CLAY-VEINS IN THE SPRINGFIELD (NO. 5) COAL

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As found in the Canton area, the clay-veins in the Springfield (No. 5) coal are made up of clay, shale, sand, or sandstone, in varying degrees of induration, containing isolated masses of coal, roof slate, marine limestone caprock, iron oxide concretions, calcite, pyrite, sphalerite, and galena. The material in the shale or clay type is usually of a light gray color, with a very fine grained texture. Microscopical examination of the clay from the veins shows a predominance of very fine quartz grains and clay flakes, with minor amounts of muscovite.

Veins of the sandy variety closely resemble the typical Pennsylvanian, micaceous sandstones. The material in this type of vein is predominantly a fine to medium grained, yellow to gray sandstone. This variety of vein is much more resistant to weathering than the clay variety and is usually harder in the original unweathered state.

In the clay type, considerable mineralization has occurred in the form of recementation or replacement of a part of the clay by pyrite. Sphalerite and galena occur as well developed crystals, often an inch or so in diameter, but not in disseminated masses. Calcite is more common in the sandy variety, but all unweathered veins are somewhat calcareous.

The veins may intersect the coal bed at any angle, but the more general attitude is at high rather than low ones. They are very irregular in trend, size, and shape. Their thicknesses vary from that of paper to a dozen feet. The walls in many cases show a distant matching, as though they had been torn apart. They are usually more regular in shape and trend in the roof slate or limestone than they are in the coal.

The clay and coal show distinct evidence of movement within the clay mass as well as between the clay and the coal.

The strikes of the clay-veins agree fairly well with the strikes of joints in the roof slate and the limestone caprock, as well as with the strikes of cleats in the No. 5 coal. All of these features, however, vary greatly in strike from place to place, with the varying strike of the rock. This evidence seems to indicate that the clay-veins are of tectonic origin.

The fact that the clay-veins are never observed penetrating through the underclay beneath the coal, and the distinct difference in type of material making up the clay-vein and the underclay point to a place of origin for the material filling the veins either in or above the coal seam. The presence of foreign material, derived from the strata above the coal, in the veins where they cut the coal, indicates that the clay originated above rather than within the coal seam.