

Black Beauty Coal Company
Cottage Grove Mine
Gallatin & Saline Counties

Black Beauty -
Cottage Grove

Black Beauty Coal Company - Cottage Grove Mine - Gallatin and Saline Counties, Illinois Notes by John Nelson on visit with Tom Moore, Russ Jacobson, Scott Elrick, and Andrew Louchios; February 3, 2004.

This is a surface mine in the Herrin Coal. The office and tipples are located **NW SE SE, Sec. 7, T9S, R8E, Gallatin County**. Active pits are as follows:

- Pit 1** - straddles county line, advancing northward; largely in N $\frac{1}{2}$ SE $\frac{1}{4}$, Sec. 1, T9S, R7E and adjacent part of Sec. 6, T9S, R8E, Gallatin County.
- Pit 2** - advancing northeast, NE NE Sec. 5 and NW Sec. 4, T9S, R8E.
- Pit 4** - L-shaped highwall advancing north and west away from the tipples of Willow Lake underground mine near center E $\frac{1}{2}$ of Sec. 2, T9S, R7E, Saline County.

Black Beauty is still working on permits for Pit 3, which will be west of S.R. 142, between Pit 1 and the Willow Lake Mine or Arclar, LLC. Black Beauty and Arclar are both subsidiaries of Peabody Coal Company.

We went to Pit 2. Weather was sunny and cold. Mud and snow were present, but not a serious hindrance.

They have uncovered an igneous dike that appears to strike N 30 E (a map provided by the company shows the overall trend is nearly north-south). Dike rock is medium-dark gray to greenish gray and has a uniform, very finely granular texture. Adjacent to the dike, the coal has been coked. The upper part of the seam is carbonized and riddled with quartz veins at least 10 feet away from the dike. The intrusion is poorly exposed; the coal is partially uncovered where the dike crosses. On the highwall, there is no igneous rock but a fault zone is in line with the dike. This takes the form of a small horst, having about 3 feet of displacement. See sketch.

The following is an estimated section. I did not have opportunity to examine rocks directly in most cases.

TOP - surficial materials removed.

- 5-10' Shale or siltstone, gray (weathering brown), bedded; may contain coal stringers near base.
- ½ - 1' Allenby Coal, bright banded, cleat well developed (inaccessible).
- ½ - 2' Mudstone, dark greenish gray, massive, crumbly.
- 2-4' Bankston Fork Limestone, light gray, massive to slightly nodular. In places two beds of limestone are separated by shale or mudstone.
- 15-18' Shale and siltstone, dark gray silty shale in the lower 10-12 feet has planar lamination. This grades upward to lighter gray, thin to medium-bedded siltstone and sandstone. The uppermost 2 to 3 feet lacks bedding and resembles underclay.
- 3-4' Brereton Limestone, dark gray, massive.
- 1-1½' Anna Shale, black, hard, fissile.
- 4½' Herrin Coal, pyrite common as lenses, laminae, and cleat facings; "blue band" of claystone about 0.2' thick and 1.3' above base.
- 1' Claystone, dark gray to olive gray, slickensided, rooted.

