EXPERIMENT STATION

OF THE

KANSAS STATE AGRICULTURAL COLLEGE,

MANHATTAN.

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DEPARTMENT OF AGRICULTURE

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EXPERIMENTS WITH WHEAT.

Agreeable to the policy which has been adopted of devoting the entire farm to experiments, the total area in wheat has again been under experiment the past year. The season was a favorable one for the wheat crop, and the yield has been generally satisfactory, though the quality is a little inferior to that of last year's crop. The Currell, a new variety, has superseded the Zimmerman for the general crop. Starting with a few pounds, in 1889, it has given so uniformly good results as to merit the first place among wheats on the farm. The demand for this variety has been much greater than our supply, and although each purchaser is limited to a small amount, all that we can spare will be disposed of before this bulletin reaches the reader. This is stated to save useless correspondence on the subject.

The experiments hereinafter detailed, as well as all the experiments by the Farm Department, are planned with a view to aid the farmers of the State to make the most of their crops under the conditions which surround them. The search is not so much for abstract scientific truths as for the

practical and efficacious application of the truths we already possess, to the problems of every-day farming; not so much for new and startling discoveries as for ways and means to make the most of the conditions with which we are confronted. This has been the leading thought in planning the experiments here recorded. All questions asked of the soil are necessarily tentative in their nature, and we can proceed with more confidence only as we are guided by the answers to previous questions. Owing also to the widely differing climatic conditions, the results in any two consecutive years may differ greatly. It follows that in most cases a single season's experiments may be of comparatively little value, and that it is only when repeated during a succession of years that we can judge with accuracy of the merits of the results. The more times, therefore, an experiment is repeated, the more valuable it will be as a guide for the future.

The following are the experiments with wheat the past year:

I. WHEAT CONTINUOUSLY WITHOUT MANURE.
II. WHEAT IN ROTATION.
III. TIME OF SEEDING WHEAT.
IV. IMMATURE AND MATURE SEED WHEAT.
V. METHODS OF SEEDING.
VI. EFFECTS OF PASTURING WHEAT.
VII. HOW MUCH SEED TO THE ACRE.
VIII. EFFECTS OF CHARACTER OF SEED.
IX. TEST OF VARIETIES.

All the seed was treated with hot water as a preventive of stinking smut, with entire success. (See Bulletins 13 and 20.)

I. WHEAT CONTINUOUSLY WITHOUT MANURE.

The acre which was set aside in 1880 for continuous cropping with wheat without the use of manure, green crops, or any kind of renovating treatment other than good culture, has this year produced its twelfth crop. It was 31.3 bushels. This is half a bushel more than last year's crop.

In comparing this yield with the yields of former years, it should be noticed that there has been a change in variety grown. The crop just harvested was Currell wheat, a variety which has proved to be a superior yielder, while for several years previous the Zimmerman was the variety used. Whether the yield would have been as great had it again been seeded to Zimmerman, or how much, if any, should be credited to the variety in this comparison, must of course remain a subject for conjecture. The opinion of the writer is, that the Zimmerman would not have yielded as much as the Currell has done in this case. However, the fact remains that at the end of the twelfth year this acre makes a showing of 31.3 bushels.

The treatment accorded it is such only as should be given to all wheat land. It has always been plowed soon after harvest, and harrowed at in-

tervals of 10 days or two weeks until seeded. It may here be noted that early plowing is essential to successful wheat growing, and the several workings with the harrow leave the surface in the best possible condition to receive the seed. The acre was not seeded until October 9, which is fully three weeks later than it has been customary to seed it. This was due partly to the dry fall, and partly to the prevalence of the Hessian fly. The crop did not suffer from any insect enemies. It rusted slightly, but not to any damaging degree. But it did, to some extent, suffer from the exceptionally severe cold, which on one occasion reached 26° below zero. The cold did not kill the wheat plants, but it appeared to stunt them. During the coldest weather, a strip along the fences some four or five yards wide was covered with snow, while all of the central area was bare. The effect was noticeable all through the season. The protected strip was more vigorous and grew taller than the portion fully exposed to the rigor of the cold.

The following table shows the results of the 12 years' cropping:

YEAR.	VARIETY.	YIELD.		REMARKS.
		Bushels.	Straw, lbs.	
1880–1	Early May	9.00		Crop estimated.
1881–2	" "	47.00	7,845	
1882–3	" "	28.19	3,281	
1883–4	Zimmerman	37.00	4,525	
1884–5	"	12.30	2,238	
1885–6	"			Winter-killed.
1886–7	"			Winter-killed.
1887–8	"	30.31	3,766	
1888–9	"	37.00	3,619	
1889–90	"	22.90	1,841	
1890–1	"	30.75	3,435	
1891–2	Currell	31.30		
Produce of 12 years		285.75		
Yearly average		23.81		
Average of the 10 crops harvested		28.57		

II. WHEAT IN ROTATION.

In the fall of 1889, and again in the fall of 1890, two series of rotation experiments were started, with wheat as the basis, with a view to ascertain what system of cropping will yield the best returns, all things considered. The rotations are ten in number, and are explained on the accompanying plan. Each rotation is repeated five times on five $\frac{1}{10}$ acre plats, none of which adjoin each other, and the conclusions are based on the average yield of these five plats. As yet these rotations show but little. This is only the third crop that has been taken from the first-established series, plats 1–25, and it is the second crop from the second series, plats 26–50, which are devoted to three-, four-, five- and six-year rotations.

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PLAN OF ROTATION

K	J	H	G	F	K	J	H	G	F	K	J	H
50	49	48	47	46	45	44	43	42	41	40	39	38
grass	grass	wheat	wheat	corn	oats	grass	oats	crims'n clover	wheat	roots	oats	roots
grass	wheat	corn	corn	oats	grass	grass	wheat	wheat	corn	oats	grass	oats
wheat	corn	roots	oats	wheat	grass	wheat	corn	corn	oats	grass	grass	wheat
corn	oats	oats	crims'n clover	corn	wheat	corn	roots	oats	wheat	grass	wheat	corn
roots	grass	wheat	wheat	oats	corn	oats	oats	crims'n clover	corn	wheat	corn	roots
oats	wheat	corn	corn	wheat	roots	grass	wheat	wheat	oats	corn	oats	oats
grass	corn	roots	oats	corn	oats	grass	corn	corn	wheat	roots	grass	wheat
grass	oats	oats	crims'n clover	oats	grass	wheat	roots	oats	corn	oats	grass	corn
wheat	grass	wheat	wheat	wheat	grass	corn	oats	crims'n clover	oats	grass	wheat	roots
corn	grass	corn	corn	corn	wheat	oats	wheat	wheat	wheat	grass	corn	oats
roots	wheat	roots	oats	oats	corn	grass	corn	corn	corn	wheat	oats	wheat
oats	corn	oats	crims'n clover	wheat	roots	grass	roots	oats	oats	corn	grass	corn

ALLEY 12

E	D	C	B	A	E	D	C	B	A	E	D	C
25	24	23	22	21	20	19	18	17	16	15	14	13
oats	wheat	summ'r fallow	Wheat continuously without manure.	Wheat continuously with two tons barn-yard manure yearly.	wheat	corn	summ'r fallow	Wheat continuously without manure.	Wheat continuously with two tons barn-yard manure yearly.	oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow
wheat	corn	wheat			oats	wheat	wheat			wheat	corn	wheat
oats	wheat	summ'r fallow			wheat	corn	summ'r fallow			oats	wheat	summ'r fallow

EXPERIMENT, FIELD No. 4.

Size of plats,
147 ft. x 29.93 ft.= one tenth acre

G	F	K	J	H	G	F	K	J	H	G	F	
37	36	35	34	33	32	31	30	29	28	27	26	
oats	oats	corn	corn	corn	corn	corn	wheat	wheat	wheat	wheat	wheat	1891
crims'n clover	wheat	roots	oats	roots	oats	oats	corn	corn	corn	corn	corn	1892
wheat	corn	oats	grass	oats	crims'n clover	wheat	roots	oats	roots	oats	oats	1893
corn	oats	grass	grass	wheat	wheat	corn	oats	grass	oats	crims'n clover	wheat	1894
oats	wheat	grass	wheat	corn	corn	oats	grass	grass	wheat	wheat	corn	1895
crims'n clover	corn	wheat	corn	roots	oats	wheat	grass	wheat	corn	corn	oats	1896
wheat	oats	corn	oats	oats	crims'n clover	corn	wheat	corn	roots	oats	wheat	1897
corn	wheat	roots	grass	wheat	wheat	oats	corn	oats	oats	crims'n clover	corn	1898
oats	corn	oats	grass	corn	corn	wheat	roots	grass	wheat	wheat	oats	1899
crims'n clover	oats	grass	wheat	roots	oats	corn	oats	grass	corn	corn	wheat	1900
wheat	wheat	grass	corn	oats	crims'n clover	oats	grass	wheat	roots	oats	corn	1901
corn	corn	wheat	oats	wheat	wheat	wheat	grass	corn	oats	crims'n clover	oats	1902

FEET WIDE.

B	A	E	D	C	B	A	E	D	C	B	A	
12	11	10	9	8	7	6	5	4	3	2	1	
Wheat continuously without manure.	Wheat continuously with two tons of manure yearly.	wheat	corn	summ'r fallow	Wheat continuously without manure.	Wheat continuously with two tons of manure yearly.	oats	wheat	summ'r fallow	Wheat continuously without manure.	Wheat continuously with two tons barn-yard manure yearly.	1890
		oats	wheat	wheat			wheat	corn	wheat			1891
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1892
		oats	wheat	wheat			wheat	corn	wheat			1893
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1894
		oats	wheat	wheat			wheat	corn	wheat			1895
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1896
		oats	wheat	wheat			wheat	corn	wheat			1897
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1898
		oats	wheat	wheat			wheat	corn	wheat			1899
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1900
		oats	wheat	wheat			wheat	corn	wheat			1901
		wheat	corn	summ'r fallow			oats	wheat	summ'r fallow			1902

TABULAR STATEMENT OF CROPS AND YIELD.

The figures given apply to the yield of wheat only.

No. of Plat.	Rate of yield per acre.						Rotation.
	1890.		1891.		1892.		
	Grain, bus.	Straw, tons.	Grain, bus.	Straw, tons.	Grain, bus.	Straw, tons.	
1	40.8	1.35	30.58	2.76	33.08	2.50	Wheat continuously with 20 tons manure per acre yearly.
2	27.3	1.13	31.25	2.39	36.33	1.91	Wheat continuously, no manure.
3	Fallow	.....	36.83	2.77	Fallow	.....	Fallow and wheat in alternation.
4	24.6	1.81	Corn	.....	25.25	.94	Corn and wheat in alternation.
5	Oats	.....	32.08	2.34	Oats	.....	Oats and wheat in alternation.
6	35.6	1.50	31.00	2.29	39.41	2.64	Same as plat 1.
7	28.6	1.42	29.17	2.02	37.41	1.71	Same as plat 2.
8	Fallow	.....	19.63	1.67	Fallow	.....	Same as plat 3.
9	Corn	.....	33.17	2.05	Corn	.....	Same as plat 4.
10	30.6	1.23	Oats	.....	34.33	1.42	Same as plat 5.
11	36.4	1.51	31.17	2.19	36.66	2.40	Same as plat 1.
12	33.2	1.22	28.33	1.70	40.75	1.87	Same as plat 2.
13	Fallow	.....	31.58	2.33	Fallow	.....	Same as plat 3.
14	39.2	1.44	Corn	.....	38.33	2.00	Same as plat 4.
15	Oats	.....	29.25	2.33	Oats	.....	Same as plat 5.
16	40.5	1.18	28.41	2.20	33.00	2.51	Same as plat 1.
17	36.5	1.44	29.92	2.13	39.66	2.36	Same as plat 2.
18	Fallow	.....	25.33	2.34	Fallow	.....	Same as plat 3.
19	Corn	.....	29.33	1.92	Corn	.....	Same as plat 4.
20	43.8	2.03	Oats	.....	39.66	2.38	Same as plat 5.
21	46.1	2.09	27.42	2.10	32.41	2.30	Same as plat 1.
22	41.4	1.95	29.50	2.19	43.91	2.55	Same as plat 2.
23	Fallow	.....	21.42	1.95	Fallow	.....	Same as plat 3.
24	43.3	2.00	Corn	.....	36.66	2.45	Same as plat 4.
25	Oats	.....	29.17	2.65	Oats	.....	Same as plat 5.
26			42.17	2.91	Corn	.....	Wheat, corn, oats.
27			40.00	2.90	Corn	.....	Wheat, corn, oats, clover.
28			41.54	2.88	Corn	.....	Wheat, corn, roots, oats.
29			43.67	3.04	Corn	.....	Wheat, corn, oats, grass 2 years.
30			42.83	3.31	Corn	.....	Wheat, corn, roots, oats, grass 2 years.
31			Corn	.....	Oats	.....	Same as plat 26.
32			Corn	.....	Oats	.....	Same as plat 27.
33			Corn	.....	Roots	.....	Same as plat 28.
34			Corn	.....	Oats	.....	Same as plat 29.
35			Corn	.....	Roots	.....	Same as plat 30.
36			Oats	.....	36.75	2.14	Same as plat 26.
37			Oats	.....	Clover	.....	Same as plat 27.
38			Roots	.....	Oats	.....	Same as plat 28.
39			Oats	.....	Grass	.....	Same as plat 29.
40			Roots	.....	Oats	.....	Same as plat 30.
41			42.67	3.09	Corn	.....	Same as plat 26.
42			Clover	.....	35.58	2.58	Same as plat 27.
43			Oats	.....	37.41	2.20	Same as plat 28.
44			Grass	.....	Grass	.....	Same as plat 29.
45			Oats	.....	Grass	.....	Same as plat 30.
46			Corn	.....	Oats	.....	Same as plat 26.
47			41.42	3.33	Corn	.....	Same as plat 27.
48			37.67	2.84	Corn	.....	Same as plat 28.
49			Grass	.....	22.66	1.07	Same as plat 29.
50			Grass	.....	Grass	.....	Same as plat 30.

The experiment has not progressed far enough to warrant the drawing of any conclusions. It may be noted, however, that the plats which are annually manured with 20 tons of barnyard manure to the acre are too rich. The straw grows so heavy that it lodges soon after heading, and consequently the grain does not fill out, and the yield is comparatively light. The Currell was the variety grown.

III. TIME OF SEEDING WHEAT.

In order to ascertain the influence that the time of seeding has upon the growth and yield of wheat, 5 series of 6 plats were laid out, and seeded at intervals of ten days, from September 10 to October 30. All were seeded with Currell wheat, at the rate of 1 1/4 bushels to the acre. The soil is poor, and has been cropped with corn and oats alternately for four years past without any manure. The dry weather during the late summer and fall retarded the growth of all seedings. March 3, the following notes were taken: The wheat on plats seeded September 10 has stooled well, and is making a good growth–better than any of the others. There is no appreciable difference between seedings made September 21 and 30. The plants have stooled somewhat less than the first seeding. Plats seeded October 10 have a uniform stand, but the plants are small and have stooled very little; and the same applies to plats seeded October 20, with the addition that the stand is imperfect. Plats seeded October 30 have but half a stand, and the plants look sickly. On April 23 it was noted that the first seeding, made September 10, was far ahead of any of the others in stand and growth, and that, generally speaking, there was a regular gradation downward through the later seedings, the last being the poorest.

The following table shows the details of the results:

No. of Plat.	When seeded.	Date of heading.	Date when ripe.	YIELD PER PLAT.		YIELD PER ACRE.	
				Grain, lbs.	Straw, lbs.	Grain, bus.	Straw, tons.
16	Sept. 10	June 2	June 27	59.5	90.0	19.83	.90
17	" 21	" 8	" 30	65.0	85.0	21.66	.85
18	" 30	" 8	" 30	71.5	108.0	23.83	1.08
19	Oct. 10	" 13	July 2	73.5	86.5	24.50	.86
20	" 20	" 13	" 7	46.0	79.0	15.33	.79
21	" 30	" 13	" 7	13.0	22.0	4.50	.22
22	Sept. 10	" 2	June 27	80.5	114.0	27.29	1.16
23	" 21	" 8	" 30	58.0	72.0	19.33	.72
24	" 30	" 8	" 30	61.0	94.0	20.33	.94
25	Oct. 10	" 13	July 2	52.0	88.0	17.33	.88
26	" 20	" 13	" 7	37.0	63.0	12.33	.63
27	" 30	" 13	" 7	20.0	20.0	6.66	.20
28	Sept. 10	" 2	June 27	65.5	114.0	22.46	1.14
29	" 21	" 8	" 30	76.7	118.0	25.58	1.18
30	" 30	" 8	" 30	64.0	88.0	21.28	.88
31	Oct. 30	" 8	July 7	34.5	40.0	11.50	.40
32	" 20	" 8	" 7	55.0	45.0	18.33	.45
33	" 10	" 8	" 2	76.0	99.0	25.33	.99
34	Sept. 30	" 8	June 30	55.0	70.0	18.33	.70
35	" 21	" 8	" 30	57.0	73.0	19.00	.73
36	" 10	" 2	" 27	60.0	70.0	20.00	.70
37	Oct. 30	" 8	July 7	18.5	26.0	6.16	.26
38	" 20	" 8	" 7	44.5	65.0	14.50	.65
39	" 10	" 8	" 2	66.0	106.0	22.50	1.06
40	Sept. 30	" 8	June 30	66.0	74.0	22.50	.74
41	" 21	" 8	" 30	69.0	149.0	23.00	1.49
42	" 10	" 2	" 27	81.5	143.5	27.16	1.43
43	Oct. 30	" 13	July 7	27.0	73.0	9.00	.76
44	" 20	" 13	" 7	51.0	104.0	17.00	1.04
45	" 10	" 8	" 2	57.5	87.5	19.16	.87

Average Yield per Acre.

