We live forward, but we can only think backward.
—Søren Kierkegaard

What happens to us is determined by our actions, our times, and the world in which we live. Looking back over the Highlights Lectures from the annual meeting of the SNM in 1977, it is clear that nuclear cardiology stole the show and was on the verge of becoming a major force that would bring nuclear medicine into the mainstream of medicine. It is also clear that nuclear medicine continued to build on previous innovations, and several of these are included to set the scene for the progress shown at this meeting. The figures accompanying this article illustrate some of those seminal innovations.

Although the tracer principle—the most fundamental principle of nuclear medicine—had remained the same during the previous 25 years (Fig. 1), measurement of regional function of the lungs and heart had been an important advance. The latter was brought about by the invention of the scintillation camera by Hal Anger in 1958. Lung scanning of regional perfusion and ventilation had anticipated nuclear cardiology but was developed using rectilinear scanning, invented by Benedict Cassen in 1951 (Fig. 2).

Cyclotron-produced radionuclides, such as 15O and 11C, which had been used in the 1930s by chemists including the late Martin Kamen, revolutionized our understanding of basic processes such as photosynthesis. Kamen was able to show that oxygen produced by photosynthesis came from water rather than from carbon dioxide (as had been assumed previously). Renewed interest in this topic was just beginning in 1977.

At that time radioiodine (most often 131I) continued to be the number one radionuclide. Since shortly after the end of World War II, radioiodine had been used widely and successfully in the diagnosis of hypo- and hyperthyroidism and in the treatment of thyroid diseases. The result was the elimination of surgery for many patients. In 1977 a few studies employed 123I, and 99mTc studies were almost equal in number to those with radioiodine (Fig. 3). Chemists at the SNM meeting reported on advances in expanding 99mTc chemistry, for example, by reduction of pertechnetate to technetium–tin complexes, which were more useful for labeling molecules.

Radionuclide generators were still being perfected. Innovative studies, such as the development and application of 99mTc tracers for diagnosis of acute cholecystitis, were becoming wide...
spread. White cell labeling with $^{111}$In was successful in the detection and localization of infections. Bleomycin, an iodinated antibiotic, proved to be a failure in detecting neoplasms but, surprisingly, was not tried for imaging infections. Today, antibiotics labeled with $^{99m}$Tc are widely used in patients with infections. Investigators reported on $^{18}$F as a label for fluoracil for detecting tumors. Estrogen receptor labeling was described but not FDG studies in oncology. PET scanners were being developed (Figs. 4–7), and computer assisted studies were mentioned only briefly. (The use of dedicated “minicomputers” was first introduced into nuclear medicine for quantitative analysis of lung scans in 1968 and was used in the first large-scale clinical trial of urokinase, a thrombolytic agent, in the treatment of massive pulmonary embolism.) “Kinetic imaging” was beginning to be applied to several organ systems to better portray regional physiology.

$^{18}$F-FDG for the study of regional brain metabolism and “actively metabolizing tissues” was mentioned for the first time at the 1977 meeting. Its eventual role in joining $^{131}$I and $^{99m}$Tc tracers as the big three in the history of in vivo imaging was still in the future. $^{67}$Ga studies dominated oncology at the meeting, whereas results with labeled antibodies in oncology were not striking. Several authors suggested $^{201}$Tl for imaging neoplasms.

One of the celebrations of 1977 for the nuclear medicine community was the announcement that Rosalyn Yalow had received the Nobel Prize for her development, with the late Soloman Berson, of the technique of radioimmunoassay. They had deduced from the retarded rate of disappearance of insulin from the circulation of insulin-treated subjects that these patients had developed antibodies to animal insulins. In studying the reaction of insulin with antibodies, they appreciated that they had developed a tool with the potential for measuring circulating insulin. It took several more years of work, until 1959, to transform the concept into its practical application to the measurement of plasma insulin in humans. The era of radioimmunoassay had begun, and even-
tually the technique was used to measure hundreds of substances of biologic interest in laboratories throughout the world. Other Nobel prize winners in 1977 were Roger Guillemin and Andrew Schally, who, among other important discoveries, isolated the pituitary hormones, thyroid-releasing hormone, and somatostatin, the latter eventually playing a major role in the renaissance of radionuclide therapy.

