

PIPELINE CONSTRUCTION: MULES TO MACHINES

by Ellen Schweppe

When natural gas pipeline construction was in its infancy, it wasn't as exact a science as it is today. Building a transmission line from a gas field through the countryside to the gas-heated homes of the early 1900s required more muscle and common sense than engineering expertise.

"In those days, experience counted for just about everything. Most of us didn't have much more education than the eighth grade," recalled the late Ed Greenwalt, who got his first pipeline construction job about the turn of the century and worked on pipelines until the late 1940s.

"Why, we never did have an engineer in my operations. When a line needed to be laid, the main office told us where it went from and to. Then we measured the land, built the pipeline and sent back maps and inventories to the office for their files."

Columbia Gas and Electric Co., a predecessor of the Columbia Gas System Inc., began laying one of the first long-distance gas pipelines in the country in 1908. The line—some 180 miles from the West Virginia gas fields through northern Kentucky and across the Ohio River to Cincinnati—was built primarily with pick and shovel. That process, which had been used since the 1800s, remained much the same through the 1920s and '30s, when a few pieces of machinery started showing up on pipeline jobs.

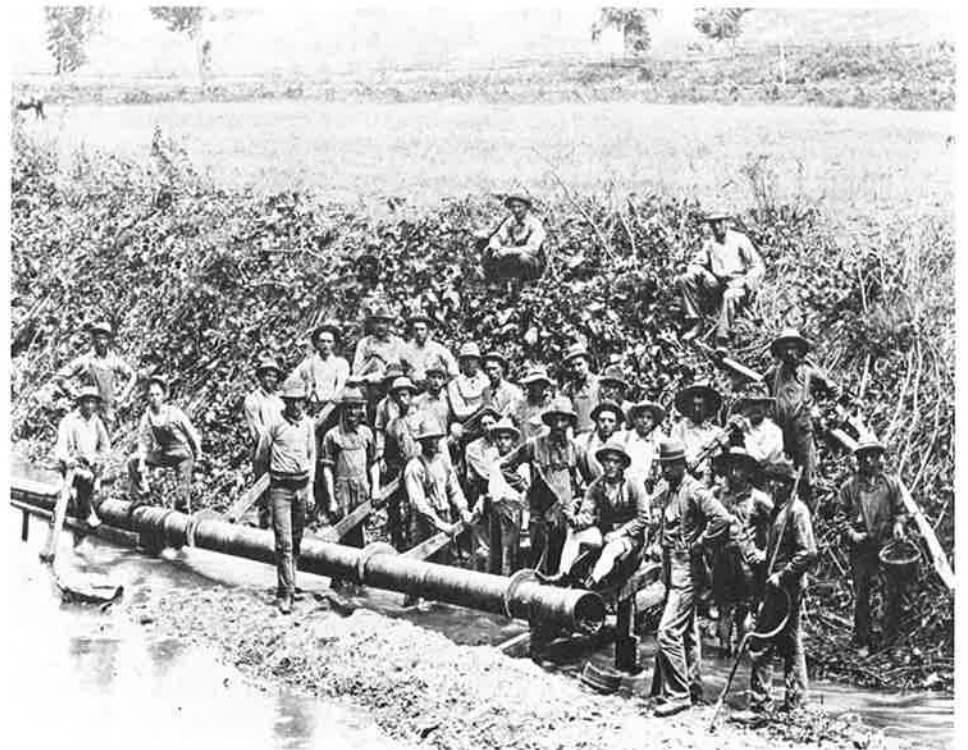
Back in the early part of the century, before chain motels had cropped up at every interstate exit, men who worked on a rural pipeline job stayed in camps. The camp, which consisted of sleeping tents equipped with cots and a dining tent staffed with a cook and an assistant to take care of odd jobs, was packed up

and moved along as the pipeline progressed so the workers would never be more than an hour's walk from supper and a night's rest. The men worked 10 hours a day, six or seven days a week, for \$2 to \$2.50 a day.

"Oftentimes, we didn't get home for weeks at a time," said Greenwalt.

(see *Mules*, pg. 26)

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Pipeline construction crew near Springfield, Ohio, in 1900 used tongs and wooden levers to install a line.

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Rights of way did not present much of a problem in the early days of gas pipeline construction because a utility bought the right to lay a line across a particular piece of property without having to describe exactly where on the property that line would be laid. Instead, it relied on the shotgun survey method, which meant those laying the line chose starting and ending points and laid the line as straight as possible in between. Once the path was decided, workers cleared the right of way by hand, saving logs and tree trunks which could be used later as skids to lay the pipe on before it was lowered into the ditch.

After the right of way, which normally was just a few feet wide, was cleared, the ditchmen moved in. Each was equipped with a pick, a short-handled shovel, a long-handled shovel and a spade and was expected to complete two tricks a day. A trick equaled 10 feet, or the length of two long-handled shovels.

If a ditchman hit rock, but it wasn't solid, he attacked it with a 12-pound sledge hammer. If the rock was solid, he turned the job over to the rock crew, which pounded holes in the rock with long, pointed churn drills made of iron

and weighing 50 to 75 pounds each. Two men on a churn drill could ram out a hole four inches in diameter and four to five feet deep in 30 minutes. The dynamite man then loaded each hole with explosives topped with a fuse and set off up to 200 fuses at a time to clear out the rock.

The pipe used in the early 1900s was made of thin sheets of bar iron laminated together in 20-foot sections. Pipe twenty inches in diameter was the largest available. The pipe was hauled to the construction site in wagons pulled by oxen, mules or horses.

Moving the pipe into position over the ditch was a process involving both brawn and coordination. Long wooden poles with hooks in the middle were attached to each end of each section of pipe. Workers lined up along the lifting poles on either side of the pipe section. At a signal, the men on one side jumped the ditch while the men on the other side pushed. They then carefully lowered the pipe onto the skids stretched across the ditch.

Bolting crews came along to fasten each section of pipe to the next with a coupling—a steel middle ring, two steel follower rings and two rubber gaskets all bolted together to form a flexible seal. The wrench inspector followed behind the bolting crew, checking the



The wrench inspector working on this Columbia line in 1930 made certain all 12 bolts in each coupling were tight.

tension of every bolt.

Workers lowered the pipe into the ditch with an intricate system of ropes and levers and used gas to test the strength of the line. They filled in the ditch with a team and morman board, a flat wooden contraption fitted with two plow handles which dragged the excavated dirt back over the ditch.

"We were always inventing things," said Greenwalt of the early days of building Columbia pipelines. "We were always finding better ways to bend bolts, lift pipeline or do just about anything else we had to do."

Individual resourcefulness, muscle and mule-power built gas pipelines until the 1920s and early '30s, when some machinery, small by today's standards, came into use. That was about the time Columbia Gas and Electric built a 460-mile-long pipeline from Kentucky to the Washington, D.C., area and beyond. The project was started in 1930, several months ahead of schedule at the request of public officials to provide jobs in Appalachia, and used much of the so-called modern equipment available at the time.

"The equipment we had was thought adequate," recalled V. E. Frazier, who worked on Columbia's Seaboard line. "But by today's standards, it was primitive. We had the only type of sideboom that was available."

(see Primitive, pg. 27)



One of the first major transmission arteries of the present Columbia Gas System was this 20-inch pipeline laid in 1916 between Calendenin and Cedarville, W. Va.