TIME OF SEEDING.	*Grain, bushels.*	*Straw, tons.*
Sept. 10	23.34	1.08
Sept. 21	21.71	.99
Sept. 30	21.23	.87
Oct. 10	21.66	.93
Oct. 20	15.56	.71
Oct. 30	7.53	.36

The difference in favor of the earlier seedings would doubtless have been much more marked if the fall had been favorable to a good growth.

IV. IMMATURE AND MATURE SEED WHEAT.

An experiment covering only two-tenths of an acre was made, in which equal areas were seeded with mature and immature seed, the latter having been cut while in the milk. The rate of yield per acre was as follows:

Immature seed yielded 19.75 bushels of grain, and .80 tons of straw.

Mature seed yielded 22.0 bushels of grain, and 1.04 tons of straw.

This is in harmony with the results of last year, when, however, the difference in favor of good seed was much more pronounced. It is a well-established fact that it is unprofitable to use poor seed, and more proof in that direction is well-nigh superfluous.

V. METHODS OF SEEDING.

The more work we do with a view to ascertain the best method of seeding, the more apparent it becomes that the season and the soil very largely govern the stand obtained, as well as the yield, independently of the method of seeding. That is, a method which under given conditions proves highly satisfactory one year may the next year prove to be anything but satisfactory. For instance: Owing to the dry weather last fall, the broadcasted seed, which was harrowed in and consequently covered unevenly, some shallow and some three or four inches deep, failed to make a good stand. Much of the seed left on or very near the surface did not grow, and more got but a poor hold on the soil and suffered from the extreme cold, and never made healthy plants. The result, was a yield comparatively light. The previous year the fall was favorable to a good growth, and the broadcasted plats made the best yield. Again, last year the listed plats did well. The dry weather favored deep planting, and furrows left by the lister aided in holding the snow and thus in protecting the wheat from the cold. The result was a perfect stand, healthy plants, and a good yield. But the wet fall of the previous year proved a detriment to the listed plats, and they gave that year the poorest yield of all the methods tried. There can be, therefore, no such thing as a "best" method, any more than there is a best variety of wheat. What is best one year and under given circumstances may be far from best under altered conditions.

All this, of course, was to be expected, and the writer simply calls it to the attention of the reader here to caution him against drawing unwarrantable inferences. The point of the experiment is rather to ascertain which method will, in the long run, during a series of years, yield the best average results–the method, be it broadcasting, listing, or the use of the now common shoe press drill, which will, so to speak, best harmonize with our conditions.

The plats to which this record refers were seeded October 8, at the rate of one and one-quarter bushels per acre. The Currell was the variety used. The listed plats were seeded at the rate of one bushel per acre. The lister used is the same as has already been described in previous bulletins—a reconstructed, one-horse Buckeye drill, on which every other hoe was removed, and the three remaining hoes having small, home-made listers fitted to them. The lister furrows were 14 inches apart.

On March 3 it was noted that the listed plats showed a full stand; the plants were green and vigorous, and looked better than the wheat on any of the other plats. The plats seeded with shoe drill had a good stand, and the plants were healthy but not extra vigorous. The plats seeded with roller dril1 had a poor stand, and the plants had a sickly look. The broadcasted plats showed but half a stand, and the plants weakly; they gave but a poor promise for a crop. The arrangement of the plats, and the manner of experimenting, are the same as already described in previous bulletins, namely: The plats alternate with each other in regular succession as they appear in the table below, with a view to obviating, as far as possible, any discrepancies due to inequality of the soil, each method being repeated five times on as many plats, and the conclusions based on the average yield of the five. The plats were one-twentieth acre each.

TABLE SHOWING YIELDS OF THE SEVERAL METHODS OF SEEDING.

No. of plat.	Method of Seeding.	Yield of Plat.		Rate per Acre.	
		Grain, lbs.	Straw, lbs.	Grain, bus.	Straw, tons.
100	Roller drill	62.75	64.50	21.12	.67
101	Shoe drill	83.00	117.00	27.66	1.17
102	Broadcast	62.50	72.00	20.83	.72
103	Listed	65.50	94.50	21.83	.94
104	Roller drill	68.50	91.00	22.83	.91
105	Shoe drill	74.50	115.00	24.83	1.15
106	Broadcast	52.00	88.00	17.33	.88
107	Listed	80.00	95.00	26.66	.95
108	Roller drill	73.00	92.00	24.33	.92
109	Shoe drill	85.00	125.00	28.33	1.25
110	Broadcast	70.50	169.00	23.50	1.69
111	Listed	76.50	103.00	25.50	1.03
112	Roller drill	65.00	95.00	21.66	.95
113	Shoe drill	81.00	124.00	27.00	1.24
114	Broadcast	91.50	168.00	30.50	1.68
115	Listed	96.00	134.00	32.00	1.34
116	Roller drill	87.00	193.00	29.00	1.93
117	Shoe drill	91.00	184.00	30.33	1.84
118	Broadcast	84.00	176.00	28.00	1.76
119	Listed	87.50	197.00	29.16	1.97

Average Yield per Acre:

Roller drill	23.78	bushels of grain,	1.07	tons of straw
Shoe drill	27.63	"	"	1.33	"	"
Broadcast	24.03	"	"	1.22	"	"
Listed	27.03	"	"	1.24	"	"

Average of Two Years' Trials:

Roller drill	28.17	bushels of grain,	1.61	tons of straw.
Shoe drill	29.76	"	"	1.68	"	"
Broadcast	26.41	"	"	1.65	"	"
Listed	28.19	"	"	1.39	"	"

It has already been noted that, owing to the difference in climatic conditions, the methods which succeeded best last year did not prove successful this year, and they therefore balance each other in the above average so as to produce a remarkable uniformity in results. The shoe drill, however, did well both years, and hence it leads the others by nearly a bushel and a half.

VI. EFFECTS OF PASTURING WHEAT.

Fifteen plats, each one-twentieth of an acre, were seeded to Currell wheat, on October 8th, with a view to ascertain the effect of pasturing it. The design was to pasture five plats in the fall, five in the spring, and leave five untouched; but the seeding being late, there was not growth enough in the fall to afford any pasturage. The plats intended for spring pasture were fenced and a dairy cow put on each for five hours each day, on April 6, 7, and 9. The wheat was eaten down to the ground, but not to an excessive degree, and the soil was, of course, tramped by the cattle to the extent required by the feeding, care being taken, however, not to put them on when the soil was wet. The plats on which the fall pasture did not materialize were rolled instead, in spring, with an ordinary field roller.

The results are given in the following table:

No of plat.	TREATMENT.	YIELD OF PLATS.		RATE PER ACRE.	
		Grain, lbs.	Straw, lbs.	Grain, bu.	Straw, tons.
120	Spring pastured	105.0	371.0	35.00	3.71
121	Rolled	127.5	211.0	42.46	2.11
122	Not pastured	118.5	191.0	39.50	1.91
123	Spring pastured	118.0	237.0	39.33	2.37
124	Rolled	118.0	222.0	39.33	2.22
125	Not pastured	108.5	161.0	36.16	1.61
126	Spring pastured	92.5	117.0	30.83	1.17
127	Rolled	105.0	145.0	35.00	1.45
128	Not pastured	105.5	154.0	35.16	1.54
129	Spring pastured	98.5	131.0	32.83	1.31
130	Rolled	112.0	248.0	37.33	2.48
131	Not pastured	127.5	242.0	42.50	2.42
132	Spring pastured	111.5	.....	37.16	.....
133	Rolled	110.0	175.0	36.66	1.75
134	Not pastured	111.0	209.0	37.00	2.09

Average Yield per Acre:

Spring pastured	33.03	bushels of grain,	2.12	tons of straw.
Rolled	38.15	"	"	2.00	"	"
Not pastured	33.06	"	"	1.91	"	"

Average of Two Years' Trials:

Spring pastured	29.08	bushels of grain,	1.66	tons of straw.
Not pastured	32.31	"	"	1.56	"	"

Last year there was a loss of a bushel and a half by pasturing the wheat. This year the pastured plats show a loss of five bushels, and the average loss, for the two years, is about three bushels and a peck per acre.

This, then, does not argue in favor of pasturing.

The theory which is so commonly held, that pasturing, in some unexplained manner, benefits the wheat, is not upheld by these experiments. Pasturing injures the wheat and reduces the yield. The real question at issue is, whether the value in feed thus obtained will balance the loss in yield, and this cannot be settled by experiment on so small a scale. If we can ascertain what the probable loss in yield is in average cases, then each farmer can decide for himself if he will pay that amount of wheat for the feed gained. It should be borne in mind, too, that it is the general practice in pasturing wheat to let the stock run on it all winter and spring, and, too often, in all weathers, wet or dry, and the wheat thus commonly suffers more than here shown, as in these experiments the cattle were not allowed on the plats when the ground was wet, nor was the wheat kept eaten down for a long period.

Another theory which is occasionally advanced is, that pasturing is beneficial in fields infested with the Hessian fly, because it is supposed the cattle eat the pupae of the fly along with the wheat. This is a fallacy which should be corrected. The pupa, or "flax seed," of the fly which winters in the wheat is not found on the upper portion of the plant, but is securely lodged between the sheaths of the base of the young stems, below the surface of the ground, and out of the reach of animals browsing on the tops. This anyone can readily ascertain for himself by pulling up a wheat plant infested with the fly, and peeling the leaves to near the roots, where the little, brown pupa will be found, if present. The only time when pasturing might possibly be of some aid in destroying the fly is either early in the fall, before frost, or late in the spring, after frosts are over, when the fly is active laying eggs, and some of these might be eaten with the wheat; but cattle are not on the wheat so early or so late in the season. Instead of benefiting fly-blown wheat, pasturing will injure it still more, in that it weakens the plants and thus renders them less able to withstand the attacks of the fly.

VII. How Much Seed to the Acre.

Opinions of practical and successful farmers differ widely upon this point. It ranges all the way from half a bushel to a bushel and a half. While farmer in the east and east central portion of the State hold that it is most profitable to sow at least a bushel and a peck, many of our brethren in the west claim that they get better returns from half a bushel of seed than from either more or less. Whatever results the latter amount may bring in the west, it is certainly far too little for central Kansas. A bushel and a peck is the normal quantity sown in this part of the State, but our experiments this year indicate that it would be better to sow more rather than less. The

experiment was tried on 35 one-twentieth-acre plats. The amount of seed varied from one-half bushel per acre, and increasing by one peck up to two bushels, and each amount was repeated five times on as many plats. The seeding was done October 9 with a shoe drill with press wheels, and the wheat on all plats came up well, so that all had an equal start. On March 3 all plats were found to be in good condition, having suffered but little or none at all from winter killing; but it was noted that the stand and apparent vigor of the plants were in almost direct proportion to the amount of seed sown. The heavy seedings had decidedly the most promising aspect.

The following table gives the yields in detail:

Number of Plat.	Rate of seeding per acre, bushel.	Yield of plats.		Rate per acre.	
		Grain, lbs.	Straw, lbs.	Grain, bus.	Straw, tons.
135	½	74.0	146.0	24.66	1.46
136	¾	92.5	177.0	30.83	1.77
137	1	104.0	176.0	34.66	1.76
138	1¼	112.0	218.0	37.33	2.18
139	1½	116.0	214.0	38.66	2.14
140	1¾	102.5	242.0	34.16	2.42
141	2	120.5	244.0	40.16	2.44
142	½	59.5	120.0	19.83	1.20
143	¾	108.0	167.0	36.00	1.67
144	1	111.5	203.0	37.16	2.03
145	1¼	96.0	163.5	32.00	1.63
146	1½	111.0	194.0	37.00	1.94
147	1¾	110.0	150.0	36.66	1.50
148	2	114.0	276.0	38.00	2.76
149	½	70.5	124.0	23.50	1.24
150	¾	100.0	200.0	33.33	2.00
151	1	108.0	192.0	36.00	1.92
152	1¼	115.5	154.0	38.16	1.54
153	1½	111.8	178.0	37.29	1.78
154	1¾	106.5	213.0	35.50	2.13
155	2	105.5	164.0	35.16	1.64
156	½	57.0	133.0	19.00	1.33
157	¾	100.0	200.0	33.33	2.00
158	1	101.0	359.0	33.68	3.59
159	1¼	115.0	190.0	39.13	1.90
160	1½	114.0	221.0	38.00	2.21
161	1¾	114.5	205.0	38.16	2.05
162	2	113.0	217.0	37.66	2.17
163	½	41.0	69.0	15.33	.69
164	¾	77.0	133.0	25.66	1.33
165	1	95.0	135.0	31.66	1.35
166	1¼	95.0	155.0	31.66	1.55
167	1½	102.0	138.0	34.00	1.38
168	1¾	109.5	220.0	36.50	2.20
169	2	116.0	184.0	38.60	1.84

Average Yield per Acre:

One-half bushel seed averaged	20.46	bushels of grain,	1.18	tons of straw.
Three-fourths bushel seed averaged	31.83	"	"	1.75	"	"
One bushel seed averaged	34.76	"	"	2.13	"	"
One and one-fourth bushels seed averaged	35.05	"	"	1.76	"	"
One and one-half bushels seed averaged	36.99	"	"	1.87	"	"
One and three-fourths bushels seed averaged	36.16	"	"	2.06	"	"
Two bushels seed averaged	37.91	"	"	2.17	"	"

It is here to be noted, that in all instances but one the heavier the seeding is the better is the yield. It is the first time this experiment has been tried here, and another season might alter the results, but there is enough evidence in favor of more seed in the above to call the attention of our farmers to the subject. If an additional peck of seed to the accustomed quantity will add two bushels to the yield, it is a good investment. The Indiana station has experimented in the same direction, and has arrived at

the same conclusion. The average of six years' trials at that station are as follows:

One-half bushel of seed yielded 19.58 bushels.
Three-fourths bushel of seed yielded 23.47 bushels.
One bushel of seed yielded 26.53 bushels.
One and one-fourth bushels of seed yielded 28.87 bushels.
One and one-half bushels of seed yielded 29.67 bushels.
One and three fourths bushels of seed yielded 30.25 bushels.
Two bushels of seed yielded 31.45 bushels.

These results indicate that we do not put enough seed on the ground; that it would pay well to sow at least a bushel and a half, or perhaps more. This for the eastern portion of the winter-wheat belt. It would be well for wheat growers in the west to experiment with heavier seeding than they now practice, and note the result.

VIII. EFFECTS OF CHARACTER OF SEED.

The experiment of comparing the effects of different grades of the same seed which was begun last year was continued. The "common" wheat, that is, the wheat as it came from the thresher, but cleaned of trash, and which weighed 64¼ pounds to the struck bushel, was graded on a Clipper fanning mill into "heavy," or best grade, and "light," or poorest grade. The "heavy" seed weighed 64½ pounds to the struck bushel, and the "light" seed 60 7/8 pounds. It will be noticed that even the light seed is of standard weight, and viewed by itself it was a fine quality of grain. It can therefore not be regarded as poor seed, and, indeed, it was but little inferior to the other two grades. The Currell was the variety used. Originally 15 plats were seeded, October 5; but of these numbers 1 and 15 were rejected because, lying against the fence on either side of the field, they suffered from disadvantages to which the others were not subjected, and number 2 was rejected because of similar irregularity. This left 12 plats, four being seeded to each of the three grades of seed.

The results are given in the following table:

No. of Plat.	Grade of seed.	Yield of plats		Rate per acre.	
		Grain, lbs.	Straw, lbs.	Grain, bus.	Straw, tons.
3	Heavy seed	93.0	137.0	31.00	1.37
4	Light "	76.5	118.0	25.50	1.18
5	Common "	89.0	131.0	29.66	1.31
6	Heavy "	82.0	148.0	27.33	1.48
7	Light "	82.5	132.5	27.66	1.32
8	Common "	82.5	137.0	27.66	1.37
9	Heavy "	85.5	129.0	28.50	1.29
10	Light "	87.0	128.0	29.00	1.28
11	Common "	81.0	148.0	27.00	1.48
12	Heavy "	85.0	145.0	28.33	1.45
13	Light "	84.5	140.0	28.16	1.40
14	Common "	91.0	134.0	30.33	1.34

Average Yield Per Acre:

Heavy seed	28.88	bushels of grain,	1.39	tons of straw.		
Light seed	27.37	"	"	1.29	"	"
Common seed	28.60	"	"	1.37	"	"

Average of Two Years' Trials:

Heavy seed	31.90	bushels of grain,	1.92	tons of straw		
Light seed	30.03	"	"	1.62		
Common seed	31.13			1.73		

Though the difference in favor of the heavy seed is not strikingly great, it is still sufficient to indicate that the better the seed the better the yield.

IX. TEST OF VARIETIES.

The varieties which are described in the succeeding pages have now been tested here for two years, and a few of them for three or four years. Last year many of them were grown on so small a scale, for want of seed to sow larger plats, that it was thought best to give them one more trial, and therefore the list is repeated. Next year only the very best will be retained for further comparison. The plats on which these trials were made were 300 feet long by 3 1/3 feet wide, each containing five drill rows. This form was adopted instead of the usual square form because of the greater convenience in working them. They were arranged in the order of ripening, and consequently we could begin cutting on an outside plat with the machine, and proceed as the wheat matured. There was a space of two feet from plat to plat, to prevent mixtures of adjoining sorts. This space was hoed clean and kept bare. It is to be noticed that this arrangement probably gave some advantage to the two outside rows on each plat. That is, there were 12 inches of ground on each side of the plat from the outside row to the middle of the space which separated it from the next plat; of these 12 inches, four inches were considered as occupied by the wheat, leaving eight inches unoccupied. Now, this may have increased the yield above that which it would have been in "interior field conditions." But, as it was a comparative test, and the conditions were exactly the same for all varieties, it does not interfere with the results. The fact is mentioned in order that the reader may fully understand the conditions of the experiment.

It is hoped that the brief description of each variety may be useful to the reader in judging of the merits of these wheats. As a whole, the quality of the grain is not so good as it was last year. A period of dry weather, just as the wheat was filling, interfered with the process, and from this cause all varieties have a greater proportion of shrunken and small kernels than they had last year.

