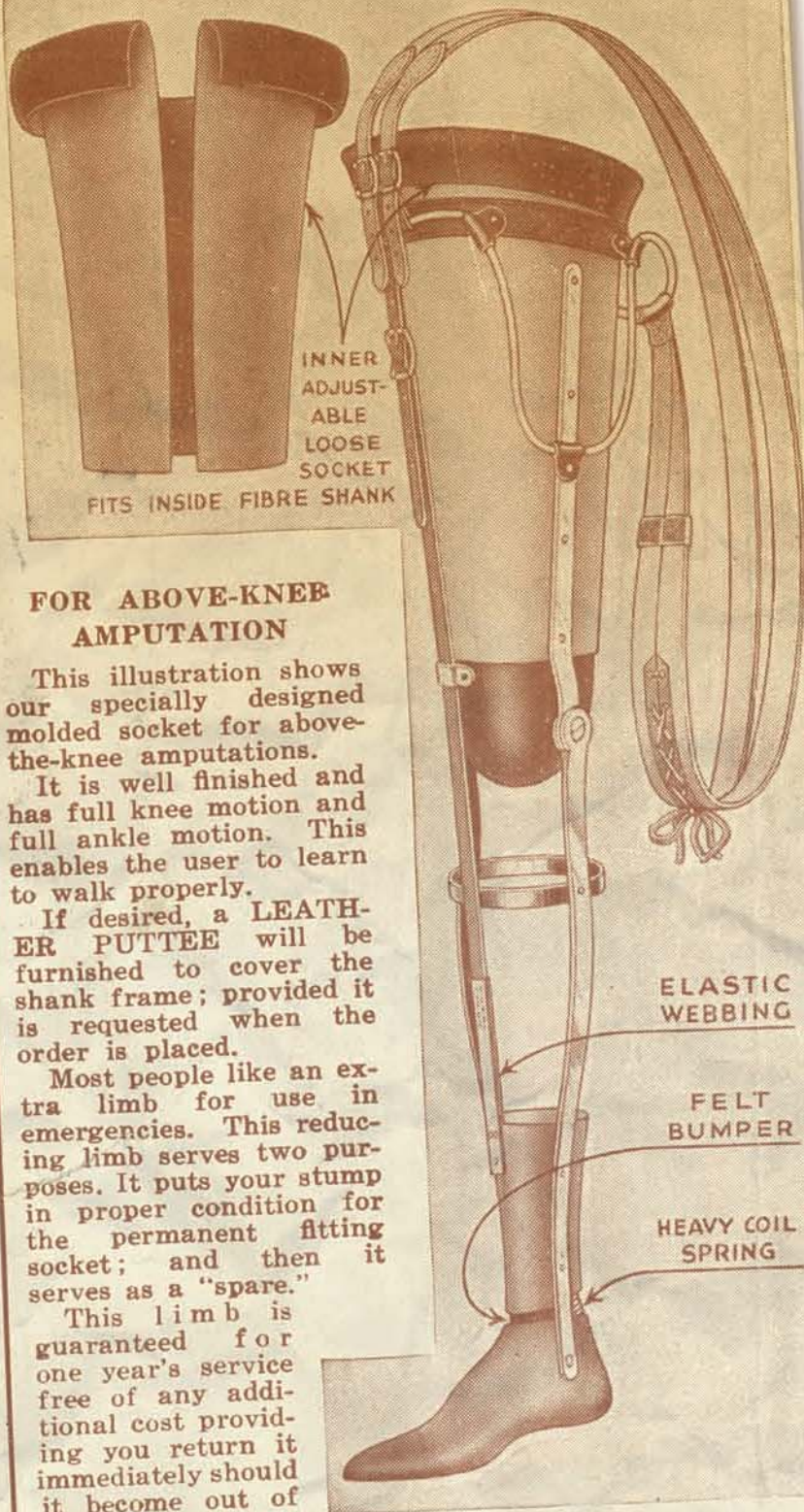


Reducing Limb Price, \$50.00



FOR ABOVE-KNEE AMPUTATION

This illustration shows our specially designed molded socket for above-the-knee amputations.

