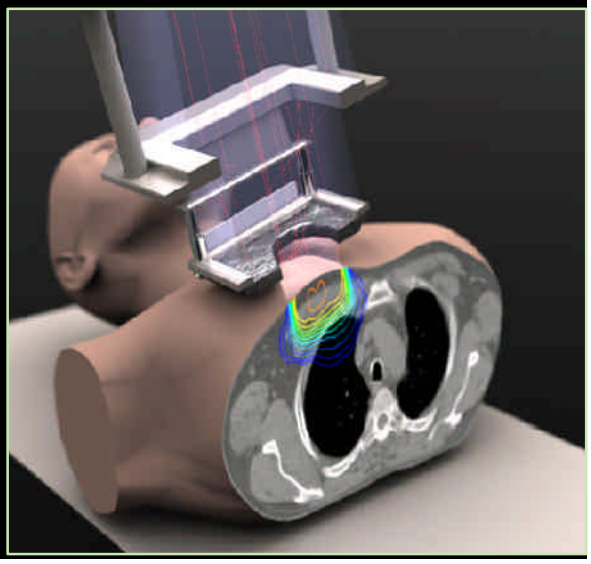
InterACTIONS

CANADIAN MEDICAL PHYSICS NEWSLETTER
Le BULLETIN CANADIEN de PHYSIQUE MÉDICALE

David W.O. Rogers, PhD, FAAPM
AAPM 2010 Coolidge Award



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InterACTIONS

Volume 56, Number 4– octobre/October 2010

Cover Image

Dave Rogers (photo credit: Claudia Salguero, Carleton University), a Canada Research Chair in medical physics at Carleton University in Ottawa, is the 2010 recipient of the William D. Coolidge Award - the highest distinction of the American Association of Physicists in Medicine (AAPM). Professor Rogers is the fourth Canadian who received this award, after H. E. Johns (1976), J. R. Cunningham (1988) and E. B. Podgorsak (2006). He is internationally recognized as a leading expert in Monte Carlo algorithms for radiation transport and radiation dosimetry. He had a major contribution in establishing the TG-51 absolute calibration protocol, now used in every radiation therapy clinic in North America. Before joining Carleton University, he served for two decades as the leader of the Ionizing Radiation Standards laboratory at the National Research Council, where he had a pivotal role in creating the EGSnrc Monte Carlo system, the most widely used simulation tool for radiation therapy applications in the world. On behalf of all Canadian medical physicists, InterACTIONS congratulates Dr. Rogers on this major achievement. The bottom picture is from his paper, Monte Carlo Techniques in Radiotherapy, Physics in Canada, Medical Physics Special Issue, 2002 Vol 58#2, pp 63-70.

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Message from the COMP President

Well another very successful Annual Scientific Meeting has now become a part of history, and I believe that all who attended would agree that the high standard that has been established over the years was once again achieved. I am hoping that Malcolm McEwen and the Ottawa Local Arrangements Committee (LAC) have fully recovered and offer congratulations and thanks for a job well done. As of the Annual General Meeting I officially assumed the mantle as President and Jason Schella, naturally enough, became Past President. In addition, I would like to take this opportunity to welcome two new members who were appointed to the Board: Luc Beaulieu is now President-Elect and our new Secretary is Isabelle Gagné. Stephen Pistorius and Patrick Rapley received their well earned plaques having completed their terms as Past President and Secretary, respectively. Our thanks to Patrick for taking on what, although essential, is often considered one of the more onerous of functions (I can only get away with saying this because Isabelle has already accepted the position) and for marshalling through a number of bylaw changes, some of which were quite fundamental and, on occasion, controversial. While I certainly would like to be a bit more expansive in expressing our appreciation for Stephen's contributions over his six year term with the Board, there is not really sufficient space here to do justice. I am very pleased to say that COMP will continue to benefit from the legacy of Stephen's influence during his tenure. If I were forced to choose a particular highlight, I believe that Stephen's initiative to engage a formal strategic planning process particularly stands out. That process provided COMP with a roadmap to better meet its mandate and motivated the many positive changes that have taken place over the three year life of the plan. As a result of the success of that endeavour, Stephen's initiative will live on with the development of a second strategic plan in 2011.

The usual series of Committee and Board meetings took place in the days leading up to the ASM. Perhaps one of the more significant underlying themes of these discussions related to ongoing evolution of the operational organization of COMP. One example is taking advantage of the current Board member transitions to review and modify the roles and responsibilities of the three positions related to the presidency of COMP. These deliberations are leading to modification of relevant committee Terms of Reference. For historical reasons, the various awards offered by COMP have not all been managed in a coordinated fashion through the Awards Committee. Efforts are underway to better consolidate these processes through that committee, which has implications for the responsibilities of the Past President. One issue being inherited by the committee that had proven to be somewhat contentious is the implementation of the Fellow of COMP (FCOMP) award. In accordance with the results of the vote by the membership, FCOMP will be introduced in 2011. Another committee that will be affected is the Conference Committee where the Past President will likely be assuming some of the responsibilities traditionally delegated to the President-Elect.

Another example of restructuring, which I hope will not create confusion, is a proposal to create an Executive Committee comprised of a subgroup of members of the Board. The potential confusion may arise from the fact that the now more appropriately designated "Board" was, until recent bylaw changes, called the "Executive". Regardless, the intent is to provide a mechanism for addressing operational issues in a more efficient manner, particularly those items of either limited significance or requiring urgent response. The Terms of Reference for this committee are currently in preparation.

Both the CCPM and COMP have been long time supporters of the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP). The activities of CAMPEP continue to escalate and, as a result, there are increasing demands upon the representatives from CCPM and COMP who are actively participating. The Science and Education Committee (SEC) is assuming responsibility for addressing the growing challenges in this arena.

The student representatives on the SEC, Alejandra Baltazar and Nadia Octave, organized what was, at least for me, one of the highlights at the ASM. David Wilkins, Brenda Clark and I, representing CCPM, CAMPEP and COMP respectively, were invited to participate in a session specifically targeted towards students. While this was an opportunity to provide more background on the three organizations, it was also a forum for dialogue on student issues. The most significant concerns related to the introduction of CAMPEP accreditation requirements for graduate programs and residencies, and more specifically the impact upon progression through to employment. One of the immediate take home messages was that there is a need to improve and better coordinate communication for students with regard to the process and implications of the introduction of accreditation.

Dr. Peter McGhee
COMP President

Another group with special interests that COMP is continuing to engage is the Physics Assistants. The Professional Affairs Committee (PAC) is continuing to provide advice and direction as this group continues with its efforts to establish a more defined profile.

The PAC is also exploring the possible implications of the reference to Medical Physicists in the recently released Health Canada Safety Code 35 entitled *Radiation Protection in Radiology—Large Facilities: Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities*. Clearly there would be significant professional advantage realized should similar regulatory recognition be establish for imaging physics that which has been undeniably beneficial to therapy physics, particularly with regard to patient safety.

