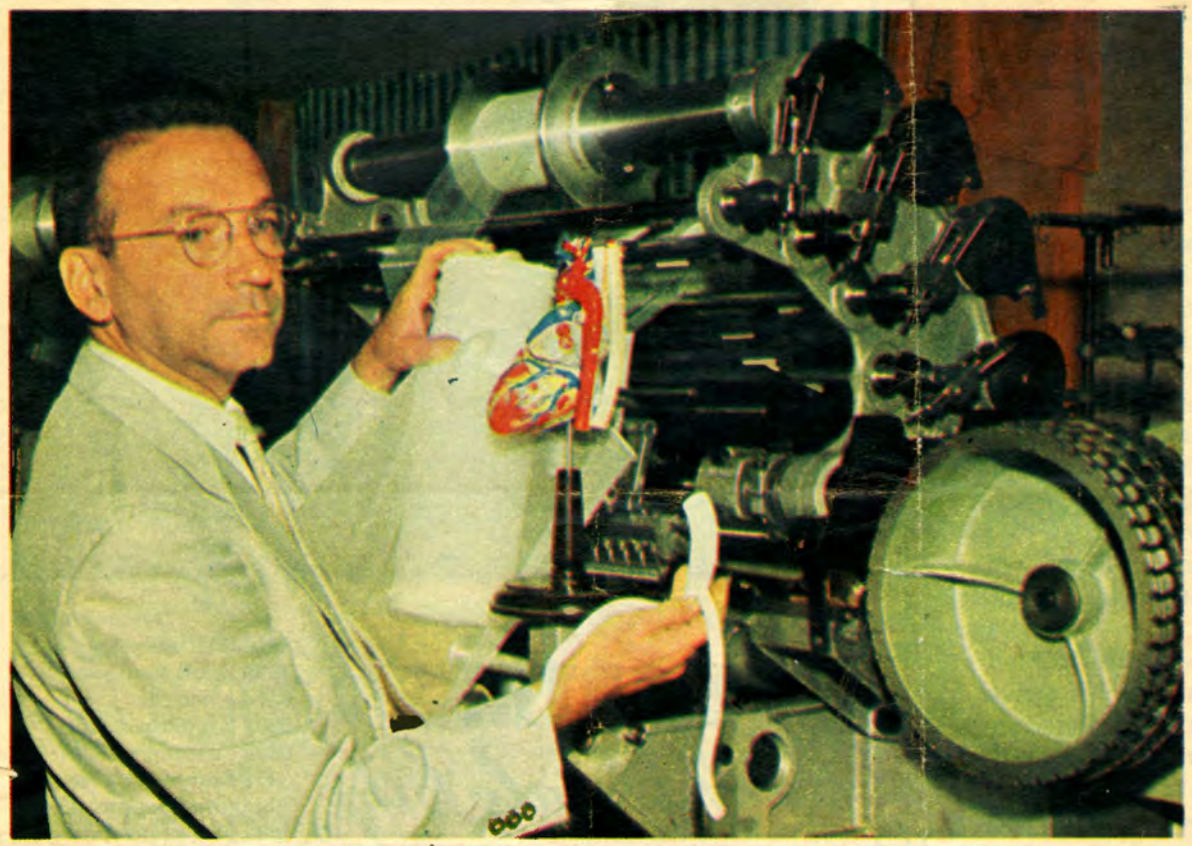
Wonderful World of Textile Technology

Frederick Meyer

At Philadelphia College of Textiles and Science Dr. William G. Wolfgang, research director, looks over NASA shoulder patch (right) and patch for Apollo I flight, bearing names of Astronauts White, Grisson and Chaffee.



A sample tricot knitting machine for making patches used in connection with hernia and brain operations is inspected by Dr. Thomas Edman, professor of knitting technology in the Textile Department.

By RAYMOND C. BRECHT
Of The Bulletin Staff

THE NEXT U.S. manned spaceflight will be followed with keen interest by a group of textile researchers here.

If all goes according to plan, the Apollo astronauts will wear flight insignia spun of glass on the researchers' looms at the Philadelphia College of Textiles and Science.

It will be the first time that American spacemen have worn insignia made of glass, and it's the first time that the college at School House lane and Henry av. has made such things.

