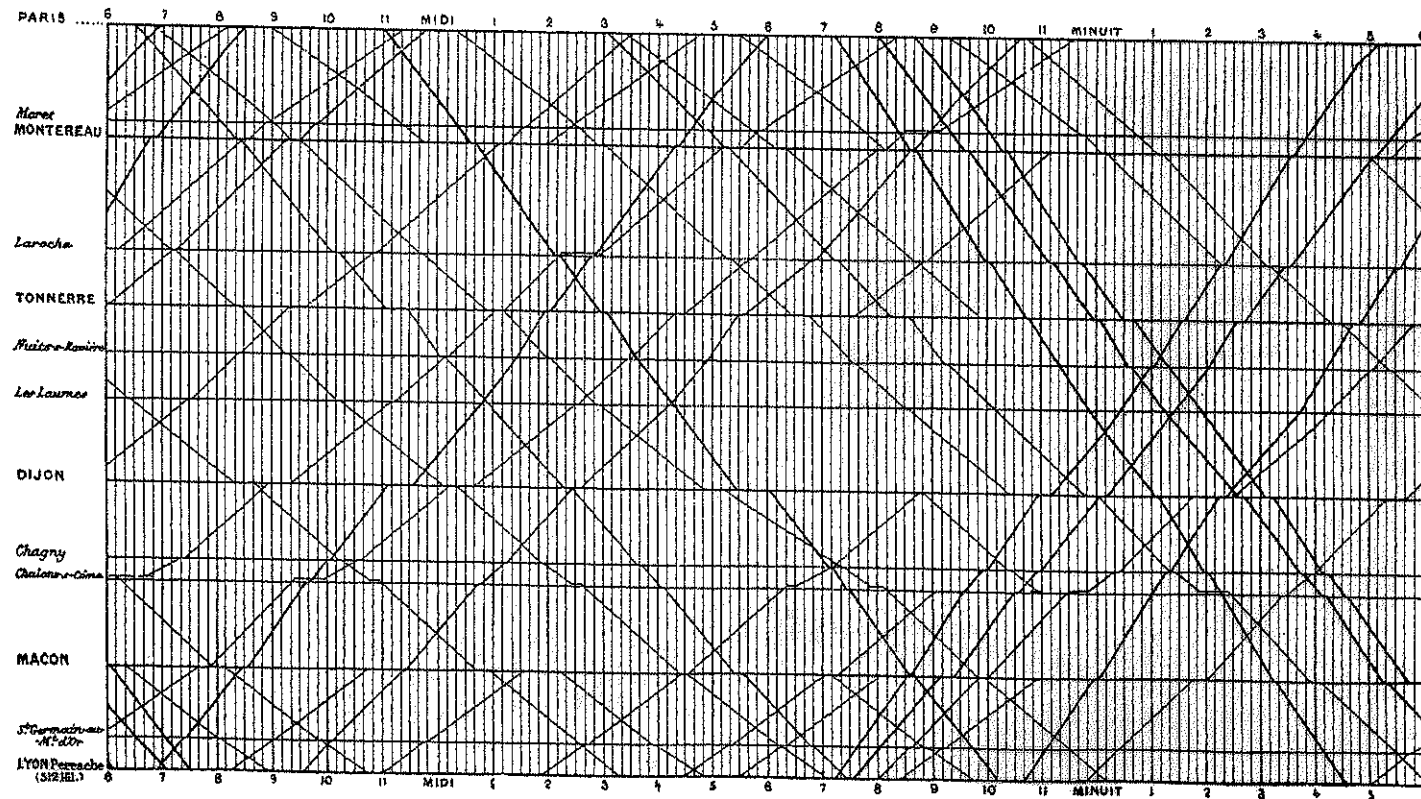


### BOX 4.2 Railway Trains in Spacetime



Spacetime diagrams were in use before the advent of special relativity, as this timetable for the railway trains on the Paris-Lyon line reproduced from Marey (1885) shows. Unfortunately the designer of the timetable did not anticipate the convention of relativity and plotted time horizontally. The world lines of the stations (at rest)

are horizontal lines. The slanting lines are trains of various speeds moving in between stations and halting at them. Faster trains have steeper slopes, but the time axis is measured in hours, so the  $45^\circ$  lines are not at the speed of light. Rotate the diagram by  $90^\circ$  to view it with the conventions of special relativity.