Another initiative of interest, which originally arose from a meeting held at the

(Continued on page 103)

Message from the CCPM President

I was fortunate to have the opportunity to attend the awards ceremony at the AAPM meeting in Philadelphia in mid-July, at which Dave Rogers of Carleton University was presented with the AAPM's highest honour for a career of achievement in medical physics, the William D. Coolidge Award. It is a testament to the close ties between the Canadian and American medical physics communities that the AAPM awarded this honour to a Canadian physicist for the fourth time (Harold Johns, Jack Cunningham and Ervin Podgorsak being the others). This was graciously acknowledged by Dave in his acceptance speech, which was conveniently lent gravitas by dramatic crashes of thunder from a storm raging outside.

The relatively tight integration of Canadian and US medical physics is one of the reasons that the CCPM has adopted a policy of requiring completion of either a graduate or a residency program accredited by CAMPEP in order to apply for CCPM certification as of January 2016. (The ABR requirement actually goes further, requiring both graduate and residency programs to be CAMPEP accredited, a requirement that CCPM might adopt at some future date.) There has always been a lot of back and forth across the border in our profession (usually more forth than back), and maintaining some degree of reciprocity and acceptance of Canadian qualifications for clinical practice in the US is important to many Canadian medical physicists.

Of course there are other reasons for the CAMPEP requirements for certification, including the assumption that patient safety in radiation therapy and imaging is enhanced by ensuring that the programs which train clinical medical physicists meet certain minimum standards defined through accreditation. Patients, physicians and health care institutions have the right to surmise that a certified medical physicist (indeed, any health care professional) has acquired certain defined core knowledge and skills through an accredited educational program. This core knowledge is laid out in some detail in AAPM Report #197, Academic Program Recommendations for Graduate Degrees in Medical Physics, published in 2009, a report which underpins the criteria currently used for the accreditation of graduate programs by CAMPEP.

In his acceptance speech for the Coolidge Award, Dave Rogers pointed out that Report #197 does not emphasize research. On page 24 of this report there are section headings for *Clinical Research* and *Scientific Communications*, but the sections are empty. Dave Rogers argued convincingly for a research component to clinical medical physics practice and training:

> *"We have to be doing research: it is research that sets us apart. Without a research component to every clinical physics position, we will soon find ourselves being replaced by radiation technologists making half the salary but doing a perfectly adequate clinical job with their strong physics background.*
>
> *So as a start, I would like to see CAMPEP graduate programs and residency programs include a compulsory research component. … Research must be ingrained in every medical physicist at the graduate level. Research is the reason that we have been important in medicine. Of course not everyone can be producing revolutionary ideas, but everyone can contribute to the improvement of our craft, thereby improving patient care and continuing the traditions of our field."*

Some would argue that this is outside the scope of Report #197 and CAMPEP accreditation, being the purview of the university and the accreditation body which has vested the university with the authority to grant graduate degrees. Neither Report #197 nor the CAMPEP accreditation process attempts to define a university's criteria for awarding a graduate degree; rather, they lay out the minimum curriculum contents of a medical physics graduate program. However, the curriculum requirements laid out in Report #197 are extensive, and thorough coverage of all the material puts a graduate program at risk of crowding out the time available for students to learn research skills. It is up to graduate program directors, and CAMPEP in its application of accreditation criteria, to ensure that the teaching of core clinical knowledge does not jeopardize the teaching of research skills.

Dr. David Wilkins

Finding the right balance between clinical service and research has always been a challenge in our profession. While research output by clinical physicists is sometimes valued by employers and can aid in an individual's career progression, it is a harsh reality that salary dollars for medical physicists normally flow from clinical budgets where the priority is clearly patient treatment. In such an environment, research is often relegated to "spare time" or voluntary overtime. But without research, or at minimum an effort to "contribute to the improvement of our craft", we risk losing scope of practice to others.

On behalf of the Canadian College of Physicists in Medicine, I would like to congratulate Dave Rogers on being awarded the AAPM's highest honour, the William D. Coolidge Award. It is well-deserved recognition of an exemplary career of achievement in medical physics.

Message from the Executive Director of COMP/CCPM

.**Annual Scientific Meeting**

The feedback regarding the Ottawa ASM was most positive and congratulations are in order for **Malcolm McEwen** and his team. We are grateful once again to our corporate sponsors for their generous support of the meeting.

Once again, some new elements were introduced at the Ottawa meeting: an NSERC/CLS workshop and a professional session on workforce planning. Based on the survey results, delegates are interested in seeing more of these types of sessions included. As well, the COMP annual general meeting was held in the morning with breakfast rather than at the end of the day. This change received much positive feedback and resulted in greater participation than in previous years.

A summary of the evaluations can be found in a separate article in this issue of the newsletter. Thank you to all those who provided feedback. Congratulations to Christine St. Pierre of Laval University who completed the evaluation and was the winner of the $50 Chapters gift certificate. Your feedback is important and your suggestions will certainly be taken into account for the 2012 Annual Scientific Meeting in Halifax.

As you are aware, the 2011 meeting will be a joint meeting with the AAPM in Vancouver. Preparations are already underway for this meeting so ***mark your calendars for July 31st – August 4th.*** COMP will be well represented in the planning of the meeting by **Luc Beaulieu** who is serving on the Scientific Committee and **Conrad Yuen** who will be involved in local arrangements. We do plan on hosting a COMP banquet at this joint conference.

COMP Winter School 2012

We are very excited to be hosting the 2nd COMP Winter School which will be taking place from January 30th – February 3rd, 2010 in Mont Tremblant, Québec. **Marco Carlone, Sherry Connors, Luc Beaulieu, Stephen Breen, Jennifer Thompson and Renée Larouche** have been working together to build on last year's successful Winter School and will be continuing with the theme of: **Quality and Safety in Radiation Oncology.** More details and registration information are available at www.medphys.ca. Take advantage of this excellent continuing education opportunity.

Strategic Planning

The COMP Board will be undertaking a strategic planning session in the Fall of 2011 as our current 3 year plan is nearing completion. We will be looking to members for input over the coming year to guide this process. We thank you in advance for your support of our efforts to serve the medical physics community in Canada.

As always, please feel free to contact me at nancy@medphys.ca or Gisele Kite at admin@medphys.ca at any time with your feedback and suggestions.

Ms. Nancy Barrett

(Continued from page 101)

2010 COMP Winter School, is the creation of the Canadian Partnership for Quality Radiotherapy (C-PQR). The initiative was motivated by the *Structural Standards for Quality Assurance at Canadian Radiation Treatment Centres* document prepared by the Canadian Association of Provincial Cancer Agencies (CAPCA). COMP has long been involved with this initiative, particularly with development of the supporting technical documents specific to equipment quality assurance. At present the C-PQR is comprised of two groups: a steering committee and an advisory group. The steering committee is comprised of designated representatives from the Canadian Partnership Against Cancer (CPAC), the Canadian Association of Radiation Oncology (CARO), the Canadian Association of Medical Radiation Technologists (CAMRT), and the COMP. Our representatives are Jason Schella and Jean-Pierre Bissonnette. Clearly, if this initiative is successful, there is potential for significant benefit to patient safety on a national basis.