Last summer, William G. Wolfgang, the college's research director, headed the job of dyeing and weaving glass yarn for the insignia under a $2,000 contract from the National Aeronautics and Space Administration. NASA is seeking to avoid inflammable materials of any kind in the spacecraft following the fire last winter that killed three astronauts. The Owens-Corning Fiberglas

Corp. developed the glass yarn for the insignia.

Threads of Glass

In the weaving operation a special Jacquard loom controlling every glassy thread was used. For one shoulder patch depicting an American flag, the yarn was dyed red, white and blue. Black and yellow dyes were needed for three other patches to be worn by the spacemen. One of these contains the NASA insignia and a second gives the flight number. The third is a name tag for each of the six astronauts comprising the primary and backup crews.

Woven out of colored glass yarn were the names W. M. Schirra, R. W. Cunningham and D. F. Eisele, who are scheduled to make the next flight in March or later, and E. A. Cernan, T. P. Stafford and J. W. Young, who are the backup men.

Making glass insignia for Apollo astronauts is just one of the unusual technological feats currently occupying textile researchers. For textiles are branching out. They're getting into electronics and into medicine. They're poking into boats and helicopters. There's no telling where textile technology will turn up next.

"What we're trying to do," said Wolfgang, "is strike a happy balance—do the regular research and also develop things that are a little more fundamental and farsighted."

Research at the 83-year-old college once helped save the life of the Duke of Windsor. Three years ago, the former British monarch suffered from a blister on the wall of his aorta. It happened that scientists at the college here had helped develop a technique to replace arteries damaged as the duke's was.

The replacement consists of a knitted tube made of synthetic fiber, like a piece of hose, through which blood flows until scar tissue is built up around it.

Development of the tube was the result of two years' collaboration by Dr. Thomas Edman, professor of knitting at the College of Textiles and Science, and Dr. Michael DeBakey, the internationally known cardiovascular expert.

Surgical Patches

When the duke fell ill, he went to Texas where Dr. DeBakey practices. And in December, 1964, using the technique he and the college had jointly developed, Dr. DeBakey replaced about four inches of the duke's aorta with the synthetic-fiber tube.

Since then, the college has been working on several medical projects, Wolfgang said.

Dr. Edman and Walter Reed Army Hospital staffers are developing textiles for use as patches in hernia and brain operations.

Professor Paul Siminuk, in the college's

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"It's now starting to get some industrial use on permanent press garments—trousers, shirts and some women's wear. These are fabrics you can toss into the washing machine and take them out and put them on. You don't have to iron them."

A Pants Problem

One of the new buildings in the college's $4,000,000 expansion program will be an Apparel Research Center. Its purpose will be to find better manufacturing techniques for apparel, particularly men's apparel.

"The basic concept of the center comes from the Philadelphia apparel industry and is largely supported by it," Wolfgang said.

The center will look into such problems as this: when you lengthen trousers, you can't repress the cuffs flat; if the seat is let out, the place where the original in-seam was still shows. How to overcome these difficulties will take some research.

Wolfgang, who is a graduate of Juniata College, in Huntingdon, with Master's degree from the University of Pennsylvania, came to the Philadelphia College of Textiles and Science in 1950 to teach mathematics, his MA field of study. He says he did some moonlighting as a rubber chemist for a year. Then he taught a new course called textile chemistry.

"I'd never seen a loom before," he says, "so I made a nuisance of myself trying to learn the connection between fibers, dyeing and chemistry. I ran around the halls all the time with my arms full of fibers and yarns.

In 1953 the college created a course in textile fibers. Officials found the yarn-laden Wolfgang and said, "You're going to teach it."

"With that I got into the fundamental teaching of fiber science. This involves evaluation of these materials and also textile teaching."

In 1958, this mild, precise-speaking man became assistant director of research, and, in 1965, research director. He now lives in Cherry Hill, N. J.

The Philadelphia College of Textiles and Science is the only privately owned and operated college of its type in the country.

It was founded by the Philadelphia Manufacturers Association in 1884, and was incorporated as the Philadelphia Textile School of the Pennsylvania Museum of Art. It was originally in center-city. Its present handsome site in Germantown was purchased in 1945. It gained its present name in 1960. Its enrollment now is about 970, with between 100 and 150 women.

Students studying there at various times have represented a total of 43 different foreign countries from six continents.