



Winter 2008

News

News and information for members

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Honorary Editors: Sue Marchant and Simon Blease



**When Science
Becomes Art...**

Presidential Inauguration



Dr Julie Olliff handing over the BIR reins to Dr Stuart Green.

It was on Thursday 18 September, after two years of loyal service to the BIR, that Dr Julie Olliff handed over the reins of the Institute to Dr Stuart Green at 36 Portland Place, London.

An evening starting off with prizes

This wonderful evening surrounded by live classical music — an event kindly sponsored by Philips Healthcare — began with Dr Dow-Mu Koh's presentation of the Mackenzie Davison Memorial Lecture on the topic of "Diffusion-weighted MRI: A new technique for body imaging".

After presenting the 2007 Barclay Medal to Dr Fergus Gleeson and the 2007 Barclay Prize to Professor Adrian K Dixon, Dr Olliff delivered her final speech as President, thanking the BIR Committees, Members, Company Subscribers and staff for their support over the last two years. Her presidency will be remembered for the many projects she led, such as the introduction of free associate membership for UK-based students and trainees, reorganisation of the BIR Local Branches, and the much improved contacts made between the Institute, the government and other organisations such as NICE.

A new President with many projects

It is a confident Dr Stuart Green, a BIR member for 16 years, who steps up to take on his new role. Supported by Vice-President Dr Stephen Davies, Dr Green named the projects that he intends to pursue during his two-year tenure: (i) to strengthen the relationship between clinicians and scientists throughout the world; (ii) to support the *British Journal of Radiology* (BJR) — a journal which now has the highest impact factor for a UK published radiology journal — in its efforts to further improve quality; (iii) to implement the retrospective digitization of the BJR; (iv) to encourage and develop projects that present the work of the BIR to a wider public; (v) to optimize the services which BIR provides to its members by implementing Quality Management procedures in the Institute with ISO9001 accreditation; and (vi) to continue to improve services to BIR members and the radiology community through the development of BIR branches.



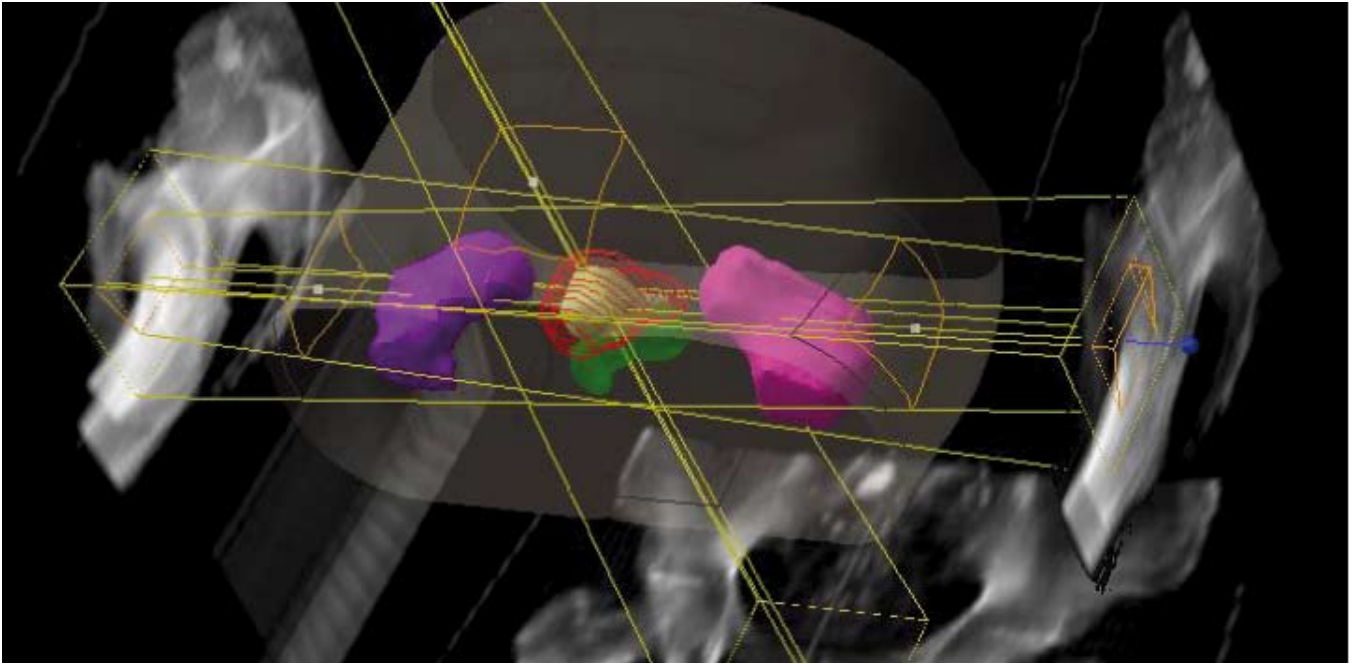
These are only a few of the projects that will be led by a very enthusiastic president, whom the BIR would like to warmly welcome.



From right to left. Photo 1: Dr Koh and Dr Olliff. Photo 2: Professor Dixon, Dr Pilling and Dr Olliff. Photo 3: Dr Gleeson, Dr Pilling and Dr Olliff.

Correction: BIR News apologises to Agfa Healthcare for referring incorrectly to the Agfa Mayneord Lecture at UKRC 2008 as the Mackenzie Davidson Lecture in the President's Column of the Autumn BIR News.

