

History of the British Nuclear Medicine Society



Radioisotope studies in the UK have a long history. One of the first radiotracer experiments in the United Kingdom (UK) took place in 1911. George de Hevesy (György Hevesy) had left Berlin to study under Rutherford in Manchester, England. He suspected that his landlady was recycling the remains of the Sunday meat pie to meals later in the week. To test this hypothesis he added a radioactive deposit of lead-212 to the freshly prepared pie and the following Wednesday, with the aid of an electroscope, demonstrated the presence of the activity in the soufflé, proving beyond doubt that there had been recycling.

Towards the end of the 1940s the foundations of nuclear medicine in the UK were laid by a series of eminent physicists. Probably the most famous of the original isotope departments was that led by Norman Veall at the Hammersmith Hospital, London. The original Government Radiochemical Centre at Amersham became a private company, Amersham International providing a wide range of radiopharmaceuticals for the UK and abroad.

Initially, little equipment was available commercially. Physicists with access to their own workshops developed their own detectors for laboratory work and eventually for imaging. Norman Veall made one of the original glass-sleeved thin-walled Geiger counters in 1948 for counting ^{32}P . Most of the first radioisotope tracer studies concentrated on human physiology. These were summarised in 1951 at a conference on isotope techniques held in Oxford in July of that year. In 1948/49 the first U.K. patients had been treated with radioisotopes. At the Royal Cancer (now Royal Marsden) Hospital, London the isotopes used included ^{32}P for polycythaemia and ^{131}I for carcinoma of the thyroid. In the absence of imagers in 1951, maps of the thyroid gland were made by hand, using radioiodine and a home-made scintillation counter designed by Russell Herbert (the man with glasses close to the camera in Figure 4) in Liverpool. In 1951, W.V. Mayneord at the Institute of Cancer Research designed and built what is believed to be the second automatic isotope scanner in the world (Fig. 1). (The first device for “indirect autoradiography” of the thyroid was demonstrated by a Dutch doctor, George Ziedses des Plantes, at The International Congress of Radiology in London in 1950.) The Mayneord scanner had a storage scope and a raster motion, background subtraction and other features which had to await the development of digital computers many years later before they were used again.

At the Hammersmith Hospital, Mallard and Peachey built a whole-body colour scanner used for brain diagnosis with cyclotron-produced ^{72}As and then ^{74}As with dual counter positron detection. The commercial firm EKCO made a small Anger-type gamma camera and placed it in the Middlesex Hospital, London. In 1971 first images of a tiny rat thyroid gland (Fig 2) were recorded using a Ge(Li) semiconductor camera at the Royal Marsden Hospital in Sutton Surrey. The device was made in conjunction with the Atomic Weapons Research Establishment.



Also in 1971, early studies on tomography for brain imaging were carried out by John Mallard on his home-made Aberdeen Section Scanner (shortened to ASS).

In 1967, Norman Veall and Steve Garnett at Guys Hospital, London developed the now familiar and increasingly important method of measuring renal function using ^{51}Cr -EDTA. The 1958 Veall and Vetter book on *Radioisotopes in Clinical Research and Diagnosis* became the standard reference book for radioisotope studies. John Mallard published reviews on the physics of radioisotope scanning in 1965/6, while Ralph McCready critically reviewed the already quite numerous radioisotope clinical applications in the *British Journal of Radiology* in 1967. It was the first reprint to be sold by a publisher. In spite of that, it quickly sold out, demonstrating the interest in what was to become the specialty of Nuclear Medicine.

In 1969 Brown and Britton developed computer-assisted background-subtracted renography although probably the original idea of blood background subtraction using labelled albumin was that of a radiotherapist, Dr. Hall (Canterbury).

Unusually in 1967 early bone scans were made at the Royal Marsden (Sutton) with ^{18}F provided by the cyclotron unit at Hammersmith. Road traffic was lighter and traffic lights fewer, so transport of the 90-minute half-life isotope was feasible. Over 40 years later ^{18}F is again being used for bone scanning.

With the introduction of the generator-produced $^{99\text{m}}\text{Tc}$, imaging became easier and predominant in radioisotope departments. Only a few departments have retained in vitro studies using radioisotopes in their range of investigations.

In 1967 a conference on the use of radioactive isotopes in the localisation of tumours was held by the Institute of Cancer Research at Imperial College in London. Figure 3 shows the front cover of the conference book of abstracts laboriously typed by hand on an old fashioned typewriter. With little competition from other conferences and with London as an attractive venue, experts from all over the world gathered to present state of the art images, imaging apparatus and clinical results. Figure 4 shows the formal photograph of the conference dinner attended by many of the national and international pioneers in the development of radioisotope studies. Labelled rather reluctantly as a “Nuclear Medicine” symposium following the American style, the focus began to change from physicist-led isotope departments to clinician-led nuclear medicine departments.

While the first consultant in nuclear medicine (Clive Hayter) was based in Leeds, the most eminent department in 1961 was that of Edward Williams at the Institute of Nuclear Medicine (Middlesex Hospital, London). Dr. David Keeling was the first consultant physician in charge of nuclear medicine (1965-73).

