The History of Telescopes

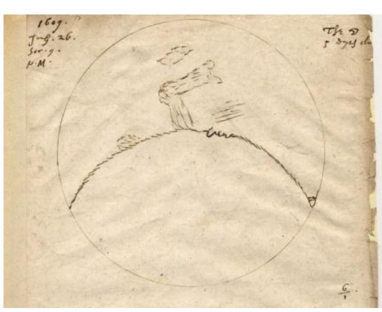
In 3500 B.C., Phonenicians cooking on sand discover glass. A green glass rod found at Eshnunna in Babylonia has been tentatively dated to 2600 BC. The earliest surviving glass objects from Egypt are beads of glass dating from some time after c. 2500 BC. A small piece of blue glass found at Eridu dates from sometime before 2200 BC. www.antiquetelescopes.org/history.html

In 424 B.C. Aristophanes uses a glass sphere filled with water to start fires. Although this is the earliest known example of a "lens", lenses would not be used to view the night time sky for 2000 years. In the 14th century, convex lenses to correct farsightedness were developed. And in the 15th century concave lenses were developed to correct nearsightedness. www.antiquetelescopes.org/history.html

The telescope has historically been attributed to be invented in 1608 by Hans Lippershey, a spectacle maker from Middelburg, Holland. Lippershey (at left) discovers that holding two lenses up some distance apart bring objects closer.

Hans Lipperhey was the first to apply to the States General at the Binnenhof for a patent on his invention. The idea is believed to been independently developed by Jacob Metius and Sacharias Janssen. Owing to nearly simultaneous discoveries by other opticians, the patent to Lipperhey is denied on the grounds that the idea is not his unique discovery. The States General could not understand why the device only used one eye, and they ask Lipperhey to produce a device that used both eyes. Lipperhey produces three of the devices--the first binoculars--for the States General before they decline his patent on the grounds that it was already too commonly known.

https://en.wikipedia.org/wiki/Hans_Lippershey, http://www.antiquetelescopes.org/history.html
https://en.wikipedia.org/wiki/History_of_the_telescope



Thomas Harriot (1560 – 1621) English astronomer, mathematician, ethnographer, and translator becomes the first person to make a drawing of the Moon through a telescope, on July 26, 1609, over four months before Galileo. He makes the earliest known sketch of the moon seen through a telescope. The sketch clearly reveals craters.

www.antiquetelescopes.org/history.html
http://www.universetoday.com/23629/was-galileo-the-first

News of the telescope discovery spread and after simply hearing that the device was invented, Galileo Galilei of Padua, Italy, built his first three-powered spyglass in June or July 1609. He presented an eight-powered instrument to the Venetian Senate in August, and turned a twenty-powered instrument to the heavens in October or November. In January 1610, Galileo begins observing the moons of Jupiter. He published a description of his night sky observation in The Starry Messenger (Sidereus Nuncius) in March 13, 1610. Although it contained only twenty four pages, it astonished and troubled the learned world. He reported that the moon was not smooth, as previously believed, but rather rough and covered with craters; that the Milky Way was composed of millions of stars and Jupiter had four moons.

https://en.wikipedia.org/wiki/History_of_the_telescope

https://en.wikipedia.org/wiki/Sidereus_Nuncius

On the night of April 14, 1611, a banquet was held in his honor outside Rome. Galileo showed the guests his instrument and let them see his discovered. An unidentified Greek poet-theologian happened to be present and he proposed a name for the instrument, one borrowed from ancient Greece. It was quickly accepted and the host, Federico Cesi, then officially christened Galileo's instrument, "the telescope". http://www.hioptic.com/telescopes

In 1604 and 1611, Johann Kepler of Germany set forth the principles of the refractor astronomical telescope by publishing two books entitled, *Astronomia Pars Optica* and *Dioptrice,* respectively. In his book *Astronomia Pars Optica*, for which he earned the title of founder of modern optics he was the:

- First to investigate the formation of pictures with a pin hole camera;
- First to explain the process of vision by refraction within the eye;
- First to formulate eyeglass designing for nearsightedness and farsightedness;
- First to explain the use of both eyes for depth perception.

