

**O**ver the last twelve years, we have gone to great lengths to document the history of agriculture in both the United States and Canada.

One large gap in that history has been the role of steam power. The big steam traction engines broke the prairie sod and allowed both countries to become the world's bread basket. Steam power helped work the coal mines that fueled the factories and steel mills which created unimaginable industrial might. Steam powered the railroads whose ribbons of steel tied the continent together and carried agricultural products to lucrative eastern markets. Wood and coal fired river boats tamed the mighty rivers and carried passengers and raw materials to the newly opened western territories. Steam powered sawmills that turned out huge quantities of lumber. Coal, wood and straw burning traction engines traveled from farm to farm running the thrashing machines that separated the wheat, barley, oats and rye that fed the world. Coal and wood as fuel and steam as a power source, for many different reasons, has fallen out of favor. However, this country would not have obtained its important place in the world without this power source.

# STEAM POWER

## BUILDING NORTH AMERICA'S INDUSTRIAL & AGRICULTURAL MIGHT

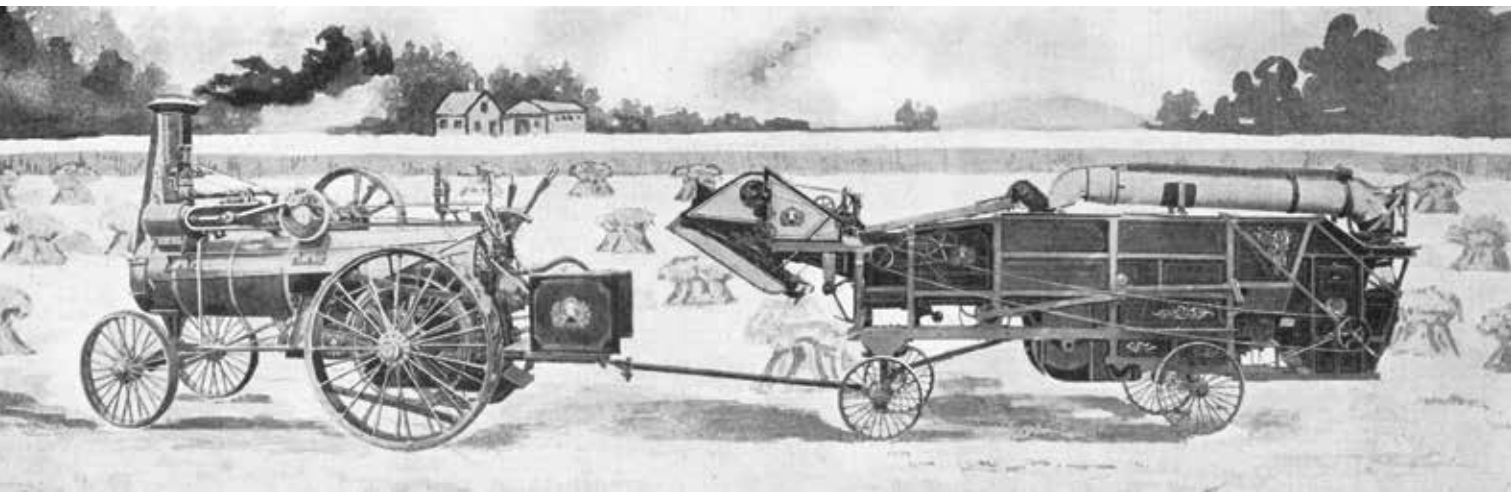


Steam enthusiasts are a hardy and dedicated group. It's a LOT of work. As I attended the Ohio Massey club's annual state show in August, I realized that loading up two Ferguson tractors behind a pick-up truck was a far cry from packing up an eight-ton traction engine on a low-boy trailer. Steam collectors have a lot of work and expenses

that would make many tractor collectors throw in the towel. However, the hobby is attracting young folks at an amazing rate.

I have asked several of the most knowledgeable editors, writers and collectors I know, to contribute to this feature article about the significance of steam power and why it is important to preserve its history. Some

of these good folks you may already know: they are Rick Mannen, editor of *Antique Power Magazine*; Brenda Stant, editor of *Engineers and Engines Magazine*; Bruce Babcock, known throughout Canada and the United States for his work preserving steam history and conducting Steam Schools; Tim Searson, Canadian collector of Sawyer-Massey engines and Chief Boiler Inspector's office for the State of Ohio. We will start out with Rick Mannen's history of the Sawyer-Massey Company. — editor



## SAWYER-MASSEY'S PRAIRIE GIANTS

BY RICK MANNEN

The Massey family of companies had a modest beginning when Daniel Massey opened his first, small factory in 1847 in Newcastle, in what is now Ontario, Canada. By the turn of the 20th Century, Massey-Harris had grown into a full line company with a worldwide scope. One way they did this was by purchasing existing farm implement companies. However, not all of the firms that fell under the Massey name were fully brought into the fold. One of these was the old L. D. Sawyer and Company of Hamilton, Ontario.

### THE MASSEY-HARRIS CONNECTION

In 1836, John Fisher built the first ever threshing machine in Canada in his small shop in Hamilton, a town on the verge of becoming an industrial powerhouse. Located at the head of Lake Ontario it would soon become a railway town and the centre of Canada's steel making industry. Fisher brought another chap into the business with him—Luther D. Sawyer. When Fisher died in 1856, the company became L. D. Sawyer

and Co. Along with threshers, they would build reapers, mowers and other goods. In the 1880s, they started building steam power for the farm.

