

Moisture Management

by Mark Barnes

high-tech engineered polyesters are transforming our seventies-era preconceptions about synthetic fabrics

SINCE MANY OF our internal organs start incurring damage outside a very narrow temperature range—and we begin losing our ability to function sensibly even sooner—it is essential that we have ways of regulating heat. Long before we had clothing to assist us in this task, our bodies coped through automatic means. When our temperatures fell too low, blood vessels near our outer surface constricted to reduce heat loss and we shivered to generate a little additional warmth by burning extra calories with our muscles. When our temperatures rose too high, those same outer blood vessels dilated to shed heat, and our sweat glands made use of the principle of evaporative cooling to help us avoid the unpleasant effects of overheating—like brain damage, among others.

As clever as our sweat glands are (think how old you were when you learned how the principle of evaporative cooling works), they have apparently yet to figure out that we now wear clothes. Hence, they proceed with the release of precious bodily fluids whether or not we've impeded the process of evaporative cooling by encasing ourselves in garments that block the necessary airflow to make it work.

It seems unlikely that our sweat glands will evolve to a state of enlightenment in this matter anytime soon, and it would be nice to continue making use of their efforts, plus we still need to regulate our temperatures, clothed or not. What's required, then, is special clothing; some way to move the perspiration through our clothing, where it can again produce the desired evaporative cooling effect.

Different materials transport fluids differently. Our beloved cotton, so soft and comfy when dry, actually does a pretty lousy job of *moving* moisture. It's absorbent, and tends to hang on to sweat

quite a while, releasing it only very slowly to the surrounding atmosphere. Under another layer of clothing, as in the case of a tee-shirt under a riding jacket, cotton just becomes a soggy, sticky mess—definitely not comfortable, and of no use to the cause

underwear that clearly accomplished that advertised advantage under layers of winter gear, which sometimes proved excessively warm during vigorous activity. But it never occurred to me that the same principle would be helpful in hot conditions—

and, perhaps even more importantly, I've been a strict devotee to cotton ever since crawling out of those traumatically oppressive polyesters of the 70's. Well, I've been converted, and I'm here to tell you the good news: Modern high-tech polyesters are where it's at in high-moisture applications. Thanks, flash.

There's a plethora of synthetics out there, with a dizzying array of brand names and claims, often with little tech bulletins attached to each garment, explaining and diagramming the supposedly unique features

of each one. The purpose of this article is to alert you to the availability and value of this category of clothing. You won't find an exhaustive list or comprehensive comparison test here. But you will find an assortment that illustrates some important factors you might want to consider as you shop.

First, let's look at the basic reason why these fabrics do a better job of transporting sweat away from skin and out where it can evaporate and cool. It's capillary action that does the trick. Without going into the physics of hydrogen bonding and the like, water happens to have some unique properties—for one, it sticks to itself. That's why you can fill a glass of water a little past the top of the rim, and the water will bow upward without pouring out; this surface tension isn't present with most other liquids. Pour a few drops of water onto a smooth, non-porous surface and it will hold together in domes. Do the same thing with alcohol, and it spreads out flat. When a water molecule moves, it pulls its neigh-



Unlike conventional cotton T-shirts, which retain moisture in a thicket of random fibers so that evaporative cooling (the reason why our bodies sweat in warm weather in the first place) works very poorly, engineered polyesters are designed to draw moisture away, so that it can be effectively evaporated—much safer than riding like the proverbial naked ape.

of evaporative cooling. Until relatively recently, polyesters were even worse. I spent a large part of my adolescence wearing the plastic fabrics of the disco era in the heat and humidity of breathless central Florida. Before the first bell rang at school, the stylish among us would be miserably cloaked in thick, sopping layers of glistening Qiana, which would then cling mightily to our tacky flesh for hours. I don't know what you call the opposite of evaporative cooling, but it's the main property of those gooey materials called "double-knits" (if you remember them, I bet you're wincing right now).

Enter modern technology (big applause). In his article addressing the ravages of Monkey-Butt, MCN co-contributor flash gordon, m.d. aroused my curiosity about synthetic underwear. He recommended a brand named Wickers, and I gave their products a try.

It wasn't that I'd never heard of the superior wicking ability of certain polyester fibers—in fact, I already owned long