In his book *Dioptrice* he was the:

- First to describe: real, virtual, upright and inverted images and magnification;
- First to explain the principles of **how** a telescope works;
- First to discover and describe the properties of total internal reflection.

https://en.wikipedia.org/wiki/Johannes_Kepler

http://kepler.nasa.gov/Mission/JohannesKepler

In 1611 Johannes Kepler improved the refractor telescope design by eliminating the concave eyepiece in favor of a convex lens as an eyepiece. The field of view widened, eye relief improved, magnification increased - but the image was inverted and the f-ratio increased.

- Although the images are inverted, Kepler demonstrates how a third convex lens positioned between the other two turns the images right-side-up again. Unfortunately, the use of a third lens also degrades the images, making them so blurred that this form of the telescope is not widely used.

- Kepler's studies the human eye and notices that the eye's lens is hyperbolical. He suggests the use of hyperbolical lenses in the telescope. Spherical lenses are not very sharp because they smear the rays of light over a very small area, a phenomenon now known as spherical aberration. Kepler's own eyesight is quite poor so he never actually builds a working model of any of these telescopes. The first example of these telescopes is built several years later by Christoph Scheiner (1573-1650) a Jesuit astronomer who fought with Galileo.

www.antiquetelescopes.org/history.html

1612—A German astronomer, Simon Marius observes and measures the diameter of the Andromeda Galaxy with his telescope, describing it as "like a candle shining through horn." Also observed Jovian moon and derived better periods of revolution than Galileo.
https://en.wikipedia.org/wiki/Simon_Marius

1637--Rene Descartes demonstrated that spherical lenses cannot produce pinpoints of light. He studies elliptical and hyperbolical lenses and demonstrates that different combinations of hyperbolical lenses or elliptical lenses will produce a pinpoint of light and a sharper image. He has a Parisian optician produce hyperbolical lenses for a demonstration, but the lenses are a failure. Although the lenses corrected for spherical aberration, they introduced another problem--chromatic aberration, which made the problem worse. Chromatic aberration means that different colors are focused at widely differing points, producing smeared images with halos around them.
www.antiquetelescopes.org/history.html

1640--Lens making had progressed to a point where the optical quality of the glass and the grinding techniques were good enough to produce Keplerian telescopes with acceptable image quality. Anton Schyrle de Rheita (1597-1660), a Capuchin monk, discovers even more satellites around Jupiter than the original four. In 1645, he published Oculus Enoch et Eliae which describes his inventions, an eyepiece for a Keplerian telescope, which left the image reverted. This was an improvement of Kepler's original design. It also contained a long section on binocular telescopes, which greatly influenced other telescope-makers and opticians in the next century. His section on binocular telescopes is not illustrated, but the methods he describes became the standard construction techniques for many years. High quality telescopes could now be purchased from Johannes Wiesel (1583-1662) in the city of Augsburg. Wiesel was an impeccable craftsman and his scopes were quite expensive.

https://www.sophiararebooks.com/pages/books/4027/anton-maria-schyrlaeus-de-rheita/oculus-enoch-et-eliae-sive-radius-sidereomysticus-pars-prima-opus-philosophis-astronomis-rerum https://en.wikipedia.org/wiki/Anton_Maria_Schyrleus_of_Rheita

1663--James Gregory designed a telescope using a concave primary mirror (slightly hyperboloid) concave ellipsoidal secondary mirror. The first mirror gathers the light and reflects it onto the secondary. The secondary mirror focuses the light back through a hole in the primary mirror. This is the basis for many telescopes made today, but the opticians of his time were not able to produce mirrors of high enough quality to give good results. www.antiquetelescopes.org/history.html

1668--Robert Hooke demonstrates how to shorten the tube by using three or four perfectly flat mirrors to reflect the image back and forth in a shorter tube. A 60-foot long telescope can be reduced to 12 feet long, greatly simplifying support and stability. www.antiquetelescopes.org/history.html

1672--Laurent Cassegrain proposed a similar design using a convex secondary mirror that allowed the tube to be shortened even more. More importantly, it cancelled aberrations from the primary mirror and would have resulted in much sharper images, had opticians been able to produce quality mirrors. It is interesting that Gregory, Cassegrain, and later Newton were able to invent designs that were so far ahead of their time that no one could actually make one.

