The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Tech talk: Coal mining - the transition to pit ponies

Posted by Heading Out on May 16, 2010 - 10:22am
Topic: Supply/Production
Tags: coal mining, history of coal mining, pit ponies, tech talk, underground coal mining [list all tags]

One of the problems that has consistently plagued underground coal mining lies in the height of the coal seam that is being mined. This was the portal (i.e. entrance) to a coal mine that we once ran a research project in, near Summersville, W Va.

Dr. Rupert and I in May 1975 at the portal of a W Va mine. (Note the kneepads).

The mine was extracting only the coal, and you can see that the entry height comes to just below our shoulder blades, which made walking into the mine (about half-a-mile or more) very tiring, since you have to walk in quite bent over. As a result, the machines that work in these low conditions, have the operators lying almost recumbent as they steer and operate them. Back in earlier times, however, before there was much machinery underground, conditions were much different. And so today I thought I would talk a little more about those early conditions and how changes began to evolve.

I'm motivated a bit in this by finding (on a market stall in Lancaster) an illustrated autobiography by James Dunn called "From Coal Mine Upwards," that was written in 1910 by a 70-year old who began his life in a mine. As the prologue noted (abbreviated):

> Over sixty years ago in a small village on the border of the Leicestershire coalfields a company of men met to discuss what was to be done with a poor lad eight years old. The richest farmer in the neighborhood said" "I should like to ask two questions before you decide. The first is, how much learning does it want to drive the plough?" and "How much learning does it need for a lad to work in the coal-pit?" The answer was very little,

> and to the coal pit at eight years of age I was sent to work. It was in those dismal mines, four hundred yards deep and about a mile underground from the bottom of the shaft, that I commenced to earn my daily bread."

He was fitted with a flannel shirt, wide trousers, a cap, a smock-frock, and heavy nailed boots. He walked the two miles to the mine to be there at 6 am and he earned tenpence a day, except that the mine rarely worked more than half days, so that he made around 30 pence (when 240 pence made a pound which was worth about $4 at the time I believe) a week. After a ten to twelve hour day underground he then had to walk home.

He was lowered into the mine on a chain fitted with loops, and then walked to the working face, having been given a candle to light the way. His job was to haul at the front of a tub, so that he took off all, but his trousers, socks and boots and his flannel cap.

> The man I had to work with showed me how to place a leathern belt around my loins, with a light chain attached about a yard long, which was hooked to the front of the small wagon of coal thus pulling from the front while the man pushed behind.

From James Dunn "From Coal Mine Upwards", W. Green London, 1910. 227 pages

The mine was worked by subletting different jobs, thus a miner would work in measures of a "stint" which was two yards wide, by a yard deep to mine the coal. He loaded the tub from the face of a tunnel that he was driving into the coal, and then swopped out a full and an empty tub to continue.

Loading the coal. A sculpture in the archive at Missouri S&T

The initial rails were wooden, and the tubs were turned on steel plates at the end of the tunnel (the "flat"). Once the tubs were started back to the mine shaft, they passed through a series of folk:

> this process was worked in what they called "stages", or lengths, a man having one stage, and then two boys the next, then another miner, and then two boys, and this was continued throughout the whole length. Now it will be seen that every pair of boys were running between two men – one at each end of their stage, and the great concern of the boys was to meet the man at either end, so as not to keep them waiting. . . .(if late) The man at the other end would be waiting with his empty truck (tub) and the probability was that the boys would be beaten with his strap.

The men were paid by the ton delivered to the shaft top (a token in the tub marked who had loaded it) but the boys were paid by the day, and thus not nearly as well rewarded.

Rails were the first major improvement, transitioning from just dragging the corves on one's back, which had been the earlier method. But the tubs had still to be moved manually. It was pictures such as this, that had led to the legislation that got women and young children out of the mines in 1842.

Woman hauling a corf, Royal Commission Report, UK, 1842.

Hauling the flat (on which a corf or two would be mounted. Note the chain) MO S&T archive

They were replaced, in large part by ponies, but there was an immediate consequence. It had been possible to use people to drag tubs along in low coal, but that doesn't work with ponies. (And in some seams they still remained impractical).

Putting in a 2 ft 10 inch coal seam, 1929 (A Bevin Boy Remembers, Ted Holloway, Henge Publications, 1993)

The tubs were also of wood at this time, since it allowed the front planks to be removed to fill the tub, where the roof was too low to easily fill it over the walls. But the ponies had to have more height, and so the height of the roadways had to be increased (which also made it easier to walk down them). This was done by blasting a small amount of rock from the roof of the tunnel, giving the extra height. As James Dunn noted "My lot was never as hard again."

From "The Miners," Anthony Burton, Andre Deutsch Ltd 1976

The ponies had the advantage that they could pull more than one tub at once, and with the restriction on height gone, they were more frequently made of metal. You may notice the lad riding on "the limmers." That was, strictly speaking, forbidden, though I think we all did it.

As mines became more productive, so the ponies could not keep up with the number of tubs that had to be hauled down the access roads, and they were, in turn, replaced by long "endless" ropes of wire, to which we attached the tubs, and which then hauled them from around the face area down the mile or more to the shaft, where they were disconnected, loaded onto the skip and hauled to the surface. But I'll talk about the first steps in mechanization next time.