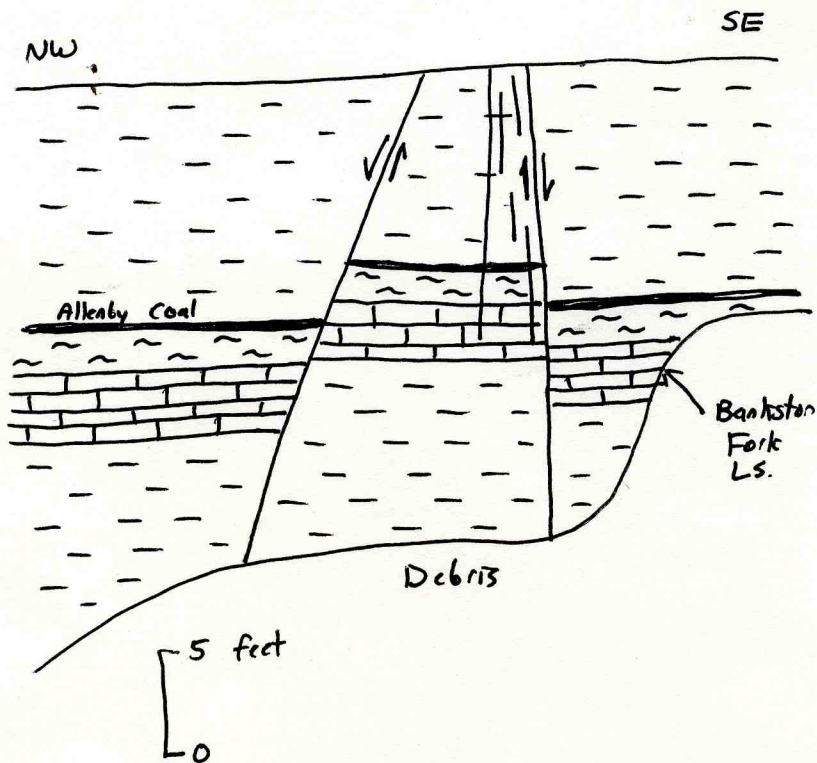
Pit 1. Our visit was brief. Overburden was thickest in the east part of the pit, where Danville Coal was being mined in addition to Herrin. Overburden on the Danville comprised about 15 feet of glacial sediment overlying 10 to 15 feet of shale. The latter was medium-dark gray, silty, and contains bands of siderite. Fossils included *Lingula*, *Dunbarella*, and *Mesolobus*. A small thrust fault, having abrupt hinges in the hanging wall, affected only the upper part of the shale and was apparently a glacial ice-shove structure. Only the top of the Danville Coal was exposed.

At the west end of Pit 1, the Bankston Fork was at the bedrock surface. The section of strata is nearly the same as in Pit 2, so I did not repeat the description.

Pit 4. This pit was opened within a few months of our visit. At the southwest end, the Herrin Coal was at the crop line. Overburden thickens rapidly toward the north. We were told that abandoned underground workings have been encountered; timbers were visible in the spoils. This mine is near the crest of a structural dome.

At the northeast end of Pit 4, roughly 10 feet of glacial deposits and 25 feet of rock overlie the Herrin Coal. The Bankston Fork Limestone is eroded. A limestone bed, presumably the Conant, occurs 1 to 1 ½ feet above the Brereton, separated from the latter by dark gray to black shale. The Conant(?) is approximately 0.3 to 0.8 foot thick. No Jamestown Coal is evident. A small normal fault, dipping 40-50 degrees east, offsets strata about one foot. The fault steepens downward and splits upward, both branches reaching the bedrock surface.

Black Beauty Coal Co. Cottage Grove Mine
W. J. N. 2/4/04



Faults appear to be in line with igneous
intrusion in coal. No igneous rock
visible on highwall above Herrin coal.

Black Beauty Coal (Peabody subsidiary), **Cottage Grove Mine, October 16, 2007.**

Notes by John Nelson on visit with Dave Morse, Scott Elrick, and Chris Korose of ISGS, with Phil Ames from Black Beauty.

This is a surface mine that chiefly recovers the Herrin Coal. There are two active pits. Pit 1, on the east, is advancing eastward; Pit 7, on the west, is advancing northward.

In both pits the Allenby Coal locally is thick enough to mine. Thick Allenby Coal occupies shallow channels that are eroded through the Bankston Fork Limestone, locally approaching (but not cutting into) the Brereton Limestone. Outside of these channels, the Allenby Coal is generally continuous, but less than 1 foot thick. Within the channels the coal thickens to 3-4 feet, and in one place reportedly reached 6 feet thick.