www.antiquetelescopes.org/history.html

1668--Newton produces the first successful reflecting telescope, using a two-inch diameter concave spherical mirror, a flat, angled secondary mirror, and a convex eyepiece lens. As is often the case in physics, the simplest solution is often the most practical one. The reflector telescope that Newton designed opened the door to magnifying objects millions of times--far beyond what could ever be obtained with a lens. There were problems with his mirror. It was made of copper and tin (called "speculum") and polished to a high degree of reflectivity. It would tarnish quickly and need re-polishing at least twice a year. Newton was the most important thinker of his day, and he believed that only mirrors would eliminate chromatic aberration and that it could never be done with lenses. The mirror telescopes of the day suffered from poor image quality. This was due to the use of a spherically ground primary mirror. Newton's mirror did not bring all rays of light to common focus. www.antiquetelescopes.org/history.html

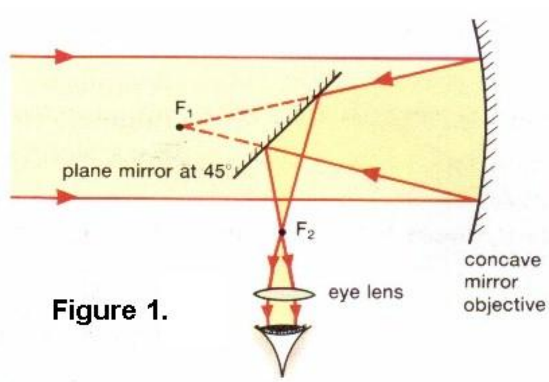


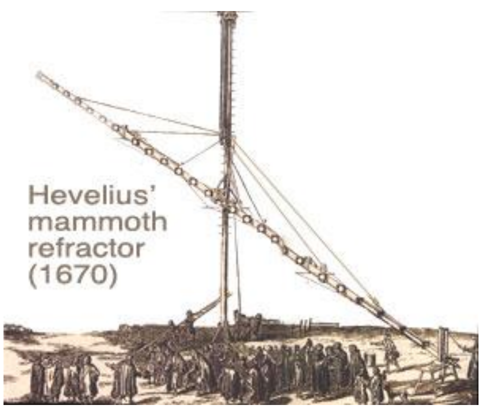
Figure 1.

The earliest telescopes, such as those used by Galileo, consisted of glass lenses mounted in a tube. Newton discovered that when light (from a star, for example) passed through a lens the different colours were refracted by differing amounts. This meant that the components of white light were brought to a focus at different places and the image of a star would then appear to be surrounded by a spectrum of colours. This effect is called chromatic aberration, and was not easily rectified using the technology available in Newton's time.

To solve the problem, Newton designed a telescope that used spherical mirrors, rather than lenses, to bring the light to a focus. It is interesting to note that Newton did not invent the idea of a reflecting telescope: the honor for this goes to the Scottish mathematician James Gregory, who designed such an instrument in the early 1660s. Newton's design was simpler than Gregory's and the basic idea is shown in figure 1.

Light from the object being viewed is collected by the concave primary mirror and reflected to a smaller, secondary plane mirror (sometimes called the "flat"). The flat is inclined at 45 degrees to the axis of the telescope and reflects light to an eye lens which forms an image. Newton communicated the details of his telescope to the Royal Society in 1670, but it did not become widely known until the publication of Opticks more than thirty years later. The photograph shows Newton's original telescope. http://voyager.egglescliffe.org.uk/physics/astronomy/telescope/newtontele.html

1673--Johannus Hevelius realized that the longer the telescope was, the closer together the different colored points of light would be at the focal point, yielding a sharper image. He constructs a telescope 140 feet long which probably gave very sharp images, but it was almost impossible to keep the two lenses aligned because the supporting structure (usually a long tube) could not be made rigid enough. www.antiquetelescopes.org/history.html



1675--Christian Huygens suggests getting rid of the supporting structure and mounting the objective lens on the top of a long pole. These were called "aerial telescopes" because they were open to the air. They were also much easier to build and use. At the same time, Huygens developed a compound negative eyepiece using two air-spaced convex lenses. This arrangement cancelled out some of the chromatic aberration that occurred in a single lens eyepiece. www.antiquetelescopes.org/history.html

