are in a measure counteracted on the larger plats. This is illustrated in the weights of ear corn obtained from each row of the several plats on tract (*a*), as shown in table, page 77. On plat 3 there was a difference of 16 pounds between rows 2 and 3. As a row in this case was equal to 1-72 of an acre, the difference in yield between equal rows of the same variety was about 16 bushels per acre. The sum, however, of the weights of rows 2 and 3 of each of the 25 plats differed 77 pounds, which was a difference of about 3 bushels per acre. On plat 19 there was a difference in yield of 20 pounds between rows 4 and 5, equal to about 20 bushels per acre; while the sums of the weights of these rows on the 25 plats differ by only ¾ of a pound, or about 1-30 of a bushel per acre. On plat 10 there was a difference of 10 pounds between rows 6 and 7, equal to about 10 bushels per acre; while the sums of the weights of these rows on the 25 plats differ only ¾ of a pound, or 1-30 of a bushel per acre. Again, the difference in yield of row 8 of plats 6 and 7 was nearly 25 pounds, equal to about 25 bushels per acre; while the difference in the yield per acre of these plats was, when husked, 3.4 bushels, and when air-dry, 1 bushel per acre. It is easy to see what error might have been made, if one row of each plat had been selected as sufficient to determine the yield per acre of the several plats; but yet that is what is done, in effect, when the size of the plats is reduced to 1-72 of an acre or less.

The illustrations given are only a few of the more striking ones to be found in the table on page 77. Those wishing further data, may find them in the table in *Experiment No. 8*, and in tables in *Experiment No 11*.

Great as are the difficulties of obtaining satisfactory results with small plats, there are even greater difficulties with large plats. It is much easier to obtain like conditions of soil with eighty one-fortieth-acre plats than with eighty plats of an acre each. The expense of testing the requisite number of varieties in other directions than that of the yield per acre would, of course, be great on large plats and probably not commensurate with the results. For the yield in itself in tests of these kinds is, by no means, all that is sought. The season of growth, the percentage of barren stalks, the height of stalk and ear, the size, shape, and other characteristics of the ear, the relative percentage of water in the several varieties tested, the pounds of ear corn to a bushel, the loss by drying, the determination of varieties and of variety differences are subjects not depending on the size of plats, which it is hoped that the work presented in this bulletin indicates are of importance. To learn that a variety, introduced as something wonderful, is merely an old variety under a new name, or to find that a supposed variety of which different reports

are made is, in fact, two varieties, is vastly more important than to learn in a particular test that two well known and meritorious varieties differ by five or ten bushels per acre.

The yields per acre reported from small plats are somewhat greater than would be obtained in field culture. As the experiment is conducted, the smaller the plat the greater is the opportunity of obtaining a larger yield per acre. So long as the plats are of equal size, the relative yields will remain nearly the same; but where the plats are of unequal size, there is opportunity for an appreciable variation. This may be illustrated by referring again to the table of field weights, page 77. On tract (*a*) the average weight of ear corn of the two outside rows of the 25 plats was 2,383 pounds, while the average weight of the six inside rows was 2,122 pounds, an increase of 261 pounds, or about 12 per cent. in each of the outside rows. On tract (*b*), plats 26 to 90, the west third and the middle third of each plat were weighed separately. The outside third of the 64 plats weighed 2,997 and the middle third, 2,766 pounds, an increase on the outside third of 231 pounds or about 8 per cent. On tract (*c*), Nos. 92 to 113, there are some irregularities, and the average of the outside sixth of the plats is but two pounds higher than that of the inside sixth. On tract (*c*), Nos. 114 to 168, the average of the outside third is again about 8 per cent. more than that of the inside third. On tract (*a*), the outside rows are ¼ of the whole plat; and, therefore, the yield of the plats was increased about 3 per cent. On tract (*b*), the outside third was one-half the quantity used in determining the yield, and, therefore, the yield of the plats was increased about four per cent.; while on tract (*c*), Nos. 114 to 168, as the outside third was two-thirds the quantity used, the yield was increased five per cent. The reason for the increase in yield is sufficiently obvious. The vacant land about each plat supplies extra food to the adjacent row. In the plats on tract (*a*), which are one-ninth of an acre each, this land amounts to about one-eight of the whole plat; while in the plats on tract (*c*), Nos. 114 to 168, which are one-fortieth of an acre each, it amounts to about one-fourth of the whole plat. The weights given were not taken for the purpose of determining the question, and are not in most cases those that would best show this result, as the weight of the outside row around the whole compared to the inner portion of the plat is what would give the full difference. The weights given, however, are believed to be sufficient in number to establish fully the probability of error where different sized plats are used.

There is a further chance of error, and a probability also, in plats of the same size. The larger and later maturing varieties require more room for their full development than the smaller and earlier maturing varieties, and for this reason it is customary to plant the hills farther apart—sometimes five feet apart, it is said, in the more southern latitudes. On this account the later maturing varieties are more affected by the vacant land about the plats. On tract (*a*), the outside rows of eight early maturing varieties yielded eight per cent. more corn than the corresponding inside

rows; eleven medium maturing, twelve per cent. more, and six late and non-maturing varieties, eighteen and one-half per cent. more. This would make an increase in yield above the normal for the whole plat of two, three, and four and one-half per cent., respectively.

Results.

In the tables, pages 71 to 88, are given in detail the results obtained from the varieties tested, and a description and classification of a large number of the dent varieties will be found on pages 48 to 67. A summary of the results obtained from 82 dent varieties, tested on tracts (*a*) and (*b*), Nos. 1 to 85 (except Nos 75, 76, and 79, from which yields are not reported on account of insufficient stand), is given below. The varieties are divided into early maturing, which ripened this 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. On account of the later planting of the varieties on tract (*c*), they can not be fairly brought into this classification and are, therefore, omitted.

TABLE Showing Summary of Results for Early Maturing Varieties; Medium Maturing; Late Maturing; and Non-Maturing.

Items.	Average of 27 early maturing plats.	Average of 32 medium maturing plats.	Average of 15 late maturing plats.	Average of 8 non-maturing plats.
Percentage of kernels germinating in Geneva apparatus	96.	97.	90.	78.
Percentage of kernels producing plants in field in 14 to 15 days	84.	80.	74.	71.
Percentage of full stand, 4 stalks per hill	88.	87.	85.	86.
Percentage of barren stalks	8.	11.	13.	9.
Average height of stalks, ft	9 8	11.5	12.2	12.7
Average height of butt of ear from ground, ft	4.5	5.5	6.2	7.
Average length of 3 specimen ears, inches	8.3	9.	9.7	9 9
Average circum. of 3 specimen ears, inches	6.33	6.97	7.22	7.06
Average circum. of 3 specimen cobs, inches	3 71	3 97	4.17	4.06
Number of good ears per acre	7,597.	7,482.	6,263.	5,678.
Number of nubbins per acre	2,948.	2,741.	2,745.	2,710.
Total number of ears per acre	10,545.	10,223.	9,008.	8,388.
Weight of 100 good ears, lb	60.	74.	93.	100.
Weight of 100 nubbins, lb	35.	43.	51.	50.
Weight of 100 average ears, lb	53.	68.	80.	84.
Lb. of ear corn to make bu. when husked	67.2	68.4	71 4	73 5
Lb. of ear corn, when husked, to make bu. air-dry	73.3	78.1	87.8	102 4
Yield per acre from good ears, bu	67.5	84.	81.2	77.7
Yield per acre from nubbins, bu	15.1	18.	20.4	16.4
Yield per acre, total, when husked, bu	82 6	102.	101.6	94.1
Yield, per acre of air-dry corn, bushels	75.6	89.8	83.2	67.8
Loss in drying, bu	7.	12.2	18.4	26.3
Percentage of water in corn when husked	18.33	21 8	27.2	35.95

The percentage of seed germinating, as tested in the Geneva apparatus, at an average temperature of 79° Fahrenheit, showed that the seed of the early maturing and medium maturing varieties was generally of extra good quality; that seed of the late maturing varieties was of fair quality; that seed of what proved to be non-maturing varieties here was of poor quality, only about three-fourths germinating. Of course, where the seed was grown, those that here proved non-maturing were maturing varieties, and some of the varieties, which here were early maturing, would, where the seed was grown, be late maturing. The percentage of kernels producing plants in fourteen to fifteen days after planting was least in the non-maturing and most in the early maturing varieties. In the early maturing varieties 13; in the medium maturing, 28; in the late maturing, 18; and in the non maturing, 10 per cent. of the corn capable of germinating under favorable conditions failed to produce plants in the field in two weeks.

Four stalks to a hill, the number of kernels planted, is considered a full stand, merely for purposes of comparison, and is not to be taken as indicating the proper thickness of planting. There was, on an average, in each division about seven-eighths of a full stand, or 3½ stalks per hill. This includes suckers. In giving the yields, no correction has been made for differences in stand. Undoubtedly the number of stalks per hill or per acre will affect the yield; but it can be no less doubted that there is no constant relation between the number of stalks per acre and the yield.

In *Experiment No. 5*, in which corn was planted under similar conditions in six degrees of thickness, it will be seen that the average number of stalks harvested per acre was 29,500, 17,100, 13,900, 12,400, 11,500, and 6,200, while the yield of corn per acre was 89, 95, 87, 87, 72, and 60 bushels, respectively. In the last case, the stand was one-half a full stand. Assuming that the yield must be doubled to make up for the deficiency in the stand would make the yield 120 bushels. But, in fact, the yield from a full stand was but 87 bushels per acre.

The number of barren stalks was greatest in the late maturing varieties, 13 per cent., and least in the early maturing varieties, 8 per cent. The greatest per cent. of barren stalks in any one variety of those under consideration was in No. 28. Several varieties had no barren stalks.

The date of maturity decidedly affects the height of the ears, and is one of the many indications of the adaptability of the plant to climatic differences. In height of stalk, the most difference was found between the early maturing and medium maturing varieties, the former being 9.8 feet and the latter 11.5 feet; the least difference was found between the late maturing and non-maturing varieties, the former being 12.2 feet and the latter 12.7 feet. The total average difference in height of stalk between the early maturing and non-maturing varieties was nearly 3 feet; and of ear, 2½ feet. The average height of ear of the early maturing varieties, 4½ feet, would probably be most convenient for the husker. The highest stalks were those of No. 62, Gould Hill prolific, which averaged

14½ feet, with ears 9 feet high. One stalk was measured that was 16¼ feet high, and the ear was 10 feet from the ground. The shortest stalks of any dent variety were those of No. 138, Dakota red, which averaged 7½ feet high, with ears 2¾ feet high.

Both the size and weight of the ear increased from the early to the late maturing varieties. The average weight of 100 ears, when husked, in the early maturing varieties was 53 pounds; in the medium maturing, 68; and in the late maturing varieties, 80. While the length of the ears in the non-maturing varieties was greater than in the late maturing, neither the diameter of the ear nor of the cob was so large. The weight of 100 ears was 4 pounds greater; but, owing to the much larger percentage of water in the immature corn, when dry, the weight would probably be less.

The average per cent. of water in 27 early maturing varieties was 18.33 per cent.; 32 medium maturing varieties, 21.80; in the late maturing varieties, 27.20; and in the non-maturing varieties, 35.95. In other words, there was somewhat over a sixth more water in medium maturing than in the early maturing; about one-half more in the late maturing; and twice as much in the non-maturing varieties.

The plats were husked October 20th to 30th, and from one to five days (usually three days) after husking, corn of each plat was shelled and the water determined in an average sample. Generally the early maturing varieties had the appearance and feel of well dried corn; the medium varieties were in good merchantable condition, such as corn is in usually when husked; in the late maturing varieties, many of the ears, although usually solid, were moist to the feel; and the non-maturing varieties contained many soft ears.

Two varieties, Leaming and Burr's white, of thoroughly air-dry corn one year old, were sampled during the fall of 1887, and the percentage of water in each ascertained. Leaming contained 10.91 per cent. and Burr's white, 11.29 per cent., or on an average, practically, eleven per cent. of water. Many analyses have been made which show that air-dry corn has a comparatively constant percentage of water. In the calculations given, therefore, corn containing eleven per cent. of water is assumed to be air-dry. Commercial corn contains, probably, a somewhat higher percentage of water, taking an average of all seasons of the year, but on this point there are no data.

Granting air-dry corn to contain eleven per cent. of water, the loss from the time the crop was gathered until it became thoroughly air-day would be, in 1,000 bushels of the early maturity varieties, 85 bushels; of the medium maturing, 120; of the late maturing, 180; of the non-maturing varieties, 280. When the corn was husked it took 67 pounds of ear corn to make a bushel—56 pounds of shelled corn—in the early maturing varieties; 68 pounds in the medium maturing; 71, in the late maturing; and 74, in the non-maturing varieties. To make a bushel of thoroughly air-dry corn it took, when the corn was husked, 73 pounds of ear corn in

the early maturing; 78, in the medium maturing; 88, in the late maturing; and 102, in the non-maturing varieties.

The medium maturing varieties gave the largest yield, 102 bushels when husked and 90 bushels when air-dry. The yield of the late maturing was about equal to the medium maturing when husked, but it was 6.5 bushels less when dry. The yield of the early maturing varieties when husked was about 83 bushels, when dry, 76 bushels; while of the non-maturing when husked, it was 94, and when dry, 68 bushels. The loss per acre was, therefore, in the early maturing varieties, 7 bushels; in the medium maturing, 12; in the late maturing, 18; and in the non-maturing, 26. Any one wishing to know the relative yield of any given variety on tracts (*a*) and (*b*) should compare the yield of the variety in question with the average of the class to which it belongs, as given in the above table. It must be constantly borne in mind that a difference of 5 to 10 bushels in yield may often be due to accidental and uncontrollable circumstances; and, in judging of the merits of a variety, other results than the yield in a particular test should be carefully considered. In the description of varieties, the merit of certain varieties for the different portions of the state has been commented upon according to the indications in the test of one and, in some cases, two years.

Results of 1887 and 1888 Compared.

Eighteen of the plats of tract (*a*) have grown the same variety of corn two years successively, care being taken to get fresh seed from its original sources for the second year's planting. The average yield per acre when the corn was husked for 1887 was 32.1 bushels; and for 1888 it was 94.2 bushels. Seed of the same varieties, obtained from the same sources, planted on the same plats, and given as nearly as possible the same culture, yielded, when husked, nearly three times as much corn in 1888 as it did in 1887. The largest yield per acre of air-dry corn in 1887 was 36.5 bushels from an early maturing variety, No. 14, Murdock; and in 1888 the largest yield was 93 bushels from a medium maturing variety, No. 4, Leaming. Six early maturing varieties in 1887 averaged 29 bushels per acre; seven medium maturing varieties, 30; and four late maturing varieties, 28. In 1888 the yield of dry corn per acre from the same was 82, 86, and 87 bushels, respectively. In the season of 1887 the percentage of water in the several varieties was estimated from sample ears, and not from average samples. The percentages of water are, therefore, somewhat too low and the bushels of air-dry corn per acre, as given, a little too high. As determined, the average percentage of water in the eighteen varieties under consideration in 1887 was 18.35, while in 1888 it was 21.39. According to this, in the season of 1887 the yield per acre of dry corn was 29.4 bushels, while in 1888 it was 83.2 bushels. The loss of a thousand bushels in drying would have been 83 bushels in 1887 and 117 bushels in 1888.

When husked, it required 70.4 pounds of ear corn to produce a bushel of shelled corn in 1887, and 68 pounds in 1888. Seemingly, since

the cob develops earlier than the corn, the early part of the season of 1887 was better suited for the growth of corn than the latter part. At any rate, there was more corn in proportion to cob in 1888 than in 1887.

In 1887 there was 82 per cent. of a full stand, with 33 per cent. or one-third of the stalks barren; in 1888 there was 88 per cent. of a full stand, with 10 per cent. of the stalks barren. The largest per cent. of barren stalks in 1887 was 63 and the smallest 22; in 1888 the largest percentage of barren stalks of the eighteen varieties was 22, and the smallest 3. The percentage of barren stalks was determined in seven varieties in 1886. The average was 14 per cent; the greatest, 25; the least 6. [*See Thirteenth Report, University of Ill., p. 190.*]

The Seasons Compared.

It will probably be many years before two seasons of such marked extremes in the development of Indian corn as those of 1887 and 1888 occur again successively in this state. It is interesting to note the differences in meteorological conditions which brought about these results. Agriculturally considered, the two principal meteorological conditions are temperature and rainfall, although they are not the only ones. The following table gives facts reported by the Illinois Weather Service:

TABLE Showing Temperature and Rainfall May 1 to Sept. 30, 1887 and 1888.

Month.	Mean temperature, F.			Rainfall, inches.		
	1887.	1888.	Average for 10 years.	1887.	1888.	Average for 10 years.
May	67.9	59.2	63.0	3 84	6.84	4.66
June	73.6	73.1	71.2	1 62	5.75	5.10
July	80.4	77.0	76.7	1.65	5.34	2 99
August	75.2	72.1	74 0	2.56	3.14	3.43
September	66 4	62.0	66 0	3.23	1.46	3.12
Average and total	72.7	68.7	70.2	12.90	22.53	19 30

The average daily temperature was four degrees lower in 1888 than in 1887. During a period of five months this amounts to a difference of six hundred degrees of temperature. In 1887 the mean daily temperature was 2.5 degrees above the normal for ten years, and in 1888 it was 1.5 degrees below the normal. This, in the latter, amounted to 225 degrees during the growing season, and it may reasonably be concluded that the term of growth was thereby somewhat prolonged.

The rainfall during the first four months of the corn-growing season probably had the greatest influence on the growth of the corn crop. The rainfall during September may have small effect upon the later maturing varieties; but the early maturing varieties are practically ripe on or soon

after the first of September. The rainfall for May, June, July, and August, in 1887, was 9.67 inches, and in 1888 it was 21.07 inches; the normal for the past ten years was 16.18 inches. The rainfall for these four months in 1887 was considerably less than one-half what it was in 1888. During June and July the rainfall in 1887 was 3.27 inches, and in 1888 it was 11.09 inches, while the normal for ten years for these months was 8 09 inches.

Classification and Description of a Portion of the Varieties of Dent Corn Tested.

The classification here attempted is an arbitrary one, based upon three simple and 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, and where 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. Those varieties maturing this season in 125 or less days from date of planting are considered early; those maturing in from 125 to 135 days, medium; those maturing from 135 to 145 days, late. When corn became sufficiently hard not to be sensibly injured by frost it was considered mature.

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 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 of breaking the ear from the ear 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 $\frac{5}{8}$ inch long and $\frac{3}{8}$ 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. And in many cases there have been given, in addition, the field results in condensed form [see tables, pages 71 and 88], including height of stalk; height of butt of ear from ground; percentage of barren stalks; season of growth (number of days from planting to maturity); weight of one hundred good ears, one hundred nubbins, and one hundred average ears; number of ears per acre; per cent. of water in shelled corn, when husked; yield per acre of shelled corn, as husked, and when thoroughly air-dry, that is, containing 11 per cent. of water; and the number of pounds of ear corn, when husked, required to make a bushel of shelled corn at that time, and also the number of pounds of ear corn, when husked, required to make a bushel of shelled corn when thoroughly air-dry. 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. Suggestions as to the relative merits have, however, sometimes been made to aid the reader; but they are merely the impressions formed from one season's test.

Specimens having like characteristics, although bearing dissimilar names, have been grouped together. This has been done with the reservation that specimens classed together this year, may be found in succeeding tests to have dissimilar characteristics not noted this season, and that those seeming slightly dissimilar this season may in succeeding tests be found so similar as to be classed together.

No description is given of the flint varieties tested, which are only grown in this state as a novelty; nor of a considerable number of dent varieties, some of which are mere novelties, while others lack sufficient uniformity of type or merit to make them worthy of attention.

Early Maturing Varieties are described on pages 48–53.

Meaium Maturing Varieties, on pages 53–60.

Late Maturing Varieties, on pages 60–65.

Non-Naturing Varieties, on pages 65–67.

The field results for each variety tested, so far as obtained, will be found in the tables following the descriptions. When they are not given with the description, see tables.

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. 27, Will's 90 day;* seed from *Farm, Field and Stockman. No. 30, Goddard's favorite;* seed from *Farm, Field and Stockman. No. 31, Dammell's;* seed from T. Chester, Champaign, Ill. *No. 34, Bonus Prairie;* seed grown by Allen E. Smith, Marengo, McHenry Co., Ill. *No. 54, Queen of*

*The numbers are the same as those of the plats on which the corn was planted.

the prairie; seed from T. Chester, Champaign, Ill. *No. 105, Yellow Clauge; No. 109, Farmer's favorite; No. 110, Queen of the prairie;* seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 7½ to 8½ inches long, 1.75 to 2.1 inches in diameter. Cobs, red, rather small, 1 to 1.3 inches in diameter. Ears, smooth, tapering; butt and tip evenly rounded, the latter particularly well filled. Juncture, medium, ½ to ¾ inch in diameter. Kernels, firmly fixed; thick, perfectly wedge-shaped; 7-16 to ⅝ inch long, ¼ to 5-16 inch wide; yellow above, orange below; long dimple-dented; tip kernels, not dented. Rows, usually 18 to 20, regular, no space between, often compacted like the cells of honeycomb.

An average of the eleven plats gave height of stalk, 10¼ feet; of ear, 4¾ feet. Six per cent. of the stalks were barren. The season was about 125 days. One hundred good ears weighed 62 pounds; nubbins, 39; and average ears, 55. The number of good ears per acre was 7,420; of nubbins, 2,927; total, 10,347. The yield per acre of shelled corn, as husked, was (good ears, 68; nubbins, 17) 85 bushels, with 85 per cent. of a full stand, and of thoroughly air-dry corn, 75.7 bushels. There was 20.05 per cent. of water in the shelled corn when husked. At that time it took 68 pounds of ear corn to make a bushel of shelled corn, and 75 pounds to make a bushel of thoroughly air-dry corn.

An excellent early variety for central Illinois, and for general culture in the more northern portion of the state. Farmer's favorite, as applied to No. 109, is wrong.

No. 35, Sibley's pride of the north; No. 36, North star; seed from T. Chester.

Type, uniform. Ears, 7¼ to 7¾ inches long; 1.5 to 1.9 inches in diameter. Cob, red, medium sized, 1 to 1.3 inches in diameter. Ears, smooth, slightly tapering, butt and tip evenly rounded, well filled; juncture, rather small, ½ to ¾ inch in diameter. Kernels, firmly fixed; nearly rectangular; corners rounding, making openness between rows; 7-16 to ½ inch long, 5-16 inch wide; yellow above, orange below; long, dimple-dented. Rows, 12 to 16, regular; space between, sometimes distinct, in best specimens, slight.

Taking an average of the two plats, the height of stalk was 8¾ feet; of ear, 4¼ feet. Seven per cent. of the stalks were barren. The season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 48 pounds; nubbins, 22; average ears, 42. The number of good ears per acre was 9,630; of nubbins, 2,430; total, 12,060. The yield per acre of shelled corn, as husked, was (good ears, 69; nubbins, 8.2) 77.2 bushels, and of thoroughly air-dry corn, 72.6 bushels, with 95 per cent. of a full stand. There was 16.26 per cent. of water in corn when shelled. At that time it required 66 pounds of ear corn to produce a bushel of shelled corn; 70 pounds of ear corn to produce a bushel of thoroughly air-dry corn.

Similar to No. 13, except smaller and earlier.

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

Type, moderately uniform. Ears, 9 to 9¾ inches long, 2 to 2.3 inches in diameter. Cobs, red, medium sized, 1.2 to 1.3 inches in diameter. Ears, smooth, tapering, butt sometimes swollen, not well rounded, tip rather rounding and well filled. Juncture, rather large, ⅞ inch in diameter. Kernels, firmly fixed; thick, nearly rectangular; 9-16 to ⅝ inch long, 5-16 to ⅜ inch wide, long to round, dimple-dented. Rows, 14 to 18; sometimes space between, rather distinct.

The average height of stalk was 10¾ feet; of ear, 4¾. Four per cent. of the stalks were barren. The season was from May 10th to September 10th, or about 125 days. One hundred good ears weighed 66 pounds; nubbins, 46; average ears, 59. The number of good ears per acre was 6,912; of nubbins, 3,312; total, 10,224. The yield per acre of shelled corn, as husked, was (good ears, 72.3; nubbins, 24.2) 96.7 bushels, and of thoroughly air-dry corn, 87.3 bushels, with 88 per cent. of a full stand. There was 19.54 per cent. of water in corn when husked. At that time it took 65.5 pounds of ear corn to make a bushel of shelled corn, and 72.7 pounds to make a bushel of thoroughly air-dry corn.

This variety is not attractive in appearance, but it is large for its season of growth and may, therefore, be recommended for general culture in northern Illinois.

No. 50, Turkey; seed from T Chester.

Ears, 8½ to 9 inches long, 1.9 inches in diameter. Cobs, white, rather small, 1.1 to 1.2 inches in diameter. Ears, smooth, slightly tapering to cylindrical, butt swollen to compressed rounded, tip pointed, fairly filled. Juncture, rather large, ⅝ to ¾ inch in diameter. Kernels, firmly fixed; very broadly wedge-shaped, ½ to 9 16 inch long and wide; yellow to white above, yellow to orange below; long, shallow crease-dented. Rows, ten, twisted; space between, slight.

The season was from May 14 to September 10th, or about 120 days.

Probably not desirable for general culture.

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

No. 1, Edmonds corn; seed grown by H. P. Edmonds, Taylor, Ogle Co., Ill.

Uniform in type. Ears, 7½ to 8 inches long, 2 inches in diameter. Cobs, red, small, 1 to 1.2 inches in diameter. Ears, rough, slightly tapering, almost cylindrical, butt and tip well rounded, latter well filled. Juncture, rather small, ⅝ inch in diameter. Kernels, firmly fixed; wedge-shaped, ⅝ inch long, 5-16 inch wide; yellow above, orange below; crease-dented, ragged. Rows, 16 to 18, regular; space between, slight.

The average height of stalk was 10¼ feet; of ear, 4½ feet. Seven per cent. of the stalks were barren. The season was from May 10th to September 10th, or about 125 days. One hundred good ears weighed 62 pounds; nubbins, 39; and average ears, 54. The number of good ears per acre was 7,488; nubbins, 3,888; total, 11,376. The yield per acre of shelled corn, as husked, was (good ears, 68.5; nubbins, 22.7) 91.2 bushels, and of thoroughly air-dry corn, 83.7 bushels. with 88 per cent. of a full stand. There was 18.28 per cent. of water in corn when husked. At that time it took 65.5 pounds of ear corn to make a bushel of shelled corn, and 71.4 pounds to make a bushel of thoroughly air-dry corn.

This variety is to be recommended for general culture in the northern, and as an early variety for the central, portion of the state.

No. 32, Kane county pride; seed from R. Shedden, Pingree Grove, Kane Co., Ill. *Synonym—No. 29, Zeigler's 90-day;* seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 7½ to 9 inches long, 2 to 2.3 inches in diameter. Cobs, red, medium sized, 1.1 to 1.3 inches in diameter. Ears, rough, tapering; butt, compressed rounded; top rather pointed, well filled. Juncture, medium, ½ to ⅞ inch long. Kernels, firmly fixed; rather narrowly wedge-shaped, ⅝ to 11-16 inch long, ¼ to 5-16 wide; yellow above, orange below; crease-dented, pinched, sometimes ragged. Rows, 18 to 20; at butt, irregular; space between, slight.

Taking an average of the two plats, the height of stalk was 11 feet; of ear, 5¼ feet. Ten per cent. of the stalks were barren. The season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 69 pounds; nubbins, 43; average ears, 62. The number of good ears per acre was 6,480; of nubbins, 2,640; total, 9,120. The yield per acre of shelled corn, as husked, was (good ears, 68.1; nubbins, 17.5) 85.6 bushels, with 87 per cent. of a full stand. The total yield per acre of thoroughly air-dry corn was 75.1 bushels. There was 21.18 per cent. of water in corn as husked. At that time it took 65.6 pounds of ear corn to make a bushel of shelled corn, and 74.2 pounds to make a bushel of thoroughly air-dry corn.

No. 29 is a little the larger, and a little deeper grained. An excellent early variety, very similar to No. 1.

No. 37. King of the earliest; seed grown by A. L. Goddard, Waucoma, Fayette Co., Iowa. *Synonym—No. 28, Dakota 90-day;* seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 7 to 7½ inches long, 1.9 to 2 inches in diameter. Cobs, red, small, 1 to 1.1 inches in diameter. Ears, rough, tapering; butt, well rounded; tip, rather pointed, not always well filled. Juncture, small, ½ inch in diameter. Kernels

firmly fixed; wedge-shaped, ⅝ inch long, 5-16 inch wide; crease-dented, pinched, ragged; yellow above, orange below. Rows, 14 to 16; space between, slight.

An average of the two plats gave height of stalk, 8½ feet; of ear, 3¾ feet. Nine per cent. of the stalks were barren. Season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 45 pounds; nubbins, 26; average ears, 41. The number of good ears per acre was 7,410; of nubbins, 2,640; total, 10,050. The yield per acre of shelled corn, as husked, was (good ears, 52; nubbins, 10.08) 62.8 bushels, with 86 per cent. of a full stand. The total yield per acre of thoroughly air-dry corn was 59.5 bushels. There was 15.59 per cent. of water in corn when husked. At that time it took 64.4 pounds to make a bushel of shelled corn, and 70 pounds to make a bushel of thoroughly air-dry corn.

To be recommended as an early variety for northern Illinois.

No. 38, Hill's improved 90-day; seed from T. Chester.

Type, uniform. Ears, 7 to 8 inches long, 1.9 to 2.1 inches in diameter. Cobs, red, 1 to 1.2 inches in diameter. Otherwise like Nos. 37 and 28, next above.

The average height of stalk was 9¼ feet; of ear, 4¾ feet. Ten per cent. of the stalks were barren. The season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 51 pounds; nubbins, 34; and average ears, 46. The number of good ears per acre was 8,820; of nubbins, 2,820; total, 11,640. The yield of shelled corn per acre, as husked, was (good ears, 69.1; nubbins, 13.7) 82.8 bushels, with 102 per cent. of a full stand. The total yield of thoroughly air-dry corn was 77.2 bushels. There was 17.02 per cent. of water in the corn when husked. At that time it took 65.4 pounds of ear corn to make a bushel of shelled corn, and 70.4 to make a bushel of thoroughly air-dry corn.

Probably worthy of general culture in northern Illinois.

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

No. 23, Champion of the north; seed grown by A. L. Goddard, Wacouma, Fayette Co., Iowa. *Synonym—No. 161, 90 day white;* seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 7 to 8½ inches long, 1.9 to 2.1 inches in diameter. Cobs, white, medium sized, 1.1 to 1.3 inches in diameter. Ears, rather smooth, tapering, evenly rounded at butt and tip. Juncture, small, ½ to ¾ inches in diameter. Kernels, wedge-shaped, corners slightly rounding; 9-16 inch long, ⅜ inch wide; white above, horn-white below; crease-dented. Rows, 14 to 16; a little space between, near surface.

An average of the two plats gave height of stalk 9¼ feet; of ear, 4¼ feet. Five per cent. of the stalks were barren. The season was less than 125 days. One hundred good ears weighed 60 pounds; nubbins, 38; average ears, 51. The number of good ears per acre was 6,210; of nubbins, 4,368; total, 10,578. The yield per acre of shelled corn, as husked, was (good ears, 54.8; nubbins, 23.7) 78.5 bushels, and of thoroughly air-dry corn was 72 bushels, with 80 per cent. of a full stand. There was 18.12 per cent. of water in the shelled corn when husked. At that time it took 66.7 pounds of ear corn to make a bushel of shelled corn, and 72.7 pounds to make a bushel of thoroughly air-dry corn.

A good early variety for the extreme northern portion of the state.

No. 67, Iowa king; seed from T. Chester.

Ears, 10 to 11 inches long; 2.1 to 2.25 inches in diameter. Cobs, white, large, 1.4 to 1.6 inches in diameter. Ears, smooth, nearly cylindrical; butt, not rounded; tip, blunt. Juncture, large, ¾ to 1 inch in diameter. Kernels, firmly fixed; wedge-shaped, corners rounded; ½ to ⅝ inch long, ⅜ inch wide; white; long, dimple-dented. Rows, 12 to 16, some space between.

The season was from May 14th to September 10th, or about 120 days. Very large for an early variety.

No. 20, Princeton; seed grown by Wm. T. Lamb, Ridott, Stephenson Co., Ill. *Synonyms—No. 61, Early Wisconsin white cap; No. 159, White Wabash;* seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 7½ to 8½ inches long, 2 to 2.2 inches in diameter. Cobs, red or white, rather large, 1.3 to 1.4 inches in diameter. Ears, smooth, tapering; butt, well rounded; tip, bluntly rounded, not well filled. Juncture, small, ½ to ⅝ inch in diameter. Kernels, very firmly fixed; wedge-shaped to rectangular, ½ to 9-16 inch long, 5-16 inch wide; white above, white to orange below; round to long, dimple-dented. Rows, 18 to 20, no space between.

An average of the three plats gave height of stalk 9¼ feet; of ear, 4¼. Five per cent. of the stalks were barren. The season was less than 125 days. One hundred good ears weighed 60 pounds; nubbins, 38; average ears, 53. The number of good ears per acre was 7,760; of nubbins, 3,052; total, 10,812. The yield per acre of shelled corn, as husked, was (good ears, 69; nubbins, 16.7) 85.7 bushels, with 87 per cent. of a full stand. The total yield per acre of thoroughly air-dry corn was 79.2 bushels. There was 17.09 per cent. of water in the shelled corn when husked. At that time, it took 67.8 pounds of ear corn to make a bushel of shelled corn and 73.4 pounds to make a bushel of thoroughly air dry corn.

No. 56, White cap; seed grown by C. Leete & Son, Mooreheadville, Pa.

Type, uniform. Ears, 8¼ to 9¼ inches long, 2.1 to 2.25 inches in diameter. Cobs, red or white, rather large, 1.2 to 1.4 inches in diameter. Ears, smooth, tapering, butt slightly rounded, tip rather pointed. Juncture, large, ¾ to 1⅛ inches in diameter. Kernels, firmly fixed; wedge-shaped, ½ to 9-16 inch long, 5-16 to ⅜ inch wide; white above, white to orange below; long dimple-dented. Rows, 14 to 20, no space between.

The average height of stalk was 9 feet; of ear, 3½ feet. Nine per cent. of the stalks were barren. The season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 64 pounds; nubbins, 36; average ears, 56. The yield per acre of shelled corn, as husked, was (good ears, 60; nubbins, 13.1) 73.1 bushels, and of thoroughly air-dry corn, 64.9 bushels, with 96 per cent. of a full stand. There was 20.99 per cent. of moisture in corn when husked. At that time it took 67.3 pounds of ear corn to make a bushel of shelled corn, and 75.8 pounds to make a bushel of thoroughly air-dry corn.

No. 57, Ohio white cap; seed from T. Chester.

Type uniform. Ears, 10 to 10½ inches long, 1.9 to 2.2 inches in diameter. Cobs, white, medium sized, 1.1 to 1.4 inches in diameter. Ears, smooth, cylindrical; butt, slightly swollen, not rounded; tip, bluntly rounded. Kernels, thick; wedge-shaped to rectangular, 7-16 to ½ inch long, ⅜ to 7-16 inch wide; white above, white to orange below; rounded to long dimple dented. Rows, 14 to 16; space between, slight.

The season was from May 14th to September 10th, or about 120 days.

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

No. 58, Woodworth 80 day; seed from T. Chester.

Ears, 8½ to 9 inches long, 2 to 2.2 inches in diameter. Cobs, white, rather large, 1.3 to 1.4 inches in diameter. Ears, rough, tapering; butt, well rounded; tip, bluntly rounded, not well filled. Juncture, medium, ½ to ¾ inch in diameter. Kernels, thick; broadly wedge-shaped; corners, slightly rounded; ½ inch long, 7-16 inch wide; white; crease-dented, ragged. Rows, 12 to 14, some space between.

The season was from May 14th to September 10th, or about 120 days.

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

No. 18, Smith's mixed dent; seed grown on University farm. *No. 63, Smith's improved white; No. 82, Smith's improved striped;* seed grown by Allen E. Smith, Marengo, McHenry Co., Ill.

Type, uniform, except in color. Ears usually 7½ to 8½ inches long, 2 to 2.2 inches in diameter. Cobs, red or white, medium sized, 1.2 to 1.3 inches in diameter. Ears, roughish, nearly cylindrical; butt and tip, evenly rounded. Juncture, small, ½ to ⅝ inch in diameter. Kernels firmly fixed; wedge-shaped, ⅝ inch long, ⅜ inch wide; crease-dented, pinched, sometimes ragged; variable in color—in some ears, white above, honey-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.

An average of the three plats gave height of stalk, 9¾ feet high; of ear, 4½ feet. Five per cent. of the stalks were barren. The season was from May 10th–14th to September 21st, or about 120 to 125 days. One hundred good ears weighed 59 pounds; nubbins, 31; average ears, 49. The number of good ears per acre was 7,225; nubbins, 3,885; total, 11,110. The yield per acre of shelled corn, as husked, was (good ears, 65.3; nubbins, 17.5) 82.8 bushels, with 88 per cent of a full stand, and of thoroughly air-dry corn, 77.6 bushels. There was 16.59 per cent. of water in corn when husked. At that time it took 67 pounds of ear corn to make a bushel of shelled corn, and 71.8 pounds to make a bushel of thoroughly air-dry corn.

In No. 63, Mr. Smith has evidently attempted to form a white variety by selecting white ears from No. 82. It continues to revert to the colored ears, however. A most excellent early variety for central Illinois, and for general culture in the northern portion of the state.

No. 138, Dakota red; seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 6 to 6¾ inches long, 1.75 to 1.85 inches in diameter. Cobs, red, medium, 1 inch in diameter. Ears, roughish, distinctly tapering; butt, well rounded; tip, pointed. Juncture, ½ to ⅝ inch long. Kernels, wedge-shaped, corners rounding, ½ inch long, and 5-16 to ⅜ inch wide; orange red to dark red; crease-dented, sometimes pinched. Rows, 12 to 14; some space between, near surface.

The average height of stalk was 7½ feet; of ear, 2¾ feet. The season was from May 22d to September 14th, or about 115 days. One hundred good ears weighed 35 pounds; nubbins, 20; average ears, 28. The yield per acre of shelled corn, as husked, was (good ears, 31.2; nubbins, 16.3) 47 5 bushels, and of thoroughly air-dry corn, 43.7 bushels, with 83 per cent. of a full stand. There was 18.20 per cent. of water in corn when husked. At that time it took 64.9 pounds of ear corn to make a bushel of shelled corn, and 70.5 pounds to make a bushel of thoroughly air-dry corn.

Probably not desirable anywhere in this state.

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

No. 2, Legal tender; seed grown by Nims Bros., Emerson, Mills Co., Ia. *No. 93, Legal tender;* seed from *Farm, Field and Stockman.*

Type, somewhat variable. Ears, 8½ to 10½ inches long, 2.25 inches in diameter. Cob, red, medium sized, 1.2 to 1.3 inches in diameter. Ears, smooth, slightly tapering, butt, compressed—that is, less in diameter than the body of the ear; tip, blunt and not well filled. Juncture, with ear stock, rather small, ½ to ¾ inch in diameter. Kernels, firmly fixed; variable, broadly wedge-shaped to narrowly rectangular; ½ to ⅝ inch long, ¼ to ⅜ inch wide; yellow above, orange below; deeply crease-dented. Rows, 16 to 20, regular, space between, slight.

