The PALIMPSEST

Breaking prairie with oxen in pioneer days.

Federal Government & Iowa Agriculture

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The Meaning of Palimpsest

In early times a palimpsest was a parchment or other material from which one or more writings had been erased to give room for later records. But the erasures were not always complete; and so it became the fascinating task of scholars not only to translate the later records but also to reconstruct the original writings by deciphering the dim fragments of letters partly erased and partly covered by subsequent texts.

The history of Iowa may be likened to a palimpsest which holds the record of successive generations. To decipher these records of the past, reconstruct them, and tell the stories which they contain is the task of those who write history.

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The front cover picture is from the Society's collection; the inside front cover picture comes from Butterworth's *The Growth of Industrial Art;* and the back cover picture is reproduced from the *Iowa Agriculture Report,* 1867.

Author

Dr. Homer L. Calkin is a Diplomatic Historian in the Department of State, Washington, D. C. He is a frequent contributor to *The Palimpsest.*

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THE PALIMPSEST

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Establishing an Office for Agriculture

During the first fifty years of the Federal Government, no agency was created to be responsible for agriculture. It was not until March 3, 1839, that legislation was enacted, establishing the Agriculture Section of the Patent Office. One thousand dollars was appropriated to collect and publish agricultural statistics and for other purposes. The staff was one employee at that time.

Henry Ellsworth, Commissioner of Patents, was instrumental in procuring this first money. As a result he has been referred to as the "father of the Department of Agriculture." Under Ellsworth's guidance the reports of the Patent Office began to devote considerable space to agriculture.

Perhaps no commissioner did more than Charles Mason of Iowa to develop the early interests of the Federal Government in agriculture. An extensive landowner in Iowa and Wisconsin, Mason seemed to be well-fitted for the position. In December, 1855, he wrote: "My position is one which brings me into more immediate connection

with the bone and sinew of the country than any other person in the government." Later he said that it was generally conceded that the mechanical and agricultural branches of the Patent Office were "conducted much more to the satisfaction and advantage of the public."

In May, 1856, the House of Representatives ordered the printing of 210,000 copies of the agricultural section of the Patent Office report. Congress also authorized $30,000 for the agricultural activities of the office.

Mason noted the next month that the agricultural activities of his office were greatly expanding, "fast swelling out into great importance." Among others he employed a person to investigate and report on grapes, "the most valuable agricultural production of the United States." He also developed plans to send to South America for sugar cane for sugar planters in the south.

In 1856 the Agricultural Committee of the House of Representatives was "concocting a bill" relating to an Agricultural Bureau. Mason wrote that it was "the intuition of some of the friends of agriculture that a department should be eventually established for . . . this purpose."

Mason thought this would be the result of the constant and rapid growth of his operations. However, a Department of Agriculture was not established until May 15, 1862, when President Abraham Lincoln signed the necessary legislation.

Agricultural Statistics

The Agriculture Section of the Patent Office began to collect statistics almost at once. By 1842 a total of $105.75 was spent in compiling these statistics. By the next year this had increased to $444.67.

However, in 1846 Congress failed to appropriate any money so no agricultural report was prepared. Edmund Burke, now commissioner, wrote that these reports "have produced in the mind even of the humbler agriculturist a conviction of the true dignity of his noble avocation, and of its first and transcendent importance among the interests of his country." He continued: It [money for the Patent Office] is the only expenditure which has been made by Congress for the especial benefit of the agricultural classes."

In a circular issued by the Patent Office in July, 1849, it was stated that "a repository of agricultural statistics, founded upon official and other reliable data" was being developed. Later in 1849 Joseph T. Fales, auditor for Iowa, submitted two tabulations which were published by the Patent Office.

First, he reported that Iowa property had an assessed value of $18,496,151 in 1849, an increase

of $3,181,786 over the previous year. The state tax levied on this property in 1848 was $37,884.33 and $47,249.42 in 1849.

Fales also reported the various types of property in Iowa and its value, as assessed in 1849. His list was as follows:

Acres of land	3,150,394
Value of land with improvements	$10,349,624
Value of town lots and improvements	$2,945,299
Capital employed in merchandise	$819,637
Mills, manufactories, carding machines	$319,211
Horses over two years old	34,741
Value of horses	$1,272,005
Neat cattle over two years old	91,222
Value of neat cattle [oxen]	$953,513
Mules and asses over one year old	231
Value of mules and asses	$12,609
Sheep over six months old	140,787
Value of sheep	$156,168
Hogs over six months old	226,861
Value of hogs	$258,189
Number of pleasure carriages	4,756
Value of pleasure carriages	$167,200
Number of watches	1,311
Value of watches	$45,427
Number of piano-fortes	47
Value of piano-fortes	$6,810
All other personal property over $100	$237,265
Stock and profits in companies	$12,293
Right or interest in boats or vessels	$19,194
Gold or silver coin or bank notes	$213,782
Claims for money or other consideration	$510,577
Annuities	$3,918

Money invested and secured by deed or mortgage	$108,692
Miscellaneous property	$46,774
Total value	$18,496,151

On March 31, 1856, Charles Mason wrote that the means used for gathering agricultural statistics "have been far short of what was desired." He added that "much of the information obtained has been exceedingly loose and desultory." He had a circular prepared and sent to the governors urging them "to use your influence to cause your local legislature to act efficiently in the matter."

As an illustration of the importance of reliable information, Mason wrote:

> If all the producers and dealers in pork could learn, with reasonable certainty, how much was slaughtered last year, and how many hogs were on hand, so as to be able to institute a comparison, in relation to similar facts, for previous years, the utility of such information would be evident. The same is true in regard to any other agricultural . . . product.

James W. Grimes wrote Mason that "there is no record in this state tending to show many of the facts you desire to draw out." He was apprehensive the census marshals gathering the information might be "utterly incompetent." He thought also that many people might withhold information, fearing it was sought for assessment and taxation.

Four days later, George W. McCleary, Secretary of State for Iowa, sent Mason data gathered on a schedule prepared by the Iowa Census Board. The information supplied to, and printed by the Patent Office was as follows:

Owners of land	67,111
Acres of improved land	2,043,958
Acres of unimproved land	6,515,479
Acres of meadow	140,656
Tons of hay	225,346
Bushels of grass seed	20,815
Acres of spring wheat	346,966
Bushels of spring wheat harvested	4,072,639
Acres of winter wheat	41,114
Bushels of winter wheat harvested	496,877
Acres of oats	190,922
Bushels of oats harvested	6,127,329
Acres of corn	737,213
Bushels of corn harvested	31,163,362
Acres of potatoes	18,124
Bushels of potatoes harvested	2,014,388
Number of hogs sold	403,584
Value of hogs sold	$3,127,531
Number of cattle sold	125,799
Value of cattle sold	$2,923,253
Pounds of butter made	6,099,208
Pounds of cheese	732,323
Pounds of wool	517,441

IOWA AGRICULTURAL STATISTICS
1840-45---1847-48*

Year	Bushels of Wheat	Bushels of Barley	Bushels of Rye	Bushels of Buckwheat	Bushels of Indian Corn	Bushels of Potatoes	Bushels of Oats	Tons of Hay	Tons of Flax and Hemp	Tons of Tobacco	Pounds of Sugar
1840	154,737	729	3,787	6,217	1,326,241	234,063	216,385	17,953	313	12,674	41,450
1841	234,115	1,342	4,675	7,873	1,547,215	261,306	301,498	19,745	459	9,616	51,425
1842	341,801	1,368	5,889	9,525	1,788,580	315,134	379,885	23,028	531	11,153	59,152
1843	495,611	1,505	7,360	11,906	2,128,416	390,765	479,856	28,599	654	13,271	55,899
1844	595,000	2,000	7,000	13,000	1,695,000	469,000	568,000	34,000	-	-	74,000
1845	793,000	2,500	8,000	14,000	2,028,000	516,000	681,000	26,000	-	-	150,000
1847	1,000,000	3,500	12,000	20,000	2,900,000	850,000	1,000,000	40,000	-	-	175,000
1848	1,300,000	4,000	15,000	25,000	3,500,000	1,000,000	1,500,000	60,000	-	-	-

*No statistics were compiled for 1846.

