



Public Safety

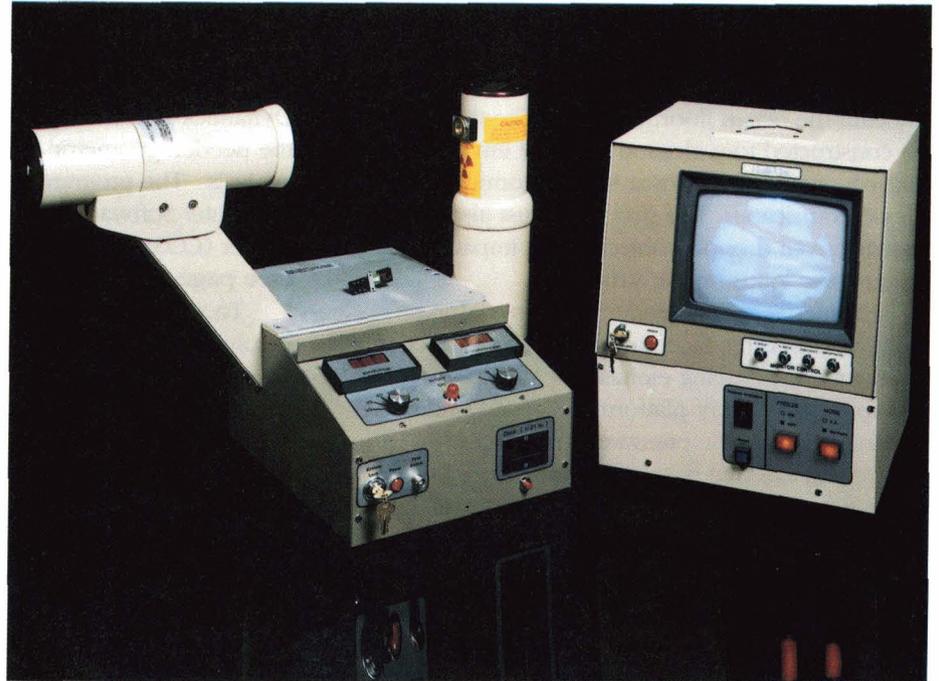
## X-ray Imaging System

*An industrial-use device represents a third generation spinoff from technology originally developed for x-ray astronomy*

**At right** is the Model 60007A InnerView Real-time X-ray Imaging System, produced by National Imaging Systems, a division of HealthMate, Inc., Northbrook, Illinois. It is an industrial-use device that offers low cost and operational safety for such x-ray applications as airport and building security (inspection of luggage, containers, boxes, etc.), non-destructive testing, quality control inspection and production inspection.

The InnerView device represents a third generation spinoff from technology originally developed for x-ray astronomy, where imaging at extremely low intensity is required. Goddard Space Flight Center adapted the imaging technology to a novel Earth-use product: a small, portable, isotopic, minimal radiation x-ray instrument known as the Low Intensity X-ray Imaging Scope; it was designed principally for medical emergencies, for example, on-site use to examine injuries at an accident scene or a sports contest.

NASA licensed the technology for commercial applications to several companies, among them HealthMate, Inc. HealthMate used it to develop the FluoroScan medical x-ray system for hospital operating rooms and physicians' offices; the company replaced the isotopic penetrating source with a variable power x-ray tube and added a number of improvements while retaining the small size and light weight of the Goddard system. Because of the low intensity imaging technology, the



Food and Drug Administration allows use of the FluoroScan without the lead aprons, film badges or lead lined walls that other x-ray systems require.

The InnerView imaging is a direct spinoff from FluoroScan. The system consists of an x-ray tube, a TV camera and a detector/intensifier (all packaged within the compact unit at left in the photo) and a nine-inch black and white display monitor. It is also available in a mobile unit in which the monitor is transported on a wheelbase and the x-ray tube, camera and detector/intensifier are mounted on a swinging "C-arm" affixed to the monitor.

In industrial use, the x-rayed object casts a shadow that is converted to a visible light image on a scintillator screen. After being reduced in size by a fiber optic taper, the image is intensified 50,000 times by an electron multiplier known as an MCP (microchannel plate intensifier). The closed circuit TV camera deposits the images on the monitor.