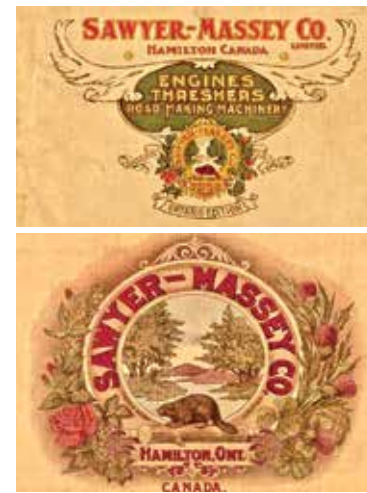
Sawyer was also producing road building machinery and all this expansion would have required a large influx of cash. Sawyer found benefactors in the Massey family. Hart Massey, son of Daniel, along with two of his sons, Walter and Chester purchased a forty percent share in the L. D. Sawyer works in 1889, and for this investment, the firm was renamed the Sawyer and Massey Co. Limited. As it turned out, there would be no corporate connection between the firms other than the Massey money and name. For many years though, Sawyer made threshing machines for Massey-Harris that were sold under the company banner. In 1910, the Massey family severed their financial connections and the company name was changed to Sawyer-Massey.

Sawyer's early threshers were designed for horse operation and they made treadmill power sources for this purpose as well. But they soon saw the merit of steam power. The first

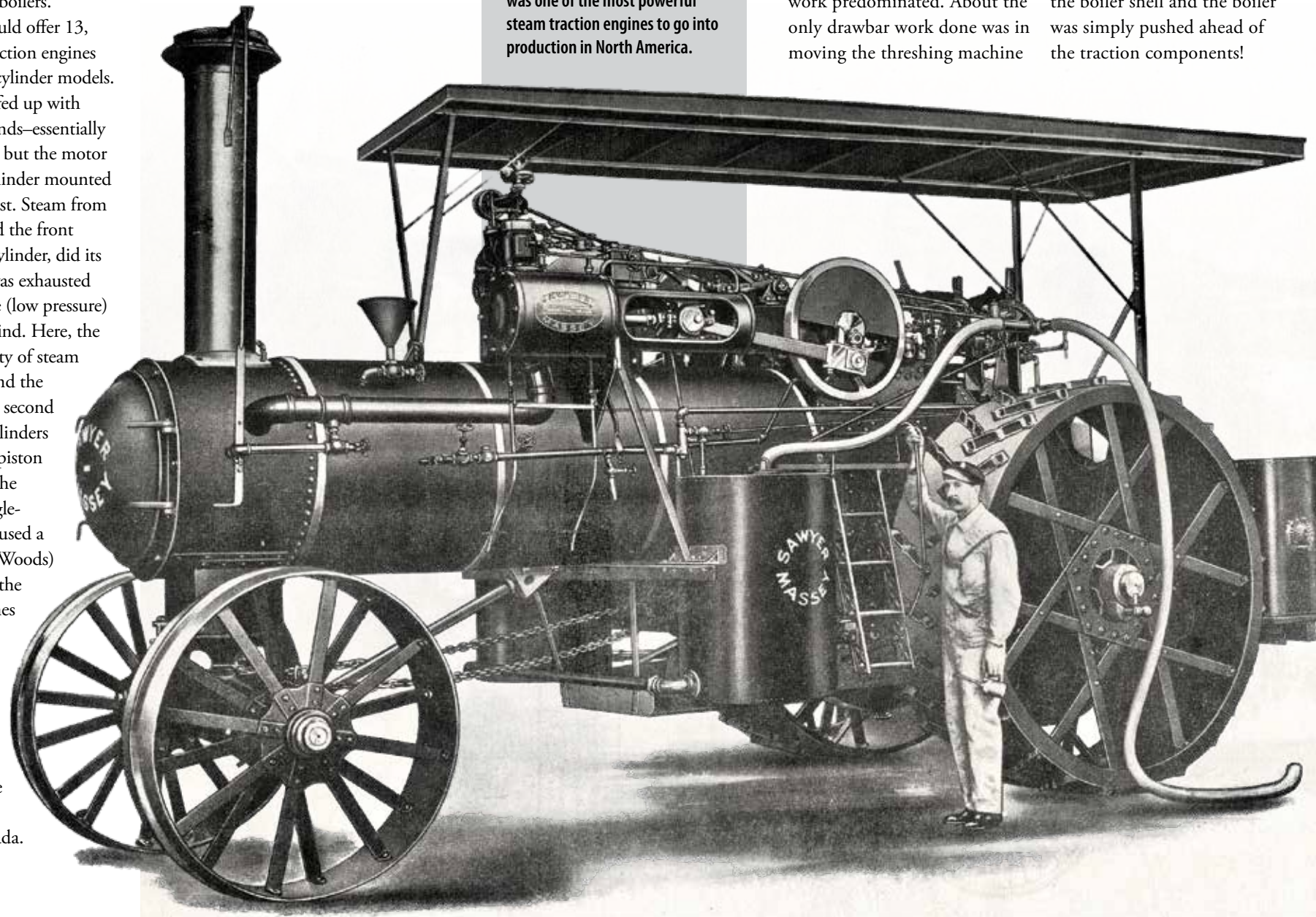
engines were portable types of the return flue design. By the late 1880s, they had adapted this to a traction engine and in the mid-1890s, they modernized the engine design to locomotive style boilers.

