



INTRODUCTION

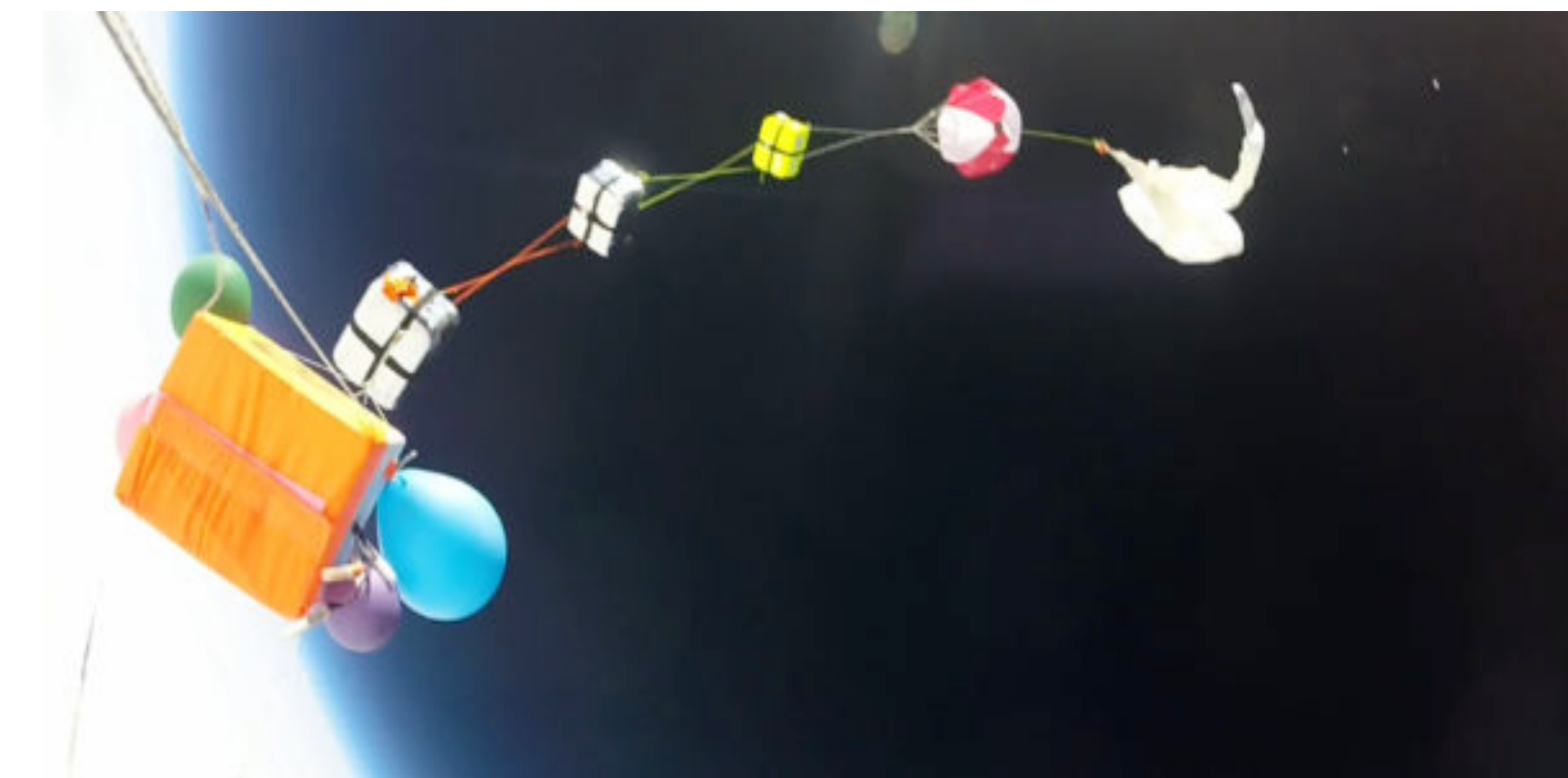
One of the most important characteristics of our world is defined by the equation $PV=nRT$, which simply means pressure and volume are inversely related, but directly related to temperature and the amount of something in a container. As pressure goes lower and lower, volume must increase to match. Our experiment was designed to help visually show this by taking very small balloons and watching them massively increase in size near the end of a High Altitude Balloon's trip, somewhere around 76,000 ft. And touching the very tips of space.

METHOD

We took several small balloons with different gases held within to determine if their expansion rates notably differed over the course of the flight. The best method we could devise is essentially brute force – comparing the sizes shown in pictures about 10 minutes apart during the course of the ascension.