Radiation Physics and Dosimetry Committee



Applications of ionizing radiation have been at the heart of the BIR's activities from the inception of the Röntgen Society. The Radiation Physics and Dosimetry Committee considers the physical principles underpinning the clinical uses of ionizing radiation, especially methods for measuring absorbed dose and understanding its clinical relevance. Traditionally, this has resulted in a primary focus on the dosimetry and optimization of radiotherapy treatments. However, with imaging technologies playing an increasing role in advanced radiotherapy, the committee has begun to explore the role of physics in assessing concomitant doses and balancing the risks and benefits of additional verification imaging. These activities naturally allow this committee, together with the Clinical Imaging and Radiation Protection Committees, also to contribute towards optimization of the diagnostic imaging process.

Radiotherapy and diagnostic imaging are truly multi-disciplinary fields and the committee membership represents a broad cross-section of the radiotherapy and diagnostic physics communities. This enables image quality and doses from radiotherapy imaging to be discussed from all perspectives, allowing well balanced opinions to be formed. In contemporary radiotherapy, patient dosimetry is influenced as much by the choice of treatment technique, immobilization devices and staff training as by fundamental equipment calibration and treatment planning. To help cover this,

we are pleased to welcome our first radiographer onto the committee from the start of the 2008/2009 session, Carol Scott who is based in Cheltenham.

Much of the committee's activities are centred around organizing scientific meetings. A successful meeting on the physics and engineering aspects of PET/CT was held in November 2008. Meetings scheduled for 2009 include a technology update on radiotherapy dosimetry and exploring the diagnostic basics of radiotherapy imaging. We are also excited to be holding a meeting on Radionuclide Dosimetry, which is the fruit of a working party evaluating current UK practice. An additional working party is also undertaking a scoping exercise to determine the value of publishing a revision to BJR Supplement 25, a document found in almost all radiotherapy departments in the UK and abroad.

This committee has continued to demonstrate support for the efforts of the CEP Device Evaluation Groups, including the first-class training previously provided by them. It is hoped BIR will be able to work with CEP to facilitate the running of the ImPACT CT course in 2009.

Andrew J Reilly
Chair, Radiation Physics and
Dosimetry Committee

Fundraising Update

Recent donations received

We would like to thank Dr M F Cottrall, Dr Pelmore C.Eng, Dr Wright, Dr Holland, Mr Doyle, for their kind donations.

Update on the exhibition "The Art of Medicine"

The BIR art exhibition is on target for 16 - 21 March next year. There are several ways in which members of the BIR can help our fundraising via this event.

There will be a schools art competition and prizes are required for this. If we receive information regarding the donations for this competition early enough we will include the donors' details in the leaflet circulated to the schools. In addition we hope to have a daily tombola: any contributions for this, small or large, will be very helpful.



Painting entitled "Rays II" painted and donated especially for the art auction by David Cross whose wife is currently undergoing radiotherapy.

One evening during the show there will be a dinner in a nearby venue and an auction at that event. We have already had a few kind donations of art for that auction including an original Leslie Fotherby watercolour painting donated by Chris Beetles and a limited edition Beryl Cook print from the Alexander Gallery of Bristol. If you have any artworks that you would be happy to donate for the BIR auction please do so. These can be originals by yourself or by others or limited edition prints, sculptures or whatever. Again, all contributions will be very welcome. Please telephone or, even better, e-mail Sophie at the BIR (sophie.ericum@bir.org.uk) to tell her what you are donating and we will post the information on the BIR website. All donations will be also acknowledged in the exhibition programme.

Finally: if you would like to actually exhibit at the show time is running out. We must know soon since we are presently planning the layout.

Paul Goddard
Art Exhibition Sub-Committee Chairman

When Science Becomes Art...



Figure 1: Angela's self-portrait "crouching" in the MRI vertical scanner at Aberdeen University—scans by Professor Frank Smith.
© Richard Holttum.

The cross-over between science and art is, of course, not new: Leonardo Da Vinci was drawing dissected bodies back in the 15th century. Indeed, it is a discipline that continues today – I recently spent three years drawing corpses in Oxford University's medical school as part of my degree course at The Ruskin School of Drawing and Fine Art. The introduction of MRI and CT scanning has, however, opened up a whole new field of exploration, allowing artists to portray the body from an entirely different perspective. Using the increasingly sophisticated technology available today, artists have generated images of the human figure in a myriad of media – film, photographs, painting, print, sculpture et al.

My work, which will be among exhibits to be shown at the British Institute of Radiology in March, is largely based on details derived from MRI and CT scans, which I draw or engrave onto multiple sheets of glass,

layer upon layer. This technique allows me to build a three-dimensional portrait, slice by slice, of the human body, stripped of its recognizable features. While these images may not be instantly recognizable as a portrait, they are objective representations, removing the familiar to expose the extraordinary architecture of the internal human form.

The inspiration for this work came from a visit to Oxford's History of Science Museum. I was trying desperately to introduce my three young children to matters scientific but their attention span was woefully short – it was a hot day and they wanted ice-cream. As they dragged me out of the museum, my eye fell upon an intriguing exhibit by the Nobel Laureate Dorothy Hodgkin. Constructed in the mid 1940s, Hodgkin had drawn the electron density contour images of the penicillin molecule on horizontal sheets of Perspex. At the time, I was studying for my Fine Art degree at the Ruskin, and we had been given a holiday project to produce a three-dimensional piece of work. The only condition was that it had to relate to anatomy. It struck me that I could adapt Hodgkin's method by drawing details of the human form on multiple sheets of glass, presented in three dimensions, on a vertical plane. For my project, I took details from a cadaver which had been frozen and sliced for medical research at Cambridge's medical schools.



