

"These improvements in navigation extended only to the town of Easton, where the Lehigh river flowed into the Delaware river. The Lehigh Coal and Navigation Company desired to improve the Delaware, and thereby secure better navigation to Philadelphia. It applied to the Legislature for authority to carry out this project, but the privilege was not granted, as the State proposed to undertake the improvement itself. This canal, which might be considered an extension of the canal of the Lehigh Coal and Navigation Company, was available for active use by the latter part of 1832, though water had been let into it two years previously. The greatest effectiveness of the Delaware Division Canal was not attained, however, because of the failure to make its size uniform with that of the Lehigh Canal. The narrowness of the locks made it necessary for the boats of the Coal and Navigation Company to trans-ship at Easton, and this checked the development of the coal trade by this route.

"Toward the close of this period still another canal, furnishing an outlet from the Lehigh region, was built, the object being, as in the case of the other canals previously mentioned, the development of the anthracite coal trade. It was proposed at first that the Morris Canal, to extend from Easton across the State of New Jersey to New York, should be built by the State, but its construction was finally undertaken by a private company incorporated in the latter part of 1824. Belief in the success of the project was so great that the company's capital was subscribed twenty times over. The work of construction was commenced in July, 1825, and the line from Easton to Newark, New Jersey, completed on November 2, 1831. The usefulness of the canal was greatly diminished through the lack of a New York connection, the canal boats being too small to permit of their being towed to New York harbor. In 1834, a loan was secured for the extension of the canal to Jersey City. But not during this period, nor in fact for several years to come, was the canal a real factor in the

coal-carrying trade. Mention of it seems appropriate, however, as it was one of the numerous projects undertaken to further the development of the anthracite coal industry.

"As the result of these improvements in transportation, especially those undertaken by the Lehigh Coal and Navigation Company, the trade developed rapidly. The shipments of coal, which had been 365 tons in 1820 and a little over 1000 tons in 1821, had risen by 1834 to 106,000 tons."

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The First Calorimeter

In 1826, Mr. Marcus Bull, a scientist, presented a paper to the American Philosophical Society entitled "WHAT FUEL?" The work upon which Mr. Bull's paper was based marks the first experimental work recorded on the comparative heating values of fuels. For his experiments, he built a small insulated room in which he burned, in a stove, a sufficient quantity of fuel in order to maintain a fixed temperature for a measured length of time. His results gave comparative values for the fuels upon which he experimented.

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Pulverized Coal

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The use of pulverized fuel, as developed during the last seven years, has contributed materially to the advances in power-plant operations which have come about during this period.

The practice of blowing finely ground coal into the boiler furnace with the air necessary for combustion, under such conditions that it is burned in suspension, has