The Galeski Prosthesis

ABSTRACT: *Joseph Galeski and the Galeski Laboratories staff of Richmond, Virginia were pioneers in the production of early, all—acrylic, compression—molded ocular prosthesis. During the height of its business in the 1950's, Galeski Laboratories produced over 700 stock eyes each month. Galeski Laboratories also fashioned several types of ocular implants, conformers, and supplies for the anophthalmic patient. The Galeski prosthesis was a unique stepping stone in the evolution of the modern day (impression-fitted) ocular prosthesis.*

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INTRODUCTION

Several individuals and a few noted companies have manufactured and dispensed stock (or premade) artificial eyes. These well known institutions include American Optical, Denver Optic Company and Mager and Gougelman. Nevertheless, Joseph Galeski and Galeski Laboratories of Richmond, Virginia, were among the first to produce plastic stock eyes. This article was written because Joseph Galeski was one of the true (although obscure) pioneers in fabricating prostheses and because of the originality of his technique. (Figure 1)

FAMILY BUSINESS

Salo Galeski was a German immigrant, who originally peddled eyeglasses from a pushcart on the Atlantic City boardwalks. He founded The S. Galeski Optical Company of Richmond in 1885 and became one of the first true lens grinder in the South. Salo's son, Joseph Galeski (1886–1963), grew up in Richmond and attended the University of Richmond. Joseph later graduated from the Pennsylvania Optical College, now known as Pennsylvania College of Optometry, in Philadelphia. He was licensed as an optometrist.

After his education, Joseph Galeski practiced as an optometrist along with his father in Richmond. Wanting to provide a full range of services for his patients, he fitted stock glass ocular prostheses. Glass blowers, Fried and Kohler of New York City, also provided Galeski with custom glass eyes.

Under Joseph Galeski's leadership, the optical business thrived and expanded. Galeski Optical opened several offices in Virginia and North Carolina. With this expansion came a greater demand for his prosthetic eye services.

World War II limited Galeski's (and the United States' as well) supply of quality German cryolite glass. Looking to find a substitute, Joseph Galeski

