

# Inside R&D®

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The U.S. lead in science and technology is fading. And it is doing so at a time this country faces an alarming decline in productivity. R&D alone may not cure the productivity problem, but it certainly won't hurt it.....

.....Take a look at the statistics comparing the U.S. with other industrial countries. A Conference Board report shows that U.S. investment in research has declined from 2.64% of GNP in 1970 to 2.22% in 1979. During that same period the Soviet Union has lifted its R&D spending from 3.23% of GNP to 3.4%; West Germany from 2.18% to 2.28% and Japan from 1.79% to 1.94%. From a long range point of view the decline in basic research may bode more serious problems. Investment in basic research rose 13% a year between 1953 and 1961, fell to 0.3% between 1961 and 1967, and then actually declined to 1975. In the last four years it has grown at a modest 3.4%, based on constant 1972 dollars.....

.....A turnabout is not likely soon. The number of scientists and engineers in the workforce declined 13% between 1968 and 1978. And the number of college and university researchers who engage in basic research has been growing slowly since the late 1960s, and many of those now at work are growing older. As many significant technical developments are made by younger scientists, further erosion in scientific creativity may be in store for the U.S.....

.....Details: R and D Investment and National Productivity, The Conference Board, 845 Third Ave., New York, NY 10022.

Like the U.S., British investments in R&D have plateaued. But at least one company is taking a more aggressive approach toward innovation. GEC is setting up a new research laboratory at its Hirst Research Centre. It is headed by Derek Roberts, who has committed himself to "a higher risk factor.".....

.....The lab will concentrate on long range research into the problems of designing complex engineering systems, especially military ones. It will be especially dedicated to the concerns of Marconi Space and Defense Systems, a component company of GEC. The Hirst Research Center is a good lab to begin with and this new emphasis may make it a place to watch.

A dramatic reduction in the cost of infrared television may encourage broad new applications of this technology to civilian and military equipment. Rome Air Development Center has developed a military grade camera that will cost about \$10,000. At present these cameras cost \$100,000. And simpler civilian models range from \$30,000 to \$50,000.....

.....Key to lower cost is the focal plane sensor, where the image is focused by the lens. This silicon chip contains platinum-silicide sensitive to 4.6  $\mu$ m wavelengths, the middle infrared range. It converts infrared signals from objects or people to electric current which is processed for TV display.....

.....The drop in price (along with a drop in power requirements and weight and an increase in reliability) may promote development of instruments for non-military applications in energy, industrial and medical fields. RCA laboratories at Princeton and Camden will deliver alarm and intrusion detection cameras, based on the new technology which they helped develop, to the Air Force in 1981.....

.....Details: Freeman Shepherd, chief of Electronics Device Technology Branch, Air Force Systems Command, Hanscom AFB, MA 01731.