

Farm Machinery of the 1860's in Minnesota¹

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THE DECADE of the 1860's saw many improvements in farm machinery, as well as the more general use of implements by the farmers. The fact that the Civil War resulted in a scarcity of labor stimulated the adoption of machinery.

The year 1860, according to a St. Paul newspaper, witnessed a greater importation of reapers and threshing machines into Minnesota than all previous years put together. No accurate statistics have been found to measure this importation, but nearly a hundred threshing machines and over two hundred reapers had been landed and purchased at the St. Paul levee alone by the latter part of July. In Winona, three hundred reaping machines had been sold by late July, and a dealer at Marion, near Rochester, had disposed of ninety McCormick reapers during the spring and summer. Much of the crop of 1859 was not forwarded to market until the spring and summer of 1860 because machinery sufficient to thresh it was lacking in the earlier year.²

It was hoped that a similar difficulty would be obviated in 1860. Certainly the machine trade of that year was extensive. Reports like the following were typical: "The levee was well covered yesterday with almost every variety of agricultural implements, including no less than a dozen ponderous and elegant threshing machines—some in complete running order, others with the parts separated for transportation to the Red River, and other points in the interior of the State."³

One improvement which came into general use was the self-raking

¹ An article on the use of farm machinery in Minnesota in earlier decades was contributed by the same author to the issue of this magazine for December, 1942 (see *ante*, 23:316-327). *Ed.*

² *Weekly Pioneer and Democrat* (St. Paul), July 20, 27, 1860.

³ *Pioneer and Democrat*, July 6, 1860.

reaper. Although the self-rake was first placed on the market in 1854, "it does not appear that the output of any of the self-rakers during the 'fifties approximated that of the leading makes of hand-rake reapers such as the McCormick, the Manny, and the Wood." The purpose of the self-rake was to dispense with the labor of the man who raked the grain off the machines, but the early self-rakes were extremely crude.⁴

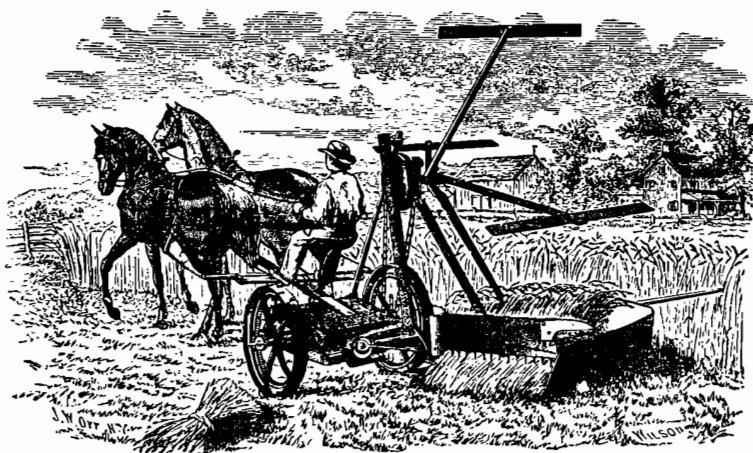
In August, 1860, it was reported in the press that B. M. Smith, who lived two miles from St. Paul on the St. Anthony road, had some of his wheat, of which he had a hundred acres, cut by one of Esterley's self-raking reapers. This machine cut an average of two acres an hour in grain that yielded twenty-five bushels an acre, for it eliminated the delays caused by the fact that a person raking by hand could not work for more than five or ten minutes at a time without resting. When gathered the grain was in as good condition as if it had been harvested by the most experienced cradler. According to one newspaper, in 1860 Temple and Beaupre of St. Paul sold "quite a number" of self-rakes "which have given general satisfaction." The self-rake was indeed a boon to the wheat growers of Minnesota, where a labor shortage was apparent in the late summer of 1860. At the Minnesota State Fair of 1860 Dorsey's self-raking reaper was exhibited. This machine was equipped with a reel rake, that is, the reel served as a rake. It was one of the first of this type to be successful.⁵

McCormick began to manufacture self-rakes in 1861, and so successful were they, and so great was the shortage of labor, that by 1864 fully two-thirds of the reapers he produced were self-rakes. The old hand-raking reaper continued to be widely used, however, especially in the East, because many farmers desired a combined reaper and mower. McCormick did not produce a self-rake which combined the two operations until 1869. Even the McCormick self-rake of the

⁴ Leo Rogin, *The Introduction of Farm Machinery*, 96 (University of California, *Publications in Economics*, vol. 9 — Berkeley, 1931).

⁵ Rogin, *Farm Machinery*, 98; *Pioneer and Democrat*, August 3, 10, October 5, 1860. According to the issue of August 10, harvest hands were much in demand near Red Wing, where they were offered \$1.50 to \$2.00 a day.

1860's was somewhat crude, as one farm wife recalled. She said her husband owned one of these machines and that "there was a big red wooden arm that went around and around, and to balance it there had to be a large iron ball on a long iron rod, as a sort of counter-weight. When the big red wooden arm came up over the reaper it



A McCORMICK SELF-RAKING REAPER

[From Leo Rogin, *The Introduction of Farm Machinery*, 101
(Berkeley, California, 1931).]

looked as though it would come down on the horses' backs as it revolved. The horses were frightened and it was a hard task to get them used to it so they wouldn't shy at it and run away."⁸

To a greater extent than during the 1850's was there rivalry in the reaper business in the succeeding decade. In 1867, for example, one agent wrote that "there has been and is still, a most fierce competition. Last year was so good for machine men, that all rushed in with a vast amount of machinery, and the county has been overrun with the most active class of agents." Naturally each company and agent claimed that its machine was the best, all of which was very confusing to the farmer. As a result, trials of rival reapers were suggested and held at various times. In 1861, for example, the *Min-*

