

BIR

The British Institute of Radiology



Summer 2008

News

News and information for members

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Obituary: John Dickson Dow, MC MD BSc FRCP(Ed) FRCR

John Dow, one of the pioneers of vascular and cardiac radiology in Britain in the mid-twentieth century, died on 1 November 2007. His whole career showed the drive and determination which led him into medicine and which underlay his wartime decoration.

John was born in Glasgow in 1916. He had a happy early childhood, but his father died when he was 7. His mother ran a dairy and bakery to support the family and he was able to go to Hutcheson's Grammar School. He wanted to go into medicine but his mother thought a career in banking would be safer. Under her pressure he sat the banking exam, putting his name at the head of the paper and writing nothing more.

He qualified in medicine at the start of the Second World War, volunteered for military service and went to North Africa. In April 1943 the Army were attacking Guiriat El Atach. His CO and others were lying wounded in a minefield so he entered it in the dark to give first aid. Over the next 24 hours he repeatedly went forward under heavy mortar and machine gun fire to treat and evacuate badly wounded men. Several of his stretcher bearers were killed but many casualties were saved. He was recommended for an immediate MC. He later served in Italy and India, returning to Glasgow at the end of the War.

He then trained in radiology and gained an MD for his thesis on lower limb phlebography. In 1953 he was

appointed consultant to Guy's Hospital. Sir Russell Brock (later Lord Brock) was developing his work on congenital heart disease and John built up a service in diagnostic angiocardiology to meet the needs of these patients. At the same time he worked widely in the general vascular field, undertaking early attempts at vascular recanalization which predated balloon angioplasty. He also undertook the first selective coronary arteriograms in the UK in 1965. All this led to the Guy's department becoming one of the premier centres of cardiovascular expertise. He wrote numerous papers and chapters on these topics, contributing several chapters to Sutton's *Textbook of Radiology*. In the late 1960s he was much involved in the planning of the new imaging department at Guy's and became its director in 1974. He retired in 1979 but continued to work in private practice.

In 1942 he married Catherine Robertson and they had a son, who is a barrister, and two daughters who both became doctors. A keen fisherman, he also enjoyed tennis, skiing, skating and canoeing and

led his children and grandchildren into these activities. In 1994 Catherine died suddenly. Two years later he married Lorraine Sykes, his senior radiographer and a family friend. She and his children survive him.

(21 March 1916 – 1 November 2007)

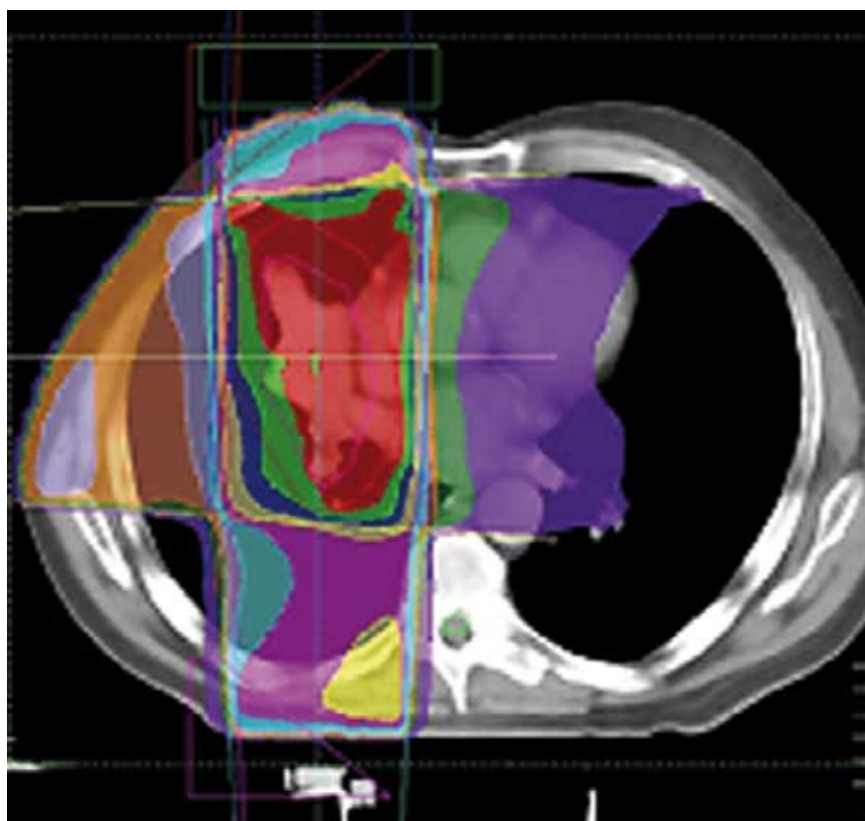


Hugh Saxton

Committee Corner: Oncology

The BIR Oncology Committee is a multidisciplinary group of clinicians, physicists, radiographers and oncology nurses. The group not only represents a spectrum of disciplines but also specialists within the disciplines, including education, research and site specialists. The BIR Radiation Physics and Dosimetry Committee is also represented.

The overall aim of the committee is to promote and facilitate teaching and research in clinical oncology and related professions. The strength of the multidisciplinary ethos is seen in the scientific meetings organized. These meetings are either held as a stand alone one day meeting, for example Chemotherapy and Radiotherapy for Upper and Lower Gastrointestinal Cancer held



in November 2007 or held jointly with the BIR Radiation Physics and Dosimetry Committee, for example, "Improving treatment accuracy" to be held in June 2008. These meetings are successful and consist of a mixture of internationally recognized experts and proffered papers. This combination contributes to the educational needs of a diverse workforce, from trainees to qualified experienced personnel. They also provide a forum for discussion nationally that is accessible for many delegates and are often oversubscribed.

In 2007 the UK Radiation and Oncology conference was organized jointly by the BIR Oncology Committee, the College of Radiographers, the Institute of Physics and Engineering in Medicine and the Royal College of Radiologists. This was held in Edinburgh attended by over 300 delegates, had an exciting and varied programme and was educationally and financially a success.

We also include the service user in the multidisciplinary ethos by being represented on the Clinical Oncology Patients' Liaison Group.

Within the BIR the committee advises the Council on matters relating to oncology and responds and advises on documents from other bodies.

The current committee members are Dr C Kelly (Chair), Dr P Blake, Ms K Burton, Prof. S Faithfull, Ms H McNair, Ms A Smith, Dr T Guerrero-Urbano, Dr D Power, Dr H Yosef, Ms M Bidmead (Radiation Physics and Dosimetry Committee representative).

Helen McNair MSc
Oncology Committee Secretary
Research Radiographer, Royal Marsden NHS Foundation Trust

Fundraising Update

Everyclick – The fundraising search engine



An easy and effortless way of raising money by searching through the web — is that possible? Yes, with “Everyclick”.