ALABAMA. June 23. Stand, poor; plants uneven in height, slightly rusted; heads fine and large; very little loose smut. Headed, June 8. Ripe, July 6. Height, 4.3 feet; straw medium to slender, clean and bright; heads bearded, square to flat, tapering, uniform in size, and loose; chaff white; grain dark red, slender, considerably shrunken; grains in spikelet,

2-3. Yield, 30.40 bushels per acre; yield in 1891, 13.01 bushels per acre; average in two years, 21.75 bushels.

AMERICAN. June 23. Stand, good; plants erect, very even in height, slightly rusted; heads large and uniform. Headed, June 8. Ripe, July 8. Height, 4.9 feet; straw coarse; heads bearded, broad, and flat, broad at tip, open; chaff white; grains in spikelet, 2, dark red, medium in size, much shrunken, Yield, 34.75 bushels per acre; yield in 1891, 14.47 bushels; average in two years, 21.61 bushels.

ANDREWS No. 4. June 23. Stand, thick; plants badly lodged, slightly rusted; heads not very long, but very fine and large; no loose smut. Fine looking wheat. Headed, June 8. Ripe, July 7. Height, 4.6 feet; straw coarse; heads bearded, square, very compact; spikelets bunched at end, giving a club like appearance; chaff brown; grains in spikelet, 2; grain red, large, slightly shrunken. Yield, 49.13 bushels per acre; yield in 1891, 50.31 bushels per acre; average in two years, 49.72 bushels.

ARNOLD'S HYBRID. June 21. Stand, good; plants tall, slender, and bending, but not lodged, no rust: heads large and drooping. Headed, June 6. Ripe, July 2. Height, 4.2 feet; straw medium; heads smooth, square to flat, tapering, very loose; chaff white; grain red, medium large, fairly well filled; grains in spikelet, 2-3. Yield, 49.25 bushels per acre; yield in 1889, 26.18; 1890, 23.16; 1891, 38.05 bushels per acre; average in four years, 31.91 bushels.

ARMSTRONG. June 21. Stand, good; plants erect, badly rusted, uneven in height; heads fair to medium. Headed, June 9. Ripe, July 8. Height, 4 feet; straw medium to slender; heads smooth, square to round, tapering, sharply pointed, moderately compact; chaff white; grain red, medium in size, much shrunken; grains in spikelet, 2. Yield, 23.57 bushels per acre; yield in 1891, 29.68 bushels per acre; average in two years, 26.62 bushels.

ASHBURN. June 21. Stand, good; plants erect, strong, slightly rusted; leaves broad; heads very irregular. Headed, June 8. Ripe, July 4. Height, 4 feet; straw coarse; heads smooth, square, not tapering, bluntly pointed, compact; spikelets more numerous at tip; chaff white to light brown; grain red, medium, very much shrunken; grains in spikelet, 2-3, Yield, 25.76 bushels per acre; yield in 1891, 46.83 bushels per acre; average in two years, 36.29 bushels.

AUSTRALIAN. June 23. Stand, good; plants inclined to lodge, rusted slightly; heads fine and large. Fine looking wheat. Headed, June 8. Ripe, July 8. Height, 4.6 feet; straw medium; heads bearded, flat, open; chaff brown; grains in spikelet, 3, dark red, long and large, plump. Yield, 47.11 bushels per acre; yield in 1891, 22.64 bushels per acre; average in two years, 34.82 bushels.

BADGER. June 21. Stand, good; plants erect, slightly rusted; heads medium. Headed, June 8. Ripe, July 4. Height, 4.1 feet; straw me-

dium; heads smooth, square to broad and flat, tapering, sharply pointed, moderately compact, quite plump; chaff white; grain dark red, medium in size, quite plump; grains in spikelet, 2. Yield, 37.11 bushels per acre; yield in 1889, 20.33 bushels per acre; 1890, 25.16 bushels per acre; 1891, 39.73 bushels per acre; average in four years, 30.58 bushels.

BAILEY. June 23. Stand, poor; plants badly lodged, slightly rusted; heads fine and large. Headed, June 13. Ripe, July 10. Height, 4.3 feet; straw coarse; heads flat, bearded, tapering; spikelets large and uniform, but not closely set; chaff on one side of head dark brown or bronze, on the other light brown or even white; grain red, medium in size, slender, very badly shrunken; grains in spikelet, 2-3. Yield, 17.55 bushels per acre; yield in 1891, 14.86 bushels per acre; average in two years, 16.20 bushels.

BALTIMORE. June 21. Stand, good; plants erect, uneven in height, badly rusted; heads fair. Headed, June 8. Ripe, July 2. Height, 4 feet; straw coarse; heads smooth, round, tapering, sharply pointed, compact; chaff white; grain light red, medium in size, considerably shrunken; grains in spikelet, 2-3. Yield, 23.50 bushels per acre; yield in 1891, 40.84 bushels per acre; average in two years, 32.17 bushels.

BEAL. June 23. Stand, thick; plants lodged badly, rusted slightly; heads long, square, extra fine, and well filled at the tip. A very fine looking wheat, but late. Headed, June 10. Ripe, July 9. Height, 4.2 feet; straw coarse; heads bearded, square, compact; chaff white; grains in spikelet, 3, red, medium, much shrunken. Yield, 32.90 bushels per acre; yield in 1891, 25.92 bushels per acre; average yield for two years, 29.41 bushels.

BEARDED KING. June 21. Stand, good; plants lodged in places, badly rusted, even in height; heads fine and large. Headed, June 8. Ripe, July 4. Height, 4.3 feet; straw medium; heads long, broad, and flat, tapering; spikelets large and coarse and far apart; bearded, beards long and spreading; chaff very light brown;grain dark red, medium to large, considerably shrunken; grains in spikelet, 3. Yield, 26.39 bushels per acre; yield in 1891, 14 bushels per acre; average yield in two years, 20.19 bushels.

BEARDED MONARCH. June 21. Stand, good; plants erect, badly rusted; heads very large and fine. Extra good looking wheat. Headed, June 6. Ripe, July 5. Height, 4 feet; straw medium; heads bearded (long, spreading beards), long, large, broad, flat, tapering, sharply pointed; spikelets large, coarse, and far apart; chaff very light brown in color; grains in spikelet, 2-3; grain dark red, medium in size, slightly shrunken. Yield, 38.01 bushels per acre; yield in 1891, 44.42 bushels per acre ; average yield in two years, 41.21 bushels per acre.

BENNET. June 23. Stand, good; plants erect, slightly rusted; heads large and fine, but very badly affected with loose smut. Headed, June 10. Ripe, July 9. Height, 3.5 feet; straw medium; heads bearded, square, uniform in size and shape, well-filled tip, quite compact; chaff white; grain

red, short, fairly well filled; grains in spikelet, 3. Yield, 18.94 bushels per acre; yield in 1891, 31.64 bushels per acre; average yield for two years, 25.29 bushels per acre.

BIG ENGLISH. June 23. Good stand; plants erect, slightly rusted; heads large to small. Headed, June 6. Ripe, July 7. Height, 4.5 feet; straw coarse; heads 3.9 inches long, smooth, square, open, and tapering; chaff white; grain dark red, fairly plump, short, and regular; grains in spikelet, 2. Yield, 40.45 bushels per acre; yield in 1891, 30.55 bushels per acre; average yield for two years, 35.5 bushels per acre.

BIG FRAME. July 21. Good stand; plants strong and erect, slightly rusted; heads short. Headed, June 1. Ripe, June 30. Height, 3.7 feet; straw medium; heads smooth, quite uniform in size, square, tapering, sharply pointed, moderately compact; chaff white; grain dark red, medium in size, fairly plump; grains in spikelet, 2-3. Yield, 44.83 bushels per acre; yield in 1891, 30.68 bushels per acre; average yield for two years, 37.75 bushels per acre.

BIG MAY. June 21. Stand, good; plants medium in size, very uneven in height, slightly rusted; heads very slender and somewhat blighted. Headed, June 9. Ripe, July 8. Height, 3.9 feet; straw medium to coarse; heads smooth, flat, medium to long, open; chaff white; grain red, small to medium, considerably shrunken; grains in spikelet, 2-3. Yield, 31.22 bushels per acre; yield in 1891, 39.78 bushels per acre; average yield for two years, 35.5 bushels per acre.

BISSELL. June 21. Stand, good; plants strong and erect, slightly rusted; heads large, drooping. Headed, June 8. Ripe, July 4. Height, 3.8 feet; straw slender to medium; heads bearded, uniform in size, broad, flat, slightly tapering, short, open; chaff white; grain dark red, medium long, slender, fairly plump; grains in spikelet, 2-3. Yield, 44.76 bushels per acre.

BLUE STEM. June 23. Very good stand; plants erect, rusted very slightly; heads rather small, but very uniform in size. Headed, June 13. Ripe, July 9. Height, 3.5 feet; straw medium; heads smooth, slender and tapering, loose; chaff brown; grains in spikelet, 2, very light red, very irregular in size, much shrunken. Yield, 23.41 bushels per acre; yield in 1889, 21.13 bushels per acre; average yield for two years, 22.27 bushels per acre.

BODINE. June 23. Good stand; plants lodged badly in places, rusted badly; heads fair size, but very much blighted. Headed, June 13. Ripe, July 9. Height, 4.5 feet; straw coarse; heads smooth, long, flat, very much tapering; chaff white; grains in spikelet, 2, sometimes 3, red, medium in size, much shrunken. Yield, 22.61 bushels per acre; yield in 1891, 42.27 bushels per acre; average yield for two years, 32.44 bushels per acre.

BORDEAUX. June 21. Stand, good; plants lodged in places, badly rusted, very uneven in growth; heads rather poor. Headed, June 9. Ripe,

July 6. Height, 3.8 feet; straw coarse; heads smooth, square, abruptly pointed, tip well filled, moderately compact; chaff white; grain dark red, medium long, considerably shrunken; grains in spikelet, 2-3. Yield, 34.21 bushels per acre; yield in 1891, 31.36 bushels per acre; average yield for two years, 32.78 bushels per acre.

BOYER. June 21. Stand, good; plants slightly bent at base, very slightly rusted; heads large and uniform, partially blighted, not damaged by loose smut. Headed, June 9. Ripe, July 7. Height, 4.1 feet; straw medium, very crooked at the joints; heads bearded, square to broad and thick, slightly tapering, broad at tip, moderately compact; chaff brown; grain dark red, large, considerably shrunken; grains in spikelet, 2. Yield, 34.22 bushels per acre; yield in 1891, 50.08 bushels per acre; average yield for two years, 42.15 bushels per acre.

BRADY LAKE. June 21. Stand, medium; plants erect, slightly rusted; heads good. Headed, June 10. Ripe, July 7. Height, 3.8 feet; straw very coarse; heads bearded, medium in size, irregular, square, slightly club-shaped, very compact; awns not spreading; chaff brown; grain dark red, large, slightly shrunken; grains in spikelet, 2. Yield, 30.03 bushels per acre, yield in l891, 22.69 bushels per acre; average yield for two years, 26.35 bushels per acre.

BUCKEYE. June 21. Stand, good; plants erect, badly rusted; heads only fair; wheat not nearly so good as it is in other places on the farm. Headed, June 9. Ripe, July 7. Height, 3.9 feet; straw coarse; heads smooth, medium to large, irregular in size, broad and thick to square, tips broad and well filled, loose; chaff brown; grain dark red, large, considerably shrunken; grains in spikelet, 2. Yield, 36.17 bushels per acre; yield in 1889, 25.03 bushels per acre; l890, 30.17 bushels per acre; l891 43.65 bushels per acre; average yield for four years, 33.76 bushels per acre.

BULLARD'S VELVET CHAFF. June 21. Stand, good; plants strong and erect, slightly rusted; heads large and fine. Headed, June 1. Ripe, June 27. Height, 4.2 feet; straw coarse; heads smooth, square to broad and flat, tapering, loose; chaff light brown, covered with silvery hairs; grains in spikelet, 3, red, short, mostly well filled. Yield, 46.94 bushels per acre; yield in 1891, 23.86 bushels per acre; average yield for two years, 35.45 bushels per acre.

CALIFORNIA BLUE STEM. June 21. Stand, good; plants lodged in places, some parts badly rusted; heads good. Headed, June 8. Ripe, July 6. Height, 4 feet; straw medium to slender; heads bearded, medium in size to large, square to broad and flat, almost as broad at tip as at base, moderately compact; chaff brown; grains in spikelet, 2-3; grain dark red, long, medium to large in size, slightly shrunken; very heavy wheat. Yield, 36.52 bushels per acre; yield in 1891, 46.31 bushels per acre; average yield for two years, 41.41 bushels per acre.

CANADA CLUB. June 23. Good stand; plants erect, rusted slightly: heads fine and large; good looking wheat; badly damaged by loose smut. Headed, June 9. Ripe, July 7. Height, 3.3 feet; straw coarse; heads bearded, square, compact, clubbed; chaff light brown, nearly white; grain very light red, short, mostly well filled, some badly shrunken; grains in spikelet, 3. Yield, 26.23 bushels per acre; yield in 1891, 14.28 bushels per acre; average yield for two years, 19.75 bushels per acre.

CANADIAN EXPRESS. June 21. Stand, good; plants weak at base, lodged in places, and badly rusted; heads fair, somewhat uneven in growth. Headed, June 10. Ripe, July 6. Height, 4 feet; straw medium to coarse; heads smooth, square to broad and flat, tapering, long, and open; chaff white to light brown; grains in spikelet, 2-3; grain dark red, medium long, slightly shrunken. Yield, 25.85 bushels per acre; yield in 1891, 35.36 bushels per acre; average yield for two years, 30.60 bushels per acre.

CANADIAN WONDER. June 21. Stand, good; plants lodged considerably, very uneven in growth, and badly rusted; heads fair. Headed, June 8. Ripe, July 4. Height, 4.5 feet; straw medium to slender; heads bearded, awns not spreading, square, tapering, rather loose; chaff white; glumes light brown; grain red, large, and plump; grains in spikelet, 2-3. Yield, 36.43 bushels per acre; yield in 1891, 42.48 bushels per acre; average yield for two years, 39.95 bushels per acre.

CENTENNIAL. June 23. Fair stand; plants badly lodged, uneven in height, very badly rusted; head fair in size but blighting from dry weather; no smut. Headed, June 13. Height, 4.5 feet; straw coarse; heads smooth, long, and large, somewhat flattened, tapering, sharply pointed, fairly compact to loose; chaff white to light brown; grains in spikelet, 2, dark red, medium, irregular, slightly shrunken. Yield, 23.90 bushels per acre; yield in 1891, 39.37 bushels per acre; average yield for two years, 31.08 bushels per acre.

CHAMPION. June 21. Stand, good; plants erect, badly rusted; heads good, but very badly affected by loose smut. Headed, June 8. Ripe, July 6. Height, 4.3 feet; straw medium; heads bearded, square, tapering towards the butt; spikelets grouped at tip, giving a club-like appearance, very compact; chaff white; grains in spikelet, 3; grain light red, medium in size, quite plump. Yield, 26 bushels per acre; yield in 1891, 20.47 bushels per acre; average yield for two years, 23.23 bushels per acre.

CHAMPION AMBER. June 21. Stand, good; plants erect, slightly rusted; heads large and fine; fine looking wheat. Headed, June 8. Ripe, July 4. Height 4 feet; straw, medium; heads smooth, square to broad and fiat, tapering, abruptly pointed, moderately compact; chaff white; grain dark red, medium in size, badly shrunken; grains in spikelet, 2-3. Yield, 28.27 bushels per acre; yield in 1891, 30.83 bushels per acre; average for two years, 29.55 bushes per acre.

CLAWSON. June 21. Stand, good; plants lodged in a few small places, but on the whole strong and vigorous, slightly rusted. Headed, June 4. Ripe, July 4. Height, 4 feet; straw coarse; heads smooth, long, slender, round to flat, tapering, sharply pointed, open; chaff brown; grain very light red, medium in size, slightly shrunken; grains in spikelet, 2. Yield, 39.93 bushels per acre; yield, in 1891, 28.42 bushels per acre; average yield for two years, 34.17 bushels per acre.

CRATE. June 21. Stand, good; plants erect, badly rusted. Good looking wheat. Headed, June 6. Ripe, July 4. Height, 4.3 feet; straw medium to coarse; heads bearded, broad and flat, very uniform, tapering, open; chaff white, or very light brown; grain dark red, long and large, fairly well filled; grains in spikelet, 2. Yield, 36.18 bushels per acre; yield in 1891, 32.20 bushels per acre; average yield for two years, 34.19 bushels per acre.

CRAWFORD COUNTY. June 21. Stand, uneven; plants erect, slightly rusted; heads good. Headed, June 9. Ripe, July 4. Height, 4.3 feet; straw medium; heads smooth, broad and flat to round, exceedingly open; chaff light brown; grain dark red, large, considerably shrunken; grains in spikelet, 2. Yield, 30.13 bushels per acre; yield in l891, 29.84 bushels per acre; average yield for two years, 29.98 bushels per acre.

CURRELL. June 21. Stand, good; plants erect, strong, no rust; heads long to medium, not affected by loose smut. Headed, June 8. Ripe, July 2. Height, 4 feet; straw medium; heads smooth, long, square, tapering, sharply pointed, moderately compact, very plump; chaff brown; grain dark red, short, very slightly shrunken; grains in spikelet, 3. Yield, 40.29 bushels per acre; yield in l889, 39.23 bushels per acre; l890, 37.50 bushels per acre; 1891, 41.42 bushels per acre; average for four years, 39.61 bushels per acre.

CURRELL'S PROLIFIC. Same as Currell.

DALLAS. June 22. Stand, good; plants erect, even in height, but badly rusted; heads medium long, but rather slender. Headed, June 8. Ripe, July 7. Height, 4.1 feet; straw medium to slender; heads bearded, quite uniform in size, square to round, tapering, open; chaff brown; grain dark red, medium, slightly shrunken; grains in spikelet, 2. Yield, 40.45 bushels per acre; yield in 1891, 40.49 bushels; average in two years, 40.47 bushels.

