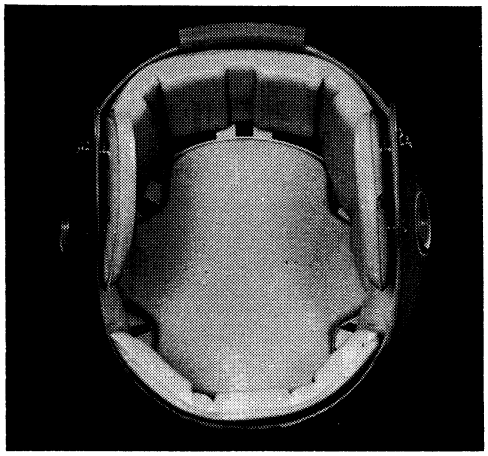
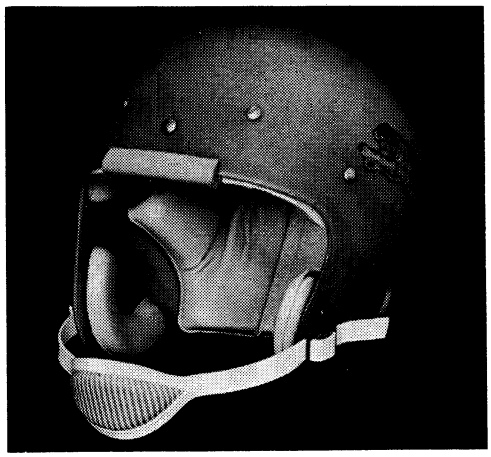
The material is an open-cell polyurethane-silicone plastic foam that takes the shape of impressed objects but returns to its original shape even after 90% compression. It absorbs sudden impacts without shock or bounce. For instance, the manufacturer claims a 3-in. thick pad can absorb all the energy from a 10-ft fall by an adult.

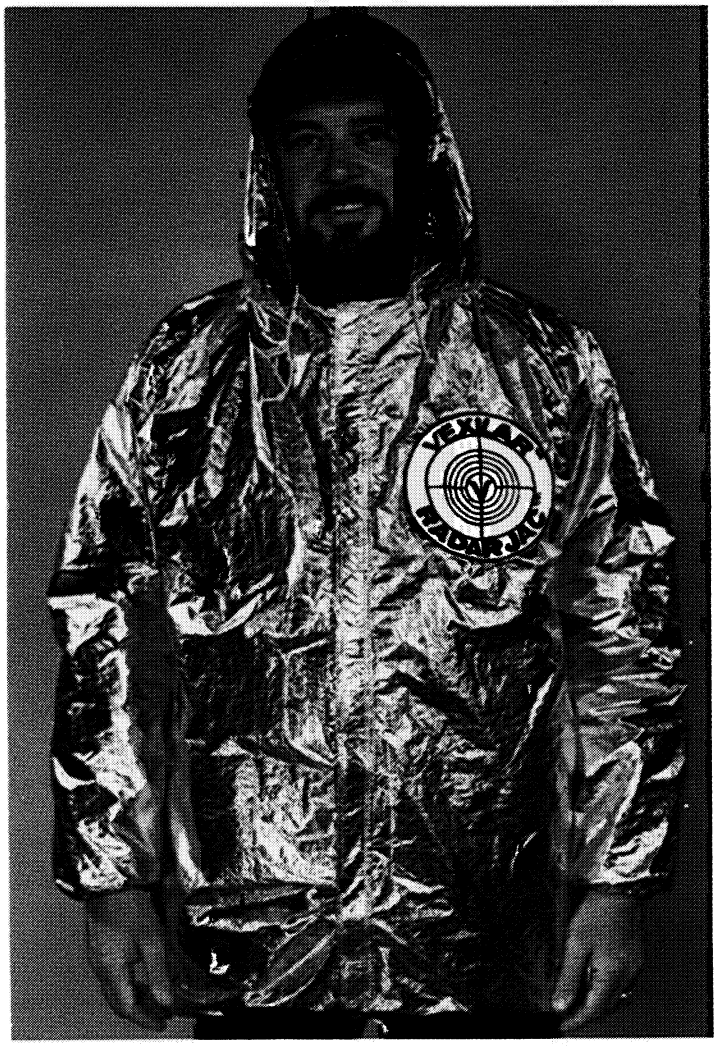
The material is temperature-sensitive, getting softer when warmed and firmer when cooled. Some formulations can be "frozen" at 60 F, yet take sustained temperatures in excess of 300 F—which also means the material can be dry-sterilized.