Soon they would offer 13, 17 and 20 hp traction engines that were single cylinder models. The line was beefed up with tandem compounds—essentially the same engines but the motor used a second cylinder mounted in front of the first. Steam from the boiler entered the front (high pressure) cylinder, did its work and then was exhausted to the larger bore (low pressure) cylinder just behind. Here, the expansive property of steam came into play and the steam was used a second time. The two cylinders used a common piston rod so they had the same stroke. Single-cylinder engines used a Sawyer-Massey (Woods) valve gear, while the compound engines used Woolf valve gear. Sawyer also made a line of straw burning engines for the newly developing market of the Prairie Provinces in Western Canada.

Traction engines were popular because they could travel to each new job site on their own power. Here an engine, towing a thrashing machine, arrives at a farm, reading to go to work.



Sawyer-Massey was proud of their big steam engines and their advertising boldly illustrated that! This 1913 ad shows a fully fitted out "Class C" single-cylinder plowing engine. The 115 hp engine, was one of the most powerful steam traction engines to go into production in North America.



### THE SAWYER-MASSEY BOOM YEARS

It was the Prairie market that spurred Sawyer-Massey into its glory years of steam production. They had major branch houses in Winnipeg and Regina. Up to the very early 1900s, Sawyer-Massey built portable engines and side-mount traction engines. The side mounts had their rear drive axles mounted on stub shafts that were attached to the side of the boiler shell. This was fine for the most part, as steam power had been developed for the Ontario threshing and sawmill operators where belt work predominated. About the only drawbar work done was in moving the threshing machine

from one location to another. But the Provinces of Manitoba, Saskatchewan and Alberta were being settled very quickly and homesteaders had to break the prairie sod. Some side-mount engines were adapted for plowing by using heavier wheels and axles. But plowing was hard on a side mount engine as the pull of the draw bar placed strain directly on the boiler shell. Sawyer-Massey designed a fleet of rear-mount engines specifically for Prairie plowing. In these, the drive axle was placed behind the boiler and a heavy hitch system was built onto the rear. Thus, little draw bar strain was placed on the boiler shell and the boiler was simply pushed ahead of the traction components!

### IMPROVED ENGINE DESIGN

Sawyer-Massey modernized their entire engine line. A range of single-cylinder and compound type side-mounts were built, called "Class B" engines. A line of rear mounts was adapted from each of these models and referred to as their "Class C" engines, all weighing in excess of 15 tons! Both types were built in the following sizes:

- **B or C-3 CLASS:** 22-68 hp (boiler-nominal brake hp) with single cylinder—9 x 11 inch bore and stroke.
- **B or C CLASS:** five-25-76 hp with single cylinder – 9 x 11—slightly larger boiler and firebox than 22-68 hp models.
- **B or C-7 CLASS:** 27-82 hp with tandem compound cylinders – 7 and 11 x 10 (7" bore high pressure cylinder and 11" bore low pressure cylinder x 10" stroke.)—same boiler dimensions as 22-68 hp models.
- **B or C-9 CLASS:** 30-96 hp with tandem compound cylinders – 7 and 12 x 11—same boiler dimensions as 25-76 hp models.
- **B or C-11 CLASS:** 32-106 hp with tandem compound cylinders – 7 and 12 x 11—slightly larger boiler and firebox than 25-76 hp models.

## THE C-CLASS 115

The “C Class” were all heavy engines with a capacity to pull 8-12 bottom plows. If this wasn't enough, Sawyer also introduced a real monster about 1910. This was built as a rear mount only and called the C-13. It was rated at 35-115 horse power and sported a single cylinder with 12 inch bore and 14 inch stroke! Most all of the old steam traction companies, built examples of these monster plowing engines and were rightly proud of them. Sawyer's compared favourably with those of the other companies including the famous 110 hp Case plowing engine.

The C Class weighed in at around 20 tons! She carried nearly 14 of those tons on her drive wheels, so traction was not a problem! At 24 feet long and 11' 9" wide it was priced at \$4620 in 1913. That big motor was governed for a rated speed of 230 rpms. The clutch/drive pulley was 43" diameter with a 13" face. Front wheels were 54 x 16 and the rear wheels were 84 x 30. Working speed was just under two mph and she could

easily pull 12 or more plow bottoms! Sawyer entered this outfit in the famed Winnipeg Motor Competitions in 1913. This engine, on the maximum brake horsepower trials, put out 153.8 hp. In the regular tests, it easily maintained its rated hp under load.

As magnificent as the 115s were, only a small number were made. The era of heavy Prairie plowing was short. Settlement in Western Canada happened at a rapid pace in the early years of the 20th century and breaker plowing was all over soon after these huge engines appeared. Sawyer sold significant numbers of the “smaller” rear mounts on the Prairies and some, like the 22-68, proved to be popular in Ontario, where they served many solid years of service with Provincial and local roads departments running rock crushers and graders.

## THE END OF PRAIRE SOD BREAKING

But times were changing. Canada declared war on Germany and her allies in August of 1914 and Sawyer-Massey was immediately called on to

devote much of its factory to armaments production. The steam era was also drawing to an end. Sawyer was also a Canadian pioneer in building gasoline tractors and developed a full line of these (but that is another story!). Sawyer continued making steam engines into the 1920s but shifted away from agricultural equipment over to road building machinery. They would continue into operation through the 1950s. Sadly, none of the big 115s are known to exist other than a boiler from one. Luckily, a few of the other rear mount engines are still with us, many still in working condition for people to enjoy today. Sawyer-Massey was a great old Canadian company, another in the Massey family of companies that helped shape the modern age of agriculture.

Information from—“Ontario's Threshing Machine Industry” by H. S. Turner and R. W. Irwin, University of Guelph, 1974. “Harvest Triumphant” by Merrill Denison, McClelland and Stewart, 1948 and from early farm periodicals—Canadian Thresherman,

Canadian Farm Implements, and from original documents. Thanks also to Robert Curran, John Davidson and Tim Shearson for their help. R.M.