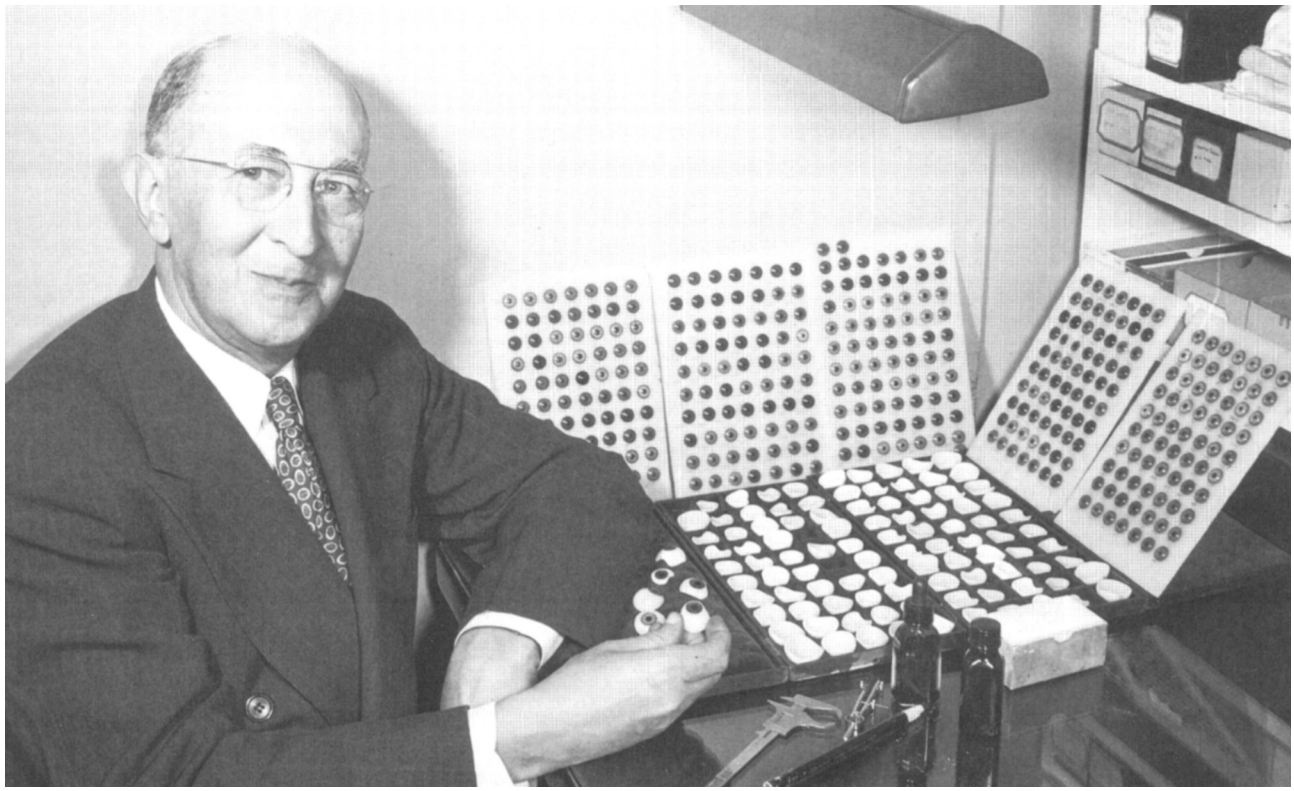

FIGURE 1 Joseph Galeski with a fitting set, 1949.

began to experiment with plastics and shape designs. Eventually, he developed a technique of compressing plexiglass into shapes which led to prosthetic eyes in 1943. One of the most significant aspects of his technique was that the acrylics used (Dupont and Rohm and Haas) came in the form of small chunks, and would cure under heat and pressure free of any monomer residue. His unique technique was awarded several U.S. and Canadian patents.

With the help of his son Edward and of Bob French, an optician and glass eye fitter, Joseph Galeski put his plastic eyes into large scale production in Richmond in 1946. Shortly afterwards, Clyde Andrews (1949), and later Langdon Henderlite (1952), contributed in the production and evolution of the "Galeski Eye."

One of Galeski's first tasks was to standardize sizes, shapes and colors so that one would write out a prescription for an artificial eye. The philosophy of the prescription came from his experience in fitting glass eyes and the technique of fitting glasses: examination, measurements taken, and prescription. The central office in Richmond (Galeski Laboratories) would then fashion the prostheses based on the specifics of the prescription.

A fitting set of common shapes was developed. The set consisted of 50 eyes, all in various colors. The "fitter" would try various sizes until he found one that complemented the "good" eye. The fitter would than pick the desired color(s), measure variable like the iris size, iris position, etc., and fill out a prescription. Opticians and optometrists were the primary customers for these fitting sets. A few glass eyemakers also purchased these versatile prostheses.

MANUFACTURING TECHNIQUE

Galeski's manufacturing technique, as described in a 1949 *Modern Plastics* article, is as follows.

The Iris

The iris (or iris plug) came in one basic size, a 9/16 – inch diameter. It was made into the shape of a rod, using steel molds to cure the various plastics together. It was processed in a serious of states. (Figure 2).