⁸ Rogin, *Farm Machinery*, 100; *Autobiography of Mary Jane Hill Anderson*, 20 (Minneapolis, 1934.)

nesota *Farmer and Gardener* suggested that since so many reapers were offered to the public, a trial be held to determine the merits of the machines' performances and not of their paint jobs. One such trial was held on the fair grounds of the Minnesota State Agricultural Society in 1867. The first premium for reapers went to the Manny machine, that for combined self-raking reapers and mowers was awarded to the Kirby machine, and the sweepstakes were given to the Wood combined reaper and mower.⁷

At another trial held in the same year on the farm of a Mr. Gournsey near Cottage Grove, it was found that the McCormick machines were heavier to draw than the others, although the parts were more accessible for oiling and tightening. The Massillon Excelsior won this trial, and the Johnston self-rake was designated the best for cutting on uneven surfaces. Some reapers were manufactured in Minnesota at this time. A notable exhibit at the state fair of 1869 was devoted to homemanufactured implements. Among them was the Valley Chief self-raking reaper and mower made by the W. W. Eastman Company of Minneapolis, and a self-rake invented by L. H. Johnson of Rochester for attachment to the Weston and Curtis reaper. The latter attracted much attention.⁸

In addition to the hand- and self-raking reapers, some "headers" and "droppers" were used by Minnesota farmers. The dropper delivered the grain to the rear of the machine instead of to the side, as did the self-rake. Since it dispensed with the revolving rake, it was a light machine, but the grain had to be bound fast in order to get it out of the way before the machine made its next round. The header

⁷ *Minnesota Farmer and Gardener* (St. Paul), 1:196 (July, 1861); *Farmers' Union* (Minneapolis), September, 1867; John Edgar to Cyrus H. McCormick, August 8, 1867. The letter is in the papers of the McCormick Harvesting Company, in the possession of the McCormick Historical Association of Chicago. Film slide copies of letters relating to Minnesota from this collection have been made for the Minnesota Historical Society and were consulted by the writer. Edgar notes that the Manny, New Yorker, Woods, Johnston, and Syracuse machines had good runs, and he complains that other manufacturers gave the farmers better terms than did McCormick.

⁸ *St. Paul Weekly Pioneer*, August 23, 1867. The Johnston machine took first prize in a trial held near Carver in 1868. About a hundred and twenty-five farmers were present. *Farmers' Union*, August, 1868; Darwin S. Hall and Return I. Holcombe, *History of the Minnesota State Agricultural Society from Its Organization in 1854 to the Annual Meeting of 1910*, 101 (St. Paul, 1910).

dispensed with binding by cutting off the tops of the grain, but it never became very popular because climatic conditions were not favorable for its employment. Most grain needed drying before stacking in order to prevent spoilage. Very few headers were used in Minnesota in comparison with other machines.⁹

The biggest advance in the reaper field in the decade of the sixties was the introduction of the Marsh harvester, which made "its commercial debut in 1864" with about twenty-five machines. By 1867, when a Marsh machine was exhibited at the state fair, 825 of the harvesters were on the market. This machine was a great improvement over those previously used. Two men standing on a platform bound the cut grain into bundles with straw. The backbreaking task of following a reaper and binding the grain off the ground thus was eliminated. Most of the cutting and bundle binding had to be done when dew was on the straw in the early morning or the evening, however, for the straw of midday usually broke when used in binding.¹⁰

The advantages of the Marsh harvester were enthusiastically reported in the newspapers. It was claimed that the machine saved the board and wages of three men, walking and stooping in the hot sun, half the expense of binding and the labor of one man in raking off, and, finally, at least one bushel of grain per acre wasted with other machines. These claims were not exaggerated, if farmers of the period are to be believed. Such a statement as the following was common: "I have bound my half of 12 to 15 acres a day, easier than 5 of us did before on the ground."¹¹

The price of reapers varied, but an average figure in the middle 1860's was about two hundred dollars for the combined reaper and mower, and somewhat less for the reaper. In 1865 P. P. Quist pur-

⁹ Rogin, *Farm Machinery*, 102-106; J. Oyen, *Watson Community Pioneers*, 25 (Watson, n.d.); E. W. Brooks to McCormick, October 3, 1867, McCormick Harvesting Company Papers. Some farmers liked the header, but it was going out of use, according to the *Independent Farmer and Fireside Companion* (St. Paul), 1:61 (March, 1879).

¹⁰ Rogin, *Farm Machinery*, 108; Oyen, *Watson Community Pioneers*, 26.

¹¹ *Glencoe Register*, April 8, 1869; *Mankato Weekly Record*, May 28, 1870. H. C. Howard of Mankato had exclusive control of the sale of the Marsh machine in southwestern Minnesota. See G. W. Allyn, *When Blue Earth County Was Young*, 6 (Albert Lea, 1919).