In addition to being editor of *Antique Power Magazine* Rick writes on steam topics for *Engineers and Engines* magazine. Rick owns **Goold**, Shapley, Muir, and Eagle gas tractors and has steam traction/ploughing engines. Rick lives near Hamilton, Ontario.



## RICK MANNEN INTERVIEW

*Before you became the editor of Antique Power magazine, you were a frequent contributor who wrote popular articles that often dealt with the very early history of power farming and testing*

Another 1913 Winnipeg trials shot, this time the 35-115 hauling 12 plows.

*of tractors during plowing and field trials. Tell us a little about your background and how you developed this special interest in tractors and their history?*

When I was a child, my father was a member of a threshing circle in our neighborhood. Our threshermen still used an Eagle Mfg. Co. 22-45hp Model H tractor. It was an antique even then, but still did a day's work. I wanted to get an Eagle someday, which I did 25 or more years later. One thing led to another, and I became interested in antique tractors in general. I began gathering photos and history on Canadian-made tractors and traction engines. That led to a series in *Antique Power* magazine called *The Canada Connection*, and along came the position as editor. The research also brought a couple of books—*The Winnipeg Agricultural Motor Competitions 1908–1913*, and *The True Metal on the John Abell and American-Abell traction engines and threshers*. I am hoping to finish a new book in 2022 on the entire Canadian tractor, traction engine, and stationary gasoline engine industry and companies.

*You also have a knowledge of steam power and steam traction engines. How did you first become interested in steam and how did you learn about it?*

In an earlier life, I was involved with steam railroading. Agricultural engines became an interest through the history of the early companies. In the late 1990s, I began helping some friends with steam traction engine restoration projects. This led to me obtaining a traction engine operator's license from the Province of Ontario.

*Maintaining a steam traction engine, speciality licensing is required, can be costly. Can you walk readers through that process? You mentioned the costs associated with bringing an engine into Ontario from the US. Why would this be considerably more expensive?*

I only know about Ontario. One can own and operate a steam traction—or portable—engine on your own property without any oversight. In the public, the boiler needs to be certified. Ontario has a private organization called the Technical Standards & Safety Authority (TSSA) that oversees pressure vessels in industry plus heritage boilers.

The first certification requires Non-Destructive Testing (NDT) and entails a complete ultrasonic testing of the boiler on a grid pattern to ascertain the thickness of the boiler plate and the integrity of rivets and stay bolts. This testing also includes magnetic particle examination of riveted seams. These tests must be performed by a certified professional company and may cost several thousand dollars. This procedure is good for ten years then must be repeated.

Further testing must be done annually by a TSSA inspector. One year includes a complete visual examination of the boiler internally and externally, plus proof of certification of appliances such as pressure gauges and relief valves. The alternate year has a hydrostatic test where the boiler is filled with water, then pumped to working pressure or more at the request of the inspector. Each visit by the inspector can run into the hundreds of dollars.

Referring to bringing a traction engine into Ontario—if it is a “new” model for Ontario, such as a make for which TSSA has no design records, the owner is required to have a mechanical engineer make an official design blueprint with calculations from the NDT examinations to determine the boiler's safe operating pressure. These results then must pass through TSSA for approval and then an inspection by a TSSA inspector. All these steps can run into several thousands of dollars.

Owners can do some mechanical repairs such as replacing boiler tubes, but any welding repairs must be done by a certified shop. Owners can purchase new welded boilers and there are shops in Ontario making boilers for historic engines. New boilers may cost in the \$50,000+ range.

*About when did the era of steam power end in Canada? Why and when did the transition from steam to gas traction engines occur?*

Most of the agricultural engines made in Canada were made in Ontario. Many companies made heavy engines for Prairie ploughing but this ended once the homesteading boom was over in western Canada around the beginning of World War I. Government encouraged the builders to make lightweight gasoline tractors to boost wartime food production. The Ontario steam builders made some traction engines after the war, especially for loyal threshermen customers and for sawmill work. Some traction engines were made into the late 1920s. One company, the Robert Bell Engine & Thresher

Co. of Seaforth, Ontario, offered traction engines through the 1930s and built some portable steam engines for sawmill duties into the 1940s.

*Why do you think that it is important to preserve the history of steam power and the equipment that went with it?*

Steam power on the farm replaced horses and is worth remembering for its role in helping to modernize and mechanize farming practices. Also, steam power helped break the Prairie sod and made western Canada into the world's breadbasket in a few short years. Steam was the transition to the internal combustion tractor and many of the steam builders went on to build tractors. Additionally, there is something about the sound of a steam engine at work that is soothing to the soul. It would be a shame if future generations could not have this experience.

## PARTING THOUGHTS

Being actively involved with steam has been interesting. I was more interested in doing the repair work than in operation. Some of the work, such as replacing tubes and stay bolts is hard and dirty work but can be rather fulfilling when the job is done. You see there are no leaks and the inspector is smiling! Also, like the tractor collecting hobby, the big bonus of steam was meeting people and making friends all over North America. I am no longer active in steam projects other than gathering and trying to understand the history of the engines and companies.