One last item to mention from the Ottawa meeting is that an invitation was extended to societies with which COMP has mutual interest. Representatives from the Canadian Association of Physicists (CAP), the Canadian Association of Radiologists (CAR), and the Canadian Association of Medical Radiation Technologists (CAMRT) attended the meeting. The intent was to reinvigorate the relationships that COMP has with these organizations and, to that end, the meeting was very productive. I anticipate that you will start to see evidence of growing collaboration with these colleague societies.

Finally, I would be remiss to not mention that preparations are underway for the semi-Annual meeting of the Board, which will be held, as usual, towards the end of November. This meeting is one of the two yearly opportunities for face-to-face meeting of the Board itself and jointly with the CCPM Board. A recent addition to these meetings is an orientation for new Board members. Considered a best practice in governance, the orientation includes a review of the history of both COMP and CCPM, how they work together, their governance structure, the role and responsibilities of Board members, and operational considerations such as the typical calendar of events. The purpose is to assist all Board members in performing more effectively and is another reflection of how, even after all these years, COMP continues to mature and progress as an organization.

CNSC Feedback Forum

Class II Prescribed Equipment Certification

David Niven
Canadian Nuclear Safety Commission
CNSC, Ottawa ON

When many people think of the Canadian Nuclear Safety Commission (CNSC), likely one of the first things that comes to mind is either "licensing" or even more daunting, "inspections." However, there are other aspects to the CNSC as well. Equipment certification is one of those aspects which may not be understood as well as some of the CNSC's more prominent activities. This article will help de-mystify the process of certifying Class II equipment and share some behind-the-scenes information.

Why does the CNSC certify Class II Prescribed Equipment?

The requirement for certification of Class II Prescribed Equipment is found in section 10 of the *Class II Nuclear Facilities and Prescribed Equipment Regulations (C2NFPER)*:

Section 10:
No person shall use Class II prescribed equipment unless

> *(a) it is a certified model; or*
> *(b) it is used in accordance with a licence that authorizes its use for development purposes or for scientific research that is not conducted on humans.*

Why was this requirement included in the regulations? As with everything else, our goal is to ensure that the equipment is safe to use. The certification process focuses on safety aspects related to workers who will operate the equipment as well as safety of the public and other staff members in the vicinity. We look at the system as a whole and evaluate the safety systems that are incorporated into it. Emergency stops on a linear accelerator or high dose rate brachytherapy machine are examples of such safety systems.

What the CNSC certification process is *not* is a full technical assessment of all of the various components of the machine. It also does not delve into any patient safety aspects (like dose conformity and dose delivery) related to use of the machine, although as you'll see later we do make sure that this has been evaluated elsewhere.

How does the certification process work?

Like licensing, an application form must be submitted to the CNSC in order to start the certification process. The application guide and form are found in CNSC document *GD-254: Certification of Radiation Devices and Class II Prescribed Equipment.* So long as all the required information has been included in the application, the CNSC service standard for completing the assessment and issuing the certificate is six months. Fortunately, the turnaround time is often less than this. The full six months may apply in the case of brand new equipment, but many times equipment will be deemed to be "similar to" or "identical to" equipment that is already certified. For example, "similar to" may be used for equipment with different possible source activities, but where the shielding is identical regardless of the source strength. The "identical to" designation may be used to reflect the name change of a product after one company is bought by another company, or when renewing a certificate if the equipment has not changed (yes, certificates have expiry dates just like licences). In these cases a certificate may be issued in much less than six months.

Typically the manufacturer is responsible for submitting the application and paying the associated fees. Should the owner of a piece of equipment want to do some modifications on their own, then they would have to apply to the CNSC for a certificate themselves. It is also important to note that certification outside of Canada does not translate to CNSC certification – our certification process is independent.

When is CNSC certification required?

Assuming the equipment in question meets the CNSC definition of a Class II prescribed equipment (under *C2NFPER)* or the definition of a Radiation Device (under *Nuclear Substances and Radiation Devices Regulations*), it must be certified by the CNSC before use, unless it meets the requirements of Section 10(b) of *C2NFPER* (see above). The exemption under section 10(b) is intended for one-off equipment used for conducting research or for the purpose of developing a product line (usually by Canadian manufacturers). Such equipment is unique in that it cannot be bought "off the shelf" or marketed externally, and it must not be used on human subjects. For equipment that falls under the exemption, the process of licensing is more demanding, as some of the certification requirements are incorporated into the licensing process.

If the equipment is brand new to the Canadian market, then it will be required to undergo CNSC certification. Similarly, certification is required if the manufacturer packages various components usually sold as machine upgrades and markets a machine as a new brand of equipment (e.g. if it has

a new name), even if the components are identical to those that have been used in other CNSC certified machines. Certification is not required if existing equipment is modified piecemeal, so long as the modification is offered by the original manufacturer. Let's use the example of an upgrade to add On-Board Imaging (OBI) to a linear accelerator. In this case a new option is being added to an existing accelerator. The name of the accelerator remains the same and there are no changes to its existing components. Instead of requiring a new certificate, this upgrade would be done under an operate-to-commission licence, which does not allow the unit to be used until all safety systems have been tested.

Since the regulations only address the *use* of Class II prescribed equipment, companies can sell equipment in Canada without a certificate. The onus is on the end-user of the equipment to ensure that it is certified by the CNSC. This does not mean that the licensee must be the owner of the certificate but rather that they should make sure that the equipment is certified before operation. The customer can store the equipment until the certificate has been obtained, or even install it. Installation of the equipment doesn't constitute use – powering it up, testing it and producing a radiation beam does. It is still worth the effort on the part of the customer to make sure that the equipment is certified before they decide to buy, as the time required to obtain the certificate may impact the project schedule. The equipment must be certified when it comes time to apply for a Class II commissioning licence, as the certificate number must be included in the licence application.

Is CNSC certification the only certification that the equipment needs in Canada?

The answer is no: Medical Devices that emit ionizing radiation fall into the categories covered in section 26 of the Health Canada *Medical Devices Regulations*, which state:

"… no person shall import or sell a Class II, III or IV medical device unless the manufacturer of the device holds a licence in respect of that device or, if the medical device has been subjected to a change described in section 34, an amended medical device licence."

This requirement does not apply to any device that is not intended to be used on humans. In that case, it would be regulated solely by the CNSC (if applicable, according to the Nuclear Safety and Control Act).

How does Health Canada licensing differ from CNSC certification?

The CNSC "certifies" equipment, which allows its use so long as the operator obtains a license that permits its operation. In contrast, Health Canada issues a pre-market approval – in other words, a "license" to import or sell a device in Canada, not a license allowing users to operate it. The Health Canada licence must therefore be obtained before sale of the device is authorized in Canada. The evaluation focuses on the safety, effectiveness and quality of the device from a patient perspective. Using a linear accelerator as an example, they would look at the beam delivery and beam confinement systems to ensure that the actual and prescribed beam parameters match. They would also look at the physical safety of the units; for example, if there are parts that could fall and injure the patient, or if there is a danger of collision due to moving parts.

