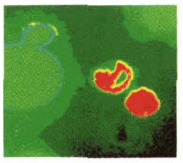
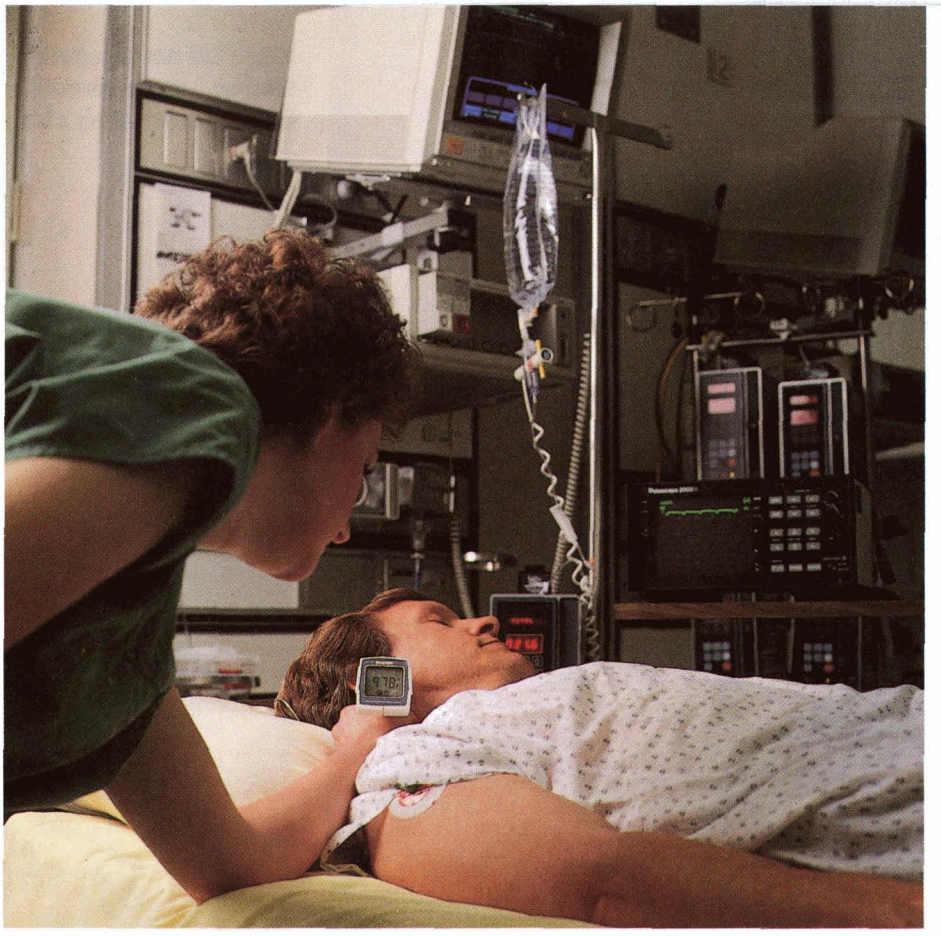




# Infrared Thermometer



**At right,** a nurse is taking a patient's temperature with the Diatek Model 7000 aural thermometer, which completed clinical testing in 1990 and was introduced to the commercial market in 1991. The thermometer, which employs infrared technology to get an almost instantaneous reading, was co-developed by Diatek Corporation, San Diego, California, and Jet Propulsion Laboratory (JPL). The development was undertaken as part of NASA's Technology Affiliates Program, which seeks to improve the competitiveness of American industries by facilitating the transfer of government-developed technology to the private sector.

*The thermometer employs infrared technology to get an almost instantaneous reading*

In the U.S. alone, some two billion clinical temperature readings are taken annually, about half of them in acute care hospital facilities. Because of a national shortage of nursing personnel, Diatek, a world leader in electronic thermometry, saw a need to reduce nursing time by providing a faster thermometer. Company researchers felt that the best developmental route was through use of infrared optical technology, which offered the fastest speed of operation and extreme accuracy. Additionally, it would allow determination of body temperature by measuring the energy emitted from the tympanic membrane (eardrum) into the ear canal; such an approach obviates the need for oral or rectal readings and avoids contact with mucous membranes, virtually eliminating the possibility of cross infection.

Diatek engineers started work on an infrared sensor but found a need for expert guidance. They turned to NASA, since Diatek is a member of the RIMTech entrepreneurial technology program and RIMTech in turn is a member of the JPL Technology Affiliates Program. This gave Diatek access to JPL's expertise, which includes 30 years of experience in remote measurement of the temperatures of stars and planets by reading their emitted infrared radiation.

Diatek and JPL worked closely on development of the infrared sensor that is the heart of the Model 7000 thermometer. The end product weighs only eight ounces, can be operated with one hand and measures temperatures in less than two seconds; this rapid response permits temperature measurement of newborn, critically ill or otherwise incapacitated patients. The saving in nursing time is appreciable because of the great numbers of temperatures taken in the course of a hospital shift. The Model 7000 is also an aid to patient comfort, since the speed of measurement makes frequent temperature taking less bothersome. The device has a disposable probe cover as a further guard against infection.

Diatek estimates the world market for electronic/infrared thermometers at $126 million for acute care hospitals and a roughly similar value for sales to alternate health care facilities, such as clinics, physicians' offices and nursing homes. Diatek's investment in the NASA technology was only the cost of technology transfer. Under the Technology Affiliates Program, a company pays only the cost of adapting or modifying the technology to its current need. For such an investment, the company gets the temporary assistance of a highly skilled staff of NASA technologists and avoids the costs of technologists before and after the company has used their talents. The JPL program is five years old; over that time, 30 companies have joined the program and about 50 transfer tasks have been completed or are being worked.