

## HSTC Bulletin

Journal of the History of Canadian Science, Technology and Medicine  
Revue d'histoire des sciences, des techniques et de la médecine au Canada

hstc  
bulletin

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Volume 8, numéro 2 (27), décembre–december 1984

URI : <https://id.erudit.org/iderudit/800192ar>

DOI : <https://doi.org/10.7202/800192ar>

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Éditeur(s)

HSTC Publications

ISSN

0228-0086 (imprimé)

1918-7742 (numérique)

[Découvrir la revue](#)

Citer cette note

Irwin, R. W. (1984). The Sylvester Auto-Thresher: A Canadian First in Grain Harvesting. *HSTC Bulletin*, 8(2), 143–150. <https://doi.org/10.7202/800192ar>

## RESEARCH NOTES/NOTES DE RECHERCHE

### THE SYLVESTER AUTO-THRESHER:

#### A CANADIAN FIRST IN GRAIN HARVESTING\*

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(Received 15 December 1983. Revised/Accepted 15 July 1984)

The Sylvester Manufacturing Company of Lindsay, Ontario, was one of many agricultural machinery manufacturing companies created to serve a local market. This company, with imaginative machinery designs and good quality products, became known across Canada, competing with Massey, Maxwell, Hamilton, McCormick, Deering and Patterson. Richard Sylvester was born in 1845 on a farm near Enniskillen, Ontario. He and his younger brother Robert worked in Sam McLaughlin's carriage and implement business at Enniskillen from 1875 and when McLaughlin moved the greater portion of his business to Oshawa in 1877, Sylvester carried on in the Enniskillen shop until 1882.

Sylvester then decided to open an implement manufacturing business at Lindsay and in 1882 erected an 86-foot by 40-foot building with a 100-foot by 40-foot wing two stories high at the southwest corner of Kent Street and Victoria Avenue. In the autumn of 1882 the Company produced a few single and gang plows but in the following year reapers, mowers and hay rakes were added to the product line, most being sold locally.<sup>1</sup> The business prospered and in 1884 the size of the shop was doubled to form a quadrangle. The town of Lindsay, with some local opposition, gave financial support to the enlargement and assumed a first mortgage on the site, a situation which created financial problems for the company twenty-five years later.

In that year, the Minnesota Chief Cord Binder was first manufactured, with many local sales in 1885. By changing from cast iron to malleable iron and from wood to steel the binder was made 300 pounds lighter; it was renamed the 'Sylvester Brothers Light Twine Binder' and became a popular machine for many years. Sylvester commented:

The supposition that the farmer is a poor man is seen to be a groundless one when it is shown that there were manufactured at the works and sold in 1885-86 -- 200 Minnesota Chief cord binders, 80 Triumph reapers, 125 mowers, 450 hay rakes, 300 gang plows and 2-furrow plows, 400 one-horse

\* Revision of a paper read at The Third Kingston Conference, 1983, published with the assistance of the Social Sciences and Humanities Research Council of Canada.

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cultivators, 100 fanning mills, 50 root cutters, 75 straw cutters and 50 grain-crushers.<sup>2</sup>

The name of the firm was changed in 1886 to Sylvester Brothers Manufacturing Company when Richard's brother, Robert, superintendent of the shops, became a partner. The Sylvester Manufacturing Company was incorporated on 16 July 1902 'to manufacture, buy, sell and deal in agricultural implements, pumps and windmills, boilers, engines and machines.' With Richard Sylvester as president, the company was capitalized with 2,500 shares and 650,000 common shares with \$1.00 par value.<sup>3</sup>

Business continued to prosper. The 200 employees produced farm machinery to be shipped to Manitoba and Eastern Ontario as well as for local sale. Sales in 1902 amounted to \$300,000. The agent for Sylvester in Western Canada was the Tudhope-Anderson Company of Orillia. Despite a large market in Western Canada, the company became financially over-extended due to the common practice of giving extended credit, running from two and three years, in selling implements. Overseas sales tended to be cash sales so, in 1905, the company appointed an agent in the United Kingdom who sold a quantity of King cultivators and hoe drills, with appropriate testimonials.<sup>4</sup>

The new International Harvester Company, formed in 1901, and other major farm implement manufacturers made it very difficult for small companies like Sylvester to compete because of the liberal credit extended to farmers. The large companies provided long-term credit in lieu of lower prices. Sylvester had a serious cash flow problem by 1911: plant and machinery were valued at \$83,550 along with \$56,790 in inventory. However, the company had an immense \$42,920 in accounts receivable and liabilities of \$29,294. For example, sales were \$57,920 in 1910, but only \$26,000 was collected from dealers. Attempts to arrange private financing failed and in May 1911 the company turned to the town of Lindsay for a loan of \$50,000.<sup>5</sup>