A Health Canada licence is a prerequisite for CNSC certification. This ensures that a patient will not be treated with a device that does not meet Health Canada requirements. However, both processes operate independently of each other, so there is no reason that a manufacturer could not apply to both agencies simultaneously; the application to CNSC can simply indicate that Health Canada approval is pending. CNSC staff can complete the rest of the assessment and should be able to quickly issue the certificate once the applicant submits proof of Health Canada approval.

In some cases, the Health Canada licence may be required even if a CNSC certificate is not. Returning once again to the OBI example, although a new CNSC certificate would not be required the OBI unit itself must still be licensed by Health Canada before the operate-to-commission licence would be issued by CNSC.

So there you have it – a crash course in Class II Prescribed Equipment certification. The certification process is an important step in ensuring that equipment is safe for staff and members of the public, and we encourage all licensees to be sure that the equipment they buy and install does in fact have a CNSC certificate. When in doubt, ask!

A list of equipment that is currently certified by the CNSC can be found on our website (http://www.nuclearsafety.gc.ca/eng/licenseesapplicants/substancesdevices/index.cfm) . A searchable list of medical devices licensed by Health Canada can be found at http://webprod.hc-sc.gc.ca/mdll-limh/index-eng.jsp

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Get your material in early!

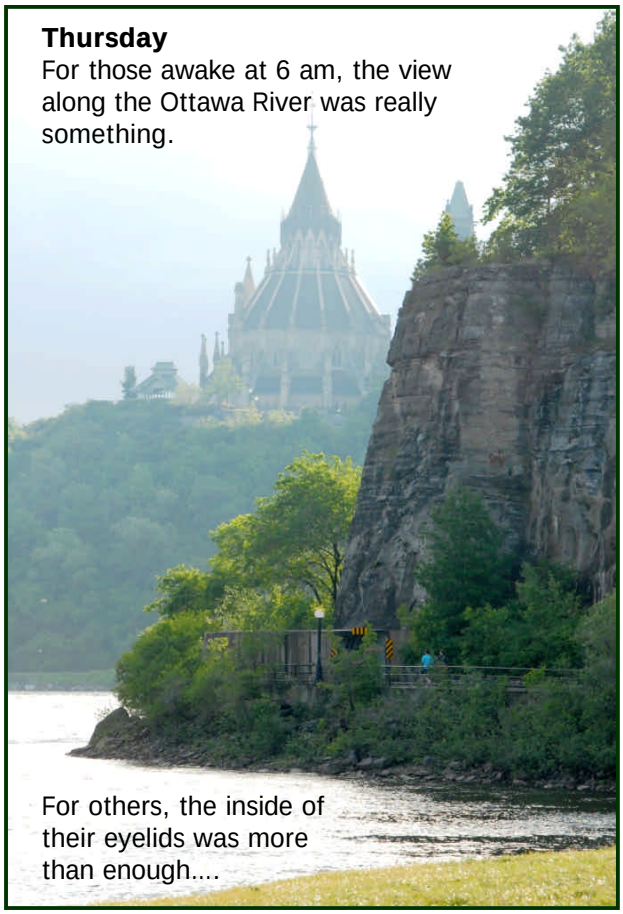
COMP2010 in Ottawa – the Highlight Reel

Four days of fantastic workshops, brilliant lectures, edge-of-the-seat presentations, fascinating meetings, breathtaking tours and a whole lot of food and drink wrapped up on the 19th June 2010.

Here are some of the highlights!

Wednesday
Torrential rain wasn't exactly what we'd planned for the opening Icebreaker reception. Good job we didn't opt for the outdoor venue!

Wednesday
The Ballroom fills up in anticipation of the COMP Public Lecture. Dr Beanlands gave an excellent presentation on the advances being made in cardiac imaging. (Note how many pictures Jason Schella appears in).



COMP ASM Rule #1 – get your picture taken with the COMP President!
COMP ASM Rule #25 – get your card stamped by the exhibitor. No stamp, no prize at the banquet!

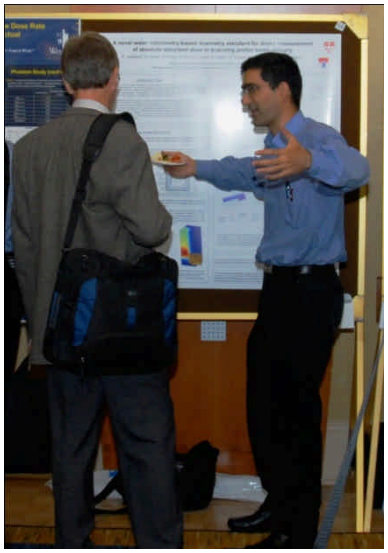
A last-minute briefing from Fun Run organizer Liz Orton....

Thursday

The 2nd COMP 5k Fun Run was a great success with more than 40 enthusiastic entrants on a damp but bright, Thursday morning. I could have done it.....

Thursday

The poster session was busy all evening. Some may suggest that the free food and drink kept people there but I say it was the high quality of the posters.



"It was this big!"

Arman Sarfhenia describes the result of his last fishing expedition to Carl Ross.

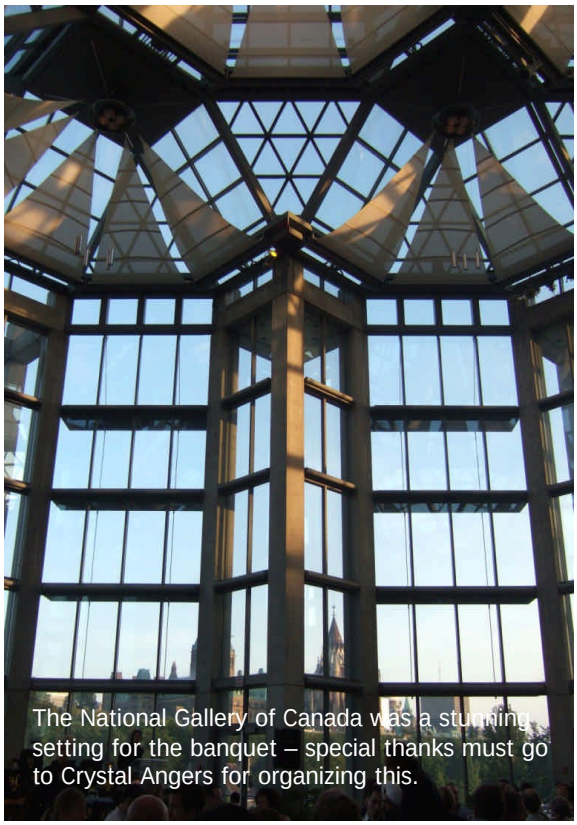
Or maybe it was something about water calorimetry.

Friday

Aaron Fenster receives the 2010 COMP Gold Medal from Jason Schella.
(It really is gold!)

The COMP Banquet – early (above) & later (left). Note the significant reductions in both jacket quotient and liquid levels – sure signs of a good party!

The Capital Swing Band provided the evening's entertainment. No prizes for identifying the 2nd clarinet!



