

Barging up a slope

Belgian engineers are borrowing a technique from history to modernize an inland waterway

On the Charleroi-Brussels Canal, Belgian engineers are reaching into technological history for a technique for canal modernization: the inclined plane.

Hauling barges up the plane in vast tubs, in which they float in 10- to 12-feet of water, eliminates the need for most of the 38 locks used to overcome the 225-foot height variation in the area around Ronquieres, 32 kilometers south of Brussels on the north-south canal.

Belgium faces the problem of financial decline in its heavily industrialized southern provinces, dependent too much on declining industries, especially steel. The northern area, particularly around Antwerp, is expanding with the influx of foreign capital.

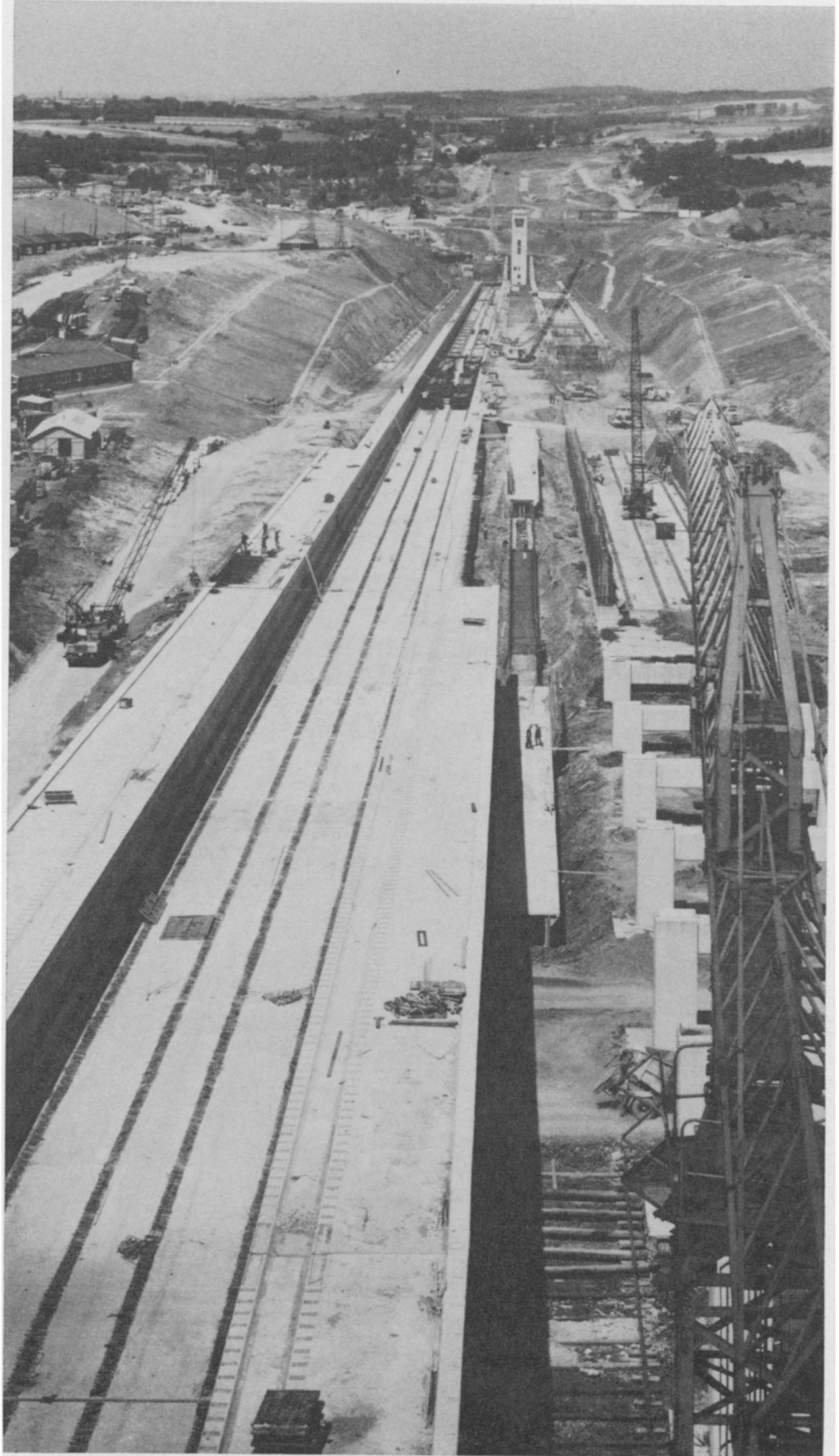
More than most nations, Belgium is dependent on her system of inland waterways, most of which are artificial. No more than some 220 miles of the 900-mile waterway network are currently accessible to vessels of 1,300 tons or more—a serious obstacle both to industrial development generally and to the kind of shifts in economic development from region to region Belgium is currently undergoing.

The canal incline at Ronquieres cuts out 28 locks, and opens this main link by waterway between Southern Belgium and Antwerp to barges of 1,300 metric tons instead of the earlier 350 tons, thus raising its annual capacity from 3 million to 10 million tons.

The inclined plane method was chosen from a number of possible techniques, including hydraulic and funicular lifts. The technique is not new, having been used on the Bude canal in Devon, England, as early as 1926 with a slightly higher lift and longer distance than at Ronquieres. The scheme involves a mile-long slope, with a 5 percent gradient. Barges enter 5,000-ton tubs, held horizontal on platforms equipped with 236 wheels; each wheel takes a 29-ton load. The platforms are hauled by eight two-inch cables, and progress up the slope is assisted by counterweights.

Six electric motors provide the driving force. They run on electricity from two 1,500 kWh hydroelectric turbines which provide enough power not only to cover the haulage but to sell residual power worth nearly \$300,000 per year to the Belgian national grid.

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The inclined plane on the Charleroi-Brussels canal cuts out 28 of 38 locks.

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