Weather Observations

At least, as early as 1848 the Federal Government became interested in the weather throughout the nation. Those who received the Patent Office circular for that year were told that Edmund Burke, Commissioner of Patents, wished information on the mean temperature and amount of rainfall during the planting, growing and harvesting seasons. Daniel McCready of Fort Madison was one who responded.

McCready noted that spring wheat was sowed on March 28 that year. Oats were harvested from July 3 to July 29. Grains, not harvested until August, were greatly damaged by the rainy weather —14.2 inches falling during the month. The first fall frost was on September 22.

Charles Mason was very much interested in the matter of weather observations while he was Commissioner of Patents. During February, 1856, he had conferences with Joseph Henry of the Smithsonian Institution and Lieutenant Matthew F. Maury of the Naval Observatory. On February 9 Henry called about establishing working relations between the Smithsonian and the Patent Office. Mason noted in his diary that Henry "is very jealous of Lieut. Maury who is also desirous for

a similar cooperation with the observatory. I am willing to work with either or both." Four days later Mason had another conference with Maury regarding meteorology. After another visit with Professor Henry on February 14, Mason wrote, "I think . . . the Professor is really a man of science and [I] shall be glad to cooperate with him."

When Mason prepared his report to Congress on March 31, 1856, he stated that "in conjunction with the Smithsonian Institution an effort has already been commenced by this Office to obtain such of these meteorological statistics as are most intimately connected with agriculture."

Two months later he was still in doubt as to the extent to which he should become involved with Henry in this venture. "To a certain extent these may be very useful in connection with agriculture, but how far?" he wrote on June 2, 1856. However, the entry in Mason's diary for June 20 reads: "Had another conference with Professor Henry this evening in relation to our meteorological operations. Think I can obtain and communicate sufficient information of this nature to justify the expenditure of some $2000 per annum."

From 1849 to 1858 reports were received from nine Iowa towns. Of these the record received from Daniel McCready was by far the most complete, covering at least in part, seven years. Others varied from one to five years.

In addition to mean temperatures, high and low

temperatures, rainfall and snowfall, the weather reporters frequently furnished other information. McCready of Fort Madison noted that the ice broke up in the Mississippi on February 19 in 1850, with the first steamboat going up six days later. One can conclude there was a rapid change in the weather that year as February 5 had been the coldest day—12° below zero and not above zero all day. In 1851 a late snowstorm of ten inches started the night of April 4 and continued to storm and drift until 3 p.m. on the 5th. He also reported cholera outbreaks in Fort Madison and West Point during July and August, 1851.

In 1858 the shortest period without frost was 114 days at Border Plains as reported by William K. Goss. McCready reported 167 days at Fort Madison, J. M. Shaffer, 165 days at Fairfield, and T. S. Parvin, 164 days at Muscatine.

Year and Town	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1848 Fort Madison[1]			44.98	53.35	68.24	72.89	72.28	73.41	61.30	54.82		
1849 Fort Madison	16.56	21.31	40.36	49.79	59.37	74.26	73.56	71.59	66.94	52.28	47.54	21.94
1850 Fort Madison	28.99	29.83	37.28	44.66	58.66	73.12	77.29	75.47	64.60	54.05	43.21	25.03
1851 Fort Madison	30.13	34.25	43.44	48.03	62.37	68.88	77.23	71.91	71.34	54.32	36.90	
1852 Fort Madison	23.96	33.05	41.08	46.48	62.32	69.13	74.93	72.96	65.07	57.50	33.54	27.70
1853 Bowen's Prairie				44.4	-	72.3	68.7	70.5	62.2			
Dubuque[2]				45.3	56.8	73.7	69.6	70.6	63.7			
Fort Madison				50.5	60.7	76.7	75.9	76.0	67.6			
Keokuk				50.3	60.9	75.8	76.1	76.3	-			
Muscatine[3]				47.9	56.3	70.8	68.6	70.9	-			
Poultney[4]				-	57.4	70.5	68.8	68.6	55.6			
1854 Dubuque	15.35	27.84	39.00	52.19	60.73	70.23	77.27	74.60	68.07	56.57	37.92	27.35
Fort Madison	21.16	32.97	42.67	56.20	65.96	76.33	85.77	81.57	72.70	58.40	39.25	30.44
Muscatine	16.21	28.39	38.91	51.44	58.55	69.02	76.39	73.19	68.12	55.41	36.85	29.60
Poultney	9.94	23.05	36.44	49.42	57.46	67.67	73.67	70.40	63.80	53.54	33.54	24.36
1855 Dubuque	24.22	18.75	31.33	55.43	63.90	68.05	73.23	69.32	64.61	48.45	39.58	21.63
Fort Madison	23.95	21.15	33.87	57.37	64.73	72.21	79.26	73.49	70.39	49.73	41.26	24.04
Muscatine	24.24	19.85	30.30	54.30	60.43	67.67	73.05	70.45	67.66	47.11	37.69	21.23
Poultney	21.86	14.37	27.90	51.93	61.23	67.09	72.63	68.56	63.62	45.08	33.83	17.49
1857 Bellevue[5]	4.26	26.46	27.17	35.61	54.54	68.45	74.89	69.68	64.38	48.86	29.95	30.59
Muscatine	6.23	28.99	29.02	36.33	53.20	65.36	71.50	68.88	63.58	47.78	31.67	31.67
1858 Bellevue	31.03	17.07	38.85	45.88	55.92	71.75	73.46	71.54	63.41	50.56	31.85	22.27
Border Plains[6]	29.19	15.71	40.98	47.01	54.32	72.66	74.39	73.96	64.43	50.83	30.12	30.12
Dubuque	31.07	16.86	39.12	46.81	56.23	72.92	73.48	71.98	64.42	51.13	32.90	23.27
Fairfield[7]	34.79	17.66	41.84	49.73	56.63	72.72	75.88	73.34	65.18	52.61	32.12	26.35
Fort Madison	34.54	18.40	41.88	50.01	57.92	74.17	76.20	78.96	65.29	52.70	33.90	28.39
Muscatine	29.78	16.06	38.54	46.21	56.75	70.64	72.57	70.14	63.47	52.17	32.58	25.15

OBSERVERS:

[1]Daniel McCready, Fort Madison
[2]Dr. Asa Horr, Dubuque
[3]T. S. Parvin, Muscatine
[4]Dr. B. F. Odell, Poultney
[5]John C. Fory, Bellevue
[6]William K. Goss, Border Plains
[7]J. M. Shaffer, Fairfield

HIGH AND LOW TEMPERATURES, 1850-1858

Year and Town	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1850												
Fort Madison	48	58	66	80	86	92	100	98	86	82	68	46
	-4	-12	14	24	30	44	55	52	40	24	21	-2
1851												
Fort Madison	58	66	76	76	86	96	102	93	94	80	54	-
	-12	4	15	28	40	50	51	66	32	18	19	-
1852												
Fort Madison	56	54	80	79	88	94	99	97	94	83	54	53
	-22	8	4	21	30	42	48	48	38	30	9	0
1857												
Bellevue	37	46	58	60	84	88	97	92	87	75	60	52
	-32	-14	-8	16	33	46	52	50	33	20	-6	12
Muscatine	41	57	58	65	83	89	97	92	88	74	60	52
	-30	-12	-5	17	29	38	45	47	36	22	0	15
1858												
Bellevue	54	46	71	81	80	94	92	96	90	84	51	42
	8	-12	2	26	40	50	61	48	40	27	4	-18
Border Plains	52	46	75	83	84	92	98	90	87	87	47	47
	-8	-14	10	20	38	55	61	51	50	31	0	-22
Dubuque	51	49	70	80	80	93	90	96	88	82	49	43
	8	-14	4	27	41	55	61	49	44	33	5	-11
Fairfield	59	52	76	80	83	90	92	94	87	88	47	49
	8	-15	1	30	41	56	60	53	50	32	5	-8
Fort Madison	57	46	74	80	82	95	94	95	90	82	48	51
	11	-16	1	24	39	54	64	46	42	29	6	-6
Muscatine	52	46	70	78	81	91	89	93	87	85	52	48
	8	-22	2	24	32	52	52	46	42	30	4	-15

RAIN AND SNOW FALL, 1850-1858 (In inches)

Year and	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.