Taking an average of the two plats, of which the first was the better, on account of location (see table, page 80), the height of stalk was 10½ feet; and of ear, 5 feet. Twelve per cent. of the stalks were barren. The season was from May 10th to September 21st, and May 22d to October 2, or about 135 days. One hundred good ears weighed 77 pounds; nubbins, 42; and average ears, 67. The number of good ears per acre was 6,882; nubbins, 2,598; total, 9,480. The yield per acre of shelled corn, as husked, was (good ears, 81.1; nubbins, 16) 97.1 bushels, with 87 per cent. of full stand, and of thoroughly air-dry corn, 84.2 bushels. There was 22.85 per cent. of water in shelled corn

when husked. At that time it took 69.2 pounds of ear corn to make a bushel of shelled corn, and 80 pounds 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, 98, Leaming; seed grown on University farm. *No. 47, Leaming;* seed grown by E. E. Chester, Champaign, Ill. *No. 113, Leaming;* seed from *Farm, Field and Stockman. Synonym—No. 94, Iowa king;* seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 8½ to 10 inches long, 2.2 to 2.4 inches in diameter. Cobs, red, rather large, 1.2 to 1.5 inches in diameter. Ears, smooth, tapering rapidly in tip fourth; cross section, sometimes oval; butt, sometimes swollen, usually well rounded, tip, pointed and well filled. Juncture, medium, ⅜ to ⅞ inch in diameter. Kernels, firmly fixed; slightly wedge-shaped to rectangular, corners often rounded, sometimes nearly as thick as wide, ½ to ⅝ long, ¼ to 5-16 wide; long to round dimple-dented, towards tip, usually not dented; yellow to orange above, orange below. Rows, 20, usually with less number on tip fourth and irregularly placed, a tendency to some openness between, especially towards tip end.

An average of the nine plats gave height of stalk 11¼ feet; of ears, 5¼ feet. Eight per cent. of the stalks were barren. The season was about 135 days. One hundred good ears weighed 75 pounds; nubbins, 46; average ears, 65. The number of good ears per acre was, 6,940; nubbins, 3,071; total, 10,011. The yield per acre of shelled corn was (good ears, 74.7; nubbins, 21.3) 96 bushels, with 83 per cent. of a full stand, and of thoroughly air-dry corn, 85.6 bushels. There was 21.21 per cent. of water in the shelled corn when husked. At that time it took 69.3 pounds of ear corn to make a bushel of shelled corn, and 78.4 pounds to make a bushel of thoroughly air-dry corn.

A well known and deservedly popular variety.

No. 5, Clark's 100-day; seed from *Farm, Field and Stockman.*

Type somewhat variable. Ears, 8½ to 10 inches long, 2.2 to 2.4 inches in diameter. Cobs, red, medium-sized, 1.2 to 1 3 inches in diameter. Ears, rather smooth, tapering; butt, well rounded; tip, variable, but well filled. Juncture, medium, ⅝ to ⅞ inches in diameter. Kernels, firmly fixed; narrowly to broadly wedge-shaped; 9-16 to ⅝ inch long, ¼ to 5 16 wide; yellow above, orange to reddish below; crease-dented, sometimes pinched. Rows, 18 to 20; regular, except near tip; space between, slight.

The average height of stalk was 12¼ feet; of ears, 5½ feet. Eight per cent. of the stalks were barren. The season was May 10th to September 21st, or about 135 days. One hundred good ears weighed 76 pounds; nubbins, 40; average ears, 68. The number of good ears per acre was 7,344; of nubbins, 2,016; total, 9,360. The yield per acre of shelled corn, as husked, was (good ears, 80; nubbins, 11.7) 91.7 bushels, with 73 per cent. of a full stand, and of thoroughly air-dry, 81.9 bushels. There was 20.55 per cent. of water in the shelled corn, when husked. At that time it took 67.4 pounds of ear corn to make a bushel of shelled corn, and 75.5 pounds to make a bushel of thoroughly air-dry corn.

This variety resembles Leaming in many respects. In general, the ear is less tapering towards tip, and has a broader and more perfectly wedge-shaped kernel. It is variable, however, many ears resembling Leaming closely.

No. 42, Yellow Blanchard; seed from T. Chester.

Type, uniform. Ears, 9 to 10 inches long, 2.3 to 2.4 inches in diameter. Cobs, red, large, 1.3 to 1.5 inches in diameter.

Very much like large specimens of Leaming, except ears do not taper so abruptly near the tip.

The average height of stalk was 12½ feet; of ear, 6 feet. Twenty per cent. of the stalks were barren. The season was from May 14th to September 22d, or about 130 days. One hundred good ears weighed 89 pounds; nubbins, 68; average ears, 83. The yield of shelled corn per acre, as husked, was (good ears, 69.4; nubbins, 20.9) 90.3

bushels, and of air-dry corn, 74.4 bushels. There was 26.65 per cent. of water in corn when husked. At that time it took 69.1 pounds of ear corn to make a bushel of shelled corn, and 83.9 pounds to make a bushel of thoroughly air-dry corn.

No. 11, Riley's favorite; seed grown by J. Riley, Thorntown, Boone Co., Ind. *No. 122, Riley's favorite;* seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 8½ to 9 inches long, 2.1 to 2.3 inches in diameter. Cobs, red, medium sized, 1.1 to 1.3 in diameter. Ears, usually smooth, slightly tapering; butt well rounded; tip, rounded, not always well filled Juncture, medium, ⅝ to ⅞ inches in diameter. Kernels, firmly fixed; wedge-shaped; ⅝ inch long, 5-16 to ⅜ wide; light yellow above, orange below; crease-dented, sometimes pinched. Rows, 16 to 18, very regular; space between, slight.

Taking an average of the two plats, of which the first was considerably better, on account of location [see table, page 80], the height of stalk was 10¾ feet; of ear, 5½ feet. Four per cent. of the stalks were barren. The season of growth was from May 10th to September 21st, and May 22d to October 22d, or about 135 days. One hundred good ears weighed 64 pounds; nubbins, 41; average ears, 58. The number of good ears per acre was 7,044; nubbins, 3,450; total, 10,494. The yield per acre of shelled corn, as husked, was (good ears, 69.5; nubbins, 21.6) 91.1 bushels, with 84 per cent. of a full stand, and of thoroughly air-dry corn, 81 bushels. There was 20.9 per cent. of water in corn when husked. At that time it took 66.9 pounds of ear corn to make a bushel of shelled corn, and 75.3 pounds to make a bushel of thoroughly air-dry corn.

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

No. 41, Seeknofurther; seed grown by G. W. Hartsock, Gifford, Champaign Co., Ill.

Type, variable. Ears, 8⅓ to 9½ inches long, 2 to 2.2 inches in diameter. Cobs, red, rather large; 1.1 to 1.4 inches in diameter. Ears, smooth, slightly tapering; butt, fairly rounded; tip, blunt, not always well filled. Juncture, medium; ⅝ to ¾ inch in diameter. Kernels, firmly fixed; quite thick; rather rectangular; ½ to ⅝ inch long, ⅜ inch wide; yellow above, deep orange to reddish below; long to round dimple-dented. Rows, 16, usually, regular; space between, apparent.

The average height of stalk was 11 feet; of ear, 5½ feet. There were no barren stalks. The season was from May 14th to September 22d, or about 130 days. One hundred good ears weighed 79 pounds; nubbins, 41; average ears, 70. The yield per acre of shelled corn, as husked, was (good ears, 85.2; nubbins, 12.8) 98 bushels, and of thoroughly air-dry corn, 87.4 bushels, with 82 per cent. of a stand. There was 20.63 per cent. of water in corn when husked. At that time it took 69.6 pounds of ear corn to make a bushel of shelled corn, and 78 pounds to make a bushel of thoroughly air-dry corn.

In many respects like Leaming.

Nos. 49 and 97, Fisk; seed grown by Eli Fisk, Havana, Mason Co., Ill.

Type, uniform. Ear, 8 to 9½ inches long, 2 to 2.3 inches in diameter. Cobs, red, medium sized, 1.2 to 1.3 inches in diameter. Ears, smooth, tapering; butt and tip, evenly rounded, latter well filled. Juncture, medium, ¾ to ⅞ inch in diameter. Kernels, firmly fixed; rather thick, wedge shaped, ½ to ⅝ inch long, 5-16 to 7-16 wide; yellow above, orange below; long, dimple-dented. Rows, 14 to 16, space between, very slight.

An average of the two plats gave height of stalk 11¼ feet; of ear, 5¼ feet. The season was about 135 days. One hundred good ears weighed 73 pounds; nubbins, 37; average ears, 63. The number of good ears per acre was 7,020; of nubbins, 2,790; total, 9,810. The yield per acre of shelled corn, as husked, was (good ears, 77.4; nubbins, 14.2) 91 6 bushels, with 89 per cent. of a full stand, and of thoroughly air-dry corn, 76.6 bushels. There was 25.56 per cent. of water in the corn as husked. At that time it took 71.0 pounds of ear corn to make a bushel of shelled corn, and 85 pounds to make a bushel of thoroughly air-dry corn.

No. 51, Kirby; seed from T. Chester.

Type, variable. Ears, 8½ to 8¾ inches long, 2.4 to 2.5 inches in diameter. Cobs, red, large, 1.3 to 1.5 inches in diameter. Ears, smooth, tapering, butt and tip nicely rounded, latter well filled. Juncture, medium, ¾ to ⅞ inch in diameter. Kernels, firmly fixed; narrowly to broadly wedge-shaped; ⅝ inch long, 5 16 to 7-16 inch wide; yellow, often white above, yellow to orange below; round to long, dimple dented, kernel towards tip, not dented. Rows, 16 to 22, space between, slight.

The season was from May 14th to September 22d, or about 130 days.

No. 53, Golden beauty; seed from T. Chester.

Type, variable. Ears, 9½ to 10½ inches long; otherwise, appearance much like No. 55. It also differs from No. 55 in maturing in about 130 days, from May 14th to September 22d.

The average height of stalk, 11 feet; of ears, 6 feet. Fourteen per cent. of the stalks were barren. One hundred good ears weighed 89 pounds; nubbins, 27; average ears, 80. The number of good ears per acre, 8,775; of nubbins, 1,620; total, 10,395. The yield per acre of shelled corn, as husked, was (good ears, 110.9; nubbins, 78) 118.7 bushels, and of thoroughly air-dry corn 98.7 bushels, with 83 per cent. of a full stand. There was 26 per cent. of water in corn when husked. At this time it took 70.5 pounds of ear corn to make a bushel of shelled corn, and 84.8 pounds to make a bushel of thoroughly air-dry corn.

No. 104, Prairie queen; Synonyms—No. 103, Smith's surprise; No. 118, Carle's prolific; seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 8¾ to 10¼ inches long, 1.75 to 2.2 inches in diameter. Cobs, red, rather large, 1 to 1.4 inches in diameter. Ears, smooth, tapering; butt, compressed rounded; tip, pointed, not well filled. Juncture, medium, ½ to ¾ inch in diameter. Kernels, firmly fixed; wedge-shaped to nearly rectangular, rather thick, 9-16 to ⅝ inch long, ⅜ to 7.16 wide; yellow to orange above, orange below; long to round dimple-dented; kernels near tip, not dented. Rows, usually 12 to 14; space between, rather distinct.

Taking an average of the three plats, the height of stalk was 10 feet; of ear, 5 feet. The season was from May 22d to October 2d, or about 135 days. One hundred good ears weighed 65 pounds; nubbins, 38; average ears, 60. The yield per acre of shelled corn, as husked, was (good ears, 79; nubbins, 13.3) 92.3 bushels, and of thoroughly air-dry corn, 77.9 bushels, with 86 per cent. of a full stand. There was 24.61 per cent. of water in the corn when husked. At that time it took 69 pounds of ear corn to make a bushel of shelled corn, and 81.8 pounds to make a bushel of thoroughly air-dry corn.

Apparently not desirable.

No. 107, Southern queen; seed from *Farm, Field and Stockman.*

Ears, 7½ to 9 inches long; diameter, 2.1 to 2.3 inches. Cobs, red, large, 1. 3 to 1.5 inches in diameter. Ears, smooth, slightly tapering; butt, compressed rounded; tip, blunt, not well filled. Juncture, rather small, ½ to ¾ inch in diameter. Kernels, loose; wedge shaped, ½ inch long, 5-16 inch wide; round to long dimple-dented; yellow above, yellow to orange below. Rows, 10 to 20; no space between.

The season was from May 22d to October 2d, or about 135 days.

No. 114, 90-day yellow; No. 115, North star; seed from *Farm, Field and Stockman.*

Type, variable. Ears, 8 to 9 inches long, 2 to 2.2 inches in diameter. Cobs, red, rather large, 1.1 to 1.4 inches in diameter. Ears, rather smooth, tapering; butt, only fairly rounded; tip, blunt, not well filed. Juncture, medium, ½ to ¾ inches in diameter. Kernels, loose; rather narrowly wedge-shaped; 9 16 to ⅜ inch long, ¼ to 5-16 inch wide; crease-dented; yellow above, light orange below. Rows, 18 to 20; space between, sometimes rather distinct.

Taking an average of the two plats, the height of stalk was 10 feet; of ear, 4¾ feet. The season was from May 22d to October 2d, or about 135 days. One hundred good

ears weighed 74 pounds; nubbins, 31; average ears, 59. The yield per acre of shelled corn, as husked, was (good ears, 77.1; nubbins, 17.5) 94.6 bushels, and of thoroughly air-dry corn 81.3 bushels, with 86 per cent. of a full stand. There was 23.42 per cent. of water in corn when husked. At that time it took 69.2 pounds to make a bushel of shelled corn, and 80.5 pounds to make a bushel of thoroughly air-dry corn.

The name North star is undoubtedly wrong for No. 115.

No. 123, Clark's Onarga; No. 124, Clark's Iroquois; seed from *Farm, Field and Stockman.*

Type, variable. Ears, 7 to 9 inches long, 2 to 2.25 inches in diameter. Cobs, red, large, 1.2 to 1.5 inches in diameter. Ears, rather smooth, distinctly tapering; butt, rounded; tip, pointed and well filled. Juncture, rather small, ½ to ¾ inch in diameter. Kernels, wedge-shaped, corners rounding; ½ inch long, 5-16 inch wide; usually yellow above, sometimes white, orange to reddish below; long to round dimple-dented. Rows, 18 to 20; space between, rather distinct near surface.

Taking an average of the two plats, the height of stalk was 9¾ feet; of ear, 4¾ feet. The season was from May 24th to October 2d, or about 130 days. One hundred good ears weighed 66 pounds; nubbins, 39; average ears, 58. The yield per acre of shelled corn, as husked, was (good ears, 64.7; nubbins, 18), 82.7 bushels, and of thoroughly air-dry corn, 69.6 bushels. There was 25 per cent. of water in corn when husked. At that time it took 70 pounds of ear corn to make a bushel of shelled corn, and 83 pounds to make a bushel of thoroughly air-dry corn.

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

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

Type, fairly uniform. Ears, 8½ to 10 inches long, 2.2 to 2.4 inches in diameter. Cobs, red, rather large, 1.2 to 1.4 inches in diameter. Ears, rough, tapering; butt, compressed rounded, sometimes swollen; tip, pointed and fairly filled. Juncture, large, ¾ to 1 inch in diameter. Kernels, somewhat loose, broadly wedge-shaped, 9-16 to ⅝ inch long, 5.16 to ⅜ inch wide; crease-dented, somewhat pinched and ragged. Rows, 16 to 22, less towards tip; space between, slight.

The average height of stalks was 11 feet; of ears, 5 feet. Thirteen per cent. of stalks were barren. The season was from May 10 to September 21st, or about 135 days. One hundred good ears weighed 83 pounds; nubbins, 41; average ears, 71. The number of good ears per acre was 7,200; of nubbins, 2,880; total, 10,080. The yield per acre of shelled corn, as husked, was (good ears, 78.1; nubbins, 15.3) 93.4 bushels, with 86 per cent. of a full stand, and of thoroughly air-dry corn, 81 bushels. There was 22 83 per cent. of water in the corn when husked. At that time it took 69 5 pounds of ear corn to make a bushel of shelled corn, and 80.1 pounds to make a bushel of thoroughly air-dry corn.

No. 15, Champaign; seed grown on University farm.

Type, variable. Ears, 8 to 8½ inches long, 2.2 to 2.4 inches in diameter. Cobs, red, medium sized, 1.1 to 1 3 inches in diameter. Ears, rough, cylindrical to slightly tapering; butt and tip, evenly rounded; latter, usually well filled. Juncture, rather small, ½ to ¾ inch in diameter. Kernels, loose; broadly wedge-shaped, ⅝ inch long, ⅞ inch wide; light yellow above, yellow to orange below; crease-dented, pinched, sometimes ragged. Rows, 14 to 16, sometimes spiral; space between, very slight.

The average height of stalks was 11¼ feet; of ears, 5 feet. Nine per cent. of the stalks were barren. The season was May 14th to September 21st, or about 135 days. One hundred good ears weighed 69 pounds; nubbins, 46; average ears, 62. The number of good ears per acre was 6,624; of nubbins, 3,096; total, 9,720. The yield per acre of shelled corn, as husked, was (good ears, 71.3; nubbins, 22.1) 93 4 bushels, with 87 per cent. of a full stand, and of thoroughly air-dry corn, 82 1 bushels. There was 21.75 per cent. of water in the corn when husked. At that time it took 67.8 pounds of ear corn to

make a bushel of shelled corn, and 77.1 pounds to make a bushel of thoroughly air-dry corn.

A valuable variety for central Illinois.

No. 39, Log cabin; seed grown by C. N. Butts, Knoxville, Knox Co., Ill.

Type, variable. Ears, 9 to 10 inches long, 2.1 to 2.4 inches in diameter. Cobs, red, large, 1.4 to 1.5 inches in diameter. Ears, roughish, tapering; butt, slightly rounded; tip, rather pointed, not filled. Juncture, large, ¾ to 1 inch in diameter. Kernels, rather loose, narrowly wedge-shaped, ⅝ inch long, 5-16 inch wide, yellow to reddish above, orange to reddish below; round dimple- to crease-dented, sometimes pinched; tip kernels, not dented. Rows, 20, usually; space between, slight.

The average height of stalks was 11 feet; of ears, 5½ feet. Fourteen per cent. of the stalks were barren. The season was from May 14th to September 22d, or about 130 days. One hundred good ears weighed 88 pounds; nubbins, 45; average ears, 74. The yield per acre of shelled corn, as husked, was (good ears, 78.2; nubbins, 20.6) 98.8 bushels, and of thoroughly air-dry corn 86.1 bushels, with 96 per cent. of a full stand. There was 22.41 per cent. of water in corn when husked. At that time it took 70.7 pounds of ear corn to make a bushel of shelled corn, and 81.1 pounds to make a bushel of thoroughly air-dry corn.

Apparently a desirable variety for general culture in central Illinois.

No. 44, Ripley 120-day; seed from T. Chester.

Ears, 8 to 9½ inches long, 2.2 to 2.3 inches in diameter. Cobs, red, medium sized, 1.2 to 1.3 inches in diameter. Ears, roughish, nearly cylindrical; butt, compressed rounded; tip, rounded, well filled. Juncture, medium, ¾ inch in diameter. Kernels loose, wedge-shaped, thinnish, often thinner at top than bottom, ⅝ inch long, ⅜ wide; yellow above, orange to reddish below; crease-dented, often pinched. Rows, 16 to 18; space between, slight.

The season was from May 14th to September 22d, or about 130 days.

No. 121, Northern queen; seed from *Farm, Field and Stockman.*

Fairly uniform in type. Ears, 8 to 9 inches long, diameter 2.1 to 2.2 inches. Cobs, red, medium sized, 1.1 to 1.3 inches in diameter. Ears, rough, tapering; butt and tip, moderately rounded. Juncture, medium, ⅝ to ¾ inch in diameter. Kernels loose, imperfectly wedge shaped, corners rounded, ⅝ inch long, ⅜ inch wide, yellow above, orange below; crease-dented, ragged, pinched. Rows, 16 to 18, space between, apparent.

The season was from May 22d to October 2d, or about 135 days.

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

Nos. 19, 25, 64, 143, 162, Furr's white; seed grown on University farms. *Synonyms —No. 66, Giant Normandy;* seed from U. S. Department of Agriculture. *No. 68, Dresback;* seed grown by E. E. Chester, Champaign, Ill. *No. 72, Champion white pearl;* seed from T. Chester. *No. 59, Zeigler's 90-day; No. 157, Champion white pearl; No. 158, White queen; No. 153, Smith's favorite; No. 154, Hugh's choice;* seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 8 to 9 inches long, 2.1 to 2.25 inches in diameter. Cobs, white, occasionally red, rather small, 1.1 to 1.2 inches in diameter. Ears, rather smooth, cylindrical, butt nicely rounded, tip bluntly rounded, usually well filled. Juncture, rather small, ⅝ inch in diameter. Kernels, firmly fixed, broadly wedge-shaped, ⅝ inch long, ⅜ to 7-16 inch wide; white above, horn-white below, sometimes tinged with yellow; crease-dented, slightly pinched. Rows, 14 to 16; space between, slight—in best specimens, no space between.

An average of the 13 plats gave height of stalk 10¾ feet; of ear, 5¼. Eight per cent. of the stalks were barren. The season was about 135 days. One hundred good ears weighed 74 pounds; nubbins, 40; average ears, 61. The number of good ears per acre

was 6,471; of nubbins, 4,117; total, 10,588. The yield of shelled corn per acre, as husked, was (good ears, 68.3; nubbins, 22.9) 91.2 bushels, with 88 per cent. of a full stand, and of thoroughly air-dry corn 81.8 bushels. There was 22.5 per cent. of water in corn when husked. At that time it took 71 pounds of ear corn to make a bushel of shelled corn, and 81.8 pounds to make a bushel of air-dry corn.

This variety is to be recommended for general culture in central Illinois. Nos. 72 and 157 were probably not true to name or not pure in type, as Champion white pearl is believed to possess some qualities not common to Burr's white. The same may be true of No. 66. Further trials may show differences not noted this season.

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

No. 70, Common early white; seed grown by E. E. Chester, Champaign, Ill.

Type uniform. Ears, 9 to 10 inches long, 1.9 to 2.2 inches in diameter. Cobs, white, medium sized, 1.1 to 1.3 inches in diameter. Ears, rough, distinctly tapering; butt, compressed rounded; tip, pointed, fairly filled. Juncture, small, ½ to ⅝ inch in diameter. Kernels, thickish, wedge-shaped to rectangular, corner slightly rounding, ½ to ⅝ inch long, ⅜ inch wide; white above, horn-white below; crease dented, sometimes pinched and with a little projection at top on chit side. Rows 14 to 18, some space between.

The average height of stalk was 12½ feet; of ear, 5¾ feet. Twenty three per cent. of the stalks were barren. The season was from May 14th to September 22d, or about 130 days. One hundred goods ears weighed 77 pounds; nubbins, 36; average ears, 64. The total yield per acre of shelled corn, as husked, was (good ears, 97.2; nubbins, 20.1) 117.3 bushels, and of thoroughly air dry corn 104.5 bushels. There was 20.74 per cent. of water in corn when husked. At that time, it took 69.8 pounds of ear corn to make a bushel of shelled corn, and 78.3 pounds to make a bushel of thoroughly air dry corn.

Not an attractive variety, but the large yield makes it worthy of further trial. No. 160, Iroquois white, is similar to it in appearance of ears.

No. 71, Gourd seed; seed grown by E. E. Chester, Champaign, Ill.

Type, fairly uniform. Ears, 9 inches long, diameter 2.25 inches. Cobs, white, rather small, 1.1 to 1.2 inches in diameter. Ears, rough, nearly cylindrical; butt and tip, evenly rounded. Juncture, small, diameter ½ to ⅝ inch. Kernels, varying from broadly to narrowly wedge shaped; corners, sometimes rounded, ⅝ inch long, 5-16 to 7-16 inch wide; white; dimple- to crease-dented, pinched, ragged. Rows, 14 to 16; space between, somewhat apparent.

The average height of stalk was 12 feet; of ear, 5¾ feet. Sixteen per cent. of the stalks were barren. The season was from May 14th to September 22d, or about 130 days. One hundred good ears weighed 82 pounds; nubbins, 40; average ears, 67. The number of good ears per acre was 8,220; nubbins, 4,440; total, 12,660. The yield per acre of shelled corn, as husked, was (good ears, 99.4; nubbins, 25.7) 125.1 bushels, and of thoroughly air-dry 111.6 bushels. There was 20.63 per cent. of water in corn when husked. At that time it took 68.6 pounds of ear corn to make a bushel of shelled corn, and 76.9 pounds to make a bushel of thoroughly air-dry corn.

A promising variety for central Illinois.

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

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

Type, variable. Ears, 8 to 10 inches long, 2.1 to 2.4 inches in diameter. Cobs, red, rather large, 1.1 to 1.4 inches in diameter. Ears, rather smooth, distinctly tapering; butt, compressed rounded; tip, pointed, fairly filled. Juncture, medium, ⅝ to ⅞ inch in diameter. Kernels, wedge-shaped to rectangular, ⅝ inch long, 5-16 to ⅜ inch wide; yellow to red above, orange to red below. Rows, 16; space between, not large.

The average height of stalks was 11¼ feet; of ears, 5 feet. Eighteen per cent. of the stalks were barren. The season was from May 10th to September 21st, or about 135

days. One hundred good ears weighed 73 pounds; nubbins, 34; average ears, 58. The number of good ears per acre was 5,616; of nubbins, 3,600; total, 9.216. The yield per acre of shelled corn, as husked, was (good ears, 60.7; nubbins, 17.6) 78.3 bushels, with 72 per cent. of a full stand, and of thoroughly air-dry corn 69.7 bushels. There was 20.63 per cent. of water in corn when husked. At that time it took 66.4 pounds of ear corn to make a bushel of shelled corn, and 74.6 pounds to make a bushel of thoroughly air-dry corn.

No. 84, Bloody butcher; seed grown by E. E. Chester, Champaign Ill.

Type, uniform. Ears, 8½ to 9½ inches long, 2 to 2.1 inches in diameter. Cobs, white, rather small, 1.1 to 1.2 inches in diameter. Ears, smooth, tapering; butt, compressed rounded; tip, pointed, not always well filled. Juncture, medium, ½ to ¾ inch in diameter. Kernels, nearly rectangular, thick; corners, rounding, ½ inch long, 7-16 inch wide; yellow surrounded with red above, light to dark red below, long dimple-dented. Rows, 12, space between, rather large.

The average height of stalk was 10½ feet; of ear, 4¾ feet. There were no barren stalks. The season was from May 14th to September 10th, or about 120 days. One hundred good ears weighed 68 pounds; nubbins, 32; average ears, 62. The yield per acre of shelled corn, as husked, was (good ears, 107.3; nubbins, 8.4) 115.7 bushels, and of thoroughly air-dry corn 103.6 bushels, with 101 per cent. of a full stand. There was 20.28 per cent. of water in corn when husked. At that time it took 68.3 pounds of ear corn to make a bushel of shelled corn, and 76.3 pounds to make a bushel of thoroughly air-dry corn.

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

No. 83, Calico; No. 85, Common red; seed grown by E. E. Chester, Champaign, Ill.

Type, uniform, except in color. Ears, 8½ to 9 inches long, 2 to 2.2 inches in diameter. Cobs, red or white, medium-sized, 1.1 to 1.3 inches in diameter. Ears, roughish, slightly tapering; butt and tip, evenly rounded. Juncture, small, ¼ to 5/16 inch in diameter. Kernels, thickish, rather narrowly wedge shaped, ½ to 9-16 inch long, 5-16 inch wide; crease-dented, slightly ragged. The ground color of kernel is yellow to white, striped lengthwise with red. In some ears the kernels are solid red. No. 85 is distinguished from No. 83 in having the larger part of the ears red. Rows, 16 to 20, space between, slight.

Taking an average of the two plats, the height of stalk was 10¾ feet; of ears, 5¾ feet. The season was from May 14th to September 22, or about 130 days. One hundred ears weighed 71 pounds; nubbins, 40; average ears, 65. The yield of shelled corn per acre, as husked, was (good ears, 104.9; nubbins, 15.6) 120.5 bushels, and of thoroughly air-dry corn 108.6 bushels. There was 19.12 per cent. of water in corn when husked. At that time it took 67.2 pounds of ear-corn to make a bushel of shelled corn, and 74 pounds to make a bushel of thoroughly air-dry corn.

No. 129, Calico, is similar to this variety, although yielding very much less, which was partly due to location.

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

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

Type, uniform. Ears, 9½ to 11 inches long, 2 3 to 2.5 inches in diameter. Cobs, red, rather large, 1.2 to 1.4 inches in diameter. Ears, rather smooth, cylindrical to slightly tapering; butt, compressed and sometimes not well filled; tip, blunt and not well filled. Juncture, large, ¾ to 1 inch in diameter. Kernels, loose, rectangular to broadly wedge-shaped, 5/8 inch long, 7-16 inch wide; bright yellow above, yellow to orange below; rather shallow crease-dented, sometimes a little ragged, dimple-dented towards tip. Usually 16 rows, regular; space between, slight.

The average height of stalk was 12¼ feet; of ear, 7¼ feet. Nineteen per cent. of the stalks were barren. The season was from May 10th to October 1st, or about 145 days. One hundred good ears weighed 103 pounds; nubbins, 60; average ears, 91. The number of good ears per acre was 5,616; nubbins, 2,232; total, 7,848. The yield per acre of shelled corn, as husked, was (good ears, 82.6; nubbins, 18.8) 101.4 bushels with 73 per cent. of a full stand, and of thoroughly air dry corn 83.9 bushels. There was 26.37 per cent. of water in the shelled corn when husked. At this time it required 72 pounds of ear corn to produce a bushel of shelled corn, and 86 pounds to produce a bushel of thoroughly air dry corn.

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

Type, fairly uniform. Ears, 8½ to 10½ inches long, 2.1 to 2.2 inches in diameter. Cobs, red, rather large, 1.2 to 1.4 inches in diameter. Ears, rather smooth, nearly cylindrical; butt and tip, well rounded; latter, not always well filled. Juncture, small, ½ to ¾ inch in diameter. Kernels, firmly fixed; thick, broadly wedge-shaped; ⅝ inch long, ⅜ inch wide; yellow above, orange below; crease-dented, pinched. Rows, 14 to 16, regular; space between, slight.

The average height of stalk was 12¾ feet, and the height of ear 5¾ feet. Sixteen per cent. of the stalks were barren. The season was from May 10th to October 1st, or about 145 days. One hundred good ears weighed 75 pounds; nubbins, 48; average ears, 65. The number of good ears per acre was 6,840; nubbins, 3,744; total, 10,584. The yield per acre of shelled corn, as husked, was (good ears, 71.9; nubbins, 24.9) 96.8 bushels, with 88 per cent. of a full stand, and of thoroughly air-dry corn 82 bushels. There was 24.57 per cent. of water in the shelled corn when husked. At that time it took 70.1 pounds of ear corn to make a bushel of shelled corn, and 82.8 pounds to make a bushel of thoroughly air-dry corn.

Probably desirable for southern-central and southern Illinois.

No. 33, Feeder's favorite; seed grown by H. & L. K. Seymour, Payson, Adams Co., Ill.

Type, uniform. Ears, 9 to 10½ inches long, 2.1 inches in diameter. Cobs, red, small, 1.1 inches in diameter. Ears, rather smooth, slightly tapering; butt, compressed rounded; tip, bluntly rounding. Juncture, rather small, ½ to ¾ inch in diameter. Kernels, loose; wedge-shaped; corners, sometimes rounding; ⅝ inch long and ⅜ inch wide; yellow above, orange below; long dimple- to crease-dented, sometimes pinched. Rows, 14 to 16; some space, between.

The average height of stalk was 12¼ feet; of ear, 6½ feet. Ten per cent. of the stalks were barren. The season was from May 14th to October 2d, or about 140 days. One hundred good ears weighed 87 pounds; nubbins, 42; average ears, 79. The yield per acre of shelled corn, as husked, was (good ears, 86.3; nubbins, 9.1) 95.4 bushels, and of thoroughly air-dry corn 75.1 bushels, with 76 per cent. of a full stand. There was 29.95 per cent. of water in corn when husked. At that time it took 67.6 pounds of ear corn to make a bushel of shelled corn, and 85.9 pounds to make a bushel of thoroughly air dry corn.

This plat was injured to some extent by cattle.

No 40, Swengel corn; seed grown by Swengel Bros., Neoga, Cumberland Co., Ill.

Type, uniform. Ears, 10 to 11½ inches long, 2 to 2.2 inches in diameter. Cobs, red, small, 1.1 to 1.2 inches in diameter. Ears, rather smooth, cylindrical or fusiform; butt, compressed rounded; tip, evenly rounded and well filled. Juncture, medium, ½ to ⅞ inch in diameter. Kernels, firmly fixed; thick, broadly wedge-shaped, ⅝ inch long, 7-16 inch wide; light yellow above, yellow below; crease-dented. Rows, 12 to 14, regular; space between, slight.

The average height of stalk was 12 feet; of ear, 6 feet. Fifteen per cent. of the stalks were barren. The season was from May 14th to October 2d, or about 140 days.

One hundred good ears weighed 88 pounds; nubbins, 37; average ears, 75. The yield per acre of shelled corn, as husked, was (good ears, 79.8; nubbins, 10.5) 90.3 bushels, and of thoroughly air-dry corn 70.6 bushels, with 106 per cent. of a full stand. There was 30.37 per cent. of water in the corn when husked. At that time it took 71.5 pounds of ear corn to make a bushel of shelled corn, and 91.5 pounds to make a bushel of thoroughly air-dry corn.

Apparently desirable for south central and southern Illinois.

No. 43, Victor; seed from T. Chester.

Type, uniform. Ears, 8 to 9 inches long, 2.3 to 2.5 inches in diameter. Cobs, red, large, 1.3 to 1.5 inches in diameter. Ears, smooth, tapering; tip fourth; abruptly; butt and tip, nicely rounded. Juncture, medium, 5/8 to 3/4 inch in diameter. Kernels, firmly fixed; wedge-shaped to rectangular, 9-16 inch long, 5-16 to 3/8 inch wide; yellow above, orange below; long dimple-dented. Rows, 18 to 20; space between, well filled. The season was from May 14th to October 22d, or about 140 days.

No. 46, Yellow king; seed from T. Chester.

Ears, 8½ to 10½ inches long, 2.2 to 2.4 inches in diameter. Cobs, red, larger, 1.4 to 1.5 inches in diameter. Ears, rather smooth, nearly cylindrical; butt, compressed rounded; tip, rounded, fairly filled. Juncture, medium, 3/8 to 3/4 inch in diameter. Kernels, thick, broadly wedge-shaped to rectangular; corners, rounded; 5/8 inch long, 7/8 inch wide; yellow to orange above, deep orange below; crease-dented, slightly pinched. Rows, 14 to 18; space between, apparent. The season was from May 14th to October 2d, or about 140 days.

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, somewhat variable. Ears, 8 to 9 inches long, 2.25 inches in diameter. Cobs, red, rather small, 1 to 1.3 inches in diameter. Ears, rough, slightly tapering; butt, compressed rounded; tip, rounded and well filled. Juncture, medium, ½ to 3/4 inch in diameter. Kernels, firmly fixed; rather thin, narrowly wedge-shaped, 5/8 to 3/4 long, ¼ to 5-16 wide; yellow above, orange below; crease-dented, pinched and ragged. Rows, 16 to 22, regular; space between, generally slight.

The average height of stalk was 12¾ feet; of ear, 6 feet. Thirteen per cent. of the stalks were barren. The season was from May 10th to October 1st, or about 145 days. One hundred good ears weighed 70 pounds; nubbins, 57; average ears, 66. The number of good ears per acre was 7,200; of nubbins, 2,736; total, 9,936. The yield per acre of shelled corn, as husked, was (good ears, 79.7; nubbins, 24.8) 104.5 bushels, with 98 per cent. of a full stand, and of thoroughly air dry corn 91.2 bushels. There was 22.31 per cent. of water in the corn when husked. At that time it took 67.3 pounds of ear corn to make a bushel of shelled corn, and 77.1 pounds to make a bushel of thoroughly air-dry corn.

Probably desirable for south central and southern Illinois.

No. 52, Menhall; seed from T. Chester.

Type, fairly uniform. Ears, 10 and 11 inches long, 2.2 to 2.4 inches in diameter. Cobs, red, rather large, 1.2 to 1.4 inches in diameter. Ears, rough, nearly cylindrical; butt and tip, well rounded, and latter, fairly filled. Juncture, medium, 5/8 to 3/4 inch in diameter. Kernels, thinish, rather broadly wedge-shaped, 5/8 to 11-16 inch long, 3/8 to 7-16 inch wide; light yellow above, yellow to orange below; deeply crease-dented, much pinched, often ragged. Rows, 14 to 18; space between, very slight.

The season was from May 14th to October 2d, or about 140 days.

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

No. 60, Rural heavy dent; seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 9½ to 11½ inches long, 2.3 to 2.6 inches in diameter. Cobs, white, large, 1.4 to 1.6 inches in diameter. Ears, smooth, nearly cylindrical, taper-

ing in tip, fourth; butt, compressed rounded; tip, pointed, fairly filled. Juncture, rather small, ½ to ¾ inches in diameter. Kernels, very broadly wedge-shaped to slightly polygonal, ½ to ⅝ inch long, ⅜ to ½ inch wide; white to horn-white above, horn-white below; round to long dimple-dented. Rows, 12 to 16; space between, often considerable.

The season was from May 14th to October 2d, or about 140 days.

No. 65, Helms' improved; seed grown by F. Helms, Belleville, St. Clair Co., Ill.

Type, uniform. Ears, 9½ to 10½ inches long, 1.9 to 2.2 inches in diameter. Cobs, red or white, medium sized, 1.1 to 1.3 inches in diameter. Ears, smooth, tapering; butt, compressed rounded; tip, pointed and filled. Juncture, rather small, ½ to ¾ inch in diameter. Kernels, wedge-shaped; corners, rounding; ½ inch long, ⅞ inch wide; white to horn-white above, horn-white below. Rows, 16; space between, apparent.

The average height of stalk was 12¾ feet; of ear, 6¾ feet. Thirteen per cent. of the stalks were barren. The season was from May 14th to October 2d, or about 140 days. One hundred good ears weighed 90 pounds; nubbins, 49; average ears, 74. The yield per acre of shelled corn, as husked, was (good ears, 81.4; nubbins, 27.6) 109 bushels, and of thoroughly air-dry corn 84.8 bushels, with 91 per cent. of a full stand. There was 30.72 per cent. of water in corn as husked. At that time it took 72 pounds of ear corn to make a bushel of shelled corn, and 92.5 pounds of ear corn to make a bushel of thoroughly air-dry corn.

No. 69, White Hunt; seed from T. Chester.

Type, fairly uniform. Ears, 9½ to 11 inches long, diameter 2.3 to 2.8 inches. Cobs, white, very large, 1.6 to 1.75 inches in diameter. Ears, smooth, distinctly tapering; butt, compressed rounded; tip, evenly rounded, fairly filled. Juncture, large, ⅞ to 1¼ inches in diameter. Kernels, rather narrowly, wedge-shaped; corners, rounded; cross section, nearly square; ⅝ inch long, ¼ to ⅜ inch wide; white to horn-white above, horn-white below; dimple-dented; kernels near tip and butt, hardly dented. Rows, 24 to 30; space between, often apparent near surface.

The season was from May 14th to October 2d, or about 140 days. Remarkable for its large ears. One hundred good ears weighed 138 pounds, and average weight of one hundred ears was 103 pounds. Three selected ears averaged one and three-quarters pounds a piece when husked.

No. 73, Improved Blountz prolific; seed from T. Chester.

