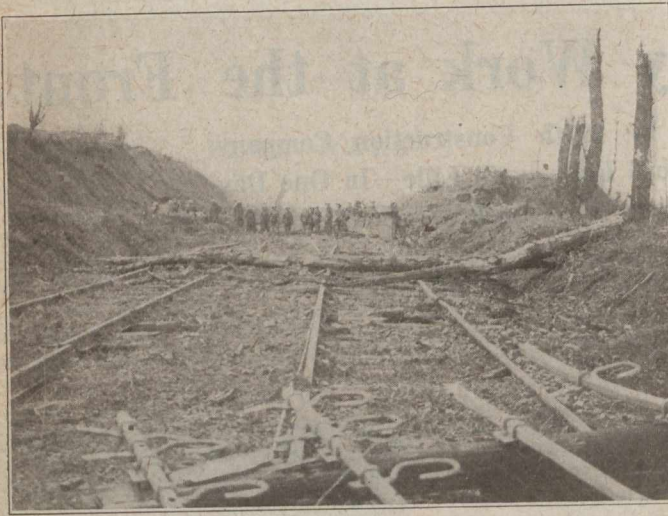


track-laying machine to service conditions immediately behind the front line trenches.

The ordinary French flat car was too small for efficient track laying, having a capacity of only from 10 to 20 tons. This difficulty was overcome by securing about 20 "tank wagons," or British pressed steel flat cars, having a capacity

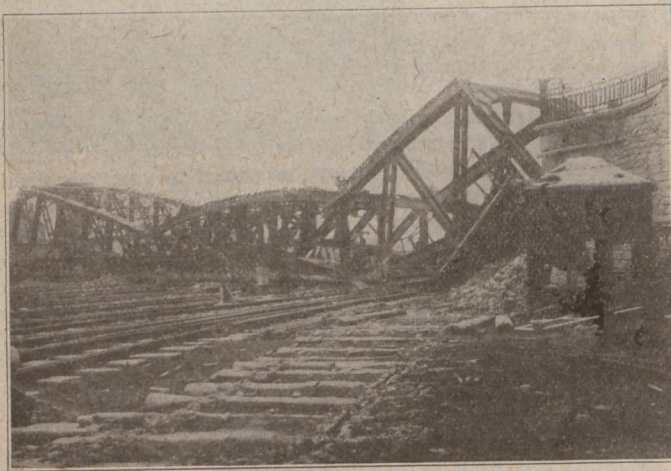


A SECTION OF THE NORD RAILWAY BEFORE RECONSTRUCTION

of 45 tons and specially built to transport army "tanks." One of these tank wagons was equipped as the track-layer. Upon the car was erected a Clyde hoisting engine. Westinghouse air brakes were installed, the air being furnished by the hoisting engine.

The operator's platform was at the extreme front of the car, from which position he had an unobstructed view of the work.

The tracklaying arm was designed as a cantilever, 24 ft. in length, built up of 5½-in. channels and 3 in. by 3 in. by ½ in. (and smaller) angles, and was anchored to the car by



TOURNAI RAILWAY YARDS—BRIDGE DROPPED FROM ABUTMENTS, EFFECTUALLY BLOCKING THE MAIN LINE OF THE NORD RAILWAY

two 1½ in. diameter circular king-pins, which allowed the cantilever arm to be dismantled easily and quickly, and swung onto a flat car by the aid of the boom.

Another function of the king-pins, equally important for this type of rapid construction, was to allow the cantilever arm to slide vertically, without damage, in case of sudden derailment of the car.

Attached to the framework of the cantilever arm was a special steel tray containing spikes, bolts, etc. This was conveniently placed to enable the men to reach for the article without walking to the front of the car.

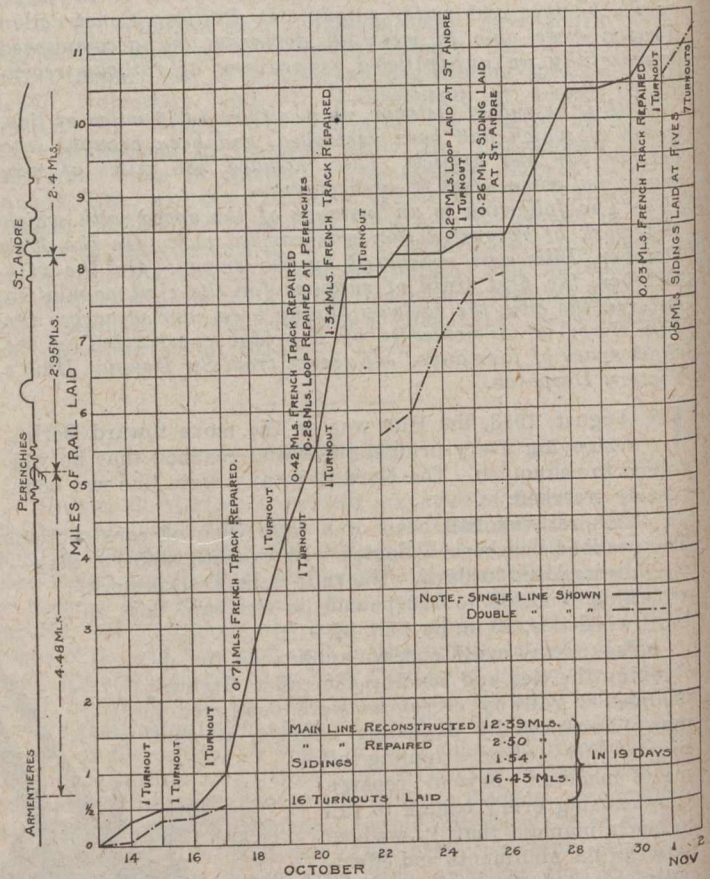
The boom used was generally a 36 ft. cedar telephone post, of standard size as used by the signal corps. These posts were conveniently located along the line and could be quickly replaced when required.

The boom was suspended from a steel "A" frame at the extreme front of the car. The height of this frame was 9 ft. above the floor of the car, to give about 12 ins. clearance for military necessities.

The cantilever arm was fitted with dollies which were graded to give gravity run for the travelling rails.

The usual track-laying train carried sufficient material for one mile of completed track, and was made up as follows: Track-layer, three tank wagons with steel, locomotive and sleeping cars as required.

Bridle rods, ¾-in. in diameter, flattened to ⅝-in. and turned up at either end to lap over the flange of the rail, were used as temporary fastenings to enable track laying trains to roll along without delay. These rods were held in place by



RECONSTRUCTION PROGRESS DIAGRAM—ARMENTIERES TO LILLE (NORD) STATION

one track spike at either end, dropped through a square hole provided for that purpose in the flattened end and gripping the inside of the rail flange.

All of the tools which were used, including the bridle rods, rail tongs, pickaroons, rail clips, pulley wheels and rail dollies, and also the tracklayer itself, were designed by the company's commanding officer and were built by the company. Therefore the operation of the track-laying train was continuous, except for accidents, until the supply of material was exhausted, when the empties were quickly replaced and the work continued.

Ballasting operations closely followed the track-laying train. Labor was supplied by the many infantry battalions and was always available. The spiking party followed immediately behind the train, removing the bridle rods and driving permanent track spikes. In this manner, work that was started each morning by the track-layer was completed that day ready for heavy traffic.

The progress of the work was maintained by a spirit of good natured rivalry between the various crews. At the