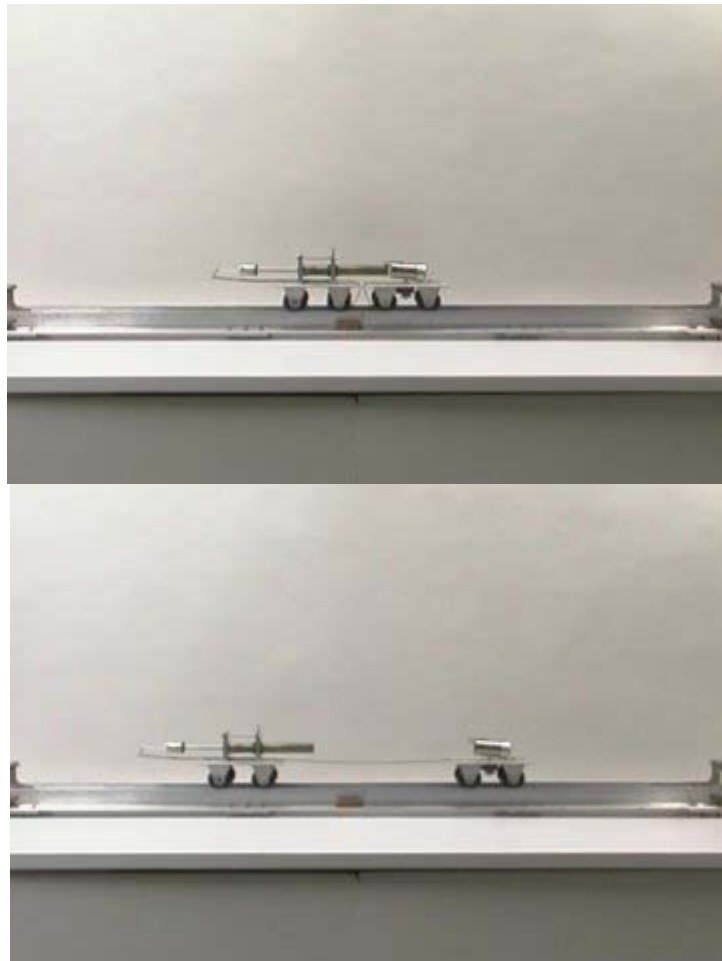


Question #244

This is a follow-up to the earlier [Question #207](#) regarding the ballistic cannon cart. The apparatus shown in the photograph at the left below, called "ballistic cannon carts," consists of a cannon on a cart, at the left in the photograph, which shoots a projectile into a receptacle cart at the right in the photograph. A string ties the gun mechanism in its ready position, the projectile is inserted into the gun, and the two carts are placed adjacent to each other in the exact center of the track. The mass of the receptacle cart plus the mass of the projectile is the same as the mass of the cannon cart without the projectile. The arrow on the track indicates its center. When the cannon is shot, because of Newton's third law and the equality of the masses the two carts move to their respective ends of the track, striking the ends at the same time, as seen in [Answer #207](#).



The photograph at the right above shows the new feature of this question: the two carts are connected by a string, approximately 40 cm long, that ties the two carts together, and will not break when the projectile is shot.

The question this week involves what will happen when the projectile is shot by the gun on the left cart into the receptacle on the cart at the right when the two carts are connected by the string.

After the projectile is shot and the motion ceases, the carts will be:

- (a) at the left side of the track.

- (b) at the right side of the track.
- (c) separated, but at the exact center of the track.
- (d) close together, but at the exact center of the track.
- (e) other.

Click here for [Answer #244](#) after March 6, 2006.

[Question of the Week](#)

[Outreach Index Page](#)

[Lecture-Demonstration Home Page](#)



For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).