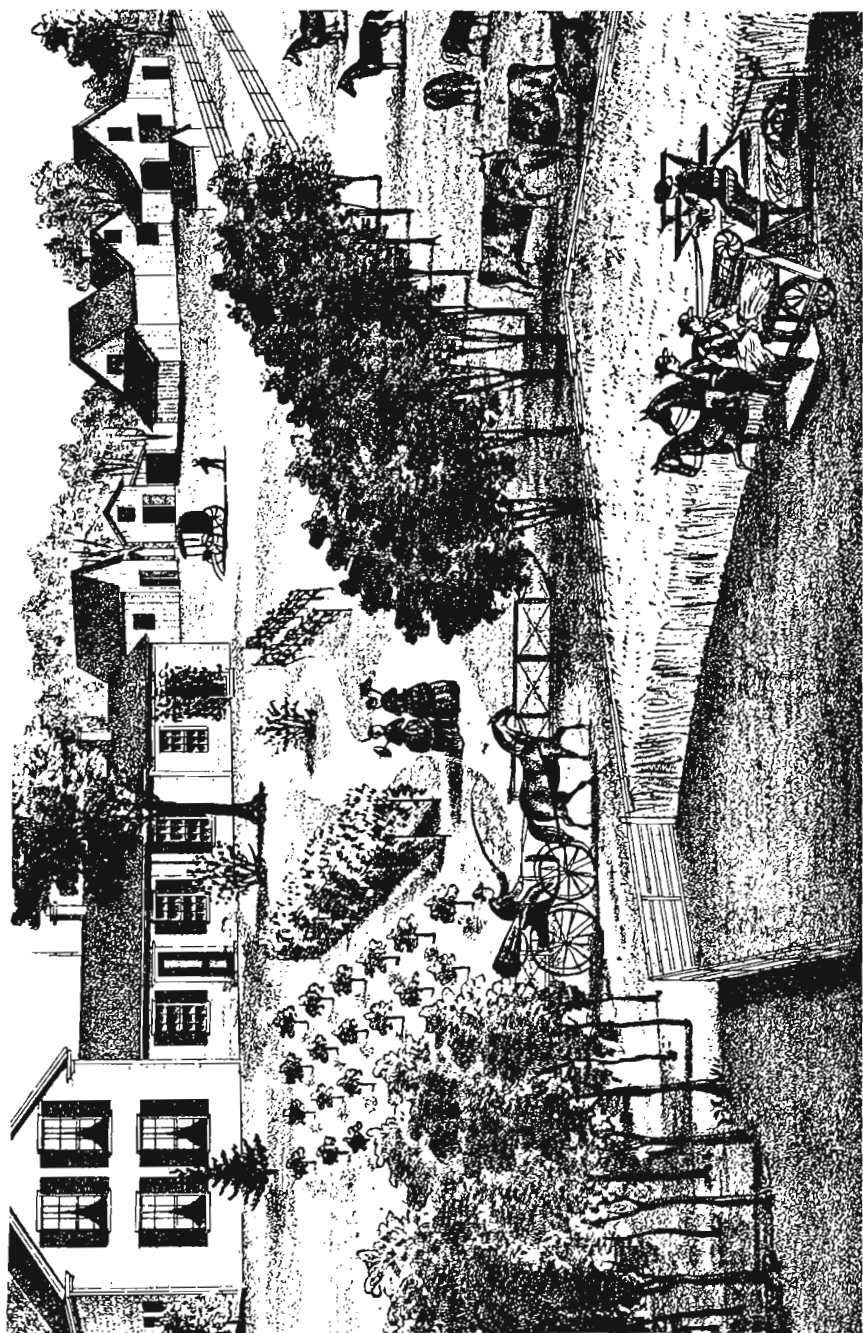
chased a Champion self-rake reaper and mower for \$225.00, payable in three annual installments, with interest at ten per cent. The installment method of paying for agricultural implements was general then, as later. Credit played a big part in the farm machinery business, and most agents complained that making collections was difficult and often unpleasant. As a result an attractive discount was offered for cash, but cash was difficult to secure. McCormick usually demanded cash on delivery equal to a third of the purchase price, with the balance plus six per cent interest due on the following December 1. If the notes were not paid on time, they were generally renewed at ten per cent and were secured by a mortgage on the farm or the personal property of the buyer. An annual rate of sixty per cent was not uncommon in Minnesota.¹²

Naturally many farmers cried out against exorbitant interest rates and the efforts of agents to make collections. "The state of public opinion here about the wealth of the McCormicks and their grace and mercy," wrote a McCormick agent in 1868, "are badly against collections at any time and are worse now. It will take years to cultivate a good healthy state of feeling about paying promptly the McCormick notes. Some men even take it in high dudgeon because I send them a simple notice that their notes are coming due, as I do to *every man*. I actually have to explain and almost apologize."¹³

The late 1860's, following the Civil War, were difficult years for collections. The deflation after the war pushed farm prices downward at a time when the average Minnesota farmer was in debt for almost everything. Thus the implement agent had to be a sharp snatcher to get the farmers' money before someone else did. A Rochester agent described conditions well when he said: "The low price of wheat and the downward tendency for the last three years has altogether ruined many men and creditors are pushing so hard as almost to

¹² P. P. Quist, "Early Harvest Days Told by Pioneer," in *Winthrop News*, July 31, 1930; William T. Hutchinson, *Cyrus Hall McCormick*, 2:74 (Chicago, 1930). Andrew Peterson, a farmer near Shakopee, recorded in his diary on May 16, 1873: "I bought a Wood's reaper with the latest improvements . . . for \$235.00 with the freight which is \$25.00. The freight I am to pay at once, then \$100.00 in June, 1874, and the rest \$110.00 in June, 1875, also I am to pay 10% interest." Peterson's diaries, which are written in Swedish, and an English translation are preserved by the Minnesota Historical Society.

¹³ Edgar to McCormick, October 14, 1868, McCormick Harvesting Company Papers.