RAIN AND SNOW FALL, 1848-1858
(In inches)

Year and Town	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1848												
Fort Madison					4.67	5.90	4.75	14.20	4.50	4.40		
1849												
Fort Madison	12.0(s)	2.5(s) 1.5(r)	11.05	5.47	2.90	3.32	.70	10.91	7.80	3.30	8.15	6.00(s) .1(r)
1850												
Fort Madison	8.75(s) 1.05(r)	1.05(s) .80(r)	1.00(s) 1.65(r)	3.00(s) 4.90(r)	4.70	4.90	6.55	9.15	6.95	2.55	3.12(r) 2.40(s)	2.37(s) 2.0(r)
1851												
Fort Madison	.55(r) .75(s)	1.70(r) .05(s)	1.66(r) .05(s)	2.45(r) 10.00(s)	10.80	8.60	5.95	2.95	1.90	2.70	2.97(r) .50(s)	
1852												
Fort Madison	1.45(r) 4.70(s)	.15(r)	8.05(r) 1.10(s)	2.85(r) 4.75(s)	6.85	4.97	2.60	3.10	6.55	6.40	6.40(r) 21.25(s)	1.80(r) 6.00(s)
1857												
Bellevue	0.95	4.80	1.90	1.83	4.19	3.92	3.51	5.27	2.47	2.47	3.57	1.17
Muscatine	0.61	5.70	2.44	1.90	2.75	0.90	4.67	6.60	1.88	1.95	3.77	1.88
1858												
Bellevue	2.71	1.05	1.84	5.21	9.59	6.66	6.61	2.54	4.08	3.96	4.83	2.43
Border Plains	-	-	-	-	4.19	9.13	13.69	4.88	1.79	6.13	1.12	0.88
Dubuque	1.91	0.78	1.84	4.37	8.23	4.86	8.69	1.37	5.55	5.63	3.01	0.95
Fairfield	-	-	-	6.84	8.47	5.59	9.44	-	4.65	6.20	-	-
Fort Madison	1.72	2.28	6.85	8.10	6.36	5.90	5.90	1.59	3.11	5.93	4.64	2.78
Muscatine	1.60	2.00	2.20	5.67	8.40	6.77	7.30	4.12	6.10	4.95	4.54	2.90

Seed Distribution and Testing

Another important aspect of the work in the Agriculture Section of the Patent Office was the distribution of seeds. A considerable part of the money appropriated by Congress for agricultural purposes was spent for the procurement and distribution of seeds, roots and cuttings. The object was the introduction of new and useful crops and vegetable products, hitherto unknown in the United States.

American consuls, missionaries and others procured from all quarters of the globe those products which might be successfully cultivated in the United States. These seeds and plants were in turn placed in the hands of persons most likely to try the experiment fully and fairly.

Only small quantities of some seeds were distributed. Small packages, weighing two or three ounces, could be conveniently sent through the mails. By this means, too, the chance to experiment could be extended to a great many more people than if the seed had been distributed by the bushel.

Charles Mason concluded his summary of this activity in 1854 by saying, "If the seeds distributed through this office can fall . . . into the hands of

persons in all sections of the country . . . it may be expected that the most substantial benefits will result from such a course."

Many Iowans received seeds of various kinds, planted them, and frequently reported the results to the Patent Office. In some cases these reports were published so farmers could benefit from knowledge of a new or improved crop.

On July 9, 1853, Mason sent out a circular announcing that "many thousand volumes" of the agricultural and mechanical reports of the Patent Office, "as well as a large amount and variety of seeds," would be available for distribution. He asked for the names and addresses "of some of the more enterprising and practical residents of your county, to whom these reports and seeds can be sent."

O.H.P. Parnell replied that Malcolm McBane of Quasqueton would thoroughly test grains, vegetables, grasses or flowers. Garden vegetables and flowers would best suit Isaac F. Hathaway. Parnell said he also would give vegetables and flowers "a thorough trial."

George Stover, Samuel Haworth, James Green and Albert Randolph of Indianola were described by P. P. Henderson as "good practical farmers" who would particularly give grapes a fair trial. Dr. B. J. Noble had just opened a large farm and "would pay attention to the grapes and other fall crops." Henderson asked for "some of Each kind

of your seeds—flowers, Garden, and Cultivated grapes" for himself.

In his letter of September 30, 1853, Robert Coles of Chariton wrote:

> You may forward to my address if convenient such samples as you may think best, of flowers, garden vegetables, cultivated grasses, field crops or grain as I am in a situation where I can devote some attention to a thorough trial of their qualities, &c.

On December 17, 1853, Laurel Summers reported on seven kinds of seeds that had been sent to him—"Long green cucumber," "Landreth's Large York Cabbage," "Landreth's Extra Pea," "Brown six week Beans" (bush variety), "Olive Shaped Red Beet," "Indian or Ice Lettuce," and the "Flat Dutch Cabbage." He said they all exceeded anything of the kind "that I have ever seen in Iowa. They seem to be well adapted to our soil and climate and the peas and beans yield abundantly and come early." He described the Flat Dutch Cabbage as being as solid as an "Oak Knot" and very sweet and brittle.

Bernhart Henn of Fairfield, on November 22, 1854, wrote that corn raised by D. P. Inskeep of Wapello County had averaged 136 bushels on five acres. At the time he wrote, the ears of corn were about 14 inches in length, although he thought they were at least one inch longer when first picked.

A Japan Pea was raised by Abram Weaver of

Bloomfield in 1854. He wrote of his experiment as follows:

> I planted 23 peas out of which number 18 grew. They were cultivated in my garden last summer, planted on 20th May & ripened last of August & first of September, say from Middle of August to 15 of Sept. before all were ripe. . . . From the few produced the past season, I am of the opinion that more bushels of Peas can be raised to the acre than of Corn. I also had about a pint of them cooked when green when about at their largest size, and found them of delicious flavor. I am fully of opinion that a few acres raised for the purpose of turning hogs . . . would be a valuable crop.

Senator Dodge sent G. P. Walker of Nine Eagles 76 grains of the improved "King Philip Corn" in 1854. Walker wrote Mason, "I assure you that I was much better pleased with my present than to have received a California letter with a slight sprinkling of the precious gold dust." He planted the corn in his richest ground on May 9. When the ground became too dry, he watered it. The corn was fully ripe before the middle of August, and the yield was abundant.

The report of D. B. Dixon of Muscatine on Hungarian millet was considered important enough to be published in 1856. Dixon wrote:

> It is luxuriant in its growth, and produces hay of the finest quality. Horses and cattle eat it with avidity. Farmers in every part of the country should give it their attention, as it will make more and better feed than any other kind of grass now known in the United States. Our

Western farmers, in particular, should learn its value; for its destiny is to change the agricultural products of this portion of the Union, and substitute cows, horses, mules, and sheep in place of hogs. We have raised hogs, heretofore, from necessity, simply because our only reliable crop was corn, and other domestic animals required hay, or its equivalent, which we could not produce with cheapness and certainty.

A number of Iowans were trying Chinese sugar cane in 1857. J. W. Raynolds of Newbern got 30 gallons of good molasses from the sugar cane seed he received. Part of this he sold for $1.25 a gallon. He also harvested nearly a bushel of ripe seed. Although he had found such experiments generally unprofitable, "the cane has more than paid all that I will expend for years to come," he wrote.

At West Union the sugar cane was cultivated "with very general success," according to R. H. Spencer. He added that "several specimens of syrup were exhibited at our county fair which compared favorably with any in our market."

J. W. Cattell of Springdale was asking for "King Philip," "Smutty-white" and "Wyandotte" corn, as well as some of the Chinese sugar cane in 1857. From Anamosa, J. S. Dimmitt wanted "Chufa" or "Earth Almond" for his own experimenting. He reported that "King Philip" corn appeared "to be the best adapted to this climate."

Seeds were not the only things tested by Iowans for the Patent Office. On May 6, 1857, the Office

sent two cans of guano to Legrand Byington of Iowa City. Two-thirds of a can of Peruvian guano was applied to one square rod of his timothy and clover meadow. Two-thirds of a can of Baker's Island guano was placed on an adjoining square rod, and the remaining one-third of each can was mixed and applied to another parcel of land.

Byington reported as follows:

> I estimate the relative product as follows:
>
> The rod which received the unmixed Peruvian Guano showed an increased production of about fifty per cent;
>
> That on which the mixture was applied showed an increase of about thirty per cent;
>
> While that which received the unmixed Baker's Island showed no perceptible increase.