DAVIS. June 23. Stand, good; plants lodged some, rusted slightly, uneven in height; heads slim. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw medium in size; heads smooth, round, moderately compact; chaff white; grains in spikelet, 2, red, medium in size, fairly well filled. Yield, 35.73 bushels per acre; yield in 1891, 35.99 bushels; average in two years, 37.36 bushels.

DEISMAN No. 1. June 23. Good stand; plants lodged considerably, badly rusted; heads fair in size, but seriously blighted by dry weather; poor outlook. Headed, June 13; still green July 13. Height, 4.5 feet;

straw coarse; heads 3.9 inches long, smooth, round, tapering, compact; chaff white; grains in spikelet, 2, red, medium in size, much shrunken. Yield, 24.91 bushels per acre; in 1891, 18.64 bushels; average in two years, 21.77 bushels.

DEISMAN No. 2. June 22. Stand, poor; plants erect, badly rusted, and uneven in height; heads fair; grain in milk. Headed, June 11. Ripe, July 9. Height, 3.9 feet; straw slender to medium; heads smooth, tapering, loose; chaff white; grains in spikelet, 2-3, light amber color, medium in size, very much shrunken. Yield, 23.47 bushels per acre; in 1891, 25.80 bushels; average in two years, 24.63 bushels.

DEITZ. June 22. Stand, fair; plants erect, slightly rusted in places; heads good. Headed, June 8. Ripe, July 6. Height, 4.5 feet; straw medium to coarse; heads bearded, square, tapering, moderately compact; chuff white; grain dark red, large, plump; grains in spikelet, 2-3. Yield, 36.35 bushels per acre; in 1891, 40.62 bushels; average in two years, 38.48 bushels.

DEMOCRAT. June 22. Stand, good; plants erect, badly rusted; heads medium in size and quite uniform. Headed, June 9. Ripe, July 7. Height, 4.4 feet; straw medium; heads bearded, beards one-half usual length, square, tapering, open; chaff white; grain light red, large, and plump; grains in spikelet, 2-3. Yield, 37.19 bushels per acre; in 1891, 44.27 bushels; average in two years, 40.73 bushels.

DIEHL-EGYPTIAN. June 21. Stand, fair; plants erect, slender, very uneven in height, badly rusted; heads medium in size, very plump. Headed, June 8. Ripe, July 4. Height, 4 feet; straw medium; heads smooth, square, tapering, sharply pointed, moderately compact; chaff white; grain red, medium in size, irregular, slightly shrunken; grains in spikelet, 3. Yield, 30.60 bushels per acre; yield in 1891, 46.17 bushels per acre; average in two years, 38.38 bushels.

DIEHL MEDITERRANEAN. June 22. Stand, good; plans large and erect, slightly rusted; heads very large, but not extra long. This is a fine looking wheat. Headed, June 8. Ripe, July 6. Height, 4.2 feet; straw medium to coarse; heads bearded, square, very thick, and very compact, spikelets closer together at tip than at base; chaff brown; grain red, very large, plump; grains in spikelet, 2. Yield, 42.91 bushels per acre; yield in 1891, 37.96 bushels; average in two pears, 40.43 bushels.

EARNHARDT. June 21. Stand, poor; plants short, erect, very irregular in height, badly rusted; heads small and uneven. Headed, June 8. Ripe, July 4. Height, 3.9 feet; straw coarse; heads smooth, square, tapering slightly, moderately compact; chaff white; grain very light red, medium in size, considerably shrunken; grains in spikelet, 3. Yield, 32.10 bushels per acre; 8.74 bushels in 1891; average in two years, 20.42 bushels.

EARLY MAY. June 22. Stand, thick; plants slender, rusted in places;

heads mostly small. Headed, June 8. Ripe, July 6. Height, 4.5 feet; straw medium; heads smooth, square, tapering to a point, quite compact; chaff white; grain dark red, medium, short, and plump; grains in spikelet, 2—3. Yield, 41.59 bushels per acre.

EARLY RICE. June 21. Stand, good; plants strong and erect, slightly rusted; heads medium. Headed, June 6. Ripe, July 2. Height, 4 feet; straw coarse; heads smooth, square to flat, tapering, sharply pointed, moderately compact; chaff white; grain red, medium, fairly plump; grains in spikelet, 2–3. Yield, 35.58 bushels per acre; 22.93 bushels in 1891; average in two years, 29.25 bushels.

EBERSOLE. June 22. Stand, good; plants lodged in places, and slightly rusted; heads medium, very badly damaged by loose smut. Headed, June 8. Ripe, July 7. Height, 38 feet; straw very slender; heads bearded, square, tapering, sharply pointed, open; chaff white; grain red, short, and plump; grains in spikelet, 2. Yield, 41.51 bushels per acre; 26.12 bushels in 1891; average in two years, 33.81 bushels.

EGYPTIAN. June 25. Stand, good; plants erect, slightly rusted; heads fine to medium. Headed, June 8. Ripe, July 6. Height, 4.4 feet; straw medium; heads bearded, long, broad and flat, uniform in size, broad at tip; spikelets large and coarse, and far apart; chaff white; grain red, medium, considerably shrunken; grains in spikelet, 3. Yield, 32.65 bushels per acre; 40.50 bushels in l891; average of two years, 36.57 bushels.

EMPORIUM. June 22. Good stand; plants erect, even in height, and only slightly rusted; heads fair to good. Headed, June 10. Ripe, July 9. Height, 3.9 feet; straw coarse; heads long, smooth, rounded to square, moderately compact, tapering; chaff white; grain red, medium, badly shrunken; grains in spikelet, 2–3. Yield, 42.15 bushels per acre; 44.61 bushels in 1891; average of two years, 43.38 bushels.

EXTRA EARLY OAKLEY. June 21. Stand, good; plants tall, strong, and erect; very little rust; heads medium. Headed, June 6. Ripe, July 2. Height, 4.3 feet; straw medium; heads smooth, long, square, tapering, sharply pointed, moderately compact; chaff white; grain dark red, short, plump; grains in spikelet, 2, 3, and sometimes 4. Yield, 36.03 bushels per acre; 31.83 bushels in 1889; 31.10 bushels in 1890; 39.75 bushels in 1891; average of four years, 34.68 bushels.

FARQUHAR. June 21. Stand, good; plants strong and erect, very slightly rusted; head large and erect. Headed, June, 6. Ripe, July 3. Height, 4.2 feet; straw coarse; heads smooth, uniform in size, square, tapering, moderately compact; chaff dark brown, covered with silvery hairs; grain dark red, large, considerably shrunken; grains in spikelet, 2. Yield, 40.29 bushels per acre; 34.79 bushels in 1891; average of two years, 37.54 bushels.

FENTON. June 21. The stand is a little too thick on account of tiller-

ing; plants strong and erect; heads large and fine, even in growth; fine looking wheat. Headed, June 9. Ripe, July 6. Height, 4 feet; straw slender; heads smooth, long, flat, well filled at the point; chaff light brown; grains in spikelet, 2-3, light red, medium in size, much shrunken. Yield, 27.05 bushels per acre; 30.20 bushels in 1891; average in two years, 28.62 bushels.

FINLEY. June 21. Stand, fair; plants strong, erect, very uneven in growth, slightly rusted; heads uneven, and slightly blighted. Headed, June 8. Ripe, July 3. Height, 4.1 feet; straw medium to coarse; heads smooth, mostly square, tapering, sharply pointed, rather compact; chaff white; grains in spikelet, 2-3, red, short, some well filled, mostly shrunken. Yield, 34.46 bushels per acre; 37.40 bushels in I891; average of two years, 35.93 bushels.

FOUNTAIN. June 22. Stand, thick; plants erect, fairly even in height; heads slender and sharp pointed. Headed, June 10. Ripe, July 7. Height, 4 feet; straw slender; heads smooth, square to rounded, long, slender, sharply pointed, spikelets rather loose; chaff brown; grain red, short, small, and fairly well filled; grains in spikelet, 2. Yield, 36.41 bushels per acre; 25.94 bushels in 1891; average of two years, 31.17 bushels.

FRENCH IMPERIAL. June 23. Stand, too thick; plants very badly lodged, rusted badly; heads very slim and blighting from dry weather. Headed, June 10. Ripe, July 8. Height, 4.2 feet; straw slender; heads long, long, tapering, sharply pointed, loose, smooth ; chaff brown; grains in spikelet, 2, red, small and very irregular, considerably shrunken. Yield, 44.87 bushels per acre; 20.03 bushels in 1891; average of two years, 32.45.

FRENCH PRAIRIE. June 21. Stand, fair; plants erect, very uneven in growth, badly rusted; heads small, uneven, blighted. Headed, June 10. Ripe, July 9. Height, 3.9 feet; straw medium to slender; heads smooth, square to round, tapering, sharply pointed, rather compact; chaff white; grain red, medium long, slender, much shrunken; grains in spikelet, 2. Yield, 28.77 bushels per acre; 36.97 bushels in 1891; average of two years, 32.82 bushels.

FULCASTER. June 21. Stand, good; plants strong and erect, slightly rusted; heads very large. Headed, June 8. Ripe, July 7. Height, 3.9 feet; straw medium to coarse; heads bearded, flat and thick to square, tapering, moderately compact; chaff a very light shade of brown; grain dark red, medium to large, quite plump. Yield, 35.60 bushels per acre; in 1891, 39.99 bushels; average of two years, 37.74 bushels.

FULTZ. June 21. Stand, fair; plants erect, uneven in growth, badly rusted ; heads medium in size, well filled. Headed, June 8. Ripe, July 2. Height, 3.8 feet; straw medium; heads smooth, square, irregular in size, tapering, rather open; chaff white; grain red, short, considerably shrunken;

grains in spikelet, 3. Yield, 35.32 bushels per acre; in 1891, 41.61 bushels; average of two years, 38.46 bushels.

FULTZ-CLAWSON. June 23. Stand, good; plants lodged in places, badly rusted; heads large, but not filling well on account of dry weather. Headed, June 10. Ripe, July 9. Height, 4.5 feet; straw medium; heads smooth, uniform in size, square to rounded, tapering slightly, abruptly pointed, loose; chaff white; grain red, large, much shrunken; grains in spikelet, 2. Yield, 19.82 bushels per acre; in 1891, 21.17 bushels; average of two years, 20.49 bushels.

GENEVA. June 22. Stand, good; plants erect, badly rusted in places; heads fine, large, and very uniform. Headed, June 8. Ripe, July 6. Height, 4.2 feet; straw medium to coarse; heads bearded, broad and thick, flattened, tapering, loose; chaff white; grains in spikelet, 2; grain dark red, medium to large, slightly shrunken. Yield, 30.25 bushels per acre; in l891, 40.43 bushels; average of two years, 35.34 bushels.

GERMAN AMBER. June 22. Stand, good; plants erect, slightly rusted; heads fair; fair looking wheat. Headed, June 8. Ripe, July 6. Height, 4.3 feet; straw medium to coarse; heads smooth, short, but large and very uniform, mostly square, slightly tapering; spikelets very plump and moderately compact; chaff white; grain light red, medium in size, considerably shrunken; grains in spikelet, 2. Yield, 39.75 bushels per acre; 25.59 bushels in 1891; average for two years, 32.65 bushels.

GERMAN EMPEROR. June 22. Stand, good; plants erect, uneven in height, slightly rusted; heads medium, uniform, quite badly affected with loose smut. Headed, June 8. Ripe, July 9. Height, 4 feet; straw medium; heads smooth, flat, tapering, open; chaff brown; grain dark red, medium, fairly plump; grains in spikelet, 2–3. Yield, 35.91 bushels per acre; 34.52 in l891; average for two years, 35.21 bushels.

GOLD DUST. June 23. Good stand; plants erect, slightly rusted; heads large and uniform; fine looking wheat. Headed, June 9. Ripe, July 8. Height, 3.7 feet; straw medium to coarse, heads smooth, square to broad and flat, tapering, abruptly pointed, moderately compact; chaff white; grain dark red, medium, rather long, shrunken; grains in spikelet., 2–3. Yield, 33.37 bushels per acre; 19.17 bushels in 1891; average for two years, 26.27 bushels.

GOLDEN CROSS. June 23. Stand, good; plants erect, very slightly rusted; heads long and clubbed; good looking wheat. Headed, June 9. Ripe, July 7. Height, 3.7 feet; straw coarse and blue; heads bearded, uniform, square, mostly clubbed, very compact; chaff brown; grain red, large, slightly shrunken; grains in spikelet, 2. Yield, 28.17 bushels per acre; 29.81 bushels in 1891; average for two years, 28.99 bushels.

GOLDEN DROP. June 22. Stand, good; plants erect, slightly rusted; heads medium. Headed, June 9. Ripe, July 8. Height, 4.2 feet; straw

medium to slender; heads smooth, long, slender, square, tapering, sharply pointed, moderately compact; chaff white; grain red, medium in size, fairly plump; grains in spikelet, 2—3. Yield, 21.54 bushels per acre; yield in 1889, 19.16 bushels; in 1890, 24.83 bushels; in 1891, 30.10 bushels; average for four years, 23.91 bushels.

GOLD MEDAL. JUNE 23. Stand, good; plants lodged some, badly rusted; heads rather short, but plump and uniform. Headed June 10. Ripe, July 7. Height, 4.6 feet; straw medium to coarse, very clean and bright; heads smooth, square, tapering, bluntly pointed, moderately compact; chaff white; grains in spikelet, 2–3; grain light amber, short, and plump. Yield, 47.31 bushels per acre; in 1891, 29.12 bushels; average for two years, 38.21 bushels.

GOLDEN PREMIUM. June 23. Stand, good; plants mostly erect but lodged in places, rusted slightly; heads fine, and uniform in size. Fine looking wheat. Headed, June 10. Ripe, July 7. Height, 4.6 feet; straw medium; heads smooth, broad, and thick, tapering, medium length; chaff white: grains in spikelet, 2—3. light red color, medium, but very irregular in size, fairly well filled. Yield, 27 bushels per acre; in 1891, 40.31 bushels; average for two years, 33.60 bushels.

GOLDEN PROLIFIC. June 22. Stand, fair; plants erect, badly rusted; very long, large, fine heads. Headed, June 8. Ripe, July 6. Height, 4.4 feet; straw medium in size; heads smooth, large, broad, and flat to square, open; chaff brown; grains in spikelet, 2—3; grain very light red, medium, considerably shrunken. Yield, 33.23 bushels per acre; in 1891, 36.60 bushels; average for two years, 34.96 bushels.

GOLDEN PROLIFIC IMPROVED. Same as Golden Prolific.

GRANAWALT. June 21. Stand, poor; plants erect, strong, badly rusted; heads large and fine. Headed, June 10. Ripe, July 17. Height, 4 feet; straw coarse; heads smooth, square, tapering, bluntly pointed, moderately compact; chaff white, covered with silvery hairs; grain red, medium in size, much shrunken; grains in spikelet, 2, Yield, 28.25 bushels per acre; yield in 1891, 39.06 bushels; average in two years, 33.65 bushels.

GRECIAN. June 23. Stand, fair; plants short, erect, slightly rusted; head fair. A very late wheat. Headed, June 13. Ripe, July 7. Height, 4.4 feet; strum medium to coarse; heads smooth, long, rounded to square, tapering, moderately compact; chaff white; grains in spikelet, 2—3, very light red, medium, very much shrunken. Yield, 20.60 bushels per acre; yield in 1891, 23.48 bushels per acre; average in two years, 22.04 bushels.

GYPSY. June 23. Stand, fair; plants erect, rusted slightly; heads large and fair; good and promising wheat. Headed, June 8. Ripe, July 7. Height, 3.7 feet: straw medium to slender; heads 3.5 inches long, bearded, flat, tapering; spikelets not closely set, but having a well-filled tip; chaff dirty white to brown; grains dark red, large, slightly shrunken; grains in

spikelet, 2—3, and sometimes 4. Yield, 35.99 bushels per acre; in 1891, 32.31 bushels; average for two years, 34.15 bushels.

HALF BEARD. June 21. Stand, good; plants erect and strong, slightly rusted; heads medium. Headed, June 8. Ripe, July 7. Height, 4 feet; straw coarse; heads bearded, square, slightly tapering, well tipped, rather loose; chaff white; grain dark red, slender, slightly shrunken; grains in spikelet, 2—3. Yield, 32.89 bushels per acre; in 1891, 41.02 bushels; average for two years, 36.95 bushels.

HECKMAN. June 21. Stand, good; plants strong and erect, short, slightly rusted; heads short to medium. Headed, June 9. Ripe, July 5. Height, 4 feet; straw medium; heads smooth, square to broad and flat, moderately compact; chaff white to light brown; grains in spikelet, 2; grain red, slender, considerably shrunken. Yield, 34.39 bushels per acre; 20.54 bushels in 1891; average of two years, 27.46 bushels.

HEIGHT'S PROLIFIC. June 21. Stand fair; plants erect, badly rusted; heads medium. Headed, June 8. Ripe July 4. Height, 4 feet; straw coarse to medium; heads smooth, square to round, tapering, moderately compact; chaff white; grain dark red, medium in size, fairly well filled; grains in spikelet, 2—3. Yield, 33.15 bushels per acre; 47.35 in 1891. average of two years, 40.26 bushels.

HICKS. June 21. Stand, good; plants erect, very irregular in size, badly rusted; heads poor. Headed, June 9. Ripe, July 5. Height, 3.9 feet; straw medium to slender; heads smooth, square, tapering, loose; chaff white; grain dark red, medium, large, fairly well filled; grains in spikelet, 2—3. This variety shells very badly. Yield, 26.18 bushels per acre; 35.37 in 1891; average of two years, 32.27 bushels.

HIGH GRADE. June 23. Good stand; plants erect, slightly rusted; heads not large but uniform; affected by dry weather; very little loose smut. Headed, June 10. Ripe, July 7. Height, 4.6 feet; straw medium to coarse; heads smooth, short to medium in length, rounded, tapering, and compact; chaff white; grain dark red, medium large, badly shrunken; grains in spikelet, 2. Yield, 27.18 bushels per acre; 37.26 bushels in 1891; average of two years, 32.22 bushels.