HARVESTING ON A DAKOTA COUNTY FARM

[From A. T. Andreas, *Illustrated Historical Atlas of the State of Minnesota*, 61 (Chicago, 1874).]

make a panic. *Money is coming very hard and slow.* . . . We shall have to secure [it] in any way we can and in many cases be glad to get security on long time." About three weeks later the same agent informed McCormick that Minnesota "is badly in debt, hopelessly in debt. . . . Through the high prices of grain during the war, men were lured on into buying and running into debt, many of them extravagantly, some of them recklessly, and perhaps nearly all of them foolishly." Many farmers put one mortgage on top of another from 1866 to 1869, going deeper and deeper into debt. As a result, the lawyers, sheriffs, and constables were swamped.¹⁴

When notes given for machinery fell due, the price of grain generally was low, so the farmer borrowed money at from twenty-four to thirty per cent. "Are not two-thirds of our farmers machine poor?" asked one newspaper, which even suggested that farmers would be better off if they went back to the flail and cradle. The *Glencoe Register* advised caution, expressing the belief that many farmers in the vicinity were making a big mistake by buying so much machinery on credit. Some were purchasing machines that had never been tried in the region, and the practicability of such implements was not known. "From the best calculation we are able to make, the surplus of the present crop will hardly pay for the machinery that will be purchased in this county this season," said the editor of the *Register*. And in a similar vein were the remarks of the farmer who wrote as follows in the *Lake City Leader*: "I think a great many of our Minnesota farmers buy things they might get along without and would if they had to pay cash for them. This credit system is ruining us. . . . I have known farmers to buy three reapers in seven years, at an expense of over six hundred dollars;

¹⁴ Edgar to McCormick, August 8, 1867, November 25, December 17, 1869; Brooks to McCormick, September 30, November 5, 1868, McCormick Harvesting Company Papers. Several McCormick agents complained of the difficulties involved in making collections, blaming poor roads, snow, and grain prices, among other causes. In a letter of 1869 Edgar complained that "at the present juncture your agents cannot live on the ten per cent com[mission]. The collecting last year, and especially this, is so *very, very* hard that no man can do justice to it at 5%. The labor and expenses of collecting is eating up everything there is in it." Two years earlier he had reported that the money market in Minnesota was nearly broken, that multitudes of farms were run entirely on credit, that interest rates ran as high as twenty-five to forty per cent, and that some of the machines sold earlier had to be reclaimed.

that is only one article. A reaper will last ten years if properly taken care of at a very little expense. . . . Anyway stop this credit system. Let farmers try the cash system for one year."¹⁵

Undoubtedly it was true that many farmers failed to take proper care of their machinery and that they bought more than necessary. Particularly did this fact impress one observer located near Crookston, who recorded: "The prairie farmer should have been proud of the magnificence of his machine shed, for the roof was the high dome of the blue sky and the floor the size of his farm. The sun lighted it by day and the moon and stars by night. The machinery was washed by rains and dried by the sun; it was protected by the snow banks in winter, and it was always easy of access when needed. Usually the plow, binder, harrow, and seeder were left just where they were last used in the field. Most farmers were thoughtful enough to remove and put in the granary the canvass from the binder. Around the yard was a miscellaneous assortment of farm machinery,—rusted, faded and dilapidated,—broken parts, hayracks, old wagons, piles of manure, half-used haystacks, logs hauled from the river for firewood, all landscaped in a shrubbery of ragweed, thistles, and sunflowers."¹⁶

Despite newspaper complaints, agents' dissatisfaction, and farmers' protests, however, the farm machinery business grew in magnitude in Minnesota. In addition to improvements on reapers, new developments were made during the 1860's on many other types of implements, notably the plow. At the state fair in September, 1860, Boston steel clipper plows, clipper cross plows, clipper breaking plows, and iron beam plows were displayed.¹⁷

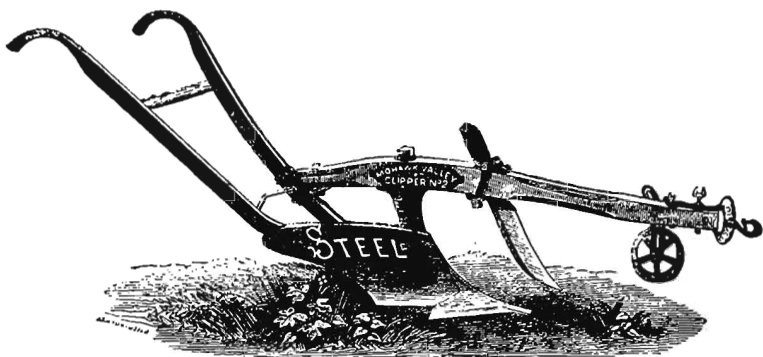
A much larger proportion of plows was manufactured in Minnesota during the 1860's than earlier. There was a plow factory at Cannon City as early as 1856, and Alonzo Leaming, who has been credited with being the earliest plow maker in the state, began in 1851 and carried on his business in St. Anthony for several years. Plow manufacturing in Minnesota, however, had only faint begin-

¹⁵ *Glencoe Register*, June 24, July 15, 22, 1869. The item from the *Leader* is reprinted in the *Minnesota Monthly* (St. Paul), 1:190, 439 (June, December, 1869).

¹⁶ W. A. Marin, "Sod Houses and Prairie Schooners," *ante*, 12:141.

¹⁷ *Pioneer and Democrat*, October 5, 1860.

nings before 1860. One of the first plow factories in the state was the firm of Woodley and Berry of St. Anthony. As early as 1861 it received orders for plows from as far away as Wisconsin. Between the fall of 1860 and the summer of 1861, the plant made four hundred plows of different sizes, a large number of which were sold in St.



The above cut represents the

MOHAWK VALLEY STEEL CLIPPER PLOW

[From an advertisement in the *American Agriculturist*, 27: 164 (April, 1868).]