Not all products or seeds were sent only from the Patent Office to Iowans. In some cases Iowans were ready to furnish seeds or show the results of their own activities to the Federal Government in Washington. A. N. Harlan of near Croton sent a sample of a potato to Mason on March 11, 1857. Harlan wrote that it had been sent to him in California in 1851 from Hobart Town, New South Wales. He continued, "I bought and raised a few near Sacramento City in 1851 and of those I raised I brought to Sweet Home one small potato from which I stocked this section of country." The potato was below yield in comparison with the Long John and others, "but when on the table they speak for themselves."

From Townsend McConnel of Pleasant Plain the Patent Office received a sample of "Squaw Beans." McConnel provided this background on the bean:

> A neighbor of mine while on an excursion to the Indian [Sauk and Fox] country about fifty miles N.W. from this place came upon an encampment of those Indians and found a quantity of bean vines from which after much hunting he obtained about one dozen beans. These were nearly all distributed among the "old women" of the neighborhood, three only being reserved to plant himself.... They are very prolific, yielding six beans to the pod and may be gathered—ripe—from the middle of July until frost kills the plant. A single plant has been known to yield a gallon of clean beans. They cook easily either green or dry and are in every respect a superior variety of beans.

Seeds of wild flowers native to Iowa were sent by A. E. Chandler of Lyons. One he called "Black Hawk's Plume" which "grows some 3 or 4 feet high, on a single stalk—bearing a peach-glow colored flower encircling the whole stalk in divisions. It abounds in our unreclaimed prairie soil." The other was a "wild locust" which grew "some 15 inches high—leaves resembling our common locust but bearing a very pretty yellow flower."

H. L. Wolford of Moravia in Appanoose County proposed on May 5, 1856, that birds and animals should also be imported:

> As the most desirable I recommend the importation of various songbirds—the Sky-Lark—the little robin red-

breast—the Blackcap and others, who, besides enlivening and beautifying creation would render themselves very useful by consuming innumerable insects, injurious to agriculture.

All these and other useful animals could be easily procured in large quantities and be set at liberty at suitable places, so that in a short time they could become indigenous to our continent and spread over our domain in the same manner we have done our own race and all our domestic animals. Eleven years ago there were no robins, nor thrushes, nor blue and redbirds to be seen in the State of Iowa, and now they are becoming very numerous; they are following, it seems, emigration and civilization.

Agricultural Societies

In 1857 the Commissioner of Patents, Joseph Holt, reported that agricultural societies had a beneficial influence. Since his information on their activities was not complete, Holt sent a questionnaire to every association on November 1, 1858, to gather uniform data.

Based upon the survey, there were 74 (66 agricultural, one horticultural, and seven agricultural and mechanical) societies in Iowa. Only New York, Illinois and Indiana—all older states—outranked Iowa in the number of societies, while Ohio had the same number.

Most of the Iowa societies charged $1.00 as annual dues. Some provided life memberships—in the case of Davis and Fayette Counties upon payment of $10.00 and in Johnson County, $5.00. In addition, the State gave each county society an amount equal to that collected in dues, not exceeding $200.00 annually. The societies reported that other sources of income included donations, receipts from entries and admissions at fairs, and rent from land owned by the societies.

The Agriculture Section of the Patent Office was particularly interested in knowing what benefits had resulted from each organization's diffusion

of agricultural knowledge, including improvement of domestic animals and increase in crops.

In reply, the Davis County Agricultural Society reported:

> The benefits resulting from our organization have been —the assembling of agriculturists, and impressing them with a more exalted view of the dignity and importance of their calling; a large amount of information is gained by the exchange of ideas, experiments, and results; and the introduction of improved cattle. When this Society was formed, we had not a thorough-bred horse, bull, nor cow, in the county; but we have since taken the highest premiums for these animals at the State Fairs. We possess a few fine sheep and swine. This is the largest pork-raising county in the State. In the management of field crops, we have made great advances, putting them in more carefully, and being more attentive to the land.

In Dubuque County the breeding of domestic animals, especially swine, had been improved. Some of the members had learned the value of rye over other cereals for that area, and of the giant sunflower. One acre of the latter plant, when dried, was claimed to be the equivalent, as fuel, to 16 cords of wood. "There is no doubt that it may be thus used with advantage in places remote from timber, far west of us," it was added.

The activities of the Jackson County Agricultural Society had led to improvement in nearly all aspects of agriculture.

> Many have been induced to leave the paths trod by their fathers, and to investigate for themselves, and consequent-

ly have learned that farming is as susceptible of advancement as any other division of industry, and for the farmer to become scientific is the shortest way to wealth and prosperity.

Methods of cultivation were improved; good breeds of cattle, horses, sheep and swine were introduced; the circulation of agricultural publications was increased; and "a new interest seems to pervade the farming community."

The Farmers' and Mechanics' Benevolent Reform Association of Marshall County tried "to induce our farmers to be observing men, to use the best means within their power for improvement, and to report progress." Four members, two of each sex, addressed the society each month on agriculture or any subject of interest they might select. The Association concluded its report by saying that its objective was . . .

> benevolence and reform in the fullest sense of the duties of life, drawing attention to the necessity of cleanliness of person and the laws of health in general, economy of means and time, and everything that tends to the elevation of the masses, morally and socially.

The Patent Office also requested information on the date of organization, the number of members, the amount paid annually for premiums at fairs, the largest premium offered, and for what objects. The Iowa State Agricultural Society and 21 local organizations supplied the following information:

Name of Society	Date Organized	Number of Members	Amount Paid in Annual Premiums	Largest Premium Offered	Object for Which Offered
Iowa State Agricultural Society	June 1854	-	$200	$20	Bulls and stallions
Boone County Agricultural and Industrial Society	Oct. 24, 1857	Abt. 200	$ 83	$ 5	Best blooded stallion; Best brood mare
Cedar Valley Ag. & Mfg. Assoc., Black Hawk Co,	July 1, 1857	300	$500 to $1000	$12	Best ploughing
Davis County Agricultural Society	July 16, 1853	224	$400	$10	Blooded bulls & stallions
Dubuque County Ag. Society	Jan. 12, 1853	Abt. 200	All money on hand	$20	Best threshing machine
Fayette County Ag. Society and Mechanics' Inst.	Mar. 3, 1855	100	$200	$ 3	Best stallion
Henry County Agricultural Society	Oct. 30, 1852	206	$275	Ag. periodical and $10	Best herd of cattle
Jackson County Ag. Society	Feb. 22, 1853	93	$250	$ 5	Grain crops, Ploughing
Jefferson County Ag. Society	-	304	$500	$100	Best 3 acres of corn, Best bull, Best herd, Best stallion
Johnson County Ag. & Mech. Society	1853	370	$700	$15	Best managed farm
Kossuth County Ag. Society	October 1857	46	$49	-	-
Linn County Ag. & Mech. Society	July 20, 1857	204	$143	$10	Best farm of 160 acres
Louisa County Ag. Society	Jan. 25, 1850	50	$150	$ 5	Blooded stock
Farmers' and Mechanics' Benevolent Reform Assoc., Marshall Co.	Jan. 30, 1857	50	None by society		
Agricultural Society of Muscatine Co.	Oct. 9, 1852	-	$259	-	-
Polk Co. Agricultural, Horticultural and Industrial Association	May 28, 1853	295	$295	$10 (a silver cup)	Best cultivated and improved farm
Poweshiek Co. Ag. Society	1855	52	$ 50	$ 5	-
Scott Co. Ag. Society	August 1853	Abt. 500	$663	$10	Best conducted farm, Best 10 lbs of sugar from Chinese cane, Best stallion
Tama County Agricultural and Mechanical Society	August 1858	78	-	$5	Stock of various kinds
Van Buren County Ag. Society	Sept. 27, 1851	400	$500	$8	Best stallion
Webster Co. Ag. Society	1858	200	$200	$5	Best female equestrian, Best matched horses
Wright Co. Ag. Society	July 31, 1858	48	-	-	-

Agricultural Reports

Soon after the Agriculture Section of the Patent Office was established, it began to gather information on crops in the various states. Sources such as agricultural publications, newspapers, and first-hand observations were used. The reports were usually very meager and lacked uniformity.