What is this all about?

Everyclick is a free internet search engine like any other major search engine, registered in the UK as a private limited company except that you can raise money for the BIR every time you search the internet via this engine search.

How can you do that?

In a very easy way: go on the website www.everyclick.com, search “The British Institute of Radiology”, select “Fundraise for this charity now”, complete the fast sign up process and make it your homepage.

This doesn't cost you anything at all – a cookie will simply be linked to your IP address to enable Everyclick to remember your charity (the BIR) and fundraiser settings every time you return to Everyclick to search the web. By doing so, an average of £0.01 on each web search will be generated. The more people who use Everyclick, the more money will be raised and there is no time limit!

This easy way of raising money will encourage the BIR to support its charitable activities such as the Schools Project, free student/trainee associate membership and many other projects on the go.



www.everyclick.com
The search engine that helps charity

Charitable activities – How can you help?



As you already know, the BIR is an independent organization which relies on funds generated through its scientific meetings, publishing activities and membership subscriptions and last but not least, donations, to continue to develop its work.

The BIR would like to thank all those who have participated in doing so until now; this funding is most important to the BIR's charitable activities. Other members have also contributed to these activities thanks to their legacies. This allows the Institute not only to manage the ongoing projects mentioned above but also to organize new ones.

If you would like any additional information or if you would like to discuss how you can help the institute, please contact Rania Gallianos (E-mail: rania.gallianos@bir.org.uk or tel: + 44 (0)20 7307 1404).

Press Release: Towards Safer Radiotherapy

The British Institute of Radiology is pleased to support the document Towards Safer Radiotherapy which presents sensible guidance on best practice for the safe delivery of radiotherapy.

More than 40% of cancer patients will receive radiotherapy as part of their treatment, and it is one of the most effective and cost-effective treatment techniques for cancer. The effectiveness of radiotherapy derives from the fact that radiation (at high doses) is a very powerful cell-killing agent. It is therefore critical that it is applied to tumours in a highly accurate and reproducible manner to kill tumour cells while sparing healthy cells.

Treatments are most commonly delivered by linear accelerators. It is the settings on these accelerators which determine the radiation dose delivered to patients, and the settings are decided following an individual treatment plan for each patient. Towards Safer Radiotherapy provides technical guidance on issues such as checking accelerator settings and independent measurements to confirm the delivered radiation dose.

Modern radiotherapy involves a team of clinicians, scientists, technologists and radiographers. As a multidisciplinary society, the British Institute of Radiology welcomes the recommendations concerning multidisciplinary working and the promotion of a safety culture within the radiotherapy department. The proposal for an incident classification and reporting scheme is to be welcomed as a mechanism by which information can be shared between centres and lessons learnt.

In general, radiotherapy in the UK is already applied in a safe manner, with estimates showing that fewer than 1 in 10 000 radiotherapy treatment fractions are delivered in error. Reducing this already low error-rate even further while ensuring that patient treatments are not delayed, will inevitably require investment to support the extra levels of checking which will be required. Radiotherapy departments will need to consider carefully the contents of this report, and where necessary to approach local funders for the support necessary to implement its recommendations.

Dr Stuart Green
Department of Medical Physics,
University Hospital Birmingham, Edgbaston, Birmingham

NOTES

In the NHS in England, funding for cancer services is distributed to Strategic Health Authorities. These authorities have to balance the requirements of different elements of the health service while ensuring that national priorities are met.

Research is ongoing into compounds which enhance the effect of radiation on tumour cells, and into techniques which more accurately deliver radiation to tumour cells while minimizing dose to healthy cells. The BIR strongly supports research into this very important area of cancer treatment.

The British Institute of Radiology has collaborated in the production of this report and its final version was approved by BIR Council a few months ago.

Scribing the Soul

"The harder one stares into the machinery of the brain, the starker the realization that there is no one in there. There is no inner sanctum of the self. Neural networks have a life and logic of their own. There is no one running the show. The self is a shadow-puppet shaped by the firings of a hundred billion brain cells. These are conceptual conundrums. Intractable to current science, they call for an artistic response."

Paul Broks, neuropsychologist and writer (Catalogue essay for *Scribing the Soul*).

It all started in 1999, when Susan Aldworth went through the experience of observing her brain live on a monitor during a diagnostic brain scan. This triggered an ongoing fascination with the relationship between the physical brain and the sense of self.

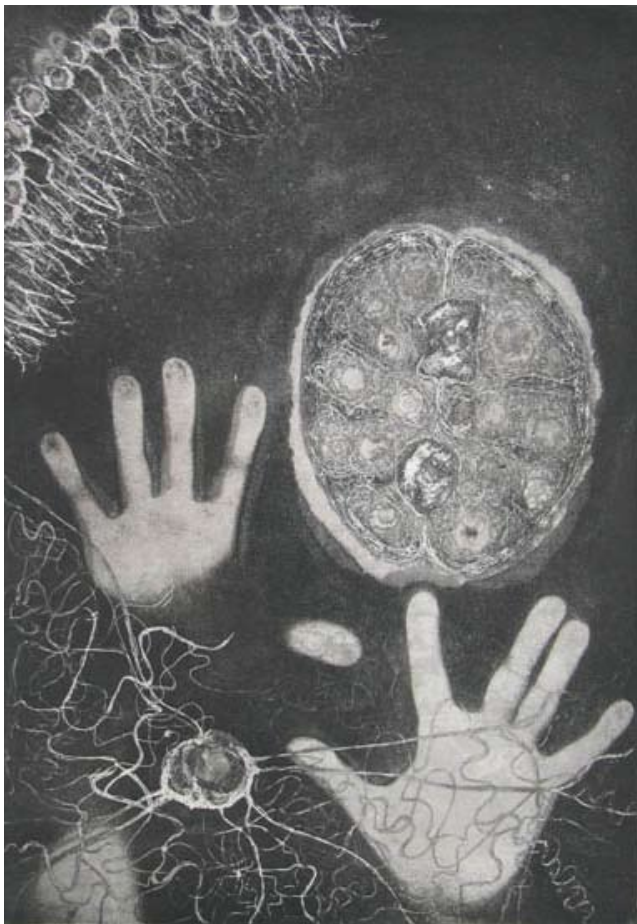


Figure 1: *Shadow Puppet 7 2007* (etching and aquatint 50 x 35 cm)



Figure 2: *A Penny for your Thoughts 2002* (mixed media 43 x 35 cm)

Since then, Aldworth has worked and collaborated with doctors, neuroscientists, neuropsychologists, etchers, artists and musicians in pursuit of this elusive subject. She has observed numerous brain scans in hospitals and undergone brain scans herself for research to try to make sense of the material basis of personality. In parallel with these investigations she has experimented with etching techniques in collaboration with master etcher Nigel Oxley and developed a radical method whose chemical processes are comparable with those in the brain and that might be responsible for personality. Aldworth also works with animated film, digital print and light installation.