It is well finished and has full knee motion and full ankle motion. This enables the user to learn to walk properly.

If desired, a **LEATHER PUTTEE** will be furnished to cover the shank frame; provided it is requested when the order is placed.

Most people like an extra limb for use in emergencies. This reducing limb serves two purposes. It puts your stump in proper condition for the permanent fitting socket; and then it serves as a "spare."

This limb is guaranteed for one year's service free of any additional cost providing you return it immediately should it become out of order for free repairs.

Minneapolis Artificial Limb Co.
240 So. 4th Street, Minneapolis, Minn.

The American Orthotic & Prosthetic Association (AOPA) turns 90 this year, and it's the perfect occasion to look back at the rich past of the O&P industry in this country. The history of this profession is a long one, filled with ingenious innovators, dedicated humanitarians and savvy business owners.

Products have taken unimaginable leaps—from limbs made of barrel staves to technological wonders that practically think for themselves. In this issue and the next, the *O&P Almanac* takes a look at some of the highlights of O&P over the last century and a half. In this part, we cover the years from the Civil War to World War II.

By Deborah Conn



If Reducing-Leg is returned in 60 days full credit will be given for permanent Extralite Fibre Limb.

Your misfortune

We are sorry to hear that you have lost a leg, operation was necessary, and now that it's over to send a few words of hope and encouragement.

Undoubtedly you are wondering about the future--- you will ever walk again...if you'll drive a car... ride horseback. You are wondering if you will ever with your old time efficiency---if you will regain your place in life.

If you are wondering these things, we urge you to throw off the doubts and fears that fill your mind. Of course you can become active again! You will not only walk, but you'll walk naturally ---so naturally, in fact, that scarcely anyone will ever notice that you have been amputated.

How

O&P Began

Part I



Left: An advertisement for an AK prosthesis. Bottom right: Members of the Artificial Limb Manufacturers and Brace Association, AOPA's predecessor, in 1917. Top right: Sales letter to a new amputee.

It all started...

It's logical, if tragic, that wars have been the powerful engine driving the prosthetics industry. The Civil War caused between 60,000 and 70,000 amputations. A Confederate soldier, James Edward Hanger, is popularly believed to be the first amputee in that war, when a cannonball ricocheted around a barn to where he was sleeping.

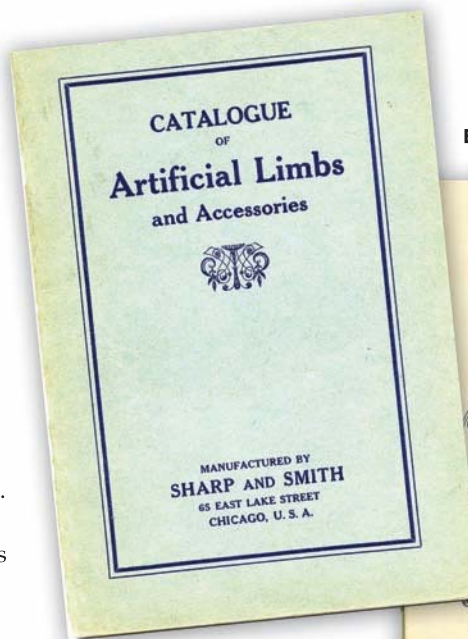
Hanger was captured and treated by a Union surgeon, but he was unhappy with the artificial leg he received. An engineer by training, Hanger created a better prosthesis, with a hinged knee and foot, from barrel staves, rubber, wood and metal. Hanger's device received a lot of attention, and he began selling the device to other amputees during and after the war. Hanger patented his prosthesis and established the J.E. Hanger Co., in 1861, the first prosthetic company in the United States, in Richmond, Va. Today, the Hanger Orthopedic Group is one of the largest O&P companies in the world.