# STEAM BOILER OPERATOR LICENSING IN OHIO

BY GARY HEFFNER

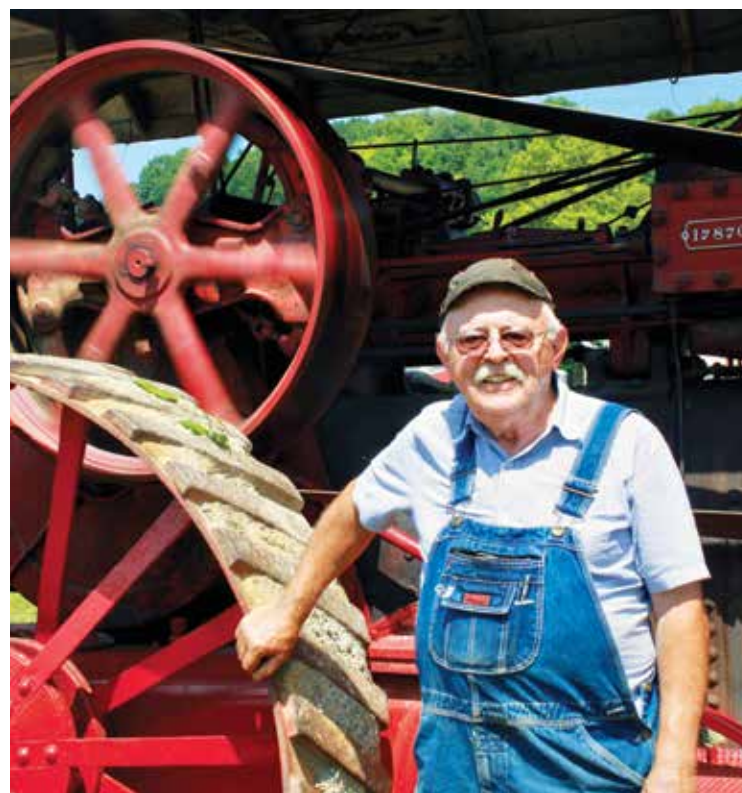
On July 30, 2001, at the Medina, Ohio, county fair, there was a terrible accident, when a boiler exploded and took the lives of five people and injured over fifty. The engine was blown ten feet into the air with parts landing over five-hundred feet away. Two near-by police officers were seriously injured and burned but survived because they were wearing bullet-proof vests. Millions of dollars in lawsuits went on for years and years.

Since that time, the State of Ohio has maintained a very strict program to oversee the public display of steam engines. In Ohio, you must obtain a license to publicly display and operate a steam engine. To accomplish this you first have to attend a Steam School. The best known group in Ohio to conduct these schools is the Hocking Valley Steam Association, which does not charge tuition for their program. At the culmination of classes, the state sends an examiner who administers a comprehensive written test. If you pass the test, you have completed step one.

Next, you are apprenticed to a certified steam boiler operator with whom you must complete one-hundred hours of hands-on training. After you have successfully completed that training and the instructor feels the student is competent, they will sign-off on your license application. After all of the paper work is turned in, the licensing board contacts your instructor to verify your hours of training. If you are the minimum age of sixteen, your application is processed and you are issued a operators permit.

There are two types of licenses, historical boiler and modern boiler. Historical is the old original boiler type that is riveted together and needs to be state inspected every three years. If it passes, a new permit is issued for a fee of \$150. The modern boiler is a welded unit and requires an annual state inspection. If it passes, a new permit is \$50. Liability insurance is up to the owner of the engine as there is no state requirement. If you operate a steam engine on your own property, none of the above requirements apply. However, a very large liability insurance policy would certainly be a good idea. This very comprehensive system of state mandated training and inspection, to the best of my knowledge, is unique to the state of Ohio. John Sharier is the Chief Boiler Inspector for the State of Ohio.

## STEAM SCHOOL



### INTERVIEW WITH BRUCE BABCOCK

In order to pass the Ohio rigorous testing, several organizations have set up Steam Schools to help students obtain the knowledge base to receive their license. I am a long time member of the Fairfield County Antique Tractor Club and I knew one of their members, Bruce Babcock, was considered a local steam expert. However, when I started work on this article, I began talking to other collectors and editors who were considered very knowledgeable. Every time I mentioned Bruce's name, they all knew him. He graciously agreed to contribute to this feature, so I put together some questions.

*Why do you feel that preserving the history of steam power is important?*

This is a huge question. One of my thoughts is that it is important because with steam powered machinery, the majority of the components are clearly visible. It only takes a little information and/or imagination to understand why and how they work. When a steam traction engine or a steam locomotive is compared to a modern tractor or diesel locomotive, the difference in the visual impact is stunning. In both instances, the viewer can see wheels turning but only with the antique machines is there any indication of the complex mechanisms that are involved.

For me, these complex mechanisms ignite my curiosity, and motivate me to struggle to understand why and how things work. Once I gain some insight into the operation of primitive mechanisms, I am better prepared to understand the more complex mechanisms that have evolved from them.

I believe that my interest in steam can be traced back to 1946, when I was five-years-old. A steam traction engine, grain separator and water wagon came to our farm to thrash for the last time. After my father retired in 1976, he purchased two traction engines, and a portable engine, along with many other pieces of antique steam related items. Twenty-five years ago, I inherited his collection and moved it from Michigan to Ohio.

