# A Space-Age View into Human Vision

Abbott
A Promise for Life

Throughout history, man's desire and ever-improving ability to clearly see into deep space has had direct impacts on man's ability to see clearly here on Earth. Today, that relationship lives on as the precision laser-based measurement devices that help craft the lenses and mirrors required for high resolution visuals of deep space are used by doctors to craft ***the most complete and accurate measurement of the eye available***. A look at the historic milestones of innovation between visualizing the cosmic vastness of space and improving our eyesight here at home:

**1000-1200**

First vision aid invented: The reading stone, used to magnify letters

"Philosophers, monks, mathematicians, physicists, microscopists, astronomers, and chemists all played vital roles in developing eyeglasses"

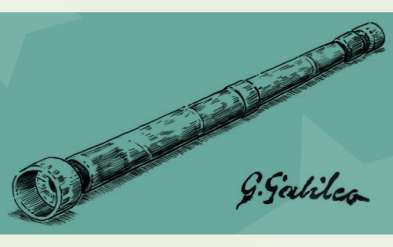
*Dr. J. William Rosenthal*

**1284**

Salvino D'Armate (Italy) is credited with inventing eyeglasses

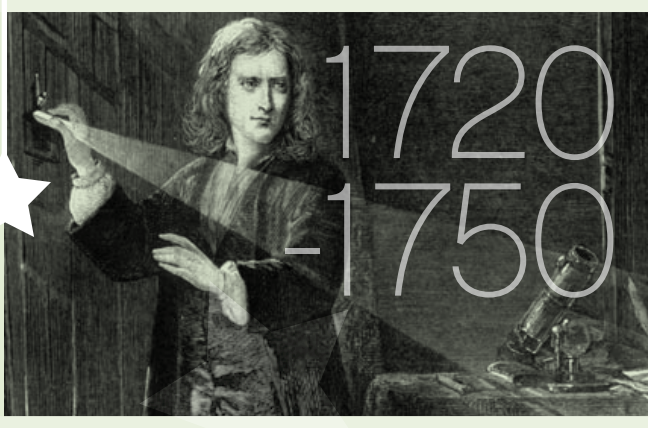
**1608**

Telescope invented by a spectacle maker. Galileo constructs his own version in 1609



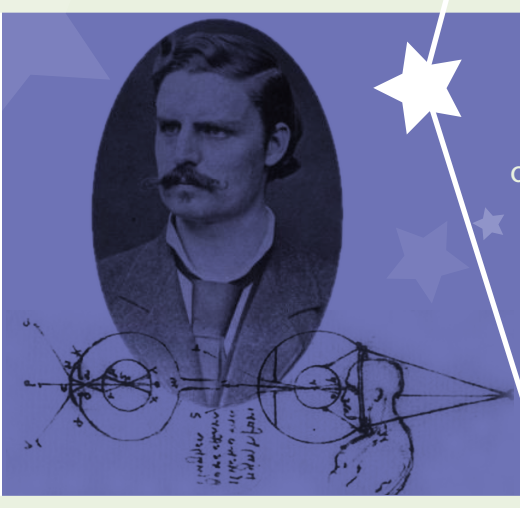

**1720-1750**

Based upon Isaac Newton's study of light (1672), mirrors are incorporated into the design of telescopes, increasing their power by reflecting light and images into rudimentary optical systems of magnifying lenses



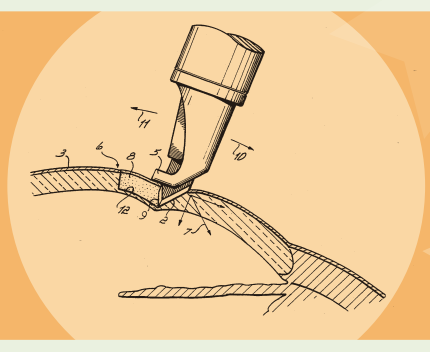
**1888**

Taking cues from ideas described by Leonard da Vinci (1505), Rene Descartes (1636) and John Herschel (1845), a German ophthalmologist - Dr. Adolf Gaston Eugen Fick - makes the first glass contact lenses