Another early, and innovative, company was founded by A.A. Marks in New York City, in 1853. According to Donald Schurr and Thomas Cook, authors of the book *Orthotics and Prosthetics*, Marks improved prosthetic feet in 1860 by using hard rubber instead of wood. The company sold wooden socket limbs by mail for \$75 to \$150. By 1890, Marks was touting its 10,000-square-foot facility as the largest artificial limb "manu-factory" in the world.

In 1885, Albert Winkley patented a new kind of prosthesis. Winkley, who had lost his foot in a farm accident, was a customer of the Hanger Co. in Chicago. "Albert tried a number of artificial legs and was not happy with them," says Greg Gruman, CP, president of Winkley Orthotics and Prosthetics, now headquartered in Golden Valley, Minn.

"He tried to eliminate the friction between the socket and the stump by wrapping a piece of leather around the residual limb. It allowed the limb to move independently from the prosthesis, eliminating friction and shear forces around the residual limb," explains Gruman.

Winkley called his device the slip socket, and it was so well received that he established the Winkley Artificial Limb Co. in Minneapolis in 1888.



Lowell Jepson became Winkley's business partner, and in 1892, the company demonstrated its invention at the annual Grand Army of the Republic convention, held in Minneapolis that year.

"That was a big jump for the company," says Gruman. "After that, we attended a number of expositions, steadily winning best-in-show awards for the next 10 or 12 years. We had the chance to reach a lot of Civil War veterans, and Mississippi and Alabama awarded us contracts to provide every amputee veteran with an artificial limb."

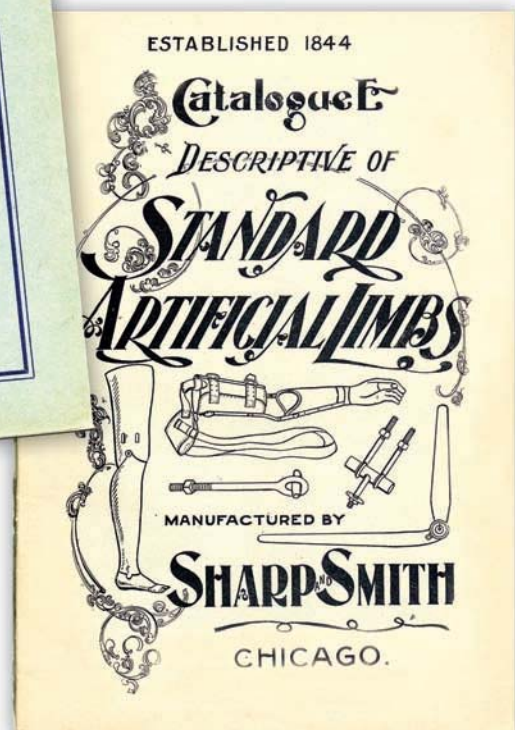
It was not uncommon for O&P

companies to spring up after the Civil War—and disappear soon after. "There were 12 companies in Minneapolis that started in the 1890s and failed within a few years," says Gruman. "It took more than just being an amputee to create a successful business."

Upper-extremity limbs

Lower-limb amputees were receiving most of the attention at this time. Al Pike, CP, with the VA Medical Center in Minneapolis, notes that one exception was D.W. Dorrance, who invented a better arm prosthesis

Early O&P catalogs.



in 1909 after losing his limb in an industrial accident. Dorrance's device featured a split hook that could be opened with a strap across the back. He founded the D.W. Dorrance Co. in 1912 in San Jose, Cal., and his hook design remained the standard for decades.

Another upper-limb manufacturer

was A.J. Hosmer, who had developed such components as wrists, elbows, hinges and cable parts after an amputation from an industrial accident in 1943. The two companies merged in 1969 as the Hosmer Dorrance Co., which is today a subsidiary of the Fillauer Companies, Inc., in Chattanooga, Tenn.