Her current exhibition *Scribing the Soul*, which is on national tour, is the result of her tracking consciousness over the past 7 years. She employed a variety of forms which have been chosen in response to the environments in which she has worked during this project. Aldworth used graphite and acrylic inks on paper when observing cerebral angiograms in a hospital operating theatre as this enabled her to respond with

an immediacy to medical procedures. These drawings produced on location were the inspiration for the experimental etchings created in the studio after each session. The etchings have an intensity and hold far more importance than the location drawings from which they are derived.

The inclusion of film in Susan Aldworth's work was a new beginning for her but seemed an obvious medium to explore in this context. This body of work consistently refers back to the lines and pathways of cerebral arteries seen during scanning procedures during her residency at the Royal London Hospital where she worked with Dr Paul Butler. Aldworth found these authentic marks of the brain aesthetically exciting and they became the language used to develop her work.

Recently, Aldworth has spent some time observing the work of neuroscientist Dr Fiona Le Beau at the Institute of Neuroscience at Newcastle University.



Figure 3: *Brainscape 30 2006 (etching and aquatint 50 x 35 cm)*

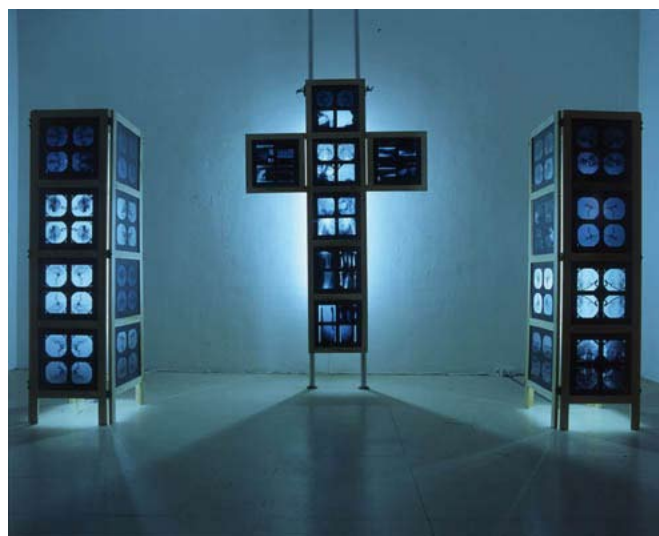


Figure 4: *Hinged Crucifix and Plinths 2002 (installation at Whitechapel Gallery)*

Le Beau studies the activity, connections and networks in the cerebral cortex that are involved in cognitive processing and consciousness. But there is a fundamental methodological problem in consciousness research for scientists – the fact that conscious experience is always tied to an individual's personal perspective. Aldworth's new works are routed in this interface of art and science.

SUSAN ALDWORTH

Exhibition still going on

The exhibition *Scribing the Soul* continues its national tour and can be seen at:

Peninsula Arts, University of Plymouth

7 June – 18 July 2008

Monday to Friday 10am – 5pm

Saturday 11am – 4pm

Phone: 01752 585050

E-mail: pen_artsenqs@plymouth.ac.uk

Transition Gallery, London

26 July – 17 August 2008

Friday to Sunday 12am – 6pm

Phone: 020 7254 4202 / 07941 208566

E-mail: info@transitiongallery.co.uk

A full catalogue for the exhibition can be ordered from: jill@visualartstudytours.com

You can also find out more about Aldworth's work on www.susanaldworth.com

BIR Regional Branches

With the ever increasing time and financial pressures placed on doctors and medical staff these days, the BIR has recognized the need to develop the regional Branches of the BIR, in order to increase the geographical choice of events and activities available for BIR members.

Currently the BIR has Branches in the North of England, South West England, Wales and Wessex region. By 2009, the BIR hopes to have set up additional Branches in the West and East Midlands, East of England, South East England, London, North East England, Scotland and Northern Ireland.

"Our members (and their allocation of time and money for study leave) are under pressure as perhaps never before. Providing local high quality educational and scientific meetings will hopefully be a time and cost-efficient way for people to keep abreast of developments in their areas of interest, fulfilling our charitable mission and serving our membership well."

Dr Stuart Green, Vice President, BIR

We need you!

The BIR is looking for enthusiastic members to join their regional committees. The committees aim to be multidisciplinary (consisting of Radiologists, Radiographers, Physicists, Members from Industry and any other professions linked to the radiological sciences) and will meet several times each year to help organize multidisciplinary scientific meetings and networking events within their region. If you are interested in joining this exciting new project, please contact the BIR Branch Coordinator, Chloe Scragg (Tel. 020 7307 1425) for further information.

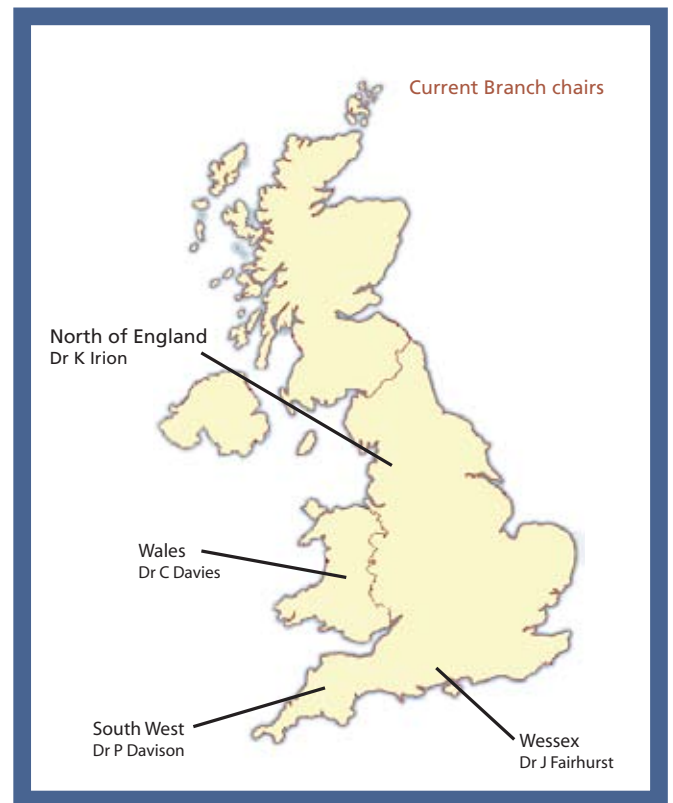
Recent Wessex meeting



Dr J Fairhurst and Dr K Johnson at the Wessex branch meeting in May

The Wessex branch of the BIR held their Spring Scientific meeting at Salisbury District Hospital Postgraduate Education Centre on Friday 16 May. The meeting, organized by Dr Katie Johnson of Salisbury District Hospital, offered a multidisciplinary overview of current research and issues within the Wessex region and over 60 delegates from nearby hospitals attended the meeting.

