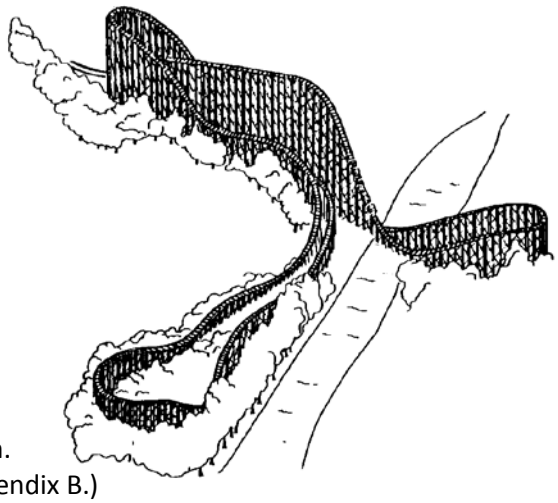
THE COMET



1. What are some things that would keep this roller coaster from being an ideal situation?

2. Find the total energy of the train with m = 4309kg and l = 12.19m at the top of the first hill of h = 24.4 m. (Hint: to find the speed at the top of the hill, see Appendix B.)

3. Find the total energy at the bottom of the hill.

4. Calculate the energy lost from the top of the hill to the bottom.

5. Find the percentage of energy lost from the top to the bottom of the hill.

6. Draw a graph of height vs. time for the first hill. Height should go on the vertical axis and time should go on the horizontal axis. Assume that the bottom of the hill is at y=0 and the train starts going down the hill at t=0. (Hint: Use a stopwatch to measure how long it takes for the car to go from the top of the hill to the bottom of the hill.)

7. Draw a graph of vertical velocity vs. time for the first hill. The velocity should go on the vertical axis and time should go on the horizontal axis. Assume the car has an initial vertical velocity v_0=0 and starts to go down the hill at t=0.

8. Draw a graph of acceleration vs. time for the first hill. The acceleration should go on the vertical axis and time should go on the horizontal axis. Assume the car starts going down the hill at t=0.