In 1842 the Patent Office, in its report, noted that the fertile sections of the Territory of Iowa promised much for the future. Wheat production had increased, and the Iowa corn crop was as good or even better than usual. The next year more ground was being brought under cultivation in Iowa because of the "influx of population from abroad." However, the winter wheat crop was estimated to be 20 per cent less "owing to the freezing out." Spring wheat was average; oats were less than average; and corn production made a slight advance.

By the end of the 1840's an attempt was being made to bring uniformity into the agricultural reports. Circulars with many questions were sent to farmers to be used as a guide. These were the forerunners of the many questionnaires and forms distributed to farmers by the Federal Government in the 125 years since then.

A circular sent by Charles Mason in 1855 was typical of the pre-Civil War questionnaires used by the Patent Office. The instructions for completing the report noted that "we seek no information that is not strictly reliable." Therefore,

> if . . . you can communicate explicit and undoubted information on any of the topics under investigation, you will confer a favor by so doing. . . . It is hoped that the interest you feel in agricultural subjects will induce you to cooperate as far as you may find it convenient and agreeable. Accurate statistics are desired as far as it is practicable to obtain them; but all that we can reasonably expect, in most cases, is the nearest approach to truth to which your experience and judgment will lead you.

These instructions were followed by specific questions which were . . .

> mainly intended to direct your attention to certain points on which information is desired. It is hoped, therefore, that the mention of these will not exclude any matters of general interest that may suggest themselves.

The 1855 circular included the following questions:

Domestic Animals

What classes of animals can be raised to the best advantages in your section? Cost of rearing, and value at various ages? Cost of transporting each to the Atlantic or Gulf markets, alive, by canal, railroad, or on foot? What breeds are the most serviceable for labor, milk, flesh, or wool? Have you any imported or blood animals in your vicinity? If so, state the number, breed, history,

and pedigree, if known, and the effects of crossing, if any, on your common stock, together with your mode of feeding and management.

Manures

What manures are most in use with you, and, which the most valuable for special crops? If guano, bone-dust, poudrette, super-phosphate, lime, gypsum, charcoal, ashes, fish, muck, or any other valuable fertilizers are employed in your vicinity, state the cost, modes of application, and their effects upon the respective crops to which they have been applied. The result of any accurate experiments would be desirable, especially as connected with any of our great leading staples—cotton, tobacco, hemp, flax, wheat, oats, rye, barley, rice, potatoes, or Indian corn.

Agricultural Products

What crops can be cultivated to the best advantage in your section? The best modes of cultivation? The maximum and average yield of each, and the smallest yield that will pay expenses? Have you any established rotation of crops? What plants are cultivated for the purpose of ploughing under as a manure? Have you any remedies against the diseases and insects which infest your crops? What are your best modes of harvesting, storing, and preparation for market? What is the cost of production and market value, in your vicinity, of the various kinds of grains, roots, hay and fodder, cotton, hemp, flax, hops, sugar, tobacco, &c.? What the cost per hundred pounds or per bushel of transporting each product, by canal, railroad, or otherwise, to the Atlantic or Gulf markets?

Special interest is felt at the present time in those plants which are employed in the manufacture of cordage, clothing, &c., such as cotton, hemp, and flax. Are any of these crops profitably cultivated by you? If so, have you any im-

proved variety, new modes of cultivation, harvesting, or preparation for market?

Market and Kitchen Gardening

Please to give the names of the best varieties of garden vegetables, the usual time of sowing, periods of maturity, yield on a given space of ground, and their market values. What vegetables are brought into your vicinity from the North, South, East, West, or from beyond the seas, at what seasons, and at what prices?

Fruits, Wines, Etc.

What varieties of summer, fall, and winter fruits are cultivated with the best success in your section? What kinds are attacked by blight, mildew, or insects, particularly injurious to their perfect growth? If any, what remedies have you against their attacks? Have you any improved modes of cultivating fruit, harvesting, storing, and preparing it for market? What is the cost per bushel or barrel of transporting those kinds not perishable, to the Atlantic and Gulf markets, by canal, railroad, or otherwise? What is the current value per bushel or barrel of each kind in your vicinity? Is the grape cultivated with you for table use, or with the object of making wine? If for either, can you communicate any information relative to its name, history, cultivation, preservation, or the manufacture, cost, and market value of American wine? What fruits are sold in your vicinity grown at the North, South, East, or West; at what seasons, and at what prices?

Live Fences

What trees or shrubs form the best live hedges in your vicinity? How long have such hedges, if any, been established? Are they seriously affected by frost or drought? What was the cost per rod, the annual expense of trimming, and your mode of management?

Iowa and the Reports

From 1848 to 1860 at least 25 reports were prepared and sent to the Patent Office in Washington, D. C. These reports covered agricultural activities in 17 areas of Iowa, from Fort Madison to Kanesville. In some cases, extracts, and in others, the complete reports were included in the annual reports of the Patent Office and distributed throughout the United States.

The reports provide a good picture of Iowa agriculture in the 1850's. Successes and failures, costs of production and selling prices, and many other facts were reported. The reports, as published, did much to publicize the agricultural potential of Iowa.

Livestock

Production of livestock was constantly increasing in Iowa. John Bangs, Jr., of New London thought in 1849 that "this is to be eventually one of the greatest stock raising countries in the world."

In 1851, Daniel McCready of Fort Madison said that cattle cost little to raise—in the summer, salt and the range of the woods or prairies; and in the winter, a little corn, salt and straw.

The next year J. E. Johnson of Kanesville reported that he thought no country was better adapted to grazing than Iowa. Along all streams were large beds of rushes where livestock could feed all winter. The broad prairies produced an abundance of fine rich grass that would fatten the stock faster than tame grasses. "The cost therefore of rearing is comparatively nothing."

The cost of rearing cattle until they were three years old varied considerably in 1852. Admiral B. Miller and Joseph Brobst said it was $6.00 at Knoxville; McCready reported the cost to be $7.00 at Fort Madison; and Johnson estimated it to be $12.00 at Kanesville.

Two years later J. W. Raynolds of Newbern said the cost of raising a steer was about $12.00. Some corn was given to calves the first winter. Afterwards, they were kept on prairie grass hay or corn fodder. In 1855 Benjamin F. Odell of Plum Spring placed the cost of raising a steer at $20.00.

Steers were selling for $10.00 to $15.00 at Fort Madison in 1852. Cows were worth from $16.00 to $20.00 in the spring and from $14.00 to $18.00 in the fall. By 1855 prices had risen. Steers were selling at Plum Spring for $25.00 to $50.00 each.

Hugh M. Thomson, president of the Scott County Agricultural Society in 1854, wrote that the cattle raised there were "common" with few exceptions. The exceptions were crosses with the

Shorthorn or Durham, one or two bulls of that breed having been introduced into Scott and Clinton Counties from Kentucky. Common cows were worth from $25.00 to $40.00 while the half-breeds would bring $50.00 to $100.00.

Good common steers were worth $70.00 to $80.00 a pair in Scott County when they were three years old. The average price for oxen was about $100.00 per yoke.

Some cattle were supplied to emigrants going to California. More were bought by drovers from Ohio, Indiana and Illinois. These men visited southeast Iowa annually seeking to buy cattle for the eastern market.

Thomson was unable to give information on transportation costs to the Atlantic or Gulf markets. "It fluctuates so much from the different stages of water in the Mississippi." H. G. Stuart of Montrose was more helpful. The cost of transportation to New York—on foot to Chicago and then by rail—was about $15.00 per bull. It was about $11.00 by steamboat to New Orleans. To St. Louis, he said, it was $4.00 by boat and $3.00 by land on foot.

Steers, when yoked for the first time, were put on the tongue of a wagon or as the hindmost yoke on a prairie plow. An older yoke of oxen was placed in front of them. "They generally soon give up," according to McCready. Miller and Brobst suggested "tying their tails together."

The average annual production of a good cow was about 200 pounds of cheese and 200 pounds of butter. The price of the former was 7c and of butter 10c in 1850. Old-fashioned churns were generally used. Miller and Brobst wrote in 1852 that "there has been a considerable amount of cheese made in this county by a colony of Hollanders, who have done well."

As early as 1849 many farmers were turning their attention to sheep because wool could be easily transported to the eastern market. A considerable amount was shipped annually to Boston and Philadelphia, netting the owner 20 to 35 cents per pound, according to the quality.