In line with the re-emphasis of the multidisciplinary nature of the BIR, there were talks from radiographers and from industry (a first for the Wessex Branch!) in addition to the more traditional paper presentations by Radiologists in training. The meeting concluded with an outstanding guest lecture from Dr Neil Stoodley, Consultant Neuroradiologist, who addressed current controversies in the interface between Radiology and the Law. There was a further opportunity



for delegates to exchange ideas and catch up with news from around the region at the post-meeting dinner, held at a local gastro pub.

The next Wessex Branch meeting will be held in Southampton in the Autumn – please join us!

The Wessex Branch of the BIR would like to thank the following companies for supporting this meeting: Bracco UK Ltd, Cancer Imaging Journal, Covidien, ev3 Ltd, GE Healthcare, Terumo Ltd and Toshiba Medical Systems Ltd.



The spring scientific meeting of the Wessex branch was well attended.

Forthcoming regional events

The North of England Branch of the BIR is currently preparing for their next meeting which will be taking place at The Adelphi Hotel in Liverpool (European City of Culture 2008) from 9 to 11 October 2008, titled “**Series Masters in Radiology: Multidisciplinary Approach in Chest Diseases – A Tribute to Professor Peter Armstrong**”, where we hope you will be able to join us.



Mrs Anne Schneider will be performing on 10 October.

This three day international meeting aims to promote a multidisciplinary approach to chest diseases, integrating radiologists, chest physicians, thoracic surgeons, infectious diseases specialists, oncologists, physicists, and radiographers. Topics cover a comprehensive list of short lectures in various chest diseases, followed by a series of case-orientated interactive panel discussions on each topic. Outstanding speakers have been chosen from among the best in their specialities to share their expertise and to pay tribute to Professor Peter Armstrong, for his role as one of the best international educators in Chest Radiology.

We also kindly invite you to join us for the cultural and social events prepared as a reward to those who practise the medical art with the same dedication, passion and professionalism shown by the wonderful musicians we have invited to perform at the social events. On 9 October there will be a Gala Dinner and Classical Music Concert. Following dinner guests can enjoy performances from the tenor Ernesto Correa, soprano Andrea Tweedale and pianist Irene McCreath. On the evening of 10 October we are delighted to announce that Mrs Anne Schneider will be performing a Classical Organ Concert. All delegates and partners welcome!

For a full programme, sponsorship opportunities and further information, please visit the forthcoming meetings section of the BIR website (www.bir.org.uk) or please contact Chloe Scragg, Branch Coordinator (e-mail: chloe.scragg@bir.org.uk).

Chloe Scragg
BIR Branch Coordinator

IMAGING THE OBESE PATIENT

Increasingly, radiologists are asked to provide imaging services to obese patients. While most obese patients are accommodated with currently designed imaging equipment, the increasing girth, weight and soft tissue thickness of obese patients are challenging radiology departments throughout the world.

The prevalence of obesity is reported to be 1.7 billion worldwide [1]. In the UK, a 2001 National Audit Office press release stated the prevalence of obesity has tripled in England over the past 20 years and currently two-thirds of men and over half of women are considered overweight or obese [2]. As the prevalence of obesity increases, it is increasingly impacting radiology departments in their ability to provide imaging services.

Although clinically, obesity is defined by body mass index (BMI) (Table 1), for radiologists more important parameters are body weight and body girth.

In defining the difficulties of imaging obese patients within the radiology department, two major questions

Table 1 – Clinical weight classification based on BMI

Weight classification	Body mass index (kg m ²)
Underweight	<18.5
Normal weight	18.5–24.9
Overweight	25–29.9
Obese	30–39.9
Morbidly obese	>40

need to be addressed: (1) Can the patient fit on the equipment? (2) Can we obtain diagnostic images? The purpose of this article is to review these questions and offer possible solutions.

CAN THE PATIENT FIT ON THE EQUIPMENT?

Even before images can be obtained, the ability to fit an obese patient on imaging equipment must be addressed. There are pre-defined industry standard equipment weight limits and aperture diameters [3,4]. However, over the past several years there have been concerted efforts by equipment manufacturers to address the issues of obesity by increasing both the table weight limits and aperture diameters (Table 2).

Table 2 – Maximum weight limit for imaging modalities

Imaging modality	Weight limit (lbs)	Maximum aperture diameter (cm)
Fluoroscopy	700	117
MDCT	680	90
Cylindrical bore MRI 1.5T	550	70
Vertical field MRI 0.3–1.0 T	700	> 100

CT

Weight

The industry standard weight limit for CT is 450 pounds. The limitation comes from the ability for the table motor to advance into the gantry at a consistent speed to an accuracy of 0.25mm [3,4]. As CT scanners become faster the need to move heavy patients into the gantry at a rapid pace in a constant speed, becomes more challenging. Commercially available CT scanners are now reported to support weight up to 680 pounds.

Gantry diameter

The industry standard gantry diameter for CT is 70cm. A patient's body circumference may exceed the gantry diameter. Also, movement of the table into the gantry subtracts 15-18cm from the gantry diameter. Therefore, a patient's AP diameter cannot exceed more than 55cm in order to fit through a standard abdominal CT gantry [3,4] (Figure 1). Equipment manufacturers have addressed this limitation. CT scanners are now available that have up to a 90cm circumference.

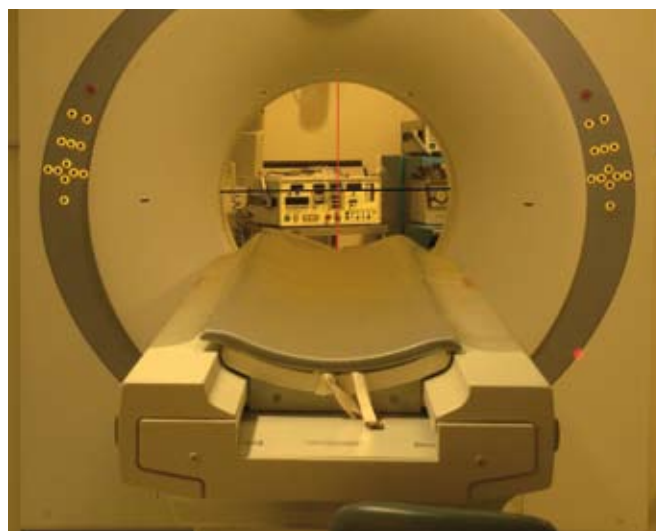


Figure 1: Photograph showing diameter of a CT gantry. The 70cm diameter (horizontal black line) is decreased by 15cm when the table moves into the gantry (vertical red line).

