they have been completed. Although Neirinckx and Davis may ultimately prove correct in their negative appraisal of our generator, we have not as yet formed an opinion on this matter and believe it to be presumptuous of them to have done so already.

It is also not clear where Neirinckx and Davis obtained their value of 0.5% Ge-68 loss for our generator. Such a loss would indeed be a problem if it were true, but we have not observed that to be the case.

At any rate, it appears that the need for a good biomedical generator for ionic Ga-68 still exists. Although no actual performance parameters were reported (*1*), the low elution yield of Ga-68 and small K_D of Ge-68 on the proposed SiO_2 column would translate to relatively poor Ga/Ge separation factors and would also require frequent generator reconstruction. Moreover, the use of HNO_3 eluent is very unattractive, and the compulsory post-elution evaporation step would result in a significant loss of effective Ga-68 yield through physical decay (similar to that incurred in the destruction of the Ga-68 EDTA chelate eluted from today's commercial generators).

PATRICK M. GRANT
H. A. O'BRIEN, JR.
SAED MIRZADEH
RICHARD E. WHIPPLE
Los Alamos Scientific Laboratory
Los Alamos, New Mexico

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Reply

We appreciate the interest of Drs. Grant, O'Brien, Mirzadeh, et al. in our manuscript and are distressed that they have the impression that we have condemned their distillation generator to failure. Our exact words were "the more complicated nature of the distillation procedure makes this more useful in a research environment than in a typical hospital setting." Neither extraction nor distillation techniques are well suited to the routine production of radioactive generators, since both are cumbersome and require chemical expertise. Given the present state-of-the-art in generator technology and the knowledge of past attempts with distillation or extraction systems, we are content to stand by our initial statement. During the early to mid 1970s, an attempt was made to commercialize a Mo-99m→Tc-99m generator based on a solvent extraction-evaporation principle (Mek-Tec). The system was fully automated, could be activated either by a preset timer or by remote signal, and allowed reconstitution to any desired concentration. The needs to restock the Mo-99 weekly in the laboratory, to connect several pieces of tubing properly, and to ensure complete removal of the solvent (MEK) were met with extreme skepticism by most of the nuclear medicine community and the "product innovation" failed. More recently, Erhardt and Welch reported on the preliminary development of an extraction generator for Ge-68→Ga-68 using oxine (*1*). Upon scaleup to larger-sized units (>20 mCi) they found that radiolysis of the solvent gave rise to impurities that significantly decreased or totally inhibited gallium labeling or complex formation (M. J. Welch, personal communication).

The Ge-68 loss figure quoted in our paper (0.5%) was obtained from an oral presentation by one of the authors (*2*), and we understand that this figure has since been appreciably lowered by using higher activities of Ge-68.

As we conceded in our article, the SiO_2-based system suffers from the necessity of completely removing the HNO_3 from the eluate. We agree that the need for a good biomedical generator still exists. For this reason our program has progressed beyond the SiO_2-based column to the development of systems based on either an organic anion-exchange resin (*3*) or a synthetic germanium-specific chelate resin (*4*). Admittedly we have no experience with the distillation procedure, but it is our belief that these procedures, no matter how easy, cannot match the convenience of a simple eluate collection from a chromatographic system.

Taking into account the desirability of a chromatographic system on an inorganic adsorbent, we feel that the best system to date (assuming it is reproducible) is the one based on adsorption on ZrO_2 from dilute hydrochloric acid as described by Malyshev and Smirnov (*5*) in 1975.

RUDI D. NEIRINCKX
Squibb Institute for Medical Research
New Brunswick, New Jersey

MICHAEL A. DAVIS
Harvard Medical School
Boston, Massachusetts

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Usefulness of Liquid Radioiodine in Avoiding Factitious Low I-131 Uptake Studies

We recently encountered a patient with severe toxic goiter (Graves' disease) who caused serious confusion, apparently by disrupting our I-131 uptake tests. A 16-year-old girl was referred for management of severe hyperthyroidism. Physical examination revealed a pulse rate of 128/min, tremor, and a thyroid diffusely enlarged to three times normal size. After i.v. administration of 8.7 mCi of [^{99m}Tc] pertechnetate, the gamma image revealed rapid and uniform tracer uptake. The serum-free thyroxine index was 16.5 (normal 1.4-4.0) and the serum T_3 (RIA) >800 ng% (normal