Clearly, many new areas of interest were being explored in nuclear medicine in 1977. It is instructive to look at events in the wider world at this time as well. In the same year, the United States continued its rapprochement with the People’s Republic of China. The promise of exploration seemed endless, as the Voyager spacecraft was launched carrying recordings of music and greetings in 55 Earth languages, and the submarine Alvin explored midoceanic ridges and discovered chemosynthetic life. The scientific world was growing smaller as communications across once-closed borders became possible. The SNM meeting attracted increasing numbers of international attendees and featured a promising range of diagnostic, therapeutic, and basic research applications.

—Henry N. Wagner, MD
SNM Historian

Nuclear Medicine Specialists Among “Most Influential”

SNM members and others active in the nuclear medicine community were named among the most influential people in radiology in the cover feature of the November issue of Diagnostic Imaging magazine. In making their selections, the magazine’s editors and editorial advisory board “concentrated on individuals in the midstream of their careers, favoring those who have made major contributions to radiology’s advancement and still have the energy and opportunity to do more.”

The top 20 most influential people were selected on the basis of “the persuasiveness of their ideas and the impressiveness of their clinical virtuosity.” Although the selection process favored academicians, the editors noted that, “ultimately, we sought men and women who inspire emulation or spur controversy. These include the movers and shakers who are expanding radiology’s frontiers through new technologies, better applications, and growing political power.”

Three SNM members were named to the list. The editors noted that Michael E. Phelps, PhD (Norton Simon professor and chair of molecular and medical pharmacology at the University of California, Los Angeles [UCLA]), combined a rare talent for invention, an astute political sense, and the ability to build great organizations. Barry A. Siegel, MD (director of nuclear medicine at the Mallinckrodt Institute of Radiology, St. Louis, MO), was recognized for his numerous contributions to the development of clinical PET and its subsequent effects on daily practice, as well as for establishing a world-class clinical training program in nuclear medicine. James H. Thrall, MD (director of radiology at Massachusetts General Hospital, Boston, MA), was selected for his leadership as an academician and organizer, and for his accomplishments in defining the cutting edge of innovations in nuclear medicine and radiology.

Among others named to the list were Elias Zerhouni, MD (director of the National Institutes of Health, Bethesda, MD); Hedvig Hricak, MD (director of the radiology department at Memorial Sloan-Kettering Cancer Center, New York, NY); and Roderic I. Pettigrew, MD (director of the National Institute for Biomedical Imaging and Bioengineering, Bethesda, MD), each of whom maintains strong ties to the nuclear medicine community.

In a second article, Diagnostic Imaging named “emerging stars” in radiology. Included on this list was SNM member Sanjiv Gambhir, MD (director of the Crump Institute for Molecular Imaging at UCLA), a frequent contributor to and editorial board member of The Journal of Nuclear Medicine.

The Minnies

The popular radiology Web site, auntminnie.com, also announced in November the winners of its annual Minnies, awards of recognition voted on by registered users of the site. Both Zerhouni and Richard Wahl, MD (chair of nuclear medicine at Johns Hopkins University Medical Center, Baltimore, MD), were presented Minnies in the category of “most influential radiology researcher.” Martha Koperwhats, RTR, CMRT, MS (acting director of the department of diagnostic imaging services, Texas Children’s Hospital, Houston, TX), and Enrico Perez (Columbia Presbyterian–Cornell University Hospitals, New York, NY) were named “most effective radiology administrators/managers.” The Minnies present awards in a number of categories, including rankings of issues that are important to the radiology community, various industry achievement recognitions, and important contributions to the literature. Hybrid CT/PET scanning took top honors in the “hottest clinical procedure” category.