*Share a little information about the steam school that you helped to organize.*

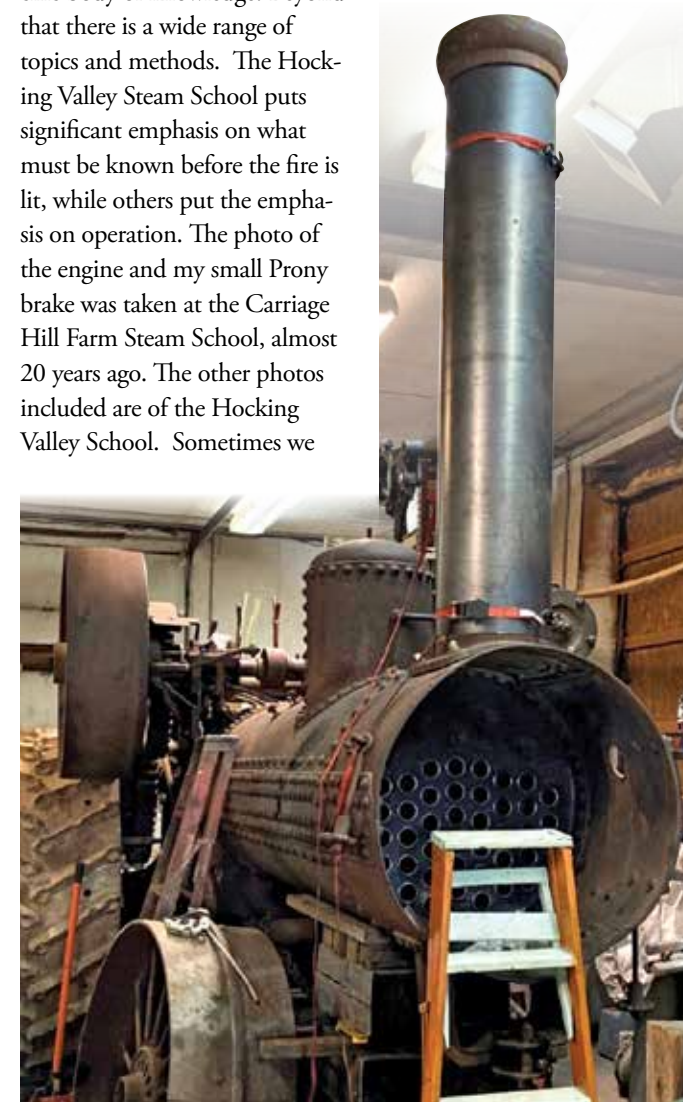
To be accredited by Ohio, all steam schools must cover a specific body of knowledge. Beyond that there is a wide range of topics and methods. The Hocking Valley Steam School puts significant emphasis on what must be known before the fire is lit, while others put the emphasis on operation. The photo of the engine and my small Prony brake was taken at the Carriage Hill Farm Steam School, almost 20 years ago. The other photos included are of the Hocking Valley School. Sometimes we

have workshops in the evening, such as shown of the young gentleman learning how to use a dead-weight gauge tester to calibrate his steam gauge.

The faculty and staff of the Hocking Valley Steam School consists of Bob Baughman, Rob Baughman, Randy Baughman, and myself. Our first school was in Nelsonville, Ohio, in 2015. We have held the school in Youngstown, Plain City, Franklin, and three more times in Nelsonville. The tuition to our school is free. The school is scheduled for two days on a weekend. A state inspector attends on Sunday to give the exam. Our school is accredited by Ohio's Historical Board.



**(LEFT)** Bruce and a group of his friends are working to restore a Sawyer-Massey engine that belongs to Jack Seitz from Amanda, Ohio. They have been hard at work on this project for a long time and were greatly delayed by the health concerns of last year. When they finally finish, they will have several photos to share with Legacy readers.



# LIFE TIME STEAM ENTHUSIAST, MAGAZINE EDITOR AND PUBLISHER BRENDA STANT



Brenda and her daughter, Susan, stand in front of the Frick Eclipse engine that owned by the family. Susan grew up with steam engines and works as a high school Ag mechanics teacher and in her spare time, is a fireman—fireperson?—on the New Hope and Ivyland Railroad.

## INTERVIEW WITH BRENDA STANT

*Why do you think that it is important to preserve the history and legacy of steam powered engines and equipment?*

We must preserve the history and legacy of steam powered engines as well as all other antique farm equipment so people can know how their forefathers lived and worked. Our country depended more on steam engines and agricultural equipment than anything

else, but history books focus more on politics and wars and not on the history of the everyday life of Americans. Most school kids learn who invented the reaper and steam boat but how many kids have any idea what a reaper does? Or how a steam engine powers the boat? The few museums that have steam powered engines show them as cold, inanimate objects, when they are really living and breathing things. A static display in a museum cannot show you what it was like to run one of these engines. It cannot

convey the smell, sounds and feel of the steam engine.

When the early steam shows and threshing bees were started, it was so the “old-time” threshermen could reminisce about the “good old days”. It was to show the younger generation how they farmed in “their day”. People would bring their kids to watch as they were certain it was their only chance to witness a real wheat threshing. Little did they know that these shows and threshing bees would catch on across

the country. Today, those “old-timers” are gone and those same kids bring their grandchildren to see these historical re-enactments. It is the continuity of the generations. If we don’t keep these machines operating and demonstrating them to the public, who will do it? They will fall into the abyss of time and fade away until no one is left that even knows what they are.

*You grew up with a father who was a fan of steam traction engines. You mentioned that you had no brothers, so it*

*appears that your dad had to instill his passion for steam in his three daughters. How was he able to so successfully accomplish not only making you an enthusiasts and collector but also the editor and publisher of a well-respected magazine, “Engineers and Engines”?*

Growing up on a farm with no brothers, you soon learned there was no such thing as “girls work” and “boys work” at our place. We worked just like our mother did when she was growing up on the farm. I learned to drive tractors before I could reach the pedals. My father, Jim Layton, bought his first antique steam engine the year I was born. It was a Paxton skid engine from the 1800’s. The next year he bought back a Frick traction engine that his father had sold years before and he swore he would get it back one day. Soon, a couple more traction engines came to live with us. They all needed restoration. We grew up scraping grease, and painting. My mother used to say that when the steam engines came, there were no more trips to the stock car races or country music shows on weekends. Our life suddenly became centered around the steam engines.

