cally different from the form implicit to direct application of d′ from published tables. Theoretically predicted ROC curves for the quadrant localization detection task in fact suggest that the authors' data indicate increased observer performance due to scan smoothing, with results obtained using the best filter quantitatively approaching the theoretical optimum, at least for the conditions studied.

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THE AUTHOR'S REPLY

Published tables of d′ depend on an assumption that each observation is normally distributed with the same variance under noise alone and signal plus noise. This has been well recognized in the published literature. In spite of this, some students of visual perception have chosen to use these published tables of d′ as indices of detectability under conditions where probability distributions are not known and might be other than Gaussian. Metz and Goodenough are correct in describing the potential hazard in this approach. They offer as alternative a new set of d′ based on their theoretical prediction of what the probability distributions should be in visual search. With confirmation in real testing, this approach may increase the usefulness of the method.

The Metz-Goodenough analysis of our data suggests a slight trend of improvement in observer performance as smoothing increases; ours did not. To confirm this trend with statistical reliability, another study would be required. Accepting the trend, the consequence is the same, the effect of smoothing on improving observer performance was small in our study.

For the present, our conclusions remain the same. A major goal in smoothing pictures of near threshold objects is to match the most significant components of the spatial frequency spectrum of the object to the optimum spatial frequency response of the eye. If one views a scan picture at an optimum distance or minifies the picture appropriately, this is already accomplished. Additional smoothing does not help observer performance very much because the false-positive rate increases just as much as the true detection rate does.

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CALCULATION OF ABSORBED DOSE FROM RADIOPHARMACEUTICALS

In their Letter to the Editor, Lane and Greenfield (*1*) report the results of an interesting comparison of the "classical" method of calculating the absorbed dose from internally administered radiopharmaceuticals and that recommended by the MIRD Committee. The shortcomings of the former method, based on the use of geometrical factors, are mentioned in articles of Smith (*2*), Loevinger (*3*), and others. I only wish to draw attention to some points which may be of importance in judging the validity of conclusions of Lane and Greenfield.

The authors determined the average geometric factors for organs of the standard man on the basis of the table published in 1965 by Focht, et al (*4*)

without regard for the fact that since that time two articles (*5,6*), bringing new more reliable information on the topic, have appeared in the literature. Widman and Powsner (*5*) tabulated the absorbed fraction for right circular cylinders containing a gamma-emitting radionuclide and noted that, for low values of $\bar{g}$ (calculated from the corresponding absorbed fractions), their results are 15 percent higher than those of Focht, et al. Later the similar discrepancy was also confirmed by Hubbard and Williamson (*6*). Comparison of the geometric factors given by Lane and Greenfield, adopted according to Focht, et al for the geometries considered, and those of Widman and Powsner show the difference as much as 30%. The close agreement is obtained only in the case of cylinders approximating kidney, liver, and lungs. For pancreas, spleen, and thyroid Lane and Greenfield give the values of the geometrical factor 17, 18, and 11, respectively, while the corresponding values interpolated from the paper of Widman and Powsner are higher—20, 22, and 15.

For the total body Lane and Greenfield give the geometrical factor 126 which was taken from work of Loevinger, et al (*7*). In the energy range above 100 keV, the corresponding absorbed fraction is about 15% lower than that interpolated from tables of Snyder, et al (*8*) and Brownell, et al (*9*), as it is graphically illustrated by Fig. 2 in the Hušák paper (*10*).

Lane and Greenfield consider the calculation of the dose to an organ due to self-irradiation and give no information about how to determine it, e.g., the dose to the target organ from neighboring organs that contain activity. In this respect the "classical" method was little developed allowing only very rough dose estimates.

Even if authors' statements were based on quite correct data, their attempt to revive the "classical" method would appear to be at best superfluous and at worst confusing. The ever-growing popularity of the MIRD procedures all over the world demonstrates clearly their outstanding advantages.

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THE AUTHORS' REPLY

We would like to thank Dr. Hušák for confirming the widespread use of the MIRD procedures for calculating absorbed dose from internally deposited radionuclides. As we state in our Letter to the Editor (*1*) these procedures are more general and more accurate than previous approaches.

Frequently, however, calculations which produce a high degree of accuracy also require a large amount of time. This may be of secondary importance when great accuracy is necessary, but often a simple, approximate method will suffice. In addition, calculations which require a great deal of time have a tendency not to be undertaken. We feel this is the situation which prevails in a number of routine clinical procedures in nuclear medicine.

We acknowledge the difficulties encountered both in calculating the average geometrical value, $\bar{g}$, and in determining the size and shape of the cylinder required to approximate the radiation absorption characteristics of a human organ.

However, suppose we accept all of the proposed changes to our published $\bar{g}$ values and we recalculate the absorbed dose rates listed in Table 2 of our Letter to the Editor using the $\bar{g}$ values suggested by Hušák. These calculated dose rates differ from those calculated by the MIRD procedure by from 1% to a maximum of 8%. This is rather remarkable agreement for a method of calculation which requires such a small investment in time.

We believe this accuracy is sufficient for most