The National Gallery of Canada was a stunning setting for the banquet – special thanks must go to Crystal Angers for organizing this.

I'm lost for words so it's caption competition time!
Send your entries to: info_comp2010@physics.carleton.ca

See you next year in Vancouver!

The CAP-COMP Peter Kirkby Memorial Medal
for Outstanding Service to Canadian Physics

The CAP-COMP Peter Kirkby Memorial Medal recognizes outstanding service to Canadian physics. The medal is intended to recognize service to the physics community by strengthening the Canadian physics community, by enhancing the profession of physical scientists, by effectively communicating physics to the non-scientific community, or by making physics more attractive as a career. It is intended to provide a lasting memorial to Peter Kirkby and to recognize in others the qualities for which he is remembered best: a vision of a strong Canadian physics community, dedicated efforts to support that vision and, in all things, fairness, and honesty. The Peter Kirkby Memorial Medal was introduced in 1996. It is awarded biennially.

Nominations are due by: January 14, 2011

Instructions for Nominations:

The nominator must be a member of the CAP or COMP.

The nominee must be a member in good standing of the CAP or COMP in order to be nominated.

The nominee must have spent the major part (i.e. more than one-half) of his/her working career in Canada or must have made a major contribution to physics after returning to a permanent position in Canada.

The nomination must be submitted using the CAP's online nomination submission process. Nominators who are not CAP members or who have not submitted an abstract at a CAP Congress since 2004 will have to request a username and password to access the nomination form. Other than the nomination form and citation, supporting documentation must be submitted as Word or PDF files.

For more information please visit http://www.cap.ca/awards/kirkby.html

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2nd Annual COMP Winter School

Quality and Safety In Radiation Oncology

January 30th to February 3rd 2011

Mt. Tremblant, Québec

The Radiation Oncology Quality Assurance Committee of the Clinical Trials Group of the National Cancer Institute of Canada

Peter Dunscombe, PhD, FCCPM, FAAPM
Tom Baker Cancer Centre

As you probably know the National Cancer Institute of Canada (NCIC) recently merged with the Canadian Cancer Society to form the Canadian Cancer Society Research Institute. The important clinical trials work of the former NCIC will continue under this new entity. The organization which led, and continues to lead, cancer clinical trials activities in Canada will still be known as the NCIC Clinical Trials Group (CTG).

To ensure the generation of the highest quality clinical data, upon which future treatment decisions can be confidently based, quality assurance is clearly essential. For those trials involving radiation therapy specialised quality assurance expertise is necessary and this expertise is provided by the Radiation Oncology Quality Assurance Committee (ROQAC). ROQAC has adopted as its mission: *to provide leadership, guidance and oversight of the radiation oncology quality assurance activities of the NCIC Clinical Trials Group.* The Committee is chaired by a Radiation Onologist and has, as members, representatives of NCIC CTG Central Office in Kingston, the Head of the CTG Radiation Oncology Forum together with several other Radiation Oncologists, Medical Physicists and Dosimetrists/Radiation Therapists. Recently a Medical Physics Working Group (MPWG) has been formed in affiliation with ROQAC. There is considerable overlap in membership between ROQAC and MPWG. The need for a MPWG arose out of the advancing technological sophistication of radiation therapy treatments and hence the specialised knowledge required for QA protocol design. As its name suggests the MPWG is heavily populated with Physicists but includes valuable and essentail contributions from the Dosimetry/Therapy and Radiation Oncology communities.

ROQAC has one face to face meeting per year at the Spring Meeting of the CTG but conducts most of its business by 'phone and email. The early role of ROQAC was to review radiation therapy trial protocols particularly for clarity and adequacy of the proposed quality assurance measures. This work continues and remains one of the main functions of the Committee. In addition, to help investigators write radiation therapy trials ROQAC has lead the development of a generic trial template which accommodates both "traditional" radiation therapy and newer techniques such as IMRT and IGRT. This template is available to members of the CTG on the CTG website. Members of the Committee are also available to assist trialists with specific technical aspects of trial design and quality assurance when requested.

A major initiative over the last few years has been the quality assurance, in "real time", of advanced trials requiring 3 dimensional dose prescription. Contacts have been established with several quality assurance groups south of the border. These US groups have gone through a realignment process recently and our prinicpal collaborative partner for reviews of advanced technology trials is the Quality Assurance Review Centre (QARC). Discussions continue with QARC to customise review processes to meet Canadian requirements.

In addition to the activities described above, ROQAC and the MPWG continue to explore opportunities for promoting the adoption of advanced technology in radiation therapy within the clinical trials context.

Meet the New COMP Board Members

Compiled by Nancy Barrett

Luc Beaulieu
Board President-Elect
Associate professor
Université Laval
Head of Medical Physics
Research Group, CHUQ Quebec

Luc Beaulieu is a well-known Canadian medical physicist who received his PhD in 1996 from Université Laval. He went on to UC Berkeley as an NSERC postdoctoral fellow from 1996 to 1998 and also spent one year as a research scientist at Indiana University Cyclotron Facility. Luc was hired at the Centre Hospitalier Universitaire de Quebec to take the leadership of the medical research group and strengthen the medical physics graduate program started a few years earlier by Jean Pouliot. Under his guidance, the medical physics program has become the second largest graduate program in the Department of Physics.

From 2005 to 2010, Luc has been directly involved in the Quebec professional clinical medical physicists association (AQPMC). He has worked with other AQPMC members to better the medical physicists working conditions and also helped formalize and introduce a new approach for medical physics workforce planning. Over 45 new medical physics positions will be created in the province of Quebec between 2009 and 2014 as a result of this. Luc is also a father of two wonderful young adolescents, Alexandre and Catherine. He loves skiing, skating, cycling and reading. According to his wife, he also cannot resist new high tech gadgets.

(Continued on page 122)

CCPM Chief Examiner's Report

Robert Corns, PhD, FCCPM

Membership Written Examination: The written membership exam was held on March 6, 2010 and 38 candidates took this exam — 36 candidates in Radiation Oncology, one in Diagnostic Radiology and one in MRI. Three exams were written in French and 35 exams were written in English. The examination was held in 14 locations across the country. Out of these 38 candidates, 33 passed the examination — 31 in Radiation Oncology, one in Diagnostic Radiology and one in MRI.

Membership Oral examination: The Membership oral examinations were held in May in three cities. A total of 35 candidates took the Membership Oral exam — 33 in Radiation Oncology, one in MRI and one in Diagnostic Radiology. There were 33 new candidates and two re-sits. The oral examination for the Radiation Oncology subspecialty was held in Montreal using six parallel sessions over two days and 18 examiners. The MRI oral exam was held in Ottawa with three examiners and the Diagnostic Radiology oral exam was held in London with three examiners. A total of 32 candidates passed — 30 in Radiation Oncology and one in Diagnostic Radiology and one in MRI.