The Tudhope and Anderson Company of Orillia purchased the Sylvester agricultural implement assets in August 1911 and manufactured seed drills and cultivators in the plant that Fall. A new Tudhope-Anderson plant in Orillia was completed in early 1912 and the inventory and machinery were removed from the Sylvester plant and moved to Orillia in May 1912.<sup>6</sup> When James Tudhope bought the Sylvester plant, the deal did not include the Sylvester gasoline and auto-thresher departments. From February 1911, Richard Sylvester put his whole attention and energy into this department.<sup>7</sup>

The typical western farmer of 1910 owned a section of land, about one-third to one-half of which would be sown in Red Fife spring wheat, the balance split into summer fallow and course grains to feed his horses. He would have sown about 200 to 300 acres of wheat and as Western spring wheat did not shell readily, the time for harvesting was not as critical as in Eastern Canada. The ripe grain would be cut with a grain binder drawn by a team of three or four horses; many farmers

changed teams during the day and needed about eight horses. The grain binder cut the standing grain, made it into neatly-tied sheaves and deposited it in windrows. A grain binder harvested 10-12 acres of wheat per day.

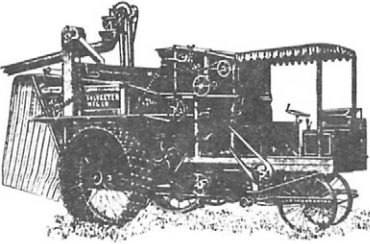
The sheaves of grain in the windrows were built into shocks, which remained in the field until a custom threshing crew came through the district. One man stooked 6-8 acres per day. In threshing from the shock, the sheaves were first pitched onto wagon racks and were drawn by teams of horses to the separator. All large cylinder steam threshing rigs were fed from both sides of the feeder by pulling a load of sheaves up to the threshing machine load on each side of the feeder. The drivers of the teams and two 'spike' pitchers unloaded the wagon; by this method four men pitched bundles into the threshing machine. When the system was working, organization was at its best. Loading and unloading were in cycles: just as the pitchers at the separator reached the bottom of the rack, teams came in from the field with their loads and took their place in rotation.

The size of the threshing crew depended on the number of teams and men needed to keep the threshing machine supplied with sheaves. A North Dakota custom thresher listed his crew in 1905 as an engineer, fireman, waterman with team, separator man, one or two spike pitchers, ten bundle teams and men, four field pitchers and two cooks.<sup>8</sup> A thirty-one-man threshing crew could thresh about 100 acres a day. Most wheat farmers relied on custom threshing in 1910 because the capital investment in such large equipment could not be considered. When smaller threshing mills and tractors became common, several farmers would often form a threshing circle but these circles did not last. Many farmers eventually bought their own threshing mills. It was the introduction of the combine that permanently changed the pattern of grain harvesting in western Canada.

Richard Sylvester was an 'inventive, aggressive type of manufacturer.'<sup>9</sup> He recognized the potential of the gasoline engine and began to manufacture these engines in his plant in 1902, a very early Canadian pioneer in this endeavour. In 1904 Sylvester conceived the idea of an automobile threshing machine which would move over the ground under its own power and thresh the grain as it moved. This too was a pioneering concept in Canada.

The Sylvester Auto-thresher was a unique machine with great promise. It should have found a ready market with grain growers in western Canada, much like the combine of today, but failed on the familiar Canadian rocks of lack of venture capital to market the machine. The first Sylvester automobile thresher was developed during 1904 and 1905. The first model was tested at the Brandon Experimental Farm in September 1906. When Sylvester returned to Lindsay following the machine trials, a reporter wrote 'Sylvester is very enthusiastic; saying that from two to three millions of dollars' worth of these machines can be sold annually until farmers are supplied, and the machine will effect a saving of millions of dollars every year to the

farming community.'<sup>10</sup> The interview reveals that Sylvester saw his auto-thresher machine as a farm implement which would replace the custom work then done by high-labour steam threshing rigs. Sylvester also pointed out the machine would sell for \$3,000, well below an ordinary threshing rig.

<h2 style="text-align: center;">100 Per Cent. Perfect and 100 Per Cent. Profit</h2> <p style="text-align: center; font-size: small;">This is what Sylvester Machines guarantee to the users. The farmer's best friend is the machine that will give the best results for the money invested. The greater the labor saving and the more rapid and most economical is what everybody is interested in.</p>		
<p>Sylvester Auto- Thresher and Plowing Engines are the best in the world</p>		<p>Engines for all purposes from 6 to 40 horse power Stationary Portable and Pumping Engines</p>
<h3>The Sylvester Auto-Thresher and Engines Limited</h3> <p style="text-align: center;">WINNIPEG                      MANITOBA</p> <p style="text-align: center; font-size: x-small;">The Field cut on next page shows the Sylvester Auto-Thresher as working on Mr. Ramsay's farm near Q'Appelle, Sask.</p>		

THE VICTORIA PRINT CO., LTD., VICTORIA, B.C.