Figure 2: Angela self portrait drawn on glass based on scans taken at the John Radcliffe Hospital by Dr Stephen Golding. © Todd White.

After completing the first piece, I soon discovered there is, perhaps not surprisingly, a paucity of frozen, sliced cadavers. Dr Matthew Wood, senior lecturer in anatomy at Oxford University suggested I move to living beings and directed me to the man with whom I would enjoy many years of fruitful and fascinating collaborations: Dr Stephen Golding, former President of the BIR, and Consultant Radiologist at the John Radcliffe Hospital in Oxford. Together with his colleague Dr Chris Alvey, Dr Golding carried out a full body MRI scan on me from which I could begin to generate a series of self-portraits. This marked the beginning of a long journey of collaborations with scientists and specialists over the past 6 years involving, among others, Dr Mark Lythgoe and Dr David Thomas at University College London (they scanned my brain using an fMRI scanner at Queen Square); Professor Frank Smith at Aberdeen University who was a pioneer in the application of MRI in clinical medicine (his vertical scanner allowed me to



Figure 3 : Mummy being taken into the scanner at the John Radcliffe Hospital © Liam McNamara



Figure 4 : Angela's engraving of the mummy based on Dr Golding's CT scans. © Richard Holttum.

adopt a crouching position which I could portray in my art work); Bruce Madge and Vikki Ayton at the London Upright MRI Centre; and Dr Renate Weller from the Royal Veterinary College in Hertfordshire, who generously provided bovine rather than human material.

My most recent project involved a 2000-year-old Egyptian child mummy from the Ashmolean Museum in Oxford. The mummy was presented to the museum in 1888 having been excavated from a site in the Faiyum, south west of Cairo. The museum's Egyptologist, Dr Helen Whitehouse was keen to learn more about the child and readily agreed to collaborate on the project. After a year of planning, the wrapped child was finally placed in a crate and carefully transported from the Ashmolean on a quiet Saturday afternoon to the John Radcliffe Hospital. Dr Golding and Dr Alvey took 2500 CT scans of the unnamed child with a GE Light Speed 16 system, using contiguous 0.675 mm sections, processed for bone and soft tissue reconstruction algorithms.

It was an emotional time as we waited to see the scans: Dr Whitehouse, said "It's like being at a birth! I'm going to find out if it's a boy or a girl." Besides establishing the sex of the child, Dr Golding hoped the scans would uncover the child's age and possibly cause of death. Within minutes, the first tiny toe appeared on Dr Golding's screen; as the scanner moved up through the child's body, its sex was duly revealed as its mummified penis was discerned. On studying the boy's lungs, Dr Golding suspected that

pneumonia may have been the cause of death. He later wrote in his report: "The only significant soft tissue remnant is in the left lower chest where there is a mixed signal pattern consisting of dense tissue containing branching gas-filled tracks. This tissue is difficult to characterize as the stomach and spleen would normally occupy this area but would be unlikely to cause this appearance. It is possible that the finding represents the residue of inflamed and consolidated lung, which would point to the presence of left lower lobe pneumonia. This could be regarded as a possibly common cause of death in this age group."

Dr Golding found the child's skeleton generally intact and normally articulated apart from the collapse of his rib cage, with no evidence of fracture, vertebral infection or bone tumour. He did however observe an abnormality in the right hip. "On the right side the acetabulum is shallow and the femoral head is angled anteriorly. These are unlikely to have been caused by post mortem handling and suggest that the child had a dysplastic hip. This is unlikely to have been life-threatening."

Much discussion ensued with regard to the boy's age, involving Dr Mary Lewis of Reading University, an expert on the teeth of Egyptian child mummies, and Dr Lars Christensen, an Oxford-based orthodontist. Based on cranial and dental evidence, they concurred the boy had died around 18 months old. Dr Christensen also declared the boy "quite special" as he was missing his

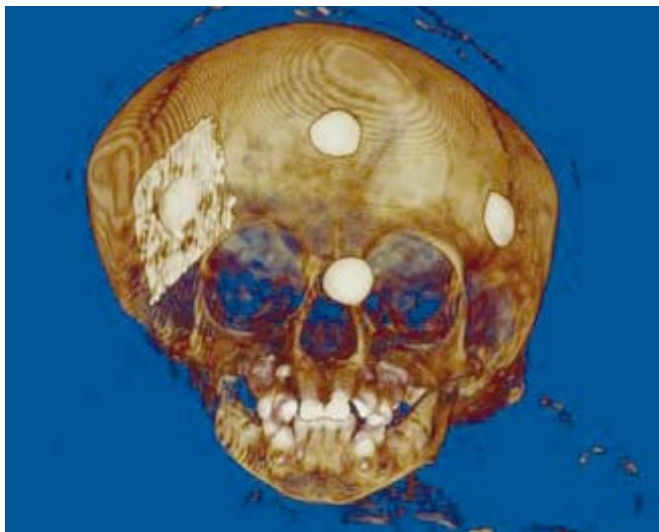


Figure 5: Skull of the mummy shows his two front side teeth missing as identified by Dr Lars Christensen.