MRI

Weight

Most standard MRI equipment tends to have lower table weight limits than corresponding CT equipment at the same institution. The industry standard table weight limit for 1.5 Tesla magnets is 350 pounds. However, there are now commercially available 1.5 Tesla MRIs, sold by major manufacturers, that support weight up to 550 pounds. An alternative solution is to refer patients to lower strength magnets that can also support weights up to 700 pounds, but have lower image quality.

Bore diameter

Standard bore diameter is around 60cm. In addition to the bore diameter, a second factor to consider unique to MRI is the bore length. Standard cylindrical bore length varies from 149cm to 170cm. Bore length is an important issue as it increases the chances that a larger portion of the patient's body will be positioned within the bore and thereby increase the patient's risk for claustrophobia. Newer cylindrical bore MRIs commercially available have a bore up to 70 cm in diameter and bore lengths as short as 125cm [3,4].

FLUOROSCOPY

Weight

Fluoroscopic equipment, extensively used in imaging post gastric bypass patients, ironically only has table weight limit of 350 pounds. Newer commercially available fluoroscopic equipment can accommodate up to 700 pounds.

Aperture diameter

Standard aperture diameter is 45-63cm (Figure 2).

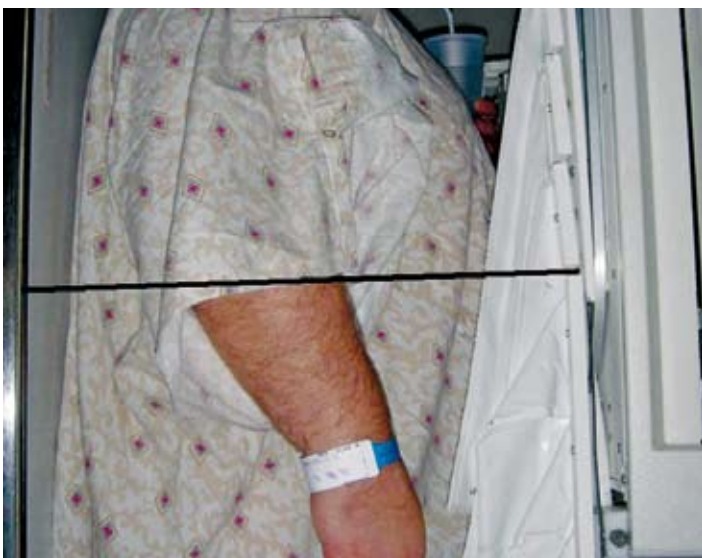


Figure 2: Photograph of post gastric bypass swallow study showing the patient barely fitting within the aperture diameter (horizontal black line) in standard fluoroscopic equipment. Weight may not be a limiting factor as studies can be performed with the patient standing. However, the aperture diameter may be the limiting factor.



Figure 3: Axial CT image in a 450 lbs patient showing the increased noise due to the attenuation of X-ray beams.

Newer fluoroscopic equipment, which inverts the image intensifier and the image acquisition plate, allows for larger aperture diameters.

CAN WE OBTAIN DIAGNOSTIC IMAGES?

Once the challenge of accommodating patients on the imaging equipment is conquered, the next issue is the ability to obtain diagnostic images. Limitations are specific for each imaging modality and specific solutions follow.

CT

Of all the imaging modalities used to image patients, CT is the most versatile for accommodating large patients. CT machines tend to have the largest weight limit at most institutions and if proper protocols are followed, adequate diagnostic images can be obtained [3,4]. Considerations that need to be addressed in imaging obese patients include kVp, mAs, noise index, field-of-view, pitch, contrast dose (Table 3).

Due to the attenuation of the X-ray beam as it passes

Table 3 – Standard vs. obese patient MDCT protocol for imaging obese patients

MDCT parameters	Standard patient (< 350 lbs)	Obese patient (>350 lbs)
kVp	120	140
mAs	“fixed mAs”	“automatic mAs”
Gantry rotation speed	1.0 sec/rotation	0.5 sec/rotation
Pitch	1.1	0.6

through fat, CT images of obese patients can be noisy (Figure 3). Adjustments to the kVp and mAs and noise index must be made prior to acquiring these images. Although the resultant adjustments can potentially result in increasing the total body radiation dose, the degree of dose increase is only incremental to the standard dose of typically 10mSV.



Figure 4: Axial CT in an obese patient showing splaying of internal organs due to abundance of intraperitoneal fat. This splaying allows improved visualization of internal structures more clearly.

Standard multidetector CT field-of-view is 50cm. Exceeding the field of view, will result in a beam-hardening artefact with bright signal along the periphery of the image. New large bore CTs have addressed this issue by increasing the field of view up to 82cm.

In addition, patients with large amount of intra-peritoneal fat, allow for improved visualization of internal structures due to the widespread splaying of the small bowel loops and mesentery (Figure 4). The advent of dual source CT, which provides greater overall power, may improve signal-to-noise ratio when imaging obese patients [5].

MRI

Obesity can limit MR image quality. Factors to consider include the field-of-view, the signal-to-noise ratio, scan times, and artefacts.

Standard field-of-view in a 1.5 Tesla MR is 40-50cm. Open MR systems typically have a lower field-of-view approximately 35-40cm. Exceeding this field-of-view can result in a wraparound artefact. New commercially available MR scanners with matrix coils with multiple elements and moving table options allow for the creation field-of-views up to 205cm [3,4].

Signal-to-noise ratio is affected in obese patients due to both minimal attenuation of the RF propagation through the soft tissues and the increased distance of the receiver coils from the inner body structures. It is presumed that higher field strengths can improve the signal-to-noise ratio.

Due to the increased girth and cranio-caudal length in larger patients, more slices need to be acquired resulting

in increased scan times which may result in motion artefact.

Artefacts specific to obese patients may also be seen in MRI of the obese including wraparound artefact and near field artefact. Wraparound artefact occurs when the field-of-view is too small for the size of the patient and anterior structures are projected on the posterior part of the body. Wraparound artefact can be addressed by several solutions including choosing the "no wrap" option, increasing the field-of-view, and changing the configuration of the field-of-view from a rectangular shape to a square-shape. Near field-of-view artefact occurs when the patient's body surface abuts the inner bore and the resultant RF propagation and received signal results in a bright signal along the periphery of the image.

Ultrasound

Of all the imaging modalities available, ultrasound is the modality most affected by obesity. Sound waves are directly attenuated by the thickness of the soft tissues and the effects of obesity are seen on ultrasound image quality at weights of 250-300 pounds (Figure 5).