I always worked with dad in the shop on the steam engines and tractors, handing him tools and “fetching” while he worked on something. It didn’t take long before I knew what tools he needed and was handing them to him before he even asked. Rebuilding a motor, putting flues in a steam engine, re-babbiting a bearing or whatever else was needed was no problem. I always

enjoyed taking something that had long been forgotten and giving it a new life. It takes a special kind of person to get excited over the smell of coal smoke and steam cylinder oil. I know Dad would be proud that our family is carrying on the traditions that he started with not only the steam engines but our home show which just held its 61st annual gathering on our farm.

My Dad started subscribing to Engineers & Engines in the 1950s so I grew up with the magazine. After he passed away in 1994, I kept the subscription going. I called when my magazine didn’t arrive on schedule and found out the previous owner, Don Knowles, had decided to retire and there was no one to take it over. I just couldn’t imagine not getting it any more so Don and I talked and I ended up buying the magazine from him in 2004. I’ve been at it ever since and have loved every minute of it, especially all of the wonderful people I have met along the way.

*Taking steam traction engines to a show must be a major undertaking. It’s not like putting a Ferguson TO-30 on a trailer and hauling it behind a small truck. What are some of the challenges and liabilities of transporting the huge old monsters?*

The main thing is to have a trucker that you trust with your engine. There are very few people we would allow to haul one of our traction engines. You want someone who knows how to load it and chain it down securely. If something happens on the

road, you don’t want that engine to start sliding or chains breaking. Some people have their own semi-trucks and trailers and that saves on hauling expenses, but unless you do other hauling, it is usually too expensive to have your own truck. Some of the smaller traction engines can be hauled on a gooseneck trailer behind a one or two-ton truck. You also want to make sure the hauler has cargo insurance. If something should happen on the road, it can quickly become very expensive.

*How did you manage to interest your daughter in this hobby?*

Susan took her first steam engine ride when she was two months old. She likes to say that she was hooked from that moment on. She grew up sitting on the seat while her dad ran our engines and watched everything he did. We took her to shows and some of the tourist steam railroads when she was small. She also went to the shop with us while my husband Mickey and I worked on steam engines and tractors. When she was little, she had her own little toolbox with some old wrenches and hammer that she could use to “work” on stuff. We had an old engine block that she would put nuts and bolts on and then take them off and put others on. She stood on a stool at the workbench to reach the vise where she would bend things into shapes. She’s also mechanically inclined so it wasn’t too difficult to get her interested. She says it is in her blood. She doesn’t just operate them, but works on them, too.

I asked Brenda’s daughter Susan this same question. Susan said, “I didn’t know any better. My parents smeared some soot on and it stuck. It has always just been a part of our lives. I don’t understand why some people don’t like them. I’ve been running engines solo since I was thirteen and helping out way before that. My dad put me on the engine when I was two months old. Once these engines are gone, nobody will ever know how they worked or what they did. They are a simple machine that just looks complicated.”

In addition to being a high school ag mechanics teacher, Susan is also a fireman on the New Hope and Ivyland Railroad, which is a tourist railroad in New Hope, Pennsylvania. She has a blog, that readers might find interesting, that tells about some of her adventures: [www.behindtheshovel.blogspot.com](http://www.behindtheshovel.blogspot.com)

*You and your daughter are involved in “Steam Schools” in the Maryland area. Describe what goes on at these events.*

I haven’t really been much involved in the actual teaching at steam schools. My daughter has helped at some with the “hands-on” part. There are steam schools all over the country usually put on by clubs that have shows. The idea of schools came about as the older generation were dying off and the younger ones needed to learn about steam to keep their agricultural heritage alive. The first part of a steam school is usually the classroom part where students will learn the basics

of a steam engine, like how it works, how the steam moves the valve and piston which turns the flywheel and how that power is used. Safety is a big part of the schools. The whole idea is to operate these engines in a safe manner so no one gets hurt. Safety cannot be stressed enough. Steam is a very powerful force and must be respected but not feared. The schools are designed to teach students what to do in different situations to keep everyone safe, as well as how to operate the engines safely.

The second part of most schools have a hands-on time where the students can perform routine maintenance on the engines like cleaning and oiling. The different parts of the engines are pointed out, along with what each part does. The engines are fired and the students can operate them around the grounds.

Steam schools are just the beginning. Most students spend a lot of time working with other engineers. A lot of students have spent years helping out but want to learn more. Steam people are notorious for helping each other out and if someone has a problem, help is always nearby. I've heard people say that you can own an engine but as soon as you strike that match, that engine owns you. You must constantly tend to it and make sure it has everything it needs while it is fired up. There is no key to turn it on and off like a gas tractor.

*Can you give readers an approximate idea of the costs of maintaining a large steam traction engine over the course of one year?*

Yearly costs can vary widely. There is always maintenance, oil, grease, coal or wood. Some of the shows supply coal or wood while you are at their show, but other times you have to supply your own. Coal can run well over \$200 a ton if you can even find it in your area. Once your engine has been restored and if it is in good operating condition, there really isn't usually a lot of expensive yearly maintenance as long as you take care of it—clean it and dry the boiler out good after firing, keep the moving parts oiled and store the engine inside. Most states require inspections every one or two years. Inspection fees vary from state to state and if you use a state inspector or a private inspector. Maryland state inspection is currently \$15 per year, but I've heard other states are much more expensive.

