with R for an imaging system. It was found that the value of R^2/S and hence of detecting ability D was independent of R for a spherical source of diameter less than R (Sharma, 1969). This finding has the important consequence that, as the resolution diameter R of an imaging system is increased from zero, the detecting ability increases until R is equal to the source diameter, and then further increases in R *do not alter* the detecting ability. In the presence of significant inherent resolution (Anger, 1964) the detecting ability does increase slightly as R is increased further. The penalty for increasing resolution diameter is therefore not any loss of detecting ability; it is simply loss of positional accuracy.

Correspondingly, detecting ability is rapidly lost if the resolution diameter is made smaller than the diameter of the source it is desired to detect by approximately a factor of R^2. It may be noted that if R is kept matched to the source diameter, D decreases with the 4th power of R for a focused-collimator system and with the 6th power of R for multiparallel hole collimators (Sharma and Fowler, 1969).

These are the factors controlling detecting ability with respect to resolution diameter for small sources. The theoretical analyses (Sharma, 1969) are in agreement with experimental results and with Dr. Walker's suggestion to use R^2/S as a figure of merit for simple comparisons for small sources only and involving no change of depth, volume, radioisotope or counting time. The counting time for a stationary scanner (camera) is equal to the exposure time. For a moving scanner, however, it is the time required to scan over an area enclosed by the contour enveloping the peripheral holes on the collimator face (Sharma, 1969). For sources larger than R, a parameter which includes effective "collecting time" must be used, such as the merit-time-product defined by two of us earlier (Westerman, Stead and Fowler, 1969).

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ASSAY OF RADIOACTIVE MATERIALS

We would like to take this opportunity to thank Dr. Herbert Vetter for his kind words about our article, "Assays of Radioactive Materials for Use in Patients—a Five Year Study" (*J. Nucl. Med.* 9:236, 1938). However, one point in Dr. Vetter's letter deserves clarification. He described an instance in which a patient experienced untoward symptoms following injection of ^{32}P as a "sterile pyrogen-free solution for intravenous use." The pH of this material was 1, and Dr. Vetter says correctly that this error would have escaped the scrutiny of the NIH Radiation Safety Office.

The original article dealt solely with the responsibilities of the NIH Radiation Safety Office, i.e., identification and quantification of the principle radionuclide and of any radioactive contaminants present in materials intended for use in patients. The NIH Radiopharmaceutical Service is responsible for a wide variety of biological and chemical testing procedures which would include pH measurements and adjustments.

Testing such as that done by *both* the NIH Radiopharmaceutical Service and the NIH Radiation Safety Office should prevent the errors described by Dr. Vetter.

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