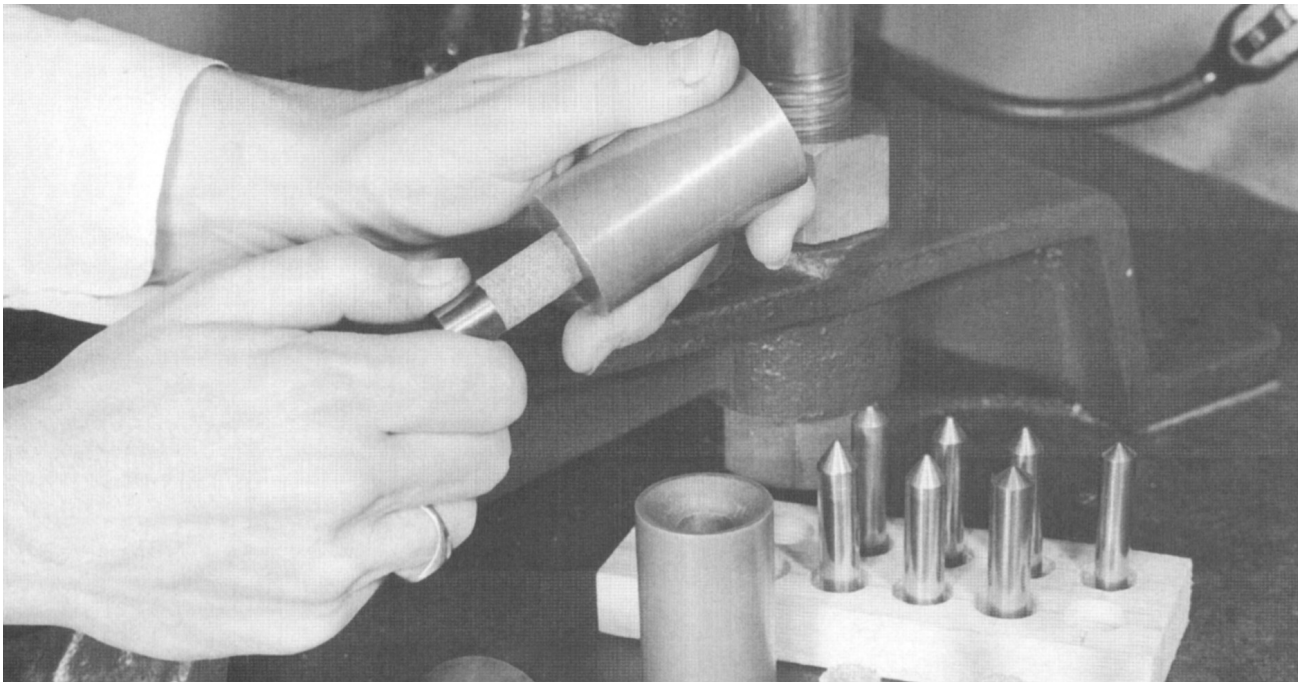

FIGURE 2 Using a steel die, the main body of the iris is cast using acrylic pellets. The acrylic is cured using a Carver hydraulic press.

The rod (or plug) would then be inserted into the lathe collet. Depending on the desired width of the iris, the diameter could be reduced (Figure 3). Once the diameter was chosen, a slice was cut off (1/16 inch or less) and later positioned into the body of the sclera (Figure 4). Thinner eyes could be made by grinding the inside of the eye, including the acrylic iris slice, leaving about 1/32 inch of the slice thickness. This thinning of the iris would produce only a slightly lighter color.

The Sclera Body

The main portion of the sclera or the sclera body was made in several sizes and thickness using steel dies. The frontal radius of these shapes ranged from 12mm to 16mm. The overall size ranged from 22-30mm. The shapes were in the form of hemispheres, and would be trimmed to the desired shapes.

With a Carver press, these hemisphere shapes were pressed out with dry acrylic plastic over a steel mold (Figure 5). Once pressed, the acrylic was cured. The amount of acrylic used was controlled by weight and came in various shades of white. This also gave the pieces varied thickness. Once the hemisphere was cured, the specific iris location was marked on the body and counterbored with an end mill to a depth of about 3mm. Because the body was plexiglasss, one could bend the plastic with direct heat to accommodate "curl back" sockets.