Laurel Summers of Le Claire wrote in 1852 that sheep and woolgrowing "will undoubtedly be the most profitable business in Iowa, as they seem to do remarkably well, and can be raised with very little expense." He reported that "but few sheep" had been introduced as yet.

McCready also reported that few sheep were being raised in his neighborhood, "each family keeping only enough for home use."

H. F. Moore of Big Mound wrote in 1854 that sheep had become more valuable in Lee County during the previous year. Most of the large flocks consisted of French Merinos, crossed with the common stock. He said the best mutton was obtained from common breeds. Profits on sheep raising were about 20 per cent of the capital invested.

The value of a common sheep was from $2.00 to $5.00. The average yield of wool was five pounds to a sheep.

In Lucas County sheep and hogs were being raised with decidedly good luck. "The wolves . . . kill a good many of both, but we are in hopes they will soon be subdued."

Depredations committed by wolves had limited sheep raising in Delaware County too. As wolves became scarcer in 1855, farmers began to turn their attention to sheep. A sheep, after shearing, was worth $2.00. The price of wool was from 45 to 50 cents a pound.

McCready said the only method used in raising hogs near Fort Madison was feeding corn to them in pens or small fields. He thought the clover field or orchard would undoubtedly soon be used instead. A number of the farmers with whom he talked said 100 pounds of corn would yield 16 to 20 pounds of pork.

The merchants of Fort Madison salted the middlings in bulk, piled up on the floor of the warehouse. McCready made good bacon by salting in a hogshead. After remaining about six weeks, he hung it up and smoked it with green hickory.

Hogs were raised in western Iowa with even less trouble. Enough nuts and roots abounded in the forests and the prairies to sustain them. Very little corn was used until time for fattening.

Dr. John G. Scott of Winterset said in 1855

that hogs could be raised for $2.00 per hundredweight. Market values were rather uncertain although the usual price was $3.00 to $4.00 per hundred. Cost of transportation was high, it "being 200 miles to the Mississippi River without a Rail Road to give us a lift on the way."

In Lee County horses and mules were raised to some extent for the California and Oregon markets. H. F. Moore of Big Mound said mules were the most profitable stock that could be raised in that section. The average price of a three-year-old was $120.00.

Near Davenport horses were only raised for the home market in 1854, according to Hugh M. Thomson. They were worth from $75.00 to $125.00, depending on quality. There were very few pure bred animals in that part of Iowa. The high prices, however, were drawing the attention of breeders to better and finer stock.

Benjamin Odell of Plum Spring estimated the cost of raising colts until they were three years old to be from $25.00 to $30.00. During the summer they lived on wild grass which was plentiful. In winter, in addition to the hay they would eat, they were given a small amount of corn.

Grains

John Bangs of New London reported in 1848 that more wheat was sown in the fall of 1847 than 1846, but it was badly winter killed. Rust injured

the rest so there was very little prime winter wheat. At Fort Madison there was considerable loss from the ravages of the chinch bug, according to McCready. Out of a field of prairie sod, containing 40 acres, not more than 150 bushels were harvested. Normally, this was not so. An average crop should yield 25 bushels per acre, as sod was the best ground for wheat.

Bangs estimated the per acre cost of raising wheat in 1848 was as follows: breaking up sod, $2.00; 1½ bushels of seed, $.90; harrowing, $1.00; cutting, binding, etc., $1.00; threshing, cleaning, etc., at 7c per bushel, $1.05; transporting the wheat to market, $.94; or a total of $6.89, thus showing a net gain per acre of $2.15 on a yield of 15 bushels.

Edward Johnstone and McCready, both of Fort Madison, wrote that the red-chaff bearded wheat was the best variety. A few farmers prepared their seed for sowing by steeping it in strong brine and then rolling it in lime. Wheat thus prepared was not likely to be injured by the Hessian fly, they thought.

In western Iowa, J. E. Johnson of Kanesville said better crops were produced by sowing in September amongst the standing corn. Stalks left standing through the winter were cut down and raked off in the spring.

In Scott County, according to Laurel Summers of Le Claire, fall wheat was not raised to any extent due to the cold, dry, windy weather in the

winter. Very fine spring wheat of the Red River, Italian and Hedge Row varieties was raised extensively. Nothing bothered the wheat there except smut which could be prevented by washing the seed in vitriol water before sowing.

Miller and Brobst of Knoxville recorded 20 bushels an acre as an average crop of wheat in 1852. "We think more might be raised, as we think the soil too new and that there is not proper care and labour bestowed by the husbandmen." The yield was increasing, and they thought it would increase "as the country grows older."

Enos Ellmaker of Jefferson County said that the 1852 spring wheat crop was somewhat uncertain because of the chinch bug. The best preventive he had found was to take 50 to 80 bushels of air-slaked lime and a light coat of stable manure, spread them evenly over the ground before frost, and then let it lie until February or March. After the frost went out, he turned the loose soil with a harrow or drill.

Next to Indian corn, Odell said wheat was their most important crop. In 1855 the average yield in Delaware County was about 15 bushels.

Odell supplied information on the expense of raising 11 acres of wheat, sown on sod land broken up the preceding year:

Dragging once with two yoke of oxen	$3.00
Seed, 16 bushels	16.00
Sowing	.75

Dragging once with one yoke of oxen	2.50
Harvesting	17.50
Hauling and stacking	6.00
Threshing	12.00
Rent of land at $2 per acre	22.00
Total	$79.75
Yield 82½ bushels at $1	82.50
Profit on 11 acres	$2.75

Only about seven acres were harvested, the remainder being "hazel-brush" land which was choked with weeds. This type of land did not yield more than half a crop that year in that area.

Thomson reported in 1855 that the average yield on his farm for the past seven years had been a little over 22 bushels. The average for Scott County was about 16½ bushels. Ten bushels to the acre would pay expenses.

By 1855 in Scott County the sickle, scythe and cradle had given way in harvesting wheat to one or another of the many reaping and harvesting machines. Thomson thought that they "certainly do save much hard labour to the farmer."

Reports from both Jackson and Union Counties indicated that little winter wheat was raised. John Flory of Bellevue said, however, that spring wheat was a good crop of superior quality in 1856. Farmers harvested an average of fully 12 bushels per acre, more than they anticipated because of

the exceedingly dry weather. J. F. Bishop of Milford wrote in 1860 that wheat was raised more as an experiment in Union County.

Bangs thought Indian corn was "truly the great staple of the west, and is constantly increasing." Drought in 1848 at the time it was shooting caused the ears to be rather light that year. Three years later McCready was saying the corn crop was nearly a total failure because of a wet spring. Not more than 10 per cent was raised in 1851.

Corn was fed raw. Corn and cob-crushers existed but farmers did not have enough experience to know if there was any advantage. McCready thought fall plowing was best. It pulverized and, to some extent, fertilized the soil, and increased production from 10 to 20 per cent. The crop was "easier cultivated, or tended, as we call it, in our vernacular tongue."

1852 was an "extra good" year for corn in Polk County, wrote Jno. F.A.H. Roberts. The same year, yields of 60 bushels per acre at Kanesville were considered average. The cost of raising corn was about 10 cents per bushel and the average price was 20 cents per bushel.

The most common variety in Scott, Clinton, and adjoining counties was yellow dent. The common yield there was 50 to 75 bushels per acre.

Ellmaker of Jefferson County wrote in 1852 that corn was a great staple of first importance. It provided a cheap and wholesome bread, and it

supported stock of all kinds, "our only source of making anything in the surplus money line."

The same year Miller and Brobst did not hesitate to say that ground corn was 25 per cent better than corn which was fed raw.

H. G. Stuart of Montrose thought an acre of good corn fodder would keep a bull in "about as good condition as an acre of timothy hay and at one fourth the cost."

Droughts came again in 1853. Corn crops were much lighter near Knoxville, though still "tolerably good."

In Lee County H. F. Moore wrote that corn was largely cultivated there for feeding hogs and cattle. The average yield in 1854 was 40 bushels, although 100 bushels could be raised with the use of barnyard manures. The cutworm was the greatest enemy, and there was "no remedy (but to pinch the raskels [sic] heads)."

Joseph W. Waldron of Weeping Willow reported yields of 40 to 65 bushels to the acre. The larger amount was raised on former timber or hazel-brush land, while the smaller quantity grew on prairie or table land.