RESULT

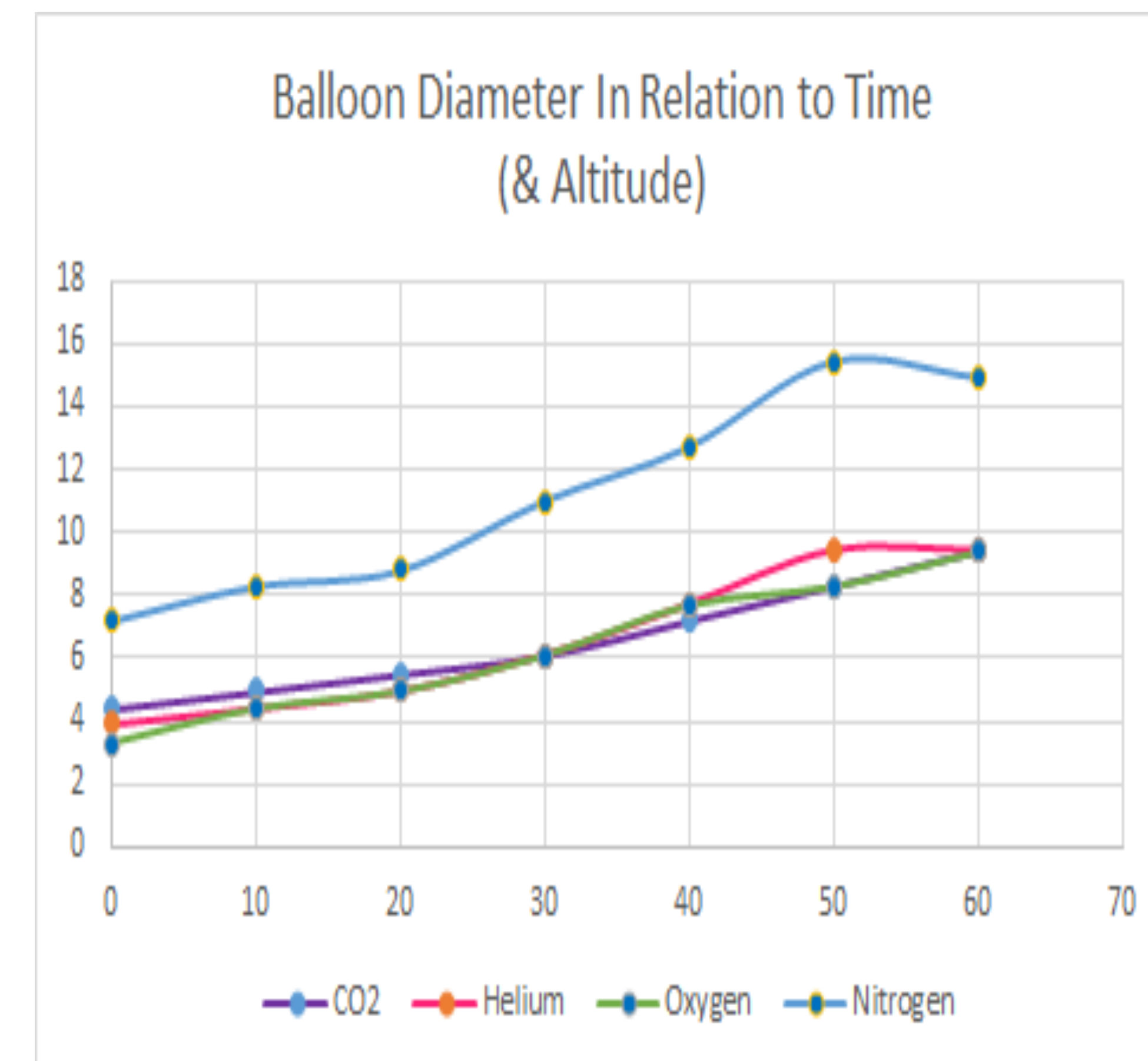
The result was really quite better than we could've hoped. One of the most consistent predictions was that the relatively flimsy party balloons would explode from the extreme temperature drops and expanding pressure from within. Fortunately they actually survived until the very end of the flight, allowing us to get an absolutely awe inspiring picture of the entire HAB line, with our experiment attached at the bottom in the coloured balloons.



My personal favorite of the pictures from the launch.

CONCLUSIONS

The balloons expanded quite noticeably by the end of the flight, which gave us some very nice results taking data every ten minutes or so. The balloons all seemed to expand at the same rate, even though the Nitrogen (blue) balloon was larger initially than the others.



Above: The graph for data collected during the balloon experiment. The left side shows the diameter in cm of each balloon. The x-axis shows the time in minutes. The altitudes of each minute marking are, in meters, 350(0) -- 4000(10) -- 8500(20) 13340(30) -- 17881(40) -- 22146(50) -- 23755(60)

CONTACT

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