Positioning the Iris into the Sclera

Once the iris location was determined, a slice of the iris could be placed into the counterbored hole. A

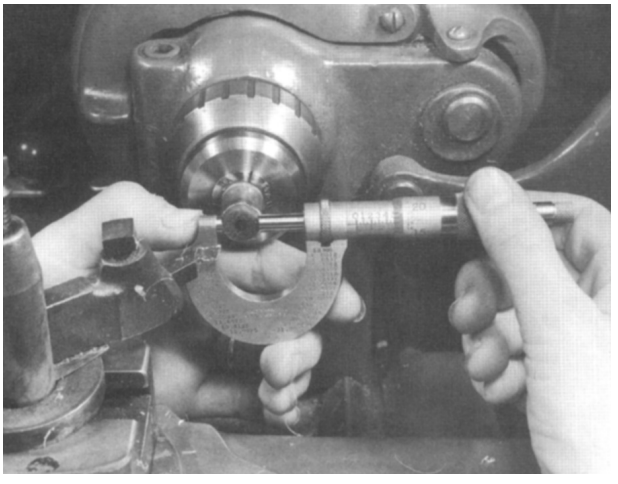

FIGURE 3 Various iris diameters and colors are made.

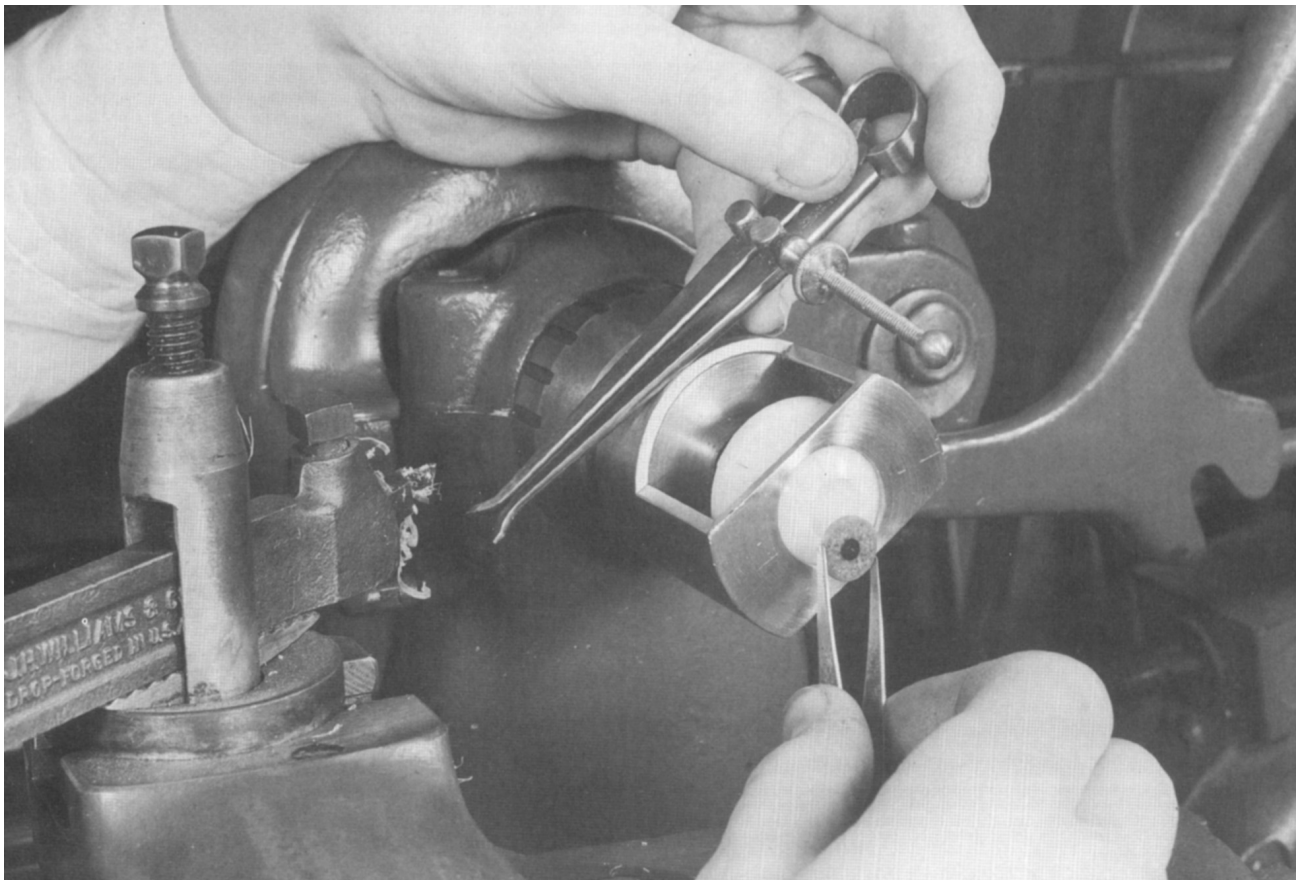

FIGURE 4 The iris is placed into the base of the acrylic hemisphere.

blending "ring," which acted as a washer, was slipped over the top of the iris on the hole. This ring actually make the edges appear a bit fuzzy as it blended together, and thus became the limbus.

Rayon or cotton veins and colored pencil lines were than added by hand to simulate vessles in the sclera, and the sclera body would be placed back into the original steel mold and prepared for the final pressing. Clear acrylic