Corn could be produced in Madison County for eight cents per bushel in 1855. The supply was not beyond demand because of immigration to that county, "which yearly uses up our surplus products though the time will soon come when it will not."

J. W. Raynolds of Newbern described the method of planting "sod corn." "Soon after the ground is plowed make a hole through the sod with an axe or a stick and drop in four to eight grains of corn every two or three feet." Sod corn would produce five to 40 bushels with "no tending at all."

Oats were used principally for feeding stock at home. Average yields were 15 bushels at New London in 1848; 40 bushels at Fort Madison in 1850; and 40 to 55 at Kanesville in 1852; depending largely on the season. Miller and Brobst thought oats grew "remarkably well in this country—much better we think than in any other country we know from our experience." Oats were very subject to falling down and lodging, due to the newness and richness of the soil.

Barley was the least soil exhausting of any crop and was the best stubble for wheat, but little was sown. Buckwheat was raised generally in small amounts for domestic use. Rye, beans, and peas were raised only on a limited scale.

Clover and Grasses

Edward Johnstone wrote in 1852 that "hay is the most profitable crop that a farmer living near the Mississippi can raise." Summers in Scott County reported two years later, however, that little attention had been paid to its cultivation yet "in consequence of the abundance of prairie hay."

In 1855 Stephen A. Lindley of Monroe provided a detailed account of timothy growing. He said it was raised in great quantities in Lee and Henry Counties and had been one of the principal export items for several years. As high as 400 acres had been cut on one farm for seed, and numerous farmers cut from 60 to 100 acres annually.

Lindley stated that the soil in that part of Iowa was better adapted to timothy than most parts of the prairie country, because it was firmer and not so light.

Timothy was allowed to become fully ripe before cutting but not until it was dry and dead. It was then cut with a reaper. It was too hard to cut and make much progress with the cradle.

As soon as it was cut, it was bound in large sheaves and set in large uncovered shocks or small ricks of about 30 sheaves in a shock. After standing two weeks, it was threshed with the common threshing machine. Lindley considered the Wheeler and Mellick Separator one of the best.

The average yield of seed per acre was about six bushels worth from $2.00 to $2.50 per bushel. "In a country like this where land is cheap and labor dear and scarce perhaps no crop will be more profitable so long as anything like present prices can be had for the seed." Eastern farmers preferred Iowa seed because "many of the noxious weeds which infest their meadows are unknown here."

Lindley also provided estimates on the cost of raising 10 acres of timothy hay and seed:

Interest on cost of 10 acres at $15	$1.50
Cutting at 50c per acre	5.00
Five hands to bind, including board	6.25
Threshing and cleaning seed	15.00
Stacking hay, including salt and board	7.00
Total	$34.75

In return he had 60 bushels of seed worth, at an average price of $2.25 per bushel, $135.00 and 10 tons of hay worth, at $3.00 per ton, $30.00. "This leaves $131.25 as the neat proffits [sic]."

Manures

Manures were seldom used by Iowa farmers in the 1850's. McCready said stable manure was all that had been tried in his section of the state.

Dr. John G. Scott of Winterset summed it up in this manner:

> We use no manure as Dame Nature has been bountiful toward us in providing soil of extreme richness, the soil being from 10 inches to three or four feet. So of course we use her bounty, hardly thinking of thanking her, much less paying her back in manure.

Fruits

According to Bangs of New London, orchards were being planted frequently in 1849. Very few apples had been raised yet, due to the newness of the country. Most orchards were not old enough

to bear fruit. The severe winters made peaches an uncertain crop.

Seven years later M. L. Comstock of Burlington reported, "Iowa has made praiseworthy advancement in the cultivation of fruit." In spite of the problems of settling a new country, "fruits have been produced in such quantities, and of such size and quality, as to excite the astonishment of fruit growers from older states."

The apple was the principal fruit cultivated. This was probably because it was readily available and because moisture in undrained soils caused little trouble.

Severe winters and late frosts had destroyed pear, plum and peach trees. The smaller fruits, such as currants, gooseberries, raspberries and strawberries were "produced in perfection."

Vegetables

Potatoes at first were cultivated almost entirely for table use. Until 1848 the rot had not spread to Iowa, but it appeared very unexpectedly at New London that year. Those potatoes which were planted very early escaped almost entirely. Those planted late in the season were, in some cases, not worth digging. The loss totaled half the crop.

The rot was bad again in 1851. A poor potato crop was also raised in 1857, according to Raynolds of Newbern, when they rotted badly late in the fall.

In 1852 both Irish and sweet potatoes were produced in abundance at Kanesville. The former produced, if well taken care of, 300 bushels per acre at a cost of five cents or less per bushel. The average market price was 30c per bushel.

Miller and Brobst reported that the season had been extremely good for sweet potatoes in 1853. In some cases, 14 of them filled a half bushel measure as full as they could be laid on. Seven average potatoes weighed 14 pounds.

Miller and Brobst also said turnips did uncommonly well. They weighed some that were eight pounds each.

Live Fences

In 1855 Stephen A. Lindley supplied an extensive report, which was published by the Patent Office, on the use of Osage orange hedge for fencing. He said it was being brought into use extensively in the middle and southern parts of Iowa where it was receiving a great deal of attention.

Lindley pointed out that the hedge had two enemies. The chinch bug cut off the bark of the tap root and either killed it outright or checked its growth so that it was worthless. At a more advanced period of its growth, the gopher would frequently cut off roots two or three inches in diameter.

Hedge growing had already become a business. Plants were raised by nurserymen who sold them,

in many instances to men who had large contracts at so much a rod. These contractors agreed to furnish the plants, set and tend them until a good fence was produced at 100 dollars a mile or 31 cents a rod.

General Observations

Several of the men who reported to the Agriculture Section of the Patent Office included general observations about Iowa and the importance of farming in the state. Joseph W. Waldron of Weeping Willow in Davis County wrote in 1852:

> Our State is new. The oldest farms in this Section have not been over eight or nine years in cultivation and those were opened by Frontiersmen as all new countries are, and still occupied by them. Therefore, there has not been much improvement in the manner of farming from the old method of cultivation. That is to cultivate or wear out one farm and then sell it for what you can and go West, but the cultivated portion of our country is yet relatively fractional and the fertility of the soil has enabled the farmers to procure abundant crops by a very easy mode of farming. Many of the first settlers have cultivated their farms for seven, eight, and nine years and still obtain very good crops without ever having manured them.

Since Iowa was a new state to which thousands were immigrating each year, Miller and Brobst thought a brief description of the soil, climate and methods of production might be of benefit to those planning to settle in Iowa. In 1854 they wrote:

As this season has been unusually dry here, as well as in all other parts of the Union, we think the soil has been sufficiently tested in relation to its power of resisting the drought. We think the great depth & fertility of the soil are the principal causes of the crops being as good as they have been this season. In fact the crops have never been finer here than they were this season. . . .

The face of the country is generally gently rolling—being prairie, with timber on the streams, except some groves of timber on the high prairies.

The climate of Iowa is mild—spring rather late—summer warm—autumn long & mild—winter rather windy & dry. Winter being dry makes this state exceedingly favourable for wintering stock.

The soil on the prairies is a rich black sandy loam from thirty inches to three feet, with a sub-soil of a light coloured clay. On the creek and river bottoms the soil is a rich black sandy loam from four to six feet deep, with a sub-soil of yellow sand.

The manner of getting the prairies into cultivation is by breaking up the prairie sod, with from four to five yoke of cattle to a plow; the cost of which is about two dollars per acre.

Prairie breaking is generally done in the month of June & the ground is generally planted in corn by dropping corn in the furrows after the plow. The crop is called sod-corn & commonly produces about twenty-five bushels per acre.

