

The First Combined Harvesters

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They called it a combined harvester because it combined the jobs of cutting and threshing into one operation--into one machine. In a single sweep the grain was cut, separated and sacked. There was no need to haul the headed or bundled wheat to the separator. Instead of bringing the wheat to the thresher the combine took its thresher to the wheat and did the job while moving through a field.

The 1929 issue of Combine yearbook laid out the history of the combined harvester in considerable detail. It pointed out, "the combine in America appears to have gotten its real start in California. No doubt due to the fact that climatic conditions in that state were particularly favorable to successful combine operation, and wheat growing was a more or less prominent industry. As early as 1867 we find that D. C. Matteson built a combine at Stockton, and that patents were granted to several residents of the states of California and Oregon in the early '60s.

"A few years later, in the early '70s, several men on the Pacific Coast were apparently alive to the possibilities of the combine and began to incorporate their ideas into actual machines.

"By 1887 several machines were scattered over the state of California and by 1890 several concerns, Best, Holt, Houser and Haines, Mingee Shippee, Young and Berry, were in production and ready to meet the requirements of the Pacific Coast wheat growers.

"These early machines differed little in principle from the combines in actual use today. Wood construction, which was vogue at that time, was used. This material made the machines very cumbersome which was further augmented by the fact that the idea of the early combine manufacturer was to get as much capacity as possible out a single unit.

"Machines cutting a swath 30 feet wide or even wider were constructed and as their weight ran up to 15 tons or more it required as many as 40 horses or mules to pull them, especially where the land was rolling.

"To meet the hilly conditions of Washington it became necessary to develop a leveling device which would compensate for the unevenness of the fields. This gave rise to what is now known as the 'hillside' as against the 'prairie' type of combine. The hillside type of combine is still operated largely by horses because of the fact that it is very difficult to operate tractors on such steep grades."

The first machines, wood-framed and heavy, didn't explode onto the harvest scene as overnight sensations. In those days farmers were somewhat slow to change but the machines did make a steady progression at winning converts. In Adams County Washington, for instance, the record shows that the first ground-powered combine was used on the John Gillett farm 14 miles northwest of Ritzville in 1898. Farmers came from 60 and 70 miles around to watch it. This wasn't the first combined harvester in the northwest but it was among the early ones.

Before the machines had proven themselves, it was always the progressive, innovating farmers in a community who were the first to plunk down the cash for one of the "new fangled gadgets." There was one particular old wives' tale which held many back from making the switch. Scores of wheatmen still clung to the idea that cutting the grain and separating immediately was no good--that it had to go

through a "sweat" in the stack before it was ready for milling.

By 1906 the machines were catching on and 13 were introduced in the Washtucna, Washington area. As more began appearing in the wheatfields they became known simply as "combines" rather than "combined harvesters." The transition from headers and threshers to combines stretched itself out from 1900 to 1920.

When a farmer went from a stationary operation to the mobile combine his harvesting crew suddenly plummeted from an average of 20 men to just five or six. It's obvious then that the demand for harvest hands began tapering off as more and more farmers bought the new machines.

The first combines were ground-powered rigs. Power, in other words, to run the sickle bar, header reel, belts, pulleys and threshing mechanism came from one of the combine wheels called the ground wheel. As the combined harvester moved forward, power was transferred to the working parts by chains and sprockets.

32 HORSEPOWER

The combine required 32 horsepower to function. This was the most amazing aspect of the entire operation. This horsepower requirement referred to the real, live, four-footed, hay-burning variety of horsepower, not the theoretical horsepower rating given to the drawbar and pulley strength of a steam engine.

Imagine the spectacle--32 horses in one hitch pulling a machine through the fields which gobbled up wheat in one end and discharged filled sacks out the other end. There were times in tough-pulling country when they used 44, even 50 horses or mules to do the job.

The usual team of 32 had two horses in the lead followed by five rows of six animals each. On curves and corners it was up to the leaders to swing the rest of the harnessed workers around. Some teamsters felt that was too big a job for two animals so they used three in the front line.

To the onlooker, the driver had the most glamorous job on the combine. He was perched high on the end of a ladder which slanted out over the horses. It was like riding in the prow of a ship. The hills were the waves.

There were times just before reaching the peak of a hill that the driver was projected so far up and at a backward slant that he couldn't see the horses in front of him. They were already over the hill and out of sight. Even the most experienced drivers had a feeling of relief as the combine pulled over the hill and the horses came back into view.

The comparison was the same at the bottom of a hill. It was the trough of the wave. With the horses already starting up the next rise and the combine coming down the last, the driver was suddenly thrust right down in and among the draft animals just a few feet above the ground.

Although it seldom happened the combine crew knew only too well the danger of straw piling up under the bull wheel on the down side of a hill. It occurred just enough that the very thought sent shudders down their backbones.