Type, uniform. Ears, 10 to 10¾ inches long, diameter 2.3 to 2.6 inches. Cobs, white, large, 1.4 to 1.5 inches in diameter. Ears, smooth, tapering; butt, compressed rounded; tip, bluntly rounded. Juncture, large, ¾ to 1 inch in diameter. Kernels, thickish, broadly wedge shaped to rectangular, 9-16 to ⅝ inch long, 7-16 inch wide; white above, horn-white below; long dimple dented. Rows, 14 to 18; space between, usually slight.

The season was from May 14th to October 2d, or about 140 days.

No. 79, Hickory king; seed from T. Chester. No. 163, *Hickory king;* seed from *Farm, Field and Stockman.*

Type, variable. Ears, 7½ to 8½ inches long, 1.7 to 1.8 inches in diameter. Cobs, white, small, .9 to 1 inch in diameter. Ears, smooth, tapering; butt, not rounded or compressed rounded; tip, pointed, filled. Juncture, small, ½ to ⅝ inch in diameter. Kernels, distinctly polygonal, ½ to 9-16 inch long and wide, long dimple-dented; white above, horn-white to yellow below. Usually 18 rows; space between, large and apparent.

Yield is not reported from No. 79 on account of poor stand. The average height of stalk was 10 feet; of ear, 5½ feet. Twelve per cent. of the stalks were barren. The season was from 130 to 140 days. One hundred good ears weighed 63 pounds; nubbins, 35; average ears, 56. The number of good ears per acre was 6,180; of nubbins, 2,880; total, 9,060. The yield per acre of shelled corn, as husked, was (good ears, 45.2; nubbins, 13.2) 58.4 bushels, and of thoroughly air-dry corn 43.6 bushels, with 86 per cent. of

a stand. There was 33.53 per cent. of water in corn when husked. At that time it took 70.7 pounds of ear corn to make a bushel of shelled corn, and 94.7 pounds to make a bushel of thoroughly air-dry corn.

This variety is not desirable for general culture in this state.

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

No. 24, Smith's premium white dent; seed grown by M. H. Smith, DeSoto, Washington Co., Neb. *Synonym—No. 21, Clark's premium 110-day;* seed from *Farm, Field Stockman.*

Type, fairly uniform. Ears, 8½ to 9 inches long, 2.1 to 2.4 inches in diameter. Cobs, white, large, 1.2 to 1.5 inches in diameter. Ears, vary from smooth to rough, tapering to nearly cylindrical; butt and tip, evenly rounded. Juncture, medium, ⅝ to ⅞ inch in diameter. Kernels, wedge-shaped to nearly rectangular, ⅝ inch long, ⅜ inch wide; white above, horn-white below; crease-dented, sometimes pinched. Usually 16 to 18 rows; some space between.

An average of the two plats gives height of stalk, 11¼ feet; of ear, 5¼ feet. Seven per cent. of the stalks were barren. The season was from May 10th to October 1st, or about 145 days. One hundred good ears weighed 75 pounds; nubbins, 49; average ears 67. The number of good ears per acre was 6,480; of nubbins, 3,060; total, 9,540. The yield per acre of shelled corn, as husked, was (good ears, 77 ; nubbins, 23.6) 100.6 bushels, with 85 per cent. of a full stand, and of thoroughly air-dry corn 87.8 bushels. There was 22.29 per cent. of water in shelled corn when husked. At that time it took 68.3 pounds of ear corn to make a bushel of shelled corn, and 78.2 pounds to make a bushel of thoroughly air-dry corn.

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

No. 81, Piasa pride; seed from T. Chester.

Type, uniform, except in color. Ears, 8 to 9½ inches long, 2.2 to 2 4 inches in diameter. Cobs, red, large, 1.3 to 1.5 inches in diameter. Ears, rather smooth, slightly tapering to cylindrical; butt, compressed rounded; tip, rounded, fairly filled. Juncture, rather large, ⅝ to ⅞ inch in diameter. Kernels, wedge-shaped, 9-16 inch long, ⅜ inch wide, crease-dented. Kernels on some ears are white above and horn-white below; on others they are striped longitudinally with red. Rows, 16 to 18, some space between.

The average height of stalk was 13¾ feet; of ears, 7¾ feet. The season was from May 14th to October 2d, or about 140 days. One hundred good ears weighed 95 pounds; nubbins, 53; average ears, 83. The yield per acre of shelled corn was (good ears, 89.2; nubbins, 18.1) 107.3 bushels, and of thoroughly air-dry corn 85.4 bushels, with a full stand. There was 29.13 per cent. of water in corn when husked. At that time it took 72.4 pounds of ear corn to make a bushel of shelled corn, and 91 pounds to make a bushel of thoroughly air-dry corn.

Probably desirable on fertile river bottom lands of southern Illinois.

No. 127, Strawberry; Synonyms—No. 134, Bloody butcher; No. 136, Calico; seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 8 to 9 inches long, 1.9 to 2.1 inches in diameter. Cobs, white, sometimes tinged with red, medium sized, 1.3 inches in diameter. Ears, generally smooth, tapering; butt, slightly rounded; tip, pointed and not well filled. Juncture, large, ¾ to 1 inch in diameter. Kernels, thick, polygonal to nearly oval, 7-16 inch long, ⅞ inch wide, long dimple dented. The ground color is yellow above, orange to red below, striped longitudinally with red Rows, 12 to 14; space between, very large.

Taking an average of the three plats, the height of stalk was 10½ feet; of ear, 5 feet. One hundred good ears weighed 67 pounds; nubbins, 41; average ears, 57. The yield per acre of shelled corn, as husked, was (good ears, 57.6; nubbins, 21.7) 79.3 bushels, and of thoroughly air dry corn 61.9 bushels. There was 30.47 per cent. of water in shelled corn when husked. At that time it took 76.7 pounds of ear corn to

make a bushel of shelled corn, and 98.1 pounds of ear corn to make a bushel of thoroughly air-dry corn.

According to the field notes taken, No. 127 barely ripened in 130 days, while Nos. 134 and 136 did not mature.

Inasmuch as the percentage of water in the corn was as high in No. 127 as in Nos. 134 and 136, and in other respects they are so similar, they are classed as the same. The variety is probably not desirable for general culture.

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

No. 55, Golden beauty; seed from U. S. Department of Agriculture. *Nos. 108 and 116, Golden beauty;* seed from *Farm, Field and Stockman. Synonym—No. 45, Golddust;* seed from T. Chester.

Type, uniform. Ears, 10½ to 11½ long, 1.9 to 2.2 inches in diameter. Cobs, red, medium sized, 1.1 to 1.3 inches in diameter. Ears, smooth, tapering; butt, not rounded; tip, bluntly pointed, not entired filled. Juncture, large, ⅝ to 1 inch in diameter. Kernels, loose; broadly wedge-shaped to nearly rectangular; corners, rounding; thick, ½ to 9-16 inch long, 7-16 to ½ inch wide; yellow above, light orange below; long dimple- to crease-dented, tip kernels not dented. Rows, 12 to 14; space between, distinct.

An average of the four plats, of which 108 and 116 were the poorer on account of location, gave height of stalk 11¼ feet; of ear, 5¾ feet. Seven per cent. of the stalks were barren. Did not mature in a season of from May 14th to October 1st, or 140 days. One hundred good ears weighed 85 pounds; nubbins, 46; average ears, 75. The number of good ears per acre was 6,735; of nubbins, 2,115; total, 8,850. The yield per acre of shelled corn, as husked, was (good ears, 78.; nubbins, 13.1) 91.1 bushels, and of thoroughly air-dry corn 71 bushels, with 88 per cent. of a full stand. There was 30.74 per cent. of water in corn when husked. At that time it took 72.4 pounds of ear corn to make a bushel of shelled corn, and 93.2 pounds to make a bushel of air-dry corn.

The chief attraction of this variety seems to be its long smooth ears. The cob is relatively large and kernel short, and there is considerable space between rows.

No. 96, Queen's golden; Synonym—No. 99, Imperial; seed from *Farm, Field and Stockman.*

Type, variable. Ears, 9 to 11 inches long, 2.1 to 2.6 inches in diameter. Cobs, red, very large, 1.3 to 1.6 inches in diameter. Ears, smoothish, slightly tapering; butt, swollen, not rounded; tip, rounded and unfilled. Juncture, large, ⅞ to 1⅛ inches in diameter. Kernels, very loose; thin, very broadly wedge-shaped; corners, sometimes rounding, ½ to ⅝ inch long, 7-16 to ½ inch wide, crease-dented, somewhat pinched; light yellow above, yellow to orange below. Rows, 14 to 20; space between, slight.

The average height of stalk was 10½ feet; of ear, 5½ feet. Did not mature with season from May 24th to October 2d, or in 130 days.

No. 100, Pride of Missouri; seed from *Farm, Field and Stockman.*

Variable in type. Ears, 8 to 10 inches long, diameter 2 inches. Cobs, red, medium sized, 1.2 to 1.3 in diameter. Ears, smooth, tapering; butt, not rounded; tip, pointed, not filled. Juncture, large, ¾ to ⅞ inch in diameter. Kernels, loose; thick, polygonal, ½ to ⅜ inch long, 5-16 inch wide, round to long dimple dented, near tip not denting; yellow to orange above, orange below. Rows, 14 to 16; space between, large.

Did not mature in season from May 22d to October 2d.

No. 111, Missouri mammoth; seed from *Farm, Field and Stockman.*

Uniform in type. Ears, 9 to 9½ inches long, 2.2 inches in diameter. Cobs, white, rather large, 1.3 to 1.4 inches in diameter. Ears, rather smooth, tapering; butt, well rounded; tip, pointed and well filled. Juncture, small, ½ to ¾ inch in diameter. Kernels, loose; wedge-shaped, ½ to 9 16 inch long, 5 16 inch wide, crease-dented; yellow above, orange below. Rows, 16 to 18; space between, slight.

Did not mature with season from May 22d to October 2d.

No. 119, Long John; seed from *Farm, Field and Stockman.*

Variable in type. Ears, 9 to 10¼ inches long, diameter 2 to 2.1 inches. Cobs, red or white, rather large, 1.3 to 1.4 inches in diameter. Ears, smooth, nearly cylindrical; butt, compressed or scarcely rounded; tip, blunt. Juncture, small, ½ to ⅝ inch in diameter. Kernels, thick, wedge-shaped, 7-16 to ½ inch long, ¼ to ⅜ inch wide, crease-dented; whitish to yellow above, orange below. Rows, 16 to 20; no space between.

Did not mature in season from May 22d to October 2d.

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

No. 95, Mammoth club; seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 8½ to 9 inches long, diameter 2.4 to 2.6 inches. Cobs, red, very large, 1.6 to 1.7 inches in diameter. Ears, rough, tapering; butt and tip, slightly rounded, latter but partially filled. Juncture, large, ¾ to 1¼ inches in diameter. Kernels, loose; rather narrowly wedge-shaped, ½ to 9-16 inch long, ⅝ inch wide, crease-dented, pinched, ragged; yellow above, orange below. Rows, 18 to 22; space between, slight.

Did not mature in season from May 22d to October 2d.

No. 101, Illinois premium dent; seed from *Farm, Field and Stockman.*

Type, uniform. Ears, 9 to 11 inches long, diameter 2.2 to 2.4 inches. Cobs, red, large, 1.4 to 1.5 inches in diameter. Ears roughish, tapering; butt, slightly rounded; tip, bluntly rounded, fairly filled. Juncture, ¾ to 1 inch long. Kernels, rather narrowly wedge-shaped, 9 16 to ⅝ inch long, 5.16 to ⅜ inch wide, crease dented; whitish to yellow above, orange below. Rows, 16 to 20; space between, slight.

Did not mature in season from May 22d to October 2d.

No. 120, Chester county mammoth; seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 8½ to 9 inches long, diameter 2.4 to 2.7 inches. Cobs, red, very large, 1.4 to 1.7 inches in diameter. Ears, rough, tapering; butt, slightly rounded; tip, evenly rounded and well filled. Juncture, large, ¾ to 1⅛ inches long. Kernels, firmly fixed; thick, narrowly wedge shaped; cross section of kernel, often nearly square, 9-16 inch long, 5-16 inch wide; dimple- to crease-dented, often pinched and ragged; whitish to yellow above, orange below. Rows, usually 22, irregular, no space between.

Did not mature in the season from May 22d to October 2d.

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

No. 62, Gould Hill prolific; seed from T. Chester.

Type, variable. Ears, 9 to 10 inches long, 2.1 to 2.3 inches in diameter. Cobs white, large, 1.3 to 1.5 inches in diameter. Ears, smooth, tapering; butt, compressed rounded; tip, pointed, well filled. Juncture, medium, ⅝ to ¾ inch in diameter. Kernels, rectangular to slightly polygonal, 9 16 inch long, 7-16 inch wide, long dimple-dented; white above, horn-white below. Rows, 12 to 16; space between, apparent.

Did not mature in season of 140 days. This variety is remarkable for its high stalks. The average height was 14½ feet, and the average height of ears was 9 feet. One stalk was measured that was 16¼ feet long, and whose ear was 10 feet from the ground. It is not a desirable variety.

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

No. 22, Piasa king; seed grown by F. C. Pickard, Godfrey, Madison Co., Ill.; *Synonyms—No. 76, St. Clair: No. 77, St. Charles;* seed from T. Chester. *No. 151, St. Charles improved; No. 152, Madison county mammoth;* seed from *Farm, Field and Stockman.*

Type, fairly uniform. Ears, 9 to 11¾ inches long, 2.2 to 2.6 inches in diameter. Cobs, red and white, usually red, large, 1.2 to 1.6 inches in diameter. Ears, roughish,

tapering to nearly cylindrical; butt, slightly rounded; tip, rounded and fairly filled. Juncture, medium, ⅝ to ⅞ inche in diameter. Kernels, wedge-shaped to slightly polygonal, ⅝ to ¾ inch long, ⅜ inch wide; white above, horn-white below; crease-dented, pinched. Rows, 14 to 22, space between, usually slight.

Yields are not reported for Nos. 76 and 152, on account of a poor stand. An average of the other three plats gave height of stalk, 12¼ feet; of ears, 6¾ feet. Four per cent. of the stalks were barren. Did not mature in a season from May 10th to October 1st, or 145 days. One hundred good ears weighed 99 pounds; nubbins, 5.2; average ears, 82. The number of good ears per acre was 5,230; of nubbins, 2,950; total, 8,180. The yield per acre of shelled corn, as husked, was (good ears, 70.3; nubbins, 19) 89.3 bushels, with 74 per cent. of a full stand, and of thoroughly air-dry corn 60.7 bushels. There was 39.24 per cent. of water in corn as husked. At that time it took 75 pounds of ear corn to make a bushel of shelled corn, or 110 pounds to make a bushel of thoroughly air-dry corn.

This variety is probably worthy of a trial on the fertile river bottom lands south of the latitude of Alton.

No. 74, Hominy; seed from T. Chester.

Type, uniform. Ears, 8½ to 9 inches long, diameter 2.25 to 2.6 inches. Cobs, red or white, large, 1.3 to 1.6 inches in diameter. Ears, rough, cylindrical, compressed rounded; tip, rounded, fairly filled. Juncture, ½ to ⅝ inch long. Kernels, thin, rather narrowly wedge-shaped, ⅝ to ¾ inch long, 5-16 to ⅜ inch wide; white above, horn-white below, crease-dented, pinched. Rows, 16 to 20; space between, slight.

Did not mature in season of 140 days.

No. 78, Shoe peg; seed from T. Chester.

Ears, 8 to 9½ inches long, diameter 2.1 to 2.2 inches. Cobs, white, small, 1 to 1.1 inches in diameter. Ears, tapering, rough; butt, nicely rounded; tip, pointed and filled. Juncture, medium, ⅜ to ¾ inch wide. Kernels, narrowly wedge-shaped, ⅝ inch long, 5-16 inch wide, long dimple- to crease-dented, pinched; white above, horn-white below. Rows, 16 to 20; space between, slight.

Did not mature in season from May 14th to October 2d, or about 140 days.

NON-MATURING VARIETY—*Kernels, colored, not yellow*—Ears, smooth.

No. 80, Piasa pet; seed from T. Chester. *No. 141, Piasa pet; Farm, Field and Stockman.*

Type, uniform, except in color. Ears, 9½ to 10½ inches long, 2.4 to 2.6 inches in diameter. Cobs, red or white, large, 1.3 to 1.5 inches in diameter. Ears, rather smooth, nearly cylindrical; butt, compressed rounded; tip, rounded and not filled. Juncture, small, ⅓ to ¾ inch in diameter. Kernels, broadly wedge-shaped; corners, rounding; ⅝ inch long, 7-16 inch wide, crease-dented; white above, white to pink below. Rows, 14 to 16; space between, apparent.

Taking an average of the two plats, the height of stalk was 11½ feet; of ear, 6¾ feet. Four per cent. of the stalks were barren. Did not mature in season from May 14th to October 2d. The yield of shelled corn per acre was (good ears, 77.1; nubbins, 14.6) 91.7 bushels, and of thoroughly air-dry corn 60.4 bushels. There was 42.54 per cent. of water in corn when husked. At that time it took 80.9 pounds of ear corn to make a bushel of shelled corn, and 126.4 pounds to make a bushel of thoroughly dry corn.

RESULTS IN DETAIL—EXPLANATIONS TO TABLES.

Table 1.—The germinating power of fifty kernels of each of the varieties of seed planted on Plats 1 to 91, except Nos. 15 and 62, was tested in the Geneva apparatus at an average temperature of 79 degrees Fahrenheit. [*For description of Geneva apparatus see Bulletin No. 3, p. 30.*]

The number of plants growing in 100 hills on plats 1 to 25, and in 18 hills on plats 26 to 91, was ascertained 14 to 15 days after planting; and in 18 hills on plats 92 to 169 the number was ascertained 11 days after planting. The percentage of kernels producing plants is given in the table.

September 14th to 20th, the number of stalks and the number of barren stalks growing in 90 hills on plats 1 to 25, and in 81 hills on plats 26 to 169 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 what appeared to be an average hill, usually of four stalks each bearing an ear, and taking an average of the measurements thus obtained.

Weekly observations were made upon the tasseling of the several plats, beginning July 10th and ending August 15th. The date given in the table indicates that the condition specified was reached during the preceeding week.

Observations were made upon the ripeness of the corn at three periods, September 10th and 14th, September 21st and 22d, and October 1st and 2d. The date given in the table indicates that maturity was reached during the ten days preceeding the observation, except the first date, which, in a few instances, may be more than ten days after maturity.

Table 2.—For plats 1 to 25 there is given the yield in pounds of ear corn on each of the eight rows, 10 rods long, or 1-72d of an acre; for plats 26 to 91, the yield on the west and middle thirds of the plats, 1-40th of an acre; for plats 92 to 113, the yield on each one-sixth of the 1-20th-acre plats; and on plats 113 to 166 the yield on each one-third of the 1-40th-acre plats, is given.

Plats 1 to 9 were husked October 30th; plats 10 to 25, October 27th; plats 26 to 68, October 20th; plats 69 to 91, October 25th; plats 92 to 95, November 7th; plats 96 to 146, November 13th and 14th; and plats 146 to 166, November 17th.

Table 3.—In plats 1 to 25 forty-five hills, or 1-72d of an acre, and in plats 16 to 166 fifty-four hills, or 1-60th of an acre, were used to ascertain the number and weight of good ears and nubbins, and 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 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

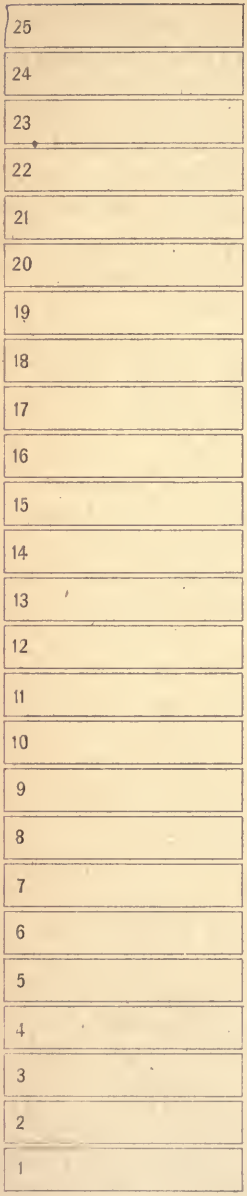
weight, as given in table 2. An average pint-sample of the shelled corn of each variety, with the few exceptions noted in the table, was sent to the Station laboratory and the percentage of water ascertained. From these data, there were calculated the yield per acre of corn containing 11 per cent. of 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.

One to five (usually three) days elapsed from the time the corn was husked until it was shelled. It is, therefore, a slight error of statement to give the percentage of water as that of the corn when husked; but as the percentage of shelled corn in ear corn was calculated from the field weights of the ear corn, it causes no error in giving yields.

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.

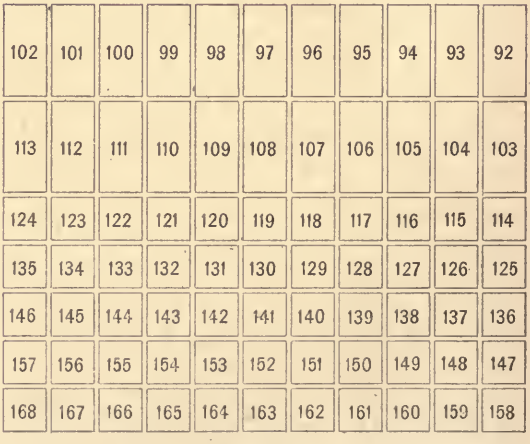
Table 5.—The yield of the 25 plats of tract (*a*) during the season of 1887 is given in this table. The corn was planted May 14th and husked October 25th to 27th. The yield per acre was calculated from three-fourths of the plat, or 1-12th of an acre. The percentage of water was ascertained from sample ears, instead of from an average sample.

DIAGRAMS OF PLATS USED IN EXPERIMENT NO. 1.



(*a*)

(*b*)



(*c*)

[*Note to Diagrams.*—Tract (*a*) had 25 plats, Nos. 1 to 25, each containing 8 rows, 45 hills or 10 rods long. Tract (*b*) had 66 plats, Nos. 26 to 91, each 9 hills or 2 rods square, except Nos. 51 to 54 and 76 to 91, which were 4 by 9 hills each. Tract (*c*) had 76 plats, Nos. 92 to 168. Nos. 92 to 113 were each 9 by 18 hills or 2 by 4 rods, and Nos. 114 to 168 were each 9 hills or 2 rods square. The position of the tracts in relation to each other is not shown.]

TABLE 1. NUMBER OF PLAT; NAME OF VARIETY; FROM WHOM RECEIVED; WHERE GROWN; GERMINATION IN APPARATUS; IN FIELD; STAND; BARREN STALKS; SIZE OF EARS; OF COBS; DATE OF TASSELING; OF MATURITY.

No. of plat.	Name of variety.	From whom rec'd.	Where grown.	Page of description.	Percentage germinating in Geneva apparatus.	Percentage germinating in field.	Percentage of a full stand of stalks.	Percentage of barren stalks.	Height, feet. Stalks.	Height, feet. Ears.	Av. length 3 specimen ears, inches.	Av. circum. 3 specimen ears, inches.	Av. circum. of 3 cobs, inches.	First tassel in week ending	Full tassel in week ending	Maturity in 10 days ending
	Tract (a)—Yellow dent	*varieties.*														
1	Edmonds corn	H. P. Edmonds	Taylor, Ill.	50	98	84	88	9	10.25	4.5	7.93	6.42	3.54	July 10	July 18.	Sept. 10.
2	Legal tender	Nims Bros	Emerson, Iowa	53	100	81	92	22	11.	5.	9.78	7.08	4.	July 18	July 25.	Sept. 21.
3	Howard's improved yellow	H. Howard	Marshall, Mc	60	66	53	73	19	12.25	7.25	10.	7.25	4.17	July 18	Aug. 1.	Oct. 1.
4	Leaming	University farm	Champaign, Ill.	54	100	72	84	7	12.	5.	9.	7.17	4.25	July 18	July 25.	Sept. 21.
5	Clark's 100-day	*F., F. and S.*		54	96	48	73	8	12.25	5.5	9.	7.25	3.92	July 18	July 25.	Sept 21.
6	Hogue's yellow dent	R. Hogue	Crete, Neb.	57	100	65	86	13	11.	5.	9.17	7.25	4.17	July 18	Aug. 1.	Sept. 21.
7	Orange pride yellow	J. H. McConnell	Rigdon, Ind.	61	100	73	88	16	12.75	5.75	9.78	7.17	4.	July 18	Aug. 1.	Oct. 1.
8	Steward's imp. yellow dent	S. W. Steward	Amanda, Ohio	62	100	80	98	13	12.75	6.	8.58	7.	3.75	July 18	Aug. 1.	Oct. 1.
9	Golden rod	E. Morris	Decatur, Mich.	49	100	85	88	4	10.75	4.75	9.5	7.	4.08	July 18	July 25.	Sept. 10.
10	Leaming	University farm	Champaign, Ill.	54	100	72	86	7	11.75	5.5	.....	.....	.....	July 18	July 25.	Sept. 21.
11	Riley's favorite	J. Riley	Thorntown, Ind.	55	100	83	82	6	11.25	5.25	8.67	6.83	3 83	July 18	July 25.	Sept. 21.
12	Prairie queen	Nathaniel Pease	Quincy, Ill.	48	100	66	84	7	9.75	4.5	7.83	6.5	3.92	July 10	July 25.	Sept. 10.
13	Murdock	University farm	Champaign, Ill.	48	86	66	†101	7	10.5	5.5	8.08	6.5	3.83	July 18	July 25.	Sept. 10.
14	Murdock	Wm. T. Lamb	Ridott, Ill.	48	92	66	74	3	11.5	5.5	7.83	6.25	3.58	July 18	July 25.	Sept. 10.
15	Champaign	University farm	Champaign, Ill.	57	...	54	87	9	11.25	5.	8.25	7.08	3.75	July 18	July 25.	Sept. 21.
16	Leaming	" "	" "	54	100	66	94	11	11.75	5.75	.....	.....	.....	July 18	July 25.	Sept. 21.
	Tract (a)—Mixed dent	*varieties.*														
17	Lape's mixed dent	H. T. Lape	Roseville, Ill.	59	94	45	72	18	11.25	5.	8.83	6.92	3.83	July 18	July 25.	Sept. 21.
18	Smith's mixed dent	University farm	Champaign, Ill.	52	98	77	97	7	11.	5.25	8.83	6.58	3.83	July 10	July 25.	Sept. 10.
	Tract (a)—White dent	*varieties.*														
19	Burr's white	University farm	Champaign, Ill.	58	98	79	92	7	12.25	6.	8.5	6.83	3.58	July 10	July 25.	Sept. 21.
20	Princeton	Wm. T. Lamb	Ridott, Ill.	52	100	88	94	7	10.25	4.5	7.75	6.5	4.08	July 10	July 25.	Sept. 10.
21	Clark's premium 110-day	*F., F. and S.*		64	100	64	83	7	11.25	5.	8.83	7.17	4.	July 18	July 25.	Oct. 1.

**Farm, Field and Stockman,* Chicago. †Five kernels planted in a hill.

TABLE 1—*Continued.*

No. of plat.	Name of variety.	From whom rec'd.	Where grown.	Page of description.	Percentage germinating in Geneva apparatus.	Percentage germinating in field.	Percentage of a full stand of stalks.	Percentage of barren stalks.	Height, feet.		Av. length 3 specimen ears, inches.	Av. circum. 3 specimen ears, inches.	Av. circum. of 3 cobs, inches.	First tassel in week ending	Full tassel in week ending	Maturity in 10 days ending
									Stalks.	Ears.						
22	Piasa King	F. C. Pickard	Piasa, Ill.	66	98	57	81	9	13.	7.25	9.17	6.75	4.	Aug. 1	Aug. 8.	Unripe.
23	Champion of the north	A. L. Goddard	Waucoma, Iowa	51	92	56	78	8	10.	4.25	8.	6.25	3.67	July 10	July 18	Sept. 10.
24	Ohio white dent	M. H. Smith	De Soto, Neb.	64	100	65	86	6	11.25	5.25	8.92	7.	3.83	July 18	Aug. 1.	Oct. 1.
25	Burr's white	University farm	Champaign, Ill.	58	98	77	90	5	11.25	5.25	.....	.....	.....	July 18	July 25	Sept. 21.
	Tract (b)—Yellow dent varieties.															
26	Leaming	University farm	Champaign, Ill.	54	100	89	94	18	11.	5.75	8.92	7.	4.17	July 10	July 25	Sept. 22.
27	Will's 90-day	*F, F. and S.*	.....	48	100	81	88	15	10.5	4.75	8.5	6.25	3.83	July 18	July 25	Sept. 10.
28	Dakota 90-day	" "	.....	50	98	85	79	7	8.25	3.75	7.33	6.08	3.08	July 10	July 18	Sept. 10.
29	Zeigler's 90-day	" "	.....	50	100	86	91	11	11.	5.5	8.33	7.08	3.83	July 18	July 25	Sept. 22.
30	Goddard's favorite	" "	.....	48	94	81	94	13	10.5	4.5	8.17	6.25	3.83	July 10	July 25	Sept. 10.
31	Dammell's	T. Chester	.....	48	100	83	82	8	11.5	5.25	8.	6.5	3.83	July 18	July 25	Sept. 22.
32	Kane county pride	R. Shedden	Pingree Grove, Ill.	50	98	83	83	9	10.75	5.	8.17	6.67	3.5	July 10	July 25	Sept. 10.
33	Feeders' favorite	H. & L. K. Seymour	Payson, Ill.	61	96	86	76	10	12.25	6.5	9.67	6.5	3.5	July 18	Aug. 1.	Oct. 2.
34	Bonus Prairie yellow	Allen E. Smith	Marengo, Ill.	48	100	96	99	9	9.5	4.75	8.17	6.17	3.66	July 10	July 18	Sept. 10.
35	Sibley's pride of the north	T. Chester	Champaign, Ill.	49	100	93	106	10	8.25	4.	7.5	5.58	3.08	July 10	July 18	Sept. 10.
36	North star	"	..... Dakota	49	94	92	82	3	9.	4.5	7.58	5.92	3.58	July 10	July 18	Sept. 10.
37	King of the earliest	A. L. Goddard	Waucoma, Iowa	50	88	88	96	11	8.5	3.75	7.25	6.17	3.42	July 10	July 18	Sept. 10.
38	Hill's improved 90-day	T. Chester	.....	57	88	86	102	10	9.25	4.75	7.58	6.17	3.42	July 10	July 18	Sept. 10.
39	Log cabin	C. N. Butt	Knoxville, Ill.	58	94	88	96	14	11.	5.5	9.5	7 33	4.42	July 18	July 25	Sept. 22.
40	Swengel corn	Swengel Bros	Neoga, Ill.	61	100	88	106	15	12.	6.	10.75	6.67	3.58	July 18	Aug. 1	Oct. 2.
41	Seeknofurther	G. W. Hartsock	Gifford, Ill.	55	100	92	82	0	11.	5 5	9.25	6.58	3.83	July 18	July 25	Sept. 22.
42	Yellow Blanchard	T. Chester	.....	54	100	85	92	20	12.5	6.	9.5	7.33	4 42	July 18	Aug. 1	Sept. 22.
43	Vicker Blanchard	"	.....	62	98	90	91	14	12.25	6.25	8.5	7.5	4.5	July 18	Aug. 1	Oct. 2.
44	Ripley 120 day	"	.....	58	100	95	79	12	11.75	5.5	9	7.17	3 83	July 18	Aug. 1	Sept. 22.
45	Golddust	"	.....	65	44	63	98	16	12 25	6.5	10.67	6 66	4.	July 25	Aug. 8	Unripe.
46	Yellow king	"	.....	62	84	83	83	21	12.5	6 25	9 58	7.25	4.5	July 18	Aug. 1	Oct. 2.

47	Leaming	E. E. Chester	Champaign, Ill.	54	100	88	78	15	11.25	5.25	9 83	6.92	4 08	July 18	Aug. 1	Sept. 22.
48	Leaming	University farm	"	54	100	83	80	11	11.5	5 25	8.66	7 25	4 25	July 18	July 25	Sept. 22.
49	Fisk	Eli Fisk	Havana, Ill.	55	98	74	87	12	11.75	5.75	9.08	6.83	3 83	July 18	Aug. 1	Sept. 22.
50	Turkey	T. Chester	Iowa	56	98	83	88	12	10.25	4 5	8.83	6	3.58	July 10	July 25	Sept. 10.
51	Kirby	"	"	56	98	90	78	6	10.25	4 75	8.42	7 67	4.42	July 18	July 25	Sept. 22.
52	Menhall	"		62	96	81	77	3	11.25	5.75	10.67	7 33	4 25	July 18	July 25	Oct. 2.
53	Golden beauty	"	Alton, Ill.	56	100	64	83	14	11.	6.	9 83	6.67	3 92	July 18	Aug. 1	Sept. 22.
54	Queen of the prairie	"	"	48	100	92	74	0	9.75	4.5	8.17	5.92	3 5	July 10	July 25	Sept. 10.
55	Golden beauty	U. S. Dep't of Agric.		65	90	64	85	12	12.25	6 5	10.92	6.42	3 75	July 18	Aug 1	Unripe.
	Tract (b)—White dent varieties.															
56	White cap	C. Leete & Son	Moorheadville, Pa.	52	100	97	96	9	9.	3.5	8 67	6.67	3.83	July 10	July 18	Sept. 10.
57	Ohio white cap	*F., F. and S.*		52	94	85	83	12	8.5	3.5	10.25	6.33	4.08	July 10	July 18	Sept. 10.
58	Woodworth 80 day	" "		52	100	86	90	10	9 75	4.	8.83	6 58	4.17	July 10	July 25	Sept. 10.
59	Zeigler's 90-day	" "		58	100	88	87	14	11.5	5.75	9.58	7.25	4.17	July 18	Aug. 1	Sept. 21.
60	Rural heavy dent	" "		62	100	89	90	18	12.25	6.75	10.33	7.5	4.75	July 25	Aug. 1	Oct. 2.
61	Early Wisconsin white cap	" "		52	100	88	83	8	9.5	4.5	8.42	6.33	3 67	July 10	July 18	Sept. 10.
62	Gould hill prolific	" "		66		89	80	6	14.5	9.	9 83	7.	4.25	Aug. 1	Aug. 8	Unripe.
63	Smith's white dent	Allen E. Smith	Marengo, Ill.	52	100	92	85	6	9.5	3.75	8.17	6.5	3.75	July 10	July 18	Sept. 10.
64	Burr's white	University farm	Champaign, Ill.	58	98	82	102	20	11.	4 75	9.	7.08	3.92	July 18	July 25	Sept. 21.
65	White dent	F. Helms	Belleville, Ill.	63	98	97	91	9	12.25	6.5	10.08	6.42	3 75	July 18	Aug. 1	Oct. 2.
66	Giant Normandy	U. S. Dep't of Agric.		58	100	76	83	7	12.5	6.5	8.67	6.83	4.	July 18	Aug. 1	Sept. 22.
67	Iowa king	T. Chester	Iowa	51	90	82	56	9	11.25	5.	10.5	6.83	4 5	July 10	July 25	Sept. 10.
68	Dresback	"	Champaign, Ill.	58	94	93	75	16	11.75	5.75	9.33	6.75	4.	July 18	July 25	Sept. 22.
69	White Hunt	"	"	63	26	42	59	13	12.75	6.75	10.17	8.58	5.25	July 18	Aug. 1	Oct. 2.
70	Common early white	E. E. Chester	"	59	84	88		23	12.5	5.75	9.83	6.42	3.75	July 10	July 25	Sept. 22.
71	Gourd-seed	"	"	59	100	92		16	12.	5.75	9.17	7.	3.67	July 18	July 25	Sept. 22.
72	Champion white pearl	T. Chester	"	58	86	88	105	16	11.25	6.	8.58	6.58	3.67	July 18	July 25	Sept. 22.
73	Improved Blountz prolific	"	"	63	98	38	68	22	11.5	5.5	10.33	7.58	4.42	July 18	Aug. 1	Oct. 2.
74	Hominy	"	"	67	72	63	100	28	12.5	6.75	8.92	7.5	4.25	July 18	Aug. 8	Unripe.
75	Ivory white	"	"		24	24	44	18	11.25	4.5	9.	7.75	4.33	July 10	July 25	Sept. 10.
76	St. Clair	"	St. Clair Co., Ill.	66	66	43	42	7	12.	6.75	10.	8.	4.5	July 18	Aug. 1	Unripe.
77	St. Charles	"	"	66	96	68	67	1	12.75	7.5	11.08	7.92	4.33	July 25	Aug. 1	Unripe.
78	Shoe peg	"		67	58	88	96	0	11.75	5.75	8.67	6.58	3.42	July 25	Aug. 1	Unripe.
79	Hickory king	"	Onarga, Ill.	63	38	7	16	0	10.25	5.25	8.67	5.58	2.83	July 18	Aug. 1	Oct. 2.
	Tract (b)—Mixed dent varieties.															
80	Piasa pet	T. Chester	Alton, Ill.	67	86	76	77	1	12.75	7.25	10.08	7.67	4.5	July 25	Aug. 1	Unripe.
81	Piasa pride	"	"	64	86	85	100	1	13.75	7.75	9.25	7.33	4.33	July 25	Aug. 1	Oct. 2.
82	Smith's mixed dent	Allen E. Smith	Marengo, Ill.	52	100	90	83	1	8.5	4.25	7.83	6.25	3.5	July 10	July 18	Sept. 10.
83	Calico	E. E. Chester	Champaign, Ill.	60	66	95	92	1	10.75	5.5	8.92	6.58	3.75	July 18	July 25	Sept. 22.