Maps and cross sections provided by Phil Ames and based on drill-hole data depict the channels of thick Allenby Coal. In map view the channels are sinuous belts that average approximately 1,000 feet wide. The one in the western (Pit 7) area trends east-west and has a short tributary on its north side. The channel in the Pit 1 area trends northeast-southwest. The direction of flow is unknown. The cross sections clearly show that the Bankston Fork, otherwise a continuous and tabular unit, is missing in both channels. Maximum stratigraphic relief of the channels is approximately 35 feet and the Allenby is thickest where the channels are downcut most deeply.

We had opportunity to observe the channels in both pits, although the exposures were incomplete.

Pit 1 - We spent most of our time in the central part of the active pit. Location Illinois State Plane 402,200 N, 493,500 E; legal 2000' NL, 100' WL, Sec. 5, T9S, R8E, Gallatin County, Ridgway 7.5' quadrangle.

Here is the southeastern margin of the belt (channel) of thick Allenby Coal depicted on Phil's map. The coal has been uncovered but not mined, so we cannot judge its thickness and the Bankston Fork is concealed. The top of the Allenby drops 15 to 20 feet in elevation within a horizontal distance of 500 feet. The overlying strata, up through the Danville Coal, also dip into the trough but less strongly, so the interval between Danville and Allenby thickens from about 20 feet on the south to 35 or 40 feet on the north. The following section is about midway down the flank of the trough. Thicknesses of most units had to be estimated.

Surficial materials, not examined.

- 20' Shale, medium gray, finely silty, contains highly tabular siderite bands 1 inch or thinned spaced 6 to 12 inches apart. Lower contact gradational.
- 1' Shale, grayish black, hard, fissile (not "slaty"), contains abundant pectenoids and other bivalves replaced by pyrite. Lower contact sharp.
- 2.4' Danville Coal, bright banded, well developed cleat, much pyrite.
- 8' Mudstone, inaccessible except for fallen blocks, medium-dark olive-gray, massive to indistinctly layered, silty in part; upper part rooted and slickensided.
- 1' Mudstone, as above, with thin layers of black carbonaceous shale or claystone at top and base. May correspond to thin "twin coals" seen in Pit 7.

- 2-5' Mudstone, light olive gray, silty claystone to siltstone, weakly layered, thoroughly rooted, large *Stigmara* abundant. Thickens to northward. Lower part contains vertical cylinders of siderite that probably replace roots. Lower contact gradational.
 - 6-10' Shale, medium gray, silty, moderately fissile, contains numerous discontinuous bands and lenses of siderite; a few ovoid siderite concretions as large as 12 inches across. Fossil plants abundant: dominantly stems and Cordaites leaves along with large fronds of *Pecopteris* and other "ferns". Thickens to north. Lower contact gradational.
 - 2-4' Siltstone to silty mudstone, olive gray, massive, slickensided, poorly exposed, lower part talus-covered.
- Top of Allenby Coal.

On north wall of pit near northeast corner, in NE NE NE, Sec. 5, we observed Allenby Coal thinner than 1 foot a few feet above intact Bankston Fork Limestone. Eastward the coal gradually drops in elevation and the limestone appears to be cut out and replaced by mudstone. This is where Phil's map shows the northwest margin of the channel.

Pit 7. The following strata were observed in the middle part of the highwall, about 400,700 N, 476,700 E; legal 2300' SL, 1000' EL, Sec. 3, T9S, R7E, Saline County, Eldorado 7.5' quadrangle. Observations in the mine combined with drill-hole information because we did not have direct access to measure unit thicknesses.

Surficial materials, not examined.