Fillauer got its own start in 1914, when George Fillauer, a German immigrant, opened a pharmacy in Chattanooga. According to Karl Fillauer, CPO, FAAOP, and CEO of the Fillauer Companies, George located

the pharmacy across the street from the hospital and by the 1920s was fitting appliances.

"In the early 1930s Granddad hired a German mechanic to manufacture braces," says Fillauer. "They began fitting custom-made corsets, trusses and back braces. Then Granddad added on to the pharmacy, building a shop that did orthotics. He then became a distributor for Minneapolis Artificial Limb and expanded into prosthetics.

"My grandfather was very entrepreneurial and creative. He patented several trusses and back braces in the late 1930s."

Today, still owned by the family, the Fillauer Companies encompasses Fillauer LLC, Hosmer, Motion Control, Center for Orthotics Design and Centri.

Carving legs from willow wood

In 1905, a railroad brakeman named William Arbogast lost both his legs—one above and one below the knee—when a train ran over them. He survived, says his great-granddaughter, Lisa Arbogast, only because he crawled to a nearby wooden shack and set it ablaze, hoping to catch someone's attention. Dissatisfied with the artificial limbs he was using, Arbogast began carving legs from the willow trees that grew all over his property in Five Points, Ohio. He established a prosthetic manufacturing company in 1907, aptly named Ohio Willow Wood, that moved to Mt. Sterling in 1913, where it remains today.

Lisa Arbogast is now a graphic designer and human

resources associate at Ohio Willow Wood and works with her father, Robert, who runs the company today. Her brother, Ryan, is a supervisor there. Like many O&P businesses, Ohio Willow Wood is a family concern that has spanned multiple generations.

The company added a knitting department in 1921. "That's when we introduced Sterling Stump Socks," says Lisa Arbogast. "The knit sock was an interface between the stump and the leg and it became the industry standard. This was a major contribution to the field."

Willow wood, too, became standard for artificial limbs for many years. It was light and strong, with an even grain. "Early on, everyone used it," says H. E. (Ted) Thranhardt, CPO(E). "Once it had been cut and cured for several years, it wouldn't crack after you started carving it. And it was gorgeous."

In the early 1930s, William Arbogast brought his two sons, Edwin and John, into the company. "The two brothers were quite innovative," says Lisa Arbogast. "They introduced the first ankle joint to the industry. It helped simulate the motion of a human foot."

Beginnings of Snell's Limbs & Braces

One of the rare O&P entrepreneurs who was not an amputee himself was R.W. Snell of Memphis, known as "Pop" to his family. In the early 1900s, Snell had a variety of business interests. His grandson William C. (Clint) Snell, CPO, who is president of Snell's Limbs and Braces, Inc., in Shreveport, La., explains, "Pop did fruit orchards and farming, manufactured walking canes and taught school." Eventually R.W. got a job in Memphis with a surgical supply business that had an O&P office as a sideline.

"In 1911, Pop bought the P&O end of the business along with his three sons—my father, Jim, my uncle Ralph,

(continued on page 38)



Early leg braces.

A Peek into the Past

AOPA's collection of sales letters and brochures from prosthetic manufacturers during this time period offers a peek into the past. Changes in technology and fitting have made for some strange-sounding instructions.

From "Klopp Komfort — How to Wear and Take Care of Your Artificial Limb," by the Thos. W. Klopp company:

"...For irritated stumps in an advanced stage, Irish Moss will draw out the pain. You can get it at any drug store. Or order Carbolized Mutton Tallow direct from the Thos. W. Klopp Company, Inc."