Figure 6: Angela's representation of the mummy on 111 sheets of glass based on the CT scans taken by past BIR President, Dr Stephen Golding ©Todd White

baby side front teeth, a 0.4% occurrence today. When the actual mummy was shown this year next to the glass recreation of his body "under wraps", Andrew Nairne, the Director of Modern Art Oxford, observed: "Each piece of information contributes to creating a more detailed picture of another era. But as art we have even more to gain from an exhibition which merges past and present, engaging with science and other disciplines while always considering the aesthetic impact of each work and display." This way of experimenting, said Mr Nairne, "enriches us all." Without the generosity, enthusiasm and inspiration of radiographers who put their expertise at the disposal of artists, there would be no such enrichment. We cannot thank them enough.

Angela Palmer

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Conferences & Events

Evidence Based Imaging

Thursday 8 January 2009

Venue: The British Institute of Radiology, London

When making evidence-based clinical decisions in imaging, the balance of benefit versus service cost must be made according to specific guidelines. This meeting aims to improve the implementation of evidence based imaging within radiology departments by understanding the processes of obtaining evidence, formulation of guidelines and the practical challenges of their implementation. Understanding the evidence base from which a guideline has been formulated can help the user identify in what circumstances and to what extent the guideline should be followed.

Radionuclide Therapy and Radiopharmaceutical Dosimetry: Where are we? Where are we going?

Friday 6 February 2009

Venue: The British Institute of Radiology, London

Radionuclide therapy has been used in the past to treat only a limited range of diseases. The recent development of new radiopharmaceuticals offers increasing opportunities for more diseases in clinical practice. This meeting brings together all disciplines concerned with radionuclide therapy to discuss its rapidly expanding role. A new UK survey which defines current practice will be presented, and the day will feature an exciting debate about the best way forward.

Radiotherapy Dosimetry: Current Status and Future Developments

Thursday 26 February 2009

Venue: The National Physical Laboratory, Teddington

Are dynamic treatments, small fields, *in vivo* dose verification or brachytherapy seeds giving you dosimetry headaches? This one day meeting will provide the opportunity to review the current state of clinical radiotherapy dosimetry and to learn about recent developments in the field. Talks will look at all aspects of radiotherapy dosimetry, including: IMRT, IMAT, Tomotherapy, radionuclide, brachytherapy, 3D, *in vivo* and small-field dosimetry.

Publications

British Journal of Radiology (BJR) full electronic archive coming in 2009!

Starting in 2009 ALL of the BJR will become available online as a fully searchable electronic archive. The first issue of BJR was published in 1928, but its history can be traced back to the world's first radiological journal – Archives of Clinical Skiagraphy – first published in May 1896. BJR has long played a pivotal role in the development of the radiological sciences. Among its many esteemed contributors, the pioneering work done by Hounsfield and Ambrose on Computed Tomography was first published in the BJR in 1973. The BIR is proud to be able to bring the entire journal to the radiological community in a comprehensive, user-friendly format. Stay up to date with new developments, bookmark <http://bjr.birjournals.org>.

Increased Impact Factor! 2007 Impact Factor: 1.773*

We are pleased to announce that the Impact Factor for BJR has increased to 1.773 (previously 1.279). BJR is the official peer-reviewed monthly research journal of the British Institute of Radiology. It is a multidisciplinary journal covering all clinical and technical aspects of diagnostic imaging, radiotherapy and oncology, medical physics and radiobiology. It is now the highest ranked radiology journal published in the UK.

The journal publishes Editorials, Commentaries, Review Articles, Case Reports, Short Communications, Pictorial Reviews, Letters to the Editor, Book Reviews, and a Case of the Month feature. Submit your articles online at <http://www.edmgr.com/bjr>. The peer-review process averages 54 days. Accepted papers are normally published rapidly – average handling time is 6 months from acceptance to print publication, while papers can be published online with a DOI and PubMed ID on BJR Advance within 3 months of acceptance.

Visit the Journal's website: <http://bjr.birjournals.org> and sign up to receive our free Table of Contents alerting services.

*(ISI, 2007 JCR Science Edition.)

Scanning the BIR – Elsbeth Headley

1. What is your current position?

I am Production Coordinator in the Publications department of the BIR, where I oversee the editorial processes of the Institute's two journals — BJR and Imaging — from manuscript acceptance until final publication. I have been in the job for about 15 months now.

2. In your work, what do you most appreciate?

Definitely the friends I have made here. Even though everyone is tucked away in separate offices, I have become good friends with people working in different departments throughout the BIR. We've had some great nights out, most notably those involving "Champagne Fridays"! I believe that it's really important to have a social aspect to the workplace, and that team spirit is fostered through creating a fun working environment.

3. We believe that you have a passion for sports. Can you tell us more about it?

I'm not sure where it comes from, as my family hates sport! Perhaps it was an early chance to rebel?! I closely follow football, rugby and cricket; however, as long as there are two competing sides, I can get hooked on anything. I've always been a really competitive person, and so sport has always been a chance to release this side of my personality. I think that's why I found my niche in rugby, where being competitive and aggressive is actively encouraged! I played for 12 years but sadly had to retire 2 years ago because of injury, but I've been unable to chuck away any of my kit and still dream about playing all of the time, so I would never rule out a return to the pitch! In my last few years of playing, I got to play my dream position of No.8 and captain my team for 2 seasons, so that was a real thrill. However, my biggest love will always be cricket, and I'm so excited about travelling to the West Indies next year to watch England play back-to-back tests in Barbados and Trinidad. It's just about the perfect holiday...cricket, sun, sea, friends and rum!