HINDOSTAN. Stand, poor; plants erect, rusted slightly; heads fine, large, and uniform. A fine-looking wheat. Headed, June 9. Ripe, July 9. Height, 4.6 feet; straw medium; heads 3.9 inches long, long bearded, square, tapering, open; chaff brown; grains in spikelet, 2; grain dark red, medium to large, somewhat shrunken. A very uniform, good-looking wheat. Yield, 42.63 bushels per acre; yield in 1891, 37.85 bushels per acre; average in two years, 40.24 bushels.

HOLBORNE WONDER. This variety and Hundred Fold are two English varieties that have had two years' trial on the College farm and have been

very badly winter-killed each season. The grains shrivel up before ripening. They are worthless for the West.

HUNDRED FOLD. See Holborne Wonder.

HUNGARIAN. June 22. Stand, good; plants erect, badly rusted; heads medium to large. Headed, June 8. Ripe, July 6. Height, 4.3 feet; straw medium; heads bearded, square to flat, tapering, loose; chaff white; grains in spikelet, 2-3; grain red, medium, fairly well filled. Yield, 28.53 bushels per acre; yield in 1891, 39.17 bushels per acre; average in two years, 33.55 bushels.

HYBRID DATTEL. This wheat seems to be too late and tender for this section of country. The seed was received from the United States Department of Agriculture. The grains were red and very large and plump. While the winter of 1890-'91 was very mild, it was badly winter-killed. What grain matured was badly shrunken, and the yield per acre was only 4.07 bushels. It was almost entirely winter-killed the past winter, not enough being left to cut. Worthless here.

HYBRID LAMED, This wheat is very similar to Hybrid Dattel, and especially in being unfit for this climate. It winter-killed badly the winter of' 1890-'91, giving a yield of only 3.32 bushels per acre. Very few plants survived the past winter. Worthless here.

HYBRID MEDITERRANEAN. June 23. Good stand; plants erect, rusted slightly; heads clubbed, large and fine; fine looking wheat. Headed, June 9. Ripe, July 7. Height, 3.4 feet; straw coarse; heads bearded, medium to short, square, compact; chaff brown; grains in spikelet, 3, red, large, considerably shrunken.Yield, 25.52 bushels per acre; 25.66 in 1889; 13.70 in 1890; 42.05 in 1891; average of four years, 26.73 bushels.

HYBRID No. 9. June 22. Stand, good; plants erect, badly rusted; heads medium. Headed, June 8. Ripe, July 4. Height, 4.1 feet; straw medium; heads smooth, square, tapering, rather compact; chaff white; grain bright red, large, fairly well filled; grains in spikelets, 3. Yield, 34.80 bushels per acre; 37.79 bushels in 1891; average of two years, 36.29 bushels.

IMPROVED FIFE. June 21. Stand, good; plants erect, very irregular in height; heads poor, Headed, June 8. Ripe, July 7. Height, 3.9 feet; straw medium to slender; heads smooth, medium in length, slender, round to square, tapering, moderately compact; chaff white; grain red, medium in size, irregular, much shrunken; grains in spikelet, 2. Yield, 31.33 bushels per acre; 16.38 bushels in 1891; average of two years, 23.86 bushels.

IMPROVED RICE. June 21. Stand, fair; plants slender and drooping, slightly rusted ; heads medium. Headed, June 8. Ripe, July 4. Height, 4 feet ; straw coarse ; heads smooth, long, square to round, tapering, sharply pointed, open; chaff white ; grain dark red, medium to large, fairly well

filled; grains in spikelet, 2-3. Yield, 30.50 bushels per acre; in 1891, 31.57 bushels ; average for two years, 31.03 bushels.

JACQUES. June 22. Stand, poor; plants erect, rusted badly; heads short, but large, good many heads affected by loose smut. Fair wheat. Headed, June 10. Ripe, July 9. Height, 3.6 feet ; straw medium to coarse; heads smooth, short, square, blunt tip, very compact; chaff white ; grains in spikelet, 3, white, short, and small, considerably shrunken. Yield, 18.78 bushels per acre ; in 1891, 18.85 bushels ; average for two years, 18.79 bushels.

JENNINGS. June 21. Stand, good; plants strong and erect, badly rusted ; heads very irregular, both in size and shape. Headed, June 10. Ripe, July 8. Height, 3.8 feet ; straw medium ; heads bearded, square to flat, moderately compact; chaff white ; grain light amber, medium to small, badly shrunken ; grains in spikelet, 2. Yield, 23.71 bushels per acre ; in 1891, 46.53 bushels ; average for two years, 35.12 bushels.

JOHNSON. June 23. Stand, very poor (winter-killed) ; plants erect, slightly rusted; heads large and fine, clubbed, very uniform. Headed, June 11. Ripe, July 8. Height, 3.5 feet; straw coarse ; heads bearded, broad and thick, flattened, beards nearly parallel with heads, very compact ; chaff white; grains in spikelet, 3, light red, medium in size, much shrunken. Yield, 10.55 bushels per acre ; in 1891, 18.48 bushels; average for two years, 14.66 bushels.

KENTUCKY WHITE. June 23. Stand, too thick; plants erect, rusted slightly; heads long, large, and uniform. Headed, June 9. Ripe, July 7. Height, 4.9 feet; straw medium to slender; heads smooth, square to flat, tapering, sharply pointed, rather loose; chaff white ; grain red, small to medium, fairly well filled; grains in spikelet, 2. Yield, 28.69 bushels per acre; 33.13 bushels in 1891; average of two years, 30.91.

KNAPP. June 23. Fine looking wheat; good stand; plants erect and only slightly rusted; heads medium in size, and uniform; quite badly damaged by loose smut. Headed, June 8. Ripe, July 7. Height, 4.8 feet; straw medium to slender ; heads smooth, rounded, tapering, open ; chaff brown; grains in spikelet, 2, red, short, shrunken. Yield, 34.78 bushels per acre; 31.19 bushels in 1891; average of two years, 32.98 bushels.

LANCASTER. June 23. Good stand ; plants erect, rusted badly. Heads fine, large, and uniform. Fine looking wheat. Headed, June 8. Ripe, July 6. Height, 4.5 feet; straw slender; heads bearded, square, open, slightly tapering; chaff brown; grains in spikelet, 3, red, medium large, slightly shrunken. Yield, 37.25 bushels per acre; 38.33 bushels in l891; average of two years, 37.79 bushels.

LANDRETH. June 23. Good stand; plants erect, but badly rusted. Heads good size, but blighting from dry weather. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw coarse; heads 4.1 inches long,

smooth, somewhat flattened, well pointed, and open; chaff white; grains in spikelet, 3, very light red, medium in size, and much shrunken. Yield, 27.72 bushels per acre; 17.54 bushels in 1891; average of two years, 22.63 bushels.

LEBANON. June 22. Stand, fair ; plants erect, slightly rusted ; heads good. Headed, June 8. Ripe, July 4. Height, 4.3 feet ; straw coarse ; heads bearded, square to flat, tapering, loose; chaff white; grain dark red, medium large, fairly plump; grains in spikelet, 3. Yield, 30.11 bushels per acre ; yield in 1891, 39.55 bushels per acre ; average in two years, 34.83 bushels.

LEHIGH. June 22. Stand, fair; plants erect, slightly rusted ; heads medium. Headed, June 10. Ripe, July 8. Height, 4.2 feet; straw medium to slender; heads bearded, nearly square, tapering, moderately compact, beards nearly parallel with heads; chaff brown; grains in spikelets, 2; grain red, medium long and large, fairly well filled. Yield, 45.11 bushels per acre; yield in 1891,35.41 bushels per acre; average in two years, 40.26 bushels.

LEHIGH No. 6. June 22. Stand, good ; plants erect, slightly rusted; heads good. Headed, June 8. Ripe, July 6. Height, 4.2 feet; straw medium ; heads bearded, uniform in size, square, slightly tapering, moderately compact ; chaff brown ; grain dark red, large, long, slightly shrunken; grains in spikelet, 2-3. Yield, 36.57 bushels per acre; yield in 1891, 36.89 bushels per acre; average in two years, 36.73 bushels.

LINCOLN June 22. Stand, good ; plants erect, badly rusted ; heads very fine and large ; shows no effects from dry weather; a fine-looking wheat. Headed, June 8. Ripe, July 6. Height, 4.8 feet; straw medium to coarse ; heads smooth, long, broad, thick, well filled at point, tapering slightly ; spikelets very large and moderately compact ; chaff brown ; grain white, medium in size, somewhat shrunken ; grains in spikelet, 2-3. Yield, 34.16 bushels per acre; 10.55 bushels in 1891; average of two years, 22.35 bushels.

LITTLE RED. June 23. Stand, good ; plants erect, rusted slightly; heads long, large, fine, and uniform. Headed, June 9. Ripe, July 6. Height, 3.6 feet ; straw coarse ; heads smooth, nearly square, tapering, abruptly pointed, moderately compact; chaff white; grain red, medium irregular, shrunken ; grains in spikelet, 2. Yield, 21.63 bushels per acre; 45.35 bushels in 1891; average of two years, 34.99 bushels.

LONGBERRY. June 22. Stand, good ; plants erect, badly rusted ; heads uneven, mostly small. Headed, June 9. Ripe, July 5. Height, 4.1 feet ; straw medium to coarse; heads smooth, square to round, tapering, sharply pointed, moderately compact ; chaff ; grain dark red, medium in size, fairly well filled; grains in spikelet, 2, sometimes 3. Yield, 32.57 bushels per acre; 35.76 bushels in 1891; average of two years, 34.16 bushels.

LOST NATION. June 22. Stand, good; plants erect, very uneven in growth ; heads mostly poor. Poor looking wheat. Headed, June 10. Ripe, July 9. Height, 4 feet ; straw medium ; heads smooth, rounded, tapering, compact; chaff white; grains in spikelet, 2, red, slender, very much shrunken. Yield, 26.46 bushels per acre ; yield in 1891, 31.15 bushels per acre; average in two years, 28.80 bushels.

MAMMOTH. June 23. Stand, good; plants badly lodged, slightly rusted; heads medium in size, very uniform, and plump. Headed, June 9. Ripe, July 9. Height, 4.5 feet; straw medium ; heads bearded, square, tapering, abruptly pointed, moderately compact ; chaff white; grain dark red, medium, considerably shrunken ; grains in spikelet, 2. Yield 43.38 bushels per acre; yield in 1891, 24.60 bushels per acre; average in two years, 33.99 bushels.

MAMMOTH RED. June 23. Stand, good ; plants lodged considerably, rusted slightly ; heads good and large ; affected by dry weather. Headed, June 9. Ripe, July 9. Height, 4.7 feet ; straw medium ; heads bearded, short ; chaff white; grains in spikelet, 2, medium, slightly shrunken. Yield, 31.93 bushels per acre; yield in 1891, 21.73 bushels per acre; average in two years, 26.83 bushels.

MANITOBA. June 22. Stand, very poor ; plants erect, slightly rusted; heads very uneven, small to medium. Not a promising looking wheat. Headed, June 10. Ripe, July 11. Height, 3.9 feet; straw slender to medium ; heads smooth, square, tapering, rather sharply pointed, moderately compact ; chaff brown ; grain red, irregular, much shrunken; grains in spikelet, 2-3. Yield, 34.06 bushels per acre; in 1891, 36.57 bushels; average for two years, 35.31 bushels.

MARTIN'S AMBER. June 23. Stand, fair; plants erect, rusted slightly; heads long, and medium in size; affected by dry weather. Headed, June 11. Ripe, July 9. Height, 3.5 feet; straw medium to coarse; heads smooth, flat, tapering, abruptly pointed, a large head and moderately compact ; chaff white ; grains in spikelet, 2 ; grain light amber, medium, mostly shrunken. Yield, 21.33 bushels per acre; in 1891, 30.77 bushels; average for two years, 26.05 bushels.

McCRACKEN. June 21. Stand, fair; plants erect, slender, badly rusted, very uneven in height; heads medium in size, and quite plump. Headed, June 6. Ripe, July 4. Height, 4.1 feet; straw medium ; heads smooth, square to flat, tapering, sharply pointed, rather loose; chaff white; grains in spikelet, 2-3, red, medium in size to short, fairly plump. Yield, 38.32 bushels per acre ; in 1891, 41.24 bushels; average for two years, 39.75 bushels.

McCREGAN. June 21. Stand, good ; plants erect, badly rusted ; heads good. Headed, June 9. Ripe, July 4. Height, 3.9 feet; straw medium; heads smooth, flat, slightly tapering, loose ; chaff white ; grain red, medium

long, considerably shrunken ; grains in spikelet, 2-3. Yield, 33.20 bushels per acre; also, 33.20 bushels in 1891.

McGHEE'S RED. June 21. Stand, poor; plants erect, but badly rusted; heads fair. Headed, June 9. Ripe, July 5. Height, 3.9 feet; straw medium; heads smooth, medium length, uneven in size and shape, mostly squre, tapering, sharply pointed, moderately compact ; chaff brown; grain red, medium in size, considerably shrunken; grains in spikelet, 2-3, Yield, 27.92 bushels per acre; 40.99 bushels in 1891; average of two years, 34.45 bushels.

McGHEE'S WHITE. June 23. Stand, good; plants erect, rusted slightly. Heads fairly large and uniform. Good looking wheat. Headed, June 9. Ripe, July 6. Height, 3.6 feet; straw medium in size; heads smooth, medium length, tapering very much, round, moderately compact; chaff brown ; grains in spikelet, 2, white, medium in size, mostly well filled. Yield, 30.12 bushels per acre; 31.93 bushels in 1891; average of two years, 31.02 bushels.

McPHERSON. June 22. Stand, good; plants erect, badly rusted; heads good. Good looking wheat. Headed June 8. Ripe, July 2. Height 4.3 feet; straw, medium to slender; heads smooth, nearly square, tapering, loose; chaff white; grain red, medium, very irregular, considerably shrunken; grains in spikelet, 2. Yield, 63.86 bushels per acre; 33.09 bushels in 1891; average of two years, 48.47 bushels.

McQUAY. June 22. Good stand ; plants erect; heads rather small and tapering but quite uniform, with little rust and very little loose smut. Only a fair-looking wheat. Headed, June 8. Ripe, July 4. Height, 4.1 feet; straw medium to coarse ; heads 3.5 inches long, smooth, rounded to square, quite tapering, and open; chaff brown; grains in spikelet, 2, red, medium, in size irregular, about one-half badly shrunken, other half fairly well tilled. Yield, 30.80 bushels per acre ; 37.75 bushels in 1891; average of two years, 34.29 bushels.

MEALY. June 21. Stand, good; plants erect, badly rusted, very even in height; heads very uniform and large. Fine looking wheat. Headed, June 9. Ripe, July 3. Height, 4.1 feet ; straw coarse ; heads smooth, large, flat, well filled at the point, open; chaff velvet white, covered with silvery hairs; grains in spikelet, 2-3, dark red, short and small, all shrunk up. Yield, 26.51 bushels per acre; yield in 1891, 34.49 bushels per acre; average in two years, 30.25 bushels.

MEDITERRANEAN. June 22. Stand, good ; plants erect, badly rusted; heads fair. Fair looking wheat. Headed, June 10. Ripe, July 9. Height, 3.8 feet ; straw medium to slender ; heads bearded, long, broad, and flat, tapering, rather loose: chaff brown ; grain dark red, long, and large, slightly shrunken; grains in spikelet, 3. Yield, 31.99 bushels per acre; yield in 1891, 27.99 bushels per acre; average in two years, 29.94 bushels.

MEDITERRANEAN RED CHAFF. June 22. Stand, poor; plants erect, rusted slightly ; heads fair size. Headed, June 8. Ripe, July 6. Height, 4 feet; straw medium to coarse; heads smooth, square, sharply pointed; chaff brown ; grains in spikelets, 2, red, large, fairly well filled. Yield, 25.47 bushels per acre ; yield in 1891, 35.23 bushels per acre; average in two years, 30.85 bushels.

MENNONITE. June 22. Stand, good; plants erect, short, and badly rusted ; heads fair, and nearly free from smut. Fair looking wheat. Headed, June 8. Ripe, July 7. Height, 4 feet; straw clean and slender; heads 3.4 inches long, loose, square, tapering, and having long, branching beards ; chaff white ; grains dark red, medium in size, well filled, and hard; grains in spikelet, 2. Yield, 44.67 bushels per acre; 12.06 bushels in l891; average of two years, 28.36 bushels.

MICHIGAN AMBER. June 22. Stand, fair; plants erect, rusted slightly; heads long, large, fine, fairly uniform, and free from smut. Headed, June 8. Ripe, July 5. Height, 4.2 feet; straw medium to slender; heads 3.6 inches long, smooth, square, slightly tapering, well pointed, loose; grain dark red, medium large, considerably shrunken ; grains in spikelet, 2. Yield, 28.53 bushels per acre ; 34.82 bushels in 1891; average of two years, 31.67 bushels.

MICHIGAN BRONZE. June 23. Stand, good; plants erect, rusted very slightly ; heads large and fine. Headed, June 9. Ripe, July 7. Height, 3.5 feet; straw very coarse; heads bearded, square, abruptly pointed, compact; chaff brown, grains in spikelet, 3, red color, medium to large, few grains fairly well filled, but mostly shrunken. Yield, 26.51 bushels per acre; 29.65 bushels in l891; average of two years, 28.11 bushels,

MICHIGAN WHITE. June 23. Stand, good ; plants erect, slightly rusted; heads large, fine, and uniform. Fine looking wheat. Headed, June 9. Ripe, July 8. Height, 3.5 feet ; straw medium ; heads smooth, square, tapering, abruptly pointed, only moderately compact; chaff brown ; grains in spikelet, 3, dark red, medium large, fairly well filled. Yield, 29 42 bushels per acre; in 1891, 48.43 bushels ; average for two years, 38.92 bushels.