TABLE 1—*Continued.*

No. of plat.	Name of variety.	From whom rec'd.	Where grown.	Page of description.	Percentage germinating in Geneva apparatus.	Percentage germinating in field.	Percentage of a full stand of stalks.	Percentage of barren stalks.	Height, feet. Stalks.	Height, feet. Ears.	Av. length 3 specimen ears, inches.	Av. circum. 3 specimen ears, inches.	Av. circum. of 3 cobs, inches.	First tassel in week ending	Full tassel in week ending	Maturity in 10 days ending
84	Bloody butcher	E. E. Chester	Champaign, Ill.	60	92	93	101	0	10.5	4 75	9 33	6.33	3.58	July 18	July 25	Sept. 10.
85	Common red	"	"	..	100	99	92	0	10.75	6.25	8.58	6.83	4.	July 18	July 25	Sept. 22.
	Tract (b)—Flint corn.															
86	White smut nose	T. Chester	Michigan	..	100	85	100	3	9.25	3.25	12.08	5.	3.08	July 10	July 18	Sept. 10.
87	White flint	"	"	..	66	92	120	2	9.75	3.75	11.42	4.75	2.75	July 10	July 18	Sept. 10.
88	Longfellow	"	"	..	86	53	105	0	8.75	3.	9.58	5.33	3.5	July 10	July 18	Sept. 10.
89	Compton	"	Iowa	..	76	86	106	1	9.25	3.5	10.	5.33	3.5	July 10	July 18	Sept. 10.
90	King Philip	"	"	..	72	92	81	3	8.75	2.75	9.83	4.67	2.75	July 6	July 10	Sept. 10.
	Tract (b)—Soft corn.															
91	Brazillian flour corn	T. Chester	Iowa	..	10	0	3	0	8.	3.75	.....	.....	.....	.....	.....	Oct. 2.
	Tract (c)— Yellow dent varieties.															
92	Yellow dent	*F., F. and S.*		..	..	43	33	1	9.5	4.25	8.67	7.08	4.25	uly 25	Aug. 1.	Oct. 2.
93	Legal tender	" "		53	.....	88	81	2	10.25	4.75	8.92	6.67	4.08	.....	Aug. 1.	Oct. 2.
94	Iowa king	" "		54	.....	90	78	1	11.25	5.75	8.58	6.92	4.25	July 25	Aug. 8.	Oct. 2.
95	Mammoth club	" "		66	.....	5	12	1	9.75	4.75	8.83	7.67	5.08	Aug. 1	Aug. 8.	Unripe.
96	Queen's golden	" "		65	.....	17	19	3	10.	5.	9.83	7.83	4.92	Aug. 1	Aug. 15.	Unripe.
97	Fisk	Eli Fisk	Havana, Ill.	55	.....	95	90	2	10.75	5.	8.58	6.42	3.82	July 25	Aug. 8.	Oct. 2.
98	Leaming	University farm	Champaign, Ill.	54	....	92	81	2	10.5	4.5	.....	.....	.....	July 25	Aug. 1.	Oct. 2.
99	Imperial	*F., F. and S.*		65	.....	68	72	1	11.	5.75	9.83	7.	4.42	Aug. 1	Aug. 15.	Unripe.
100	Pride of Missouri	" "		65	.....	96	91	2	10.5	5.25	9.17	6.25	3.83	Aug. 1	Aug. 8.	Unripe.
101	Illinois prem. yellow dent	" "		66	.....	57	52	4	10.25	5.25	9.83	7.17	4.42	Aug. 1	Aug. 8.	Unripe.
102	Gilt edge	" "		..	.....	98	80	2	10.5	5.	8.75	6.5	3.67	July 25	Aug. 8.	Unripe.
103	Smith's surprise	" "		56	.....	89	81	2	9.75	5.	9.33	6.5	3.67	July 25	Aug. 1.	Oct. 2.
104	Prairie Queen	" "		56	.....	92	87	3	10.	4 75	9.08	6.08	3.58	Aug. 1	Aug. 1.	Oct. 2.
105	Yellow Clauge 90-day	" "		49	.....	85	87	2	9.5	4.5	8.17	6.25	3.58	July 25	Aug. 1.	Oct. 2.

106	Extra early	*F., F. and S.*		..	.....	82	81	1	9.25	4.25	8.17	7.08	4.08	July 25	Aug. 1.	Sept. 24.
107	Southern queen	" "		56	.....	71	67	0	10.75	5.5	8.5	6.92	4.17	Aug. 1	Aug. 8.	Oct. 2.
108	Golden beauty	" "		65	.....	83	85	0	10.25	5.	10.08	6 25	3.92	Aug. 1	Aug. 15.	Unripe.
109	Farmers' favorite	" "		49	.....	86	81	0	10.25	5.	8.17	6.33	3.92	July 25	Aug. 1.	Oct. 2.
110	Queen of the prairie	" "		49	.....	67	74	0	8.75	4.	8.	6.25	3.58	July 25	Aug. 1.	Oct. 2.
111	Missouri mammoth	" "		65	.....	85	85	3	10.5	4.75	9.33	7.	4 17	Aug. 1	Aug. 8.	Unripe.
112	Mammoth bronze	" "		..	.....	3	4	0	9.25	4.75	.....	.....	.....	Aug. 1	Aug. 15.	Unripe.
113	Leaming	" "		54	.....	92	73	0	10.25	4.75	.....	.....	.....	Aug. 1	Aug. 8.	Oct. 2.
114	90 day yellow	" "		56	.....	90	86	0	10.	4.75	7.92	6.5	3.83	July 25	Aug. 8.	Oct. 2.
115	North star	" "		56	.....	92	85	0	9.75	4.75	8.83	6 5	3.75	July 25	Aug. 1.	Oct. 2.
116	Golden beauty	" "		65	.....	96	83	0	10.25	5.	9.67	6.17	3.75	Aug. 1	Aug. 8.	Unripe.
117	Ten-rowed corn	" "		..	.....	95	84	4	10.5	5.25	.....	.....	.....	July 25	Aug. 1.	Oct. 2.
118	Carle's prolific	" "		56	.....	92	89	2	10.5	5.25	9.75	5.83	3.25	July 25	Aug. 1.	Oct. 2.
119	Long John	" "		66	.....	99	86	3	10.25	5.25	9.92	6.33	4 08	Aug. 1	Aug. 15.	Unripe.
120	Chester Co. mammoth	" "		66	.....	54	53	1	9.5	4.	9.08	8.	4.92	Aug. 1	Aug. 15.	Unripe.
121	Northern queen	" "		58	.....	88	81	2	10.	5.	8.58	6.83	3.83	Aug. 1	Aug. 8.	Oct. 2.
122	Riley's favorite	" "		55	.....	95	86	1	10.25	5.5	8.67	6.67	3.67	Aug. 1	Aug. 8.	Oct. 2.
123	Clark's orange yellow	" "		57	.....	86	78	3	9.75	4.75	8.25	6.58	4.25	Aug. 1	Aug. 8.	Oct. 2.
124	Clark's Iroquois	" "		57	.....	84	81	2	9.5	4.5	7.67	6.42	3.75	July 25	Aug. 8.	Oct. 2.
125	Yellow rose	" "		..	.....	96	91	2	10.75	5.5	8.75	6.25	3.42	Aug. 1	Aug. 8.	Oct. 2.
126	Giant yellow mixed	" "		..	.....	72	70	3	10.75	5.	9.83	6.67	4.17	Aug. 1	Aug. 15.	Oct. 2.
	Tract (c)—Mixed dent varieties.																
127	Strawberry	*F., F. and S.*		64	..	90	90	4	10.25	5.	8.5	6.25	3.75	Aug. 1	Aug. 15.	Oct. 2.
128	Mixed dent	" "		..	.....	100	87	2	11.25	5.75	.....	.....	.....	Aug. 1	Aug. 8.	Oct. 2.
129	Calico	" "		60	.....	83	84	3	9.75	4.5	9.25	6.58	4.	July 25	Aug. 8.	Oct. 2.
130	Red husk, or dye corn	" "		..	.....	97	91	2	8.5	3.25	8.25	6.08	3.42	July 25	Aug. 1.	Sept. 14.
131	Black Mexican	" "		..	.....	43	44	5	10.25	5.25	8.83	6.75	4.25	Aug. 1	Aug. 15.	Unripe.
132	Black Hawk	" "		..	....	90	80	5	10.	4.5	9.67	6.08	3.58	Aug. 1	Aug. 8.	Oct. 2.
133	Mammoth red	" "		..	.....	75	71	9	10.75	5.75	8.67	7.97	3.92	Aug. 1	Aug. 15.	Unripe.
134	Bloody butcher	" "		64	.....	89	87	21	10.25	4.75	8.83	6.08	3.83	Aug. 1	Aug. 8.	Unripe.
135	White calico	" "		..	.....	97	91	3	8.75	4.	8.08	5.92	3.42	July 25	Aug. 1.	Oct. 2.
136	Calico, old variety	" "		64	.....	96	90	3	10.75	5 25	8.67	6.17	4.	Aug. 1	Aug. 8.	Unripe.
137	Northern bronze	" "		..	.....	93	86	3	9.	3.75	8.58	6.42	3.67	July 25	Aug. 1.	Sept. 24.
138	Dakota red	" "		53	.....	92	83	1	7.5	2.75	6.42	5.58	3.	July 18	July 25.	Sept. 14.
139	Rotten Clauge	" "		..	.....	80	82	2	9 75	4.5	8.58	6.5	3.83	July 25	Aug. 1.	Oct. 2.
140	Early valentine	" "		..	.....	44	52	1	10.	5.75	9.08	6.58	4 08	Aug. 1	Aug. 8.	Unripe.
141	Piasa pet	" "		67	.....	95	78	6	10.25	6.	9.33	7.	4.08	Aug. 8	Aug. 15.	Unripe.
142	Excelsior	" "		..	.....	48	48	7	11.5	6.75	8.5	6.83	4.	Aug. 1	Aug. 15.	Unripe.
	Tract (c)—White dent varieties.																
143	Burr's white	University farm	Champaign, Ill.	58	.....	93	87	4	10.	5.	9.	6.83	3.83	Aug. 1	Aug. 8.	Sept. 24.

TABLE 1—*Continued.*

No. of plat.	Name of variety.	From whom rec'd.	Where grown.	Page of description.	Percentage germinating in Geneva apparatus.	Percentage germinating in field.	Percentage of a full stand of stalks.	Percentage of barren stalks.	Height, feet. Stalks.	Height, feet. Ears.	Av. length 3 specimen ears, inches.	Av. circum. 3 specimen ears, inches.	Av. circum. of 3 cobs, inches.	First tassel in week ending	Full tassel in week ending	Maturity in 10 days ending
144	Kell's pride	*F., F. and S.*		..	.....	32	32	8	10.25	5.75	9.58	7.33	4.42	Aug. 1	Aug. 8.	Unripe.
145	Normandy giant	" "		..	.....	19	31	4	10.25	5.25	9.17	7.42	4.5	Aug. 1	Aug. 15.	Unripe.
146	Valley champion	" "		..	.....	86	78	5	10.5	5.5	9.08	6.42	3.85	Aug. 1	Aug. 15.	Unripe.
147	Blountz prolific	" "		..	.....	83	72	1 0	10.75	6.25	9.67	6.33	3.75	Aug. 1	Aug. 15.	Unripe.
148	Leeds mammoth	" "		..	.....	0	1	0	10.75	5.	.....	.....	.....	Aug. 1	Aug. 8.	Unripe.
149	Mammoth white	" "		..	.....	80	77	0 7	10.5	5.75	8.33	6.33	3.83	Aug. 1	Aug. 8.	Unripe.
150	Giant white mixed	" "		..	.....	4	9	17	10.	5.75	.....	.....	.....	Aug. 1	Aug. 15.	Unripe.
151	St. Charles improved	" "		66	.....	82	75	2	10.75	5.75	.....	.. ..	.....	Aug. 1	Aug. 15.	Unripe.
152	Madison Co. mammoth	" "		66	.....	14	21	4	10.5	5.75	.....	.....	.....	Aug. 1	Aug. 8.	Unripe.
153	Smith's favorite	" "		58	.....	97	94	3	10.5	5.25	7.83	6.83	4.25	Aug. 1	Aug. 15.	Oct. 2.
154	Hugh's choice	" "		58	.....	72	73	4	9.75	4.75	8.75	7.	4.00	Aug. 1	Aug. 8.	Oct. 2.
155	Stine's mammoth	" "		..	.....	92	91	4	10.	4.25	8.	6.17	3.67	Aug. 1	Aug. 8.	Unripe.
156	Starch white	" "		..	.....	89	89	3	10.	4.75	8.75	7.08	4.	Aug. 1	Aug. 8.	Unripe.
157	Champion white pearl	" "		58	.....	83	80	4	8.5	3.75	8.42	6.83	3.83	July 25	Aug. 1.	Oct. 2.
158	White queen	" "		58	....	97	90	2	9.25	4.5	8.58	6.67	3.75	July 25	Aug. 1.	Oct. 2.
159	White Wabash	" "		52	.....	93	83	1	8.	3.75	9.17	6.25	3.67	July 25	Aug. 1.	Sept. 24.
160	Iroquois white	" "		..	.....	92	78	1	8.75	3.75	9.25	6.25	3.92	.....	Aug. 1.	Oct. 2.
161	90-day white	" "		51	.....	92	81	1	8.5	4.	8.58	6.	3.42	.....	Aug. 1.	Sept. 24.
162	Burr's white	University farm	Champaign, Ill.	58	.....	90	89	2	9.	4.	. ....	. ....	.....	Aug. 1	Aug. 8.	Oct. 2.
163	Hickory king	*F., F. and S.*		63	.....	90	86	12	9.75	5.5	7.83	5.5	2.83	Aug. 1	Aug. 8.	Oct. 2.
	Tract (c)—Flint corn.															
164	White flint	*F., F. and S.*		..	.....	85	80	5	9.5	4.	11.	6.17	4.	Aug. 1	Aug. 8.	Unripe.
165	Yellow flint	" "		..	.....	89	83	3	9.75	4.75	9.58	6.17	3.67	Aug. 1	Aug. 15.	Unripe.
166	Compton's early yellow	" "		..	. ...	86	84	3	5.5	1.75	9.42	5.08	3.17	.....	July 25.	Sept. 14.

TABLE 2.—Field Weights of Ear Corn in Pounds.

No. of Plat	Row 1.	Row 2.	Row 3.	Row 4.	Row 5.	Row 6.	Row 7.	Row 8.	Yield of ear corn on 1-9th acre.
1	90.5	86	87	74.75	80	89	75.5	81	663.75
2	100.5	92.25	85	94	93.75	91.5	96.25	91.25	744.5
3	110	100.5	94.5	93.75	88.5	96	101.25	125.5	810
4	110.25	91	85.5	98	97.75	92.5	92.25	94.5	761.75
5	91	90	83.75	83	84	85.5	80	89.5	686.75
6	93.5	100.25	84.25	92.5	97	77.75	83	93.25	721.5
7	99 75	98.25	91.75	82.25	83	82.75	98.5	118	754.25
8	99.5	92.5	98	95.25	96.5	98.75	92	109	781.5
9	95.5	84.25	90.25	78.5	86	85	94.25	92.25	706
10	93.75	87.5	84.5	91	87.25	87	76.75	88.5	696.25
11	103.25	83.5	78	73.5	84	78	83.5	106.25	690
12	80	76.75	73.25	75.25	70.5	70	66.5	76	588.25
13	91	88	80.25	83.75	81	81.25	87.5	94	686.75
14	79	70.5	81 75	78.75	74.25	78	73	82.5	617.75
15	101.75	85.75	84.25	81.5	79.5	91	80.75	99	703.5
16	93.75	91.5	83	92.5	84	85	94.25	96.75	720.75
17	74.75	75	63.5	70	71.75	74.5	65.5	83.5	578.5
18	91	85	86.75	84.5	83	94 5	90.5	98	713.25
19	109.5	95.5	87.5	103	83	84.5	87	95.75	745.75
20	89.5	80	78.25	75 75	73.25	77.25	76	82.5	632.50
21	95.25	87.75	90	89 5	88.5	85.75	82.25	104.5	723.5
22	100.25	83.75	77	75.5	78	77	71.75	98.75	662
23	70	67.75	72.5	58.75	73.25	63.25	67	65.5	538
24	115.25	92.5	95	93.25	92.25	101.5	104	109.5	803.25
25	110	99.25	92.75	87	94.75	88.5	96.25	106	774.5
Sum	2,385.5	2,185	2,108.25	2,105.5	2,104.75	2,115.75	2,115.5	2,381.25	17,504.5

TABLE 2—*Continued.*

Weight ear corn on parts of 1-46th-acre plat.

No.	West Third.	Middle Third.	Two-Thirds.	No.	West Third.	Middle Third.	Two-Thirds.
26	56	53	109	58	53	47	100
27	53.5	46.5	100	59	56	49	105
28	34.5	26	60.5	60	80	63	143
29	56	49.5	105.5	61	51	50	101
30	42 25	45.25	87.5	62	52	52	104
31	66	57.5	123.5	63	48	38.5	86.5
32	40.5	41.5	82	64	70	57.5	127.5
33	57.5	50	107.5	65	66	63	129
34	41	46.5	87.5	66	74.5	57.5	132
35	40.5	39.5	80	67	54	49	103
36	45	45	90	68	66.25	71.25	137.5
37	37.5	37	74.5	69	62	53	115
38	43.5	47	90.5	70	72	64.5	136.5
39	65.25	51.5	116.75	71	78	65	143
40	55.5	52	107.5	72	56.5	54.5	111
41	55.5	56.5	112	73	52.5	43.5	96
42	51	53	104	74	59	45.5	104.5
43	69.5	69.5	139	75	24	27.5	51.5
44	48	55	103	76	23	24	47
45	56	48.5	104.5	77	23	35	58
46	60.25	46.5	106.75	78	21	30	51
47	69	57	126	80	33.5	32.5	66
48	61.5	54	115.5	81	31.5	26	57.5
49	60	48	108	82	19	19	38
50	52.5	55.5	108	83	32	29.5	61.5
51	28.5	30	58.5	84	30.5	28	58.5
52	35.5	34	69.5	85	29.5	29	58.5
53	34	28	62	86	16.25	16.75	33
54	21.5	18	39.5	87	20	21	41
55	66	49.5	115.5	88	13 5	13.5	27
56	43.5	38.5	82	89	18	19	37
57	46	43.5	89.5	90	19	18.5	37.5
				Sum	2,097.25	2,765 75	5,763.00

No.	Yield of ear corn, pounds, on one-six of plat.						Ear corn on 1-20th acre plat.
	1	2	3	4	5	6	
92	27.25	30	26.5	30	28	30	171.75
93	49	53.5	65.5	48.5	59 5	60	336.00
94	53.5	53.5	55	54	56.5	52.5	325.00
96	19.75	25.75	24	27	24.5	20	141.00
97	49	51	55.5	55.5	56	58	325 00
98	49	47.75	56.5	56 5	55.5	52.5	317.75
99	54.5	55.5	60	60	60	54.5	344.5
100	49.5	49 75	54.5	54 5	52	54	314.25
101	44.5	42 5	50	50	43	55	285.00
102	46.5	45	52	52	46.5	48 5	290.50
103	51.75	55.75	53	44.5	51.5	46	302.50
104	50.25	54.75	49	47	53	57	305 00
105	46	45	44.5	43	44.5	48	271.00
106	54.5	50	51 5	49	50.5	47.5	303.00
107	52.75	41.25	47	41	46	45	273.00
108	60	49.5	59.5	55.5	57.5	58	340.00
109	52	54	52	54.5	48.5	56.5	317.50
110	42	43	40	34 5	42	44.5	246.00
111	59	55.5	55	48.5	54	53.5	325.50
113	56.25	53.75	51	50	53.5	50.5	315.00
Sum	967.00	956.75	1,002.00	955 50	982.50	985.50	5.849 25

TABLE 2—*Continued.*

No. of plat.	Yield of ear corn, pounds, on each ⅓ of the plat.			Yield of ear corn on 1-40th-acre plat.
	1	2	3	
114	58.5	53.5	52	164
115	56.5	54.5	52	163
116	51.5	52.5	55	159
117	45.75	41.25	44	131
118	60.5	54.5	58.5	173.5
119	60	54	59.5	173.5
120	46.5	44	44.5	135
121	48	43	53	144
122	52	47.25	50	149.25
123	50.5	45.5	50.5	146.5
124	49	41.5	52	142.5
125	57	49	60	166
126	63.5	47.25	54	164.75
127	51.5	48	54	153.5
128	60.5	59	63	182.5
129	50.75	47.25	55.5	153.5
130	49.5	43.5	46	139
131	37.25	31.75	33	102
132	48	44.5	48 5	141
133	55.5	41	55	151.5
134	45.5	39.25	50.5	135.25
135	48.5	44	50	142.5
136	58	53.75	59.25	171
137	53.25	53.75	54	161
138	25	27.5	24.5	77
139	51	46.25	53	150.25
140	40	39.25	41.25	120.5
141	49.75	44.5	55.5	149.75
142	34.75	33.5	37	105.25
143	46.5	46	46.5	139
144	39	28	31	98
145	32	36.25	25.5	93.75
146	54.5	48.5	51.5	154.5
147	58.5	52	57.5	168
149	58.75	53.5	50.75	163
151	52	54.75	49.5	156.25
152	23.75	13.5	16.75	54
153	46	40	44.75	130.75
154	39	34.75	40.25	114
155	44 75	41	47.75	133.5
156	53.75	54.25	55.75	163.75
157	42.75	43.5	46	132.25
158	54.25	54.25	54 5	163
159	49	47.75	45.5	142.25
160	51.75	51	47	149.75
161	49.25	49.5	42.25	141
162	54	50	47.5	151.5
163	33.75	33.5	36	103.25
164	50	42.5	52	144.5
165	38.75	36	35.75	110.5
166	26	26.25	24.5	76.75
Sum	2,456 00	2,261.25	2,413.50	7,130.75

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.

No. of plat.	Name of variety.	From whom received.	Where grown.	Percetage of water in shelled corn when husked.	Pounds ear corn per bushel when husked.	Pounds when husked to make bushel shelled corn when dry.	Bushels shelled corn per acre.				
							Good ears.	Nubbins.	Total as husked.	Total air-dry containing 11 per cent. water.	Loss in drying.
1	Edmond's corn	H. P. Edmonds	Taylor, Ill.	18.28	65.5	71.4	68.5	22.7	91.2	83.7	7.5
2	Legal tender yellow dent	Nims Bros.	Emerson, Iowa	20.78	67.1	75.4	82.	17.9	99.9	88.9	11.
3	Howard's improved yellow	H. Howard	Marshall, Mo	26.37	71.9	86	82.6	18.8	101.4	83.9	17.5
4	Leaming	University farm	Champaign, Ill.	18.74	67.3	73.7	82.7	19 2	101.9	93.	8 9
5	Clark's 100 day	*Farm, Field and Stockman*		20.55	67.4	75.5	80.	11.7	91.7	81.9	9 8
6	Hogue's yellow dent	R. Hogue	Crete, Neb	22.83	69.5	80.1	78.1	15.3	93.4	81.	12.4
7	Orange pride yellow	J. H. McConnell	Rigdon, Ind.	24.57	70.1	82 8	71.9	24.9	96 8	82.	14.8
8	Steward's imp. yellow dent	L. W. Steward	Amanda, Ohio.	22.31	67.3	77.1	79.7	24.8	104.5	91.2	13.3
9	Golden rod	E. Morris	Decatur, Mich.	19.54	65.5	72.7	72.3	24.2	96 5	87.3	9.2
10	Leaming	University farm	Champaign, Ill.	18.74	68.3	74.8	72.8	18.9	91 7	83.7	8.
11	Riley's favorite	J. Riley	Thorntown, Ind	19.12	66.5	73.2	73.1	20.3	93.4	84.8	8.6
12	Prairie queen	Nathanial Pease	Quincy, Ill	18.64	66.9	73.	61.2	18.	79.2	72.4	6 8
13	Murdock	University farm	Champaign, Ill.	17.55	67.5	72.9	69 3	22.3	91.6	84.8	6.8
14	Murdock	Wm. T. Lamb	Ridott, Ill.	19.28	66.6	73.5	71.5	12.	83.5	75.7	7.8
15	Champaign	University farm	Champaign, Ill.	21.75	67.8	77.1	71.3	22.1	93.4	82.1	11.3
16	Leaming	"	"	18.74	67.8	74.3	76.1	19.6	95.7	87.4	8.3
17	Lape's mixed dent	H. T. Lape	Roseville, Ill.	20.63	66.4	74.6	60.7	17.6	78.3	69 7	8.6
18	Smith's mixed dent	University farm	Champaign, Ill.	*16.45	67.	71.3	74.9	20.9	95.8	90.	5.8
19	Burr's white	"	"	21.01	69.9	78.6	71.2	24.8	96.	85.2	10.8
20	Princeton	Wm. T. Lamb	Ridott, Ill.	16.45	65.9	70 2	67.3	19.1	86.4	81.1	5.3
21	Clark's premium 110 day	*Farm, Field and Stockman*		20.94	68.3	76 8	72.1	23 2	95.3	84.6	10.7
22	Piasa king	F. C. Pickard	Piasa, Ill.	38.39	73.5	106.4	65.5	15.6	81.1	56.2	24.9
23	Champion of the north	A. L. Goddard	Waucoma, Iowa	15.69	65.4	69.	54.2	19.8	74.	70.1	3.9
24	Ohio white dent	M. H. Smith	DeSoto, Neb	23.64	68.3	79.5	81.9	23.9	105.8	90.9	14.9

*Assumed to be the same as in No. 82.

25	Burr's white	University farm	Champaign, Ill	21.01	68.	76.6	86.5	16.	102.5	91.	11.5
26	Leaming	"	"	21.08	67.4	76.	83.6	13.4	97.	86.	11.
27	Will's 90-day	*Farm, Field and Stockman*		21.24	70.	79.1	71.2	14.5	85.7	75.8	9 9
28	Dakota 90-day	" "		14.88	63.9	66.8	47.4	9.4	56.8	54.3	2.5
29	Zeigler's 90-day	" "		22.05	66.7	77.2	75.	19.8	94.8	81.9	12.9
30	Goddard's favorite	" "		18.15	66.7	72.5	....	....	78 8	72 5	6.3
31	Dammell's	T. Chester		22.20	67.1	76.8	101.8	8.6	110.4	96.5	13.9
32	Kane county pride	R. Shedden	Pingree Grove, Ill	20.31	64.4	71.8	61.1	15.2	76.3	68.3	8.
33	Feeders' favorite	H. & L. K. Seymour	Payson, Ill	29 95	67.6	85.9	86.3	9.1	95.4	75.1	20 3
34	Bonus Prairie yellow	Allen E. Smith	Marengo, Ill	18.47	65.5	71.5	58 4	21.7	80.1	73.4	6.7
35	Sibley's pride of the north	T. Chester	Champaign, Ill	15.43	65.6	69.1	65.6	7.5	73.1	69.5	3.6
36	North star	"	Dakota	17.09	66.5	71.4	72.3	8.9	81.2	75.6	5.6
37	King of the earliest	A. L. Goddard	Waucoma, Iowa	16.30	64.9	69.	56.8	12.	68.8	64.7	4.1
38	Hill's improved 90-day	T. Chester		17.02	65.6	70.4	69.1	13.7	82.8	77.2	5.6
39	Log cabin	C. N. Butt	Knoxville, Ill	22.41	70.7	81.1	78.2	20.6	98.8	86.1	12.7
40	Swengel corn	Swengel Bro's	Neoga, Ill	30.37	71.5	91.5	79.8	10.5	90.3	70.6	19.7
41	Seeknofurther	G. W. Hartsock	Gifford, Ill	20.63	69.6	78.	85.2	12.8	98.	87.4	10.6
42	Yellow Blanchard	T. Chester		26.65	69.1	83.9	69.4	20.9	90.3	74.4	15.9
43	Vicker Blanchard	"		25.99	70.9	85.3	90.5	27.1	117.6	97.8	19.8
44	Ripley 120-day	"		27.28	68.5	83.8	73.9	26.4	90.3	73.8	16.5
45	Golddust	"		34.71	74.3	101.3	69.9	14.5	84.4	61.9	22.5
46	Yellow king	"		28.13	72 9	90.3	71.5	16.4	87.9	71.	16 9
47	Leaming	E. E. Chester	Champaign, Ill	23.96	69.5	81.4	88.4	20.4	108.8	92.9	15.9
48	Leaming	University farm	"	21.72	68.8	78.3	69.8	30.9	100.7	88.5	12.2
49	Fisk	Eli Fisk	Havana, Ill	25.45	68.5	81.8	79.8	14.8	94 6	79 2	15.4
50	Turkey	T. Chester	Iowa	20.77	70.5	79.2	76.9	15.	91.9	81.8	10.1
51	Kirby	"	Iowa	23.32	68.3	79.3	106.1	9.6	115.7	99.7	16.
52	Menhall	"		25.28	70.8	84.3	120.5	12.1	132.6	111.3	21.3
53	Golden beauty	"	Alton, Ill	26.	70.5	84.8	110.9	7.8	118.7	98.7	20.
54	Queen of the prairie	"	"	19.67	66.5	73.7	68.7	11.5	80.2	72.4	7.8
55	Golden beauty	U. S. Dept. Agriculture		31.71	70.9	92.3	84.4	13.4	97.8	75.	22.8
56	White cap	C. Leete & Son	Mooreheadville, Pa	20.99	67.3	75.8	60	13.1	73.1	64.9	8.2
57	Ohio white cap	*Farm, Field and Stockman*		19.14	70.3	77.4	68.3	8.	76.3	69.3	7.
58	Woodworth 80-day	" "		19.15	70.	77.	69.1	16.6	85.7	77.9	7.8
59	Zeigler's 90-day	" "		23.95	68.2	79.8	80.4	12.	92.4	79.	13.4
60	Rural heavy dent	" "		31.36	77.4	100.4	85.2	25.7	110.9	85.5	25.4
61	Early Wisconsin white cap	" "		18.22	70.9	77.2	72.6	12.8	85.4	78.4	7.
62	Gould Hill prolific	" "		37.74	73.3	104.6	66.4	18.8	85.2	59.7	25.5
63	Smith's white dent	Allen E. Smith	Marengo, Ill	16.88	67.	71.8	59.5	17.9	77.4	72.2	5.2
64	Burr's white	University farm	Champaign, Ill	19.93	67.7	75.2	89.7	23.3	113.	101.7	11.3

TABLE 3.—*Continued.*

No. of 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 dry.	Bushels shelled corn per acre.				
							Good ears.	Nubbins.	Total as husked.	Total air-dry containing 11 per cent. water.	Loss in drying.
65	White dent	F. Helms	Belleville, Ill	30.72	72.	92.5	81.4	27.6	100.9	84.8	24.2
66	Giant Normandy	U. S. Dept. Agriculture		23.97	70.7	82.8	98	14.2	112.2	95.8	16.4
67	Iowa king	T. Chester	Iowa	22.60	73.	83.9	68.6	16.	84.6	73.6	11.
68	Dresback	"	Champaign, Ill	21.36	70.	79.2	90.3	27.6	117.9	104.2	13.7
69	White Hunt	"		31.45	75.1	97.5	59.1	32.8	91.9	70.8	21.1
70	Common early white	E. E. Chester	Champaign, Ill	20.74	69.8	78.3	97.2	20.1	117.3	104.5	12.8
71	Gourd seed	"	"	20.63	68.6	76.9	99.4	25.7	125.1	111.6	13.5
72	Champion white pearl	T. Chester		22.32	77.4	88.6	67.8	18.2	86.	75.1	10.9
73	Improved Blountz prolific	"		27.80	73.9	91.2	66.7	11.2	77.9	63.1	14.8
74	Hominy	"		34.25	74.3	100.5	63.2	21.2	84.4	62.4	22.
77	St. Charles	"	St. Clair Co., Ill	41.78	72.6	111.	86.8	21.1	107.9	70.6	37.3
78	Shoe peg	"		33.22	65.3	87.	89.2	16.3	105.5	79.2	26.3
80	Piasa pet	"	Alton, Ill	35.81	83.5	115.7	95.8	10.9	106.7	77.	29.7
81	Piasa pride	"	"	29.13	72.4	91.	89.2	18.1	107.3	85.4	21.9
82	Smith's mixed dent	Allen E. Smith	Marengo, Ill	16.45	68.	72.4	61.5	13.8	75.3	70.7	4.6
83	Calico	E. E. Chester	Champaign, Ill	18.15	67.2	73.1	111.5	12.	123.5	113.6	9.9
84	Bloody butcher	"	"	20.28	68.3	76.3	107.3	8.4	115.7	103.6	12.1
85	Common red	"	"	20.09	67.2	74.8	98.2	19.3	117.5	105.5	12.
86	White smut nose	T. Chester	Michigan	19.68	72.5	80.3	53	8.5	61.5	55.5	6.
87	White flint	"	"	20.19	72.9	81.4	61.5	14.5	76.	68.1	7.9
88	Longfellow	"	"	18.48	72.	78.7	38.6	12.	50.6	46.3	4.3
89	Compton	"	Iowa	19.82	72.7	80.7	57.9	10.8	68.7	61.9	6.8
90	King Phillip	"	"	17.69	70.	75.7	63.9	8.4	72.3	66.9	5.4
93	Legal tender	*Farm, Field and Stockman*		24.91	71.3	84.6	80.2	14.1	94.3	79.5	14.8
94	Iowa king	" "		24.25	71.3	83.8	72.7	18.5	91.2	77.6	13.6

97	Fisk	Eli Fisk	Havana, Ill.	25.67	73.4	87.9	74.9	13.7	88.6	74.	14.6
98	Leaming	University farm	Champaign, Ill.	19.47	70.8	78.3	64.9	24.9	89.8	81.2	8.6
99	Imperial	*Field, Farm and Stockman*		35.55	79.	109.2	70.5	16.7	87.2	63.1	24.1
100	Pride of Missouri	" "		27.04	84.5	103.1	62.2	12.2	74 4	61.	13.4
101	Illinois premium yellow dent	" "		27.99	73.8	91.	63.7	13.5	77.2	62.5	14.7
102	Gilt edge	" "		21.65	68.5	77.9	66.1	18.7	84.8	74.6	10.2
103	Smith's surprise	" "		24.64	69.2	81.7	76.9	10.5	87.4	74.	13.4
104	Prairie queen	" "		25.96	69.4	83.5	66.4	21.5	87.9	73.1	14.8
105	Yellow Clauge 90 day	" "		24.42	68.6	80.8	49.2	29.8	79.	67.1	11.9
106	Extra early	" "		20.36	65.5	73.2	78.1	14.4	92.5	82.8	9.7
107	Southern queen	" "		28.23	72.6	89.9	65.9	9.3	75.2	60.7	14.5
108	Golden beauty	" "		29.57	74.8	94.6	79.	11.9	90.9	71.9	19.
109	Farmers' favorite	" "		.....	70.	....	73.	17.7	90.7	....	....
110	Queen of the prairie	" "		20.84	66.8	75.2	59.5	14.2	73.7	65.5	8.2
111	Missouri mammoth	" "		22.58	73.1	84.	76.7	12.4	89.1	77.5	11.6
113	Leaming	" "		24.18	72.3	84.9	61.3	25.8	87.1	74.2	12.9
114	90-day yellow	" "		22.06	69.7	79.6	85.3	8.9	94.2	82.5	11.7
115	North star	" "		24.79	68.7	81.4	69.	26.	95.	80.2	14.8
116	Golden beauty	" "		26.97	69.5	84.7	79.	12.6	91.6	75.2	16.4
118	Carle's prolific	" "		23 24	68.3	80.2	93.8	7.8	101.6	86.5	15.1
119	Long John	" "		24.82	73.	86.5	80.6	14.4	95.	80.2	14.8
120	Chester county mammoth	" "		33.33	76.5	102.	58.2	12.4	70.6	52.9	17.7
121	Northern queen	" "		24.25	69.3	81.4	66.8	16.4	83.2	70.8	12.4
122	Riley's favorite	" "		22.68	67.2	77.3	66.	22.8	88.8	77.2	11.6
123	Clark's orange yellow	" "		24.45	70.5	83.	64.2	19.	83.2	70.7	12.5
124	Clark's Iroquois	" "		25.55	69.4	83.2	65.2	16.9	82.1	68.5	13.6
125	Yellow rose	" "		46.17	67.3	111.2	75.3	23.3	98.6	59.7	38.9
126	Giant yellow mixed	" "		32.79	74.5	98.7	74.1	14.3	88.4	66.7	21.7
127	Strawberry mixed dent	" "		31.26	76.9	99.4	46.3	30.9	77 2	59.7	17.5
128	Mixed dent	" "		24.83	70.6	83.6	85.5	17.9	103.4	87.3	16.1
129	Calico	" "		23.01	72.2	83.4	65.1	19.9	85	73.5	11.5
132	Black Hawk	" "		24.64	71.9	84.9	62.5	15.8	78.3	66.3	12
133	Mammoth red	" "		41.39	73.8	112.2	61.4	20.7	82.1	54	28.1
134	Bloody butcher	" "		29.93	78.4	99.6	50.5	18.5	69	54.3	14.7
135	White calico	" "		21.45	68.2	77.3	60.2	23.4	83.6	73.8	9.8
136	Calico, old variety	" "		30.22	74.7	95.3	76	15.6	91.6	71.8	19.8
137	Northern bronze	" "		22.29	67.5	77.3	75.8	19.6	95.4	83.3	12.1
138	Dakota red	" "		18.20	64.9	70.5	31.2	16.3	47.5	43.7	3.8
139	Rotten Clauge	" "		22.12	66.4	76.9	64.8	25.7	90.5	78.1	12.4
140	Early Valentine	" "		31.62	74.6	97	54.3	10.3	64.6	49.7	14.9

TABLE 3—*Continued.*

No. of 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 dry.	Bushels shelled corn per acre.				
							Good ears.	Nubbins.	Total as husked.	Total air-dry containing 11 per cent. water.	Loss in drying.
141	Piasa pet	*Farm, Field and Stockman*		49.27	78.2	137.1	58.4	18.2	76.6	43.7	32.9
143	Burr's white	University farm	Champaign, Ill	22.11	70	80.1	51	28.4	79.4	69.4	10
146	Valley champion	*Farm, Field and Stockman*		40.22	75.6	112.7	61.6	20.1	81.7	54.8	26.9
147	Blountz prolific	" "		27.39	74 3	91.1	66.2	24.2	90.4	73.7	16.7
149	Mammoth white	" "		40.23	78.6	117.1	60.9	22.1	83	55.7	27.3
151	St. Charles improved	" "		37.56	79.2	112.8	58.5	20.4	78.9	55.4	23.5
152	Madison county mammoth	" "		44.03	81.8	130.5	20.8	4.4	25.2	15.8	9.4
153	Smith's favorite	" "		26.86	74.1	90.4	37.5	33.1	70.6	57.9	12.7
154	Hugh's choice	" "		27.26	74.4	91	42.5	18 8	61.3	50.1	11.2
155	Stine's mammoth	" "		36.48	74.4	104.3	44.5	27.3	71.8	51.2	20.6
156	Starch white	" "		34.56	74.9	101.8	59.9	27.6	87 5	64.4	23.1
157	Champion white pearl	" "		19.89	74	82.2	57.8	13.7	71.5	64.4	7.1
158	White queen	" "		20.68	68.5	76.8	60	35.2	95.2	84.8	10.4
159	White Wabash	" "		17.60	66.5	72.8	67.4	18.1	85.5	78.1	7.4
160	Iroquois white	" "		22.98	74.7	87.7	59.3	20.9	86.2	68.3	11.9
161	90-day white	" "		20.55	68	76.4	55.4	27.6	83	74	9
162	Burr's white	University farm	Champaign, Ill	22.11	69.5	....	55.4	31.8	87.2	76.3	10.9
163	Hickory king	*Farm, Field and Stockman*		33.53	70.7	94.7	45.2	13.2	58.4	43.6	14.8
164	White flint	" "		33.28	78.8	105.2	55.3	18.1	73.4	55	18.4
165	Yellow flint	" "		27.83	77.2	95.2	37.4	19.8	57.2	46.4	10.8
166	Compton's early yellow	" "		17.51	67.3	72 7	27	18.6	45.6	42.2	3.4

