Letters to the Editor

DOSIMETRY

D. E. Raeside's article, "Film Badge Dosimetry Versus Luminescence Dosimetry" (*JNMT* 3:34–39, 1975), was one of the most biased and misleading articles I have read in recent years.

In my opinion Dr. Raeside has committed the following errors, which should be avoided by a writer for a technical journal: the literature search was apparently conducted to prove preconceived conclusions; the value of a dosimeter was totally equated with accuracy; and the only parameters considered or reported were those that clearly supported the author's prejudice.

I would like very much to submit the following statements for Mr. Raeside and your readers to consider before discarding all their film badges.

(A) The literature consistently refers to a −50 to +200% range of accuracy for film badges. The work that generated these results is now over 10 years old. No comparable study of commercially available TLD monitoring services has been reported, nor have I seen more recent studies of film badge comparisons done on nuclear medicine personnel.

(B) On two occasions we have given known doses to film badges routinely used by medical personnel and sent them through regular channels for reading and reporting. The greatest error seen was a 20% error at the 50-mrem level. Admittedly, this was a small population (a total of ten badges) and the radiation source (^{226}Ra) constitutes a very limited test. Since these tests were done within the past 1½ years using highly reputable companies, I feel that to condemn the film badge so totally is irresponsible.

(C) Dr. Raeside did not make any reference to the practical problems associated with either dosimeter. If one wishes to use either film or TLD he must consider the advantages *and* disadvantages from a pragmatic point of view.

In conclusion, I would like to say that both systems are useful but only within the limits dictated by physical and practical factors associated with their use under specific circumstances by a specific group of people.

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THE AUTHOR'S REPLY

First let me state that my analysis of the current state of personnel dosimetry followed a careful, open-minded study of all of the available *comparative* literature. Why didn't I include any references pointing to the superiority of film as a personnel dosimeter? The reason is simple: I found none. Not a single comparative study endorsed such a viewpoint. On the contrary, the accumulated evidence indicated that film is deficient in comparison to luminescence dosimeters. Now to the specific points raised by Mr. Vandergrift:

(A) Not all of the comparative studies cited were 10 years old. Why does Mr. Vandergrift ignore the more

recent ones? His point about the need for an evaluation of present commercial TLD services is a good one. I endorse it.

(B) Good scientific methodology requires that Mr. Vandergrift argue this point along one or more of the following lines: "After carefully studying the *total* available *comparative* literature I conclude that the evidence is not sufficient to warrant condemnation of film as a personnel dosimeter;" or, "Due to the fact that Raeside has overlooked certain *published* comparative studies which endorse film as a personnel dosimeter, his inferences may not be valid;" or, "After careful and extensive comparative studies, which we intend to publish, we conclude that film is an excellent choice as a personnel dosimeter." Instead we are faced with private comparisons which Mr. Vandergrift himself feels are inadequate.

(C) Without a statement of specific advantages and disadvantages, this point is without substance.

Let me conclude by stating that I feel that Mr. Vandergrift's case "for" the film badge is weak. It will take more substantial evidence than he has presented to convince me that film is the optimal personnel dosimeter.

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RECTILINEAR SCANNERS

In response to the article, "Comparison of 5:1 Rectilinear Scans with Scintillation Camera Images in Bone Scanning," by Charles H. Mandell and Herta M. Houle (*JNMT* 3:43–44, 1975), we would like to raise several serious issues concerning the techniques employed in bone scanning. We feel this article presents a distorted image of the resolving capabilities of the rectilinear scanner.

Agents, doses, and equipment used are the same as those available to this institution. Scanning times are approximately the same. However, the methods employed in establishing techniques differ considerably.

The article gives the impression that the tomographic effect of the scanner is a drawback when, in truth, used to its full capabilities, it is a definite asset. The geometric focal depth of the collimator and proper selection of the collimator for the best visualization of the organ of interest must be taken into consideration. We assume that a low-energy collimator with a 5-in. geometric focal depth was used in the study presented, which would seem to be the proper selection to visualize the viscera. The skeletal system, for the most part, however, is not at this depth within the body. This suggests that a collimator with a shorter geometric focal depth should be employed. No mention is made of the distance of the probes from the patient. One must keep in mind not only the geometric focal depth of the collimator but also the distance from the patient's body in order to always be visualizing the proper focal plane.

Another question in our minds is the combination of slit mask and line spacing, which seems to be an inappropriate match for this scan-to-image ratio. We feel this combination of slit mask and line spacing at this ratio has caused an erroneously high background erase of 45%. This high background erase could conceivably remove valuable information from the scan and thus present this washed-out look.

Although our method takes a few minutes longer (15 min at most), it presents the physician with a much finer

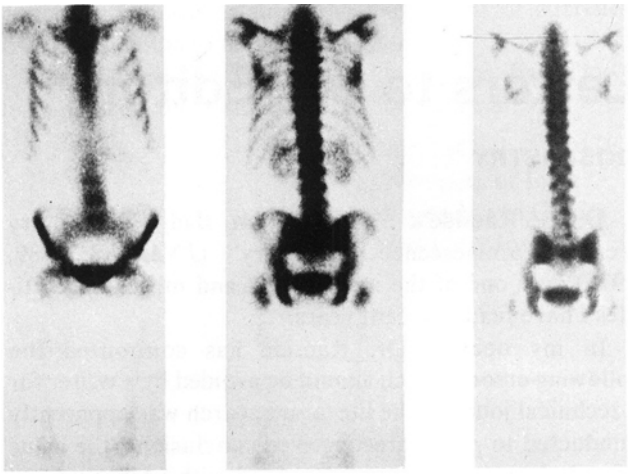

FIG. 1. Normal anterior (A) and posterior (B and C) bone scans.

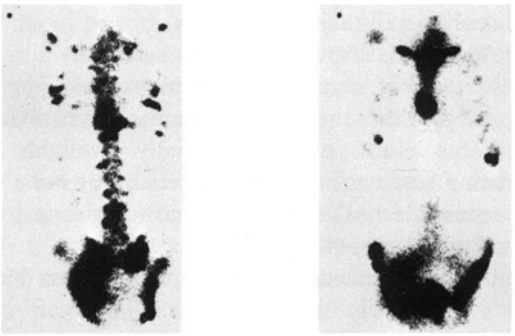

FIG. 2. Abnormal anterior (A) and posterior (B) bone scans.

image to interpret, with good visualization of bony structures (Figs. 1 and 2). Information density (ID) employed at this institution is virtually the same, but ID is only one factor in the production of a good quality image. Outlined below is a description of the technique