MICHIGAN WICK. June 23. Stand, good ; plants erect, slightly rusted; heads large and fine. Good looking wheat, containing very little loose smut. Headed, June 9. Ripe, July 6. Height, 3.5 feet; straw coarse; heads bearded, broad and flat, tapering to a point; spikelets large and far apart ; chaff white ; grains in spikelet, 2-3 ; grain light red, medium in size, slender, much shrunken. Yield, 17.32 bushels per acre; in l891, 28.88 bushels; average for two years, 23.10 bushels.

MILLER. June 22. Stand, fair; plants erect, slightly rusted; heads good and fairly uniform, but very badly smutted. Headed, June 9. Ripe, July 4. Height, 4.2 feet; straw medium; heads 4 inches long, smooth, square, tapering, loose ; chaff brown ;grain dark red, medium in size, and

badly shrunken ; grains in spikelet, 2-3. Yield, 31.68 bushels per acre ; in 1891, 43.99 bushels; average for two years, 37.88 bushels.

MILLER'S PROLIFIC. June 22. Stand, very poor; plants erect, rusted badly ; heads very short. Very poor looking wheat, and mixed too badly to separate ; similar to Jacques ; very badly affected with loose smut. Headed, June 10. Ripe, July 9. Height, 3.9 feet; straw medium to coarse; heads smooth, clubbed, very compact; chaff white ; grain light red, short, small, and slightly shrunken ; grains in spikelet, 3. Yield, 21.36 bushels per acre; in 1891, 27.89 bushels; average for two years, 24.62 bushels.

MINNESOTA HARD FIFE. June 22. Good stand ; plants erect, rusted badly; uneven in height; heads fair sized ; very ordinary looking wheat. Headed, June 9. Ripe July 8. Height, 4 feet; straw medium in size; heads smooth, flat to square, tapering very much to the point, rather loose; chaff brown; grains in spikelet, 3, red, small to medium, very irregular, considerably shrunken. Yield, 35.23 bushels per acre ; 29.73 bushels in 1891; average of two years, 32.48 bushels.

MISSOURI. June 21. Good stand; plants erect, lodged in places, rusted badly. Heads rather small. Fair looking wheat. Headed, June 28. Ripe, July 4. Height, 4 feet ; straw medium in size; heads smooth, round, very slender, tapering,and loose; chaff white; grains in spikelet, 2, dark red, medium in size, much shrunken. Yield, 28.38 bushels per acre; 32.91 bushels in 1891; average of two years, 30.64 bushels.

MISSOURI BLUE STEM. June 23. Stand poor; plants erect, slightly rusted; heads clubbed, fairly large. Good looking wheat. Headed June 9. Ripe, July 6. Height, 3.4 feet ; straw coarse, blue ; heads bearded, square, mostly clubbed at point, uniform, and very compact; chaff brown; grains red, large, fairly plump ; grains in spikelet, 2-3. Yield, 25.10 bush-& per acre; yield in 1891, 39.75 bushels; average for the two years, 32.42 bushels per acre.

MOON. June 23, Stand, fair; plants erect, rusted badly; heads fair. Headed, June 9. Ripe, July 4. Height, 4.5 feet; straw medium ; heads smooth, flat, sharply pointed, very loose; chaff white; grains in spikelet, 2, white, irregular in size, much shrunken. Yield, 34.32 bushels per acre; yield in 1891, 10.36 bushels; average yield for two years, 22.34 bushels per acre.

NAME LOST. June 23. Stand. fair; plants erect, slightly rusted; heads large; medium wheat. Headed, June 9. Ripe, July 6. Height, 3.6 feet; straw coarse; heads bearded, flat, tapering both ways from middle, abruptly tipped, fairly compact; chaff white; graindark red, large, much shrunken; grains in spikelet, 2. Yield, 25.28 bushels per acre; yield in 1891, 44.66 bushels; average yield for two years, 34.97 bushels per acre.

NEBRASKA. June 23. Stand, good; plants erect, slightly rusted; heads very long, large, and uniform. Extra fine wheat. Headed, June 8. Ripe,

July 6. Height, 3.8 feet; straw coarse; heads bearded, broad, and thick, flattened, tapering evenly toward tip, abruptly pointed; spikelets moderately close together; chaff brown, covered with silvery hairs; grain red, medium in size, rather long, fairly plump; grains in spikelet, 2. Yield, 31.71 bushels per acre; yield in 1891, 31.22 bushels; average yield for two years, 31.46 bushels per acre.

NEW AUSTRALIAN. June 23. Stand, fair; plants erect, very slightly rusted; heads large and fine. Headed, June 9. Ripe, July 7. Height, 3.6 feet; straw medium to coarse; heads bearded, square, tapering, abruptly pointed, moderately compact; chaff white; grain red, long, large, uniform, shrunken; grains in spikelet, 2-3. Yield, 22 bushels per acre; yield in 1891, 33.93 bushels; average yield for two years, 27.96 bushels per acre.

NEW MONARCH. June 23. Stand, very poor (winter-killed); plants erect, slightly rusted ; heads fair. Headed, June 9. Ripe, July 6. Height, 3.5 feet; straw coarse; heads smooth, long, thick, flattened, tapering both ways from center, loose; chaff white ; grains in spikelet, 2-3, red, short, all shrunken up. Yield, 13.61 bushels per acre; yield in 1891, 38.42 bushels; average yield for, two years, 26.01 bushels per acre.

NEW YORK FLINT. June 23. Stand, very poor; plants erect, rusted badly; heads medium. Fair looking wheat. Headed, June 9. Ripe, July 6. Height, 3.7 feet; straw medium in size; heads smooth, medium long, rounded, tapering, loose; chaff white; grains in spikelet, 2-3, red, medium to short, slightly shrunken. Yield, 18.28 bushels per acre ; yield in l891, 27.05 bushels; average for two years, 22.66 bushels per acre..

NIGGER. June 22. Stand, fair; plants erect, but somewhat rusted; heads large, uniform, and quite free from loose smut. A fine-looking wheat. Headed, June 8. Ripe, July 6. Height, 4.2 feet; straw medium; heads 3.9 inches long, square to broad and flat, bearded, tapering slightly, points well filled, moderately loose; chaff white to light brown ; grains in spikelet, 2-3, red, long, and very large, and quite well filled. Yield, 41.65 bushels per acre; yield in 1889, 22.71; in l890, 24.64; in l891, 39.90 bushels per acre ; average yield in four years, 32.22 bushels per acre.

OAKLEY. June 21. Stand, good ; plants erect, badly rusted; heads irregular. Headed, June 6. Ripe, July 2. Height, 4.1 feet; straw medium ; heads smooth, square to flat, tapering, sharply pointed, moderately compact, plump; chaff white; grains in spikelet, 2-3, dark red, medium, much shrunken. Yield, 28.29 bushels per acre; yield in 1891, 35.69 bushels; average yield for two years, 31.99 bushels per acre.

OHIO SWAMP. June 22. Stand, good; plants erect, uneven in height, and badly rusted ; heads fair, badly smutted ; not a very promising looking wheat. Headed, June 8. Ripe, July 6. Height, 4 feet; straw medium to slender; heads-3.4 inches long, bearded, square, slightly tapering; spikelets not closely set; chaff brown; grain dark red, long, and large, fairly well

filled; grains in spikelet, 2-3. Yield, 33.96 bushels per acre; yield in l891, 12.50 bushels; average yield for two years, 23.23 bushels per acre.

O. K. June 22. Stand, thick ; plants erect and rusted slightly ; heads fair in size, and uniform; badly affected with loose smut. Headed, June 6. Ripe, July 4, Height, 4 feet; straw slender, clean, and bright; heads 3.7 inches long, bearded, broad, and thick, tapering slightly, loose; chaff white ; grains in spikelet, 3, dark red, long, slender, and fairly well filled. Yield, 43.38 bushels per acre ; yield in 1891, 15.83 bushels; average yield for two years, 29.60 bushels per acre.

ONTARIO. June 22. Stand, good; plants erect, very uneven in height, slightly rusted; heads very good. A very fine-looking wheat. Headed, June 9. Ripe, July 4. Height, 4 feet ; straw medium, straight, and clean; heads smooth, long, broad, flat, almost as broad at tip as at base; very uniform in size; spikelets rather far apart; chaff very light brown; grains in spikelet, 2-3, usually 3, dark red, medium in size, shrunken. Yield, 25.65 bushels per acre ; yield in 1891, 18.04 bushels ; average for two years, 21.84 bushels per acre.

ONTARIO WONDER. June 21. Stand, good; plants erect, badly rusted; heads fairly large, but very badly smutted-loose smut. Headed, June 9. Ripe, July 4. Height, 4.1 feet; straw coarse ; heads smooth, flat, tapering, loose ; chaff white; grain dark red, medium large, very much shrunken; grains in spikelet, 2. Yield, 19.3 bushels per acre; yield in 1889, 19.13; in 1890, 17.50; in 1891, 35.47 bushels; average yield for four years, 22.85 bushels per acre.

OREGON. June 21. Stand, good; plants erect, uneven in height, badly rusted; heads medium. Headed, June 8. Ripe, July 2. Height, 4 feet; straw medium to coarse; heads smooth, square, very slightly tapering, moderately compact ; chaff white ; grain red, medium in size, rather slender, considerably shrunken ; grains in spikelet, 2. Yield, 29.11 bushels per acre; yield in 1891, 36.03 bushels ; average yield for two years, 32.57 bushels per acre.

OREGON CLUB. June 22. Good stand; plants erect and quite free from rust; heads only medium, but very uniform, very badly smutted. Headed, June 10. Ripe, July 8. Height, 3.7 feet; straw medium to slender; heads 3.7 inches long, irregular, smooth, moderately compact, and tapering; chaff brown ; grain red, short, and slender, fairly well Bled ; grains in spikelet, 2. Yield, 35.86 bushels per acre ; yield in 1891, 34.27 bushels; average yield for two years, 35.06 bushels per acre.

OSTERY, June 23. Stand, good ; plants erect, very slightly rusted; heads medium large. Fair looking wheat. Headed, June 8. Ripe, July 6. Height, 3.8 feet; straw coarse ; heads smooth, square, tapering, only moderately compact; chaff dirty white ; grains in spikelet, 2-3, dark red, short,

fairly plump. Yield, 30.18 bushels per acre : yield in l891, 15.74 bushels per acre ; average in two years, 22.96 bushels per acre.

PALESTINE. June 23. Stand, poor; plants erect, rusted very slightly; heads very slim. Poor looking wheat. Headed, June 10. Ripe, July 7. Height, 3.5 feet ; straw medium to slender; heads smooth, flat to square, tapering, loose ; chaff white; grain dark red, slender, shrunken; grains in spikelet, 2, and sometimes 3. Yield, 24.16 bushels per acre; yield in 1891, 34.58 bushels per acre; average in two years, 29.37 bushels.

PATAGONIA TRIGO. June 22. Stand, good ; plants erect, rusted badly; heads good, but somewhat smutty. A good-looking wheat. Headed, June 9. Ripe, July 8. Height, 3.5 feet; straw medium to coarse; heads 3.5 inches long, smooth, square, tapering slightly, and quite loose ; chaff brown ; grain dark red, medium in size, fairly well filled, some grains shrunk more than others ; grains in spikelets, 2-3. Yield, 29.37 bushels per acre; yield in l891, 43.99 bushels per acre; average yield in two years, 36.68 bushels.

PEARL. This is one of five English varieties of wheat that have been grown here for the last two years. A small quantity of seed was planted each season, but the plants were mostly winter-killed. What few plants lived through the winter produced very large heads, but the grains dried up instead of filling.

PENQUITE'S VELVET CHAFF. June 21. Stand, good; plants erect, strong, very uniform in height, slightly rusted; heads large and uniform. Headed, June 8. Ripe, July 2. Height, 3.9 feet; straw medium; heads bearded, square to broad and flat, tapering, compact; chaff a velvety brown, covered with silvery hairs; grain red, medium long, rather slender, fairly plump; grains in spikelet, 2-3. Yield, 41.69 bushels per acre; yield, in l891, 41.34 bushels; average yield for two years, 41.51 bushels per acre.

POLISH WHEAT. Winter-killed.

POOLE. June 23. Stand, about one-half (winter-killed); plants erect, slightly rusted; heads long, large, and uniform. Headed, June 9. Ripe, July 7. Height, 3.4 feet; straw medium; heads smooth, broad, and flattened to square, tapering, rather loose; chaff brown; grains in spikelet, 3; grain dark red, slender, irregular in size, much shrunken. Yield, 16.45 bushels per acre; yield in l891, 43.16 bushels; average yield for two years, 29.80 bushels per acre.

PORTER. June 21. Stand, poor ; plants erect but badly rusted; heads fair, and no loose smut. Headed, Jane 8. Ripe, July 2. Height, 3.9 feet; straw medium in size; heads smooth, square to flat, tapering, very loose; chaff white; grains in spikelet, 2; Red, short, irregular, much shrunken. Yield, 25.54 bushels per acre; yield in l891, 14.77 bushels; average yield for two years, 20.16 bushels per acre.

POWERS. June 21. Stand, good; plants erect, but badly rusted. Fair looking wheat. Headed, June 9. Ripe, July 6. Height, 4 feet; straw

medium; heads smooth, medium to large, square to broad and flat, tapering:, compact; chaff white; grains in spikelet, 2-3 ; grain light red, medium, slightly shrunken. Yield, 28.87 bushels per acre; yield in 1891, 45.84 bushels; average yield for two years, 37.35 bushels per acre.

PRIDE OF THE MARKET. This is an English variety that seems to be too tender for our winters. It has been grown for two seasons, and very badly winter-killed both winters. It was dried up by hot winds this season before it ripened.

PRINCE OF WALES. This is an English variety too tender for our winters. It winter-kills badly, and ripens so late that it dries up before it fills.

PURE GOLD. June 23. Stand, good; plants erect, rusted slightly; heads large and uniform. Fine looking wheat. Headed, June 13. Ripe, July 10). Height, 4.7 feet ; straw medium ; heads smooth, square, slightly tapering, moderately compact ; chaff white; grains in spikelet, —, light red, medium in size, mostly much shrunken. Yield, 23.39 bushels per acre; yield in l891, l5.59 bushels per acre; average in two years, 19.47 bushels.

PURPLE STRAW. June 22. Stand, fair ; plants erect, but badly rusted; heads fair, and tolerably free from smut. Headed, June 8. Ripe, July 7. Height, 4.2 feet ; straw medium ; heads 3.5 inches long, bearded, broad, and thick, slightly tapering, and comparatively compact; grain dark red, large, elongated, slightly shrunken; grains in spikelet, 3. Yield, 31.53 bushels per acre; yield in 1891, 42.12 bushels per acre; average in two years, 36.82 bushels.

PURPLE STRAW RED. June 21. Stand; good; plants erect, slightly rusted; heads good, and no loose smut. Headed, June 8. Ripe, July 2. Height, 4.2 feet; straw slender; heads smooth, square, tapering, quite slender, sharply pointed, moderately compact; chaff white; grain red, medium, irregular, much shrunken; grains in spikelet, 2. Yield, 32.41 bushels per acre; yield in l889, 20.13; in l890, 4.33; in 1891, 33.16 bushels; average yield for four years, 22.50 bushels per acre.

RAMSEY. June 21. Stand, good; plants strong, erect, badly rusted; heads very uneven. Headed, June 8. Ripe, July 2. Height, 4 feet; straw medium to coarse ; heads smooth, round, very slender, tapering, sharply pointed, rather compact; chaff white; grain red, medium in size, fairly plump; grains in spikelet, 2. Yield, 37.66 bushels per acre; yield in 1891. 47.75 bushels ; average yield for two years, 42.70 bushels per acre.

RAUB'S BLACK PROLIFIC. June 22. Stand, good; plants erect, fairly even in height; heads very fine, but not very large, only slightly rusted, and very few heads smutted ; a very fine-looking wheat. Headed, June 9. Ripe, July 8. Height, 4.1 feet ; straw coarse ; heads 3 inches long, bearded, very broad and thick, tapering slightly, but having a well-filled tip, and very compact ; chaff brown ; grains red, large, and plump; grains in spike-

let, 2. Yield, 35.23 bushels per acre ; yield in 1891, 32.93 bushels ; average yield for two years, 34.08 bushels per acre.

RED AMBER. June 22. Stand, good; plants erect, rusted slightly; heads only medium, but very uniform, quite badly smutted. Fair looking wheat. Headed, June 10. Ripe, July 7. Height, 4 feet; straw medium in size; heads 3.6 inches long, bearded, square, tapering, and fairly compact to loose ; chaff brown ; grain red, large, fairly well filled ; grains in spikelet, 2-3. Yield, 33.27 bushels per acre; yield in 1891, 33.43 bushels; average yield in two years, 33.35 bushels per acre.

RED BRAZILIAN. June 22. Stand, very poor; plants erect, rusted slightly; heads fair; mixed with two other varieties of wheat. Headed, June 13. Ripe, July 10. Height, 3.8 feet ; straw medium; heads smooth, long, flat, slightly tapering, loose; chaff brown; grains in spikelet, 3, red, medium, much shrunken. Yield, 20.18 bushels per acre; yield in l891, 42.67 bushels; average yield for two years, 31.42 bushels per acre.

RED CROSS. June 22. Stand, good; plants erect, rusted slightly ; heads very plump, but not very large. Headed, June 10. Ripe, July 9. Height, 3.9 feet; straw medium to coarse; heads 2.8 inches long, bearded, very compact, very irregular, mostly square, with well-rounded tip; chaff brown; grain red, large, and fairly plump; grains in spikelet, 2-3. Yield, 31.25 bushels per acre; yield in l891, 41.34 bushels; average yield for two years, 36.29 bushels per acre.

RED FULTZ (Kas.) June 21. Stand, good; plants erect, uneven in height, very badly rusted; heads medium to large. Headed, June 8. Ripe, July 2. Height, 4.1 feet; straw medium to coarse; heads smooth, square, tapering, rather compact ; chaff white ; grains in spikelet, 2, often 3, dark red, medium long and large, fairly well filled. Yield, 33 bushels per acre; yield in 1891, 45.54 bushels ; average yield for two years, 39.27 bushels per acre.