4. What is your idea of good entertainment?

So many things! In the summer, it doesn't get any better than a day in the sun at Lords with a glass of wine watching England play cricket. But I also enjoy theatre, ballet and visiting museums and galleries, as long as it's not modern art...don't get me started on that! A good evening would have to involve drinks and dinner out with my mates from university. My real-life "Sex in the City" group! I also love to travel, and it's only a matter of time before I get the rucksack out and head off into the sunset...

5. What do you consider the most important event in your life so far?

Tough question, but on reflection it has to be the decision to join my university rugby team. I can't think of any other single event that has shaped my personality or my life to such a degree. Without rugby, I would never have met any of the life-long friends that I have made through being part of the game, experienced the outrageous fun of rugby tours, or had the opportunity to travel and play in other countries. I may be broken but it was worth it!

Sophie Ericum



Open MRI – A History of Evolution (part 2 - final)



Figure 1: The 0.23T C-shape Picker Outlook of 1994.

(The first part of this article was published in the Autumn 2008 issue)

MAGNET DESIGNS

Designing an Open magnet is a more complex proposition than a conventional superconducting system. Hitachi pioneered the rectangular slot and two pillar design mandated by their use of permanent magnetic alloys licensed from Sumitomo

Special Metals in the early 1980s. The original four post 0.064T Diconics magnet was later evolved into the Toshiba 0.35 T Opart by the addition of cold-head superconducting technology. This layout was also favoured by Fonar although they used resistive magnets.

However, resistive technology has also been used to provide arguably the most open design, the 1 pillar or "C-Shape" magnets developed by Siemens and Picker Nordstar (latterly Philips) (Figure 1).

But the major bugbear of all these systems has been field strength. Physical and engineering constraints mean that it is very difficult to achieve a field strength of more than 0.3T without sacrificing patient gap or suffering a massive increase in size and weight¹. GE, Hitachi and Philips have pioneered mid-field (0.6–0.7T) designs, but the performance increase over "conventional" open systems has been modest for the increased cost and complexity of sitting and running these large, heavy devices (Figures 2).

Meanwhile, the performance gap between 0.2T and 0.7T has been narrowed by continual upgrades to the large installed base of the lower field strength systems, many of which can perform contrast enhanced MRA, DWI, EPI and spectral fat suppression²⁻³⁻⁴. Despite such performance, there is still a definite learning curve to



Figure 2: A trio of Mid-Field Open designs from GE, Hitachi and Marconi (later to be Philips).



Figure 3: The Siemens Rhapsody 1.0 T mock-up at RSNA 2000.

using low field strength and inevitable compromises have to be accepted. With most of the western world's radiological community now trained on, and used to, the imaging performance of a 1.5 T superconducting magnet, there has been a real need to address higher field strength open magnets. Both Siemens and Philips initially rose to the challenge, each pursuing a different solution. At RSNA 2000, both companies had full size mock-ups of two pillar 1T open magnets on their stands.

The Siemens product, the Rhapsody (Figure 3), did achieve limited production, but has since been dropped in favour of the 1.5 T Espree, a wide bore conventional design. By adapting the Infineon magnet (acquired from the break-up of Marconi and Siemens eventual ownership of OMT) the company has achieved an extra 10 cm of bore diameter at the expense of losing FOV in the Z-axis, down to 30 cm. This is less of a concern if used for interventional work and can be overcome by using multiple phased array and image stitching software. In all other respects, the magnet performs like any other 1.5 T superconductor design, sharing its platform with the well established Avanto.

Philips persevered with their 1.0 T two pillar open (Figure 4), overcoming the engineering difficulties of producing a complex, non-cylindrical cryostat, finally launching the 1.0 T Panorama in early 2005.

By staying true to the design brief, Philips have been able to make use of one important physics advantage – the vertical magnetic field axis, B_0 .

In terms of coil performance, the worst direction for B_0 in a recumbent body is horizontally along the long axis of the body, precisely the direction mandated by closed bore magnets. The vertical B_0 results in much better coil performance, both in signal-to-noise ratios and in coverage. A solenoid coil will give signal from tissues some way from the physical edge of the coil, whereas a horizontal, long axis B_0 situation gives sharp cut off from the edge of the coil. This means that coils for open magnets can be built smaller and lighter. The signal-to-noise improvement is nearly 40%. This fact alone makes up nearly all the performance difference between the 1.0 T Panorama and its conventional 1.5 T sibling, the Achieva. As a result, just like the Siemens Espree, the 1.0 T Panorama can run on the conventional 1.5 T platform producing economies of scale, ease of use, more efficient servicing and simpler component replacement.

These machines are now firmly established as state of the art open magnets, producing images identical to conventional "industry standard" 1.5 T magnets with



Figure 4: The 1.0 T Philips Panorama mock-up, also at RSNA 2000. This design went into production almost unaltered in appearance in 2005.



Figure 5: Hitachi embraces High Field Open technology with the 1.2 T Oasis.

little or no time penalty. Hitachi, one of the pioneers of open MR scanners has recently joined the fray with its 1.2 T Oasis, a system that shares a close visual likeness to the Siemens Rhapsody design with offset pillars (Figure 5).

