

# PART OF THE PAST

## Harrisburg Area Museum

Issue 2019-6

### HAYING-2

Loose haying continued with scythe and hand tools for many generations. One reason it took so many farmers to feed and provide fiber for the world was that much of their time was spent harvesting fuel for their power source. (Horses) I can remember a time when much of our energy was expended growing oats and barley for winter feed and annual pasture for the summer months. Reducing that labor and investment was necessary to enable agriculture to feed a rapidly growing public with rapidly shrinking farm populations.

Much of the historical record I will report here is from a couple of web sites: "livinghistoryfarm.org" and "farmcollector.com" I recommend that you visit these as they report in much more detail than I will.

The hay rake and the horse drawn mower were developed pretty much at the same time in the 1800's. Early dump rakes were basically powered hand rakes, designed to use the power of a team of horses instead of a man. At first they were dumped by hand power with a lever. Later they used a ratchet affair in a wheel to power the dump. (Picture of dump rake in previous issue.) Then came a

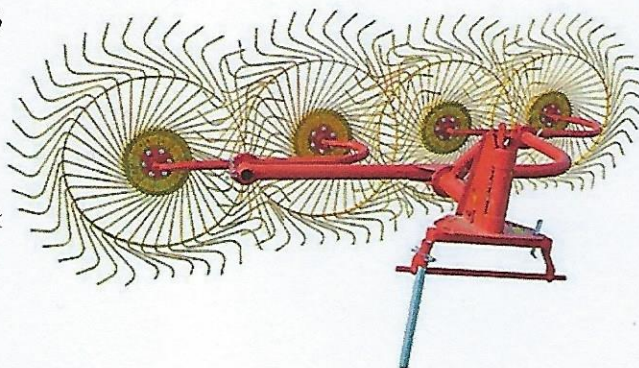


lot of different style rakes. I will show a couple...side delivery rakes (Pic above) and wheel rakes. But there were also 'tedder' rakes and both wheel and side delivery "V" rakes and more. Contemporary use is largely a "V" side delivery that rakes close to 20' at a

time.

Such rakes are high speed and leave the straw/hay in a long row around the field that can be picked up with a hay loader and moved directly to the hay wagon. Or, as is normal today, picked up by a mobile hay baler.

The hay loader was an attachment that was pulled behind the hay wagon and used a broad chain conveyor to lift the hay off the ground and dump it on top of the wagon. I understand that they are still used in Europe.



Another kind of rake is still used. This is the Wheel Rake. Sometimes today with 10 or more wheels. We bought one during a very wet year to turn the swathe of grass seed to help it dry out. It was not very successful and we only used it on Blue Grass which did not shatter.

This picture shows a modern rake with 'three point' hitch. At first they were wheeled rigs that could be pulled behind most any power source. They do a good job with few mechanical parts.

Other designs include the rotary rake. These can be set to either rake into a winnrow or just work as a tedder to stir the straw/hay. We used such to stir the straw to get it to dry enough to field burn after some summer rain.

But no matter how you did it, handling the hay loose was labor intensive! So the next step was balers.

First balers were called "Hay Presses". They were permanently installed in a hay barn. On the floor was a framework the size of the bale. Above that was a heavy wooden weight that was winched up high with horse power. Hay was pitched into the frame and then the weight was dropped, tamping the hay down. The weight was then again winched up and the process repeated six or seven times to make a 300# bale.



Another style used a large horse powered screw to compress the hay. Neither style has survived today for a picture! And the memory is slipping away. I had never heard of such a machine. They were conceived in the mid 1800's.

I suppose these presses would alleviate the problem of winter storage. But they are very labor intensive and do little to allow increased production. Aside from somewhat reduced storage the bales also made it easier to transport the hay to a remote location. The hay is still handled loose with the attended high labor needs. So it was not long before someone figured out a way to reduce the labor! The first was the Portable Baler. The owner would buy the loose hay from a farmer. Then set up his portable baler and bale it for shipment to another consumer.

Early examples of this style of baler was man powered. The loose hay was forked into an upright chamber where a ratchet and lever would compress it. A good crew could, it is said, build 72 bales per day. This was circa 1865.

By about 1880 the man powered balers were finding competition from gear driven cranks. These pushed a plunger against the straw to compress it, very similar to what is now used. While still powered by horses, it was a considerable improvement over hand power. John Deere, J.I. Case and International along with about 30 more little known manufacturers were designing and producing these. It wasn't till the early 1900's that steam and then internal combustion power sources were used. Still pretty labor intensive with 1 or 2 men to pitch the loose hay into the chamber, two more to poke the wires through and fasten them. Then a couple more to bring the hay to the machine, either by wagon or from a hay mow and another man to pile the bales out of the way. And the hay as still man handled loose in the field.

In the early 1930's two or three companies began producing machines that picked the swath up in the field and baled it. But they still required a three man crew, a tractor driver and two to poke wires and tie them.

In 1936 Iowa man named Innes took the John Deere binder knotter and adapted it to tie strings on a baler. But it did not work well in the field. A farmer named Edwin Nolt bought one of Innes machines and spent the winter of 1936-37 modifying it with parts from other machines. It is said that he used bevel gears from

a Fordson tractor, knotters from a different grain binder, and a forge blower to blow the dust off the knotters. It was mounted on pneumatic tires and wheels (wood spoke) from a Willys Knight truck. (Sounds like a farmer production!) Eventually he got it to work. It produced several hundred bales in row without failure and became the "World's First Automatic Field Pickup Self Tying Hay Baler!"

Nolt produced about 35 machines in a local shop over the next couple years and then sold the idea to New Holland. Nolt worked for New Holland as an engineer until his death in 1992 at age 83. (He was just a few years younger than my Dad!)

Farmer innovations have been the driving force in many of current production machines. (I even had a small innovation safety feature that, after the Minneapolis Moline field man saw and asked about it, was incorporated in the next years production of Minneapolis Moline tractors!)

The Museum has only the 1919 Ann Harbor Baler. I had never heard of a baler that dropped a weight or used a screw to compress the hay. But it is clear that the development of the current baler went through several phases. I suspect most of those were driven by farmer/user innovations. That is true of many farm machines...Combines, swathers, 4WD articulated tractors were all first developed by farmers. Probably other things too that I am not aware of. But it has allowed agriculture to become efficient enough to feed and cloth the world with a relatively few workers...and at a relatively low cost. Long live the American Farmer!

The next issue deals with balers...the 1919 baler and the modern baler and compressor combinations.

Sorry I don't have pictures for this issue. But could not find any, even on the internet. Which is remarkable but indicative of rapid progression in the development of the baler. Individual innovations did not last long enough to leave much of a record.

Remember that the Museum is open Tuesday, Thursday and Saturday 10:00-4:00 for your convenience. We have lots of things besides machinery.

If you know someone who would like to receive mailings like this via e-mail, please suggest they contact me at [grass-seed@peoplepc.com](mailto:grass-seed@peoplepc.com) and I will add their name.

**HAVE FUN...**

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