RED FULTZ (O.) June 21. Stand good; plants erect, very badly rusted, and uneven in height ; heads medium size. Headed, June 8. Ripe, July 7. Height, 3.9 feet; straw coarse; heads smooth, mostly square, nearly as broad at tip as at base; chaff brown ; grain dark red, large, considerably shrunken; grains in spikelet, 2-3. Yield, 36.26 bushels per acre ; yield in 1891, 46.04 bushels; average yield in two years, 41.15 bushels per acre.

RED LINE. June 23. About half stand; plants erect, rusted slightly; heads medium in size ; a late wheat. Headed, June 10. Ripe, July 7. Height, 3.5 feet; straw medium to coarse; heads smooth, flat, broad, tapering, loose; chaff brown; grains in spikelet, 3, dark red, large, much shrunken. Yield, 13.02 bushels per acre; yield in l891, l8.66 bushels; average yield for two years, 15.84 bushels per acre.

RED MAY. June 21. Stand, fair; plants strong, erect, slightly rusted; heads good. Headed, June 8. Ripe, July 2. Height, 4 feet; straw coarse; heads smooth, large, plump, square, tapering, sharply pointed,

rather compact; chaff' white; grains in spikelet, 2-3, red, short, plump. Yield, 34.88 bushels per acre ; yield in 1889, 31.50; in 1890, 29.70; and in 1891, 48.19 bushels; average yield for four years, 36.07 bushels per acre.

RED ODESSA. June 23. Stand, good; plants very tall and slender, and lodged in places; rusted slightly; heads fine and large. A good-looking wheat. Headed, June 9. Ripe, July 7. Height, 4.6 feet; straw very slender; heads, 4.1 inches long, square, and tapering to a point, moderately compact, and bearded; chaff brown ; grain dark red, long, large, and slightly shrunken; grains in spikelet, 2-3. Yield, 38.64 bushels per acre; yield in l891, 28.77 bushels; average for two years, 33.70 bushels per acre.

RED SEA. June 23. Stand, poor; plants erect, rusted slightly; heads uniform in size. Fair looking wheat. Headed, June 9. Ripe, July 7. Height, 3.5 feet; straw medium in size; heads bearded, square, abruptly pointed, rather loose; chaff brown;grains in spikelet, 2-3, dark red, long, considerably shrunken. Yield, l8.01 bushels per acre; 15.29 bushels in l891; average for two years, 16.65 bushels per acre.

RELIABLE. June 20. Fair stand; plants erect and slightly rusted; heads fine and uniform. A very fine-looking wheat and free from loose smut. Headed, June 9. Ripe, July 7. Height, 4.2 feet; straw medium to coarse; heads 3.8 inches long, flat, long, spreading beards, tapering, and loose; chaff white; grain dark red, medium in size, slender, much shrunken; grains in spikelet, 3. Yield, 31.43 bushels per acre; 27.66 bushels in l889; 24 bushels in 1890; 43.77 bushels in 1891; average for four years, 31.71 bushels.

RIO GRANDE. June 21. Stand, good; plants tall, slender, and drooping, even in height, slightly rusted ; heads good. Headed, June 6. Ripe, June 30. Height, 4.5 feet ; straw medium; heads smooth, square, tapering, rather long, uniform in size, very plump, and open; chaff very light brown; grain red, medium in size, plump; grains in spikelet, 3. Yield, 34.43 bushels per acre; 26.73 bushels in 1891; average for two years, 30.53 bushels.

ROBERTS. June 22. Stand, very poor; plants weak, slightly rusted; heads large, Headed, June 10. Ripe, July 8. Height, 3.9 feet; straw coarse; heads bearded, broad and flat, not tapering, open; chaff brown; grains in spikelet, 2-3, dull red, long and slender, very much shrunken. Yield. 9.12 bushels per acre; yield in 1891, 41.14 bushels per acre; average in two years, 25.13 bushels.

ROCKY MOUNTAIN. June 22. Stand, good ; plants erect, very slightly rusted; heads medium to large. Good looking wheat. Headed, June 10. Ripe, July 6. Height, 3.9 feet; straw medium ; heads smooth, long, large, flat, slightly tapering, loose ; chaff brown; grain light red, medium, very much shrunken; grains in spikelet, 2-3. Yield, 25.34 bushels per acre; yield in l891, 38.91 bushels per acre; average in two years, 33.62 bushels.

ROGER'S RED. June 22. Stand, fair; plants erect, slightly rusted; heads good. Headed, June 8. Ripe, July 6. Height, 4.4 feet; straw medium; heads smooth, irregular in size and shape, mostly square to flat, abruptly pointed, open ; chaff white; grains in spikelet, 2-3, dark red, short, and plump. Yield, 35.69 bushels per acre; yield in l891, 26.54 bushels per acre ; average in two years, 31.11 bushels.

ROSCOE. June 22. Stand, fair; plants lodged in places, very badly rusted; heads very short, and very badly affected with loose smut,. Poor looking wheat. Headed, June 9. Ripe, July 7. Height, 3.8 feet; straw medium to coarse; heads 2.8 inches long, smooth, very compact, full and broad at the point; chaff dirty brown; grain white, short, small, and slightly shrunken; grains in spikelet, 3. Yield, 18.52 bushels per acre; in 1891, 25.71 bushels; average for two years, 22.11 bushels.

ROYAL AUSTRALIAN. June 22. Stand, good; plants erect, slightly rusted; heads good. Headed, June 9. Ripe, July 6. Height, 3.6 feet; straw coarse; heads smooth, long, large, flat, slightly tapering, loose; chaff brown; grain light red, medium in size, much shrunken ; grains in spikelet, 2-3; spikelets large and coarse. Yield, 29.55 bushels per acre; in l891, 31.49 bushels; average for two years, 30.52 bushels.

RURAL No. 5. June 23. Stand, poor (winter-killed); plants erect,, rusted slightly; heads very large. A late wheat, and not very strong looking. Headed, June 9. Ripe, July 6. Height, 3.3 feet; straw coarse; heads smooth, long, broad, flat, very slightly tapering, well rounded at tip, moderately compact; chaff brown ; grain white, medium in length, all shriveled up ; grains in spikelet, 3. Yield, 17.71 bushels per acre; in l891, 34.55 bushels; average yield for two years, 26.13 bushels.

RUSSIAN. June 23. Stand, good; plants erect, rusted very slightly; heads very large and fine, and almost free from loose smut. Fine looking wheat. Headed, June 9. Ripe, July 8. Height, 3.2 feet; straw medium to coarse; heads bearded (long, spreading beards), broad and flat, tapering; spikelets extremely large but far apart; chaff a dirty, yellowish white; grain dark red, medium to large, shrunken; grains in spikelet, 3. Yield, 31.37 bushels per acre; in 1891, 15.86 bushels; average for two years, 23.61 bushels.

RUSSIAN HARD. June 23. Very good stand; plants erect, very slightly rusted; heads small but very uniform in size. Headed, June 9. Ripe, July 7. Height, 4.6 feet; straw slender, clean, and bright ; heads bearded, square to broad and flat, tapering ; spikelets large and moderately compact; chaff white; grain dark red, short, very hard, and only slightly shrunken; grains in spikelet, 2-3. Yield, 31.24 bushels per acre.

RUSSIAN MAY. June 21. Stand, good; plants erect, uneven in height, badly rusted. Headed, June 8. Ripe, July 4. Height, 4.3 feet; straw medium to coarse; heads smooth, square to flat, tapering to compact; chaff

white ; grains in spikelet, 2, red, medium, considerably shrunken. Yield, 28.11 bushels per acre; 31.15 bushels in 1891; average for two years, 29.63 bushels.

RUSSIAN No. 2. June 21. Stand, fair; plants erect, uneven in growths badly rusted; heads medium. Headed, June 8. Ripe, July 8. Height, 4 feet; straw coarse; heads smooth, square, tapering, moderately compact, very plump ; chuff white; grain white, medium in size, fairly plump; grains in spikelet, 3, and sometimes 4. Yield, 27.33 bushels per acre; 16.18 bushels in 1891; average of two years, 21.75 bushels.

SANDOMIRKA. June 22. Stand, fair ; plants erect,, slightly rusted; head, medium to large. Headed, June 9. Ripe, July 8. Height, 3.6 feet ; straw coarse; heads smooth, square to flat, tapering, sharply pointed, rather loose; grain light red, medium, slightly shrunken ; chaff brown ; grains in spikelet 3. Yield, 23.92 bushels per acre; 29.75 bushels in 1891; average of two years, 26.83 bushels.

SCOTT. June 22. Stand, good ; plants erect, slightly rusted ; heads small to large, very irregular. Headed, June 9. Ripe, July 6. Height, 3.8 feet ; straw medium; heads bearded, mostly square, tapering, sharply pointed, moderately compact; chaff brown ; grain dark red, long, fairly well filled; grains in spikelet, 2. Yield, 31.12 bushels per acre; 41.07 bushels in 1891; average of two years, 36.09 bushels.

SENECA CHIEF. June 22. Stand, fair; plants erect, slightly rusted; heads short, but plump. Headed, June 9. Ripe, July 7. Height, 4.2 feet; straw coarse; heads bearded, large, square, very compact ; spikelets bunched at tip ; chaff brown ; grain red, medium in size, plump; grains in spikelet, 2-3; a very good wheat. Yield. 34.70 bushels per acre; 36.26 bushels in 1891; average for two years, 35.48 bushels.

SHERIFF. June 22. Stand, fair; plants lodged some, badly rusted; heads good, but irregular in size. Headed, June 9. Ripe, July 6. Height, 3.9 feet; straw coarse to medium; heads smooth, round to broad and flat, tapering very slightly, abruptly pointed, loose; chaff white; grain dark red, medium in size, much shrunken; grains in spikelet, 2-3. Yield, 23.87 bushels per acre; yield in 1891, 32.29 bushels; average for the two years, 28.08 bushels.

SHUMAKER'S CLAWSON. June 22. Stand, fair; plants inclined to lodge, rusted badly; heads good. Headed, June 9. Ripe, July 6. Height, 4.1 feet; straw medium to coarse; heads smooth, square to broad and flat, slightly tapering, rather loose; chaff brown; grain very light red, medium in size, considerably shrunken; grains in spikelet. 2. Yield, 32.51 bushels per acre; yield in l891, 13.34 bushels; average of the two years, 22.92 bushels.

SIBERIAN. June 23. Good stand; plants erect, very free from rust; heads very fine. Very fine looking wheat. Headed, June 4. Ripe, July

6. Height, 4.7 feet; straw medium to slender; heads smooth, long, round, tapering, loose; chaff white; grains in spikelet, 2, red, medium, slightly shrunken. Yield, 43.16 bushels per acre; yield in 1891, 15.05 bushels; average for the two years, 29.10 bushels.

SIBLEY'S HYBRID. June 23. About one-half stand (winter-killed); plants erect, rusted very slightly; heads very large; late wheat, Headed, June 9. Ripe, July 6. Height, 3 feet; straw very coarse; heads bearded, uniform in size, clubbed, large, square to broad and flat; spikelets very large and very compact; chaff brown; grain in spikelets, 2-3; grain red, large, very much shrunken. Yield, 14.81 bushels per acre; yield in l891, 7.1 bushels; average for the two years, 10.95 bushels.

SIBLEY'S NEW GOLDEN. June 22. Very poor stand; plants erect, slightly rusted; heads small to medium, very little smut. Headed, June 11. Ripe, July 8. Height, 3.9 feet; straw medium; heads 4.3 inches long, bearded–beard on about two-thirds of head–square, tapering, moderately compact; chaff light brown; grain red, very large, slightly shrunken; grains in spikelet, 2. Yield, 24.82 bushels per acre; yield in 1891, 45.09 bushels; average for the two years, 34.95 bushels.

SILVER CHAFF. June 23. Stand, fair ; plants erect, slightly rusted; heads medium. Headed, June 11. Ripe, July 8. Height, 3.4 feet ; straw coarse ; heads square to broad and flat, tapering, abruptly pointed, smooth, moderately compact; chaff white; grain white, medium in size, irregular, very badly shrunken; grains in spikelet, 2-3. Yield, 19.14 bushels per acre; yield in 1891, 27.43 bushels; average for the two years, 23.28 bushels.

SILVER CHAFF BEARDED. June 22. Stand, good; plants erect, slightly rusted; heads medium in size and uniform. Headed, June 9. Ripe, July 6. Height, 4 feet; straw medium; heads bearded, broad, flat, very loose; chaff white ; grain dark red, short, mostly much shrunken; grains in spikelet, 2-3; spikelets coarse. Yield, 36.79 bushels per acre; yield in 1891, 22.02 bushels; average for the two years, 29.40 bushels.

SILVER CHAFF SMOOTH. June 23. Stand, poor; plants erect, but slightly rusted ; heads very large, but not filling out well on account, of dry weather. Headed, June 13. Ripe, July 9. Height, 3.5 feet; straw coarse; heads smooth, broad, flattened, quite thick, slightly tapering, abruptly pointed; spikelets very large, and moderately compact ; chaff white; grain white, medium, all shrunken up; grains in spikelet, 2-3. Yield, 9.27 bushels per acre; yield in 1891, 27.43 bushels; average for two years, 18.35 bushels.

SMALL FRAME June 22. Stand, good; plants erect, badly rusted; heads very small to medium, very irregular. Headed, June 4. Ripe, July 5. Height, 3.7 feet; straw medium; heads smooth, square, tapering, moderately compact; chaff white; grains in spikelet, 2, dark red, medium in

size, slightly shrunken. Yield, 39.32 bushels per acre; yield in 1891, 12.02 bushels ; average for two years, 25.67 bushels.

SMITH'S IMPROVED. June 22. Stand, good ; plants erect, but slightly rusted ; heads medium, but very much blighted by dry weather. Headed, June 10. Ripe, July 9. Height, 3.9 feet; straw medium ; heads bearded, tint, tapering, rather abruptly pointed, loose ; chaff brown ; grain white, short, irregular, and considerably shrunken ; grains in spikelet, 2. Yield, 25.50 bushels per acre ; yield in 1891, 17.59 bushels ; average for two years, 21.61 bushels.

SMOOTH SCOTT. June 22. Stand, very poor; plants erect, slightly rusted; heads very irregular in size. Headed, June 9. Ripe, July 8. Height, 3.9 feet; straw medium to slender ; heads smooth, very irregular in shape, open ; chaff white ; grain dark red, medium in size, considerably shrunken; grains in spikelet, 2. Yield, 26.51 bushels per acre ; yield in 1891, 15.74 bushels ; average for two years, 21.12 bushels.

SOULES. June 21. Stand, fair; plants bent at first joint,, but straight above, badly rusted, and uneven in height. Headed, June 10. Ripe, July 9. Height, 3.7 feet; straw medium to coarse; heads smooth, flat to square, slightly tapering, broad at tip, rather loose; chaff white; grains in spikelet, 2, very light red or white, small, much shrunken. Yield, 29.68 bushels per acre ; yield in 1891, 18.84 bushels ; average for two years, 24.26 bushels.

SOUTHERN AMBER. June 21. Stand, good ; plants strong and erect, even in height, only slightly rusted ; heads rather small. Headed, June 8. Ripe, July 7. Height, 4.3 feet ; straw medium in size ; heads smooth, round to flat, tapering to a point., open ; chaff white ; grain red, short and small, irregular in size, considerably shrunken ; grains in spikelet, 2. Yield, 30.37 bushels per acre; yield in 1891, 13.82 bushels ; average for two years, 22.09 bushels.

STEWART. June 22. Stand, very poor; plants erect ; heads very irregular, containing several types ; a very late wheat. Headed, June 13. Green at time of cutting, July 13. Two types of heads: one bearded, long, flat, very slightly tapering, moderately compact; chaff brown; grains in spikelet, 3, light red, medium in size, badly shrunkeu ; the other smooth, broad, flattened, thick, very compact, with spikelets bunched at tip ; this is also mixed with smooth, tapering heads, grain quite similar to above. Yield. 12.91 bushels per acre ; yield in 1891, 6.12 bushels ; average for two years, 9.01 bushels.

STRAYER'S EGYPTIAN. June 21. Stand, good ; plants strong, erect, badly rusted ; heads medium. Headed, June 8. Ripe, July 4. Height, 4 feet ; straw coarse ; heads bearded, broad and thick to square, slightly tapering, moderately compact, very plump ; chaff white ; grain dark red, medium in size, much shrunken ; grains in spikelet, 2-3. Yield, 28.06 bushels

per acre; yield in 1891, 47.96 bushels per acre; average in two years, 35.01 bushels.

STRAYER'S LONGBERRY. June 21. Stand, good; plants erect, uneven in height, badly rusted; heads medium. Headed, June 9. Ripe, July 8. Height, 4 feet; straw slender; heads bearded (beards not spreading), flat, tapering, open; chaff white; grain red, medium in size, irregular, shrunken; grains in spikelet, 2. This is mixed with about the same amount of heads, bearded and similar shaped, but having a brown chaff, and much larger, finer kernels. Yield, 30.46 bushels per acre; yield in 1591, 41.56 bushels per acre; average in two years, 36.01 bushels.

STRAYER'S ROUMANIA. June 23. Stand, poor; plants erect, slightly rusted; seeds large. Fair wheat. Headed, June 10. Ripe, July 8. Height, 3.7 feet; straw medium; heads smooth, long, broad, flat, tapering slightly, abruptly pointed; spikelets large, but not closely set; chaff bronze; grain dark red, medium in size, shrunken; grains in spikelet, 2, 3, and sometimes 4. Yield, 13.56 bushels per acre; yield in 1591, 42.13 bushels per acre; average in two years, 27.99 bushels.

SURPRISE. June 22. Fair stand, plants very much inclined to lodge, rusted slightly; heads uniform in size. Headed, June 10. Ripe, July 8. Height, 3.7 feet; straw medium; heads smooth, square, square at tip, compact; chaff white; grains in spikelet, 3, white, short, much shrunken. Yield, 23.16 bushels per acre; yield in 1891, 35.70 bushels; average of two years, 29.43 bushels.