Paul. An early farm journal congratulated this "pioneer plow factory of Minnesota" on its success, and expressed the hope that "the day will come when the St. Anthony plows will be sold in Moline and Rock Island."¹⁸

In 1860 the firm of Wells and Smith established a plow factory at Belle Plaine. This plant advertised that it made the only plow that "cleaned satisfactorily in the sticky timber soil of Scott and Sibley Counties, being the same that gave universal satisfaction to our customers last year," and that it had the "largest and best equipped Foundry and Machine Shop" in Minnesota. Originally the Belle Plaine plant manufactured and repaired steam engines and mill gearing, but when these activities proved unprofitable, its owners decided to turn to plows. Specimens of various plows in use in Minnesota—the Moline, Galena, Grand Detour, and St. Anthony—

¹⁸ *Farmer and Gardener*, 1:123, 203, 2:59 (February, July, 1861, February, 1862). One account tells of a huge load of plows from Woodley and Berry on the road to St. Paul.

were collected, and farmers were asked about their qualities. Then an experienced plow maker was secured from the East and a plow different from any other in use was designed. The new plow proved to be popular in the vicinity, but it could not be made cheaply enough to compete in the wholesale trade with those manufactured in Illinois. As a result the Belle Plaine manufacturers went to Moline and elsewhere and examined the machinery with a view to adopting the best. In the winter of 1860-61 they added eight new machines to their former equipment and made plans to introduce their plows in the Minnesota Valley.¹⁹

Another factory established in 1860 was the Monitor Plow Works of Minneapolis. St. Paul lagged behind some other towns in establishing implement factories, but during the winter of 1861-62 the firm of Davison and Connelly started a plow factory there. Leaming, whose St. Paul Clipper plow took second premium at the state fair in 1861, was placed at the head of the plant; and he expected to have four hundred plows ready for the spring trade in 1862. They were of all sizes, from a breaker that would take off six-inch roots down to a little corn plow.²⁰

As agriculture expanded in the state, more and more machine factories were established. For example, the Noble plow was manufactured by Harrison and Company of St. Anthony, the Gopher State by C. L. Snyder of Faribault, the Monitor by Ferguson and Clark of Minneapolis, the North Star of Winona by B. W. Sutherlin at Winona, and Nelson and Gunderson's was made in Rochester. Of 438 plows sold in 1867 in Mankato, 78 were manufactured in that city; while of 510 sold there in the following year, 245 were produced locally either by Mohr and Danber or by Hatch and Roberts. The largest plow factory west of the Great Lakes was owned by Laraway, Perrine and Company of Minneapolis and was housed in a building which measured 157 by 44 feet. In 1869 this plant turned out five thousand plows, with a daily production of twenty-five. Its plows were an improvement on the C. K. Perrine brand, a model

¹⁹ *Farmer and Gardener*, 1:175, 191 (June, 1861).

²⁰ Marion D. Shutter, *History of Minneapolis*, 1:381 (Chicago, 1923); *Farmer and Gardener*, 2:59 (February, 1862).

which had been extremely popular west of the Big Woods. A new process of hardening the metal made possible plows that would scour, and the moldboard was shaped in such a way that the furrow could be turned over with greater ease than previously.²¹

The year 1864 marked the first introduction on a small commercial scale of buggy plows, as they were called, and two years later they were displayed at the state fair. The exhibit caused Oliver H. Kelley of Granger fame to remark: "Won't it be fun to be a farmer, when we can ride while doing all our farm work? Now we can ride while plowing, drilling in seed, reaping and mowing, ride while raking our hay, and if fortune favors us, we can ride to prosperity." Few Minnesota farmers, however, had horse-drawn plows before 1870. Gang plows for four horses and two plows were tried out at the same fair, but they did no better than a single plow with two horses. A plow made for general use by William B. Young and Company of Chicago was the only one on the grounds that did not clog.²² The introduction of the riding plow and the invention by James Oliver of a method of hardening cast iron that improved its wearing and scouring qualities constitute the two major improvements in plow manufacturing of the 1860's.

In general, it would appear, the average pioneer Minnesota farmer did a poor job of plowing, and his work was constantly criticized in the farm papers. "Here in the west, especially," said the *Farmer and Gardener*, "there is almost a universal practice of turning over about four or five inches of the surface, and continuing this same process from year to year." The paper suggested a motto, "Plow deep while sluggards sleep." It advised plowing fewer acres per day, and "running the plow deeper." Farmers were told that it would pay to get a subsoil plow and put on three horses, for deep plowing, which "is,

²¹ *Farmers' Union*, August, 1867, March, 1869; Hall and Holcombe, *State Agricultural Society*, 100; *Pioneer*, December 20, 1867, August 21, 1868; *Glencoe Register*, June 24, 1869.

²² Rogin, *Farm Machinery*, 35-37; *Pioneer*, October 12, 1866. According to the *Rochester Post* of August 19, 1871, the chief defects of the common two-horse plow were the lack of proper temper and polish; as a result they wore out quickly and would not scour. Some startling developments in plowing were suggested. J. W. McClung of St. Paul, for example, described a plan to build a "rotary steam plow, driven by cogs." See the *Farmer and Gardener*, 1:193 (July, 1861).