1704--Isaac Newton published his book, *Opticks*, on light and the spectrum of light. https://en.wikipedia.org/wiki/Opticks

1721--An Englishman named John Hadley used a parabolical mirror in the reflecting telescope that dramatically improved telescope performance.

https://en.wikipedia.org/wiki/Newtonian_telescope

1729--Chester Moor Hall develops an achromatic lens. Two pieces of glass (the crown and flint) with different indices of refraction can be combined to produce a lens that tends to focus most colors at a very close (though not exact) point. Red and Green neatly blended at a point, but blue-violet still missed that point by a small amount. The result was a much sharper image with violet halos around brighter objects. Refractors are suddenly popular again. The images still show simple optical distortion around the edges, which mirrors developed around the same time did not. www.antiquetelescopes.org/history.html

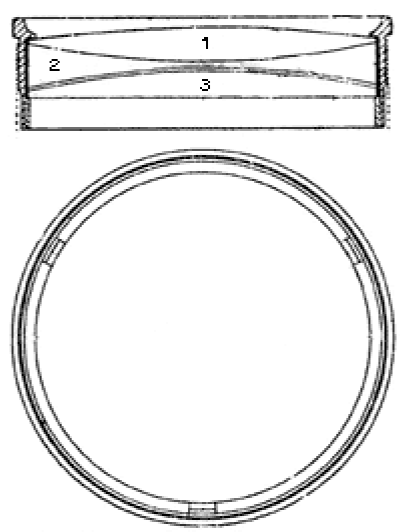
1730--The Scottish Instrument maker James Short invents the first parabolic and elliptic, distortionless mirror ideal for reflecting telescopes. Short accomplished this in a very practical manner: Since parallel rays nearer the center of a spherical mirror overshoot the marginal rays coming from the edge of the mirror, why not just deepen the center to bring all the rays of light to the same point of focus? James Short built over 1,360 telescopes. All had speculum mirrors. Short was closely involved with the Transit of Venus observations made throughout the world on 6th June 1761. His instruments traveled on the ship Endeavour with Captain Cook to observe the Transit of Venus on 3rd June 1769. www.antiquetelescopes.org/history.html

1757--John Dolland improves upon the achromatic objective lens by placing a concave flint glass lens between two convex crown glass lenses. This triplet uses the natural differences between the refractive indices of the two types of glass to cancel out chromatic aberration even more. Some historians claim that the triplet was introduced in 1765 by Peter, son of John Dollond. www.antiquetelescopes.org/history.html

1789--Sir William Herschel constructs a forty foot long telescope with a four-foot diameter mirror. Reflector telescopes have become popular again because they can be built with enormous mirrors, capable of gathering hundreds or even thousands of times more light than a refractor. Today we call them "light buckets." www.antiquetelescopes.org/history.html

1850's-- Silver replaced speculum for coating mirrors on reflecting telescopes. Silver has a longer life span, but still loses reflectivity quickly over time due to oxidation. https://en.wikipedia.org/wiki/Silvering

1893--H. Dennis Taylor, optical manager of T. Cooke & Sons of York, makers of astronomical telescopes, designed and patented the revolutionary, and now famous, triplet design



The Cooke Triplet

(British patent no. 1991). This lens eliminated the optical distortion at the outer edge of lenses. The Cooke Triplet was a significant improvement of the Dolland triplet of more than a century earlier. The Cooke triplet, seen at right, is made of three different types of glass. No. 1 in the diagram is Schott's baryta light flint glass. No. 2 is Schott's boro-silicate flint glass, and No. 3 is Schott's light silicate crown glass. The lenses are air-spaced, that is, not touching each other. www.antiquetelescopes.org/history.html

By 1930 telescope mirrors were being coated with aluminum, which is further overcoated with a clear coating to keep it from oxidizing. This further enhanced the longevity of telescope mirrors. https://en.wikipedia.org/wiki/Silvering

In the 1930's Bernard Schmidt developed the Schmidt principal using a spherical primary mirror and a thin aspheric corrector lens. This allowed a correction for coma in very low f-ratio mirrors. Up to this time telescopes were generally produced for professional astronomers or had to be made by hand by the amateur astronomer. However this was about to change in the 1950's. https://en.wikipedia.org/wiki/Bernhard_Schmidt

Cave Astrola began producing telescopes in December 1950.