The successful candidates for this year's MCCPM examination were:

Ismail AlDahlawi
Afsaneh Amirabadi (MRI)
Krum Asiev
Stuart Burnett
Jean-Charles Côté
Melanie Davidson
Esmaeel Ghasroddashti
Jason Hancock
Martin Hinse
Harry Ingleby (Diag Rad)
Renée Korol
Frédéric Lacroix
Katie Lekx-Toniolo
Claire McCann
Andrea McNiven
Marie-Pierre Milette
Tara Monajemi
Ernest Osei
Peter Petric
Nicolas Ploquin
Marija Popovic
Eric Reynard
Daxaben Saparia
Teodor Stanescu
Kathleen Surry
Stanley Szpala
Chris Thomas
Steven Thomas
Aaron Vandermeer
Eric Vandervoort
Slav Yartsev
Ge Zeng

Fellowship Exam: The FCCPM exams were held in Ottawa in June. A total 14 candidates presented and were examined in two parallel sessions over two days by 13 examiners. All 14 candidates were in the Radiation Oncology specialty. Ten candidates passed.

The successful candidates for this year's FCCPM examination were:

Parminder Basran
Deidre Batchelar
Craig Beckett
Alanah Bergman
Jean-Charles Côté
Brad Gill
Ian Kay
Brian Keller
Renée-Xavière Larouche
Vitali Moiseenko

On behalf of the CCPM I would like to congratulate all new Members and Fellows.

Finally, I would like to point out the tremendous level of support I have received from the Board and the CCPM community at large in running this exam. Whenever I have asked for help it has always been forthcoming, and the strength and success of the CCPM is a reflection of the commitment of its members. In particular I would like to thank the following people that helped out either as invigilators, with logistical support, on the exam committee, the marking committee, the appeals committee, as MCCPM oral examiners, as FCCPM oral examiners and fellow Board members (apologies if I missed anyone):

Wamied Abdel-Rahman
John Aldrich
Clement Arsenault
Alistair Baillie
Rob Barnett
Nancy Barrett
Jean-Pierre Bissonnette
Chantal Boudreau
Derek Brown
Ian Cameron
Fred Cao
Brenda Clark
Sherry Connors
Maria J. Corsten
Francois DeBlois
Nicola DeZanche
Robert Doucet
Peter Dunscombe
Cheryl Duzenli
Michael Evans
Gino Fallone
Tom Farrell
Aaron Fenster
Judy Hale
Gisele Kite
Kirpal Kohli
Ting Lee
Darcy Mason
Boyd McCurdy
Malcolm McEwen
Orest Ostapiak
Will Parker
Horacio Patrocino
Vic Peters
Rasika Rajapakshe
Ram Ramaseshan
James Robar
John Rowlands
Russell Ruo
Stephen Sawchuk
Jason Schella
Matt Schmid
John Schreiner
Jan Seuntjens
Keith Wachowicz
Brad Warkentin
David Wilkins
Milton Woo
Atiyah Yahya
Conrad Yuen

Please welcome the following new members who have joined COMP

Last Name	First Name	Institute	Membership Type
Amirabadi	Afsaneh	The Hospital for Sick Children	Full
Asiev	Krum	Jewish General Hospital	Full
Chaal	Kahena	Centre de santé et services	Full
Després	Philippe	CHUQ	Full
Enger	Shirin	Université Laval	Full
Xu	Chen	CHUQ	Full
Zeng	Ge	Peel Regional Cancer Centre	Full
Jutras	Jean-David	University of Alberta	Student
Lalonde	Michel	Carleton University	Student
Lloyd	Samantha	University of Victoria	Student
Matthews	Quinn	University of Victoria	Student
Papaconstadopoulos	Paul	McGill University	Student
Ryu	Bon	University of Western Ontario	Student
Shin	Naomi	McGill University	Student
Singh	Khushdeep	McGill University	Student
Thakur	Varun Singh	McGill University	Student
Twork	Gregory	McGill University	Student

COMP 2010 Treasurer Report

Bill Ziegler, PhD
Regina, SK

The financial report was presented at COMP's annual general meeting in Ottawa. Nephin & Winter Chartered Accountants audited the financial statements for the year of 2009. It was moved and passed that Nephin & Winter be retained to audit the 2010 statements. Due to the $7,197 surplus from 2009 (see Comparative Income Statement), the total equity at the end of 2009 was $200,560 (see Balance Sheet). The 2009 surplus was mainly caused by:

1. The Job Posting Advertising revenue was higher than expected (extra ~ $7K).

(Continued on page 116)

The band playing at the COMP 2010 Banquet in Ottawa (photo credit: Brad Warkentin)

(Continued from page 115)

2. The Expenses for the mid-year meeting were down (saved ~ $2K).
3. There was no Professional Survey in 2009 (~ $3K).
4. The Travel Award was not awarded in 2009 (~ $3K).

Even though the expenses for 2010 are up considerably, the membership fee increase this year will bring 2010 close to break even. The approved budget for 2011 predicts a deficit on the order of $10K, mostly due to the planned "Strategic Planning" scheduled for November 2011. The other major difference in the 2011 budget, compared to the 2010 budget, is the Annual Scientific Meeting (ASM). The 2011 ASM will be held in conjunction with the annual AAPM meeting. The AAPM are handling the financial administration for the meeting and providing us a share of the profit (~$20K). If there are any questions about any of the numbers, do not hesitate to send me a message (bill.ziegler@saskcancer.ca).

Canadian Organization of Medical Physicists
Balance Sheet As at 12/31/2009

ASSETS	
Total Cash	116,165.84
Investments	132,276.08
Total Receivable	14,166.07
Prepaid Expenses	11,089.66
TOTAL ASSETS	273,697.65
LIABILITIES	
TOTAL LIABILITIES	73,136.71
EQUITY	
Retained Earnings - Previous Year	193,363.11
Current Earnings	7,197.83
TOTAL EQUITY	**200,560.94**
LIABILITIES AND EQUITY	273,697.65

Canadian Organization of Medical Physicists
Comparative Income Statement

	Budget 2011	Budget 2010	Actual 2009	Actual 2008
REVENUE				
Total Advertising	39,000.00	36,000.00	42,786.91	31,086.65
Total ASM	20,000.00	149,500.00	117,335.93	147,322.46
Total Winter School	63,600.00	52,000.00		
Interest Income	2,000.00	4,500.00	4,625.55	4,433.71
Membership Dues & Processing Fees	107,000.00	107,000.00	85,745.83	84,689.17
Subscriptions	0.00	0.00	5,660.00	7,140.00
Aw ard Sponsorship Revenue	4,000.00	4,000.00	2,000.00	4,000.00
TOTAL REVENUE	235,600.00	353,000.00	258,154.22	278,671.99
EXPENSES				
Total - Committees & Executive/Board	27,900.00	17,500.00	12,411.09	14,135.18
Travel to represent COMP/CCPM	2,000.00	5,000.00	1,720.66	1,031.73
Travel for CAMPEP	5,000.00			
Total - Annual Scientific Meeting	0.00	135,300.00	110,561.22	70,644.51
Total - Winter School	63,600.00	52,000.00		
Total - Programs & Services	39,500.00	35,900.00	30,317.94	42,587.86
Total - Office & Administration	93,330.00	98,130.00	83,540.24	83,288.60
Awards & Support				
Total - Awards & Support	14,500.00	14,500.00	11,903.53	22,855.71
TOTAL EXPENSES	245,830.00	358,330.00	250,956.39	234,543.59
SURPLUS (DEFICIT)	(10,230.00)	(5,330.00)	7,197.83	44,128.40