If you are able to work on the engines yourself, it will be much cheaper than if you have to hire someone to work on them. Or sometimes you can "work swap" where you help someone else and they help you do the things you can't do. If a cast iron piece breaks, finding a foundry to pour a replacement part can be rather expensive. Flues usually last a good many years, but replacing them can also add considerably to the cost of maintenance. If you need boiler work, welding on any pressure vessel has to be done by a certified shop. This can run into a lot of money. If you get to the point of needing a completely rebuilt or new boiler, it can run up towards \$50,000 for a medium sized engine, more for large engines.



This is Tim's grandfathers 20 hp Sawyer-Massey engine currently owned by his cousins Mike and Jeff Searson for Sarnia, Ontario. The small one-quarter scale model in front, is owned by Jeff Searson.

## SAWYER-MASSEY COLLECTOR TIM SEARSON

I was introduced to Tim by his good friend, Rick Mannen. Tim and his family have a wealth of knowledge about steam power and especially the Sawyer-Massey line. I posed several questions to Tim and here are his responses: You have a family history with the Sawyer-Massey brand. How did that start?

"The family history started back when my great-grandfather and grandfather bought a complete thrashing outfit with a Sawyer-Massey engine in 1926."

*I realize that Sawyer-Massey is a Canadian company that was located in Hamilton, Ontario but other than*



Tim's 1921, 20 hp Sawyer-Massey just after it finished competing a plowing match.

*that, what is so special about that particular brand?*

"My grandfather bought this engine and we have learned over the years that it was the Cadillac of the steam engines. Back in those days they were very heavily built and exceedingly reliable. There were other engine builders but they did not put as much ironwork into them. They weren't nearly the heavy-duty machine as the Sawyer's!"

*Even after the steam era was mostly over, didn't the company build some steam powered equipment?*

"The Sawyer-Massey company built the last steam traction engine in 1926, and that was a 20-horsepower Ontario, side-mount engine! The Sawyer-Massey company built all kinds of agricultural equipment, starting with thrashing machines and clover hullers. Then they started building steam engines, portables engines, sawmill engines, sawmills and then finally they built road building equipment. They also produced truck bodies, concrete forms and then of course military guns and equipment for the Great War and World War II. The company was dissolved in 1946 when it was bought out by the Hamilton Bridge company!"

*Could you list the engines owned by you and your family?*

The Searson family is well known across the country for their knowledge of the Sawyer-Massey. I myself have a 1915 and a 1921 20-hp engine. The 1921 engine was my grandfather's. I also have a

## RESTORING A STEAM ENGINE

Many of these old steam traction engines are well over one-hundred fifty years old. When you are restoring an old Sawyer-Massey, you can't just stop by your local Massey Ferguson dealer and pick up a new part. You might be lucky enough to find a parts engine but that is highly unlikely. That means you are going to have to reproduce the broken or missing piece.

First you have to know what the missing part looks like, so an old manual, parts book or advertisement has to be located. This Sawyer-Massey is owned by Jack Seitz from Amanda, Ohio. Jack has a large collection of stationary—large and small—gas engines, so he is no stranger to searching for missing parts. Among many items too numerous to mention, Jack's Massey was missing a clutch lever and bracket.

As you can see from the photos, making a new bracket was a long and difficult process. (1) First a pattern was made out of plywood, checked and rechecked to make sure all the dimensions were correct. (2) Then the new pieces are cut out of steel plate, finished and bolted together. (3) And of course, a replacement lever had to be located and made to fit the new bracket.

(4) Replacing the steam tubes was a lot more complicated and time consuming. (5) Fabricating the supports for the rear platform required a lot of careful measurement and building the supports.

(6) Building the rear platform of Jack Seitz's engine.

## SPECIFICATIONS ON JACK SEITZ'S ENGINE

Sawyer-Massey 27-80 Tandem Compound Engine

Class C, Remount plowing engine

They were built in the following sizes:

- 22-68 Single Cylinder
- 25-76 Single Cylinder
- 27-82 Compound Cylinder
- 30-96 Compound Cylinder
- 32-106 Compound Cylinder (later called 32-100)

The above sizes were also offered in a sidemount engine as Class B

The 35-115 was built only as a rear-mount engine and was a Class C



32 x 50 Great West (wooden) thrashing machine built in 1914. There is also a clover huller (wooden) built in the late 1880's that was delivered to Milton, Ontario. It still has its original paint. My father had a Sawyer-Massey sawmill that he made his living with for many years. As you can see, the Searson family has taken great pride in owning Sawyer-Massey equipment and have done so over the last five generations.

## GETTING YOUNG PEOPLE INVOLVED

One of the things that I found surprising during my conversations with Bruce Babcock and Brenda Stant was the interest shown in steam by younger folks. It takes several people to make up the crew running a steam engine. As I walked around the different exhibits, I



noticed that many of the crew members were under thirty and often included young kids. They weren't staring at their phones, they were working hard, sweating and getting really dirty. You have to be on your toes and pay close attention to what's going on. It can be dangerous work and inattention could lead to a disaster.

The steam schools, held around the state also seem to be a way of attracting young

enthusiasts. Young people can't afford to purchase a large engine plus a semi-truck and trailer to haul it around. However, they can become an important member of a crew and a vital part of the whole operation. An Ohio state inspector, told me about two young guys who had passed their test, completed their one-hundred hours of apprenticeship but couldn't get their license because they were only twelve years old. *LQ*