Big and heavy as it was, the drive wheel could actually lose contact with the ground if enough straw built up. As it wedged in under the wheel, lifting it up, the mass of straw became a runner, putting the entire combine on skids. An overturned combine or pile-up of some sort was inevitable.

For the driver, such a runaway accident was scarier than any roller coaster ride and considerably more dangerous. As the combine began careening down the hill the teamster was no doubt wondering why he hadn't chosen a more genteel occupation.

It was the wheeler horses, the ones closest to the combine, that faced the greatest danger though. Frequently two or three would be crushed in the terrifying downhill flight. Fortunately, such accidents were rare.

Driving 32 horses or mules was an art in itself. Incomprehensible as it may seem, the driver guided his charges with just two lines. If he had a jerk-line mule setting the pace he needed only one line.

The normal procedure was to have a line running to each of the two lead animals. The fastest, smartest animals were always up front. When the driver tugged a rein indicating a turn the leaders had to swing all the horses in the desired direction.

The jerk-line mule was even more of a phenomenon. Paired with another mule he was the left-hand leader. To go to the left the driver gave a steady pull on the single line. As the mule went left so did all the other mules. A series of short jerks caused the lead mule to throw his head up. This in turn activated a G-string to pull his head to the right. The lead mule then turned right followed by the rest of the team.

A G-string wasn't needed when the mule was trained to the signals. He quickly responded to the left when he felt a steady pull on the rein and turned right when there were a couple of jerks.

They used to say a driver had to be at least as smart as the horses he drove or he wouldn't last long. That may have been true. Equine I. Q. rated high among those animals that had a lazy streak and looked for ways to get out of work. Usually they followed the simple ruse of lagging back in the traces and merely walked along instead of pulling. Some got so clever they could keep the traces taut and look like they were pulling when they weren't at all.

Most drivers didn't use a whip to remind a wily horse that he had a load to pull. When mule skinner's language failed, the driver resorted to rocks or clods. They were kept in a small built-in box next to the driver. The offender snapped to, at least for a little while, when he felt a sting of a pebble bouncing off his rump. Daydreams of throwing baseballs instead of rocks inspired many drivers into becoming excellent marksmen. Other skimmers didn't waste their time with rocks to gain an animal's attention. Instead, they used air guns.

Ted Porter of Walla Walla started as a mule driver in 1923 when he was 15. By then the combines had motors on them to run the machinery. The work animals still pulled the combine forward but fewer were needed since the harvesters no longer relied on ground power to activate the mechanical apparatus. The number of horses dropped to 27 on most rigs with the addition of a motor, but this depended on the topography and the size of the machine.

Now a store owner, Porter vividly remembers his early experiences. When asked which was best for wheat work, horses or mules, Porter sided with mules. He had a string of arguments in their favor.

According to Porter, mules were far and away the best performers. For one thing he said, "Mules could stand the heat better. You couldn't heat-founder a mule like you could a horse. When a mule had a combination of too much heat and work he stopped. You've heard of a balky mule. That's just what he did. He balked and heaven or hell wouldn't budge him. That could be exasperating but I always figured

it was better than a horse working until it dropped dead in its tracks."

At this point, Porter was just warming up in his stand for the mule. He also pointed out that mules were less nervous than horses; they never went into fences and horses did; and mules were supposed to have had the good common sense not to step into badger holes while horses would. Interestingly enough, though, the county censuses taken during that era showed horses easily outnumbered mules.

Ted Porter speaks almost affectionately about his days as a mule skinner on a combine but adds, "The job wasn't a picnic. It wasn't quite as glamorous as it looked. For one thing, it was extremely dusty. All the mules below and ahead were churning up dust. You were trapped in it. It absolutely encased you. If you had a tail wind you not only got the dust of the mules but also the chaff from the combine."

He described two things which occasionally happened that caused his heart to skip a beat or two. "Say the outfit was on a sidehill. That had you a little nervous to start with," he warned. "Then let the wheel on the lower side drop into a badger hole and you thought she was going over for sure.

"It was just as scary when we'd be going around a steep hill and we'd hit soft dirt and the whole rig would slide sideways. Don't think that wouldn't shake you up a little bit," Porter recalled.

The former mule handler went on to say that the steady pull of the reins all day left his arms aching the entire night. "It wore your arms out because once you picked up the reins it was a steady pull from start to finish."

In outlining the activities of a normal day, Porter commented, "You were always up by 4 a.m. to get the mules ready. The driver was responsible for nine head. The rest were cared for by the sack-sewer, sack-jig and header-tender who took six apiece. We fed, curried and harnessed them."

He emphasized that currying the stock not only made them look better but it could lead to trouble if you didn't. If a mule or horse wasn't curried down the dirt could build up in the hair. Sores often resulted as the harness rubbed the accumulated dirt.