After serving in Europe during the second world war, Thomas Cave (1923-2003 returned to his home in Long Beach,California and enrolled in USC, where he majored in optical engineering. In 1950, six credits short of his degree, Tom left school to begin the Cave Optical Company out of his garage in Long Beach.

Although the company pioneered the mass production of telescopes, Cave Optical became known for the quality of their mirrors and the overall quality of the telescopes and mounts. Their reputation led to the production of observatory class telescopes and government contracts. Over the years they produced several mirrors for NASA, the largest having a 75cm diameter. Cave Optical also produced Cassegrain optics, and they ground and polished primary mirrors for Questar Maksutovs. Over a period of thirty years Cave Optical would produce over 83,000 mirrors and 15,000 complete telescopes.

But now, twenty-five years after the Cave Optical Company closed its doors, they are still remembered for the quality of their smaller scopes, the Cave Astrolas, which are still used and highly valued among planetary observers today. Tom Cave was himself a planetary observer throughout his life. His drawings and written observations of various Mars oppositions were published many times. His personal preferences were reflected in his company's products. Despite all of the big contracts, Cave Optical's main focus was always the production of medium to large aperture, long focus Newtonian reflectors for amateur and professional astronomers.

http://www.cave-astrola.com/history/thomascave/making/index.html

Questar Corporation was founded in 1950 by the inventor of the 3.5" telescope, Lawrence Braymer. Mr. Braymer lived in Solebury, Bucks County and was an illustrator by trade. His wife, Marguerite Braymer, an advertising executive, was his active partner in the development of the company.
He had a passion for fine art and artistic detail – and loved astronomy. He designed, applied for and received a patent in 1948 for what is now referred to as "The Questar, the finest small telescope ever made." His design was revolutionary in its compactness, durability and portability. http://www.questarcorporation.com/QuestarPDF/QuestarHistory.pdf

In the 1960's John Dobson first popularized the "classic", "hard tube" or first generation Dobsonian as part of the San Francisco Sidewalk Astronomers mission to bring astronomy to the masses. The basic idea driving the original design is to make large aperture telescopes affordable, easy to make, and portable.
https://en.wikipedia.org/wiki/John_Dobson_(amateur_astronomer)

John Dobson has been called the "Pied Piper of Astronomy," the "Star Monk," and the "MacGuyver of Astronomy." He is arguably one the most influential personalities in amateur astronomy in the last 50 years. He has almost single-handedly revolutionized backyard astronomy by bringing it out to the street, making it accessible for anyone who has ever looked up in wonder, and asked "Why?"

Because of his influence, millions of people all over the world have looked through the telescopes of the Sidewalk Astronomers (the San Francisco was dropped when chapters started forming worldwide). John has helped to simplify the art of mirror making enabling thousands of children and adults with no previous experience or special training in optics to experience the joy of turning slabs of glass into powerful eyes into the heavens with their own hands. The "Dobsonian" mount has made large, "user friendly" telescopes affordable and accessible to the general public. Thousands of people have made their own sturdy, low-cost telescopes under John's direction or on their own by using his simple design.

Telescopes with light-weight mirrors previously considered unusable, long focal ratios previously considered unmanageable, and apertures previously considered unthinkable are now in the hands of lovers of astronomy around the globe. With so many home-made Dobsonians showing up everywhere, commercial telescope makers joined the trend and now most offer relatively inexpensive Dobsonians. Because of the popularity of home-made and commercial Dobsonians, it is impossible to measure the impact John has made on amateur astronomy and because of the changing role of amateur astronomy in discovering comets and other celestial objects, it is equally impossible to measure the true contribution his inspiration has made to our knowledge of our Universe.

http://www.sidewalkastronomers.us/id32.html

220 Sky & Telescope, *August, 1988*

Coulter Optics was started in 1967 in California by Jim Jacobson. The original optics manager of the company was Steven Murdock who later became the Chief Executive Officer and President of Meade Instruments Corp. Coulter made mirrors for amateur telescope makers and later began to make assemblies to hold them. They made several types of telescopes including the CT-100 "Coffee Can" scope but the most popular were the large dobsonians. They came out with the 13.1 inch dobsonian in May of 1980. These were the "Blue box" scopes where the mirrors were held in a "sling" cell. They switched to the well known red tubed Coulters around 1985.