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, lbs.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lbs.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lbs.		
	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	7,488	3,888	11,376	62	39	54	30	7,200	2,820	10,020	..	..	52	59	6,540	2,340	8,880	84	36	71
2	6,984	2,376	9,360	78	49	70	31	9,480	1,260	10,740	72	45	69	60	5,820	3,180	9,000	110	63	94
3	1,616	2,232	7,848	103	60	91	32	6,360	2,460	8,820	63	38	56	61	7,860	2,280	10,140	65	39	59
4	7,128	2,492	9,620	74	47	67	33	6,660	1,440	8,100	87	42	79	62	4,980	2,520	7,500	96	55	82
5	7,344	2,016	9,360	76	40	68	34	6,360	4,320	10,680	60	33	49	63	6,600	3,600	10,200	60	34	51
6	7,200	2,880	10,080	83	40	71	35	9,900	2,340	12,240	44	21	39	64	7,860	3,840	11,700	77	41	65
7	6,840	3,744	10,584	75	48	65	36	9,360	2,520	11,880	52	23	45	65	6,300	3,960	10,260	90	49	74
8	7,200	2,736	9,936	70	57	66	37	7,800	2,940	10,740	47	27	42	66	8,040	2,220	10,260	85	45	76
9	6,912	3,312	10,224	66	46	59	38	8,820	2,820	11,640	51	34	46	67	5,400	3,120	8,520	92	38	72
10	7,200	3,240	10,440	69	39	59	39	6,180	3,240	9,420	88	45	74	68	7,320	3,660	10,980	85	52	74
11	6,768	2,880	9,648	68	45	61	40	6,360	2,040	8,400	88	37	75	69	3,660	3,000	6,660	138	59	103
12	7,200	3,240	10,440	59	39	52	41	7,320	2,220	9,540	79	41	70	70	7,800	3,960	11,760	77	36	64
13	8,136	4,104	12,240	58	37	51	42	5,400	2,100	7,500	89	68	83	71	8,220	4,440	12,660	82	40	67
14	7,200	1,800	9,000	60	40	56	43	6,960	3,300	10,260	92	59	81	72	6,480	4,020	10,500	73	34	63
15	6,624	3,096	9,720	69	46	62	44	6,660	2,280	8,940	74	50	68	73	4,500	2,460	6,960	106	38	82
16	7,569	3,096	10,656	68	43	61	45	4,620	2,040	6,660	109	56	93	74	4,620	3,240	7,860	99	50	79
17	5,616	3,600	9,216	73	34	58	46	5,280	2,640	7,920	97	48	80	75	.....	... .	.....	96	48	77
18	7,920	3,600	11,520	59	36	52	47	6,960	3,060	10,020	87	49	75	76	.....	.....	.....	124	61	111
19	7,200	3,960	11,160	69	44	60	48	7,440	2,400	9,840	80	40	70	77	4,590	2,970	7,560	132	57	103
20	7,920	3,456	11,376	55	36	50	49	7,020	2,520	9,540	77	40	67	78	8,100	4,645	12,745	72	30	59
21	6,120	2,952	9,072	76	51	68	50	8,760	3,420	12,180	62	31	53	79	.....	.....	.....	75	38	67
22	5,400	2,160	7,560	84	53	75	51	8,505	1,485	9,990	87	45	79	80	6,750	1,890	8,640	117	50	102
23	6,120	3,456	9,576	58	37	51	52	9,045	1,755	10,800	92	50	86	81	6,750	2,565	9,315	95	53	83
24	6,840	3,168	10,008	73	47	65	53	8,775	1,620	10,395	89	27	80	82	7,155	4,455	11,610	58	23	44
25	8,640	2,520	11,160	69	42	63	54	9,045	1,755	10,800	51	42	49	83	10,530	2,160	12,690	71	37	65
26	7,320	2,040	9,360	77	46	70	55	6,360	2,220	8,580	93	46	81	84	10,800	1,890	12,690	68	32	62
27	6,960	2,580	9,540	71	40	62	56	6,300	2,520	8,820	64	36	56	85	9,450	2,970	12,420	70	43	64
28	7,020	2,340	9,360	43	25	39	57	7,200	1,800	9,000	67	32	60	86	7,020	3,645	10,665	54	19	42
29	6,600	2,820	9,420	75	47	67	58	7,320	2,760	10,080	66	42	60	87	8,910	4,455	13,365	50	24	41

TABLE 4—*Continued.*

No. of plat.	Number of ears per acre.			Weight of 100 ears, lbs.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lbs.			No. of plat.	Number of ears per acre.			Weight of 100 ears, lbs.		
	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.
88	5,265	3,645	8,910	51	26	41	115	6,420	4,800	11,220	75	38	59	142	.....	.....	.....	82	49	71
89	7,290	3,645	10,935	56	24	46	116	8,280	2,280	10,560	64	36	58	143	5,400	5,160	10,560	64	38	52
90	9,450	3,105	12,555	47	20	40	118	9,600	1,500	11,100	65	34	61	144	.....	.....	. ....	89	53	77
92	.....	.....	.....	81	42	67	119	8,100	2,820	10,920	70	37	61	145	.....	....	.....	97	43	80
93	6,780	2,820	9,600	76	35	64	120	4,800	2,100	6,900	90	43	76	146	6,360	3,600	9,960	72	44	61
94	6,600	3,060	9,660	77	45	66	121	6,840	3,120	9,960	63	35	54	147	6,720	4,860	11,580	71	38	57
95	.....	.....	.....	89	48	76	122	7,320	4,020	11,340	60	37	52	149	5,580	3,900	9,480	86	48	70
96	.....	.....	.....	108	60	95	123	6,420	3,000	9,420	69	41	61	151	5,700	3,720	9,420	82	46	68
97	7,020	3,060	10,080	69	34	58	124	6,780	3,180	9,960	63	36	54	152	1,920	1,020	2,940	92	44	76
98	5,580	4,260	9,870	73	39	58	125	7,500	3,240	10,740	65	46	59	153	4,500	6,840	11,340	60	36	46
99	6,240	3,300	9,570	81	39	66	126	6,720	2,460	9,180	82	43	71	154	4,500	3,840	8,340	67	36	53
100	6,420	3,660	10,080	70	32	56	127	5,100	5,340	10,440	68	44	56	155	4,860	5,460	10,320	64	37	50
101	5,040	1,980	7,020	83	45	73	128	8,100	2,940	11,040	73	42	64	156	5,940	4,620	10,560	73	46	61
102	6,420	3,180	9,600	65	37	56	129	6,300	3,480	9,780	71	40	60	157	6,000	3,660	9,660	65	28	53
103	8,280	2,040	10,320	68	37	62	131	.....	.....	.....	74	35	62	158	6,000	5,340	11,340	69	45	57
104	7,320	3,540	10,860	63	43	57	132	6,900	3,000	9,900	64	37	55	159	7,500	3,420	10,920	61	36	53
105	6,000	4,680	10,680	56	43	50	133	5,280	3,180	8,460	81	43	67	160	6,420	4,560	10,980	67	36	54
106	8,040	2,520	10,560	65	38	50	134	5,640	3,480	9,120	65	38	55	161	6,300	5,280	11,580	61	39	51
107	6,540	1,620	8,160	73	46	68	135	7,200	4,080	11,280	55	38	49	162	5,640	6,120	11,760	68	38	53
108	7,680	1,920	9,600	73	44	67	136	8,100	2,760	10,860	67	42	61	163	6,180	2,880	9,060	50	32	44
109	6,840	2,820	9,660	74	44	65	137	8,280	3,240	11,520	61	40	55	164	5,400	3,540	8,940	75	40	61
110	7,200	2,820	10,020	58	30	50	138	6,000	5,280	11,280	35	20	28	165	4,680	4,740	9,420	60	34	47
111	7,680	2,640	10,320	74	40	65	139	6,240	3,600	9,840	68	43	58	166	4,680	6,060	10,740	39	22	29
113	6,660	4,080	10,740	68	46	59	140	4,920	1,860	6,780	80	42	69							
114	8,040	3,360	11,400	73	23	58	141	5,520	3,300	8,820	76	43	64							

TABLE 5. Results from Tract (*a*), 1887—Number of Plat; Name; From whom Received; Where grown; Stand; Barren Stalks; Percentage of Water; Ear Corn per Bushel; Bushels Shelled Corn per Acre.

No. of plat.	Name of variety.	From whom received.	Where grown.	Percentage of a full stand, 4 kernels pr hill.	Percentage of barren stalks.	Percentage of water in shelled corn when husked.	Pounds ear corn per bushel when husked.	Pounds, when husk'd, to make bu. when dry.	Bushels shelled corn per acre.		
									When husked.	Air-dry.	Loss in drying.
	Yellow dent varieties.										
1	Edmund's corn	H. P. Edmonds	Taylor, Ill	82	34	16.57	67	71.4	29.5	27.7	1.8
2	Legal tender	Nims Bros	Emerson, Iowa	97	47	20.01	70.6	78.5	28.7	25.8	2 9
3	Howard's improved yellow	H. Howard	Marshall, Mo	86	42	20.08	75.6	84.2	23.6	21.2	2.4
4	Leaming	University farm	Champaign, Ill	88	30	17.27	68.6	73.8	31.3	29.1	2.2
5	Yellow dent	W. J. Cochran	Winfield Kas	83	63	23.87	71.1	83.2	25.4	21.7	3.7
6	Hogue's yellow dent	R. Hogue	Crete, Neb	84	33	20.06	73.0	81.4	34.0	30.5	3.5
7	McConnell imp'd orange pride	J. H. McConnell	Rigdon, Ind	80	34	17.13	72.8	78.2	30.6	28.5	2.1
8	Steward's imp'd yellow dent	L W. Steward	Amanda, Ohio	84	31	17.92	70.0	75.8	35.1	32.4	2.7
9	Golden rod	E. Morris	Decatur, Mich	71	31	19.69	69.5	77.0	29.7	26 8	2.9
10	Yellow dent	J. Riley	Thorntown, Ind	80	25	15.05	67.1	70.3	35.0	33.4	1.6
11	Riley's favorite	J. Riley	"	85	38	16.39	68.6	73.1	32.8	30.8	2.0
12	Two-eared Murdock	University farm	Champaign, Ill	83	42	16.31	67.4	71.7	33.6	31.6	2.0
13	Murdock	"	"	95	30	14.57	69.3	72.1	33.1	31.8	1.3
14	Murdock	"	"	78	25	16.20	67.0	71.2	38.8	36.5	2.3
15	Champaign	"	"	77	31	16.31	70.3	74.8	36.4	34.2	2.2
16	Leaming	"	"	79	39	16.67	68.5	73.1	32.0	30.0	2.0
	Mixed dent varieties.										
17	Lape's mixed dent	H. T. Lape	Roseville, Ill	78	41	.....	68.2	....	30.1	....	....
18	Smith's mixed dent	University farm	Champaign, Ill	68	37	18.61	70.3	77.0	27.6	25.2	2.4
	White dent varieties.										
19	Burr's white	University farm	Champaign, Ill	75	31	18.36	67.5	73.8	32.8	30.0	2.8
20	Monticello	"	"	74	40	19.36	76.8	84.8	23.4	21.2	2.2
21	Champion white pearl	"	"	83	44	18.25	74.3	80.9	22.0	20.2	1.8
22	Piasa king	F. C. Pickard	Piasa, Ill	89	22	27.32	79.3	97.3	37.9	30.9	7.0
23	Champion of the north	A. L. Goddard	Waucoma, Iowa	74	24	17.49	68.8	74.2	30.3	28.1	2.2
24	Smith's premium dent	M. H. Smith	DeSoto, Neb	76	29	19.71	70.8	78.5	33.5	30.2	3.3
25	Cochran's premium dent	W. J. Cochran	Winfield, Kas	64	30	20.11	81.9	91.5	28.7	25.7	3.0

Experiment No. 2. Corn, Test of Varieties for Ensilage.

The land used in this experiment was in two tracts (*a*) and (*b*). Tract (*a*), plats 1, 2, and 3, had been in clover two years. Prior to May 1st, it was plowed four inches deep; May 16th and 17th, it was disked twice and harrowed once. On the latter date it was planted in rows 22 rods long and 3 feet 8 inches apart with an ordinary corn-planter, one to three kernels being planted every 9 inches, or at the rate of about 14 pounds of seed per acre, as follows:

Plat 1, 36 rows, with Burrill & Whitman ensilage corn from B. & W., Little Falls, N. Y.

Plat 2, 3 rows, with Breck's Boston Market, from U. S. Department of Agriculture.

Plat 3, 26 rows, with Burr's white, from the University farm.

Tract (*b*), plats 4–11, was a piece of rather fertile land of irregular shape and quality, which had been under cultivation several years. The land was fall-plowed. Otherwise the preparation of the seed-bed was similar to that of tract (*a*).

May 24th, plats 4 to 8 were planted by hand in rows 3 feet 8 inches apart to Burrill & Whitman ensilage corn; and June 15th and 16th plats 9 to 11 were planted to Burr's white, as follows:

TABLE SHOWING NUMBER AND SIZE OF PLATS; DATE OF PLANTING; KERNELS PER HILL; AND INCHES BETWEEN HILLS.

Plat.	Rows.	Length rows, rods.	Name of variety.	Date of planting.	Kernels to a hill.	Inches apart of hills.
4	4	30.25	Burrill & Whitman	May 24th	1	3
5	3	29.25	"	"	1	6
6	3	27.5	"	"	1	12
7	3	25.5	"	"	2	12
8	2	25.0	"	"	2	24
9	4	30.25	Burr's white	June 15–16th.	1	6
10	3	30.25	"	"	1	12
11	3	30.25	"	"	2	12

TABLE SHOWING NUMBER OF PLAT; NAME OF VARIETY; DATE OF PLANTING; NUMBER OF STALKS, AND TONS OF FODDER PER ACRE.

Plat.	Name of variety.	Date of planting.	No. Stalks per acre.	Tons green fodder per acre.
1	Burrill & Whitman	May 17th	9,648	13.6
2	Breck's Boston market	"		8.0
3	Burr's white	"	14,076	11.5
4	Burrill & Whitman	May 23d	27,310	17.6
5	"	"	16,950	14.9
6	"	"	9,324	12.7
7	"	"	14,775	14.5
8	"	"	8,900	11.2
9	Burr's white	June 15–16th	18,425	11.0
10	"	"	9,043	7.9
11	"	"	14,573	8.9

Tract (*a*) and plats 4 to 8 of tract (*b*) were cultivated three times with shallow cultivator between June 5th and June 26th, and plats 9 to 11 of tract (*b*) twice, June 26th and July 6th. Tract (*b*) was hoed July 3d. September 11th to 17th, the corn was cut and carried to the silo about as rapidly as cut, with results as shown in the preceding table.

In plat 4, where one kernel was planted every three inches, about six tenths of the kernels produced stalks; in plat 5, where one kernel was planted every six inches, about seven-tenths of the kernels produced stalks. In the former the yield was 17.6 tons; in the latter 14.9 tons per acre.

In plats 5 and 9, where one kernel was planted every six inches, about three-fourths of the kernels on an average produced stalks; in plats 7 and 11, where two kernels were planted every twelve inches, about three-fifths of the kernels produced stalks. In the former the yield was 13 tons; in the latter, 11.7 tons. There was but slight difference between the yields of plats 5 and 7, and about two tons between plats 9 and 11.

In general, therefore, it was found in this experiment, just as in Experiment No. 5, that where one kernel was planted every three inches more corn-fodder was raised than where a less quantity of seed was used; and that where the kernels were planted single a little more corn-fodder was raised than where, with the same quantity of seed per acre, two or more kernels were put in a place.

TABLE SHOWING NUMBER, WEIGHT, AND CONDITION OF THE GREEN PARTS OF CORN-FODDER AS PUT INTO SILO, AND AS TAKEN FOR ANALYSIS.

Description.	Burrill & Whitman. Plat 1.	Burr's white. Plat 3.	Burrill & Whitman. Plat 4.	Burr's white. Plat 9.
Condition of ears.	In milk, some glazed.....	Glazed; indenting, difficult ..	In milk.....	Not fully reached milk stage.
Condition of husks	Green	Dry	Green.....	Green.....
Condition of leaves	4 to 5 at bottom dry	5 and 6 at bottom dry, and others partly dry	Green	Green. .....
Height of stalks..	11 to 12 feet....	9 to 10 feet.....	.....	8 feet.....
Number of nodes.	15	12	.....	12
Number of stalks.	14	20	20	38
Number of ears...	12	17	19	27
Pounds of ears...	7	13.75	7.75	7.5
Pounds of bare stalks	20	16.5	16.5	16.5
Pounds of leaves and husks.....	13	9.75	15.75	16

Condition when harvested.—As the corn was carried to the silo, forty-pound samples of plats 1, 3, 4, and 9 were divided into stalks, ears, leaves, and husks, each portion weighed, and sample of each taken for analysis.

As between the Burrill & Whitman ensilage corn and Burr's white, a medium maturing dent corn used in general field culture, planted the same day, on similar soil, the former was considerably greener. The ears of the former were in the milk, a few being glazed, the husks were green and the leaves green except a few at the bottom; while the latter had its ears glazed, most of which could be indented by the thumb nail with difficulty, the husks were dry, and many of its leaves were partly dry. In the former, the ears contained 61.5, the stalk 77, and the leaves and husks 65 per cent. of water, with an average for the whole of 70.5 per cent. In the latter, the ears contained 43; the stalks, 74; and the leaves and husks, 58 per cent. of water, with an average of 59.5 per cent. In every ton of Burrill & Whitman ensilage corn there were 1,410 pounds and in the Burr's white 1,190 pounds of water.

The Burrill & Whitman ensilage corn on plat 4 was planted a week later and much thicker, being nearly twice as thick when harvested as Burr's white, plat 3, and three times as thick as Burrill & Whitman, plat 1. The ears were in the milk and the husks and leaves were green. The per cent. of water in the stalks was seemingly the same as that of plat 1, while the moisture in the ears and leaves was about five per cent. higher. In a ton of the green corn-fodder, as carried to the silo, there were 1,450 pounds of water.

The Burr's white on plat 9 was planted fully four weeks later than that on plat 3. The ears had not fully reached the milk stage. The water in the stalks was 1 per cent. higher; in the ears 30 per cent. higher, and in the leaves 14 per cent. higher than in the same variety planted four weeks earlier. The percentage of moisture in the total product was not much higher than that of Burrill & Whitman ensilage corn on plat 4.

The Burrill & Whitman ensilage corn was about two feet higher than that of Burr's white of the same period of growth, the height being 11 to 12 feet in the former and 9 to 10 in the latter. There were, on an average, 15 nodes in the Burrill & Whitman ensilage corn and 12 in the Burr's white. As there is a leaf for each node, the relative number of leaves to height was about the same—one leaf for every 10 inches.

The stalks were also considerably heavier in the Burrill & Whitman than in the Burr's white of the same growth; but this may be to a small extent due to the thinner stand owing to poorer seed.

In the fresh substance the bare stalks were 50 per cent. of the total weight of the Burrill & Whitman from plat 1, and in the other three samples 41 per cent. of the total weight.

In the Burr's white, whose ears were fully formed, the ears were 34 per cent. of the whole weight; but in the other samples it was from 17.5 to 19.5 per cent.

In Burr's white, plat 3, and in Burrill & Whitman ensilage corn, plat 4, are to be found examples of two different sets of conditions. The first is a common, medium maturing dent variety, grown but little, if any, thicker than if it were to be husked. It was harvested when the husks

were dry, the ears fully formed, and the kernels could be indented by the thumb nail with difficulty. The second is a large, late or non-maturing southern variety, tasseling two weeks later than Burr's white, grown twice as thick, and harvested when the kernels were in the milk, and the leaves and husks were green.

TABLE SHOWING PROXIMATE COMPOSITION OF VARIETIES OF CORN USED FOR ENSILAGE.*

Plat.	Name of variety.	Description.	Fresh substance.					Water-free substance.						
			Water.	Ash.	Ether extract.	Crude protein.	Crude fibre.	Nitrogen-free extract.	Crude ash.	Crude fat.	Crude protein.	Crude fibre.	Nitrogen-free extract.	True portein.	Per cent. total N. non-protein.
1	Burrill & Whitman.	Ears	61.49	0.80	.....	3.28	.....	.....	2.07	.....	8.53	.....	.....	8.31	2.58
		Stalks	77.01	0.70	0.60	0.60	6.92	14.16	3.05	2.63	2.63	30.09	61.60	2.63	.....
		Leaves and husks	65.11	2.86	1.33	2.36	8.38	19.94	8.22	3.82	6.78	24.02	57.16	6.12	9.73
		Average compos'n.	70.43	1.42	.....	1.64	.....	.....	4.56	.....	5.01	.....	.....	4.76	4.99
3	Burr's white	Ears	42.81	0.99	2.44	3.51	5.15	45.10	1.74	4.26	6.13	9.01	78.86	5.47	10.76
		Stalks	74.45	0.84	0.43	0.62	8.84	14.82	3.27	1.67	2.41	34.62	58.03	1.97	18.25
		Leaves and husks	57.89	4.40	1.07	1.93	12.47	22.24	10.45	2.54	4.59	29.62	52.80	4.37	4.79
		Average compos'n.	59.54	1.76	1.27	1.93	8.46	27.04	4.49	2.77	4.22	24.60	63.92	3.75	11.14
4	Burrill & Whitman.	Ears	66.58	0.60	1.37	3.07	3.94	24.44	1.79	4.09	9.19	11.80	73.13	8.53	7.18
		Stalks	77.36	0.59	0.50	0.40	6.84	14.31	2.62	2.21	1.75	30.19	63.23	1.31	25.14
		Leaves and husks	70.73	2.18	0.95	1.80	7.26	17.09	7.45	3.23	5.91	24.85	58.56	5.25	11.17
		Average compos'n.	72.66	1.22	0.85	1.47	6.44	17.36	4.36	2.98	4.83	24.52	63.31	4.26	11.80
9	Burr's white	Ears	72.91	0.76	.....	2.67	.....	.....	2.79	.....	9.84	.....	.....	7.87	20.02
		Stalks	75.52	0.65	0.51	0.64	6.65	15.97	2.67	2.28	2.63	27.20	65.22	2.41	8.37
		Leaves and husks	71.34	2.05	1.02	2.26	6.59	16.74	7.15	3.56	7.87	23.01	58.41	7.21	8.39
		Average compos'n.	73.36	1.23	.....	1.67	.....	.....	4.48	.....	6.08	.....	.....	5.35	12.01

*Analyzed by Dr. A. S. Mains and H. S. Grindley, assistant chemists.

Composition.—As shown in the table, page 91, 40.46 per cent. of the fresh corn-fodder in Burr's white, as carried to the silo, was dry substance, and 27.34 per cent. in the Burrill & Whitman ensilage corn was dry substance. Although differing widely in condition and relative proportion of parts the average proximate composition of the dry substance is rather uniform in the two varieties. The percentage of crude fibre and of nitrogen-free extract (starch, sugar, etc.) is essentially the same in both. The percentages of these substances in the different parts vary considerably, however. The percentage of crude fibre is considerably lower in the ears and higher in the stalks and leaves of Burr's white, than in those of the ensilage corn; while the nitrogen-free extract is higher in the ears and lower in the stalks and leaves.

TABLE SHOWING YIELD PER ACRE IN POUNDS OF SUBSTANCES AS SPECIFIED IN VARIETIES OF CORN USED FOR ENSILAGE.

Plat.	Name of variety.	Description of parts.	Fresh substance.	Water-free substance.	Crude ash.	Crude fat.	Crude protein.	Crude fibre.	Nitrogen-free extract.	True protein.
1	Burrill & Whitman.	Ears	4,764	1,834	38	....	156	.....	.....	152
		Stalks	13,613	3,130	95	82	82	942	1,928	82
		Leaves and husks.	8,848	3,087	253	118	208	741	1,764	188
		Total	27,225	8,051	386	...	446	.....	.....	422
3	Burr's white.	Ears	7,924	4,532	78	193	278	408	3,574	248
		Stalks	9,508	2,429	80	41	59	841	1,409	448
		Leaves and husks.	5,618	2,366	247	60	107	701	1,249	102
		Total	23,050	9,327	405	294	444	1,950	6,232	398
4	Burrill & Whitman.	Ears	6,837	2,285	41	94	210	269	1,671	195
		Stalks	14.555	3,295	86	73	58	996	2,083	43
		Leaves and husks.	13,893	4,067	303	132	250	1,009	2,374	222
		Total	35,285	9,647	430	299	518	2,274	6,128	460
9	Burr's white.	Ears	4,145	1,123	32	....	111	.....	.....	89
		Stalks	9,118	2,232	59	46	58	606	1,456	53
		Leaves and husks.	8,842	2,534	181	86	200	583	1,480	183
		Total	22,105	5,889	272	...	369	.....	.....	325

The percentage of crude ash is a little higher in Burr's white and the crude fat is a little higher in the ensilage corn. The ash is mostly found in the leaves, while the ears contain the larger percentage of fat.

The percentage of crude protein is appreciably higher in the Burrill & Whitman ensilage corn, although in both cases the percentage is but half that of the average of American and European analyses.* The percentage was largest in the ears and least in the stalks. It was larger in the less mature ears and leaves and in the more mature stalks.

* Report Penn. State Coll., 1887, Part II., p. 124.

Yield per Acre of Dry Substance.—As shown in the above table, the Burr's white yielded 23,050 pounds and the Burrill & Whitman ensilage corn 35,285 pounds of fresh substance, and 9,327 and 9,647 pounds, respectively, of dry substance, equal in weight to the dry substance of about five and one-third tons of well cured timothy hay. While there was 13,235 pounds more of fresh substance in the latter, there was but 320 pounds more of dry substance. Over six and one-half tons more water was obtained, and one-sixth of a ton more of dry substance.

There was 4,532 pounds of dry substance in the ears of the Burr's white, which was about twice as much as in the ears of the ensilage corn. There were about one-third more bare stalks and seven-tenths more leaves and husks on the latter. While three-fourths the latter was stover (stalks and leaves), one-half the former was ears.

The Burr's white yielded 324 pounds per acre less of crude fibre and 104 pounds more of nitrogen-free extract (starch, sugar, etc.) than the ensilage corn; while the ensilage corn yielded 4 pounds of crude fat, 25 pounds of crude ash, and 74 pounds per acre more of crude protein.

The comparative digestibility of these two varieties, differing as they do so widely in the relative proportion of their several parts, can not be determined by the digestion experiments of Mosher* in Germany, Sturtevant† in New York, or Woll‡ in Wisconsin; but the conclusion can hardly be escaped, although without experimental evidence, that of two varieties yielding practically the same amount of dry substance, the one having half of its substance ear corn is more valuable than the one having but one-fourth of its substance ear corn.

The question of the keeping qualities of the two varieties, when put into the silo, is reserved until a future bulletin.

Experiment No. 3. Corn, Time of Planting.

Seven plats measuring 2x8 rods each were planted with corn, one a week for seven weeks, beginning April 27 and ending June 8, 1888. The land had been in wheat two seasons. Last fall it was manured with stable manure and plowed. Each plat was pulverized twice on the day planted by the use of a disk-harrow, and twice by the use of a common tooth-harrow before planting. The hills were 3 feet 8 inches apart. Four kernels of Burr's white dent corn were planted in each hill. The corn was cultivated with a hoe and a shallow cultivater, usually the Tower cultivator. The attempt was made to have the cultivation equal in quantity on each plat and at equal intervals from dates of planting. Owing to varying condition of weather and to the longer period of growth of the earlier planted plats, this was not always done. The first cultivation of each plat was with the hoe: in the first three plats, it was three weeks after

* Landw. Versuch Stationen, 8, 93.
† Rep't N. Y. Agr. Exp't Station, 1884, 45.
‡ Rep't Wis. Agr. Exp't Station, 1888, 59.

planting; in the last four, two weeks after planting. Plats 1, 2, 7, and 9 were cultivated three times; plats 4, 6, and 8 were cultivated twice. The apparent result of the cultivation was, however, similar on all the plats.

TABLE SHOWING DATE OF PLANTING; IMPLEMENT USED, AND DATE OF CULTIVATION.

Plat.	Dates of planting.	Dates of Cultivation.			
		With hoe.	With cultivator.		
			First time.	Second time.	Third time.
1	April 27	May 19	June 1	June 15	June 26
2	May 4	May 26	June 1	June 15	June 26
4	May 11	June 1	June 15	June 26	None
6	May 19	June 1	June 15	June 26	None
7	May 26	June 8	June 15	June 26	July 13
8	June 1	June 15	June 26	July 13	None
9	June 8	June 22	June 26	July 13	July 27

With the exception of plat 9, the corn came up evenly and well. As shown in the table below, there was an almost complete stand at the end of two weeks from planting in plats 2–8 inclusive, little difference being observable in the rapidity of germination of these plants. The germination of the corn on plat 1 was evidently delayed on account of the lowness of the temperature; that on plat 9 on account of the dryness of the soil. Within certain limits, of the two factors, temperature and moisure, the germination of corn seems to be most readily affected by the latter.

TABLE SHOWING NUMBER OF HILLS AND NUMBER OF PLANTS IN THE MIDDLE ROW OF EACH PLAT AT DATES GIVEN.

No. of plat.	Date of planting.	May 11.		May 19.		May 26.		June 1.		June 8.		June 15.		June 22.	
		No. of hills.	No. of plants.	No. of hills.	No. of plants.	No. of hills.	No. of plants.	No. of hills.	No. of plants.	No. of hills.	No. of plants.	No. of hills.	No. of plants.	No. of hills.	No. of plants.
1	April 27.	28	55	36	139	36	139	36	131	36	131	....	.....	....	....
2	May 4..	....	....	36	103	36	132	36	129	36	127	...	.....	....	....
4	May 11.	....	....	...	....	29	79	36	127	36	124	....	.....	....	....
6	May 19.	....	..	....	.....	11	21	35	122	35	121	....	....	....	....
7	May 26.	....	...	....	...	...	.....	4	5	36	124	36	132	....	...
8	June 1..	....	....	....	.....	....	.....	....	.....	29	57	36	130	....	...
9	June 8..	...	....	....	.....	....	.....	....	.....	....	.	8	10	19	41

Beginning with the first appearance of the tassel, weekly observations, with the exception of August 7th, were made upon the occurrence and quantity of tassel. The dates given in table below are those on which the conditions were noted. The given stage was reached during the week preceding. The dates are, therefore, accurate only so far:

TABLE IN REGARD TO TASSELING.

Plat.	Date of planting.	First tassel noted.		Fully in tassel.	
		Date.	No. w'ks after planting	Date.	No. w'ks after planting
1	April 27	July 11	10	July 25	12
2	May 4	July 11	9	July 25	11
4	May 11	July 18	9	August 1	11
6	May 19	July 18	8	August 1	10
7	May 26	July 25	8	August 1	9
8	June 1	July 25	7	August 15	10
9	June 8	August 1	7	August 22	10

The first tassel appeared in from seven to ten weeks and the corn was fully in tassel in from nine to twelve weeks, approximately. In general, the earlier planting made the slower growth. While there was six weeks variation in the planting, there was but three weeks variation of maturity. September 14th, the stage of maturity of the plats was noted. Plats 1–6, inclusive, were fully out of the way of frost. Husks were about three-fourths dry and leaves about one-half dry. Plat 7 was a little greener but would not have been much injured by frost. Plat 8 had about one-third of its husks dry and most of its leaves were green. Plat 9 was very green. Both would have been severely injured by frost. October 2d, plats 1 to 7, inclusive, were ripe. Plat 8 was a trifle green, apparently, but was not injured by the destructive frost of the succeeding night. Plat 9 was very green, the corn being largely in the milk. The frost of the morning of October 3d prevented its maturing.

November 21st, the corn was husked and weighed. A fifty-pound sample of corn was taken from each plat, and December 8th the samples were shelled to ascertain percentage of shelled corn, and number and ratio of good ears to nubbins.

TABLE SHOWING EARS AND NUBBINS PER ACRE; EAR CORN PER PLAT; PERCENTAGE OF SHELLED CORN; CALCULATED YIELD OF SHELLED CORN PER PLAT IN POUNDS; BUSHELS PER ACRE, AS HUSKED, AND WHEN AIR-DRY; I. E., CONTAINING BUT 11 PER CENT. OF WATER.

Plat.	Date of planting.	Number ears per acre.			Yield of corn.					
		Good ears.	Nubbins.	Total ears.	Ear corn per plat, lb.	Percentage shelled corn.	Shelled corn per plat, pounds.	Bushels per acre, actual.	Percentage of water in shell'd corn.	Bushels per acre air-dry.
1	April 27...	7,656	1,392	9,048	580	82 5	479	85.4	16.89	80
2	May 4....	7.500	2.750	10,250	625	83.	519	92.6	16.59	86.7
4	May 11....	8.190	2,142	10,332	630	82.5	520	92.8	17.48	86.1
6	May 19...	7,434	2,268	9.702	630	82.	517	92.3	15.85	87.3
7	May 26...	6,720	3.360	10,080	600	82.5	495	88.4	16.88	82.5
8	June 1....	7,068	2.356	9,424	620	78.5	487	86.9	17.28	80.8
9	June 8....	6,110	2,122	8,232	470	71.	334	59.6	24 85	50.3

From the preceding table it will be seen that the total number of ears per acre varied from 8,232 to 10,332. The least number was on plat 9 and the largest number on plat 4. Excepting plat 9, the variation was very small, the average number of ears being 9,806. An arbitrary division into good ears and nubbins was made. The ratio of good ears to nubbins was about three to one by number, and about five to one by weight. The ratio is largest in the first week's planting, and smallest in the fifth week's planting. The actual yield of shelled corn varied from 59.6 bushels to 92.8 bushels: the former from the last week's planting, June 8th, and the latter from the third week's planting, May 11th. The last week's planting, which did not mature, excepted, the variations in yield are surprisingly small, and can almost be said to be no greater than the possibility of error in this kind of experimental inquiry. The greatest variation is about 7½ bushels, the smallest yield of those plats on which the corn matured being 85.4 bushels; the average yield 89.4 bushels. The percentage of water in a sample of the shelled corn from each plat was determined by the Station chemists. The variation in the percentage of water in the mature corn was slight—possibly within the error of sampling—and does not materially change the relative yield of the plats. The average percentage of water in the corn of these first six weeks' planting was 16.83; in the seventh week's planting the percentage was 24.85. Assuming 11 per cent. of water in thoroughly air-dry corn, the average yield per acre of air-dry corn for the six plats maturing was a little less than 84 bushels. The least yield, 80 bushels, was the first week's planting, April 27th, and the largest yield, a little more than 87 bushels, was the fourth week's planting, May 19th; while the second and third weeks' planting, May 4th and 11th, were essentially as large.

This season, therefore, with the variety of corn named, a medium-maturing variety, and good soil and culture, the best results were obtained from planting between May 4th and 19th, while satisfactory results were obtained during the period of five weeks, from April 27th to June 1st.

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 inches. 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 the rows were 3 feet 8 inches apart. Four kernels of Burr's white dent corn were planted in each hill. The depth was obtained by means of a scale on a dibble. The cultivation of all the rows was the same. They were hoed once, May 26th, and cultivated with a shallow cultivator three times, June 1st, 16th, and 26th.

The shallower the corn was planted the quicker it came up and the more nearly did every kernel grow, with the possible exception of row 3, which, May 26th and June 1st, had a larger number of plants than row 2.

June 8th it had a less number, which was due to their removal by cut-worms, probably. An idea of the relative rapidity and extent of germination will be obtained from the following table:

TABLE SHOWING DEPTH OF PLANTING; NUMBER OF HILLS AND PLANTS IN EACH ROW AT DATES GIVEN.

Row.	Depth, Inches.	May 19.		May 26.		June 1.		June 8.	
		Hills.	Plants.	Hills.	Plants.	Hills.	Plants.	Hills.	Plants.
1	1	36	134	36	136	36	128	36	129
2	2	36	112	35	115	35	117	36	117
3	3	36	99	36	121	36	122	36	115
4	4	24	44	36	111	36	116	36	115
5	5	6	7	34	90	34	93	34	92
6	6	0	0	27	53	34	85	34	83

July 25th, corn which was planted from one to four inches deep was fully in tassel, and one week later that which was planted five and six inches deep, was fully in tassel. September 14th, there was a somewhat similar variation in the stage of ripeness. Those rows which were planted from one to four inches deep were about equally ripe. The husks were about three-fourths, and the leaves about one-half dry. The rows which were planted five and six inches deep were rather the greener. On the former the husks were about one-half and the leaves about one-third dry. On the latter the husks were about one-third and the leaves about one-fourth dry. October 1st, all the rows were ripe. The corn was husked November 20th and weighed November 26th.

TABLE SHOWING DEPTH OF PLANTING; EARS AND POUNDS OF CORN PER ROW, ACTUAL; EARS AND BUSHELS PER ACRE, CALCULATED; AND EARS PER BUSHEL.

Row.	Depth, inches.	Ears pr row.			Ears per acre.			Lb. sh'l'd c'n pr row.			Bushels per acre.			Number of ears in a bushel.
		Good ears.	Nubbins.	Total.	Good ears.	Nubbins.	Total.	From good ears.	Shelled corn from nubbins.	Total.	Good ears.	Nubbins.	Total.	
1	1	81	42	123	7,290	3,780	11,070	52.25	16.	68.25	84.0	25.7	109.7	101
2	2	69	38	107	6,210	3,420	9,630	42.	13.	55.	67.5	20.9	88.4	109
3	3	73	43	116	6,570	3,870	10,440	45.75	17.	62.75	73.5	27.3	100.8	104
4	4	65	42	107	5,850	3,780	9,630	39 25	15.5	54.75	63.1	24.9	88.0	109
5	5	53	39	92	4,770	3,510	8,280	31.5	14.	45.5	50.6	22.5	73.1	113
6	6	48	18	66	4,320	1,620	5,940	30.75	6.75	37.5	49.4	10.9	60.3	98

The largest yield, at the rate of 109.7 bushels per acre, was from the row planted one inch deep; the next largest, 100.8 bushels, from row planted three inches deep; and the least, 60.3 bushels, from the row planted six inches deep. The larger yields are principally due to the larger number of ears produced, but also partly due to the larger size of the ears, with the exception of the row planted six inches deep. The row planted one inch deep yielded 11,070 ears per acre, and it took 101 ears

to make a bushel of shelled corn. The row planted three inches deep yielded 10,440 ears per acre, and it took 104 ears to make a bushel. Rows planted two and four inches deep yielded 9,630 ears each, and it took 109 ears to make a bushel. On the other hand, the row planted six inches deep yielded 5,940 ears, and it took but 98 ears to produce a bushel. The shallowest and deepest planted rows, however, were outside rows, and that in itself, as has been seen, may be enough to cause a larger yield; and, therefore, a possible error in the result. The ears on both these outside rows averaged larger than on the other rows; and, of the two, those on the row planted deepest averaged largest, which may be accounted for by the thinner stand on that row. The average number of ears required to make a bushel in the other four rows is 109. If this number had been required in the row planted one inch deep the yield would have been 101.6 bushels, which would still be a little the largest yield; while, if that number were required in the row planted six inches deep, the yield would be but 54.3 bushels.

So far as planting from one to four inches deep is concerned, these results are not at all decisive. Inasmuch as there is not a direct relationship between the depth of planting and the yield, some accidental cause of variation is indicated; that is, accidental as relates to this experiment. If another season's trial, when the possible error from outside rows is eliminated, gives the best result from planting three inches deep, then the present season's results will be of more value. As in ordinary field practice, when planting is done on fall-plowing, the soil was not stirred at the depths of five and six inches by the cultivation given the plat. The corn planted at these depths, therefore, was at a double disadvantage—that due to depth, and that due to the less favorable mechanical condition of the soil.

The best depth to plant will depend largely upon the temperature, moisture, and mechanical conditions of the seed-bed at the time of planting,—three conditions which are, probably, rarely exactly similar in two different places or seasons. In this experiment, these conditions were all favorable to the early growth of the corn plant; and in such a case the depth of planting, between one and four inches, would make but little difference.

Experiment No. 5. Corn, Thickness of Planting.

This experiment was conducted with the object of determining the best thickness at which to plant corn, and also the best manner of distributing the corn at a given thickness—whether, for instance, it is better to plant three kernels every three and one-half feet, or one kernel every fourteen inches.

The land had been for some years in raspberries. This spring the briars were gathered and burned, and May 1st and 2d stable manure was spread on at the rate of thirty tons per acre. May 2d and 3d, the land was plowed. Each plat contained three rows about six rods long, and

five rods of each row was harvested, which made that part of each plat harvested for use in this experiment 1-48th of an acre. The plats were continuous, that is, no space was left between plats, and extra rows were planted at the ends of the tract, so that each row harvested had an equal amount of soil for its use. May 8th and 9th, Burr's white dent corn was planted on the twenty-four plats in quantity and manner indicated in the table below. The distances were obtained by means ot a steel tape, the dropping was done by hand, and the covering with a hoe.