Dr. B. Gino Fallone Receives the Sylvia Fedoruk Award at the COMP 2010 Banquet

COMP 2010 Young Investigator Award winners stand for a memorable moment with Dr. Jack Cunningham, Dr. Peter McGhee and Dr. Jean-Pierre Bissonnette

COMP Annual Scientific Meeting Feedback

Thank you to the 73 participants who took time to respond to the survey. Further congratulations go to Christine St-Pierre, of Laval University, whose name was drawn from the survey participants to win a $50 Chapters gift certificate. Once again delegates came away from our Annual Scientific Meeting with a positive impression of the events. Of those that responded, 69% rated the value for the registration fee as excellent or very good. The following changes were introduced at this year's meeting:

1. the AGM was held in the morning and breakfast was provided. 82% of the respondents indicated that they preferred the new scheduling of the AGM.

2. Two additional sessions were offered: an NSERC/CLS workshop and a professional session on workforce planning.

All 73 respondents were asked to indicate the aspects of the conference that they liked most. The top five include:

1. Scientific Sessions (24)
2. Networking Opportunities (18)
3. Specialty Sessions and Workshops (9)
4. Young Investigator Symposium (8), Banquet (8),Poster Session (8)
5. CCPM Symposium (3)

Respondents were asked what they liked least about the conference and what would improve their conference experience. Two themes emerged:

1. The length of the conference should be increased to accommodate the new sessions that have been added in the last two years and allow for more networking time between sessions.

2. The program should be expanded to include more invited speakers, panel discussions and continuing education sessions.

The following tables detail the feedback received on both the overall conference organization and the meeting program.

Feedback on the 2010 ASM Overall Organization						
	Excel-lent	**Very Good**	**Good**	**Fair**	**Poor**	**N/A**
Abstract submission proc-ess	25%	**29%**	8%	0%	0%	38%
Online registration process	**47%**	35%	7%	1%	4%	6%
Onsite registration	27%	19%	6%	0%	0%	**48%**
Conference Materials	32%	**41%**	25%	1%	0%	0%
Accommodations	18%	**22%**	19%	8%	0%	33%
Cost of Accommodations	11%	14%	21%	**21%**	6%	27%
Coffee Breaks and Lunches	34%	**29%**	25%	11%	1%	0%

Feedback on the 2010 ASM Program						
	Excellent	Very Good	Good	Fair	Poor	N/A
Ice Breaker	12%	**39%**	11%	8%	1%	29%
Public Lecture	19%	**25%**	21%	4%	4%	27%
5K Fun Run	**14%**	8%	3%	0%	0%	75%
CCPM Symposium	19%	**32%**	15%	7%	1%	26%
Scientific Sessions	19%	**63%**	17%	1%	0%	0%
Young Investigator Symposium	**41%**	40%	11%	0%	0%	8%
Bone Mineral Densitometry Session	7%	**12%**	4%	0%	0%	77%
Poster Session	26%	**49%**	18%	1%	0%	6%
Gold Medal Awards Ceremony	27%	**45%**	17%	3%	0%	8%
NSERC/CLS Workshop	**21%**	14%	7%	1%	0%	57%
Workforce Planning Session	10%	**18%**	14%	3%	0%	55%
Final Banquet	**60%**	15%	6%	3%	0%	16%
Vendor Exhibits	16%	**40%**	27%	7%	0%	10%

We would like to thank you once again for participating in the survey. We will use the information gathered as we prepare for future meetings.. If you would like to see the full results of the survey, please contact Nancy Barrett at 613-599-1948 or nancy@medphys.ca.

Lewis V. Spencer

Dan La Russa, Ph.D.
Medical Physics Resident, The Ottawa Hospital Cancer Centre

In one of my earliest memories as a graduate student, I sat down with my supervisor in his office to be introduced to my project. About thirty minutes later, notes in hand and filled with hopeful enthusiasm, I emerged with the following naive concepts about my project:

-Two clever individuals, with last names Spencer and Attix, long-ago formulated a so-called "cavity theory" that we use to relate the dose measured with a detector to the dose in the surrounding medium…or something like that.

- This theory works really well in most situations, but not quite as well in a select few others, and the goal is to find out why and if there's anything that can be done about it.

I'm not about to recount the successes and failures of my project. Suffice it to say I accumulated a mass of literature on cavity theory in the years following that initial meeting, a great deal of which make reference to a paper published by Spencer and Attix.

In 1955 Lewis Spencer and Frank Attix, working at the National Bureau of Standards (NBS)*, published a paper titled "A theory of cavity ionization" [Radiat. Res. (3), 239 – 254, 1955] which introduced refinements to earlier cavity theories by Bragg and Gray. A flurry of experiments followed putting this formalism to the test, and their work was eventually recognized as a substantial improvement.

Frank ("Herb") Attix certainly deserves his share of the credit for this work, and we hardly have to be reminded of his numerous other contributions. Yet if you search the literature on cavity theory following that 1955 publication, you'll notice that additional commentary on this topic from Spencer is rather infrequent. In endeavouring to discover why Spencer became so silent on the issue (of which he was an authority) I discovered some very interesting facts about this clever theorist, both personal and professional, that I thought would be of interest to the medical physics community given that there are only sparing mentions of him in our field.

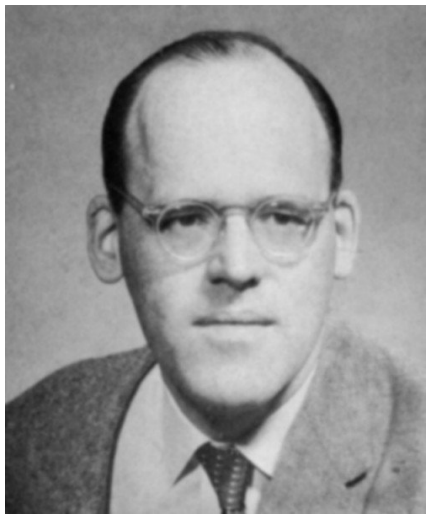
Lewis Van Clief Spencer was born in 1924 in Hillsdale, Michigan. A budding violinist in his youth, he suffered a setback at the age of 12 when he was caught under a coal train after falling from his bike, losing his right arm and leg. After recovering, Spencer learned to walk with the aid of an artificial leg, and taught himself to write with his left hand. His continued love of music was such that he also became a formidable trumpet player and, with one hand, conquered pieces by Alexander Scriabin on the piano. As if that wasn't enough, he went on to win state-wide typing competitions against people with twice as many fingers. He even became a typing instructor while a student.

Spencer's accomplishments as a student are no less impressive. He graduated second in his class in 1945 from Franklin College, which he and his siblings attended by virtue of the fact that his father was president of the school at the time. His professors felt he deserved to graduate summa cum laude, but was denied this distinction since his father did not want to appear to be favouring his own children. Three years later Spencer received his Ph.D. from Northwestern University in 1948, at the tender age of 23 (times have indeed changed).