In 1985, Coulter Optics sought to add a smaller telescope to their line of larger dobsonians such as the popular 13.1 inch. The 8 inch "Odyssey 8" was first made with a focal ratio of f/4.5. Nearly ten years later, in 1993, they added an 8 inch f/7 which fit on the same base as the f/4.5. The longer focal ratio of the f/7 made it better for planetary work while the f/4.5 was naturally considered a deep sky scope. For a short time, just before the end of the company,

The f/4.5 originally sold for $239 and moved up a bit to $275 by the 1991 ad on the left. Coulter went bankrupt in 1995 when Jim Jacobson became ill. Mr. Jacobson died and the Coulter name and remaining assets were sold to Murnaghan Industries of Florida in 1996. Murnaghan sold a slightly updated version of the Odyssey until 2001 but then stopped production. The scopes sold for $399 which couldn't compete with the likes of Orion who sells the XT8 for as little as $350. The Odyssey does live on though in some form. Murnaghan sells Odyssey kits that contain the primary and secondary mirrors, a new and improved spider, a new and improved helical focuser, a 5x25 finder, a 25mm kellner eyepiece and edge trim for a sonotube. You must supply the sonotube, mirror cell, and rocker box and bearings. Total kit price for the 8 inch is $299.95.

The Coulter Odyssey 8 is a hardier scope than one might expect from first glance. The optical tube of the scope is a paperboard sonotube. The rocker box is made of exterior grade chip board. While it looks cheap, it can withstand the elements. These scopes worked right out of the box but users typically upgraded them as needed. This has led some to call the old Coulter Odyssey telescopes "kit telescopes" that worked right out of the box.
https://sites.google.com/site/coulterodyssey/index

Celestron began in the 1950s as Valor Electronics, an aerospace electronics firm. Celestron's founder, Tom Johnson, became interested in telescopes and astronomy when looking for a suitable telescope for his two young sons. Tom decided to build a telescope from scratch. Starting with a 6" reflector, he progressed to building increasingly larger and more sophisticated designs. Tom's hobby soon grew into a full-time business. In 1964 "Celestron Pacific" was formed as a division of Valor Electronics, offering Schmidt-Cassegrain telescopes from 4" to 22". In 1970 Celestron introduced its "C8" 8" diameter 2032 mm focal length, ƒ10 telescope, the first of a new line of telescopes built using methods developed by Celestron to produce Schmidt-Cassegrains at a high volume and low cost. These models made significant inroads into the amateur astronomical and educational communities. The popularity of the C8 Celestron telescope in the consumer marketplace led to the C5 Celestron telescope and then to larger versions, including an 11" and 14" telescope. Celestron was acquired by Tasco in 1997 and almost went out of business when Tasco folded in 2001.

In early 2003 Celestron's rival, Meade Instruments, attempted a takeover but a bankruptcy court allowed the sale of the company back to its original owners. The company had been U.S. owned until April 2005 when it was acquired by SW Technology Corporation, a Delaware company and affiliate of Synta Technology Corporation in China. Synta is a leading manufacturer of astronomy equipment and related components.
https://en.wikipedia.org/wiki/Celestron

Meade Instruments began business in 1972 on initial capital of $2500 as a mail-order supplier of small refracting telescopes. The fledgling company quickly found that there was an increasing demand for quality telescope accessories, a demand that was going largely unmet. In 1973 Meade added lines of Orthoscopic and Kellner eyepieces, followed rapidly by a group of precision rack and pinion focusers, viewfinders, filters, camera adapters, and other accessories. That year also saw us as charter advertisers in the new magazine Astronomy. Amateur astronomers purchasing Meade accessories found that each had custom touches not generally available on competing models. The focusers, for example, had spring-loaded gearboxes that permitted smoother action throughout the entire travel distance, and the viewfinders included eyepieces with wider fields than had been commonly available.