TABLE SHOWING NUMBERS OF PLATS; KERNELS PLANTED IN A HILL; INCHES BETWEEN HILLS; KERNELS PLANTED PER ACRE.

Plat.	Kernels per hill.	Inches bet. hills.	Kernels per acre.	Plat.	Kernels per hill.	Inches bet. hills.	Kernels per acre.	Plat.	Kernels per hill.	Inches bet. hills.	Kernels per acre.
1	1	3	47,520	9	2	18	15,840	17	13	45	9,504
2	1	6	23,760	10	2	24	11,880	18	4	12	47,520
3	1	9	15,840	11	2	30	9,504	19	4	24	23,760
4	1	12	11,880	12	2	48	5,940	20	4	36	15,840
5	1	15	9.504	13	3	9	47,520	21	4	48	11,880
6	1	24	5,940	14	3	18	23,760	22	5	15	47,520
7	2	6	47,520	15	3	27	15,840	23	5	30	23,760
8	2	12	23,760	16	3	36	11,880	24	5	45	15,840

The cultivation of all the plats was the same. They were hoed twice, May 24th and June 21st, and cultivated once with a shallow cultivator. October 8th, 13th, the plats were cut and shocked.

October 13th–17th, corn-fodder on each plat was weighed; the corn husked and weighed; the corn shelled and the cobs weighed. The number and weight of good ears and nubbins and the weight of cobs from each was ascertained. A sample of the shelled corn taken October 20th contained 22.72 per cent. of water. The corn on the different plats ripened equally early, so far as could be observed, and the corn of the different plats was assumed to contain an equal percentage 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, 9,540, and 5,940 kernels per acre; and, for the sake of brevity and clearness, will be spoken of in the discussion which follows as the first, second, third, etc., plantings. As there are 3,240 hills on an acre, where the hills are 3 ft. 8 in. apart each way, and 12,960 kernels planted when four kernels are planted to a hill, the two thickest plantings in this experiment were considerably above the rate of ordinary seeding; the two thinnest, somewhat below it; and the two intermediate plantings were not far from the usual rate.

Number of stalks harvested for 100 kernels planted.—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 first and thickest planting, which was made in five different ways—one kernel every three inches, two kernels every six inches, three kernels every nine inches, four kernels every twelve inches, and five kernels every fifteen inches—produced, on an average, 62 stalks for every 100 kernels planted, or at the rate of 27,460 stalks per acre. Of the five methods of distribution at this thickness, that of one kernel every three inches produced the largest number of stalks, 70 for every 100 kernels planted; but when two or more kernels were planted in a hill there was but little difference in the percentage of stalks produced.

TABLE SHOWING NUMBER OF PLAT; KERNELS IN A HILL; INCHES BETWEEN HILLS; KERNELS PLANTED; STALKS HARVESTED; POUNDS OF STALKS AND CORN PER PLAT AND PER ACRE; WEIGHT OF 100 STALKS WITH CORN; YIELD OF STOVER.

No. plat.	No. kernels in a hill.	Inches between hills.	No. kernels planted per plat.	Corn-fodder (stover and corn).					Corn-stover.		
				Number of stalks harvested.	Ratio of stalks planted to kernels harvested.	Pounds per plat, stalks and corn.	Pounds per acre, stalks and corn.	Average weight of 100 stalks with corn.	Pounds per plat of stover.	Pounds per acre of stover.	Average weight of 100 stalks.
1	1	3	990	691	0.70	400	19,200	58	283.	13,584	41
2	1	6	495	379	0.75	360	17,280	95	216.	10,368	57
3	1	9	330	331	1.00	340	16,320	102	202.5	9,720	61
4	1	12	248	294	1.19	345	16,560	117	212.	10,176	72
5	1	15	198	275	1.39	325	15,600	118	207.5	9,960	75
6	1	24	165	199	1.21	275	13.200	138	182.5	8,760	92
7	2	6	990	574	0.58	390	18,720	68	249.5	11,976	43
8	2	12	495	356	0.72	350	16,800	98	210.	10,080	59
9	2	18	330	276	0.84	300	14,400	109	175.5	8,424	64
10	2	24	248	255	1.03	310	14,880	122	181.5	8,712	71
11	2	30	198	224	1.13	280	13,440	125	177.5	8,520	79
12	2	48	165	143	0.87	230	10,040	161	146.5	7,032	102
13	3	9	990	591	0.60	340	16,320	58	208.	9,984	35
14	3	18	495	353	0.71	285	13,680	81	164.5	7,896	47
15	3	27	330	283	0.86	285	13,680	101	161.	7,728	57
16	3	36	248	251	1.01	295	14,160	117	171.	8,208	68
17	3	45	198	219	1.11	240	11,520	110	146.	7,008	67
18	4	12	990	609	0.62	355	17,040	58	232.	11,036	38
19	4	24	495	363	0.73	335	16,080	92	203.5	9,768	56
20	4	36	330	311	0.94	330	15,840	106	197.5	9,480	63
21	4	48	248	228	0.92	270	12,960	118	156.	7,488	68
22	5	15	990	614	0.62	380	18,240	62	257.	12,336	42
23	5	30	495	349	0.71	320	15,360	92	182.	8,736	52
24	5	45	330	251	0.76	295	12,160	118	184.	8,832	73

TABLE SHOWING NUMBER OF EARS; EARS HARVESTED TO 100 STALKS; WEIGHT OF 100 EARS; POUNDS EAR CORN; EAR CORN TO 100 POUNDS STOVER; POUNDS SHELLED CORN; POUNDS EAR CORN PER BUSHEL; BUSHEL SHELLED CORN PER ACRE AS HARVESTED; AND BUSHELS PER ACRE AIR-DRY CORN.

No. plat.		Kernels in a hill.	Inches bet. hills.	Kernels planted.	Good ears.		Nubbins.		Total ears.		Ears harvested to 100 stalks.	Wt. 100 ears.			Pounds ear corn.			Wt. ear corn for 100 lb. stover.	Pounds shelled corn.			Pounds ear corn per bu.	Bu. shelled corn pr acre as husked.			Bushel per acre air dry corn.
					Per plat.	Per acre.	Per plat.	Per acre.	Per plat.	Per acre.		Good ears.	Nubbins.	Total ears.	Good ears.	Nubbins.	Total.		Good ears.	Nubbins.	Total.		Good ears.	Nubbins.	Total.	
1	1	3	990		69	3,312	325	15,620	394	18,932	57	51	25	30	35	82	117	41	29	67.5	96.5	67.8	24.9	57.8	82.7	73
2	1	6	495		141	6,768	150	7,200	291	13,968	77	65	35	50	91	53	144	67	74	43.0	117	68.9	63.4	36.9	100.3	88.5
3	1	9	330		142	6,816	94	4,512	236	11,328	71	73	36	58	104	33.5	137.5	68	84	27.5	111.5	69	72	23.6	95.6	84.4
4	1	12	248		153	7,344	53	2,544	206	9,888	70	75	34	65	115	18	133	63	93.5	14.5	108	69	80.1	12.5	92.6	81.7
5	1	15	198		127	6,096	50	2,400	177	8,496	64	79	34	66	100.5	17	117.5	57	81.5	13.5	95	69.3	69.9	11.5	81.4	71.9
6	1	24	165		106	5,088	28	1,344	134	6,432	67	80	30	69	84	8.5	92.5	56	68	6.5	74.5	65.2	58.3	5.6	63.9	56.4
7	2	6	990		115	5,520	255	12,240	370	17,760	64	58	29	38	66.5	74	140.5	56	54.5	61	115.5	68.1	46.7	52.3	99	87.4
8	2	12	495		145	6,960	125	6,000	270	12,960	76	69	32	52	100	40	140	67	82	33	115	68.2	70.3	28.3	98.6	87.3
9	2	18	330		137	9,576	63	3,024	200	9,600	72	74	34	62	101	23.5	124.5	71	82	18.5	100.5	68.4	70.3	15.8	86.1	76
10	2	24	248		147	7,056	55	2,640	202	9,696	79	75	34	64	110	18.5	128.5	71	89.5	15.5	105	68.5	76.7	13.3	90	79.5
11	2	30	198		105	5,040	45	2,160	150	7,200	67	81	39	68	85	17.5	102.5	58	68	13.5	81.5	70.3	58.3	11.6	69.9	61.7
12	2	48	165		90	5,040	28	1,344	118	5,664	83	82	34	70	74	9.5	83.5	57	59.5	7	66.5	70.3	51	6	57	50.3
13	3	9	990		86	4,128	296	14,208	382	18,336	65	59	28	35	50	82	132	63	41	67	108	68.4	35.1	51.5	92.6	81.7
14	3	18	495		120	5,760	127	6,096	247	11,856	70	63	36	49	75	45.5	120.5	73	62	37.5	99.5	67.8	53.1	32.1	85.2	75.2
15	3	27	330		141	6,768	64	3,072	205	9,840	72	72	35	60	101.5	22.5	124	77	82.5	17.5	100	69.4	70.7	15	85.7	75.6
16	3	36	248		132	6,336	52	2,496	184	8,832	73	78	40	67	103	21	124	73	83.5	17	100.5	69	71.6	14.5	86.1	76
17	3	45	198		101	4,848	48	2,304	149	7,152	68	76	36	63	76.5	17.5	94	64	62.5	14	76.5	68.8	53.6	12	65.6	57.9
18	4	12	990		70	3,360	313	15,024	383	18,384	63	54	27	37	38	85	123	53	31.5	69.5	101	68.1	27	59.6	86.6	76.5
19	4	24	495		150	7,200	109	5,232	259	12,432	71	65	31	51	98	33.5	131.5	64	80.5	27	107.5	68.5	69	23.1	92.1	81.3
20	4	36	320		150	7,200	72	3,456	222	10,656	71	73	33	60	109	23.5	132.5	67	89.5	18.5	108	68.1	76.7	15.9	92.6	81.7
21	4	48	248		141	6,768	49	2,352	190	9,120	83	69	34	60	97.5	16.5	114	73	79.5	13.5	93	68.6	68.1	11.6	79.7	70.4
22	5	15	990		67	3,216	320	15,360	387	18,576	63	57	26	32	38.5	84.5	123	48	31.5	69	100.5	68.5	27	59.1	86.1	76
23	5	30	495		136	6,528	125	6,000	261	12,528	78	67	38	53	91	47	138	75	75	38	113	68.4	64.3	32.6	96.9	85.5
24	5	45	330		123	5,904	57	2,736	180	8,640	72	74	35	62	91	20	111	60	74	15.5	89.5	69.4	63.4	13.3	76.7	66.8

The second planting was made in five different ways—one kernel every six inches, two kernels every twelve inches, etc.—and produced, on an average, 72 stalks for every 100 kernels planted, or at the rate of 17,100 stalks per acre. Here again, where only one kernel was planted in a hill a few more stalks—75 for every 100 kernels—were produced; but the variations were slight between the different methods of planting. While twice as many kernels were planted in the thickest planting as in this, only 71 per cent. more stalks were produced.

The third planting, which was also made in five different ways—one kernel every nine inches, two kernels every eighteen inches, etc.—produced, on an average, 88 stalks, over one-fourth more than the thickest planting, for every 100 kernels planted, or at the rate of 13,940 stalks per acre. Where one kernel was planted every nine inches, over 100 stalks were produced for every 100 kernels planted; where five kernels were planted every 45 inches 76 stalks were produced. But this relationship is not borne out in the intermediate plantings. While three times as many kernels were planted in the first planting as in this, only about twice as many stalks were produced.

The fourth planting, which was made in four different ways—one kernel every twelve inches, two kernels every twenty-four inches, etc.—produced, on an average, 104 stalks for every 100 kernels planted, or at the rate of 12,350 stalks per acre. Where there was one kernel to a hill, 119 stalks were produced, and the number of stalks decreased as the number of kernels to a hill increased, there being but 92 stalks produced where four kernels were planted to the hill. While there were four times as many kernels planted in the first planting as in this, only about two and two-fifths times as many stalks were produced.

The fifth planting, which was made in three different ways—one kernel every fifteen inches, two kernels every thirty inches, and three kernels every forty-five inches—produced, on an average, 121 stalks for every 100 kernels planted, or at the rate of 11,540 stalks per acre. Where one kernel was planted to a hill, considerably more stalks—139, or 27 more—were produced for each 100 kernels planted than where more than one kernel was planted to the hill. While five times as many kernels were planted in the first planting as in this, about two and one-half times as many stalks were produced.

The sixth planting was made in two ways—one kernel every 24 inches and two kernels every 48 inches—and produced, on an average, 104 stalks for every 100 kernels planted, or at the rate of 6,180 stalks per acre. This is nineteen less than the fifth planting. There is a wide difference between the two methods of planting. Where one kernel was planted to a hill 121 stalks were produced for every 100 kernels planted; while where 100 kernels were planted two in a hill, but 87 stalks were produced.

The variation in this planting from the general trend of results is not easy to understand. It was probably due to some accidental circumstance. The total number of kernels planted was so small, that an acci-

dent occurring to a few hills would make a material difference in the result. Although the number of stalks produced in the last planting was somewhat lower than might have been expected, yet the number of stalks produced in the first planting was only a little over three and one-half times the number produced in this planting, notwithstanding eight times as many kernels were planted.

Looking at it from this point only, it would seem that the third and fourth plantings gave results this season that are the most to be desired. To plant so many kernels that many of the plants would be crowded out of existance would probably be injurious to the surviving ones; on the other hand, to plant such a small number of kernels that suckers are produced to make up the deficiency would seem unprofitable. The sucker, getting started so much later and being but an offshoot from another stalk, will not reach the same development as the independent plant which started at the proper time. This will be still further illustrated under the next heading.

With the same rate of planting, more stalks were produced where but one kernel was planted in a hill; but there was hardly any difference whether it was two, three, or four kernels to a hill. For instance, taking an average of the first four plantings, where one kernel was planted to a hill 91 stalks were produced for every 100 kernels planted. With two, three, and four kernels per hill there were 79, 79½, and 80 stalks, respectively, per 100 kernels planted.

Weight of stalks and ears.—Before proceeding to a discussion of the yields of the different degrees of thickness and methods of planting, it may be worth the while to consider the development of the individual plant under these various conditions, as indicated by the weight, both absolute and relative, of stalk and ear.

The average weight of one hundred stalks of corn-fodder,* that is stover and ears, from the first planting was 61 pounds; of stover, 40 pounds; of ears, 33 pounds, and for every 100 pounds of stover produced, 52 pounds of ear corn were produced. The heaviest stalks of corn-fodder, of corn-stover, and the heaviest ears in this planting were where two kernels were planted every six inches. It has heretofore been shown that a less number of stalks were harvested per acre. The greatest weight of ears in proportion to stover, 100 pounds of stover to 63 pounds of ear corn, was where three kernels were planted to a hill. Next to this was where two kernels were planted to a hill. With these exceptions there was but little variation in the results from the different methods of planting at this thickness.

The average weight of 100 stalks of corn-fodder from the second planting was 92 pounds; of stover, 54; of ears 51, and for every 100 pounds of stover produced 69 pounds of ear corn was produced. This is 31, 14, 18, and 17 pounds, respectively, more than the first planting.

* By corn-stover is meant the residue of the mature corn plant after the removal of ears; by corn-fodder, both ears and stalks, as proposed by Prof. Armsby, Report Penn. State College Exp't Sta., Part II., 145.

There was a variation in weight of corn-fodder between two kernels every 12 inches and three kernels every 18 inches of 17 pounds; of stover of 12 pounds in favor of the former method of planting; and a variation between four and five kernels in a hill of 11 pounds of ear corn for every 100 pounds of stover produced; otherwise there was but little variation in the results from the different methods of planting.

The average weight of 100 stalks of corn-fodder from the third planting was 107 pounds; of stover, 63; of ears, 60; and for every 100 pounds of stover produced 69 pounds of ear corn was produced. This is 46, 23, 27, and 17 pounds, respectively, more than the first planting. The average weight of 100 stalks of fodder and of stover, and of 100 ears was 15, 9, and 9 pounds, respectively, more than the second planting, while there was no difference in the weight of ear corn per 100 pounds of stover. The variation of weight of corn-fodder was 17 pounds; of corn-stover, 16; and of weight of ear corn per 100 pounds of stover, of 17 pounds, between plats planted three and five kernels to a hill. In the first two cases it was in favor of the former and in the last case in favor of the latter. Otherwise the variations were not marked.

The average weight of 100 stalks of corn-fodder from the fourth planting was 119 pounds; of stover, 70; of ears, 64; and for every 100 pounds of stover there were 70 pounds of ear corn. The variations from the average were not marked in this case.

The average weight of 100 stalks of corn-fodder in the fifth planting was 118 pounds; of stover, 74; of ears, 63, and there were 60 pounds of ear corn for every 100 pounds of stover. The heaviest stalks of corn-fodder and of stover and heaviest ears were where two kernels were planted to a hill, and the lightest where three kernels were planted to a hill. The least weight of corn to stover was where one kernel, and the greatest where three kernels, were planted to a hill.

The average weight of 100 stalks of corn-fodder in the sixth planting was 150 pounds; of stover, 97; of ears, 70 pounds, while there were but 54 pounds of ear corn for every 100 pounds of stover.

To recapitulate, the average weight of 100 stalks of corn varied from 61 pounds in the first and thickest planting to 150 pounds in the sixth and thinnest planting, there being a somewhat regular although not constant increase from the thickest to the thinnest planting. The average weight of 100 stalks of stover varied from 40 pounds in the thickest planting to 97 pounds in the thinnest planting, while the weight of 100 ears raised from 33 pounds to 70 pounds. But the weight of stalks increased more than the weight of ears. Up to the fourth planting, however, the ears increased in weight faster than the stalks, which indicates that, in this case, neither the thickest nor thinnest planting was best for the production of corn. This is also indicated by the weight of ear corn to 100 pounds of stover; which was largest in the second, third, and fourth, and considerably less in the other plantings. In the thickest planting the, the stalks could not develop the ears, probably from lack of

available food supply; in the thinner planting, the stalks budded larger than they could realize in corn, and, probably, more suckers, which contained few and imperfect ears, were thrown up to make use of the available food supply. More plants would have made better use of the land, and the plants would have developed more perfectly.

In this experiment, the development of the plant seems to have depended mostly upon the thickness of planting, and but little upon the method of distribution. Although there were some very marked variations there was, in general, a great uniformity of results. To a small extent, however, better development was obtained where two or three kernels were planted to a hill than where one or four kernels were planted. Taking an average of the first four plantings, with one, two, three, and four kernels to the hill, 100 stalks of corn-fodder weighed 93, 99, 89, and 94 pounds; corn-stover, 58, 59, 52, and 56 pounds; 100 ears, 51, 54, 53, and 51 pounds; and for every 100 pounds of corn-stover there was 60, 66, 72, and 64 pounds of ear corn. That is, the ears were larger, and more corn in proportion to stover was produced where two or three kernels were planted to a hill than when one or four kernels were planted.

Number of ears.—The number of ears per acre varied from 18,932 in plat 1, one of the thickest planted plats, to 5,664 in plat 12, one of the thinnest planted plats; about three and one-third times as many in one case as in the other. This would materially affect the cost of harvesting; and, unless there is a considerable increase in yield, the increase in ears would be undesirable.

The average number of ears per acre from the first planting was 18,397; from the second, 12,749; from the third, 10,013; from the fourth, 9,384; from the fifth, 7,616; from the sixth, 6,048. For every 100 good ears, there were 370, 97, 51, 33, 43, and 28 nubbins, respectively.

Taking an average of the first four plantings, the number of ears produced per acre with one kernel to a hill was 13,529; with two, 12,504; with three, 12,216; with four, 12,649. There was little difference in the number of ears produced whether two, three, or four kernels were planted to a hill, while there were somewhat more ears produced where but one kernel was planted to a hill. It has been shown that where two and three kernels were planted to a hill, the ears were a little larger than where but one was planted.

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. If we may assume that the results in plat 12 were somewhat abnormal, as heretofore mentioned, there were, in general, fewer barren stalks on the intermediate planting than in either the thickest or thinnest planting.

Yield.—The average yield of corn-fodder, approximately, was, for the first planting 9 tons per acre; the second, 8; the third, 7½; the fourth, 7½; the fifth, 6¾; and the sixth, 5 4-5. The average yield of stover, approximately, was 6, 4¾, 4 2-5, 4⅓, 4¼, and 4 tons per acre, respec-

tively. The average yield of shelled corn, approximately, was 89, 95, 87, 83, 72, and 60 bushels per acre, respectively. Of this quantity 32, 64, 71, 74, 61, and 55 bushels, respectively, were obtained from the good ears; and 57, 31, 16, 13, 11, and 5 bushels from the nubbins.

While the largest yield of corn-fodder and of stover came from the thickest planting—one kernel every three inches, two kernels every six inches, etc.—the largest yield of shelled corn came from the second planting—one kernel every six inches, two kernels every twelve inches, etc.; and the largest yield of corn from good ears came from fourth planting—one kernel every twelve inches, two kernels every twenty-four inches, etc.; and it was nearly equaled by the third planting—one kernel every nine, two every eighteen, etc. The second planting produced eight bushels more shelled corn than the fourth, but the fourth produced ten bushels more corn from good ears. To harvest the second planting required in this case the husking of 12,700 ears; and to harvest the fourth planting, 9,400 ears, approximately.

Taking the average of the first four plantings, where one kernel was planted to a hill the yield was 92.8 bushels per acre; two kernels, 93.4; three kernels, 87.4; four kernels, 87.8; and of shelled corn from good ears there were 60 1, 66, 57.6, and 60.2 bushels per acre, respectively. There was a little more corn, and considerable more corn from good ears, where two kernels were planted to a hill.

Experiment No. 6. Corn, Planting in Hills or Drills.

This experiment was made to supplement Experiment No. 5. In that experiment the cultivation was the same whether there was one kernel every foot or three kernels every three feet. In ordinary practice, however, if corn is planted in hills, it is cultivated both ways; while, if planted in drills, it can be cultivated but one way. An acre of land was divided into two plats, each 8x10 rods. One plat was planted in drills with a corn-planter, one to three kernels of Burr's white dent corn every sixteen inches; the other was planted in hills 3 feet 8 inches apart, two to four kernels in a hill. It was hoped by this means to plant nearly equal quantities of seed on each plat. It was found, however, that four pounds were used in planting the corn in hills and four and one-half in planting in drills. Besides, it was found that on the drilled plat six rows had been missed by the planter. These were subsequently planted, but were not used in calculating the yield. The rate of planting, therefore, was rather more than five pounds for this plat. In planting, the size of the plats was ascertained only approximately, but it was accurately ascertained, before harvesting.

In the season of 1887, the land was in mammoth clover. May 1, 1888, it was plowed four inches deep; May 14th and 15th, the land was rolled, pulverized twice with a disk harrow and once with a common tooth harrow. May 16th, the corn was planted. June 1st, the land was harrowed. June 5th, both plats were cultivated east and west with a

shallow cultivator, and again, June 20th, with a deep cultivator. July 4th, the plat planted in hills was cultivated north and south, and the drilled plat was cultivated east and west, with a deep cultivator. The cultivation was unfortunate, in that it was not with a deep cultivator the first time and that the plat planted in hills was not cultivated cross-wise at the second time.

November 12th, the ear corn on the plat which was planted in hills weighed 2,740 pounds, or, at 70 pounds to the bushel, 78 bushels per acre. The ear corn on five sixths of the drilled plat, one-sixth of the plat having been missed in planting, as heretofore mentioned, weighed 2,300 pounds, or at the rate of 2,760 pounds per plat, almost exactly the same as on the plat planted in hills. Although the test lacks the thoroughness desirable, the result is similar to results obtained in Experiment No. 5, viz., no marked differences from different methods of planting.

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. May 2, 1888, it was plowed about four inches deep. May 4th, the land was rolled, pulverized once with a disk harrow, twice with a common tooth harrow, and marked, the furrows being 3 feet 8 inches apart each way. May 5th, eight plats, approximately 2x8 rods each, or, more exactly, 9x35 hills—a little less than one-tenth of an acre—were planted, four kernels to the hill, with Burr's white dent corn. The space of one row was left between successive plats. The land was moist. May 14th, the corn was coming up and was rolled. In order to observe the result of different amounts of cultivation on the yield of corn it was arranged to cultivate very frequently plat 8 with a deep cultivator, a John Deere being ordinarly used, and plat 7 with shallow cultivator, the Tower being ordinarily used; to cultivate the usual number of times plat 6 with a deep and plat 5 with a shallow cultivator, the ordinary amount being given; to cultivate plat 4 with a deep and plat 3 with a shallow cultivator, as in plats 5 and 6, except that the cultivation was to be continued past the ordinary time of laying corn by; to remove the weeds from plat 2 without any cultivation and with the least possible disturbance of the soil; and to hoe in the ordinary way, for purposes of comparison, plat 1 in *Experiment No. 9; Depth of Cultivation.*

The table on page 108 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 quantities of cultivation were adjacent. Plat 1 was hoed, the ground being stirred one or two inches deep, and plat 2 had its weeds removed by scraping the surface with a sharp hoe, which barely moved the surface

of the soil. May 26th and 31st, and June 8th and 20th, plat 5 was cultivated shallow and plat 6 deep; plats 3 and 4, on these dates, and also July 13th and August 1st. Between May 25th and June 25th, a period of thirty days, plats 7 and 8 were cultivated twelve times, or three times as often as is usually done.

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

Date.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
May 14.....	Rolled .	Rolled .	Rolled..	Rolled .	Rolled .	Rolled..	Rolled .	Rolled .
May 26.....	Hoed ..	Scraped	Shallow	Deep ..	Shallow	Deep...	Shallow	Deep...
May 31.....	Hoed ..	Scraped	Shallow	Deep...	Shallow	Deep...	Shallow	Deep...
June 2.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 4.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 6.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 8.....	Hoed ..	Scraped	Shallow	Deep...	Shallow	Deep...	Shallow	Deep...
June 11.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 13.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 15.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 18.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
June 19.....	.....	.....	Hoed in row.	Hoed in row. ..	Hoed in row..	Hoed in row.	Hoed in row..	Hoed in row .
June 20.....	Hoed ..	Scraped	Shallow	Deep...	Shallow	Deep. .	Shallow	Deep...
June 25.....	.....	.....	.....	.....	.....	.....	Shallow	Deep...
July 13.....	.....	.....	Shallow	Deep ..	.....	.....	.....	.....
July 20.....	Scraped	Scraped	.....	.....	.....	.....	.....	.....
August 1....	.....	.....	Shallow	Deep ..	.....	.....	.....	.....

Effect of the cultivation upon the soil and upon the weeds.—The shallow cultivator stirred the ground about one inch deep and left the ground rather level. However, the cultivation being all in one direction the result was to ridge the ground somewhat. The nearest points of opposite blades of cultivator were ten inches, and in some cases further apart, this seeming to be as close as it was practicable to run the blades where the corn was in hills. The deep cultivation was at least three inches deep, and left the ground ridged and uneven, sometimes rather more ridged than usual, because the ground was too moist in a few cases for the best cultivation. It was ascertained by measurement that the cultivator did not usually run nearer than five inches, and it is believed that the roots were not cut on an average nearer than six inches from the center of the hill.

Examination, May 28th, after heavy rains, showed that the weeds were somewhat better destroyed by the deep than by the shallow cultivation. More weeds were left both in the row and between the rows by the latter mode. This was found to be the case, usually, after each cultivation.

June 19th, it was found that the shallow cultivated plats, plats 3, 5, and 7, had many weeds in the rows, while the deep cultivated plats had but few. As these would have been removed had it been practicable to cultivate both ways, and as it was desired to study the effect of deep and shallow cultivation and of quantity of cultivation, uninfluenced by other causes, the weeds were removed with a hoe with as little cultivation as practicable. So, also, it was found July 20th that grass was tall and thick on plat 2, but shorter and thinner on plat 1, and it was removed by scrap-

ing the plats with a hoe. Plats 3 and 4 were left much freer from grass and weeds than the other plats on account of the cultivation subsequent to tasseling.

Field notes.—July 10th, there were occasional tassels, and they were apparently in equal quantities on the different plats. July 18th, the corn was pretty fully in tassel. Plat 1 was more vigorous than plat 2 and was, probably, the most vigorous plat. Plats 4, 6, and 8, the deep cultivated plats, *seemed* hardly so vigorous or so far advanced as plats 3, 5, and 7, the shallow cultivated plats. September 14th, the corn was out of the way of frost. No difference was observable in stage of ripeness, except that, possibly, plats 3 and 4 seemed a little greener. At this time the general appearance of the corn indicated that plat 1 was the best, plat 2 the poorest, and no difference could be observed between the three deep and the three shallow cultivated plats, nor between those cultivated more and less frequently, except as just stated; and it may be said that several men, some of large experience in corn raising, examined the corn about this time and there was a practical unanimity of opinion on this point. The indications did not prove correct, however, for while plat 1 produced the largest yield, plat 2 gave by no means the least; and there was an appreciable difference between the yield of the deep and shallow cultivated plats.

Yield.—November 23d each of the thirty-five rows nine hills, or two rods, long of each plat was husked and weighed. A fifty-pound sample yielded 42 pounds of shelled corn. The table, page 110, gives the weights in detail, the total weight in pounds per plat, and the calculated number of bushels per acre.

The following table gives a summary of the results:

Plat.	Kind of cultivation.	Pounds ear corn per plat.	Bushels per acre.	Average.
1	Hoed, ordinary	621.5	96.	
2	None, weeds removed by scraping surface	584.5	90.	
3	Shallow, twice after tasselling	611.	94.1	89.7
4	Deep, twice after tasselling	553.5	85.2	
5	Shallow, ordinary	609.	93.8	89.4
6	Deep, ordinary	551.5	84.9	
7	Shallow, frequent	614.	94.6	89.6
8	Deep, frequent	549.	84.5	

There is, practically, no difference in the yield between the two plats 5 and 6, which were given the ordinary amount of cultivation, and plats 7 and 8, 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. The only benefit derived

from this cultivation was that the land was much freer from weeds, the effect of which another season is yet to be observed.

It may be well to remind the reader that the season was unusually favorable for corn, and that the land was newly broken sod, which is generally conceded to require less cultivation than old land, and that final judgment may be wisely delayed until the experiment can be repeated several years on the same land.

TABLE SHOWING POUNDS OF EAR CORN PER ROW AND PER PLAT, AND BUSHELS PER ACRE.

Row.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
1	2c.	16.5	13.5	18.	19	19.	19.	11.5
2	20.	17.5	16.	17.5	17.	15.	18.	15.
3	15.	16.5	15.	16.	15.	15.	15.5	13.
4	18.	18.	20.	15.	18.5	15.	20.5	16.
5	18.5	18.	16.	16.	14.	16.	15.	16.5
6	18.	19 5	14.5	18.5	19 5	15.5	18.	14.
7	20.	17.5	17.5	16.5	18.	17.	16.5	17.
8	19.5	18.	18.	16.5	18.	16.	17.	17.
9	17.5	17.	17.5	15.5	16.5	16.5	17.5	18.5
10	18.	18.	20.	18.	20.	16.5	16.	15.5
11	11.5	14.5	19.5	16.5	16.	14.5	17.	17.
12	18.5	19.	16.5	14.	19.	16.5	17.	16 5
13	17.	15.5	19.5	18.	12.5	14.	17.	16.5
14	16.	16.5	19.5	13.5	17.5	16.5	17.	15.
15	18.	14.5	16.5	15.5	16.	15.5	14.	13 5
16	16.	17.	18.5	19.	18 5	17.	17.	16 5
17	17.	15.	18.5	15.	19.	17.	18.5	14.5
18	20.5	17.5	15.5	14.5	15.5	15.5	18.	15.5
19	20.	16.	16.5	13.	20.5	15.	16.	14.5
20	16.	16.	16.5	16.5	16.5	15.	18.5	18.5
21	14.	14 5	18.	15.5	17.5	13.	15.5	13.5
22	19 5	16.5	15.	16.	18.5	17.	17.	16.
23	16.5	15.5	18.	16	17.5	13.	18.	15.
24	18.	15.5	18.	17.5	18.	15.5	18.	15
25	18.	16.	16.5	15.	19.	14.	15.	17.
26	18.5	17.5	19.	12.5	16.	18.	18.5	15.5
27	16.5	15.5	17.	14.	19 5	14.5	18.5	16.5
28	16.	17.5	18.	16.5	15.5	16.5	17.	17.5
29	17.	16.5	18.	16.	14.5	16.5	19.5	16.
30	19.	18.	16.5	16.	19.	15.5	16.5	16.
31	17.	17.5	19.5	14.5	18.	15.5	20.	16.5
32	17.5	15.	18.5	15.	18.5	14.	16.5	17.
33	17.	13.	17.	17.	14.	16.	19.5	15.
34	20.	19.	20.	16.	20.	19.	20.	16.5
35	22.	19.	17.	13.	17.	15.5	21.5	14.
Lbs.	621.5	584.5	611	553.5	609	551.5	614	549
Bu.	96.0	90.0	94.1	85.2	93.8	84.9	94.6	84 5

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.*

Three plats which were cultivated with a shallow cultivator, one four times, one four times during the season and twice after tasseling, and one twelve times during the season, yielded about 94, 94, and 94½ bushels per acre, respectively—an average of a little more than 94 bushels; while three plats cultivated with ordinary deep cultivator yielded 85, 85, and

84½ bushels per acre, respectively—an average of a little less than 85 bushels. There was on an average 9 bushels more produced 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, yielded at the rate of 90 bushels per acre, which is four bushels below the yield of the shallow cultivated plats and five bushels above the deep cultivated crops; and plat 1, hoed in the ordinary manner, yielded 96 bushels 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 might seem to indicate that in this experiment a certain amount of judicious cultivation of the soil was beneficial, while too much disturbance of the soil was harmful. This may or may not express a general truth; but there is another possible reason why the plat which was not cultivated did not yield as well as that which was cultivated shallow. As already said, July 20th, since the method of removing the weeds was less effective on plat 2, the grass on this plat was thick and tall, while it was much shorter and thinner on other plats. This was a critical period for the corn plant, and, possibly, the smaller yield may have been as much on account of the greater number of weeds as on account of the less pulverization of the soil. The corn raiser need not congratulate himself that he can raise corn without giving cultivation of some kind. The point at issue is whether the cultivation should be for the purpose of both removing the weeds and stirring the soil, or whether it is only desirable to give the land such cultivation as will keep it free from weeds.

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

Every other row of the thirty-five rows, 2 rods long, of each of the eight plats described in *Experiment No. 8*, was root-pruned about three inches deep.

It was determined by measurement that an ordinary cultivator usually runs not nearer than five inches, and it is believed that roots were not cut, on an average, nearer than six inches from the center of the hill. A frame, one foot square, therefore, was placed over the hill and a butcher-knife was drawn along the edges of this frame. The corn was root-pruned three times, at the time of the second, third, and fourth and last ordinary cultivations. The first time it was root-pruned, May 31st–June 1st, the corn was six to ten inches high, to tip of leaves. The last time it was root-pruned, June 20th–21st, it was three to four feet high, to tip of leaves. At the first and second pruning, a gauge was placed on the butcher-knife, which allowed it, when held vertical, to cut three and three-eighths inches deep, but as in practice it was not held strictly vertical, it is believed that the effective cutting depth was three inches. At the last pruning, the knife cut four inches deep; but the dirt was so ridged about plats 3 to 8 that, it is believed, the knife did not cut deeper than before, unless in plats 1 and 2.

No difference was at any time observed between the pruned and unpruned rows in regard to size, vigor, or stage of maturity.

The yields of seventeen pruned and seventeen unpruned rows from each plat are compared in detail below. The table on page 113 gives a summary of the results:

TABLE SHOWING POUNDS OF CORN IN EACH OF 17 PRUNED AND 17 UNPRUNED ROWS; AND POUNDS PER PLAT FOR PRUNED AND UNPRUNED ROWS.

Row.		Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
1	Pruned	20.	16.5	13.5	18.	19.	19.	19.	11.5
	Unpruned	20.	17.5	16.	17.5	17.	15.	18.	15.
2	Pruned	15.	16.5	15.	16.	15.	15.	15.5	13.
	Unpruned	18.	18.	20.	15.	18.5	15.	20.5	16.
3	Pruned	18.5	18.	16.	16.	14.	16.	15.	16.5
	Unpruned	18.	19.5	14.5	18.5	19.5	15.5	18.	14.
4	Pruned	20.	17.5	17.5	16.5	18.	17.	16.5	17.
	Unpruned	19.5	18.	18.	16.5	18.	16.	17.	17.
5	Pruned	17.5	17.	17.5	15.5	16.5	16.5	17.5	18.5
	Unpruned	18.	18.	20.	18.	20.	16 5	16.	15.5
6	Pruned	11.5	14.5	19.5	16.5	16.	14.5	17.	17.
	Unpruned	18.5	19.	16.5	14.	19.	16.5	17.	16.5
7	Pruned	17.	15.	19.5	18.	12.5	14.	17.	16.5
	Unpruned	16.	16.5	19.5	13.5	17.5	16.5	17.	15.
8	Pruned	18.	14.5	16.5	15.5	16.	15.5	14.	13.5
	Unpruned	16.	17.	18.5	19.	18.5	17.	17.	16.5
9	Pruned	17.	15.	18.5	15.	19.	17.	18.5	14.5
	Unpruned	20.5	17.5	15.5	14.5	15.5	15.5	18.	15.5
10	Pruned	20.	16.	16.5	13.	20.5	15.	16.	14.5
	Unpruned	16.	16.	16.5	16.5	16 5	15.	18.5	18.5
11	Pruned	14.	14.5	18.	15.5	17.5	13.	15.5	13.5
	Unpruned	19 5	16.5	15.	16.	18.5	17.	17.	16.
12	Pruned	16.5	15.5	18.	16.	17.5	13.	18.	15.
	Unpruned	18.	15.5	18.	17.5	18.	15.5	18.	15.5
13	Pruned	18.	16.	16.5	15.	19.	14.	15.	17.
	Unpruned	18.5	17.5	19.	12.5	16.	18.	18.5	15.5
14	Pruned	16.5	15.5	17.	14.	19.5	14.5	18.5	16.5
	Unpruned	16.	17.5	18.	16.5	15.5	16.5	17.	17.5
15	Pruned	17.	16.5	18.	16.	14 5	16.5	19.5	16.
	Unpruned	19.	18.	16.5	16.	19.	15.5	16.5	16.
16	Pruned	17.	17.5	19.5	14 5	18.	15.5	20.	16.5
	Unpruned	17.5	15.	18.5	15.	18.5	14.	16 5	17.
17	Pruned	17.	13.	17.	17.	14.	16.	19.5	15.
	Unpruned	20.	19.	20.	16.	20.	19.	20.	16.5
Total	Pruned	290.5	269.	294.	268.	286.5	262.	292.	262.
	Unpruned	309.	296.	300.	272.5	305.5	274.	300.5	273.5

TABLE SHOWING NO. OF PLAT; KIND OF CULTIVATION; BUSHELS PER ACRE FROM PRUNED AND FROM UNPRUNED ROWS; AND DIFFERENCE.

Plat.	Kind of cultivation.	Pruned. Bushels per acre.	Unpruned. Bushels per acre.	Difference in favor of unpruned.
1	Hoed, ordinary	92.3	98.2	5.9
2	None, weeds removed by scraping surface	85.5	94.0	8.5
3	Shallow, twice after tasseling	93.4	95.3	1.9
4	Deep, twice after tasseling	85.2	86.6	1 4
5	Shallow, ordinary	91.0	97.0	6.0
6	Deep, ordinary	83 2	87.0	3.8
7	Shallow, frequent	92.8	95.5	2 7
8	Deep, frequent	83.2	86.9	3.7

It is noticeable that while there was, on an average, only about four bushels more corn produced on the unpruned than the pruned plats, in no plat was the difference in favor of the pruned portion. It is interesting to note, also, that the largest difference was, where it was to be expected, in the plat whose soil was not otherwise disturbed, and that the next two largest differences were in shallow cultivated plats; while the least differences were on those plats which had considerable subsequent cultivation. While this experiment in no sense establishes that such root-pruning is injurious, it may be proper to point out that there was considerable rain during the period of cultivation, and a heavy rain the day following the last pruning; so that the corn's power of recuperation from injury by root-pruning, if such there was, must have been at its maximum.

