

Composite Javelin

In the photo at right, a unique, advanced type of javelin is undergoing "flight test." The javelin was designed to meet specifications laid down by the International Amateur Athletic Federation, but it has better stability than conventional javelins, according to college athletes who tested it. Its development incorporated aerodynamic design techniques and a composite material developed by NASA's Langley Research Center for aircraft and spacecraft.

The javelin was developed as a spare-time project by two aerospace engineers—NASA-Langley's Bill Brooks and General Electric Company's Victor Saffire. At the Montreal Olympics, they noticed that javelins in flight made eccentric wobbling motions—called flutter—although different athletes were throwing different javelins. They concluded that greater shaft stiffness would reduce flutter and improve performance, but increasing stiffness with conventional materials would cause an unacceptable weight increase. Their answer was use of an advanced epoxy graphite composite material to provide the requisite stiffness within weight limitations.

The developers acquired some left-over surplus epoxy graphite and obtained the assistance of Graphite Technology, Santa Ana, California, which fabricated test shafts. In the photo at left Saffire (right) holds one of the composite javelins while Irving Mondschein, track and field coach at the University of Pennsylvania and a participant in the test program, compares conventional and composite javelins. The tests confirmed the predicted improved stability of the composite javelin. As an added development, the designers placed a threaded joint at the javelin's center of gravity, permitting its disassembly into two sections for ease of transportation. Brooks and Saffire are now working on a similar development for pole vaulting.