From J.E. Hanger Inc.:

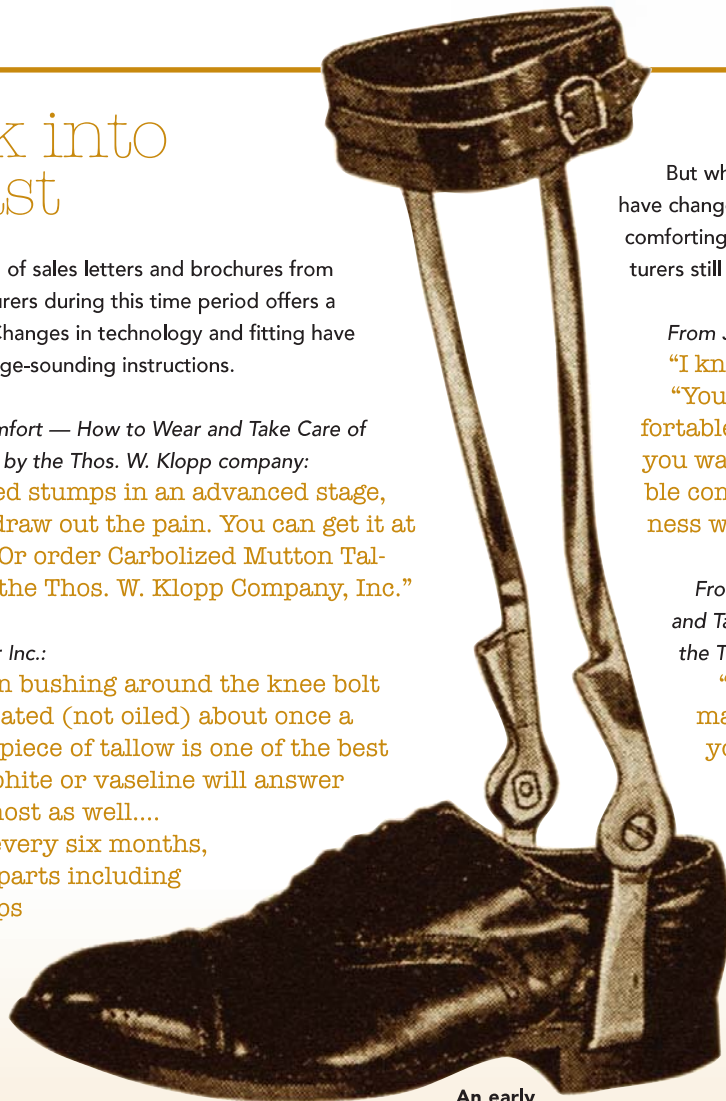
"...The elkskin bushing around the knee bolt should be lubricated (not oiled) about once a month. A small piece of tallow is one of the best lubricants. Graphite or vaseline will answer the purpose almost as well..."

"About once every six months, rub the leather parts including the leather straps on the suspenders with neat's foot oil or fish oil..."

From "Rowley Artificial Legs," by the J.F. Rowley Co.:

"While it is always more satisfactory to have the patient come to the factory to have the suspenders and the leg personally fitted and to receive his first lesson in walking, it is generally expensive and inconvenient..."

"Measurements, diagrams and casts may be taken at home by the family physician or by the patient with the assistance of another person by following instructions on measuring chart which will be furnished on application, thus saving the patient an inconvenient and expensive journey to secure a satisfactory leg..."



An early AFO.

But while the technology of O&P may have changed dramatically over the years, it's comforting to see that patients and manufacturers still have the same goals.

From J.E. Hanger Inc.:

"I know exactly what you want.

"You want a light limb, a comfortable limb, a durable limb and you want to buy from a responsible company that will be in business when you want service."

From "Klopp Komfort — How to Wear and Take Care of Your Artificial Limb," by the Thos. W. Klopp company:

"Check and see if you are making it 'easy' or 'tough' for your limb to give you service.

"1. Regular washing and massaging of the stump.

"2. Changing stump socks every day. A clean stump sock is soothing and healthy..."

From the J. F. Rowley Company:

"This letter is to remind you that we do not forget you just because we have recently sold you an artificial limb and received the money for the same..."

"It is difficult to remember everything that one has heard or seen even though the matters forgotten are entirely essential and necessary. If this has happened to you and you would like further assistance in getting better acquainted with your leg do not hesitate to call upon us. We want you to wear the leg a long time and get comfort every day."