Experiment No. 54. Corn, Root Growth.

In a study of the effect of deep and shallow cultivation and of root-pruning on the growth of the corn plant, a knowledge of the number, length, and position of corn roots is essential. To this end a few hills were examined just as they were found growing in the field, by digging a trench beside the hill and washing the vertical side with water. The particular object of the inquiry was to ascertain the number of the roots and their depths at the points where they are likely to be disturbed by cultivation; what proportion of all the roots was sufficiently near the surface to be so injured; and whether by root-pruning, three inches deep, as in *Experiment No. 10*, enough roots would be cut, so that any considerable effect should be expected therefrom. These investigations are as yet too limited to allow any general conclusions, but they will form the basis of future work in this line.

Only a portion of the roots, necessarily, could be traced by the method used. Such delicate fibres as young corn roots are easily broken in washing the dirt from them.

Four hills were examined. They grew on a black prairie loam, which is one and one-half to two feet deep, and is underlaid with permeable

yellow clay. The land had been fall-plowed about six inches deep, and well prepared before planting with disk and common tooth harrows.

Hill 1. Variety, early yellow dent; planted May 10th; examined June 5th, 26 days after planting; contained four plants.

Plant 1, eleven inches high to top of leaf, had two whorls of roots about one-half inch apart; upper whorl, ten roots; lower, five. The primary root had many rootlets.

Plant 2, nine inches high, had two whorls of roots about one-half inch apart; upper whorl, three roots; lower, four. The primary root was two inches below the surface of the soil at its base. It was traced 14 inches and then broken. The point of breaking was 10 inches in a horizontal direction from the plant and 5 inches deep. At 6 inches from plant it was 4 inches deep. The 14 inches of this root that was traced, contained 100 or more rootlets. Many were one and one-half inches, a few three inches, long.

Plant 3, nine inches high, had three whorls of roots; upper two nearly together; upper whorl, four roots; middle, four; lower, five, including primary root.

Plant 4, six inches high, had two whorls of roots; upper whorl, three roots; lower, five, including primary root. The primary root was 1½ inches below the surface of the soil at its base. Its end was 13 inches distant horizontally from base, and 5 inches deep. At 6 inches from its base it was 2½ inches deep.

Hill 2. Variety, white dent; planted June 8th; examined June 20th, 12 days after planting; contained three plants.

Plant 1, five and one-half inches high, had two whorls of roots; upper whorl was three-fourths of an inch below the surface, and had four roots just starting; lower whorl was two and a half inches below surface and had four roots. Two were 6 inches long and 4 inches deep at their extremities and had many rootlets. The primary root was 2½ inches below surface at its base. It was 13 inches long and 6 inches deep at its extremity. At 6 inches from base it was 3½ inches from surface. It had many rootlets.

Hill 3. Variety, white dent; planted June 1st; examined June 20th, 20 days after planting; contained four plants.

Plant 1, fifteen inches high, had two whorls of roots; upper whorl, 8 roots. A representative root on the upper whorl was 1½ inches below surface at its base, 8 inches long and 2 inches deep, at its extremity. The lower whorl had two roots. The primary root was 3 inches below the surface at its base; was broken at 4 inches, and at this point was 4 inches deep. The secondary root of this whorl was traced 22 inches, where it was broken. At its base it was 2½ inches deep; at 6 inches from its base, 3½ inches deep; at 12 inches, 5 inches deep; and at 22 inches, 9 inches deep. It had many rootlets.

Plant 2, fourteen inches high, had two whorls of roots; upper whorl, ten roots; and their bases were 1½ inches below the surface of the soil. One root on this whorl was 18 inches long. At 6 inches from its base it was 2 inches deep. At its end it was 4½ inches deep. Another root was traced 12 inches and broken. At 6 inches from its base it was 4½ inches deep, and at point of breaking it was 5½ inches deep. Another was 15 inches long. At 6 inches from its base it was 4 inches deep. Another was 7 inches long and 2 inches deep at its end. Another was 14 inches long. For the first 8 inches it was ¾ of an inch deep; at its end, 1¾ inches deep. Another was 6 inches long; three others, 3½ inches long. The lower whorl had 6 roots, including the primary root. The primary root and 4 others were broken 3 inches from their base. The remaining root was traced 26½ inches and then broken. For the first 15 inches it was 2½ inches deep. It then took a downward direction, and at point of breaking was 8 inches deep.

Hill 4. Variety, white dent; planted May 26th; examined June 21st, 26 days after planting; had four plants 20 to 22 inches high.

At the circumference of a half circle, with the hill for the center and a radius of six inches, were found 10 important roots, between 3 and 4 inches deep—on an average rather nearer 3 than 4 inches deep.

Plant 1, had two whorls of roots; upper whorl, 9 roots; five averaged 3 inches long. One was broken at 13 inches from the base. At 6 inches from its base it was 3½ inches deep. The lower whorl had 3 roots, including primary root. The primary root was traced 10 inches and broken. Apparently, it was not much longer. One of the secondary roots was 2½ inches deep, and the other 10 inches long.

Plant 2, had two whorls of roots; upper whorl, 9 roots, mostly 1 to 6 inches long, although some were broken at 6 inches; lower whorl, 5 roots, including primary root. The primary root was traced 35 inches and then broken, apparently very near its end. At its base it was 2 inches deep, at 6 inches from base, 3½ inches deep; at 25 inches, 13 inches deep. It then went down vertically 10 inches. It had many rootlets, 6 or more inches long, some of which came very near to the surface.

Summary. Nine plants, which averaged 12 inches high to tip of leaves, had altogether 94 roots, or an average of over 10 apiece. The longest root traced was 35 inches long, the plant being 22 inches high. A plant 4½ inches high had a root 13 inches long. Twenty-four roots were examined (some did not belong to the plants mentioned, but to others in the same hill) at 6 inches from their base. One was 4½ inches deep; five, 4 inches deep; twelve, 3½ inches deep; one, 2½ inches deep; four, 2 inches deep; and one ¾ of an inch deep at this distance from base of root. Three-fourths of the roots, therefore, would not have been broken by root-pruning or cultivating three inches deep; but all but one would have been, at four inches deep.

Experiment No. 11. Corn, Effect of Fertilizers.

This experiment was conducted to determine on a somewhat extended area the comparative effect of some of the commoner forms of commercial fertilizers, hog tankage, and stable manure, on land of only medium quality on which corn had been raised two years successively.

Ten plats, 2 x 76 rods, were treated with fertilizers as follows:

TABLE SHOWING NAME AND AMOUNT OF FERTILIZERS USED.

Plat.	Fertilizers.	Quantity.	†Laboratory number.
1	Stable manure, mixed	*30 loads	
2	None		
3	Stable manure	*30 loads	
4	Hog tankage	350 lb.	14
5	Muriate of potash	100 lb.	10
6	Hog tankage and muriate of potash	350 lb. 100 lb.	14 10
7	Dissolved bone-black	300 lb.	12
8	Sulphate of ammonia	125 lb.	9
9-10	None		

The land was uneven, being high in some places and low in others. The high and low places were distributed somewhat, though not altogether, regularly throughout the different plats.

The stable manure, which was applied before the land was plowed, was a mixture of horse and cattle manure, combined with the usual litter. It was spread on plat 1, April 18th to 21st, and on plat 3, May 14th to May 18th. The commercial fertilizers were sown broadcast on the plowed land May 18th and 19th. May 7th to 19th, the land was plowed about five inches deep. May 19th, the plats were harrowed and planted with check-rower to Champaign dent corn. December 7th, row 10 and part of row 9 was husked and corn weighed. December 17th to January 1st, 1889, rows 1 to 8 were husked in reverse order. The corn of each shock in rows 1 to 8 was weighed separately, and the number of ears was ascertained. During the period of husking and weighing the weather was not altogether favorable. It was the endeavor to weigh the corn and stover under as nearly similar conditions as possible; but it is believed that the stover of rows 1 to 6 was damper than on rows 7 to 10.

The weight and number of ears from each shock in rows 1–8 are given in detail on pages 117 and 118.

As will be seen by an inspection of the table on the next page, the average yield per acre and the difference in yield of corn was no greater on plats treated with commercial fertilizers than that of those having no manure. It may be concluded, therefore, that the commercial fertilizers produced no appreciable increase in yield. The two plats treated with

* Approximately.
† For analyses of fertilizers, see Experiment No. 24.

stable manure, however, each gave larger yields than any of the other plats, on an average 11 bushels larger. This is not a very marked increase. Indeed, the manure could not be considered a profitable investment in this case, were it not for the surplus fertility left in the soil for next year, it being not at all improbable that a more marked increase will be noticed another year.

The plats were directly adjacent, no space being left between them; and as some of the roots of two rows, or two-ninths of plat 2, would come in direct contact with the fertilized soil of plats 1 and 3, it is not at all improbable that the yield on plat 2 was thereby increased. This is, also, probably, indicated by the weight of 100 ears. In the five plats treated with commercial fertilizers the average weight of 100 ears was 50½ pounds; on the two plats treated with stable manure, 58½ pounds; while on plat 2, 100 ears weighed 56 pounds.

The yield of stover was increased on the plats treated with stable manure in about the same proportion, apparently, as the yield of corn. The figures given in the table make the increase of stover in these plats 21 per cent., and the increase of corn, 18 per cent. The stover on plats 1–10 was unquestionably dryer, especially on plats 9 and 10, than the other plats, thus introducing an error of unknown extent.

The following table gives a summary of the results:

TABLE SHOWING FERTILIZER USED, YIELD OF CORN PER PLAT AND PER ACRE; AND WEIGHT OF 100 SELECTED EARS.

Plat.	Fertilizers.	Ears.	Weight ear corn.	Wt. of stover.	Av. wt. 100 ears	Per acre.		
						Ears.	Sh'd corn.	Weight of stover.
1	Stable manure	7,493	4,446	3,080	59	7,887	71	3,242
2	None	7,422	4,173	2,790	56	7,813	66	2,937
3	Stable manure	7,610	4,404	3,295	58	8,010	70	3,468
4	Hog tankage	7,183	3,628	2,805	51	7,558	58	2,953
5	Muriate of potash	7,068	3,454	2,760	49	7,440	55	2,905
6	Hog tankage and muriate of potash	7,021	3,551	2,530	51	7,390	56	2,663
7	Dissolved bone-black	7,399	3,682	2,555	50	7,788	59	2,690
8	Sulphate of ammonia	7,656	4,014	2,710	52	8,059	64	2,853
9	None	.....	3,465	2.320	...	.....	55	2,444
10	None	.....	4,040	2,435	...	.....	64	2,563

TABLE SHOWING NUMBER OF EARS PER SHOCK, EACH CONTAINING 81 HILLS FOR EACH PLAT.

No. of shock.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
1	187	190	218	218	235	180	195	208
2	214	211	187	219	202	208	220	215
3	210	196	202	196	194	235	216	210
4	185	212	219	196	202	199	208	211
5	212	184	210	215	193	195	210	201
6	208	201	200	184	203	188	195	210
7	216	193	210	171	210	200	194	197
8	222	192	207	182	202	211	202	218
9	217	181	203	193	176	197	205	215
10	204	197	182	220	202	203	175	201
11	191	187	198	182	218	221	200	200
12	200	202	210	191	203	188	172	197
13	205	198	185	193	200	209	186	194
14	211	199	206	191	187	191	208	201
15	212	212	216	203	195	205	193	198
16	221	207	215	211	159	161	198	230
17	223	200	184	189	158	170	200	217
18	218	221	193	119	126	129	213	199
19	207	215	212	195	165	146	167	205
20	182	197	219	197	192	164	185	206
21	198	195	218	217	190	175	183	223
22	184	195	211	210	199	211	202	210
23	190	200	212	206	217	204	197	213
24	187	212	222	193	193	196	208	207
25	200	210	200	198	190	204	211	217
26	171	209	212	203	214	197	200	199
27	181	196	245	211	172	199	278	200
28	184	208	203	189	189	171	208	199
29	171	182	194	213	207	215	190	193
30	174	178	207	219	205	176	215	211
31	185	186	200	211	197	192	188	185
32	164	172	169	138	167	174	188	195
33	174	155	160	145	169	168	161	166
34	180	159	177	155	150	155	160	177
35	188	167	175	141	118	114	153	174
36	189	185	179	129	137	150	165	162
37	205	171	185	173	162	163	170	197
38	222	247	156	167	170	151	180	195
Sum.	7,493	7,422	7,610	7,183	7,068	7,021	7,399	7,656

TABLE SHOWING WEIGHT OF EAR CORN PER SHOCK, EACH CONTAINING 81 HILLS, FOR EACH PLAT.

No. of shock.	Plat 1.	Plat 2.	Plat 3.	Plat 4.	Plat 5.	Plat 6.	Plat 7.	Plat 8.
1	113.5	114.5	129 25	122.75	139.25	98	108.25	111
2	126.25	119.5	123	125	125.5	111	112.75	120.5
3	121.75	110.5	123.5	115	115.75	126 5	116.75	119
4	113	123.75	132	114	119.75	104.75	117	127
5	123.75	111	125.5	118.75	127.5	113	109	112.5
6	123.75	124	117	105.5	119.25	106	91.25	116
7	118	115	117	84.5	112	100	98	113.5
8	124	108	112.5	89	109	105	101.75	117
9	125.5	96.75	106.5	83	87.75	102	105	118.5
10	115	102.5	102.25	98.75	109 5	115	90.25	108.5
11	105	93	111.25	97.5	126.75	121	99 25	102
12	112.5	105.5	121.5	103.25	116.5	104.5	90.5	102
13	117	108	108.5	101.5	113.5	116	98.75	95
14	123	115.75	122.5	98.5	100	107	108.25	102
15	129	120.5	128	107	106.25	113.25	102.25	98.5
16	136.5	120	131.75	121.5	82.5	80.75	102.75	117
17	138	124.5	116	100.5	66	77.75	98.25	114.25
18	133	130	112.25	50.5	53	52.50	106	96
19	127.5	127.5	123	94.5	87	69 50	87.5	100
20	110	168.25	124.75	90	101.25	80	93.5	109
21	109	109.5	125.25	105	102	87	89 5	117.5
22	110	116	120.25	110	112.25	110.5	107.5	117
23	109	123	126	106	121.75	103.75	108	118.25
24	108	125.25	130.75	103.75	111.5	103	109.25	105.5
25	125.5	124.5	116.25	94.75	105.5	104	104.25	105.5
26	107	121	122.25	105.75	116	105.5	104.5	100
27	112	111	139.75	109.75	99	100.5	141.25	103
28	109	114	117.5	98.75	105.5	84	108	106.5
29	106	97	115.5	104	115	104.5	106.5	103.75
30	102	96	125.5	114.75	112	91.5	118.25	110
31	107	97.75	118.25	102.25	101.5	100	110.5	105.5
32	94.5	92.5	98.75	59	89.75	79 75	97.25	109
33	98	74.75	86.5	54	77.75	75.5	81.75	90.5
34	114.5	81.5	93.5	66.75	86.25	59	66	87
35	115.25	84 75	96.75	65 75	52.25	45	60.5	76
36	118.5	92.25	96.5	55.5	66.5	57.5	68.5	76.75
37	127.25	95.25	103.25	74	75	67	79	88.5
38	137	140	83 25	76.25	80	69.5	84	94.25
Sum.	4,445.5	4,172.5	4 403.75	3,628	3,853.5	3,551	3,681.5	4,013.75

Experiment No. 24. Comparison of Fertilizers as used with Corn.

This experiment consists of a comparison of a few of the common forms of commercial fertilizers together with hog and cattle tankage and stable manure. The hog and cattle tankage was prepared from the refuse of the slaughter houses of Chicago, and it is obvious that the profitable use of these materials would be a matter of wide economic importance.

Twelve plats, each 9 by 35 hills, or, approximately, 1-10 acre, were used. The preparation of the seed-bed and the planting of the corn, May 5th, was in every way the same as described in Experiment No. 8.

The stable manure was applied the day before the land was plowed. The other fertilizers 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.

TABLE SHOWING POUNDS OF FERTILIZER PER ACRE; OF PHOSPHORIC ACID, SOLUBLE AND REVERTED; OF NITROGEN; OF AMMONIA EQUIVALENT OF NITROGEN; AND OF POTASH.*

No. of plat.	Laboratory No. of fertilizer.	Name of fertilizer.	Fertilizer used.	Total phosphoric acid	Soluble phosphoric acid.	Reverted phosphoric acid.	Nitrogen.	Ammonia equivalent to nitrogen.	Potash.
1	4	Stable manure	40,250	137	.....	.....	209	253	141
2	14	Hog tankage	350	53	.....	18	17	20	....
3	10	Muriate of potash	100	.....	.....	.....	.....	.....	53
4	14	Hog tankage	350	53	.....	18	17	20	53
	10	Muriate of potash	100						
5	.....	None	.....	.....	.....	.....	.....	.....	....
6	13	Cattle tankage	200	54	.....	14	12	14	....
7	3	Bone meal	200	62	.....	12	8	9	....
8	5	Glue factory superphosphate	400	79	10	37	13	16	....
9	12	Dissolved bone-black	300	62	60	.....	10	12	....
10	.....	None	.....	.....	.....	.....	.....	.....	....
11	9	Sulphate of ammonia	125	.....	.....	.....	25.2	32	....
12	8	Nitrate of soda	160	.....	.....	.....	24 8	31	....

TABLE SHOWING PARTIAL ANALYSIS OF FERTILIZERS USED.

Laboratory No.	Name of fertilizer.	Total phosphoric acid.	Soluble phosphoric acid.	Reverted phosphoric acid.	Nitrogen.	Equivalent to ammonia.	Potash.	Moisture.
10	Muriate of potash	.....	.....	.....	.....	.....	52.98	0.78
9	Sulphate of ammonia	.....	.....	.....	21.00	25.50	.....	.....
8	Nitrate of soda	.....	.....	.....	15 55	19 06	.....	.....
4	Stable manure	0.34	.....	.....	0 52	0.63	0.35	74.4
14	Hog tankage	15.06	.....	5.05	4 76	5.78	0.56	.....
13	Cattle tankage	26.86	.....	6.77	5 60	6 80	0.73	.....
12	Dissolved bone-black	20.75	20.24	.....	3.36	4 08	.....	.....
5	Glue factory superphosphate	19.69	2.52	9.65	3.22	3.91	.....	.....
3	Bone meal	30.76	.....	5.95	3.78	4.59	.....	.....

The plats were cultivated five times between May 26th and June 26th with a shallow cultivator. Two cultivators were used at different times, the Tower Surface Cultivator, manufactured by J. D. Tower & Bros., Mendota, Illinois; and the Bash Surface Cultivator, manufactured by the Sandwich Enterprise Co., Sandwich, Illinois, either of which, when properly handled, did satisfactory work. June 21st to 22d, the plats were hoed to remove weeds about the hill.

No difference was observable in date of tasseling, date of maturity, or in vigor of growth at any time that could be attributed with certainty to any of the fertilizers applied. October 20th, the corn was husked on each plat, thrown on the ground, that on plats 1 to 7 weighed, and 78 pounds

*Analyses were made by Bedros Tatarian, under the direction of the Station Chemist.

of corn were taken for sample. October 24th, the corn from plats 8 to 12 was weighed and 80 pounds were taken for a sample. November 14th, the 78-pound sample, which was taken October 20th, weighed 76 pounds and yielded 63.75 pounds of shelled corn. The 80-pound sample, taken October 24th, weighed 75 pounds and yielded 62.5 pounds. The difference in the percentage 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.

The following table gives the weight in pounds of ear corn and shelled corn per plat, pounds of ear corn per bushel, and bushels per acre, for each plat:

TABLE SHOWING NUMBER OF PLAT; FERTILIZER; POUNDS EAR CORN PER PLAT AND PER BUSHEL; POUNDS SHELLED CORN PER PLAT; AND BUSHELS PER ACRE.

Plat.	Name of fertilizer.	Lb. ear corn per plat.	Lb. ear corn per bushel.	Lb. sh'l'd corn per plat.	Bushels per acre.
1	Stable manure	650	69	527	96.7
2	Hog tankage	665	69	539	99.1
3	Muriate of potash	665	69	539	99.1
4	Hog tankage Muriate of potash	665	69	539	99 1
5	None	665	69	539	99 1
6	Cattle tankage	645	69	522	96.0
7	Bone meal	635	69	514	94 5
8	Glue factory superphosphate	660	72	515	94.7
9	Dissolved bone-black	660	72	515	94.7
10	None	655	72	511	93.9
11	Sulphate of ammonia	625	72	488	89.7
12	Nitrate of soda	655	72	511	93.9

Nothing can be more conclusive than that there were no results obtained in this experiment which could with any certainty be attributed to the effect of the fertilizers. This simply indicates that this season this land, which was freshly broken clover sod of good natural fertility, did not require any of these fertilizers to put it into a condition to raise a maximum crop. Stable manure is unquestionably a valuable fertilizer for corn on ordinary land in ordinary seasons, yet on this land for this season no beneficial result was obtained by its use.

GENERAL CONCLUSIONS AND SUGGESTIONS.

The following statements are suggested in part by the experiments reported in this bulletin and, in part, by those tried in the previous years, and by experience in ordinary field culture of corn.

VARIETIES.

The hundreds of varieties of dent corn may be classified in a small number of groups, so that those included in each will closely resemble each other—as closely as different families in a breed of animals. Many varieties, so called, are practically identical. The same variety is fre-

quently known by several names in different localities; while distinct varieties often have the same name.

Most of even the best established varieties lack exact uniformity in somewhat important characteristics. Stalks or ears grown in the same hill may differ materially in size, form, or time of maturity. Persistent selection of seed with reference to the possession of desired qualities is essential to establishing or maintaining these in any variety..

Cross-fertilization often occurs when two varieties are grown near each other. The effects may not be noticed until subsequent years, if the varieties are much alike. If unlike in color, the effects of cross-fertilization may be seen in the corn first produced by such crossing.

Climate, soil, and cultivation have much influence in determining the characteristics of varieties. But permanent alteration of the qualities of any variety through these means is slowly accomplished, especially if not accompanied with selection of seed. An unfavorable season, poor soil, or poor cultivation may greatly affect the crop of a given year; but seed so produced will, under favorable conditions, produce corn not to be distinguished from the original.

Color, either of kernels or cobs, although among the most obvious of the characteristics distinguishing varieties, is of little importance in determining value. Uniformity of color is desirable for the sake of appearance. In some markets corn of one color will sell better than that of another; but there is no good reason to believe that either yield, weight, or feeding value depends on color. There are good and poor varieties of each color.

Neither is there sufficient reason to believe that the value of a variety is materially affected by the roughness or smoothness of the kernels, except that smooth-kerneled varieties are more easily handled.

No one variety possesses all desirable qualities in the highest degree. Extraordinary development of any one good characteristic is usually accompanied by some defect. Thus, in northern latitudes, early ripening is important; but no remarkably early maturing variety is so productive as some later ripening kinds. We have found no variety especially remarkable for either very great or very small size of stalk, ear, cob, or kernel that was, as a whole, equally valuable with varieties less noticeable in any one of these points.

For the soil and climate of the University farms, or central Illinois generally, the varieties we have preferred are those with moderately low, fairly thick, short-jointed stalks, producing ears low on the stalks, on short shanks; the ears from eight to ten inches long, about two and a half inches thick, nearly uniform in size until near the tip, which should be well covered with kernels; the cob, of medium thickness; the kernels, thick rather than thin; smooth rather than rough; somewhat wedge-shaped and showing hardly any open space between the rows, of which there may be fourteen to twenty. In connection with varieties of this type, we have planted annually about one-fourth of the total acreage

in corn to early maturing varieties, characterized by smaller stalks and ears, and not giving, usually, so large a yield, but valued because earlier fit for use, and because of adaptation to late planting when this is necessary from any cause.

Tests of large numbers of varieties and examination of many others show that there are varieties of much merit in almost all the great corn-producing districts of the country. The praise of new varieties, as introduced by seedsmen, is often far beyond their merits. While the trial of new varieties is wise, and while the difference between large and small crops is often in a great measure due to the use of good or poor varieties, it is not wise to discard a well tested and satisfactory variety for one untried. It is rarely safe to rely on seed of a variety which has been long cultivated in a latitude much north or south of that in which you propose to grow it; although the early maturing kinds from the south may do well as standard sorts in the north, or the standard varieties of the north prove valuable for especially early crops farther south.

Improvement of Varieties.

Many popular varieties of corn are the result of purposed or accidental crossing of distinct varieties. Others are the result of continued selection with reference to one or more desired qualities. In our experience, it is not proved that varieties tend to deteriorate if kept pure, or that cross-fertilization is necessarily or, probably, a benefit.

Generally speaking, with a careful selection of the seed, a variety adapted to the soil and climate will, at least, maintain its good qualities if given good culture. If not well adapted to the surroundings, yet able to mature seed, it may be gradually improved by selection.

Barren stalks or those producing imperfect ears often seriously reduce the yield of corn. The percentage of such stalks is often greater than is supposed. The number of such stalks is increased by unfavorable seasons or too thick planting; but it is believed varieties differ considerably in their tendency to produce such stalks.

The actual and relative size of the ears and the tendency to produce more than one ear on a stalk are increased by comparatively thin planting. Dent varieties usually produce not more than one good ear on a stalk. The tendency to this limitation of number has been increased by the common methods of selecting seed—choosing the largest ears, which are almost invariably borne singly. Some varieties have quite well fixed the habit of producing several ears on most stalks. It is conceivable that a stalk should produce an ear on every joint. It is believed entirely possible to increase the productiveness of many varieties by cultivating the tendency to have two ears on each stalk. When the corn is to be fed to cattle without husking and shelling, there would be some advantage in having two moderately sized ears instead of one. For ordinary use, one large ear is to be preferred to two small ones.

The plan of setting aside plats for the production of corn for seed, has important advantages. On these the best seed may be planted. Stalks which do not produce ears may be cut away or have their tassels removed before the silks have been fertilized, and the most desirable seed can be selected with little inconvenience, the character of the stalks and degree of maturity being taken into consideration as well as the size and shape of the ears. In such plats the attempts to fix the habit of twin or triple ear-bearing may be best made. Noticeable results are not to be expected until after some years. Color seems to be more easily modified or fixed than more important qualities.

Soil Preparation and Fertilization.

The dark colored prairie soils of Illinois, comparatively loose textured and porous to a considerable depth, and generally possessing a good store of available plant food, are unusually well adapted to corn. In many cases fair crops are produced after a series of years of continuous growing corn without manures. One plat on the University farms after 12 years of such cultivation continues to give profitable crops, although noticeably less than from manured lands.

Ordinarily fall-plowing is preferable. Generally the yield is somewhat larger, and, at the least, there is less danger of late planting being made necessary by unfavorable weather early in the spring. Planting on the freshly plowed ground in the spring is often preferable to planting on fall-plowed land which has not been cultivated in the spring. No trial of any form of commercial fertilizers has yet proved profitable on the University farms, when applied to corn ground in fair condition. In some cases increase in crop has resulted; in no case has the increase repaid the cost of the fertilizer and application.

The application of barn-yard manure has almost always produced an increased crop, not always sufficient to repay the cost. In the very dry season of 1887, the smallest yield of corn on our farms was from a plat to which stable manure had been applied in the spring, as had been done annually for ten years.

Usually the crop from sod land, grass and clover, has equalled that from the manured land. No decrease has been noticed in any case in the crop the second year after grass or clovers. Some diminution has been noticed when corn has been grown three years in succession. A rotation of crops—here, three years in grass and clover, two years in corn, and one year in small grain—with application of all available manure to the grass and corn land, is believed to be the best means at present by which to maintain fertility. That commercial fertilizers may be profitably applied to these lands in the comparatively near future is not improbable.

A recently stirred and well pulverized seed-bed is thought more important on such soil than deep plowing.

PLANTING.

An insufficient or irregular stand is one of the most common causes of a small yield. This may result from poor seed, improper planting, or destruction of the corn after growth has begun.

If the seed is selected in the fall and allowed to become well dried before it is exposed to severe cold, or kept from any marked variation in temperature, it will give little trouble. Testing it is always advisable, however; but the fact that it will germinate under favorable conditions is not conclusive evidence that it will do well when planted under unfavorable conditions.

Early planting is desirable; however, but little good can, and much harm may, come from planting corn before the soil is warm enough to cause it to germinate. "Both the thermometer and the almanac should be consulted." Warm weather at the first of April is not sufficient reason for planting corn in central Illinois; nor is a frost the last of May a reason for ceasing to plant. Comparatively late planting of sod land is safest, because of less danger of injury by insects.

So far as the growth of the plant is concerned, no good comes from covering corn deeper than is sufficient to give it moisture and warmth. Early in the season the surface is usually moist enough and warmer than the deeper soil, which is more probably wet as well as cold. A depth of one or two inches is abundantly sufficient, if the corn be closely surrounded with moist warm earth. Deep covering of the seed in early planting is nearly always an injury to the crop. There are some good reasons for having the corn planted at a little distance below the general level of the surface. Harrowing or other cultivation of the ground before the corn is up or while it is very small can then be done without disturbing the corn, and weeds and grass just starting in the hills may be more easily covered with fine earth than if the corn is on a level with the surface.

When corn is largely grown, planting with a machine is necessary, but the planting done by the best machines, remarkably excellent as they are, is not so good as that which is possible with hand-dropping and covering with the hoe. The number of kernels dropped, the depth, and the closeness with which they are covered cannot be so accurately controlled. In a good many cases the kernels are covered from sight, but are simply left in a mole-like channel. Having the surface well pulverized before planting; harrowing or pulverizing with some surface-working implement, or rolling after planting are means of securing more perfect covering.

Drill planting is theoretically preferable to hill-planting. We prefer it when planting on sod land or other land reasonably free from grass or weed seeds. In wet seasons we find it much more difficult to keep drilled corn clean than that planted in hills. Our experiments show less gain in yield from drilled corn over hill planting than might have been expected.

The corn-planter used by us makes the rows 3 feet 8 inches apart. This gives 3,240 hills to the acre; 9,720 stalks, with three stalks to the hill; 13,950 stalks, with four stalks to the hill. If planted in drill rows

this distance apart, with one kernel each foot in the row, there would be 11,880 stalks per acre. Evidently in ordinary corn culture many stalks fail to grow or to produce even half-sized ears. It is far from being conclusively proved that it is not good practice to plant more thickly than is ordinarily done, and to thin after the extent of the loss from poor seed, poor covering, insects, birds, and early cultivation is determined.

The smaller varieties may properly be planted more thickly than the larger varieties, with rows closer together or with the kernels closer together in the drills.

Cultivation.

The best methods of cultivation depend not alone on the character of the soil, but also on the season. In almost any case, stirring the surface shortly before planting and some surface cultivation very soon after planting is good practice, excessive wet weather being sufficient reason for omitting the latter.

With a fairly loose, porous soil, deep cultivation seems little needed, so far as ability of the roots to penetrate the soil is concerned. The roots of corn grow with great rapidity, and when the surface is moist, many of them remain near the surface. Deep cultivation, especially near the corn, after growth has well begun, necessarily injures many roots. Shallow cultivation, at the right time, will as effectively destroy grass or weeds just starting to grow as will deep culture.

Frequent shallow cultivation during dry weather is an effective means of reducing evaporation from the soil, the dry stirred surface acting as a mulch. Deeper cultivation in drouth exposes more of the moisture near the surface to the air, thus somewhat increasing the evaporation. In time of drouth, moisture may be the greatest need of the corn.

With a loose, moist soil, free from weeds, there seems no sufficient reason for frequent cultivation, deep or shallow. With a compact, hard soil, frequent cultivation will often do good.

When there are rains, preventing frequent cultivation, we have found no shallow-working horse tool with which we can keep corn clean in land well stocked with grass or weed seeds. Our largest yields have been when shallow cultivation was exclusively given. We have repeatedly grown good crops with only such cultivation. But unless hand-hoeing can be profitably given, it is not wise to dispense entirely with the use of shovel cultivators in wet weather and on weedy ground.

In case of drouth, or when there are many weeds starting, shallow cultivation, after the corn is too large to permit the use of the double cultivators, may help; but the extra cost of such cultivation, and the danger of injury by breaking the stalks, make it undesirable as a rule.

Harvesting.

The quantity of dry matter and the proportion of the more valuable food material, as shown by chemical analysis, increases until the kernels

are fully developed and begin to harden. Unless in cases of scarcity of other food, it does not seem wise to use the corn until this stage is reached. At what point in the maturing process the lessened palatability of the stalks from drying begins to diminish their value as green food, we have not determined. We have found it profitable to feed the corn, stalks, and ears, to both cattle and hogs so long as the stalks were readily eaten by them; then to continue feeding the ripening ears.

Cutting corn for future use before the lower part of the stalks has become yellow, and the kernels fairly hardened, causes loss in the weight and the quality of the corn. Delaying until the stalks have become dry and the ears well dried, causes serious loss to the value of the stalks.

It is believed medium sized varieties, especially with short-jointed stalks, thus increasing the number of leaves, are better either for dry fodder or ensilage, than the very large, coarse, tall-growing varieties. Attempting to reach fineness of stalks by excessively thick planting of the large varieties is not good practice.

The difference in the percentage of water in the early and late maturing varieties at the usual husking season is often very great. The shrinkage in weight in a few weeks, or even days, especially after husking, is often not fully considered in buying or selling. The shrinkage of the whole crop is considerably greater than that of selected ears. Early husking makes necessary the handling of a large quantity of water in the corn; but the more favorable weather and the danger of loss from bad weather make it advisable to husk the uncut corn as soon as it is in fit condition for marketing or storing.

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GARDEN EXPERIMENTS WITH SWEET CORN, 1888.

Experiment No. 49. Sweet Corn, Testing Varieties.

In the classification of sweet corn, the varieties are first divided according to time of reaching edible maturity after planting, into: *Early*, sixty-three days or less; *Medium*, sixty-four to seventy-one days; *Late*, seventy-two days or more. A further division is made on color: *Yellow*, *White*, *Other colors.*

In the descriptions, where the same variety has been received under different names, it is not assumed that one is correct; that question is left to be determined later. 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; for instance, *Roslyn hybrid sweet*, and *Roslyn hybrid sugar* are not quite alike, but as much like each other as either of them is like anything else. The variation may have come from a difference in the way of selecting, or from mixing with some other variety.

Each plat had three rows two rods long, the rows being three feet eight inches apart; the hills were two feet apart in the rows, making forty-eight to the plat. It was intended to have three stalks in a hill, and that number is counted a full stand.

The plats were planted May 7th to 10th; this first planting, however, was destroyed by cut-worms. They were replanted June 5th, except Nos. 90, 91, and 92, which were replanted June 16th. They were given the usual cultivation.

The numbers used in the descriptions are the same as the plat numbers in the table.

EARLY VARIETIES—*Yellow.*

No. 48, Golden sugar; Henderson. *No. 75, Early orange sugar;* Dreer. Ears of the first were fit for use in 64 days, and of the second in 63 days from planting.

Stalks, 5 to 6½ feet high, slender, long-jointed; tassels, not much branched, rather stiff; suckers, numerous; husk-blades, small to medium; ears, 18 to 20 inches from the ground, golden yellow, 5 to 6½ inches long, 1 4 to 1.7 inches in diameter; kernels, even or slightly rounded over the butt, not quite filling out at the tip; rows, 8, occasionally 10, inclined to be irregular; pairs of rows, usually distinctly separated; cob, white, .9 to 1 inch in diameter; kernels, fairly solid, flatly rounded at top, crinkled, not so deep as broad. The *Early orange sugar* is a little more solid in ear and a little more slender in stalk than the other.

EARLY VARIETIES—*White.*

No. 50, Extra early Tom Thumb; Henderson. Corn first fit for use in 60 days from planting.

Stalks, 3½ to 5 feet high, rather long-jointed, slender; tassels, not many-branched, slender, drooping; husk-blades, many, medium size; ears, 10 to 12 inches from the ground, white, nearly cylindrical, round pointed, part of them curved, 4½ to 6 inches long, 1.4 to 1.5 inches in diameter, kernels, even at the butt, nearly filling out the tip; rows, 8, regular; pairs of rows, usually not very distinct, though sometimes entirely separated near the butt; cob, white, .8 to .9 of an inch in diameter; kernels, solid, flatly rounded over the top, broader than deep, crinkled or crimped. A very neat but small ear. This is not very different from the next variety.

No. 69, Dolly Dutton; Landreth. Corn first fit for use in 58 days from planting.

The chief differences noted between this and the above are that this is earlier, has a little larger ear and kernel, and a slight difference in color, this being the lighter. If the two varieties were mixed, they could not be separated.

No. 32, Early sweet or sugar. Ferry. Corn first fit for use in 63 days from planting.

Stalks, 5 to 7 feet high, dark green; tassels, slender and drooping; suckers, numerous; husks, with medium sized blades; ears, 20 to 24 inches high, white, cylindrical, round- or taper-pointed, most of them curved, 6½ to 8 inches long, 1.4 to 1.6 inches in diameter, kernels, barely even at the butt, not quite filling out at the tip; rows, 8; pairs of rows, distinct or entirely separated toward the butt; cob, white, .9 to 1 inch in diameter; kernels solid, flatly rounded over the top, broader than deep, rather thick, crinkled. A slender ear.

No. 11, Early Minnesota; Vaughan. *No. 66, Extra early Minnesota sugar;* Landreth. Ears of the first, fit for use in 61 days, and of the second in 62 days from planting.

Stalks, 4½ to 5 feet high, rather long-jointed; blades, small; tassels, drooping; suckers, few; husks, with small to medium sized blades; ears, 12 to 18 inches from the ground, dull white, cylindrical, tapering at the tip, sometimes enlarged at the butt from added kernels, 5½ to 7 inches long, 1.4 to 1.7 inches in diameter, kernels, even at the butt, well to poorly filled at the tip; rows, 8, fairly regular; pairs of rows, not usually distinct, though sometimes widely separated at the butt; cob, white, .8 to 1 inch in diameter; kernels, solid, rounded over the top, broader than deep, crinkled.

No. 16 and 29, Crosby's early; Vaughan and U. S. Department of Agriculture. *No. 38, Crosby's extra early sugar;* Smith. *No 46, Crosby's early sugar;* Henderson. *No. 59, Extra early Crosby's sugar;* Landreth. *No. 74, Crosby's extra early sugar;* Dreer. Ears from the first were fit for use in 63 days, from the third in 62 days, and from the other three in 64 days from planting. The lot grown from Smith's seed was not true to type.

Stalks, 5½ to 7 feet high, rather slender, long jointed; tassels, slender and drooping; suckers, numerous; husk-blades, small to medium size; ears, 18 to 24 inches from the ground, white, generally cylindrical, tapering at the tip, a few taper from the butt, 5 to 7 inches long, 1.4 to 1.9 inches in diameter, kernels even at the butt, nearly, sometimes entirely filling out the tip; cob, white, .9 to 1.1 inches in diameter; kernels, solid, flatly rounded over the top, rather thick, nearly as deep as broad, crinkled. A neat, smooth ear.

No. 55, Early Landreth market; Landreth. Corn was first fit for use in 56 days from planting.