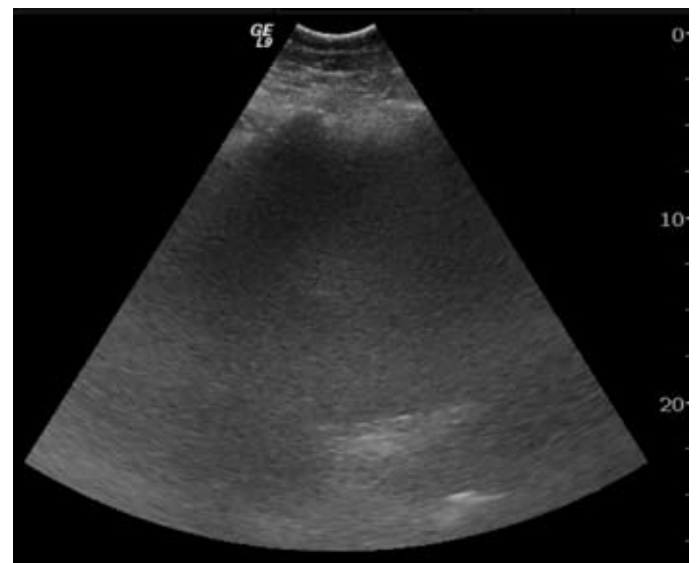


Figure 5: Ultrasound examination of the liver in an obese patient shows a non-diagnostic image due to the attenuation of sound as it passes through the thickness of the soft tissue fat. None of the internal structures of the liver (biliary ducts, vessels) can be seen.

However, predicting the image quality of the patient by visual observation of an obese patient is not accurate as the location of the fat plays an important role in image quality. Patients with predominately subcutaneous fat have poorer image quality compared with patients who have predominately intra peritoneal fat. Solutions to improve image quality include: using the lowest frequency transducer available, decreasing the distance from the probe surface to the organ of interest by applying forward

pressure on the probe, examining prior cross-sectional imaging to determine the location of the fat.

Plain Films/ Fluoroscopy

Plain films and fluoroscopy are affected by obesity by the attenuation of the X-ray beam as it penetrates through the thickness of fat. Inadequate penetration of X-ray beam results in increased noise and low image contrast. Solutions to improve the signal-to-noise ratio and contrast include increasing the kVp and mAs.

Portable plain films are also affected by the size of the patient. Standard film cassette sizes are 14 × 17 inches. A single standard cassette may be inadequate to cover the area of interest, particularly, in the abdomen. Multiple film cassettes should be used when imaging the abdomen in an obese patient who exceeds the size of standard 14 × 17 inch film cassette.

Mammography

Although it may be logically deduced that abundance of fatty tissue may improve image quality for mammography due to the improved tissue contrast between mammary tissues and soft tissue nodules, studies have shown that increased adipose tissue has been correlated with increased rate of recall and false-positive screening mammograms [6,7]. Abundance of fat limits mammograms due to inadequate penetration and results in increased noise, decreased image contrast geometric sharpness and the greater potential for motion unsharpness.

Nuclear medicine

Nuclear medicine studies are degraded by obesity due to the scatter of photons within the soft tissues of obese patients. Obese patients may exceed the maximum allowable limit of radioisotope dose. Solutions to address this issue include, using the maximum allowable radioisotope dose, using the highest field gamma cameras, and imaging patients for longer periods of time to maximize counts.

Interventional Radiology

Challenges in performing image-guided procedures in obese patients include, ability to sedate the patient safely, limitations in the length of the instruments, and the ability to fit both the patient and the instruments through a bore or gantry.

Markedly obese patients may exceed the limits of weight-based sedatives used for interventional procedures.

If patients cannot be safely sedated, consultation with anaesthesia may be required for the performance of image-guided procedures.

All interventional radiology equipment have standard lengths. Solutions to addressing this issue include pre-planning including: reviewing pre-procedure imaging and identifying the shortest trajectory distance to reach the lesion or organ of interest.

In addition to the length of the instrument, an additional limitation to consider is ability to fit both the patient and the instruments through the limited diameter bore or gantry. Various manufacturers have addressed this issue by designing interventional equipment that is either flexible or has right angles to the tip of the instrument that allow passage of both the patient and the instruments into the bore/gantry.

CONCLUSION

Obesity impacts medical imaging in the ability to fit patients on imaging equipment and acquire diagnostic images. Equipment manufacturers have, in recent years, begun to address the issues of obesity by modifying designs to accommodate larger patients. Understanding the limitations for each imaging modality and adjusting patient position and equipment settings, can attempt to maximize the image quality when imaging the obese patient.

Raul N Uppot, MD

Department of Radiology, Massachusetts General Hospital Assistant Professor, Harvard Medical School, USA

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Conferences & Events

Starting out in Cardiac CT

Thursday 2 October 2008

**Venue: The British Institute of Radiology,
36 Portland Place, London W1B 1AT**

This meeting will look at topics including cardiac CT principles and managing radiation dose, indications and appropriateness, patient pre-preparation and heart rate control, coronary and cardiac anatomy and variations, calcium scoring and risk stratification, functional information, strengths and limitations, coronary grafts and surgery, accuracy of CT for coronary artery disease and training and credentialing.

Safety of Ultrasound

Tuesday 7 October 2008

**Venue: The British Institute of Radiology,
36 Portland Place, London W1B 1AT**

This meeting will look at physical mechanisms by which diagnostic ultrasound may cause harm and will give an overview of the safety legislation. Equipment testing and equipment management policies will be reviewed with the focus on ultrasound safety. This meeting will be of interest to all those using diagnostic ultrasound clinically, those responsible for teaching and training, and those concerned with managing ultrasound equipment.

Physics and Engineering Aspects of PET/CT

Thursday 6 November 2008

**Venue: The British Institute of Radiology,
36 Portland Place, London W1B 1AT**

The aims of this meeting are to provide a forum for current scientific issues in PET/CT and to provide attendees with up to date information on PET/CT facility design, testing and staff safety. An insight into the use of PET/CT in the research environment and the production of PET radiopharmaceuticals will be given.

Register online at www.bir.org.uk

Publications

Forthcoming BJR Special Issue: New Agents in Clinical Oncology

Over the last few years there have been considerable advances in our understanding of the molecular pathways and micro-environmental conditions that underpin cancer cell survival and therapeutic resistance. These studies have facilitated the development of range of new agents that target specific cancer-associated pathways, processes or tumour-specific environmental conditions. Many of these new agents are not designed be used as stand alone therapies but rather in the context of standard anti-cancer therapeutics to improve overall response and potentially limit detrimental side effects.

