terms used in nuclear medicine has not yet been answered satisfactorily.

From among the many alternatives that exist, it appears desirable to select terms that are general enough to associate analogous concepts in all imaging fields, yet specific enough to designate a particular system or component appropriately.

On the most general level, the terms *system spread function** and *system transfer function* appear satisfactory. For systems that are linear and stationary (*1–6*), these functions are related by the FT and its inverse, FT^{-1}; thus

$$\textit{system spread function} \underset{FT^{-1}}{\overset{FT}{\rightleftarrows}} \textit{system transfer function.}$$

On this level of generality, the word *system* might be deleted without loss of clarity.

On a more specific level, *system* might be replaced by a term designating the particular system (or component), such as *optical, screen-film, scanner, gamma-ray camera* (or *detector, recorder, processor, display*), etc.

Thus for example, the FT of the *detector* (*point* or *line*) *spread function,* which has been called the "modulation transfer funciton" of the generalized† detector (*14,15*) in nuclear medicine, would be called the *detector transfer function.* Although this function could in general be complex, its values would be real for the usual symmetric *detector spread function.* In particular, the *detector transfer function* (like the *optical transfer function*) might assume negative values, indicating "spurious resolution" (*13,14*).

In addition, to preserve the degree of generality that is most convenient for asymmetric *spread functions,* the absolute value and the argument of all *system transfer functions* might be designated *modulation transfer function* and *phase transfer function,* respectively, in nuclear medicine as currently in optics and radiology.

Finally, it appears to be generally agreed that the use of three letter symbols, such as OTF and MTF, to designate these terms is cumbersome and should be replaced by a single-letter notation without subscripts whenever possible.

In the interest of finding an acceptable set of terms and symbols to designate these concepts, your comments, criticisms, and alternative suggestions would be greatly appreciated.

ROBERT N. BECK
Argonne Cancer Research Hospital
Chicago, Illinois

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* Modified by *point* or *line* when ambiguity would otherwise result.

† The term generalized *detector spread function* refers to the shape of the normalized expected count-density profile due to a point (or line) source of radioactivity at a certain depth within a tissue-equivalent scattering medium. Thus it is dependent on the geometrical response of the collimator, septal penetration, scattering in the medium and collimator, the energy resolution of the detector, and "window" setting of the pulse-height analyzer.

DOSIMETRY OF ^{87m}Sr

Calculating the radiation dose from ^{87m}Sr using the formulas from Johns and Cunningham (*1*), we found a bone dose of 14.8 mrad/100 μCi. This value agrees rather satisfactorily with those calculated by others (*2–5*) which are in the range 10.0–14.0 mrad/100 μCi. However, the value of 40.3 mrad

mentioned in an article by Meckelnburg (*6*) is about 3½ times as high as ours although he uses a similar formula from Johns (*7*).

We have one main objection to his calculation, besides the fact that he does not take into account the dose contribution of the conversion electrons; recalculation, after substituting the figures he uses, leads us to a value of 4.03 mrad instead of 40.3 mrad. Consequently we come to the conclusion there is a mathematical error by a factor of 10. This reaction may seem a little late, but up until now the error has never been corrected. Many references have been made to the erroneous result of this calculation without any correction by other authors, the industry (*8*), and the ICRP (*9*).

P. H. v.d. GIESSEN
J. H. J. RUYS
Radio-Therapeutisch Instituut
Tilburg, The Netherlands

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AN INEXPENSIVE REMOTE START SWITCH FOR THE PHO/GAMMA CAMERA

Dynamic function studies are not easily performed by a lone technologist with the Nuclear-Chicago Pho/Gamma III camera because the automatic mode must be initiated from the console. A common solution to this dilemma requires two persons: one to inject and the other to operate the camera. Others have lamented this situation and described an alternative employing a foot-actuated relay (*1*). Our device offers the added advantages of low cost (about $10), less bulk, and the elimination of the potentially hazardous 120-volt a-c cabling underfoot.

Activation of the camera in our lab is accomplished by a ribbon switch fastened around the detector head within easy reach of the technologist. Before initiating a study, the technologist switches on the new "remote" circuit (Fig. 1) and momentarily depresses the "stop" button. The "photo record" switch is then set to "auto". When the injection is made, the technologist depresses the ribbon switch, allowing the study to proceed by the preset controls. At the end of the serial phase, the circuit is switched off and the examination completed in the normal manner.

Figure 1 illustrates the location of the new "remote" toggle switch on the Pho/Gamma console and the placement of the ribbon switch around the detector head. In the interest of simplicity, it was decided to fit the few components involved in the control circuit directly to the back of the miniature toggle switch, and to make the four electrical connections to the Pho/Gamma at the S/C control card located immediately behind the center console front panel. The Type 141-BPH ribbon switch is manufactured by Tapeswitch Corporation, Farmingdale, New York. It may be glued to the detector head, or as we have done, fastened beneath a strip of adhesive tape.

Camera operation in the "auto" mode may be halted by continuous depression of the "stop" button on the console, which grounds point R on the S/C control card. The added circuitry maintains this ground electronically when the "stop" button is released. Operation may then be initiated only through the ribbon switch.

Figure 2 is a schematic of the device; basically a

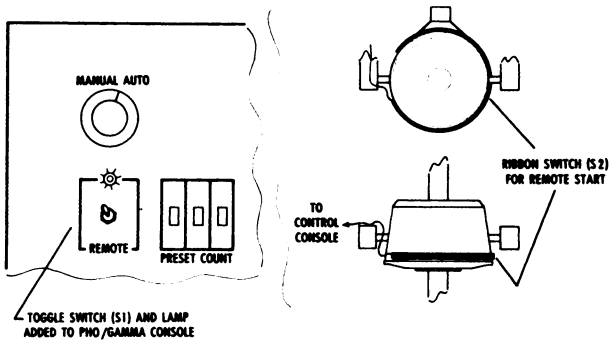

FIG. 1. Location of added switches on console and around detector head.