Professor N. Wolverton of the Manitoba Experimental Farm, in a letter to the *Rural New Yorker*, reported on the trials of September 1906. He wrote the 'machine moved with regularity and ease among the stooks ... In very heavy grain six men, four on the ground and two on the side platforms were required to feed the machine. It took the grain as fast as an ordinary separator of the same (36 in. x 48 in.) size. It threshed 175 bushels of oats in an hour.' He concludes, 'This new combination will be a great boon to the western farmer.'<sup>11</sup>

Wolverton described the auto-thresher as having a two cylinder, 25-horsepower gasoline engine. The engine and separator are:

... all upon one set of four wheels ... The engine is under the separator ... The driver sits in front, directing the machine which moves at 3 to 4 miles per hour through the field of grain ... Men pitching sheaves from the stooks upon a platform on either side of the separator. Two men stand on this platform and pitch the sheaves into the self-feeder, which is upon the top and in the centre of the machine.

According to Wolverton 'No fault can be found with the principle involved in the new combination. I am inclined to believe that the machine will be used extensively in the Canadian West.' He also remarked that the machine had been 'put together too hurriedly' although there were few stoppages. One

advantage of the machine was no danger from fire: 'Yesterday there was a very high wind blowing and the steam threshing outfits were compelled to stop work,' but 'this machine continued to work without any difficulty.'

By 1907 Sylvester had produced two experimental models of the auto-thresher. The first machine, and his automobile gasoline plowing machine, were listed in a company advertisement in 1907.<sup>12</sup> By July 1908 he had shipped two auto-threshers to western Canada and 'hoped to have five or six by next year.'<sup>13</sup> The second experimental auto-thresher was produced in 1907 and moved over the ground at four to five miles per hour. It had a 40-horsepower, 4-opposed cylinder gasoline engine mounted on a steel frame near the front of the machine. The internal drive rear wheels were attached to the engine by a chain drive through a clutch. Steering was effected by a long chain which wound on a left-and right-drive pulley and shaft. It turned the entire front axle truck. The threshing mill was a modified Waterloo Champion, with a 36-inch cylinder and a 48-inch body. The gasoline engine also operated the threshing mill as well as moving the machine over the ground. Spike feeders stood on a folding foot board beside the operator while the driver sat below the feed apron of the thresher.

A third auto-thresher was produced in 1908, with progressive improvements. The rear drive wheels were made larger, the engine horsepower was increased to 50 and the threshing mill was turned 180 degrees giving the driver more space and improved visibility. The foot boards for feeding the thresher were raised above the rear drive wheels. A straw blower was added, as an option, to distribute the straw on the field in a windrow to be burned later; or perhaps, so the auto-thresher could be used in a conventional way thus making it more versatile.

The auto-thresher was exhibited at fairs at Winnipeg and Brandon in 1908. The *Winnipeg Free Press*, reviewing the exhibits at the Winnipeg Fair of 1908, states 'the Sylvester Manufacturing Company of Lindsay, Ontario, are exhibiting an entirely new departure in the field of threshing outfits.'<sup>14</sup> This auto-thresher threshed 11,000 bushels of grain at the Manitoba Asylum Farm in 1908. 'It is sure the coming machine for Manitoba' testified M.J. Best, and A.J. McNeil added 'This machine is going to revolutionize the threshing and farming in Western Canada.'<sup>15</sup>

The Sylvester Automobile Plow was promoted with the auto-thresher as an added feature of value to the western farmer. Wolverton had pointed out in 1906 that 'the separator can be removed and the machine used as a tractor for plowing or probably to run one of our 12-foot binders.' The threshing mill was removed by removing the eight bolts holding it to the frame. According to Sylvester, 'While in the first makeup the plowing was not considered of so much importance, but the traction plowing has developed so rapidly that some important changes had to be made to take care of this end.'<sup>16</sup> Two of the plowing machines were tested in 1907. The *Winnipeg Free Press* reported in 1908 'When not in use for threshing purposes, the separator can be detached from the engine in a very short

time, and it can be used for plowing. When in use in this manner, the engine will pull an eight gang plow and perform the work in extremely clean and handy shape.'<sup>17</sup>

It is difficult to determine how many auto-threshers Sylvester actually produced. The machine would be tested on a farm near Lindsay, it returned to the plant for minor changes and adjustment, and then was loaded on a railway flat car and sent out West accompanied by three mechanics. When the threshing season was over, the machine was often returned to Lindsay for modification, based on the field experience, although some were stored at Brandon over the winter.