This does not mean that the game is over for lower field and permanent magnet designs. The expiry of the original patents for permanent magnetic alloys is allowing development of the technology as more players come into the market. Novel engineering

concepts are spinning off into specialist magnets such as the resistive Fonar Stand Up 0.6 T (Figure 6) that allows true weight loaded imaging and the 0.2 T Esaote G-Scan that aims to do the same. MagnaVu have produced the tiny 0.2 T almost-flat plate magnet for imaging extremities (Figure 7) and ONI have pioneered mid and high field extremity systems with their superconducting 1.0 T and 1.5 T design (Figure 8). However, these are likely to remain low volume specialist magnets.

One area of particular interest is China with both Neusoft and Wandong producing C-shape permanent designs at 0.3 T and 0.36 T respectively. The Neusoft magnet is the result of a joint venture with Philips and improvements in technology mean that the system can run the platform that was originally developed for the Philips 0.6 T Panorama with virtually identical image quality (Figure 9). There has been rumour of 0.5 T machines in the near future. Hitachi, the originators of the market, have produced their first single pillar design, the 0.4 T Aperto (Figure 10), which combines much improved imaging with an advanced and clean design. Industry standard performance, such as 22 mT/m gradients



Figure 6: The 0.6 T Fonar Stand-Up MR resistive magnet (image courtesy of Frank Smith).



Figure 7: The tiny MagneVu extremity device for hand and foot imaging.



Figure 8: The ONI superconducting extremity magnet available at 1.0 T and 1.5 T.



Figure 9: A product of a Philips & Neusoft JV, the 0.35 T Superstar permanent magnet.



Figure 10: The Hitachi Aperto 0.4 T single pillar permanent magnet.

with a maximum slew rate of 55 T/m/s, allows competitive imaging with single shot EPI and diffusion weighted imaging as standard in addition to chemical shift fat suppression. As new Asian and Southern Hemisphere markets open up, a renaissance of lower field designs seems very likely, driven by newer entrepreneurial companies.

CONCLUSION

Open MRI scanning has matured into a viable alternative to closed bore scanning in almost every circumstance. Manufacturers are now supporting more and more advanced scanning techniques and product lines are diversifying. Conventional 1.5 T image quality is now available on open platforms and, with time, cost will come down. Patient pressure alone may well drive this sector of the market, particularly since reservations regarding image quality can now be overcome.

**Dr Simon Blease FRCR FFSEM (UK & I) FBIR,
Head of Musculoskeletal Radiology,
Med-Tel International**

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Making Sense of Radiation



Radiation has become a taboo word, associated with danger and harm. Hospitals now remove most mentions or symbols of radiation from packaging a patient might see; MRI is no longer known as nuclear magnetic resonance imaging, as people associated the “nuclear” with weapons and harm; people worry about radiation from mobile phones and computers and there are frequent references in newspapers and on websites to “electrosmog” polluting us, causing illnesses and even hanging around in our bodies. So how do we make sense of all of this?

Over the past year, Sense About Science has received increasing requests for help to cut through what radiation is, what it isn’t and when it’s harmful and when it’s not from a range of groups, including schools, town councillors, hospitals and libraries.

As a charity set-up to promote evidence and good science for the public on topical issues, we work with experts from our database – Evidence Base – of

about 3000 scientists (ranging from PhD students to Nobel Prize winners) to help us respond when there is a significant gap between scientific reasoning and public discussion. We work with the scientists to identify insights and tools to equip people with the ability to weigh up things for themselves. To respond to the enquiries about radiation we worked with physicists, epidemiologists, engineers, psychologists and others to produce the guide *Making Sense of Radiation*¹.

We started by looking at what are the prevailing misconceptions about radiation in the public domain. We collected newspaper articles, looked at websites and monitored the enquiries we received about radiation. We then asked the working group to explain why these misconceptions weren’t correct and what insights they use to evaluate claims about radiation in the media and elsewhere. We found that the group was keen to get across that radiation is not always something we need to be protected from, that different kinds of radiation exist, that the impact radiation has on health depends on where in the electromagnetic spectrum it is and that many of the claims made about needing protection from non-ionizing radiation in product advertising are wrong.

As scientists we often want to add caveats, especially when talking about risks and safety as Dr Miodownik, a contributor to the report, says “science works in terms of probabilities” and therefore “neither scientists nor regulatory bodies can ever categorically state that



Figure 2: “It has not been shown that mobile phones or Wi-Fi cause cancer.”



Figure 3: Radiation has become a taboo word.

anything is absolutely safe". However, caveats can leave people as confused as they were to start off with. By answering public questions and concerns directly we've found that there is a lot we can say at the moment. We can say, for example, that it has not been shown that mobile phones or Wi-Fi cause cancer. We can explain that genuine cancer clusters are quite rare and generally well-investigated. We can clarify that "electrosmog" is not a real description of how radiation exists around us.

We can also convey the relative risks and benefits. CT scans or radiotherapy use ionizing radiation and have associated risks. When deciding on any further tests or treatments, a doctor will consider all the information and will weigh up the risks and benefits. If a doctor does recommend a scan or radiotherapy it will be because, on evaluation, the risk of not having this treatment outweighs the risk of having it².

We have also found that bringing up a counterintuitive point can help people grasp an issue. For example, in the report, Dr Stuart Green says that as people are naturally radioactive "people who sleep together will be irradiating each other to a very low level continuously through the night – not generally the first thing we think about when sleeping with someone!".