Stalks, 4½ to 6½ feet high, leafy, short-jointed; tassels, slender and drooping; suckers, very few; husks with few small blades; ears, 16 to 20 inches from the ground, white, cylindrical, tapering irregularly at the tip, 5 to 7½ inches long, 1.4 to 1.8 inches in diameter; kernels, even at the butt, not filling out at the tip; rows, 8 to 12, regular; pairs of rows, nearly separated in the 8 rowed but scarcely noticeable separation in the 12-rowed; cob, white, 1 to 1.2 inches in diameter; kernels, solid, rounded over the top, broader than deep, smooth or slightly dented. Has the appearance of a flint corn when ripe.

No. 5, Adams' early; Vaughan. *No. 57, Extra early Adams;* Landreth. Ears, from the first were fit for use in 57 days, and from the second in 60 days from planting.

Stalks, 4¼ to 5½ feet high, rather short-jointed; tassels, not much branched, stiff; ears, 16 to 20 inches from the ground, white, cylindrical, tapering at the tip, 4½ to 6 inches long, 1.6 to 1.9 inches in diameter; kernels, rounded over the butt, not filling out at the tip; rows of kernels, 10 to 12, regular, pairs of rows, not very distinct; cob, 1 to 1.2 inches in diameter; kernels, very solid, rounded over the top, about as deep as broad; top, creased or smooth. These varieties are not sweet but are used for the table.

EARLY VARIETIES—*Colored, not yellow.*

Nos. 23 and 7, Cory; U. S. Department of Agriculture and Vaughan. *No. 39, Early Cory;* Smith. *No. 45, Cory early sugar;* Henderson. The earliest ears from the seed obtained of Vaughan were fit for use in 54 days; from the others in 55 and 56 days from planting.

Stalks, 3½ to 5 feet high, slender, upper part of the stalk long-jointed; suckers, very few; tassels, stiff; husk-blades, small to medium; ear, 10 to 12 inches from the ground, cylindrical, tapering roundly at the tip, sometimes enlarged at the butt by the addition of extra kernels, 4 to 6 inches long, 1.3 to 1.7 inches in diameter; kernels, even at the butt, sometimes, but not usually filling out at the tip; rows, 8, mostly regular, sometimes very irregular; pairs of rows, but little to widely separated; dull white to nearly blood-red; cob, white or red, .8 to 1.2 inches in diameter; kernels, solid, rounded over the top, broader than deep, crinkled or smooth. This variety has not a very settled type.

No. 73, Marblehead sugar; Dreer. *No. 9, Marblehead early;* Vaughan. *No. 33, Extra early Marblehead;* Ferry. Ears of the first were fit for use in 55 days, and of the other two in 56 days from planting.

Stalks, 3½ to 4½ feet high, rather stout, short-jointed; tassels, rather stiff, not much branched; suckers, few; husks, with small to medium sized blades; ears, 12 to 16 inches from the ground, reddish to flesh color, nearly cylindrical, generally larger at the butt and tapering off rather roundly at the tip, 5 to 7 inches long, 1.4 to 1.6 inches in diameter; kernels, even at the butt, nearly filling out at the tip; rows, 8, occasionally 10, not crowded; pairs of rows, usually separated or widely separated; cob, red, .9 to 1.1 inches in diameter; kernels, not solid, rounded over the top, crinkled, sometimes smooth.

No. 79, New Cory; Nellis. Seems to be a later strain of the *Marblehead.* Ears were first fit for use in 59 days from planting.

Stalks, 4 to 5½ feet high.

No. 17, Chicago market; Vaughan. *No. 78, Ballard's extra early;* Storrs & Harrison. Ears of the first were fit for use in 59 days and of the second in 57 days from planting.

Stalks, 4 to 5 feet high, not very strong; tassels, not much branched, stiff to drooping; suckers, not many; husk-blades, small to medium, not numerous; ears, 12 to 15 inches from the ground, white to pale flesh color, nearly cylindrical to abruptly tapering, rounded at the tip, 5 to 6½ inches long, 1.4 to 1.8 inches in diameter, kernels even or slightly rounding past the butt, entirely or nearly filling out the tip; rows, 8 to 12, not distinct in the 12-rowed to separated in the 8-rowed; cob, white or pink, .8 to 1.1 inches in diameter; kernels, solid, rounded or flatly rounded over the top, broader than deep, rather thick, crinkled or nearly smooth. Very neat ears.

No. 31, Early red Narragansett; Ferry. *No. 60, Extra early Narragansett sugar.* Landreth. Ears of the first were fit for use in 61 days, and of the second in 59 days from planting.

Stalks, 4½ to 6 feet high, stout, short-jointed, dark green, conspicuously marked with purple; tassels, not many-branched, stiff; husk blades, medium size, numerous; ear,

18 to 20 inches from the ground, flesh color to dark red, cylindrical, sometimes enlarged at the butt by openness between the pairs of rows, tapering at the tip, 6 to 7½ inches long, 1.4 to 1.8 inches in diameter, kernels even at the butt, sometimes, but not commonly filling out the tip; rows, 8; pairs of rows, distinct, sometimes entirely separated toward the butt; cob, red, 1 to 1.2 inches in diameter; kernels, fairly solid, rounded over the top, crimped, broader than deep.

No. 70, Golden sugar; Landreth. Corn first fit for use in 63 days from planting.

Stalks, 4 to 6 feet high, leafy, short-jointed, rather stiff; tassels, stiff; suckers, not many; husks, with small to medium sized blades; ears, 12 to 18 inches from the ground, nearly white to dark red, nearly cylindrical to tapering, bluntly pointed, 5½ to 7½ inches long, 1.5 to 1.8 inches in diameter, kernels slightly rounded over the butt, sometimes nearly filling out at the tip; rows, 8 to 12, regular; pairs of rows, not distinct in the 12-rowed but distinct or separated in the 8-rowed; cob, nearly white to red, .9 to 1.1 inches in diameter; kernels, not solid, rounded or flatly rounded over the top, crinkled, nearly as deep as broad. This is entirely distinct from the other Golden sugar and may be misnamed.

Medium Varieties—*White.*

No. 67, Darling; Landreth. Corn first fit for use in 64 days from planting.

Stalks, 5.5 to 7 feet high, rather slender, long-jointed; tassels, all drooping; husks, with small blades; ears, 22 to 28 inches from the ground, white, tapering, usually rounded at the tip, frequently curved, 7 to 9 inches long, 1.4 to 1.6 inches in diameter, kernels even at the butt, not filling out the tip; rows, 8, regular; pairs of rows, distinct or entirely separated; cob, white, .9 to 1.1 inches in diameter; kernels, solid or nearly solid, rounded over the top, broader than deep, crinkled.

No. 88, Albany sugar; Dreer. Corn first fit for use in 64 days from planting.

Stalks, 5½ to 7 feet high, long jointed, dark green; tassels, short, bunchy and stiff; suckers, many; husk-blades, small; ears, 20 to 28 inches from the ground, dull white, cylindrical, tapering bluntly at the tip, 6 to 7 inches long, 1.5 to 1.9 inches in diameter, kernels, even at the butt, not filled out at the tip; rows, 10 to 12, regular; pairs of rows, not very distinct; cob, white, 1 to 1.3 inches in diameter; kernels, loose, flatly rounded over the top, not so deep as broad, thick, large, crimped.

No. 24, Breck's premier; U. S. Department of Agriculture. Corn first fit for use in 64 days from planting.

Stalks, 5 to 6 feet high, strong, leafy, dark green; tassels, rather stiff; suckers, many; husks, with medium to large blades; ears, 24 to 30 inches from the ground, dull white, tapering, bluntly pointed, 6½ to 8 inches long, 1.6 to 1.9 inches in diameter, kernels, barely even at the butt, not filled out at the tip; rows, 10 to 12, regular; pairs of rows, not very distinct; cob, white, 1.1 to 1.3 inches in diameter; kernels, not solid, rounded over the top, nearly as deep as broad, thick, crinkled or crimped.

No. 10, Perry's hybrid; Vaughan. Corn first fit for use in 64 days from planting. This variety has not a settled type, part of the ears looking as if crossed with some field corn.

Stalks, 4 to 6 feet high; ears, dull white or pinkish, cylindrical or tapering, 6 to 8 inches long, 1.6 to 2 inches in diameter, kernels even at the butt, not filling out at the tip; rows, 8 to 12, regular or irregular; pairs of rows, not distinct to widely separated; cob, white or pink, 1 to 1.4 inches in diameter; kernels, fairly solid, rounded or flatly rounded over the top, crimped or smooth. Very variable

Nos. 34 and 4, Moore's early Concord; Ferry and Vaughan. *No. 63, Early Concord sugar;* Landreth. Corn from the first was fit for use in 65 days, from the second in 68 days, and from the last in 67 days from planting.

Stalks, 5 to 7 feet high, short jointed; tassels, long, slender, and drooping; suckers, numerous; husks, with many medium sized blades; ears, 18 to 24 inches from the ground, dull white, cylindrical, roundly pointed at the tip, 5½ to 8 inches long, 1.6 to 2 inches in diameter; kernels, even at the butt, nearly filling out at the tip; rows, 12 to 14, regular; pairs of rows, not very distinct; cob, white, 1.1 to 1.3 inches in diameter; kernels, loose, flatly rounded over the top, nearly as deep as broad, very thick, crimped.

No. 72, Shaker's early sweet; Henderson. Corn first fit for use in 66 days from planting.

Stalks, 5 to 7 feet high, rather heavy, leafy; tassels, heavy, stiff; husks, with small blades; ear, 18 to 24 inches from the ground, dull white, cylindrical or tapering, roundly pointed, 5½ to 7 inches long, 1.6 to 1.9 inches in diameter; kernels, even or slightly rounded at the butt, not filling out at the tip; rows, 10 to 12, regular; pairs of rows, distinct; cob, white, 1 to 1.2 inches in diameter; kernels, nearly solid, rounded over the top, broader than deep, thick, crinkled or nearly smooth.

No. 14, Pee and Kay; Vaughan. Corn first fit for use in 67 days from planting.

Stalks, 4½ to 6½ feet high, short-jointed, leafy, dark green; tassels, rather stiff; husks, with small narrow blades; ears, 12 to 16 inches from the ground, slightly or abruptly tapering, sometimes compressed at the butt, round- or long-pointed, very dull white, 6 to 8 inches long, 1.6 to 2 inches in diameter; kernels, even or nearly even at the butt, not quite filling out the tip; rows, 10 to 12, regular; pairs of rows, not distinct to nearly separated at the butt of some ears; cob, white, 1.1 to 1.3 inches in diameter; kernels, not solid, flatly rounded over the top, crinkled or crimped, nearly as deep as broad, thick or very thick. In appearance very similar to *Asylum sugar*, but smaller and earlier.

No. 49, Squantum sugar; Henderson. Corn first fit for use in 69 days from planting.

Stalks, 6 to 8 feet high, leafy, short-jointed, heavy; tassels, stiff; suckers, none; husks, with small blades; ears, 24 to 30 inches from the ground, very dull white, tapering, sometimes compressed, sometimes enlarged at the butt, rounded at the tip, 5½ to 7½ inches long, 1.6 to 1.8 inches in diameter; kernels, even or slightly rounded over the butt, nearly filling out the tip; rows, 12, very regular, except at the butt; pairs of rows, not distinctly separated; cob, white or pink, 1 to 1.2 inches in diameter; kernels, fairly solid, flatly rounded over the top, crinkled or crimped, nearly as broad as deep, rather thick.

No. 92, Sweet fodder; Vaughan. First ears fit for use in 70 days from planting.

Stalks, 3 to 3½ feet high, not very leafy; tassels, few, branches, stiff; suckers, very few; ears, 8 to 10 inches from the ground, white, cylindrical, tapering at the tip, 3½ to 5 inches long, 1 to 1.5 inches in diameter; kernels, even or barely even at the butt, not filling out at the tip; rows, 8, regular; pairs of rows, distinct, sometimes entirely separated; cob, white, .7 to .8 inch in diameter; kernels, fairly solid, rounded over the top, not so deep as broad, rather thick, crinkled or smooth, small. This is not worth growing for table use, being entirely too small for so late a variety. Something of larger growth would also be of more value for feeding.

Nos. 22 and 27, Stabler's early; U. S. Department of Agriculture. *No. 87, Stabler's extra early sugar;* Dreer. *No. 36, Stabler's extra early sweet;* Smith. *No. 53, Stabler's early sugar;* Henderson. Corn of the first two was fit for use in 66 days, of the third in 68 days, of the fourth in 69 days, and of the last in 71 days from planting. The first two produced rather smaller corn than the rest.

Stalks, 5 to 7 feet high, rather long-jointed, pale green; tassels, slender, drooping or stiff; suckers, not many; husks, with small blades; ears, 16 to 24 inches from the ground, white, tapering, rounded at the tip, 6 to 7½ inches long, 1.5 to 1.9 inches in diameter; kernels, even at the butt, filled out or nearly filled out at the tip; rows, 10 to 14, regular; pairs of rows, not distinctly separated; cob, white, 1 to 1.1 inches in diameter; kernels, fairly solid, flatly rounded over the top, crinkled and crimped, as deep as broad.

No. 61, Red cob sugar; Landreth. Corn first fit for use in 70 days from planting.

Stalks, 6½ to 8½ feet high, heavy, very dark green, characteristically marked with purple; tassels, slender and drooping; suckers, many; husk blades, small to large, many; ears, 2½ to 3 feet from the ground, dark or reddish white, generally cylindrical, rounded at the tip, or sometimes tapering, 7 to 8½ inches long, 1.6 to 2.1 inches in diameter; kernels, even or barely even at the butt, fairly well filled at the tip; rows, 10 to 12, regular, sometimes spirally arranged; pairs of rows, not very distinct; cob, red, 1 to 1.4 inches in diameter; kernels, very loose, flatly rounded over the top, as deep as broad, rather thick, crinkled and wrinkled.

No. 6, Livingston's evergreen; Vaughan. Corn first fit for use in 71 days from planting.

Very similar to the above; ear, a little longer and more slender; cob, not so large and not so much purple on the stalk and blades; rows, 8 to 12, but the 8-rowed ears are not common.

No. 15, Asylum sugar; Vaughan. Corn first fit for use in 71 days from planting.

Stalks, 6 to 8 feet high, rather long-jointed, blades, large; tassels, many-branched, stiff or drooping; suckers, not many; husks, with small to medium sized blades; ears, 16 to 24 inches from the ground, abruptly tapering, sometimes compressed at the butt; tip, bluntly rounded, very dull white, 7½ to 9½ inches long, 1.6 to 1.9 inches in diameter; kernels, not quite even at the butt, nearly filling out the tip; rows, 10 to 12, regular; pairs of rows, not distinct; cob, white, 1.1 to 1.3 inches in diameter; kernels, solid, flatly or broadly rounded over the top, not so deep as broad, thick or very thick, crinkled and crimped. There is occasionally an 8-rowed ear, but it does not look as if it belonged in this variety.

No. 68, Landreth sugar; Landreth. Corn first fit for use in 71 days from planting.

Stalks, 6 to 8 feet high, heavy, short-jointed, leafy, dark green; tassels, short, thick, and stiff; suckers, many; husk-blades, medium size, many; ears, 28 to 36 inches from the ground, white, tapering, rounded at the tip, 6 to 9 inches long, 1.8 to 2 inches in diameter, kernels rounded over the butt, filling or nearly filling out at the tip; rows, 12 to 16, regular, sometimes spirally arranged; pairs of rows, not distinct; cob, white, 1 to 1.2 inches in diameter; kernels, flatly rounded over the top, deeper than broad, crimped or wrinkled, loose.

No. 84, Early Adams; Henderson. Corn first fit for use in 70 days from planting.

Stalk, 5 to 7 feet high, heavy; tassels, short, bunchy, stiff. Owing to a very poor stand, our specimen ears were too imperfect for a description.

This is not a sweet corn, but is grown for table use. It is different from *Adams' early*, page 130.

MEDIUM VARIETIES—*Colored, not yellow.*

No. 82, Early orange sweet; Farm, Field and Stockman. Ears of this were first fit for use in 65 days from planting.

Stalks 5½ to 7 feet high, rather long-jointed; tassels, many-branched, stiff or drooping; suckers, many; husk-blades, medium to large, numerous; ears, 20 to 30 inches from the ground, white to flesh color, tapering slightly from the butt and bluntly at the tip, 7 to 8 inches long, 1.7 to 1.9 inches in diameter; kernels, even at the bntt, not quite filling out the tip; rows, 10 to 12, regular; pairs of rows, not very distinct on most of the ears; cobs, white or red, 1.1 to 1.3 inches in diameter; kernels, not solid, rounded or flatly rounded over the top, crinkled or crimped, as deep as broad, This is a rather neat ear, and is entirely distinct from *No. 82, Early orange sweet.*

No. 3, Black Mexican; Vaughan. *No. 40, Black Mexican sweet;* Smith. *No. 43, Black Mexican sugar;* Henderson. Ears from the first two were fit for use in 66 days, and from the last in 68 days from planting.

Stalks, 5 to 7 feet high, rather slender, long-jointed, very light green; suckers, few; husks, with medium to large blades; ears, 16 to 24 inches from the ground, cylindrical, tapering at the tip, 6 to 7½ inches long, 1.3 to 1.7 inches in diameter; kernels, scarcely even at the butt, not filled out at the tip; rows, 8, or occasionally 10, regular; pairs of rows, usually but little separated, though sometimes widely separated; black or slate color; cob, white, .7 to 1.1 inches in diameter; kernels, not solid, round over the top, crinkled or crimped, broader than deep.

LATE VARIETIES—*White.*

Nos. 35 and 12, Stowell's evergreen; Ferry and Vaughan. *No. 64, Evergreen sweet or sugar;* Landreth. Ears from the first were fit for use in 69 days, from the other two in 74 days from planting.

Stalks, 6 to 8 feet high, strong, short-jointed; tassels, many-branched, rather stiff, heavy; suckers, not many; husk-blades, small to medium size; ears, 24 to 28 inches from the ground, white, usually tapering, sometimes nearly cylindrical, 7½ to 10 inches long, 1.9 to 2.3 inches in diameter; kernels, even at the butt, sometimes, but not commonly filling out at the tip; rows, 14 to 16, regular; pairs of rows, but little more separated than the single rows; cob, white, 1.1 to 1.4 inches in diameter; kernels, very loose, flatly rounded over the top, wrinkled, deeper than broad. A coarse-looking, deep grained ear.

No. 90, Early sugar; Nellis. Corn first fit for use in 72 days from planting.

Stalks, 4½ to 6 feet high; ears, 16 to 20 inches from the ground, dull white, cylindrical or tapering, round or long pointed, 5 to 8 inches long, 1.7 to 1.9 inches in diameter, kernels barely even at the butt, not filled out at the tip; rows, 10 to 12, regular or somewhat irregular; pairs of rows, not very distinct; cob, white, 1.2 to 1.4 inches in diameter; kernels, very loose, rounded over the top, not so deep as broad, thick, crimped or smooth. Not a handsome ear.

Nos. 58 and 13, Early mammoth sugar; Landreth and Vaughan. Corn from these plats was first fit for use in 72 days from planting.

Stalks, 6 to 8 feet high, stout, short-jointed, large leaved; tassels, drooping; suckers, few; husk blades, small; ears, 24 to 28 inches from the ground, dull white, tapering, rounded at the tip, sometimes compressed at the butt, 7.5 to 10 inches in length, 1.7 to 2.2 inches in diameter, even or nearly even at the butt, not filling out at the tip; rows, 12 to 14, regular; pairs of rows, not very distinct; cob, white, 1 to 1.4 inches in diameter; kernels, flatly rounded over the top, as deep as broad, thick, crinkled; ear-stalk, very large and strong. A large, rather coarse ear.

No. 81, Large eight rowed; Nellis. *No. 30, Darling's sugar;* McAllister. *No. 28, Early eight-rowed;* McAllister. *No. 44, Large early eight-rowed sweet;* Henderson. *No. 25 Perry's hybrid;* U. S. Department of Agriculture. Ears of the first were fit for use in 69 days; of the second, in 73 days; of the third and fourth, in 74 days; and of the last, in 72 days from planting.

Stalks, 6½ to 8½ feet high, medium to long-jointed, rather slender; tassels, slender, drooping; suckers, not many; husk-blades, small, not numerous; ears 20 to 30 inches high, white or bleached white, tapering, long or bluntly pointed, sometimes curved, 8 to 10 inches long, 1.5 to 1.8 inches in diameter, kernels even or nearly even at the butt, filling out or nearly filling out the tip; rows, 8, regular; pairs of rows, distinct, sometimes entirely separated toward the butt; cob, white, 1 to 1.1 inches in diameter; kernels, not solid, broadly rounded over the top, broader than deep, crinkled, large. A long, slender ear.

No. 56, Hickox improved; Landreth. *Nos. 2 and 52, Hickox improved sugar;* Vaughan and Henderson. Ears from the first were fit for use in 71 days, from the second in 74 days, and from the third in 72 days from planting.

Stalks, 6 to 8 feet high, heavy, leafy, short-jointed; tassels, full, rather stiff; suckers, not many; husk-blades, small to medium; ears, 30 to 36 inches from the ground, white or bleached white, cylindrical, rounded or roundly pointed at the tip, 8 to 10 inches long, 1.7 to 2 inches in diameter, kernels scarcely even at the butt, not filling out at the tip; rows, 10 to 14, regular; pairs of rows, not very distinct; cob, 1.3 to 1.4 inches in diameter; kernels, not solid, flatly rounded over the top, nearly as deep as broad, thick, crinkled or crimped, ear stalk, very large. Not an attractive ear.

No. 1, Potter's excelsior; Vaughan. *No. 83, Excelsior sugar;* Maule. Ears of the first were fit for use in 72 days and of the second in 74 days from planting.

Stalks, 8 to 10 feet high, rather strong, short-jointed, pale green; tassels, many-branched, drooping; suckers, not very many; husk-blades, small; ears, 2 to 3 feet from the ground, dull white, cylindrical, rounded at the tip, frequently curved, 6 to 8 inches long, 1.5 to 1.8 inches in diameter, kernels scarcely even at the butt, filled out or not filled out at the tip; rows, 8 to 10, regular; pairs of rows, usually distinct; cob, white, 1 to 1.2 inches in diameter; kernels, not solid, rounded or flatly rounded over the top, broader than deep, crinkled or wrinkled.

No. 19, Triumph; Vaughan. *No. 65, Triumph sugar;* Landreth. *No. 41, Triumph sweet;* Smith. Corn from the first was fit for use in 72 days, from the second in 73 days, and from the last in 76 days from planting.

Stalks, 6 to 8 feet high, stout, short-jointed; tassels, full and heavy; suckers, few; husks, with many medium sized blades; ears, 24 to 30 inches from the ground, white, cylindrical, sometimes enlarged at the butt, tapering roundly at the tip, 7½ to 9½ inches long, 1.6 to 2 inches in diameter, kernels even at the butt, not commonly filled out at the tip; rows, 8 to 10; pairs of rows, distinct to entirely separated; cob, white, 1 to 1.4 inches in diameter; kernels, not solid, rounded over the top, very large, broader than deep, crinkled or crimped; ear stalk, very strong; the ear frequently breaks in two in husking.

No. 86, ———; J. R. Hiestand. Corn first fit for use in 74 days from planting.

Stalks, 6 to 7½ feet high, leafy, pale green; tassels, close, many-branched, rather stiff; suckers, many; ears, 28 to 36 inches from the ground, clear cream-white, slightly tapering, 5½ to 6½ inches long, 1.3 to 1.7 inches in diameter; kernels, rounded past the butt, not filling out quite at the tip; rows, 12 to 14, regular; pairs of rows, not very distinct; cob, .9 to 1 inch in diameter; kernels, loose, flatly rounded over the top, deeper than broad, crinkled or wrinkled. This variety is not yet catalogued or named.

No. 21, Improved evergreen; U. S. Department of Agriculture. Corn first fit for use in 74 days from planting.

Stalks, 6.5 to 7.5 feet high, strong; ear, 24 to 30 inches from the ground, white, cylindrical tapering roundly at the point, or tapering from the butt, 6 to 7½ inches long, 1.7 to 2.1 inches in diameter; kernels, rounding over the butt, not filing out at the tip; rows, 12 to 14, regular; pairs of rows, not very distinct; cob, white, 1.3 to 1.4 inches in diameter; kernels, not solid, very flatly rounded over the top, nearly as deep as broad, rather thick, crimped. A very neat, attractive ear.

No. 20, Old Colony; Vaughan. Corn first fit for use in 74 days from planting.

Stalks, 6 to 7½ feet high, very heavy, leafy, dark green; tassels, stiff and heavy; husks, with small blades; ear, 16 to 20 inches from the ground, clear white, tapering abruptly, commonly curved, 6½ to 7 inches long, 1.6 to 1.9 inches in diameter; kernels, rounded over the butt, not quite filled out at the tip; rows, 12 to 14, regular or irregular; pairs of rows, not distinct; cob, white, .9 to 1.1 inches in diameter; kernels, very loose, flatly rounded over the top, deeper than broad, crimped or wrinkled.

No. 54, Roslyn hybrid sugar; Henderson. *No. 37, Roslyn hybrid sweet;* Smith. Corn from the first was fit for use in 72 days; from the second, in 76 days from planting.

Stalks, 6 to 8 feet high, heavy, leafy; tassels, heavy and rather stiff; suckers, few; husks, with small to medium sized blades; ear, 24 to 30 inches from the ground, dull

white, nearly cylindrical to abruptly tapering, blunt pointed, 7 to 9½ inches long, 2 to 2.3 inches in diameter; kernels, even or slightly rounded over the butt, not filling out at the tip; rows, 10 to 16, regular; pairs of rows, not very distinct; cob, white, 1.2 to 1.4 inches in diameter; kernels, loose or very loose, rounded or flatly rounded over the top, deeper than broad, part of them very thick, crimped or wrinked. A rather coarse ear.

Nos. 26, 8, and 89, Egyptian; U. S. Department of Agriculture, Vaughan, and Dreer. *No. 62, Egyptian sugar;* Landreth. Ears from the first were fit for use in 73 days, from the second and third in 74 days, and from the last in 80 days from planting.

Stalks, 6½ to 8 feet high, leafy, heavy, short-jointed; suckers, not many; tassels, heavy, rather stiff; husks, with small blades; ear, 2 to 3 feet high, tapering to strongly tapering, bluntly rounded at the tip, 6 to 8½ inches long, 1.5 to 2 inches in diameter; kernels, even or slightly rounded over at the butt, usually nearly filling out at the tip; rows, 12 to 14, regular or irregular; pairs of rows, not very distinct, white, clear color; cob, white, 1 to 1.2 inches in diameter; kernels, loose, flatly rounded over the top, as deep as broad, not large, crimped and wrinkled.

No. 18, Late mammoth; Vaughan. *No. 51, Mammoth sugar;* Henderson. Corn from the first was fit for use in 76 days and from the second in 80 days from planting.

Stalks, 7 to 8½ feet high, strong, leafy, pale green; tassels, large, many-branched, drooping; husk-blades, small; ears, 28 to 33 inches from the ground, dull white, tapering, roundly pointed, 8.5 to 11.5 inches in length, 1.8 to 2.4 inches in diameter, kernels even at the butt, nearly filling out the tip; rows, 12 to 18, not very regular; pairs of rows, sometimes separated at the butt; cob ,white, 1.2 to 1.8 inches in diameter; kernels, rounded or flatly rounded over the top, as deep as broad, thick, crinkled or crimped, ear-stalk, large and strong. A large coarse looking ear.

No. 91, Northern pedigree; Vaughan. Corn first fit for use in 77 days from planting.

Stalk, 5½ to 7 feet high, leafy, heavy; ears, white. None of it ripened sufficiently for a description. There was, probably, a mistake made in sending out the seed, since, by Vaughan's description, *Northern pedigree* is the earliest sweet corn grown.

Late Varieties—*Colored, not white.*

No. 85, Eruda; E. E. Chester. A variety not catalogued. Corn fit for use in 74 days from planting.

Stalk, 6½ to 8 feet high, strong, leafy; tassels, large, many-branched, drooping; suckers, few; husk-blades, few, small to medium size; ears, 2 to 3 feet high, dull white and black mixed (about ⅔ white), cylindrical, tapering roundly at the tip, 8 to 10 inches long, 1.8 to 2.2 inches in diameter, kernels even at the butt, filling out or nearly filling out the tip; rows, 12 to 16, regular; pairs of rows, not distinct; cob, white, 1.2 to 1.4 inches in diameter; kernels, loose, flatly rounded over the top, crinkled, nearly as deep as broad, large.

No. 71, Amber cream; Landreth. *No. 47, Amber cream sweet;* Henderson. Ears of the first were fit for use in 71 days and of the second in 72 days from planting.

Stalks, 6 to 7½ feet high, short-jointed, stout; tassels, many-branched, rather slender and drooping; suckers, many; husk, with numerous blades, variable in size; ear, 20 to 24 inches from the ground, reddish white to flesh color, cylindrical or tapering, frequently curved, long and rather slender, 8 to 10½ inches in length, 1.5 to 1.8 inches in diameter, kernels even at the butt, not filled out at the tip; rows, 10 or 12, fairly regular; pairs of rows, not distinctly separated; cob, white, .9 to 1.1 inches in diameter; kernels, not solid, flatly rounded over the top, as deep as broad, rather thick, crinkled. Ears neat, rather handsome.

TABLE SHOWING NUMBER OF PLAT; NAME OF VARIETY; DATE OF FIRST BLOOM, FULL BLOOM, AND FIRST EARS FIT FOR USE; DAYS FROM PLANTING; YIELD; WEIGHT OF 10 SELECTED EARS; PER CENT. OF FULL STAND.

No. of plat.	Name.	Page of description.	Date of first bloom.	Date of full bloom.	Date first fit for use.	No. days from planting.	No. of hills in plat.	No. of stalks in plat.	No. of salable ears.	No. of nubbins.	Weight of corn—lb.	Wt. of 10 selected ears in ounces.	Per cent. of full stand.
1	Potter's excelsior	135	7-26	8-4	8-16	72	47	133	75	60	32.75	54	92
2	Hickox imp. sugar	134	7-27	8-6	8-18	74	36	74	61	35	25.25	65.5	49
3	Black Mexican	133	7-25	8-4	8-12	68	40	86	44	91	19.5	30	60
4	Moore's early Concord.	131	7-23	8-1	8-12	68	38	89	43	44	19.5	52	62
5	Adams' early	130	7-17	7-29	8-1	57	48	131	45	66	23.75	48	90
6	Livingston's evergreen.	133	7-26	8-2	8-15	71	49	159	111	58	45.75	68	110
7	Cory	130	7-13	7-20	7-29	54	48	136	76	57	22	31	94
8	Egyptian	136	8-1	8-11	8-18	74	36	59	55	55	25.75	70	40
9	Marblehead early	130	7-16	7-22	7-31	56	38	70	34	47	12.75	33	49
10	Perry's hybrid	131	7-23	8-1	8-8	64	27	52	32	42	15 25	54	36
11	Early Minnesota	129	7-18	7-27	8-5	61	21	40	18	38	7	36	28
12	Stowell's evergreen	134	7-29	8-4	8-18	74	40	87	73	50	34.25	68	69
13	Early mammoth sugar	134	7-27	8-2	8-16	72	48	149	93	53	40	65	103
14	Pee and Kay	132	7-25	8-1	8-9	67	37	98	39	65	20.5	52.5	68
15	Asylum sugar	133	7-27	8-3	8-15	71	38	116	80	64	38.25	75	81
16	Crosby's early	129	7-21	7-31	8-7	63	40	98	50	85	20	41	68
17	Chicago market	130	7-16	1-24	8-3	59	46	102	36	67	15.75	38	70
18	Late mammoth	136	7-30	8-9	8-20	76	25	70	51	43	37.5	118	49
19	Triumph	135	7-26	8-2	8-16	72	45	118	115	74	44	68.5	82
20	Old Colony	135	7-26	8-4	8-15	71	35	74	51	68	28	59	51
21	Improved evergreen	135	7-30	8-9	8-18	74	43	137	70	80	40	68	95
22	Stabler's early	132	7-25	8-5	8-10	66	39	74	54	91	27.25	56.5	51
23	Cory	130	7-16	7-22	7-31	56	44	89	68	57	17.5	29	62
24	Breck's premier	131	7-21	7-30	8-8	64	44	124	70	64	31	56	86
25	Perry's hybrid	134	7-28	8-5	8-16	72	35	60	58	42	23	61	42
26	Egyptian	136	7-29	8-8	8-17	73	38	104	98	52	36.25	57	72
27	Stabler's early	132	7-24	8-3	8-10	66	41	87	70	71	26.5	48	54
28	Early 8 rowed	134	7-27	8-3	8-18	74	46	143	113	59	43.75	57	99
29	Crosby's early	129	7-19	7-30	8-7	63	46	130	92	79	23	45	90
30	Darling's sugar	134	7-27	8-3	8-17	73	48	129	117	37	39	56	89
31	Early red Narragansett	130	7-18	7-24	8-5	61	46	132	91	64	25	38	92
32	Early sweet or sugar	129	7-20	7-27	8-7	63	48	131	125	72	35.5	43	91
33	Extra early Marblehead	130	7-13	7-24	7-31	56	43	97	69	70	18	38	67
34	Moore's early Concord.	131	7-23	7-30	8-9	65	48	137	76	52	28.25	53	95
35	Stowell's evergreen	134	7-30	8-10	8-13	69	44	93	65	30	33	78	64
36	Stabler's ex. early sweet	132	7-26	8-2	8-13	69	48	136	95	67	31	54	94
37	Roslyn hybrid sweet	135	7-29	8-6	8-20	76	43	97	81	38	42.75	87	67
38	Crosby's ex. early sugar	129	7-19	7-31	8-8	64	32	79	35	55	16.75	55	55
39	Early Cory	130	7-13	7-21	7-30	55	46	90	68	62	15.5	25	62
40	Black Mexican sweet	133	7-23	8-1	8-10	66	45	145	135	56	33.5	37	101
41	Triumph sweet	135	7-27	8-4	8-20	76	45	110	90	43	37	69	76
42	Little gem sweet	...	7-30	8-11	8-18	76	39	77	105	72	27.25	41	53
43	Black Mexican sugar	133	7-23	7-30	8-10	66	46	106	139	46	35.75	44	74
44	Large early 8-row'd sw't	134	7-27	8-4	8-18	74	48	107	100	52	32.5	62	75
45	Cory early sugar	130	7-13	7-24	7-30	55	31	48	49	48	11.5	29.5	33
46	Crosby's early sugar	129	7-19	7-26	8-6	62	47	150	109	70	32	37	104
47	Amber cream sweet	136	7-27	8-3	8-16	72	48	120	103	43	37	65	83
48	Golden sugar	128	7-21	7-29	8-8	64	47	94	72	74	18.5	31	65
49	Squantum sugar	132	7-26	8-3	8-13	69	44	114	102	66	38.5	54	79
50	Extra early Tom Thumb	129	7-17	7-25	8-4	60	43	82	50	65	18	34	57
51	Mammoth sugar	136	8-2	8-14	8-24	80	35	67	63	38	32	85.5	47
52	Hickox improved sugar	134	7-27	8-2	8-16	72	48	120	100	37	44.25	81	83

No. of plat.	Name.	Page of description.	Date of first bloom.	Date of full bloom.	Date first fit for use.	No. days from planting.	No. of hills in plat.	No. of stalks in plat.	No. of salable ears.	No. of nubbins.	Weight of corn—lb.	Wt. of 10 selected ears in ounces.	Per cent of full stand.
53	Stabler's early sugar...	132	7-25	8-2	8-15	71	47	88	80	49	32	60	61
54	Roslyn hybrid sugar...	135	7-26	8-3	8-16	72	44	92	92	38	42	74	64
55	Early Landreth market	129	7-13	7-20	7-31	56	46	142	85	52	28	44.5	99
56	Hickox improved.....	134	7-28	8-5	8-15	71	46	102	91	41	32	59	71
57	Extra early Adams	130	7-18	7-27	8-4	60	48	113	65	81	25	49	88
58	Early mammoth sugar .	134	7-28	8-7	8-16	72	41	60	75	41	33	80	42
59	Ex. early Crosby's sugar	129	7-21	7-29	8-8	64	46	109	85	66	24.25	42	76
60	Ex. early Narragansett..	130	7-18	7-27	8-3	59	46	105	90	65	26.25	44	73
61	Red cob sugar.....	133	7-25	8-1	8-14	70	45	110	110	40	41.5	67	76
62	Egyptian sugar.....	136	7-30	8-5	8-18	74	47	126	122	70	46	59	87
63	Early Concord sugar...	131	7-24	8-2	8-11	67	48	113	55	65	23.5	54	78
64	Evergreen sweet	134	7-27	8-6	8-18	74	41	71	72	52	32.5	70	49
65	Triumph sugar.....	135	7-18	8-4	8-17	73	47	111	105	42	42.5	61	77
66	Extra early Minn. sugar	129	7-18	7-28	8-6	62	46	94	60	74	21	39	65
67	Darling	131	7-21	7-30	8-8	64	48	130	129	49	35.25	49	90
68	Landreth sugar	133	7-27	8-3	8-15	71	46	105	106	66	47.5	64	73
69	Dolly Dutton sugar....	129	7-13	7-23	8-2	58	43	87	52	101	22	33	60
70	Golden sugar	131	7-21	7-29	8-7	63	46	93	75	71	28.25	41	65
71	Amber cream.....	136	7-27	8-2	8-15	71	46	125	115	31	37.5	58	87
72	Shakers' early sweet...	132	7-23	7-28	8-10	66	47	134	89	49	27.75	48	93
73	Marblehead sugar	130	7-14	7-21	7-30	55	48	131	67	98	22	36	91
74	Crosby's ex. early sugar	129	7-21	7-29	8-8	64	44	104	99	90	38.75	48	72
75	Early orange sugar....	128	7-21	7-28	8-7	63	41	78	66	112	22.5	33	54
76	Little gem....	....	7-30	8-9	8-18	74	59	85	....	....	....	....	59
77	Ne plus ultra.....	....	8-1	8-12	8-20	76	46	95	....	....	....	....	66
78	Ballard's extra early...	130	7-17	7-24	8-1	57	48	127	61	89	23.25	41	88
79	New Cory	130	7-17	7-24	8-3	59	44	89	82	71	24.75	39	62
80	Early Tom Thumb	....	7-30	7-30	8-20	76	1	1	....	....	.....	....	....
81	Large 8-rowed	134	7-27	8-3	8-13	69	47	123	130	75	56.75	61	85
82	Early orange sweet....	133	7-22	8-2	8-9	65	26	39	67	39	26.25	65	27
83	Excelsior sugar.....	135	7-30	8-6	8-18	74	47	127	111	91	40.5	51	84
84	Early Adams..	133	7-24	8-1	8-14	70	7	12	8	6	3.5	47	8
85	Eruda	136	7-28	8-5	8-18	74	42	72	80	36	41	82	50
86	....	135	7-29	8-6	8-18	74	45	118	164	134	51	43	82
87	Stabler's ex. early sugar	132	7-25	7-30	8-12	68	47	126	110	72	47.25	63	87
88	Albany sugar	131	7-22	7-28	8-8	64	45	111	85	68	32.5	56	77
89	Egyptian	136	7-31	8-12	8-24	80	48	132	98	65	36.5	57	92
90	Early sugar	134	8-4	8-14	8-27	72	48	129	57	94	22.75	43	90
91	Northern pedigree.....	136	8-5	8-27	9-1	77	39	65	64	41	26.5	54	45
92	Sweet fodder	132	8-1	8-5	8-25	70	14	17	3	13	1.25	16	12

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G. W. MCCLUER,
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