Papers in this forthcoming BJR special issue discuss of some of the most promising new agents that have already entered clinical trial and to present exciting pre-clinical data on their potential successors.

Overall this special issue provides an update of the clinical development of new anti-cancer therapeutics, particularly although not exclusively, those to be used in combination with radiotherapy.

***Edited by Professor David Hirst and
Dr Kaye Williams***



Scanning the BIR – Tim Hogan

1. What do you do at the BIR?

As General Secretary, I have overall responsibility for the operational management at the Institute, and I also work closely with the President, Officers and Trustees to assist with governance and the development of the BIR's activities. It's a very busy and varied role – it's good to be at the centre of everything.

2. How long have you worked at the BIR?

Since October 1989! I remember that when I started the BIR was the proud owner of a brand new Amstrad PC, with Wordstar word processing software, and that using the fax machine was a great novelty!

I became General Secretary in 2003, but for the majority of my 18 years at the BIR, I was Publications Manager. There were some very interesting times in the 1990s when the Internet appeared, and when I was involved in setting up the BIR's first website and the first incarnations of BJR Online.

3. Which qualities do you need to be a good General Secretary?

A good General Secretary would be diplomatic, calm, fair and insightful.

4. Which 4 words would your staff use to describe you?

Diplomatic, calm, fair and insightful (well, maybe in my finest dreams!). More likely, pedantic, nit-picking and many variations along those lines.

5. What were your best moments at the BIR?

From my point of view it's always been interesting, challenging and rewarding. It's been a privilege to work with so many talented and dedicated members and staff.

There have been many highlights. From my days as Publications Manager the launch of BJR Online in 1997 was particularly memorable – it was all very new technology at the time, with a rather elaborate access control mechanism – and it worked! I also remember speaking at a very well attended conference session on "How to publish your paper", when it was thrilling if somewhat scary seeing things from the other side of the podium. It was a great honour to be





Tim has been working at the BIR since 1989 and has participated in projects throughout the years.

appointed General Secretary in 2003 and it has been gratifying to have participated in the BIR's progress over the last 5 years. On 25 May 2005, the Memorial service for Sir Godfrey Hounsfield at St Clement Danes Church, directly followed by the first day of Günter Dombrowe's President's Conference dedicated to Sir Godfrey and held at the Royal Society, was a moving occasion and an important day in the history of the BIR.

6. As a child, what did you want to be when you grew up?

First I wanted to be an astronomer, then for about 10 years I was mad on chemistry and wanted to become a research chemist... As soon as I gained a PhD in Chemistry I promptly changed my mind and went into journals publishing.

7. Tell us about your hobbies.

Music (all sorts, but especially classical), occasionally squash and badminton, and many years ago (before children) my wife Tracey and I were keen bridge players – hope we'll get back into it one day.

8. If you would have a dinner party with 3 people (alive or dead), who would you invite?

J S Bach, Mozart and Beethoven. Not sure they would get on very well, and I wouldn't understand what they were saying, but it would work out fine if they took turns playing the piano.

9. What do you believe makes a successful life?

Lots of interesting things to do, and a good balance between work and play.

Sophie Erpicum



I have just returned from UKRC 2008 – did it live up to expectation? Did you enjoy it? Both of these questions have been asked of me in the last few days. Well I am pleased to say that I can answer both with a big Yes! Indeed, the Congress exceeded expectation and was fun despite the hard work.

It was a pleasure to see such enthusiasm from delegates, exhibitors and the conference and events team. This was reward in itself for the detailed preparation that had gone in to the Congress.

The satellite sessions, “education-on-the-stand” and interactive lectures all got off to a flying start in 2008. We need to build on this for UKRC 2009. We need to build on our partnership with industry in delivering these satellite sessions and education-on-the-stand. Having the new lecture area in the exhibition was a real plus. Delegates appreciated preregistration and the avoidance of the Monday morning queues of previous years.

Lectures were popular with a number of “sell-outs” – I was turned away twice from the trauma series of lectures! The BIR Agfa Mayneord lecture was delivered by Professor Graham Bydder. His topic was “Magnetic resonance and direct imaging of short T_2 relaxation components of tissue”. This was an inspiring lecture. This work is of major importance and this will have a significant impact on musculoskeletal radiologists such as myself. This was a real highlight of the Congress for me.

The Congress dinner “Magic and Illusion” was a stunning success. It was a complete sell-out and very much the topic of conversation at the next day. Flamethrowers, an irreverent comic (Phil Hammond) and a psychic all played their part. Many congratulations must go to Salma Master, who has been managing the conference and events team, Chris Wright and Charlie McCaffery for organizing such a great event. The Dinner was organized in a partnership between Industry and UKRC. It was a real success and we look forward to building on this in 2009.

The BIR stand was impressively designed and presented. All in all a Congress that was hard work, enjoyable and exceeded expectation. We should be proud of our Conference and Events team who really ran an excellent Congress. Thank you.

So now we turn to UKRC 2009. I am pleased to inform you that the programme is in an advanced stage of development. We need to build on the innovations of 2008.

I have more in store for 2009 but more on this anon. One area where I would appreciate BIR members’ and fellows’ help would be in providing ideas for a series of public lectures at UKRC 2009.

Stephen Davies
Congress President

Electronic Patient Records – The Key to E-Health

How do you create a software package that adequately addresses the multi-faceted administrative needs of individual hospitals? This has proven to be one of the major challenges facing the UK healthcare industry to date. Now that it is introducing its full-service EPR and medical informatics system, ORBIS™, to the UK market, Agfa HealthCare describes how it will meet the UK's clinical and administrative challenges head on. Following successful implementations in Germany, Agfa HealthCare took the decision in 2005 to roll out ORBIS to the rest of Europe, where it is now acclaimed as one of the most popular Hospital Information Systems available. No ORBIS solution worldwide has ever been replaced by a competitor system.

The end of the paper trail?

Healthcare information management in the UK is well recognised as a complex and constant challenge. Solutions have been developed to service individual speciality, clinical or administrative needs but until recently, there has been a lack of integration between the disparate systems developed to meet the distinct requirements of both clinical and administrative staff.



Central to the UK Government's plans for healthcare reform is the electronic patient record, EPR. The advantages of an electronic system are numerous and wide reaching, covering both clinical and administrative functions to ultimately improve the quality of patient care. Improvements to clinical processes include the streamlining of referrals, diagnostics, second opinions and medication delivery, whilst administrative functions are enhanced through savings on storage space, accessibility, staff time and cost reductions.

With the healthcare system in the UK continuing to undergo unprecedented change, the planning and management of the patient treatment pathway is ever evolving. Patients now are increasingly managed by multi-disciplinary teams, often based at multiple sites. With a paper-based system this type of treatment would not have been feasible as case notes could only be in one place at one time, and often got lost in transfer. Now with an EPR, any staff member involved in a patient's treatment programme, can access all required information regardless of location.