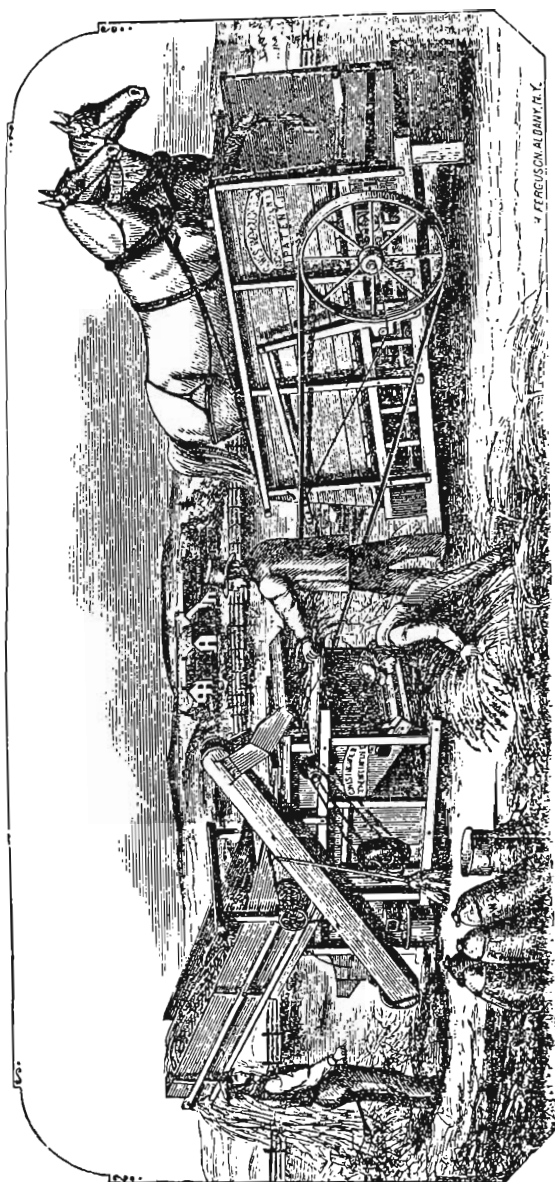
in short, a system of trenching on a small scale," and would put the ground in good condition to "withstand a drouth."²³ Nevertheless, plowing methods remained poor, for their improvement was retarded by lack of machinery, ignorance, and the presence of fertile soil that required little working.

New developments in threshing appeared during the 1860's, although many farmers continued to use the primitive flail or to tramp out the grain with horses or oxen. Horsepower was generally used for threshing machines, though steam power was introduced before 1870. The horses and the thresher generally required a dozen men and boys to handle the various operations; three or four men usually accompanied the outfit and the rest were gathered in the neighborhood. But the threshing itself did not seem to be the biggest task. Serious difficulties in moving their outfits were encountered by "Old Man" Boomhower, who operated an eight-horsepower thresher, and J. J. Mihin, who had a twelve-horsepower machine, near Lake Wilson in 1866. There was constant danger of breakdowns, and when they occurred it was often necessary to drive to the nearest blacksmith shop for repairs. The possibility of injury to one of the operators was a source of worry. Although a state law ordered owners of threshers to box the tumbling rod on the machine, it probably was not enforced on two occasions out of ten. Hence men were frequently injured, sometimes fatally. A writer for the *Farmer and Gardener* felt that "of all the work that has to be done on the farm, there is hardly anything that is so unpleasant as threshing with machines that are tended by a large number of horses."²⁴

The amount of grain which a horsepower machine could thresh in a day varied, of course, with its size. Boomhower's eight-horsepower machine turned out about three hundred bushels of wheat in a day,

²³ *Farmer and Gardener*, 1:170 (June, 1861).

²⁴ *Farmer and Gardener*, 1:208 (July, 1861); H. V. Arnold, *Old Times on Portland Prairie, Houston County*, 52 (Larimore, North Dakota, 1911); "Threshing in the Early Days of Murray County," in *Lake Wilson Pilot*, August 22, 1935; Oyen, *Watson Community Pioneers*, 27. Threshing with flails, horses, and oxen in Rock County in 1869 is described in A. P. Rose, *History of the Counties of Rock and Pipestone*, 53 (Luverne, 1911). Flails were used near Glencoe as late as 1866, when there was only one old-fashioned and weatherbeaten machine in the vicinity, according to the *Glencoe Enterprise* of April 14, 1904. An accident near Eyota in which a man was caught by a tumbling rod is recorded in the *Rochester Post*, December 11, 1869.



TWO HORSE POWER AND THRESHER AND CLEANER.—Weight 2,900 Pounds.

For Sale by Gilman & Senger, Saint Paul, Min.

[From the *Minnesota Farmer and Gardener*, 1:206 (July, 1861).]

while the Mihin twelve-horsepower unit threshed five hundred. A report in 1861 stated that a man near Faribault threshed 217 bushels of oats in an hour and fifteen minutes. "It was probably a large machine," said a farm paper, "and exceedingly well handled. If any . . . beat this, we should be glad to hear from them and receive their figures." In 1868, L. Martindale of Redstone, using a Tornado thresher with a thirty-inch cylinder, threshed 247 bushels of wheat in two hours and seven minutes. The grain was usually taken out of the separators in half-bushel measures, a method that required much extra stooping and hard work and that resulted in a great deal of waste. Horsepower units generally charged about five cents a bushel for threshing wheat and ten cents for flax.²⁵

The Pitts thresher, which was popular in Minnesota in the 1850's, continued to be extensively used there in the next decade, but other makes were well liked also. The Massillon machines, which were manufactured by C. M. Russell and Company of Massillon, Ohio, were popular with many southern Minnesota farmers as early as 1861, although few if any of them were then in use near St. Paul. Ruble Brothers of McGregor's Landing sold the Massillon, as did S. P. and P. F. Hodges of St. Paul. Particularly popular was the Sweepstakes threshing machine of C. Aultman and Company of Canton, Ohio, which was exhibited at the state fairs of 1860 and subsequent years. According to Bigflow, Murdock and Company of St. Paul, who sold the machine, it was "the accredited head of the threshing machine family," for "it threshes clean from the heads, separates perfectly from the straw, cleans fit for market without waste, saves all the grain, does its work with the utmost speed, safety and economy. . . . Our 'Patent Cleaning Apparatus' enables the operator to control the direction of the blast, and position of the sieves, and clean either heavy or light grain, without waste, as fast as it can be threshed—the chaff and dirt being separated from the grain *before it strikes the sieve* at all." Some of these claims doubtless

²⁵ *Lake Wilson Pilot*, August 22, 1935; *Farmer and Gardener*, 1:296 (October, 1861); *Pioneer*, September 4, 1868; Oyen, *Watson Community Pioneers*, 28; Peterson Diary, September 10, 1866. Peterson paid seven cents a bushel to have his wheat and rye threshed, six cents for his barley, and five cents for his oats.