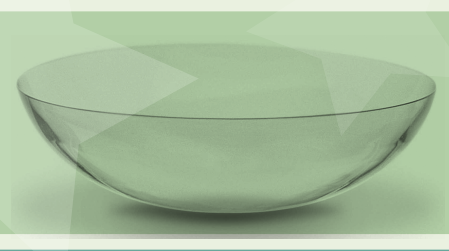
**1898**

Radial keratotomy - or RK - was the first widely-accepted surgical vision correction procedure designed to correct myopia (nearsightedness)



**1948**

Soft plastic contact lenses are developed

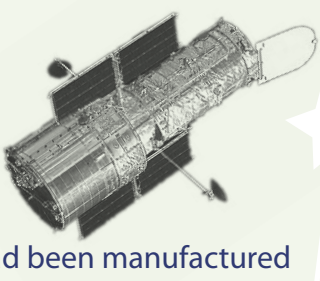


**1987**

First laser vision correction surgery is performed

**1990**

The Hubble space telescope is carried into orbit. Within weeks it is discovered that the telescope's mirror had been manufactured into the wrong shape – creating visual aberrations. In 1993, space "spectacles" were added to correct Hubble's optical system



In an effort to avoid this error in the James Webb Space Telescope, scheduled to launch in 2018, a sophisticated wavefront measurement system was developed to precisely shape the telescope's mirrors within accuracies of less than 1/1,000,000th of an inch - ensuring high-resolution, crystal clear images of deep space

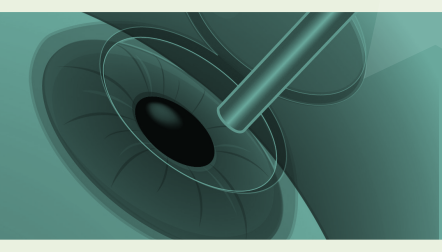
**1995**

Refractive eye surgery uses an excimer laser to reshape the cornea to allow more focused light to enter the eye. Reshaping the cornea requires microscopic precision

U.S. FDA approves the excimer laser for vision correction (PRK)

**1998**

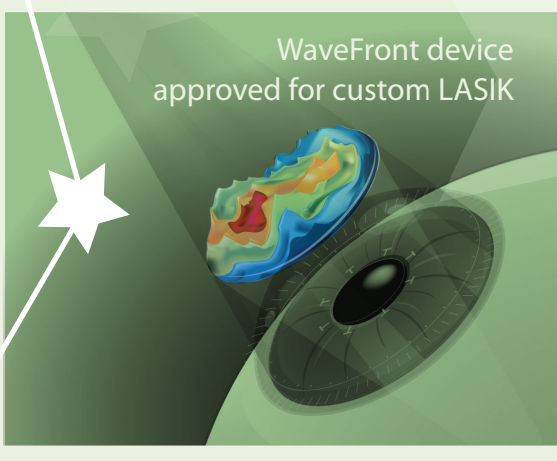
FDA approves first excimer laser for LASIK



**2002**

An era of micro-precision is ushered into refractive eye surgery with the FDA's approval of Wavefront and femtosecond technologies. Femtosecond lasers allow physicians to create thin, extremely precise flaps. Wavefront systems were the first to measure surface irregularities - or aberrations — at a microscopic level

WaveFront device approved for custom LASIK



**2003**

Femtosecond laser approved for corneal flaps

**2012**

5x higher resolution

Incorporating the technologies developed for manufacturing the James Webb Space Telescope optics, Abbott receives CE Mark for the iDesign in Europe. With 5x the resolution power, surgeons can now precisely capture five optical measurements at once, creating a higher resolution correction for LASIK

**2013**

iDesign becomes available to U.S. ophthalmologists and patients