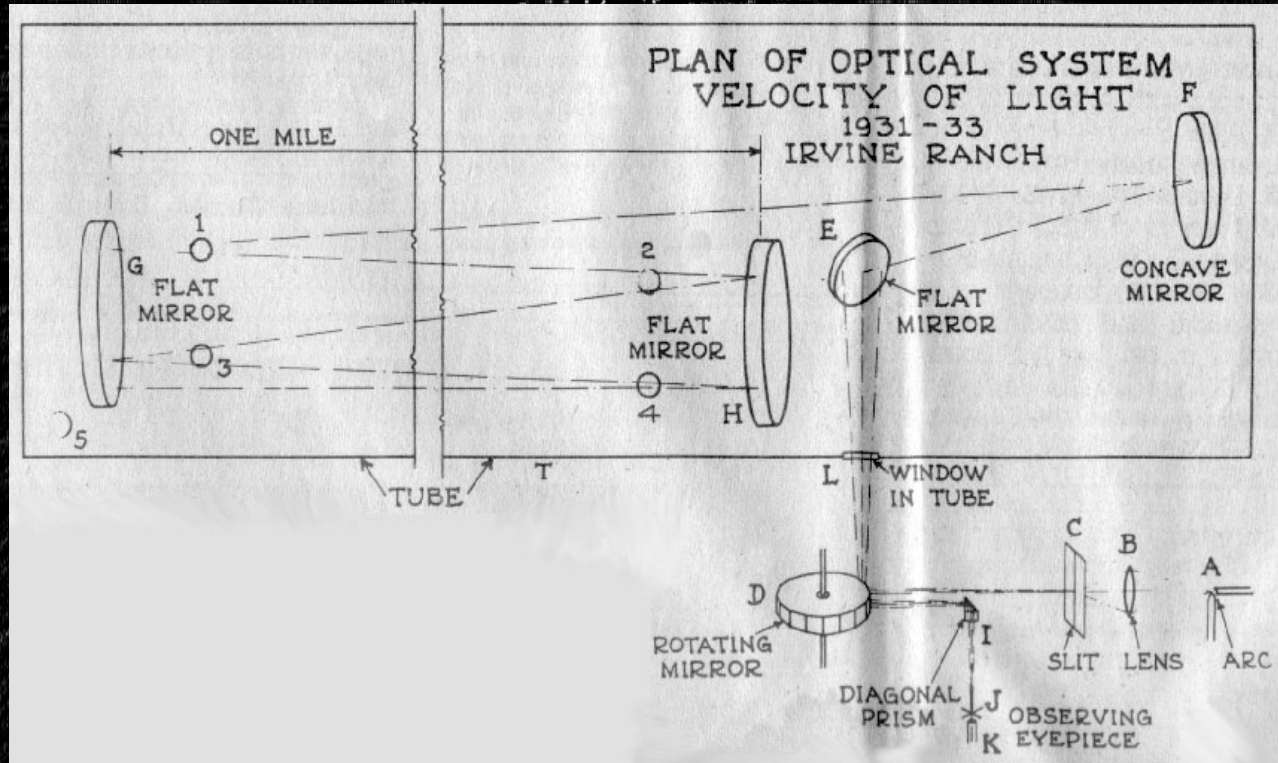


The Speed of Light

The speed of light was measured by Dr. Albert Michelson at the Irvine Ranch in the early 1930s.

Many modern physics students repeat the experiment in their college laboratory classes.

**Light...What is it?
How do you measure it?**



Come share a story and begin a journey that will last longer than a lifetime...it will go on for generations!

When Will We Make . . .



. . . The Jump to
Hyperspace?

When Science Fiction . . .

It's 8 a.m. in a Southern California classroom and a teacher begins the day's science lesson. Little do these middle school students know that this teacher has just finished a workshop presented by the Optics Institute of Southern California. These children are about to experience the world famous **Optricks Suitcase!** The class is its usual noisy self as the teacher heads for the lights and slowly starts turning them off. The class settles down as the last light goes dim and only stray beams sneak through from the cracks in the windows and doors.

Suddenly, they witness a flash of colored lights. They let out gasps of wonder and think, "What's happening?!"



The teacher turns on a small light so the students can see her and the object flashing the lights, and she asks them to explain what is happening.

Thus begins a lesson that these students will not soon forget. The lesson continues with concepts of rubber balls that appear the same—but one bounces and the other does not! Why? the students are asked to explain. A periodic table of elements helps clarify this "trick." Then: what's the difference between a lens and a mirror? Why can you see through one, but not the other?



Playing with large Fresnel lenses only looks like it will give a student a big head. Actually, they will start to wonder how these large pieces of plastic perform their special **Optricks**.

The OISC teaches about the Scientific Method by asking about things that seem to be well known. What are the primary colors? Red, Blue and Yellow. "Not quite," comes the answer. Think about color ink jet printers, whose ink colors are Cyan, Magenta, Yellow, and Black. These youngsters will discover that by using only the true primary colors, they can mix these colors and create all the colors of the traditional color wheel.



One of the main reasons we teach the scientific method is to let children know that adults don't always have the answers. Scientists are constantly searching for new and deeper understandings of the world around us. We let them know that it was not long ago that airplanes didn't exist and most people thought man would never fly, and it was never even thought that a man could go to the moon. Science fiction seems to go places first—and science fact sometimes follows.

When we watch science fiction like *Star Trek* and *Star Wars*, we see people fly through space at “warp” or “hyper speed,” which means “faster than the speed of light.” Today's (and yesterday's) best scientists have no way of describing a means to have any bit of matter travel faster than the speed of light. Einstein's Special Relativity predicts that matter can not travel faster than the speed of light; and much of our modern technologies, like computers, lasers and the most advanced telescopes and research laboratories suggest that Einstein was correct.



But we don't know what we don't know. The OISC has a new project, “The Speed of Light” exhibit. This is a tribute to a friend of Einstein's, Dr. Albert Michelson, who was the first American to win the Nobel Prize in physics. He won it by establishing light as a tool for accurate measurement. Michelson's last and most accurate speed of light experiment was completed at the Irvine Ranch in 1931 and the road that leads into the John Wayne Airport is named after this famous scientist.

If we ever hope to move from science fiction to science fact and find our way to the stars, we need to teach our children to dream, to study, and to seek ways to make their own dreams come true. We must instill in them the power of knowledge, the curiosity to learn how things work and the drive to make new things real from their dreams. This is the OISC's mission. Come walk this path with us.

... Leads to Science Fact.