were true, as the Sweepstakes won a prize at the state fair of 1866. Among the threshers exhibited at the fair of 1868 were the Invincible Vibrator, made by Roberts and Throp at Three Rivers, Michigan, the Tornado, and the Case thresher. The latter with a Woodbury power unit sold for a total of \$639.00. Also shown was "Taylor's Alarm Register," which would "keep a correct tally of grain measured" when attached to a thresher and so dispense with hand measures.²⁶

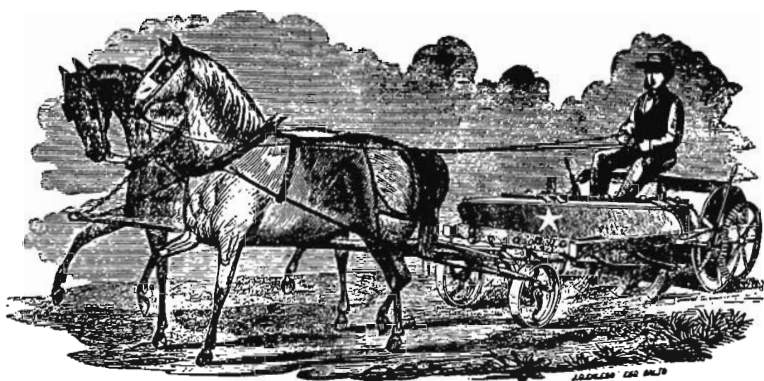
The steam thresher made its appearance in Minnesota not later than 1867. In that year Sylvanus Jenkins raised wheat on more than four hundred of the 1,036 acres in his Dakota County farm. This was the largest farm in one tract in the state, and naturally many machines were to be found on it. Among them the outstanding feature was a steam-powered threshing machine. An appeal to farmers to make general use of steam threshing machines was published by a rural journal in 1869. There were then in the state a number of portable steam engines that were being used to run ordinary threshing machines. Most of these engines were from the works of N. Wood and Company of Madison County, New York; they sold in St. Paul for about twelve hundred dollars. They were eight-horsepower engines which required about half a cord of wood a day to operate. Farmers were urged to get together before the next harvest and purchase steam threshers, for they would thresh nine hundred to one thousand bushels a day while the horses were free to do the plowing.²⁷

Many Minnesota farmers who used improved plows, cut their grain with a Marsh harvester, and had it threshed with a mechanical thresher nevertheless continued to sow their seed by the primitive broadcast method. As late as 1867 one of the state's leading newspapers reported that broadcast sowing prevailed, and that the broad-

²⁶ *Farmer and Gardener*, 1:183, 206, 221 (June, July, 1861); *Pioneer and Democrat*, October 5, 1860; *Pioneer*, July 20, October 12, 1866, December 20, 1867, August 21, 1868; *Farmers' Union*, November, 1868. Among important centers of the implement trade were Mankato, St. Peter, New Ulm, Winnebago, and Blue Earth.

²⁷ Rogin, *Farm Machinery*, 175; *Farmers' Union*, November, 1867; *Minnesota Monthly*, 1:357 (October, 1869). The excitement resulting from the use of a steam thresher at Hesper, Iowa, is described in the *Preston Republican* for September 8, 1869.

casting machine was not much better than broadcasting by hand. A farmer, who signed his communication "De Novo," recommended the drill and described his own experience as follows: "I well knew that this subject of drilling grain is pretty generally tabooed among farmers, but I also know that many who argue the loudest against



A DRILL IN OPERATION

[From an advertisement in the *American Agriculturist*, 26: 305 (August, 1867).]

the drill know the least about it. I have used the drill for four seasons. If the season proves dry the advantage in the yield is most decided . . . yet I expect to see the broadcast system prevail for years to come." Although there were advantages in planting corn with drills, farmers continued to plant it with hoes. Drilling corn was faster than the old way, and a field needed to be marked only one way. One enthusiastic writer expressed the hope that "our readers will this season try this new way of raising corn. If corn will yield as well in drills as in hills, and we are inclined to think it will, this system will certainly bring about a revolution in corn culture."²⁸

Not until the late 1860's and the early 1870's, however, was there a rapid transition from broadcasting to drilling in the Mississippi Valley winter wheat region. For spring wheat, the main crop of Min-

²⁸ *Pioneer*, May 24, 1867; *Farmer and Gardener*, 2:97 (April, 1862); George Gilbertson, "Pioneer Days in Vernon Township," in *Hayfield Herald*, July 19, 1934. The latter writer recalls that corn fields were marked with wooden markers and that three or four kernels of corn were dropped at the points where they crossed. An in-

nesota, drilling was used even less than for winter wheat. Small patches of land, stumpy ground, and land with corn stalks on it were better suited to hand planting than to drilling. In addition many impecunious pioneers were slow to buy drills.²⁹

Various types of drills nevertheless were offered for sale in Minnesota. At the state fair of 1860 Pennock's wheat drill, patented in 1841, was exhibited by D. C. Jones of St. Paul, who, a little more than a year later, was advertising strongly the Buckeye grain drill and advising every farmer with fifty acres of wheat to buy one. By 1866 the McSherry grain and seed drill was well known, and in that year it won the prize for drills at the state fair. Lowth and Howe's seeder, manufactured in Owatonna, won first place among the broadcast machines at the same fair. Another device used by some Minnesota farmers was Cahoon's hand rotation seed sower. This implement was simply a box which held seed and was carried by a planter who broadcast the seed by turning an attached crank instead of by throwing it out by hand. Such a machine was exhibited in the state as early as 1860. In 1868 it was reported that a hundred and fifteen seeders sold at Mankato for nine-two hundred dollars—an average price of eighty dollars. Many of them, however, were undoubtedly hand seeders and broadcasters, which must have sold for smaller sums.³⁰