By 1977 Meade Instruments offered a broad range of telescope accessories and parts for the serious amateur, a range of accessories and parts that in fact permitted the company to bring out its first in-house manufactured telescopes, Meade Telescopes Models 628 and 826 6" and 8"reflecting telescopes. With Meade reflectors American amateur astronomers found that they had, really for the first time, a telescope manufacturer that provided a quality product at a reasonable price, that continually updated its products technically, and, above all, one that stood firmly behind every sale.

Meade telescopes, namely the 6" and 8" reflecting telescopes, were an instant success–so much so that in early-1978 the company was faced with a 6-month backlog, despite the fact that they had promised "6-to-8 week delivery." Every customer was written a personal letter explaining the backlog situation and was offered a full and immediate refund if the additional waiting time was not acceptable. Few accepted the offer. As it turned out, by working overtime shifts and adding additional personnel, they were able to ship all of the back-ordered Meade telescopes within about three months instead of the projected six.

In 1978 Meade Instruments took on its most formidable challenge to that date: the Schmidt-Cassegrain telescope market. Development of the original Meade Telescopes model 2080 8" Schmidt-Cassegrain required three years and all of the financial and engineering resources that the company had at its disposal, notwithstanding the significant growth that the company had experienced in the late-'70's. But we were determined to develop the state of Schmidt-Cassegrain design, a design that we strongly felt had overpowering advantages for the serious amateur, but one that was not being technically well-advanced due to an absence of competition.

With the announcement, in September, 1980, of the Model 2080, Meade Instruments began to grow rapidly. Each year thereafter saw new and exciting Meade telescopes models and accessories, as Meade led the way in telescope technology for the serious amateur. By 1986 Meade Instruments was generally acknowledged as the largest, and certainly the leading, manufacturer of serious telescopes in the world. By 1995 in virtually every country in the world where serious telescopes are sold, more Meade telescopes were sold than all competing telescope models combined. http://www.meade.com/company

Orion Telescopes & Binoculars was founded in 1975 by Tim Gieseler, who served as its only president and CEO. Since January, 2005, it has been owned by Imaginova, the U.S. conglomorate founded in 1999 by CNN business anchor Lou Dobbs. Between the mid-1990's and 2005, Orion only sold binoculars, telescopes and accessories under the "Orion" brand, but since the Imaginova acquisition, Orion has started to sell non-Orion brand products as well, including Tele Vue eyepieces, Celestron 8 and 11-inch (280 mm) Schmidt-Cassegrain telescopes.

In late 2005, Imaginova and Celestron, the latter fresh out of an out-of-court settlement with rival Meade over "GoTo" telescope technology[1], announced an agreement that would allow Celestron 8, 9.25, and 11-inch (280 mm) Schmidt-Cassegrain optical tube assemblies (OTA), painted in metallic gray and using the "Orion" brand (Celestron OTAs are painted either gloss black or semi-gloss matte orange), to be sold with Orion German equatorial mounts and eyepiece accessories. https://en.wikipedia.org/wiki/Orion_Telescopes_%26_Binoculars

In 1989, the first commercial truss tube Dobsonian was released into the market by David Kriege and Obsession Telescopes with apertures up to 30 inches in diameter. After this time period, large aperture telescopes started to appear as a market had appeared creating large mirrors and therefore large telescopes for amateur astronomers.

In 2007, David Kriege and Obsession telescopes released an 18 inch diameter Ultra Compact Dobsonian Telescope, which reduced the weight by about 30%, lowered the eyepiece height by 7 inches, and reduced the storage volume by 60%. Late in 2008, Obsession telescopes started offering a 15 inch diameter Ultra Compact Dobsonian. Later Obsession join with StellarCat and Argo Navis to offer go-to capability for its line of Dobsonians.
https://en.wikipedia.org/wiki/Obsession_Telescopes

In 2013, Celestron released StarSense auto align (SSA) which brought an easy-to-use auto-alignment technology to most of the company's other computerized telescope mounts.   In 2014, SSA could be used to polar align an equatorial mount.
https://astronomynow.com/2014/11/10/celestron-starsense-autoalign-receives-upgrade

In 2013, Meade released StarLock which is makes target acquisition on your imaging sensor and accurate guiding during exposures completely automatic. There's no need for a separate guide or computer and the StarLock requires no user focusing or guide star selection.
https://www.meade.com/lx850-telescopes.html?cat=5