With the changing emphasis in Nuclear Medicine, Edward Williams, David Keeling, Steve Garnett and Ralph McCready met at a pub in Queensway in London on Tuesday 19th July 1966 to discuss the future professional situation of physicians in nuclear medicine. It was decided to form the British Nuclear Medicine Society (BNMS). Essentially, at the beginning, a medical society to represent the interests of those brave

enough to leave the security of the conventional specialties of radiology and general medicine, it changed when from 1972 annual meetings and exhibitions were held. The BNMS evolved into a successful forum for everybody interested in radioisotope studies, including scientists, chemists, nurses and technologists. It was an exciting time, when new ideas could be developed without the present constraints of regulatory bodies. An idea could be suggested one week, be in clinical use the next week (with the patients' informed agreement, of course) and be presented to the world the week after.

The BNMS hosted the second joint SNME/ENMS Congress under the presidency of Keith Britton in the Barbican, London in 1985. What was expected to be a marginal increase on the annual BNMS meeting turned into a massive event with over 3,000 participants. There was even a fanfare of trumpets at the opening ceremony. The BNMS still owns the copyright of the music! The Scintillating Swingers jazz group composed of doctors and scientists from all over Europe performed at the banquet in the Park Lane Hilton Hotel and it was agreed that everyone had had a great scientific and social time.

Since then the BNMS has been the mouthpiece in the UK in all matters nuclear medicine. Its members have made a major contribution to Nuclear Medicine in Europe. Peter Ell from the Middlesex Hospital was elected EANM President in 1994. The *European Journal of Nuclear Medicine* developed to become a more widely read international journal with a high citation index under the direction of the chief editor and guidance of the associate editors, two of whom came from the UK. Desmond Croft was elected first President of the UEMS nuclear medicine monospecialty formed in 1989.

Membership of the BNMS now numbers nearly 600, more than 10% of whom are overseas members based in countries from South America to South Africa. The official journal of the society is *Nuclear Medicine Communications*.

The society advises on education professional standards through membership of the relevant committees of the Royal College of Radiologists, the Royal College of Physicians and IPEM. Its specialist subcommittees include professional standards, teaching and training, and scientific groups. Membership is drawn from a wide spectrum including clinical practitioners, clinical scientists, industry representatives, nuclear medicine physicians, nuclear medicine radiologists, nurses, patients groups and radiopharmacists. There are also close links with industry, especially in the field of research and development.

Today, radioisotope studies are performed by nuclear medicine physicians and radiologists with additional training. The cross-training requirements are being agreed between the professional organisations. Therapeutic procedures are in general performed by nuclear medicine physicians although there are doctors with dual qualification in nuclear medicine and radiology who also combine imaging and therapy.

The future for Nuclear Medicine and the BNMS in the UK is bright. The strong influence of clinical scientists means that there is continuing development of radioisotope techniques, the scientific basis of nuclear medicine. Our immediate past president, Alan Perkins, is professor of medical physics and an honorary consultant clinical scientist with a special interest in targeted radioisotope therapy and drug delivery.



The use of radioisotope therapy is increasing while the availability of ^{18}F compounds throughout the country and of fixed or mobile PET scanners means that PET studies are increasing rapidly. Technologists play a large part in developing education and operating procedures for the various types of investigation, while nurses, with their background in patient care, ensure a comfortable environment in what can be a rather frightening experience to be on the receiving end of radioactivity.

Ralph McCready
Past President, British Nuclear Medicine Society

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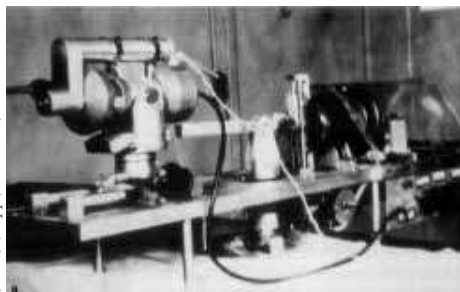
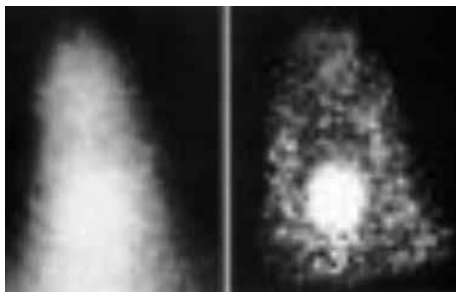


Fig. 1 The Mayneord scanner



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Fig. 2 The comparison of Anger Camera and Semi-conductor Camera images of a rat thyroid following an i.v. injection of Tc 99m pertechnetate.

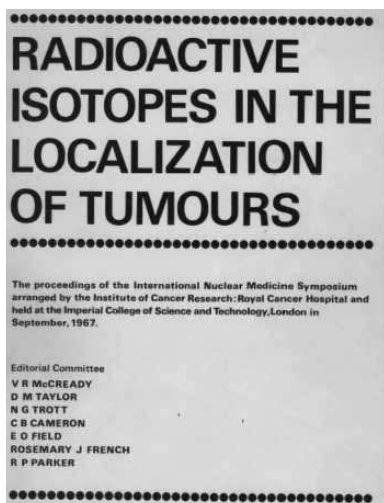


Fig. 3 The front cover of the 1967 conference book of abstracts reproduced from the typescript of a manual typewriter. Word processors had not been invented.



Fig. 3a Placental scan using Cr51 labelled red cells. It seemed like a good idea in 1967.



Fig. 4 The 1967 conference dinner at Imperial College London. In the picture are many International and UK pioneers in Nuclear Medicine.



Fig. 5 The second joint SNME/ENMS Congress was held in the Barbican London. Peter Ell was the ENMS and Congress secretary, Keith Harding the BNMS President and Keith Britton the EANM and Joint Congress President.

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