After the initial Ames work to improve safety and comfort in aircraft passenger seats, a contractor's employee invented the material, which he called "Temper Foam," and started Dynamic Systems Inc. to produce it. In 1974 the product line was bought by the Edmont-Wilson division of Becton, Dickinson & Co. in Coshocton, O., which last year began to make it in greater quantities.





Temper Foam, exhibiting about 340% less shock from impact, lines football helmets. The versatile padding today is utilized in wheelchair and hospital pads and off-road vehicle seats.



Patients who could spend only a few hours at a time in standard wheelchairs now can use their chairs three times longer. Used in hospitals for orthopedic and other cases, it greatly reduces pain and bedsores.

Inside football helmets, it adjusts to the shape of the wearer's head without putting undue pressure on any one point. The helmet is safer because the new foam material absorbs far more of the impact energy than conventional padding used in the lining of most helmets.

The Dallas Cowboys have started to use the new helmets, along with other teams and schools. This year Temper Foam will be incorporated into a variety of athletic equipment such as body pads, chest protectors, and shin guards.

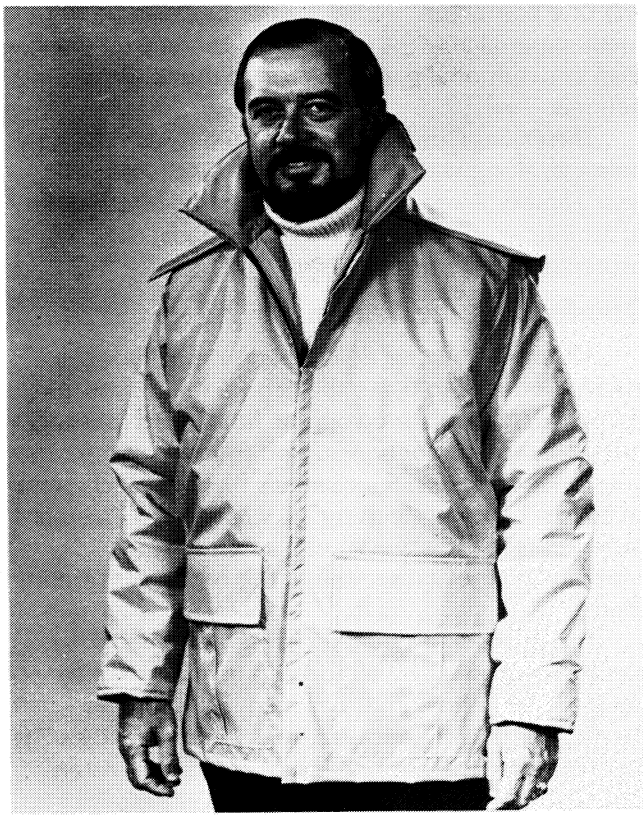
Comfort for sportsmen

Aluminized mylar developed originally for NASA-Goddard to make the Echo satellites more reflective, to insulate cryogenic fluids, and for space-suit insulation has been spun off to a variety of consumer products. Sportsman's blankets and jackets, ski parkas, sleeping bags, and even life-raft canopies (see "Rescue at sea" under "Your Mobility" in the first section of this report) are among them.

The sportsman's blanket, weighing only 12 oz, can be used equally well to keep heat away or to keep available heat in. It has many uses for the outdoor enthusiast because of its large size (4½ x 7 ft).

The emergency rescue blanket has heat reten-

Camping blanket above and jacket below have been spun off from cryogenic and other space applications. The survival jacket is manufactured by Vexilar Inc. using King-Seeley Thermos Co. gold-metallized polyster "superinsulation" that is highly visible, radar reflective, lightweight, and waterproof.



tion qualities similar to those of the sportsman's blanket. It is strong enough to be used as a litter, yet folds up so small you can carry it in your shirt pocket.

One of the latest products is a light-weight jacket fabricated by several companies from the super-insulation originally developed for NASA-Lewis and now manufactured by King-Seeley Thermos Co., Winchester, Mass.

The 10-oz reversible jacket absorbs warmth from the sun. The silver-colored side next to your body retains a large portion of body heat. In warm weather, you wear the silver side out to reflect the sun's rays.

In a similar model, a gold metallized polyester film is bonded to a tear-resistant fabric to allow radar reflection, as well as higher visibility under all light conditions. Like the other jackets, the material protects against heat or cold and doesn't absorb moisture.

Composite golf clubs

Composite materials developed for the Marshall Space Flight Center are being used by Babcock & Wilcox Co., Alliance, O., for golf clubs. The reinforced composites provide the combination of shaft rigidity and flexibility that provides maximum distance.

The company used Marshall's data summary file originally compiled to consider new materials for the shuttle program. The file summarizes typical-processing techniques and mechanical and physical properties of graphite and boron-reinforced composite materials.