(continued from page 34)

and another uncle, William, who died soon after in an auto accident," says Clint Snell.

R.W. Snell branched out from Memphis into Nashville and Little Rock, Ark., in 1935. Jim Snell ran the Little Rock office, and Ralph took on Nashville. Jim opened his own facility in Shreveport in 1938, and a nephew, Ed Snell, took over the Little Rock office in 1945. Today, there are three separate corporations run by Snell family members.

AOPA's inception

The period between the Civil War and the end of World War II was fairly quiet in terms of technological breakthroughs. Nevertheless, one significant event does stand out: the founding in 1917 of what would become the American Orthotic & Prosthetic Association (AOPA).

The U.S. government anticipated

that returning World War I soldiers would spike the need for orthotic and prosthetic services. The Council of National Defense met with artificial limb and brace manufacturers from around the country in Washington, D.C. to help prepare the industry, and the Artificial Limb Manufacturers and Brace Association (ALMBA) was born.

"The two specialties would have formed earlier into one organization," says Al Pike, "but there was a split in those days. Orthotists perceived prosthetists as being the less professional branch. They considered prosthetists to be more like salesmen than professionals."

Between the Great Wars

The O&P industry created opportunities beyond manufacturing and fitting limbs and braces. Knit-Rite, Inc., based in Kansas City, Mo., was founded in 1923 by a World War I

amputee and prosthetist named Billy Isle. "My grandfather, Ted Smith, was his patient," says Mark Smith, CP, now president of the company. "Ted had lost a leg in a childhood streetcar accident."

The history of Knit-Rite goes back to 1906, when William Edgar Isle

became manager of the Kansas City branch of the J.K. Rowley Co. of Chicago, an early O&P provider. Billy Isle, as he was known, went to Europe during World War I to work with amputee soldiers. He returned a year later and in 1920 purchased the Kansas City office from Rowley.

"In 1923, Billy bought a knitting machine and started making socks for patients," says Smith. At first, Anna Coen Isle, Billy's wife, knit the socks on the sun porch of their

home. Interest grew, and she took to the road, traveling throughout the country in her car, selling socks.

By the 1930s, Knit-Rite was manufacturing such prosthetic components as feet, knees, joints and a variety of orthotic parts.


In 1935, Theodore Smith, Mark's father, joined the company as an artificial limb salesman. Says Mark Smith, "Ted traveled around the country selling limbs and socks. He became a certified orthotist, a partner in 1945 and then president of the company in 1968."

Another company, Becker Orthopedic, got its start in 1933. The firm was founded by Otto Becker, a German immigrant who came to the United States in 1929. Becker moved to Huntington, W.Va., from New York in the early 1930s, where he learned to make braces and artificial limbs from a man named William Jahng. In 1933, Becker moved across town and opened his own patient care facility, the Otto K. Becker Co.

In 1941, he opened another office in Detroit, and in 1944, he moved everything to Detroit and renamed the business Becker Manufacturing Co. The company moved to Birmingham, Michigan in 1946 and became Becker Orthopedic Appliance Co.

"In the mid-1940s, my father decided to design component parts," says his son, Rudolf B. Becker, III. "The company began to manufacture orthotic component parts and also provided what is now known as central fabrication for a number of other O&P facilities. But in the early years, most of the company's revenues came from patient care."

A turning point

Like the Civil War, World War II was a watershed for the O&P industry. Next month, the *Almanac* looks at some of the companies that began after the war and an array of exciting developments in technology sparked by concern for returning soldiers. 

Your Part in History

What's your part in O&P history? We know this article only covers the highlights. Many other people played a role in the development of O&P. (For an example, see David Harning's "Glad You Asked" entry on p. 64.)

If you were you involved with a piece of O&P history, we want to hear your story. E-mail the *O&P Almanac* at almanac@AOPAnet.org with the details and your contact information. We may run some stories in a future issue.