- 4-6' Shale, black
- 18' Shale, medium to dark gray, with thin and continuous siderite layers.
- 1 ½ -2' Danville Coal
- 2-3' Underclay
- 4' Sandstone, light gray, slightly lenticular.
- 5-6' Shale, medium to dark gray; two thin but highly continuous layers of bright coal (twin coals) occur near the middle of the interval.
- 3-4' Sandstone, light gray, slightly lenticular. May be 1-2' shale below, concealed on bench.
- 0.8-1.0' Allenby Coal, poorly exposed but reported to be continuous and nearly uniform thickness.
- 5' Claystone, greenish gray, soft.
- 4-5' Bankston Fork Limestone, light gray, changing to light brown or yellowish brown near top. Upper surface crenulated, probably a weathering surface. Base is sharp and planar.
- 18-20' Lawson Shale, dark gray
- 2-6' Brereton Limestone, dark gray
- 1-4' Anna Shale, black, lenticular
- 4-5' Herrin Coal

At the northwest corner of the pit the Bankston Fork is absent and the Allenby

Coal is thicker (at least 3 feet) and much closer to the Herrin Coal than in the central part of the pit. This is obviously within the channel, which Phil's map shows trending east-northeast in this area (thus it extends north of the central part of the highwall, and will be encountered as the highwall advances).

Unfortunately we cannot see the transition from out-of-channel into the channel, because the highwall in the critical area was blasted just a few hours before our arrival. Also it was not possible to access and sample rocks above the Brereton Limestone, and we could not readily identify the channel facies and their relationship to surrounding rocks. The following is a brief description of rocks in ascending order:

Herrin Coal, Anna Shale, and Brereton Limestone are as seen in central part of highwall.

- 2-4' Lawson Shale, dark gray, well laminated, no roots or soil features.
 - 0-1' Coal, bright banded, closely spaced cleat, forms a lens less than 40 feet wide.
Both contacts sharp.
 - 2-5' Calcareous siltstone to impure limestone, greenish gray, massive, micaceous, partly very fine sandstone.
 - 2-3' Underclay, olive gray
 - 3' Allenby Coal, poorly exposed
 - 10-15' Shale and sandstone, poorly exposed, inaccessible
 - 1' Shale with "twin coal" layers
- Remainder of section more or less as previously described.



FORM 180 W

At the southern end of the pit there are three depositional sequences in the Lawson/Anvil Rock, each with erosional contact on the unit below. See sketch.

After our return from the pit, mine officials reported tree stumps and *Lepidodendron* logs occur in shale a short distance below the Danville Coal.



FORM 180 W

Black Beauty Coal Co. - Cottage Grove Mine, Gallatin and Saline County, Illinois. Notes by John Nelson with David Moore and Scott Elrick, August 31, 2005.

This was a brief visit. Currently two pits are active. We go first to the one west of S.R. 142 and southeast of Willow Lake portal, **NE $\frac{1}{4}$, Sec. 12, T9S, R7E.**

There is no place to measure a detailed section so I'll settle for an estimated one. See next page. The pit runs NE-SW and is about 800 feet long, advancing southeast. Coal dips slightly to northeast.

We collected three large cubic blocks of coal for a lab in Australia.

Our guide reports no faults or igneous rocks presently exposed.

On upper bench about 7-8 feet of loess overlies 7-8 feet of gray diamicton. Several huge boulders of micritic limestone rest on the bedrock surface. These are probably Bankston Fork Limestone shoved a short distance by the glacier. Surficial sediments are extremely sloppy. This area received 3½ inches of rain yesterday from the passage of Katrina, the great hurricane that devastated New Orleans.

Eastern pit - **W $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 6, T9S, R8E.** Here 35-40 feet of surficial sediments overlie 40 to 50 feet of bedrock above the Herrin. The Danville Coal, about two feet thick, is present in places and is mined where available. The pit is advancing eastward and the strata dip gently north or northwest. Bankston Fork is at bedrock surface to south; Danville Coal or overlying shale to northwest. Uppermost strata are not visible from the pit floor.

The Brereton Limestone is discontinuous and overlies zero to two feet of Anna Shale. The Anna Shale position tends to be covered with talus. Where Brereton is absent, dark shale (Anna?) as thick as six feet is overlain by a band of flattened septarian limestone concretions about half a foot thick. I believe the concretions represent the Conant Limestone. The concretionary layer appears to merge into the top of the Brereton and disappear.



FORM 180 W

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