The response to the guide has been fantastic with over 14,000 downloads and about 500 publications

requested since it was launched in October. We've also been contacted by local councillors, teachers and others, who are using the guide to find out how to evaluate claims about radiation and as a tool to explain to others about radiation. We now need to work to make the message stick.

As radiologists you are in a very good position to transmit the risks and benefits of working with radiation. We don't want people to go back to a time when "radioactive baths" were considered beneficial but it's in no-one's interest that radiation remains a taboo word.

To request copies of the publication, join Evidence Base or to find out more about Sense About Science please visit the Sense About Science website www.senseaboutscience.org or email Leonor on lsierra@senseaboutscience.org.

Dr Leonor Sierra
Scientific Liaison
Sense About Science



Dr Leonor Sierra

References

1. *Making Sense of Radiation – A guide to radiation and its health effects* has been published in association with the British Institute of Radiology, the Institute of Physics and Engineering in Medicine and the Institution of Mechanical Engineers.
2. Our *Making Sense of Testing* report considers why health checks for well people without risk of disease are not a good idea. This can be downloaded from our website www.senseaboutscience.org.

Integrating the Healthcare Enterprise (IHE)

IHE-Europe Vienna Workshop 22–23 April 2009 Sharing clinical documents and integrating workflow

The Integrating the Healthcare Enterprise organisation (IHE) in Europe has asked IHE-Austria to organize this two day workshop. It will provide an in depth review and discussion of IHE solutions in sessions for users and suppliers. The main focus will be on the nature and means of applying the IHE document and image sharing facilities to improve the real world of clinical practice.

There will also be the opportunity to visit the IHE-Europe connectathon, which will be held in Vienna at the same time. During the week around 80 different suppliers will show that their software can interoperate with that of three other suppliers to perform clinical tasks correctly as described in the relevant IHE specifications. Connectathon visitors gain a real understanding of the way IHE enables suppliers to work together to obtain interoperability of systems in a very enjoyable atmosphere. Experts from all healthcare specialties will be present including medical imaging.

For details visit the IHE-Austria homepage www.ihe-austria.at

Vienna is a city of many facets. Trendy clubs, “young” galleries, modern architecture and stylish shops are as much Vienna as the concert halls, the large museums, the splendid buildings and the nostalgic shops.

For a comprehensive guide to Vienna go to www.wien.info

Clinical Document and Image Access Control

The BIR Health Informatics committee recently discussed a set of patient “sensitivity” levels that have been included in an international standard. One of five levels can be selected as a way of expressing a patient’s feelings about who should have access to the documents and images being created for their care.

The five sensitivity levels range from the most sensitive level 5, which is intended to limit access to only one or two people who they trust, to level 1 which is intended to allow access to anyone who is trusted by any organization to be granted access even just for administrative purposes. Level 3, is expected to be the most commonly used level and is limits access to those with direct responsibility for the delivery of healthcare during the current episode.

Of course the sensitivity depends on the nature of the information contained in the document. Some information, such as the volume of urine passed during a specific day in hospital is not very sensitive for example. The IHE document sharing specification includes a set of descriptive data items associated with each stored document or image. One of these is a code to show its sensitivity.

The two page specification also includes a set of healthcare professional functional role classes. A table shows which classes of professional are intended to have access to documents and images for each sensitivity level.

For full details see section 6 of part 4 of the British Standard version of the CEN standard 13606 (BS EN 13606-4:2007). This standard is available for purchase from the British Standards Institution at £124.00. (There are plans for the BIR library to buy a copy for reference purposes.)

Nick Brown

BIR Branches - Update

2008 proved to be an exciting start for the relaunch of the BIR Branches, with events held in Salisbury, Swansea, Liverpool and Southampton.

We hope to build on these successes in 2009, and events (both scientific and social) are currently being planned across the UK. Please keep checking the Branches page on the BIR website for further information.

Meeting Review

Series Masters in Radiology: Multidisciplinary Approach in Chest Diseases A Tribute to Professor Peter Armstrong



Figure 1: Dr Klaus Irion (North of England Branch Chairman) thanking the SpRs involved in the programme organisation at the Gala Dinner.



Figure 2: Delegates at the conference in Liverpool.

The North of England Branch of the BIR held a 3 day multidisciplinary meeting on chest diseases with delegates and speakers from the UK, Europe and beyond. It focused on a multidisciplinary approach to the diagnosis and treatment of diseases of the chest, integrating radiology, chest medicine, thoracic surgery, infectious diseases and oncology. The meeting also paid special tribute to Professor Peter Armstrong for his role as one of the world's leading chest educators.

Our hardworking delegates were also able to relax and enjoy some of the social events planned, including a gala dinner with classical music and a classical organ concert at the Metropolitan Cathedral, during which Mr Raj Jain, Chief Executive of the Liverpool Heart and Chest Hospital, welcomed delegates.

The BIR would like to thank the programme organizers for hosting such an enjoyable and successful meeting.

