protective barriers. It might also be well to note that any personnel permanently stationed in close proximity to such a unit should likewise be protected.

W. R. CHRISTENSEN, Boston.

BIBLIOGRAPHY RADIATION DETECTION (1ST EDITION). ATOMIC ENERGY COMMISSION, Radiation Instruments Branch Report, no. 2, 143 pages, July, 1949.

This bibliography of reports and journal references covers the following subjects: detector components, count rate meters, ionization chamber rate or integrating meters, scalers, accessories for radiation detection instruments, related instruments, radiochemical laboratory technics, radiation interaction with matter, health physics and radiation sources.

NUCLEAR SCIENCE ABSTRACTS.

THE PROBLEM OF EXCESSIVE RADIATION DURING ROUTINE INVESTIGATIONS OF THE HEART. T. H. HILLS and R. W. STANFORD, Brit. Heart J. **12**:45 (Jan.) 1950.

An account of the types of measurements made during routine cases of angiocardiography and cardiac catheterization is given. Details are provided concerning the possible amounts of excess radiation to which the patient and the technical personnel may be exposed during the routine investigations; suggestions are made as to means whereby the excess can be avoided or reduced to a safe level. Distance, lead and rubber aprons and gloves, and other protective devices and measures are discussed. Accurate monitoring and calculation of the radiation exposure experienced by the patient are also mentioned as safeguards.

AUTHORS' ABSTRACT.

TRACK DEMONSTRATION OF RADIOACTIVE SUBSTANCES IN BIOLOGICAL TISSUES IN SPECIAL REFERENCE TO THE DIAGNOSIS OF RADIUM POISONING (IN GERMAN). HERMANN SCHAEFER, Strahlentherapie **78**:563, 1949.

The normal amount of radium in living tissues has been determined to be about 10^{-13} to 10^{-12} Gm. radium/Gm. tissue. This means that 1 Gm. of tissue sends out 0.037 α particles per second or about 2 α particles per minute. For these measurements a newly developed point-counter (A-Krebs) and counting tube have been used. However, a better method is available: the particle track demonstration of α particles in a photoemulsion. Gained by this method was the knowledge that the active substance does not only exist in molecular dispersion in the tissue but occurs also in colloidal solution and suspension. Colloidal thorium dioxide (thorotrast®) has been investigated with the same method, and it was found that the total (α particle) activity of an ampul of 12 cc. thorotrast® is 2.25×10^{-8} Gm. radium eq which for an organism of 60 Kg. weight would be 3.75×10^{-13} Gm. radium eq/Gm. tissue. If thorotrast® (after intravenous injection) would be evenly distributed in the organism, the dosage should not cause any damage, but in the reticular endothelial system it reaches much higher concentrations. The much stronger α radiations of the radioactive decay products become a great danger to the organism. One thorotrast® tumor was subjected to the same investigation; microtome sections after fixation showed unexplained high contents of 2.0×10^{-8} Gm. radium eq/Gm. tissue. Thorium X (as used in the thorium X therapy of Troch) does not show any selective accumulation in any tissue after intravenous injection. There exists a difference in the activity of different tissues; after an intravenous dosage of thorium X the spleen exhibited the highest activity; the liver and tumors of the lungs exhibited smaller concentrations. Another new result is that in a platinum-eosin-sol loaded with thorium X, the latter is always only molecularly dispersed, whereas the activities in the tissue occur also in aggregations.

ADAPTATION OF NUCLEAR SCIENCE ABSTRACT.