Porter continued his description of the early morning chores by saying, "Once we fed the mules their wheat hay and curried them, we harnessed them, had breakfast, hooked up and were in the field by 6 a.m. We worked until 11:00 and started again at 1:00 and continued at least until 6:00.

"In those two hours at lunch we weren't under a shade tree resting, I can guarantee you that. The mules had to be brought in and fed. Feed racks were always pulled to wherever the outfit was working. It was the driver's job to work out any sores the mules might get from the hard work. He normally rubbed salve on the sore spots to speed up the healing. The sores usually came in the shoulders where the pressure

of pulling was the greatest. One of the best preventions," he said, "was in making sure each mule had a collar that was big enough for him."

"At night we tied the mules to the feed rack. It was the same process only in reverse of taking the harness off, feeding the mules and giving them a curry job. The harness was set on the ground behind each animal. We had a special way of setting the harness so it was easy to grab the next morning. The harness and collar were upright as they leaned against each other and the rest of the harness trailed back. We used this arrangement when we were way out in a big field. There were many times though when we were close to a barn and could put the harnesses inside overnight."

Mr. Porter emphasized that the mules were never kept in a barn at night during the summertime harvest for two reasons. For one thing it was cooler and more comfortable for the animals outside. Secondly, the barns were almost always filled with hay. There was the chance this hay could go up in flames from spontaneous combustion. The farmers didn't want to take that gamble.

The work animals wintered outside also, getting by on the food they gleaned from the stubble fields. When the weather got really tough, the farmers brought their four-legged charges in for feeding and shelter.

During harvest the driver had the company of four other workers who rode the combine. They were the header-tender, combine man, sack-sewer, and sack-jig. There were also a couple of men picking up sacks in the field.

The combine man was usually the foreman of the crew. He rode on top of the combine just over the two rear wheels on the right-hand side. Like the separator man he kept an alert eye on the machine's smooth operation.

It was also up to him to keep the combine level as the outfit snaked its way around the hills. This he could do because of a sidehill leveling device introduced by the Holt Co. in 1891.

Hal Higgins, foremost agricultural historian with the University of California at Davis, says that only after this ingenious device came into use could the combine be really practical in the extremely hilly Palouse region of Southeastern Washington and Northeastern Oregon.

Without the leveler a combine leaning over a hill did a very inefficient job of threshing. The wheat jiggled down to the bottom side of the threshing cylinder and piled up there. It came through the concaves in an impenetrable slug. This resulted in most of the wheat kernels not being separated from the stalk and so, passing out the back end with the straw.

The leveler corrected all this. Those seeing the leveler working for the first time stood fascinated at the effectiveness of the device in operation. They stared as they saw a combine tilted over on its side as it followed the slope of a hill and yet the machine's threshing cylinder remained level.

The wheat passed through evenly with the kernels going into sacks instead of out the back end onto the ground. The basic principle of this early leveler is still used on today's combines.

One added advantage the leveler gave the combine was an adjusted center of gravity. As a result the

big machine wasn't so tempted to topple from the slope. Even with the leveler, the almost perpendicular sides of some wheat hills took their toll as several combines turned over each year.

Hal Higgins conjectures that thousands more acres of hilly northwest land were more adaptable to wheat after Holt came out with the leveler.

The combine man greased the machinery at noon and at night. Frequently he was assisted in this job by a grease monkey who came out from the farmstead.

The sacking platform was usually covered with an improvised canvas shade roof. It was commonly referred to as the "doghouse."

The sack-jig's job at the threshing machine and on the combine was the same. He put sacks on one spout, took them off the other, jounced them, and set them in front of the sewer. The sack-sewer sat next to the chute. As he finished his sewing he gave the sack a flip and it fell down the chute.

Originally, the sacking platform sat low on the combine, just a few feet above the ground. The short chute could hold only three sacks. Later developments raised the platform up near the top of the harvester. The chute was then longer and held five sacks. When the chute was full the sacks were dumped in as near a level spot as could be found, minimizing the trouble the pickup team had in loading the sacks from the ground.

An incident involving a sack-jig and sack-sewer appeared in "The Palouse Story" prepared by a history committee of interested Palouse citizens in 1962. It told how at the crest of a hill the hitch on the

combine broke, pulling the driver from his seat as the horses went suddenly and unexpectedly forward. It went on to describe the incident by saying, "Backward down the hill rolled the heavy machine, with the boss' saddle horse tied behind, zigzagging to keep out of its path. The sack-sewer jumped down from the high-up doghouse and the jig followed. Catching up with the horses that had become grounded, it was necessary to cut harness to unscramble the mess.

"At the moment it wasn't funny, but afterwards the sack-sewer used to say, 'And Ralph, that jig, when he jumped, couldn't find any other place to light in that whole forty-acre field but square on top of my back!'"

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