The Sylvester Automobile Thresher was designed to be 'a farmer's machine.'<sup>18</sup> In its final stage of development it had the threshing capacity equal to a regular separator of 600 bushels of flax in 10 hours, or 80 bushels of wheat per hour, the equivalent of 50 to 100 acres a day, but only requiring a crew of three or four men. Hugh Thornton testified 'in my opinion the Sylvester Auto-Thresher comes nearer to meeting the requirements of the western farmer than any machine I saw.'<sup>19</sup> Other testimonials included:

After year of hard work Mr. Sylvester has perfected the best combined plowing and threshing machine on the continent ... All weak points being now overcome; and it is only a matter of building the machines .... At the time Mr. Sylvester undertook this scheme, very few, in fact, no gasoline traction engines were in use, and stationary gasoline engines were not out of the experimental stage ... The demand for this class of machine is practically unlimited, and thousands can be sold in the Northwest.

The auto-thresher was obviously a local success but there was a concern in the Lindsay *Post*: 'The Sylvester firm at present is not able to undertake their manufacture, and none of the banks in Lindsay are disposed to come to their assistance.'<sup>20</sup> Following the sale of the Sylvester implement business in 1911, Richard Sylvester spent all his time on the gasoline engine products and by 1912 had produced an Improved Sylvester Auto-Thresher<sup>21</sup> which could be sold for \$2,800.

The improved auto-thresher harvested and threshed about 50 acres a day and saved 8 teams and 14 men in labour. The separator operator had the option of running the clean grain directly into a wagon behind the machine, or into sacks which were then tied and put on the wagon. The new model had a higher ground speed of six to seven miles per hour and had four sets of forks which automatically lifted the shocks and delivered the sheaves to the platform 'where two men forked them as fast as they were able into the threshing machine.'<sup>22</sup>

Sylvester proposed to build twenty machines in 1912 and had ten in production by May. In his petition to the town of Lindsay for a loan of \$50,000 he revealed 'there are only two Canadian firms making these machines, which are in great demand

in the west.'<sup>23</sup> Sylvester claimed it had cost \$3,000,000 to perfect the auto-thresher, probably an overstatement. Following a field trial at Saskatoon in May 1903, R.H. Potter, manager of International Harvest Company, was impressed with the machine and believed 'all that was needed now was sufficient capital to finance the sale of it, prophesying that there would be extremely heavy demand.'<sup>24</sup> Fred Engen of Saskatoon, who farmed 20,000 acres, bought a second auto-thresher and was pleased with its performance. The headline in the *Lindsay Post* reads 'Auto-Thresher a Great Success.'<sup>25</sup> This was the last we hear of this Canadian first in grain harvesting, except for a brief appearance at the Canadian National Exhibition in 1914.<sup>26</sup>

Richard Sylvester's Automobile Thresher was ahead of its time. His concept of threshing grain in the field with a mobile threshing machine was unique, but the invention failed because of insufficient venture capital and product promotion. It was another twenty-five years before the grain combine became a functional reality in western Canada.

#### NOTES

1. *Lindsay, Canadian Post*, 30 April 1886.
2. *Ibid.*
3. Ontario Archives, RG 55 Bk No. 70, Company Charters, Sylvester Manufacturing Co., Lindsay, Ontario.
4. *Canadian Post*, 1 June 1906.
5. *Lindsay, Watchman-Warder*, 18 May 1911.
6. *Orillia Packet*, 18 April 1912.
7. *Watchman-Warder*, 25 May 1911.
8. R.M. Wik, *Steam Power on the American Farm* (Philadelphia, 1953), 177.
9. *Watchman-Warder*, 23 October 1919.
10. *Lindsay Post*, 12 October 1906.
11. *Rural New Yorker* (Albany, NY), September 1906.
12. Advertisement reproduced in *Antique Gas Engine and Tractor Magazine* 1:2 (1978), 3.
13. *Lindsay Post*, 3 July 1908.
14. *Winnipeg Free Press*, 15 July 1908.
15. Sylvester Manufacturing Co. sales brochure, 1908.
16. *Lindsay Post*, 2 September 1910.



17. *Winnipeg Free Press*, 15 July 1908.
18. *Lindsay Post*, 14 June 1912.
19. *The Nor-West Farmer* (Winnipeg) 28:4 (1909). Sylvester Auto-Thresher and Engines Limited advertisement.
20. *Lindsay Post*, 2 September 1910.
21. *Watchman-Warder*, 20 September 1912.
22. *Lindsay Post*, 20 September 1912.
23. *Ibid.*, 14 June 1912.
24. *Saskatoon Star*, 29 May 1913.
25. *Lindsay Post*, 22 August 1913.
26. *Toronto, The Globe*, 5 September 1914.