molding powder was then added and pressed over the shape to form a cornea of the eye. Once again, the amount of acrylic used was predetermined by using a formula.

After the sclera was cured, the hemisphereshaped eye was removed form steel mold and hand-shaped to render the desired measurements. (Figure 6 & 7).

OTHER SERVICES

Galeski Laboratories also experimented and produced ocular implants, including simple acrylic spheres and the more complex Brawner (inclusion) implant. Working with Dr. Luther C. Brawner, this well received implant was developed in 1951. Fashioned using acrylic covered with tantalum gauze, it was one of the first inclusion motility implants developed dur-

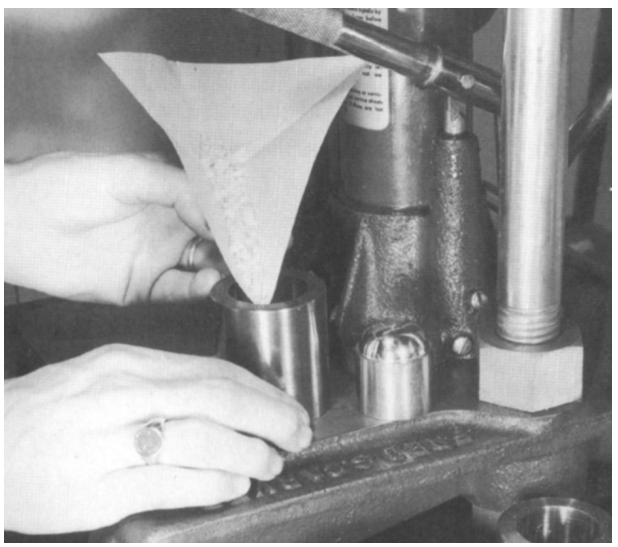

FIGURE 5 Acrylic is placed into the steel mold.