Call for Papers

Wessex Branch Spring 2009 Scientific Meeting
Friday 3 April 2009 – Basingstoke

Proffered papers are invited for this meeting. Anyone interested in presenting recent findings is encouraged to contact Dr Hazel Pratt (Basingstoke and North Hampshire Hospital) at Hazel.Pratt@bnhft.nhs.uk

Abstract Deadline: Friday 30 January 2009

Abstracts should be emailed to Dr Pratt. A full programme will be available shortly. Delegates interested in registering for this meeting should contact branches@bir.org.uk

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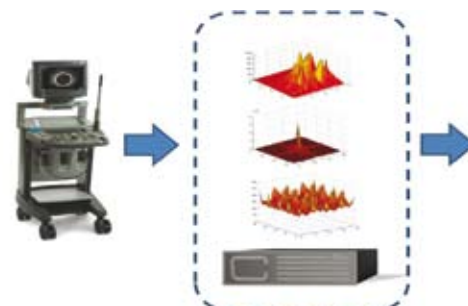
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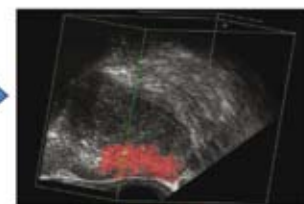
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To find out more about any of our Cancer Diagnosis products and Cancer Treatments, please see our web-site www.imagingequipment.co.uk or call us for more information on **01761-417402**

Covered in Dust: The BIR Archives: BIR (Special) Reports

In a recent review of our archives at the BIR it was discovered that a number of our own publications were absent from the shelves. These publications appeared as "special reports" and appeared in a variety of formats and sizes and so no guidance can be given as to what you should look for. Some of these special reports would seem to be the proceedings of conferences. The reports that we need are:

- 1 Medical radioisotope scanning (1966)
- 4 Computers in radiotherapy (1968)
- 5 Computers in radiotherapy (1971)
- 6 Radiobiology forum on radiological protection of the skin (1972)
- 7 Thyroid radionuclide uptake measurements (1973)
- 8 Design and installation of efficient fume cupboards (1974)
- 13 Computers in radiotherapy in Europe (1976)
- 20 Optimisation of image quality and patient exposure in diagnostic radiology (1989)
- 23 Treatment simulators (1991)

If you have a copy that you would be willing to give the BIR archives then we would be very grateful. Please could you contact either myself or our Information Centre Manager Susanne Smith (Susanne.Smith@bir.org.uk or 0207 307 1405).

Adrian Thomas
Honorary Librarian



Dates in Radiology: The centenary of the birth of Joseph Rotblat



Prof. Joseph Rotblat

Sir Joseph Rotblat KCMG, CBE, FRS (4 November 1908 – 31 August 2005).

This year of 2008 marks the centenary of the birth of Joseph Rotblat. Joseph Rotblat was born in Poland and became a British citizen. He went to Liverpool University in 1939 to work with James Chadwick who had discovered the neutron. He then went with Chadwick's group to the USA in 1944 to work on the Manhattan Project to build the atomic bomb. After the war his work on nuclear fallout made a major contribution to the partial test ban treaty. He was a signatory of the Russell-Einstein manifesto and the general secretary of the Pugwash Conferences on Science and World Affairs (www.pugwash.org) from its origin until 1973. In 1995, with the Pugwash Conferences, he received the Nobel Peace Prize for his efforts towards nuclear disarmament. He was president of the BIR in 1971–1972 and was a firm supporter of our Institute until his death in 2005.

The Pugwash conferences recognize the responsibility of scientists for their discoveries and in particular the consequences of the use of nuclear weapons. The conferences brought scientists and decision-makers together to work across political and cultural divides on proposals for reducing the nuclear threat.

Kit Hill was a colleague and friend of Joseph Rotblat and has written an excellent book entitled "Professor Pugwash: The Man Who Fought Nukes" (Rylands Publishing 2008). I would recommend that all BIR members read this book which only costs £8.99. There is a copy of the book in our library.

Adrian Thomas
Honorary Librarian

President's Column



As you may guess, my first few weeks as President, coinciding as they have with my first few weeks of married life, have been something of a whirlwind.

I'm writing this column on a train (one of the few places left for thinking, reading and writing) as I travel to the Retired Members Day at the Institute, and just a day or so after returning from the Northern Branch Meeting organized by Klaus Irion in Liverpool. I am very much enjoying this part of my role as I try to find out first-hand what members want, need and expect from the Institute, and I'm learning some radiology along the way.

The Northern Branch meeting was far from a typical BIR Branch Meeting. Klaus' contacts and Chloe's efforts from Portland Place combined to make a large and truly International gathering. The meeting was a tribute to Prof. Peter Armstrong (who was

an active participant throughout the 3-days) and featured Dr Stephen Golding delivering the 2008 Hounsfield Lecture. As you might expect from Stephen, he managed to illustrate the way that certain members of our community are able to retain their focus on quality issues (the best image for the least dose) while also dealing with the immense quantity of work which is demanded of all of us these days. It is a great example to try to follow. In recent weeks I have spent time struggling with a similar issue in radiotherapy – how to bring the quality issues into the minds of funders while their natural focus is on waiting times and quantity of delivered treatments. I have the sense that this will be a recurring theme over the next few years.

At Portland Place, we have begun a project which will perhaps take most of my first year as President – the achievement of accreditation to ISO9001 for the work-processes of the Institute. This will give us the opportunity to review the way staff and trustees work together to pursue our shared objectives. While this will be valuable in itself, final accreditation will certainly be essential as we seek to maintain and extend our external events management contracts which are so vital to the finances of the Institute.

The first few weeks of this new role have been great, my sleeves are rolled-up and the work has begun.

Stuart Green
October 2008



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