

Contact Lens Landmarks

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Thomas Young was the first to use a lens filled with liquid in contact with the eye, demonstrating in 1800 that the cornea was not involved in accommodation. In 1827 Sir John Herschel suggested that corneal distortions could be neutralised by the application of a glass shell filled with animal jelly. There is no evidence that Young or Herschel ever tried to correct vision in this way.

In 1887, a glass shell was blown by artificial eye makers F Ad Müller Söhne in Wiesbaden, Germany, to protect the eye of a patient who was already blind in one eye and was about to lose the other due to exposure. Lenses were also made for Adolf Eugen Fick, a German ophthalmologist working in Zurich, and Eugene Kalt, a French ophthalmologist working in Paris, both were trying to fit keratoconic patients but with little success. The first to correct myopia was August Müller, but, even with cocaine, wearing times were very short.

Carl Zeiss produced fitting sets of ground glass scleral lenses from 1911, giving wearing times of around four to five hours.

Adolf Müller-Welt in Stuttgart improved things from 1928 fitting blown glass lenses with a very thin layer of tears under the lens, greatly increasing wearing times. He fitted extensively in Germany before moving to Canada and then Chicago, forming the Breger Müller-Welt Company.

In the late 1920s, Hungarian ophthalmologist Josef Dallos established a technique for making lenses from moulds of living eyes. When the physiological needs of the cornea were addressed wearing times increased. He arrived in London in 1937 where, with Theodore Hamblin Ltd, he set up the first contact lens only practice in the UK.

New York optometrist Theodore Obrig discovered the combined use of fluorescein and UV light in lens fitting, before founding the Obrig Contact Lens Laboratory in 1939 and writing the first contact lens text book in 1942.

The commercialisation of Perspex by ICI in 1932 heralded a new era in contact lenses with Theodore Obrig, Ernest Mullen and Istvan Györfy all claiming priority.

In 1912, Zeiss was unsuccessful with glass corneal lenses but in 1948 Kevin Tuohy, working with Solon Braff in San Francisco, accidentally found the optic section of a scleral lens more comfortable so started making lenses 10-11mm in diameter. Although Tuohy gained the US patent in 1950, Heinrich Wöhlk had similar experiences in 1946 in Germany leading him also to make corneal lenses.

In 1952 the Microlens was launched by Frank Dickinson, Wilhelm Söhnges and Jack Neill with a diameter of only 9.50mm. Lots of variations of diameter and curvature followed.

Also in 1952, Czech chemist Otto Wichterle discovered

HEMA initially intended as a surgical material. On Christmas afternoon 1961 he successfully made soft lenses by spin-casting using a Meccano device powered by a bicycle dynamo. The National Patent Development Corporation acquired a licence, and after much research required by the FDA, Bausch & Lomb launched the Soflens in 1971.



In 1970, US polymer chemist Norman Gaylord, working for optometrist Leonard Seidner, patented the first rigid gas permeable material, launched in 1974 as the Polycon lens.

The Griffin Naturalens, the first higher water lens, was invented by chemist Ken O'Driscoll and optometrist Allan Isen, owner of the Frontier Contact Lens Lab in Buffalo. The lens was made by Griffin Contact Lenses in Toronto to avoid the US FDA regulations.

Overwear was a recurrent problem so London optometrist John de Carle developed a higher water content soft lens. With Geoff Galley he formed Global Contact Lenses, producing the Permalens in 1971, the first lens specifically for extended-wear.

As spin-casting was restricted by patents and lath cutting was slow and inconsistent, many workers started looking at cast moulding. Professor Wichterle had already tried this but Tom Shepherd was first to patent a usable process. Problems with the formation of the edges were solved by Geoff Galley, allowing increased accuracy and yield.

Danish ophthalmologist Michael Bay found that dirty lenses caused problems so launched Danalens, the first disposable lens, in 1982. Johnson & Johnson bought his unique manufacturing process, changed the material to etafilcon A, added packaging and marketing from the pharmaceutical industry and Acuvue was born.

Working in his garden shed, Ron Hamilton found he could increase yield and reduce costs, making daily disposability viable. He launched daily disposable lenses in early 1995 through Boots Opticians whilst Johnson & Johnson launched 1-Day Acuvue to the world.

In 1999, Bausch & Lomb and CIBA Vision gained European licences for 30 night continuous wear for silicone hydrogel lenses. The first major change in soft lens materials in over 40 years was a complex fusion between the hydrogels of Professor Wichterle and the silicon elastomer lenses proposed by Walter Becker, a Pittsburgh Optometrist, in 1956.

Present modalities in hydrogel and silicone hydrogel include daily disposable, weekly extended wear, daily wear with two week discard, daily wear with monthly discard and monthly continuous wear with spherical, aspheric, toric, bifocal, multifocal, UV blocking, tinted and coloured variants. Contact lenses are also available for corneal remodelling.

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