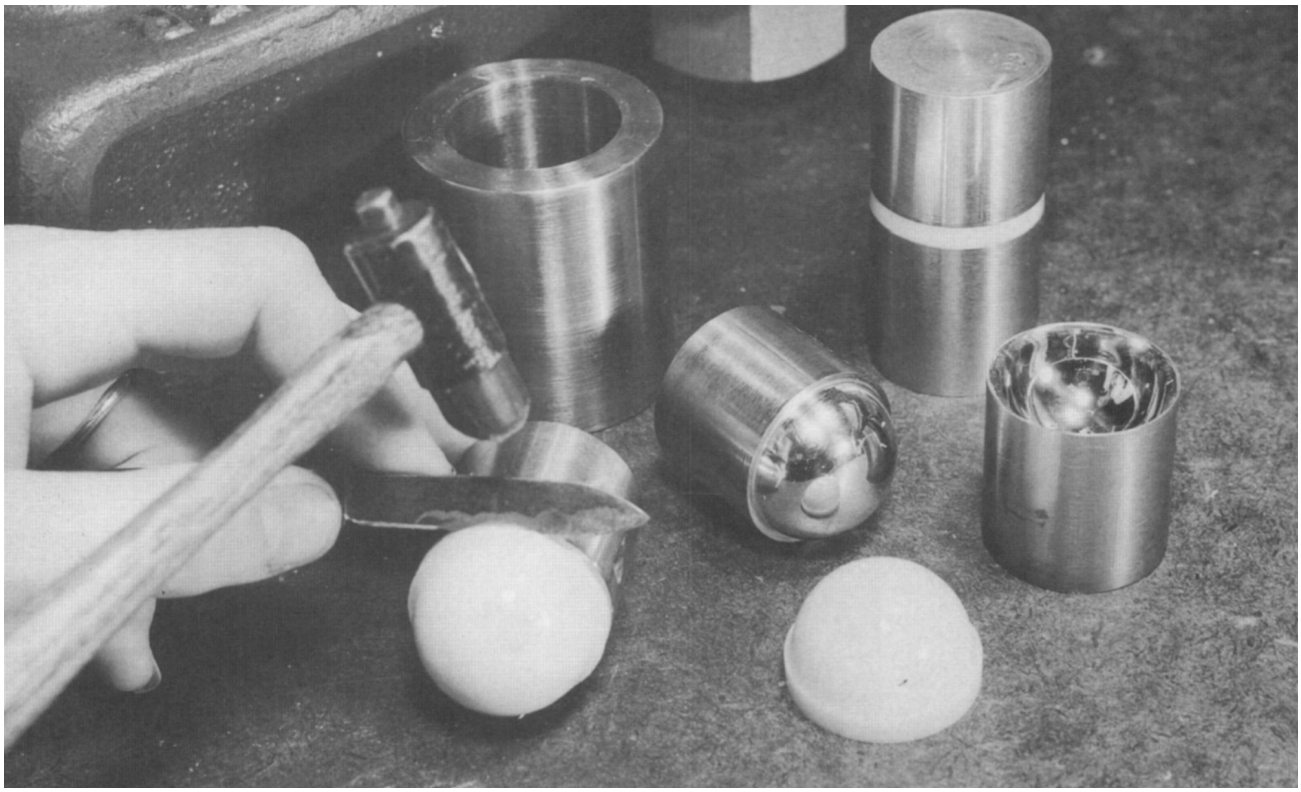

FIGURE 6 The sclera body is removed from the mold.

FIGURE 7 Once cast, each prosthesis was hand finished.

ing the post World War II years.

Cosmetic optics (for prosthetic eye wearers) was another Galeski Optical service. Because of the large inventory of lenses and frames, protective eyewear was always encouraged. Prisms and other specialty lenses were frequently used to enhance each prosthesis, depending on the particular obstacle.

In conjunction with stock prostheses, Galeski Laboratories produced the Galeski Lab Letter. Published "every now and then," this newsletter was published throughout the 1950's and 1960's. The newsletter gave helpful information about ocular prostheses to the fitters and ophthalmic community. Included in the newsletter were fitting tips, new implant and product information, addressing patients concerns, and general "old-time philosophy." The refreshingly frank information was fun to read and showed a great deal of foresight.

The optical business was the primary focus (and moneymaker) of Galeski Optical. The ocular prosthesis division, however, always held a special place of interest to Joseph Galeski. Unfortunately, Galeski's special interest could not withstand the ever demand-

ing changes associated with the prosthetic eye business. Galeski's stock eye production ceased in 1973, 10 years after Joseph Galesk's death. Galeski Optical concentrated strictly on custom work until 1980, when the entire prosthetic eye business was dissolved.

CONCLUSION

While it is common knowledge that custom, impression—fitted prostheses are the superior technique in fitting the anophthalmic patient, the plastic "stock," along with its predecessor, the glass eye, had a definite and significant place in history. With a limited number of qualified technicians available to custom – make ocular prostheses (especially in the smaller communities) and considering the difficulty of travel, the stock (or premade) prosthesis did have value. Besides the obvious, I think the real value of stock prostheses was that they filled a void and pushed the younger generations of ocularists to experiment and find a better technique in fitting ocular prostheses.

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