TAPPAHANNOCK. June 23. Poor stand; plants erect, slightly rusted; heads very small, slim, and irregular; very poor looking wheat, Headed, June 10. Ripe, July S. Height, 4 feet; straw coarse; heads smooth, square to rounded, tapering, moderately compact; chaff white; grains in spikelet, 2, sometimes 3; grain red, medium, considerably shrunken. Yield, 23.05 bushels per acre.

TASMANIAN RED. June 22. Stand, good; plants erect, slightly rusted; heads medium in size, quite uniform. Headed, June 8. Ripe, July 4. Height 4 feet; straw very slender; heads bearded, square, tapering, moderately compact; chaff brown; grains in spikelet, 2, dark red, long, large, fairly well filled. Yield, 42.37 bushels per acre; yield in 1891, 40.62 bushels; in 1890, 29.33 bushels; in 1889, 27.84 bushels; average for four years, 35.04 bushels.

TENNESSEE AMBER. June 23. Very poor stand; plants erect; heads poor. Poor looking wheat. Headed, June 9. Ripe, July S. Height, 4 feet; straw coarse; heads smooth, square to broad and flat, tapering, loose; chaff white; grains in spikelet, 2; grain red, medium, fairly well filled. Yield, 34.07 bushels per acre.

THEISS. June 22. Stand, good; plants erect, slightly rusted; heads large and fine. Headed, June 8. Ripe, July 4. Height, 3.9 feet; straw

slender; heads bearded, broad, flat, very slightly tapering, open; chaff white to light brown; grain dark red, medium in size, fairly well filled; grains in spikelet, 2. Yield, 42.90 bushels per acre; yield in 1891, 26.93 bushels; average for two years, 34.44 bushels.

TRAVIS. June 23. Good stand ; plants erect, rusted slightly ; heads fine, large, and uniform. Good looking wheat. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw coarse; heads smooth, square, tapering, moderately compact-; chaff white; grains in spikelet, 2-3, red, medium, plump. Yield, 29.57 bushels per acre; yield in 1591, 17.49 bushels; average of two years, 23.53 bushels.

TREADWELL. June 23. Stand, good; plants erect, slightly rusted; heads fair; fair looking wheat. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw medium; heads smooth, uniform, square, tapering, moderately compact; chaff white; grains in spikelet, 2-3, red, medium, considerably shrunken. Yield, 35.78 bushels per acre; yield in 1591, 12.92 bushels; average for two years, 24.35 bushels.

TRITICUM. June 23. Stand, fair; plants erect, very slightly rusted ; heads fair. Headed, June 9. Ripe, July 6. Height., 3.4 feet; straw medium to slender; heads bearded, medium in size, square, tapering ; spikelets moderately close together ; chaff brown ; grain dark red, long, slightly shrunken ; grains in spikelet, 2. Yield, 23.11 bushels per acre ; yield in 1891, 16.82 bushels; average of two years, 19.96 bushels.

TURKEY. June 22. Very thick stand ; plants erect, slightly rusted ; heads very small. Headed, June 8. Ripe, July 7. Height, 3.9 feet ; straw very slender ; heads bearded, short, square, tapering, awns nearly parallel with head ; spikelets moderately close together ; chaff white to light brown ; grain dark red, medium in size, fairly plump ; grains in spikelet, 2. Yield, 48.02 bushels per acre ; yield in 1891, 14.94 bushels ; average for the two years, 31.18 bushels.

TUSCAN AMBER. June 22. Stand, good ; plants erect,, slightly rusted ; heads medium to large. Headed, June 8. Ripe, July 4. Height, 4 feet ; straw medium ; heads bearded, broad, flat, tapering slightly towards tip ; spikelets far apart ; chaff very light brown ; grain dark red, large, fairly well filled ; grains in spikelet, 2. Yield, 41.50 bushels per acre ; yield in 1891, 16.92 bushels; average for two years, 29.21 bushels.

TUSCAN ISLAND. June 22. Stand, very poor; plants erect, rusted slightly; heads medium to large, but blighted considerably. Headed, June 10. Ripe, July 8. Height, 3.8 feet ; straw coarse ; heads bearded, long, flat, slightly tapering, loose ; chaff white ; grains in spikelet, 2, red, large, fairly plump. Yield, 31.15 bushels per acre; yield in 1891, 39.63 bushels ; in 1890, 19 bushels; in 1859, 30.83 bushels ; average for four years, 30.15 bushels.

VALLEY. June 23. Stand, good ; plants erect, rusted slightly ; heads

long, large, extra fine, and uniform. A very fine-looking wheat. Headed, June 9. Ripe, July 7. Height., 4.9 feet; straw very coarse; heads 4.5 inches long, bearded, flat, open, and tapering to a point; chaff white; grains in spikelet, 3–4, dark red, rather short, very much shrunken. Yield, 39.30 bushels per acre; yield in 1891, 41.83 bushels; average for two years, 40.56 bushels.

VELVET CHAFF. June 22. Stand, good; plants erect, slightly rusted; heads fine and large. Headed, June S. Ripe, July 6. Height, 3.9 feet; straw very slender; heads bearded, square, tapering, compact; chaff brown, covered with silvery hairs; grains in spikelet, 2, dark red, medium in size, fairly well filled. Yield, 39 05 bushels per acre; yield in 1891, 35.30 bushels per acre; average for two years, 37.17 bushels.

WALKER. June 21. Stand, very poor; plants erect, very badly rusted; heads fair. Headed, June 8. Ripe, July 5. Height, 3.8 feet; straw coarse; heads smooth, square, tapering, sharply pointed, rather loose; chaff white; grain red, medium, very much shrunken; grains in spikelet, 2. Yield, 32.26 bushels per acre; yield in 1891, 23.66 bushels; average for two years, 27.96 bushels.

WASHINGTON. June 21. Stand, very poor; plants erect., but very uneven in growth; heads fair; poor looking wheat. Headed, June 11. Ripe, July 11. Height, 3.8 feet; straw coarse; heads smooth, flat, with rounded edges, tapering slightly, tipped well, and moderately compact; chaff white to light brown; grains in spikelet, 2; grain white, medium in size, badly shriveled. Yield, 18.62 bushels per acre; yield in 1891, 36.86 bushels; average for two years, 27.74 bushels.

WASHINGTON GLASS. June 22. Stand, poor; plants erect, badly rusted; heads small and sickly; poor looking wheat. Headed, June 9. Ripe, July 6. Height, 3.9 feet; straw medium; heads smooth, round to square, slightly tapering, abruptly pointed, moderately compact; chaff white; grain light red, medium, mixed, and badly shrunken; grains in spikelet, 2. Yield, 25.28 bushels per acre; yield in 1891, 33.35 bushels; average of two years, 30.81 bushels.

WAYNE COUNTY SELECT. June 23. Stand, very poor; plants erect, very uneven in growth, rusted very badly; heads large; not a promising wheat. Headed, June 10. Ripe, July 7. Height, 4.1 feet; straw coarse; heads bearded, short, square, abruptly pointed, very compact; chaff white; grains in spikelet, 2-3, very light red, small, very well filled. Yield, 29.47 bushels per acre; yield in 1891, 43.80 bushels; average for two years, 36.63 bushels.

WHEAT FROM ALGERIA. Winter-killed.

WHITE BLUE STEM. June 23. Stand, good; plants erect and not very even in height; heads very long, but not filling well on account of dry weather. Fine looking wheat. Headed, June 10. Ripe, July 8. Height,

4.4 feet ; straw medium to large ; heads 4.1 inches long, flat, open, long, spreading beard, and well-filled point; grain red, short, and badly shrunken ; grains in spikelet, 3 ; chaff white. Yield, 35.79 bushels per acre ; yield in 1891, 43.59 bushels per acre; average in two years, 39.69 bushels.

WHITE CHAFF. June 23. Stand, poor (winter-killed); plants erect, badly rusted; heads very large, but not filling well on account of dry weather. Headed, June 11. Ripe, July 10. Height, 3.4 feet; straw coarse ; heads smooth, square to broad and flat, tapering slightly, good tip; spikelets fairly compact ; chaff white ; grain light amber, medium in size, long, all shriveled up; grains in spikelet, 2–3. Yield, 20.36 bushels per acre; yield in 1891, 16.47 bushels per acre; average in two years, 18.41 bushels.

WHITE ELDORADO. June 22. Poor stand; plants erect, rusted badly; heads medium to long. Headed, June 10. Ripe, July 7. Height, 3.8 feet; straw medium to coarse; heads smooth, uniform, flat and thick, with rounded edges, tapering slightly, well filled at tip, loose; chaff brown ; grains in spikelet, 2; grain white, short, irregular, much shrunken. Yield, 32.12 bushels per acre; yield in 1891, 20.50 bushels; average of two years, 26.31 bushels.

WHITE FULTZ. June 23. Stand, quite poor; plants erect, slightly rusted ; heads medium in size, but irregular. Poor looking wheat. Headed, June 10. Ripe, July 7. Height, 3.8 feet; straw coarse; heads smooth, irregular, flat to square, tapering, abruptly pointed, loose; chaff white; grains in spikelet, 2; grain white, slender, much shrunken. Yield, 23.84 bushels per acre; yield in 1891, 22.15 bushels; average for two years, 22.99 bushels.

WHITE MOUNTAIN. June 23. Stand, poor; plants erect, rusted badly, uneven in height; heads large. Drying up. Headed, June 11. Ripe, July 8. Height, 3.5 feet; straw coarse; heads smooth, large, flattened, slightly tapering, moderately compact; chaff white; grains in spikelet, 2, white, elongated, much shrunken. Yield, 18.94 bushels per acre; yield in 1891, 32.91 bushels; average for two years, 20.92 bushels.

WHITE ROGERS. June 23. Stand, poor (winter-killed); plants erect, rusted slightly ; heads medium. Headed, June 11. Ripe, July 9. Height, 3.5 feet; straw coarse; heads smooth, broad and flat to square, slightly tapering, abruptly pointed, spikelets closely set; chaff white; grain red, short, very irregular in size, considerably shrunken; grains in spikelet, 3. Yield, 19.92 bushels per acre; yield in 1891, 28.78 bushels; average for two years, 24.35 bushels.

WHITE ROSE. June 23. Poor stand ; plants erect, badly rusted, and blighting from dry weather; heads long and slender, poor, badly affected with loose smut. Headed, June 9. Ripe, July 4. Height, 4.3 feet ; straw medium ; heads smooth, square to rounding, long, tapering, spikelets

not closely set; chaff white; grains in spikelet, 2-3, white, slender, very irregular, and badly shrunken. Yield, 31.40 bushels per acre; yield in 1891, 20.68 bushels; average for two years, 26.04 bushels.

WHITE TRACK. June 23. Stand, good; plant erect but not very even in height; heads very long, slender, not filling out well on account, of dry weather. Fine looking wheat. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw clean and coarse; heads smooth, uniform in size, square to flat, tapering slightly, abruptly pointed. quite loose; chaff white; grain dark red, medium in size, hard, shrunken; grains in spikelet, 2-3. Yield, 37.31 bushels per acre; yield in 1891, 34.63 bushels; average for the two years, 35.97 bushels.

WHITE VELVET. June 23. Stand, poor; plants erect and even in growth; heads fine and large; wheat slightly rusted. Headed, June 10. Ripe, July 7. Height, 4.5 feet; straw coarse; heads 4.2 inches long, long beard, comparatively compact, broad and thick, slightly tapering, and well filled at the point; chaff white and pubescent; grain dark red, large and slender, but shrunken; grains in spikelet, 3. A very nice-looking wheat. Yield, 29.02 bushels per acre; yield in 1891, 33.65 bushels; average for two years, 31.32 bushels.

WILD GOOSE. June 23. Not half a stand; plants erect; heads only medium. Too late to make good wheat here. Headed, June 13. Ripe, July 8. Height, 3 feet; straw coarse; heads smooth, square to broad and flat, tapering, abruptly pointed, open to fairly compact; chaff dirty white; grains red, medium, all shrunken up; grains in spikelet, 3. Yield, 10.80 bushels per acre; yield in 1891, 35.62 bushels per acre; average in two years, 23.21 bushels.

WILLETS. June 23. Winter-killed, not half a stand; plants erect; heads clubbed and large. Headed, June 11. Ripe, July 8. Height, 3.4 feet; straw coarse; heads square to broad and flat; spikelets large and very compact; chaff white; grain dark red, elongated, medium in size, all shrunken up; grains in spikelet, 2–4. Yield, 11.66 bushels per acre; yield in 1891, 28.59 bushels per acre; average iu two years, 20.12 bushels.

WITTER. June 23. Stand, very poor; plants erect, rusted badly, very uneven in height; heads long and large. Headed, June 10. Ripe, July 8. Height, 4.2 feet; straw medium; heads smooth, long, flat, sharply pointed, very loose; chaff brown; grains in spikelet, 3, red, medium in size, all shrunk up. Yield, 27.62 bushels per acre; yield in 1891, 35.30 bushels per acre; average in two years, 31.46 bushels.

WINTER GREEN. June 21. Stand, poor; plants erect, very badly rusted, uneven in growth; heads irregular, medium in size, slender. Headed, June 9. Ripe, July 7. Height., 3.9 feet; straw medium; heads smooth, square to round, tapering, loose; chaff white; grains in spikelet, 2-3; grain white,

medium in size, much shrunken. Yield, 24.92 bushels per acre ; yield in 1891, 31.91 bushels; average for two years, 28.41 bushels.

WINTER PEARL. June 23. Stand, fair; plants erect, uneven, rusted slightly; heads good, and very little loose smut. Headed, June 9. Ripe, July 4. Height, 4 6 feet, ; straw medium to coarse; heads smooth, medium in length, broad, flattened, tapering slightly, abruptly pointed ; spikelets large, and moderately compact; chaff brown; grain dark red, medium, much shrunken ; grains in spikelet, 3-2. Yield, 30.44 bushels per acre; yield in 1891, 32.64 bushels; average for two years, 31.54 bushels.

WYANDOTTE RED. June 21. Stand, poor; plants erect, uneven in height, slightly rusted ; heads fair. Headed, June 9. Ripe, July 5. Height, 4 feet; straw medium to coarse; heads smooth, uniform in size, large, and plump, square, tapering, moderately compact ; chaff light brown ; grains in spikelet, 2-3, dark red, medium in size, considerably shrunken. Yield, 22.63 bushels per acre ; 38.36 bushels in 1891; average of two years, 30.49 bushels.

WYSOR. June 23. Stand, poor (winter killed); plants erect; heads long and slender ; late wheat. Headed, June 11. Ripe, July 9. Height, 3.5 feet ; straw coarse to medium ; heads smooth, round to square, abruptly pointed, rather loose ; chaff white ; grains in spikelet, 2, red, long, large, very much shrunken. Yield, 14.80 bushels per acre ; 16.22 bushels in 1891 ; average of two years, 15.51 bushels.

YELLOW ALABAMA. June 21. Stand, good; plants strong, erect, slightly rusted. Headed, June 4. Ripe, June 30. Height, 3.9 feet ; straw medium to slender ; heads smooth, medium in size, long, rather slender, square to flat, tapering, sharply pointed, moderately compact ; chaff white ; grains in spikelet, 3–2, red, medium, considerably shrunken. Yield. 40.74 bushels per acre; yield in 1891, 33.60 bushels; average for two years, 37.17 bushels.

YELLOW BLUESTEM. June 23. Stand, poor; plauts erect, rusted slightly heads medium in size. Not a good-looking wheat. Headed, June 9. Ripe, July 8. Height,, 3.5 feet ; straw medium in size; heads medium, tapering very much. loose; chaff white ; grains in spikelet, 3, dark red, large, fairly well filled. Yield, 24.99 bushels per acre ; in 1891, 23.75 bushels ; average for two years. 24.37 bushels.

YELLOW MISSOURI. June 23. Stand, good ; plants very much inclined to lodge, rusted badly ; heads small and slim. Poor looking wheat. Headed, June 13. Ripe, July 12. Height,, 4.2 feet; straw medium; heads smooth, medium in size, square to round, tapering, sharply pointed, loose; chaff white to brown; grains in spikelet, 2, red, small, irregular, all shrunken up. Yield, 21.88 bushels per acre; in 1891, 16.22 bushels ; average for two years, 19.05 bushels.

YORK WHITE CHAFF. June 23. Stand, poor (winter-killed); plants erect, slightly rusted ; heads medium to large, uniform. Headed, June 11.

Ripe, July 8. Height, 3.7 feet; straw medium ; heads smooth, square, tapering, sharply pointed, moderately compact ; chaff white; grain light red, medium in size, very much shrunken ; grains in spikelet, 3. Yield, 17 bushels per acre; 18.26 bushels in 1891; average of two years, 17.63 bushels.

ZIMMERMAN. June 1. Stand, good ; plants strong and erect, slightly rusted; heads medium large, rather slender. Headed, June 1. Rips. June 28. Height, 4 feet ; straw slender to medium; heads smooth, mostly square, tapering, moderately compact ; chaff white ; grain red, medium to small, fairly well filled; grains in spikelet, 2-3. Yield, 49.62 bushels per acre ; 34.65 bushels in 1891; 34.33 bushels in 1890 ; 31.51 bushels in 1889 ; average of four years, 37.53 bushels.

SUMMARY OF RESULTS.

1. The "experimental acre" yielded 31.3 bushels of Currell wheat ; the average of 12 years, including two complete failures, is 23.81 bushels, and the average of the 10 crops harvested is 25.57 bushels.

2. No conclusions can as yet be drawn from the rotation plats. So far, the plats continuously in wheat, without manure, have given the best returns, the manured plats being so rich that the wheat lodges and does not fill out.

3. The plats seeded September 10 gave the best yields.

4. Mature seed gave a better yield than immature seed.

5. Of the methods of seeding tried the past season, the shoe drill with press wheels gave the best results.

6. Two years' experiments in pasturing wheat agree in the conclusion that pasturing decreases the yield.

7. Two bushels of seed to the acre gave a larger yield than any less amount of seed.

8. In two years' trials, heavy, plump seed has given better yields than lighter grades.