A joined-up solution

For the first time a solution is available to the UK healthcare system that addresses these key challenges by offering a fully

integrated package functional for both clinicians and administrators.

ORBIS, has been developed by Agfa HealthCare as a comprehensive EPR solution that includes scheduling, activity management and communication software. Designed as a patient centric HIS, ORBIS uniquely provides an all encompassing view of clinical and administrative information.

Every transaction involving a patient is documented from nursing and clinical care right through to all the administrative processes including admission and discharge. Coupled with its statistic and reporting tools ORBIS is therefore able to create comprehensive reports with far greater accuracy and flexibility.

The Medication and Care modules offer a care record and electronic prescription functionality along with Order Communications and Results reporting modules which support laboratory, radiology and diagnostic departments. ORBIS works to limit errors in medication thereby improving overall safety and quality of care.

Precious time is saved with the eradication of duplicate form-filling enabling doctors to shift more of their time back to patient treatment. The system uses templates for recording medical history and physical examination, so that if, during the course of a treatment



programme, a patient visits many different clinicians, the initial data entry need not be repeated, and furthermore this information can be instantly recalled, updated and amended at the click of a button.

With all data stored in one centrally accessible place, the system really is designed to support evolving treatment practices where patients are seen by multi-disciplinary teams.

Karen Middlehurst, Sales Specialist at Agfa HealthCare comments, "The ability of ORBIS to consolidate the entire patient clinical pathway and record every patient episode is both fast and efficient. Diagnosis and subsequent treatment regimens are streamlined due to the system's ability to alert doctors when test results are back and allowing for these to be quickly and easily accessed. Diagnostic departments can see when the doctor has reviewed the results ensuring a level of validation and continuity in the patient's care."



The most popular HIS in Europe

In Europe, where it is currently installed in 850 facilities, with an approximate 500,000 users, ORBIS has proven its ability to streamline workflows and improve the quality of care.

In 2007, the University Hospital Centre of Toulouse, one of the five largest hospitals in Europe began replacing its existing systems with ORBIS, after a unanimous decision by its EPR Committee. Yann Morvezen, Director Information Systems and Controlling of the University Hospital Centre of Toulouse, said, "We unanimously chose ORBIS as the most suitable solution for our hospital. One of the main reasons for this decision is the fact that ORBIS covers the whole patient treatment pathway: admissions, medical record management, integration of medical history, care record management, connections with various technical platforms, and the medico-economic side, which is essential for activity-based management."

For further information contact Agfa HealthCare: 020 8231 5984 or visit www.agfa.com/healthcare
For ORBIS specific information visit www.agfa.com/uk/orbisinfo

AGFA 
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Covered in Dust: an ANRI Radiologist



I came across ANRI woodcarvings when visiting Vienna for ECR. There is a woodcarving store in the city centre of Vienna next to St Stephans Cathedral. The wooden carvings are hand crafted and are quite charming. Details of the company can be found at www.anri.com. The wood used is Alpine maple and the trees are selected in Austria. The maples are cut only during the winter. The special transparent oil colours are produced for ANRI in Italy and the stains used for the sculptures are produced in Germany.

The statue illustrated is that of a traditional radiologist. I am unsure of the date of the carving. The figure wears a lead apron and is holding a radiograph of a femur up to the light.

Do visit the ANRI shop if you go to ECR. I am sure you will be charmed!

Adrian Thomas
Honorary Librarian and Archivist

Dates in Radiology: Henri Becquerel and radioactivity



This new picture of Henri Becquerel was painted by the talented young artist Katie Golding to commemorate the centenary of his death this year. The BIR has a same-size (125 × 81mm) copy of an original positive print taken from a photographic plate prepared by Henri Becquerel on 26–27 February 1896 thereby establishing his priority to the discovery of the phenomenon of natural radioactivity.

Becquerel wrote: “I developed the photographic plates on [Sunday] 1 March, expecting to find the images very feeble. On the contrary, the silhouettes [of the metal foils] appeared with great intensity...” – “Sur les radiations invisibles émises par les corps phosphorescence” – L’Académie des Sciences, Paris, Comptes Rendus, 122: 501–503 (2 March 1896).

The print was presented to the Institute in 1930 by Sir William Crookes’ personal assistant, J H Gardiner and was almost certainly obtained from Becquerel himself

when Crookes visited his laboratory at a time shortly after the discovery. The print has been displayed in the Du Boulay room at the BIR in a specially made mahogany “cabinet” which was donated for the purpose in 1934 by C E S Phillips. The cabinet bears a brass commemorative plate: Presented to the British Institute of Radiology by J.H.Gardiner F C S (President Röntgen Society 1915–16).

Adrian Thomas
Honorary Librarian and Archivist

President's Column



I am writing this the week before the AGM. I have just completed my summary of the annual report to be given at the meeting in the BIR. It is uplifting to see how much the BIR can achieve within its aims and objectives. During the year as President I spend quite a lot of time problem solving and the bigger picture is often obscured by day-to-day decisions that have to be made. One of these unpleasant decisions that had to be made was the cancellation of the President's Conference. This was due to a number of difficulties. One of these has been an ongoing issue with online booking for meetings through the website and I apologise to those of you who have had unpleasant experiences with this. Hopefully this will be resolved shortly. I would also like to thank my speakers for their understanding.

You will already know (if you read this page last) that Chloe Scragg has been appointed as our new Branch Co-ordinator. Some of you

will recognize her. She is an ideal choice having worked in the Conference Office previously before going travelling. She is there to help you make the most of the resources that the BIR has to offer to its Branches. We hope that there will be a good choice of meetings for all BIR members nearer home which may mean that gaining study leave will be easier. The Branches are there for all disciplines and I would like to encourage those of you who have not previously been involved to note the contact details of your Branch representatives. It would be very good to see our new associate members working with the branches and I know that the Northern Branch has involved many of the radiology SpR's in the organization of a chest meeting to be held in the Autumn.

The next big meeting that the BIR is involved in is UKRC. This is a joint venture with the College of Radiographers, the Institute of Physics and Engineering in Medicine and the Royal College of Radiologists. Last year, in Manchester, I spent some time on the BIR stand and enjoyed meeting members and encouraging people to join. I look forward to welcoming you or having welcomed you, to Birmingham, where this year's venues the ICC and NIA are just a short walk along the canal for me. There is an excellent programme planned. This has been led by Congress President Dr Stephen Davies who will become the Vice President of the BIR when in September I am succeeded by Dr Stuart Green. Doesn't time fly!

Dr Julie Olliff
BIR President
(May 2008)



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