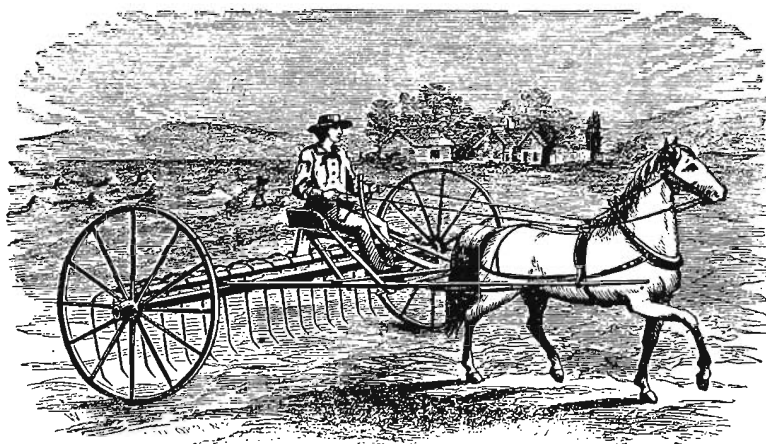
Other implements in use as early as 1860 were harrows, straw cutters, horse hay rakes, wheat field gleaners, potato diggers, iron corn shellers, corn brushers, horse hoes, and fanning mills. By the middle sixties Hunter's patent well was attracting considerable attention, because of its simplicity and low cost. At the state fair of 1866 a man sank a Hunter tube ten feet and pumped water, all within fifteen minutes. The tube cost a dollar and a half a foot and the pump attached to its top was priced at five dollars. On display at the same fair was a horse-drawn hay fork which would unload a ton of

dividual followed the planter with a hoe and covered the seed. Hand planters and drills were later developments.

²⁹ Rogin, *Farm Machinery*, 196.

³⁰ *Pioneer and Democrat*, October 5, 1860, March 28, 1862; *Pioneer*, October 12, 1866, August 21, 1868; *Minnesota Monthly*, 1:31 (January, 1869). Gilbertson, in the *Hayfield Herald*, July 19, 1934, recalls that his father used a McSherry drill with ten holes, and that it was necessary to drive steadily in order to drill in eight to ten acres a day.

hay from a wagon to a stack or mow in ten minutes. Revolving horse hay rakes were exhibited as well, but they were out of date as compared with sulky rakes. Exhibited also were many handsome buggies, wagons, and cutters from the Winona Carriage Works, the largest establishment of its kind in the state.³¹ In spite of mechaniza-



Patent Steel Tooth Self Delivering Horse Hay Rake.

[From an advertisement in the *American Agriculturist*, 19:222 (July, 1860).]

tion, the lowly pitchfork continued to hold the respect of the pioneer. In the summer of 1869, O. E. Slotte walked to New Ulm and "bought himself a pitchfork and walked right back home to his dugout again, and this fork he displayed with a great deal of pride pretty nearly as long as he lived."³²

Some idea of the extent of agricultural mechanization in the 1860's can be obtained by comparing the census figures, incomplete as they undoubtedly are, of 1870 with those of 1860. Since the federal government did not collect statistics for 1865, it is impossible to measure the effects of the Civil War, though that conflict undoubtedly

³¹ *Pioneer and Democrat*, October 5, 1860; *Pioneer*, October 12, 1866. The *Pioneer* of August 21, 1868, reports that 174 revolving and sulky rakes were sold at Mankato in 1868 for a total of \$3,723.00, an average price of \$22.00. Some of them were manufactured in Mankato.

³² Oyen, *Watson Community Pioneers*, 25.

stimulated the use of machinery. During the decade the number of farms in Minnesota rose from 17,999 to 46,500, a gain of about 258 per cent, and their average size decreased from 150.7 to 139.4 acres. Unimproved land in farms increased 93.1 per cent, but improved land increased more than three times as fast, or 317.2 per cent. Thus, there was more improved land in farms for every hundred of the rural population in 1870 than there had been in 1860. There was a more complete use of land, the average improved acreage per farm being 49.9 per cent in 1870. The value of farms, land, and buildings increased by 255.7 per cent, reaching a total of \$97,847,442.00; and the value of livestock grew to \$20,118,841.00, or 452.3 per cent. Along with these gains the value of implements and machinery advanced from \$1,018,183.00 in 1860 to \$6,721,120.00 in 1870, an increase of 560.1 per cent, which was greater than that for any other property classification on the farm. The average value of agricultural implements per farm at the end of the 1860's was slightly over \$144.50, as compared with \$56.00 in 1859. The census, however, suggested reducing currency values of 1870 by twenty per cent in order to arrive at gold values. Even when this suggestion is followed, the average value of machinery per farm in 1870 is twice that of a decade earlier, a fact which emphasizes the growing mechanization of the 1860's. Accompanying this mechanization was a marked change in the type of animal power used on the farm. In 1860 there were ten thousand more oxen than horses in Minnesota, but by 1870 horses outnumbered oxen by fifty thousand.⁸⁸ The newer machinery operated more efficiently with horses than with oxen.

No decade since has witnessed so great a relative growth in the value of machinery as did the 1860's. Today it is not uncommon to see machinery valued at from three to four thousand dollars on a Minnesota farm; nevertheless it is doubtful that the impact of mechanization on agricultural and agrarian life was greater in the 1930's than in the 1860's.

⁸⁸ Edward V. Robinson, *Early Economic Conditions and the Development of Agriculture in Minnesota*, 62, 73, 75, 103, 104 (University of Minnesota, *Studies in the Social Sciences*, no. 3 — Minneapolis, 1915); *United States Census, 1870, Agriculture*, 82, 86, 87.



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