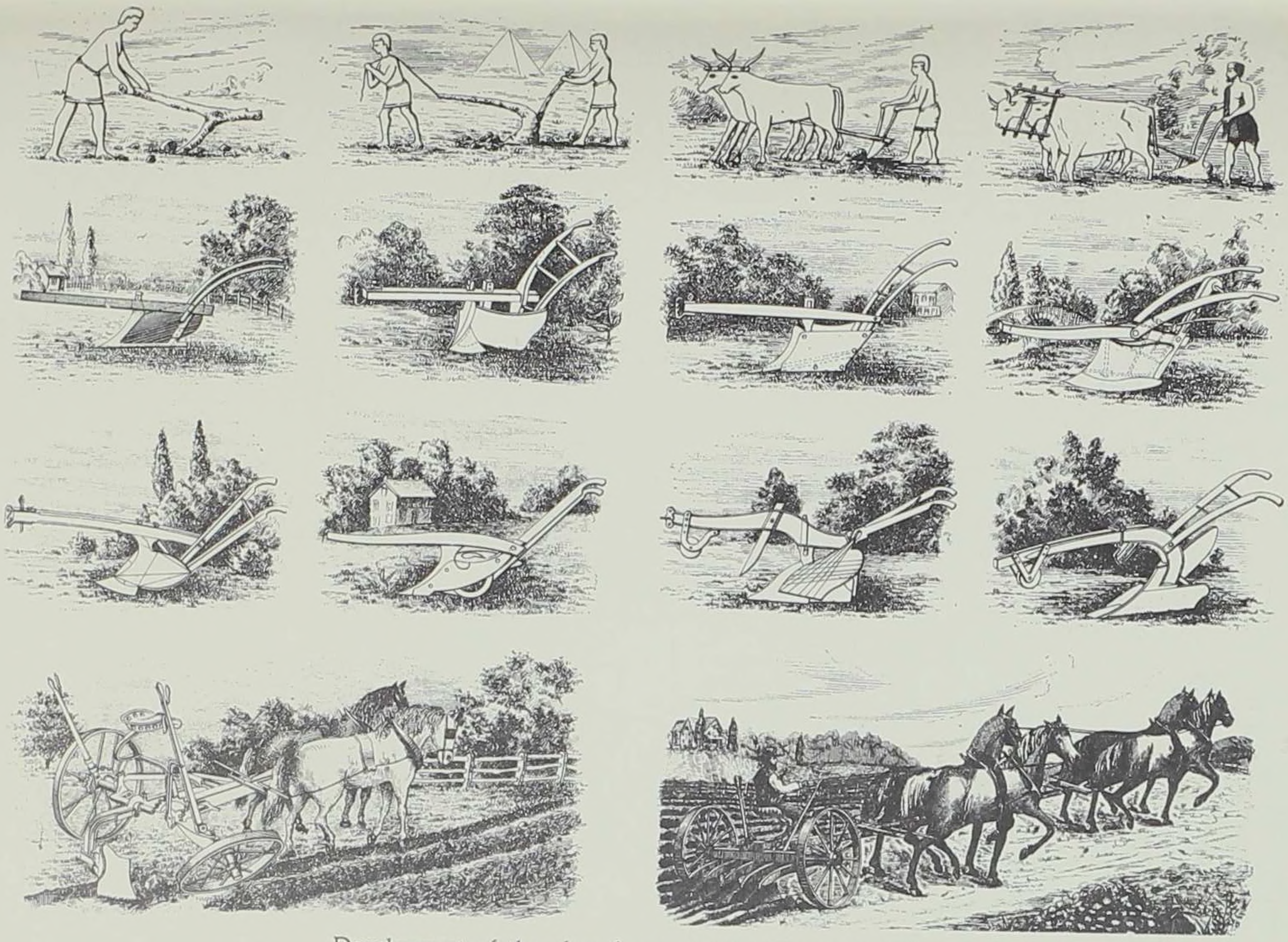
Nothing more is done than to plant the corn, until it is ready for husking in the fall. This sod-corn crop is always considered to be sufficient to pay for the breaking of the prairie. After thus getting the prairie broken there is no further necessity for breaking the prairie, as no prairie grass grows on it afterwards.

J. F. Tallant of Burlington, following the drought of 1854, wrote: "With proper ditching and draining, and sufficiently deep plowing, the strong black loamy soil of Southern Iowa is better adapted to resist both extreme wet and drought than that of any other Western state."

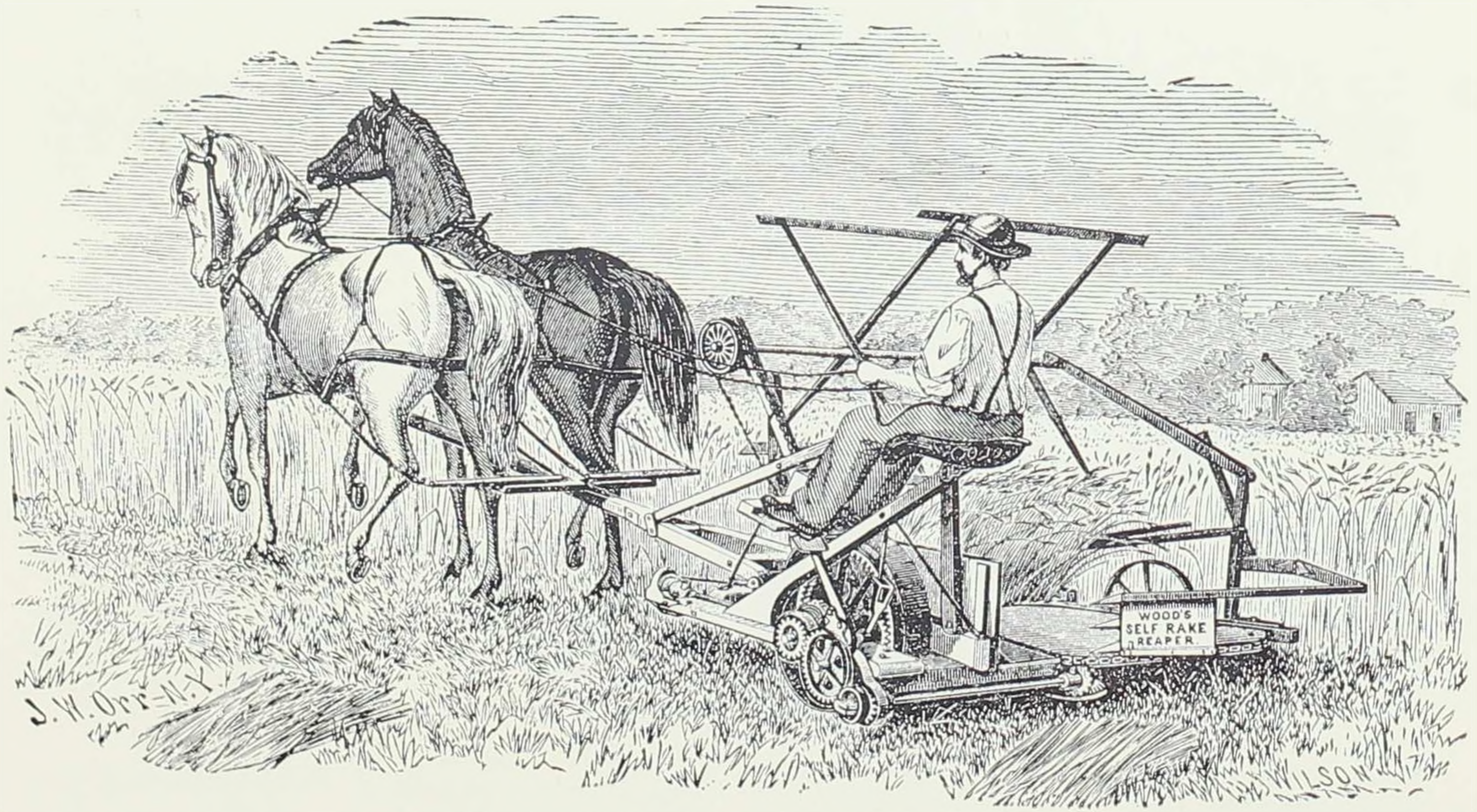
Although none of the reports covered all aspects of Iowa agriculture, the total picture presented was one of great potential for productive yields, a diversity of crops, and a profitable means of making a living. For the readers of the *Annual Reports* of the Patent Office in which the information was published, data was provided that would cause many people to emigrate to Iowa and become a part of a growing agricultural state.

Perhaps no one realized this better than Charles Mason. In 1858 he made a prediction which was to prove more correct regarding the relative growth of Iowa's agriculture than its population. In addressing the Hawkeye Pioneer Association of Des Moines County, he said: "Some of the present members of this Society will see the time when Iowa will be the fifth State in the Union in point of population, and the third, if not the second, in respect to agricultural wealth and resources."

HOMER CALKIN



Development of the plow from primitive Egypt to 1884.



Wood's self-rake reaper was popular in Iowa.