14-Year-Old Sends Balloon to Space

Jack Miron is a 14-year-old student from Bedford, New Hampshire. Jack recently conducted an experiment for his eighth-grade science fair that got the attention of NASA.

What was Jack's experiment? He built a high-altitude weather balloon and equipped it with weather-measuring devices, as well as a GoPro camera. Jack also added a personal touch to his experiment: he sent a Lego man up with the balloon!

A few years ago, Jack took a trip to Canada. He went there in an airplane, and he spent a lot of the plane ride looking out of the window at the Earth below.

“I've always wondered how airplanes could fly,” Jack said. “It was amazing looking at the world from above.”

Even though the task was difficult, Jack didn't let that stop him. Despite all the complex weather equipment he had to set up, Jack built the weather balloon in only one week!

“I never do anything simple,” Jack said.

Jack had to make complex calculations to get his balloon to fly properly. He measured the balloon's helium density in relation to its thickness, so he could properly balance the payload carried by the balloon.

Also, when Jack was researching his project, he discovered that temperatures in the upper atmosphere can fall as low as minus 67 degrees Fahrenheit (- 55 Celsius). Jack worried that this extremely low temperature could cause the batteries in the GoPro to freeze. He overcame this obstacle by putting hand warmers next to the camera!

Jack was confident his balloon would fly high, and it did. But he was worried about something else, too: “The biggest problem I found was that the jet stream would carry my balloon straight into the Atlantic Ocean,” he said.

Due to careful planning, Jack was able to avoid the jet stream. The balloon climbed to a height of 110,000 feet (33.5 km), past the troposphere and the ozone layer. Jack's balloon was well into the stratosphere at the height of its journey, and it took some amazing pictures of the curvature of the Earth.

The science fair Jack entered took place in November. But during his research, Jack discovered that the jet stream weakens during the summer. This discovery caused him to launch his balloon in August.

David Robinson of Columbia University specializes in atmospheric sciences. Robinson said that only a very clever person would be able to make such accurate calculations.

“It's not normal for national weather service balloons to get this high,” Robinson said.

At the apex of the balloon's flight, the atmosphere was extremely thin. This caused the gases in the balloon to expand, which caused the balloon to explode. Jack was prepared for this: he equipped the balloon with a parachute.

The balloon floated back down to Earth after about two hours. It landed in the driveway of another New Hampshire resident named Sean Tolland.

“I called the police because I didn't know what it was,” Tolland said, laughing.

Jack was overjoyed to discover that his balloon experiment was a success. “I was so excited and overjoyed to have it back - I thought it was gone. I was ecstatic,” he said.

Jesse Craft is a NASA Space Flight Design and Analysis Engineer. Craft was very impressed with Jack's balloon.

“He has a mind for detail - recognizing potential problems and needs before the launch. He has the mind of an engineer!”

Questions:

1. According to the story, which statement is TRUE?

    a. Jack conducted an experiment for his eighth-grade biology fair that got the attention of NASA.
    b. He built a high-altitude weather drone and equipped it with spying devices, and a GoPro camera.
    c. Jack built the device in only one week!

2. What did Jack do while on an airplane to Canada?

    a. He watched the in-flight movies about space.
    b. He looked out of the window at the Earth below.
    c. He looked out of the window at the sky above.

3. Why was Jack worried about extremely low temperatures?

    a. Because it could freeze the balloon.
    b. Because it could freeze the batteries in the camera.
    c. Because the science fair took place in November.

4. Why was Jack worried about the jet stream?

    a. Because the jet stream would carry the balloon into the Atlantic Ocean.
    b. Because the jet stream would freeze the batteries in the camera.
    c. Because he didn't have a license to launch a balloon into the jet.

5. Jack's balloon exploded. How did he prepare for this?

    a. He installed an onboard fire extinguisher.
    b. He used a secondary emergency balloon.
    c. He installed a parachute.