Immediately after graduating Spencer joined the NBS in Washington. It was here that he eventually paired with Attix to produce their familiar paper mentioned above. Ugo Fano was also present during that time (from 1946 to 1966), and the collaboration that formed between him and Spencer resulted in a few publications on topics related to radiation transport (aside: Fano came to NBS after working with none other than Enrico Fermi, Emelio Segre, Wegner Heisenberg, and Salvatore Luria, all Nobel laureates). The first (that I know of) was a paper in 1951 on the application of the moment method to neutron transport in hydrogen-containing media. This work also included discussions for photons. Another paper by these two in 1954 reported a method of calculating energy spectra resulting from electrons slowing down that included the effects of energy loss straggling and production of secondary electrons. The latter work is well known to those familiar with cavity theory.

If I had to pick one year as Spencer's best, it would be 1955. In addition to publishing the paper on cavity theory with Attix and becoming assistant chief of theoretical physics section at NBS that year, Spencer developed what is perhaps the first successful theory for treating the deep penetration of electrons using the moment method.† He and Martin Berger published a second paper on the topic in 1959. Without going into detail, it can be said that this was the most complete method to-date since it accounted for both the spatial and angular aspects of diffusion, and later included fluctuations in energy loss. Several experiments proved this theory successful for energies between 10 keV and 1 MeV. Given that charged particle transport is relevant to a wide range of topics, from lithography to radiation dosimetry/protection to electron beam microscopy, and everything in between, it should come as no surprise that Spencer garnered more acclaim for this work than he did for his contribution to cavity theory.

In 1957, Spencer began teaching physics and mathematics at Ottawa University (Kansas) and continued to do so until 1969. During that time he maintained his connection with NBS, and was even acting chief of the radiation theory section from 1960-61 while on sabbatical. By then his research began shifting focus to problems of radiation shielding and the design of structures for protection against fallout gammas



Dr. Lewis V. Spencer

from nuclear detonations and the like. In fact, the calculation of gamma-ray build-up factors are based largely on Spencer's theories of photon penetration, although I have it on good authority that his work is seldom cited in contemporary articles on radiotherapy bunker design. Nonetheless, his work in this field must have made an impression if the numerous awards and honours he received are any evidence. The most notable among them, in my opinion, is the Gray medal awarded by the ICRU in memory of Louis Harold Gray. Lewis

Spencer was presented this award in 1969 as the first recipient. It was a particularly fitting choice; presenting an award named after one of the founders of cavity theory to a person who was the most responsible for improving it.

Lewis Spencer retired from the NBS in 1984 and contributed his last paper in 1993. This November will mark the 5th year since he passed away after a battle with Alzheimer's disease.

*Now the National Institute of Standards and Technology, NIST, since 1988.
†The moment method was also used by Lewis in 1950 and, as such, one typically finds reference to the Spencer-Lewis equation.

I am grateful to Mary Ellen Goree, Lew's youngest daughter, and her family for providing me with many details.

Congratulations to COMP 2010 Award Winners

Sylvia Fedoruk Prize
Dr. B. Gino Fallone

Young Investigator Award
Joel St. Aubin, Cross Cancer Institute
Mathieu Guillot, Université Laval
Chad Hunter, Ottawa Heart Institute

Best Poster Presentation
Arman Sarfehnia, McGill University
Peter McCowan, CancerCare Manitoba

Best Oral Presentation
Jason St. Hilaire, Université Laval
John McCaffrey, National Research Council

5K Run: Male
John Kildea, McGill University
Alexandre Bourque, Université Laval
Elsayed Ali, Carleton University

5K Run: Female
Jennifer Moroz, University of Alberta
Emily Heath, Ryerson University
Pencilla Lang, Robarts Research Institute

Editor's Note

Idris Elbakri, PhD, MCCPM
CancerCare Manitoba, Winnipeg, MB

It is Fall already and it feels like summer never came. Summer was busy, with the excellent COMP meeting in June, followed by AAPM in Philadelphia (I'll take Ottawa's summer rain over Phili's humidity any time).

My summer was busy because I had four summer students and just about one week of vacation (I am realizing that I am a workaholic). At our institution, we introduced a "Summer Student Symposium" where all summer interns present their work and compete for a chance to attend the Canadian Undergraduate Physics Conference (CUPC). Although these students were undergraduates, and for many this was their first research experience, I was impressed in the depth of their understanding and the scope of their work.

Working with keen young people reminds me of the importance of mentoring in our profession. I have been lucky to have great mentors, both in my academic studies and at work. These mentors took an interest in my development, offered me guidance (gently), and allowed me to work on my own pace. I would not be where I am had it not been for their support. I believe that there are favours you can only return by doing the same to others, (return the favour to your parents by being a good parent), and mentoring is one of them. Mentoring is simply a paving of the way to someone who has the motivation and drive to get on the road.

Our very own Dave Rogers received the prestigious AAPM Coolidge award for this year. His acceptance speech further highlights the importance of good mentors. We all owe debts of gratitude for the individuals who came along our paths and made it just a little easier.

I was impressed and humoured when Dave challenged his American friends at the AAPM with the following statement. After referring to his association with Harold Johns, and the latter's interaction with Tommy Douglas, Dave said:

"So I am very pleased to have even an indirect link to our greatest Canadian. I hope that someday Americans will vote to recognize the person who finally establishes universal health care here as your greatest citizen as well." Apparently there was a surprising round of applause. The text of Dave's acceptance speech is available form the AAPM.

Congratulations to Dave Rogers and a happy and productive Fall for all.

Dates to Remember

Inter*ACTIONS* Winter Issue Deadline is December 1, 2010!

RSNA Annual Meeting November 28-December 3 Chicago, IL

COMP Winter School January 30 - February 3 Mt. Tremblant, QC

(Continued from page 113)

Isabelle Gagne PhD, MCCPM
Board Secretary
Medical Physicist
BC Cancer Agency
Vancouver Island Centre

Isabelle est née à Ottawa, plus précisément à Hammond, un petit village francophone près d'Ottawa. Elle a fait ses études universitaires au College Militaire de Royal Roads – oui elle a portée l'uniforme aérienne pendant presque 6 ans – et elle a pris sa retraite de bonne heure. Isabelle then ventured to Edmonton, to study at the University of Alberta, and graduated in 2004 with a Ph.D. in Medical Physics. Edmonton weather proved to be too harsh for her brittle bones and so Isabelle found herself traveling further west to lovely Victoria, BC. She joined the group as a resident in 2004 and was lucky enough in 2006 to be hired as a permanent medical physicist. Like most medical physicists, Isabelle is involved in clinical duties, teaching and research.

She has also been engaged in professional issues through her involvement in various associations. Before joining the COMP Board as Secretary, Isabelle served as Secretary for BCAMP, BC's provincial association. Isabelle is looking forward to meeting the Board members at the fall meeting and serving all members of COMP.

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