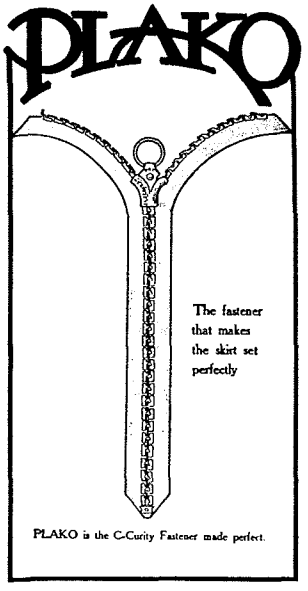
SCIENCE & TECHNOLOGY



The Plako fastener, introduced in 1913, promised to solve the pop-open zipper problem. The manufacturer boasted that the Plako was a "made-perfect" version of its earlier C-Curity fastener. But such hopes proved premature. The Plako flopped in the marketplace.

ing the early 1970s, then declined slightly due to foreign competition.)

The modern zipper works like this: Each tooth, called a "scoop," is identical, consisting of a small "dome" on top and a small pocket on its underside. As the top of the slide is pulled along to close the zipper, it holds the two sides apart at an angle; the flanges at the bottom of the slide then push them together, so domes and pockets interlock. A wedge-shaped "neck" separates them when the slide is pulled down.

Zipper technology did not come to a halt after 1913, Weiner says. The plastic zipper, for example, was invented only after World War II. Today, "slide fasteners" have new worlds to conquer. Coming up are surgical zippers to replace stitches. In the future, doctors will simply unzip patients whose transplanted organs, heart pacemakers, or other internal organs need regular maintenance.

'Magic Bullets'?

"Monoclonals: The Super Antibodies" by John Langone, in *Discover* (June 1983), 541 North Michigan Ave., Chicago, Ill. 60611.

The human body's immune system is curiously inefficient. It releases many kinds of antibodies when only one is needed to combat a particular invader, or antigen. By contrast, laboratory-produced "monoclonal antibodies," just coming into use, are "magic bullets"—and, potentially, a highly useful treatment for cancer.

Medical researchers Georges Köhler and Cesar Milstein produced the first monoclonal antibodies in England eight years ago. The process is complex: A mouse is injected with the chosen antigen, its spleen with antibody-producing white cells is removed, and the cells are fused with mouse cancer cells. The resulting "hybridomas," endowed with the cancer cells' ability to reproduce rapidly, are factories for antibodies that combat the original antigen.

The "hybridomas" are cloned, tested, cultured, and, finally, the antibodies are extracted to begin their work: They bind themselves to the attacking antigen, in effect marking it for destruction by other cells in the blood.

According to Langone, a *Discover* staff writer, doctors are only now beginning to explore uses of the new antibodies. Stanford researchers used monoclonals to push one California man's lymphatic cancer into remission in 1981. Johns Hopkins's Dr. Stanley Order has successfully injected patients with monoclonals bearing radioactive iodine to treat liver cancers. Because the monoclonals do not bind to normal cells, the patient avoids the side effects of conventional chemotherapy. Among their other uses, monoclonals can be employed to combat rejection of transplanted organs, enabling the body's immune system to destroy its own white blood cells before they attack the alien tissue.

Inevitably, problems arise. A patient's immune system, recognizing monoclonals themselves as foreign, sometimes deactivates them. Creating monoclonals that distinguish between healthy and cancerous cells is difficult. And they are ineffective against fast-growing tumors.

Researchers warn that monoclonals should be used in conjunction with other cancer treatments. But the new antibodies' full potential is still being explored.

How High The Moon?

"The Moon and Antarctica" by Hans Mark, in *Aerospace* (Spring 1983), 1725 De Sales St. N.W., Washington, D.C. 20036.

Eleven years have passed since the last of the six U.S. Apollo manned missions to the moon returned home, and there are no plans on the drawing boards for another visit. Yet Mark, deputy administrator of the National Aeronautics and Space Administration, believes that Americans will soon be back. He backs up his prediction by recalling the earthbound race to the South Pole.

On December 14, 1911, Norway's Roald Amundsen reached the South Pole, some five weeks ahead of Britain's Robert Falcon Scott, who died before reaching his base camp on the return journey. A thirst for world prestige had sparked the competition, but official interest waned once the goal was achieved. Like the moon, inner Antarctica was simply too hard to reach very often. The similarities, notes Mark, are striking: Both missions demand artificial life-support systems, and