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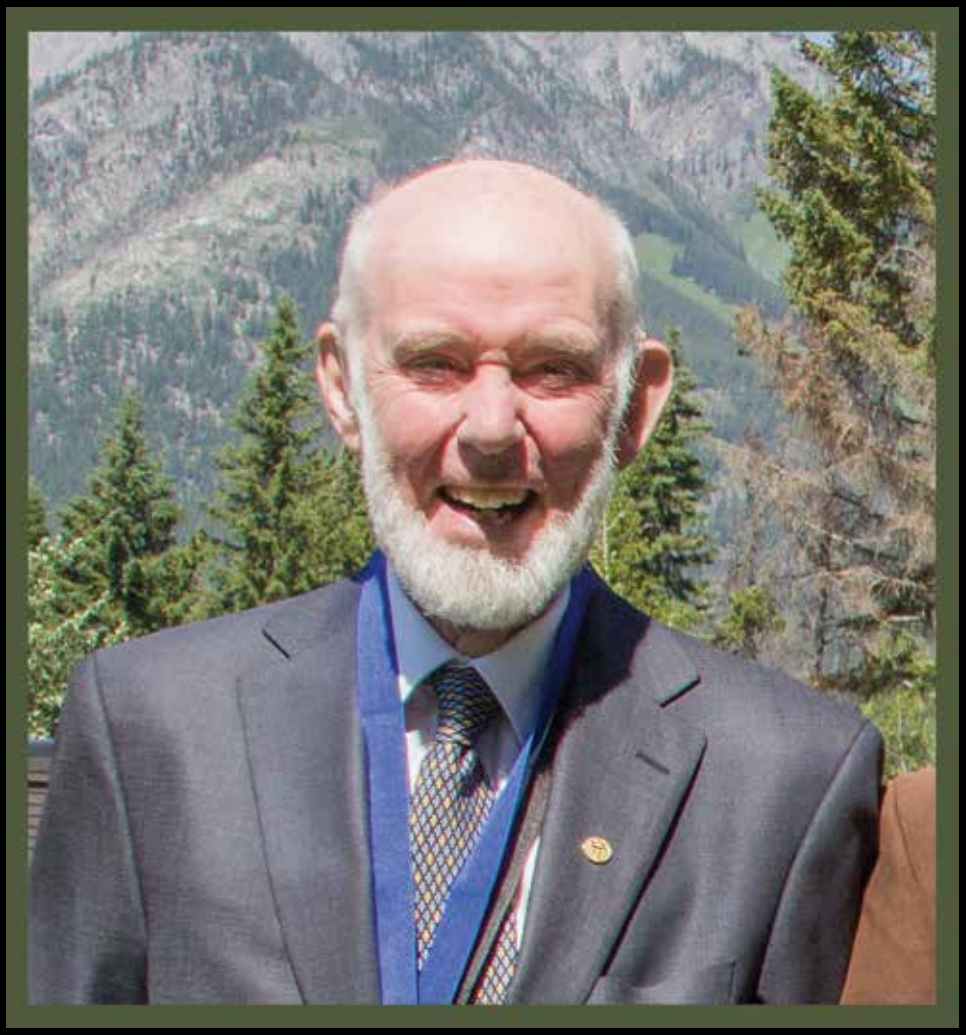

CHRIS THOMPSON

DSc, FCCPM, FCOMP

2014 COMP/OCPM GOLD MEDAL WINNER

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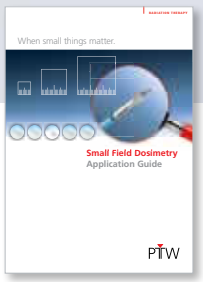

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InterACTIONS

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Message from the COMP President

This is my first message as your new President. It is both an honour and humbling to be able to serve the Canadian Medical Physics community in this capacity. I have been sitting on the COMP Board for several years, first as Councillor for Science and Education, and then as President Elect. Despite this, when Luc Beaulieu gave his last President's report at the AGM in Banff, I was still impressed by the amount of activities that COMP is engaged in and also their importance for not just COMP members, but for the broader Canadian community as well. I thought I would use this opportunity to explain to you why I am interested in serving as COMP's President, why I think service in volunteer organisations like COMP is important for all members of the community, and what are some of the upcoming challenges that COMP faces.

I became interested in professional advocacy as a young engineer just completing my professional practice license, which was issued by Professional Engineers Ontario, PEO (I spent eight years working as an engineer before switching to Medical Physicist). Upon obtaining my engineering license and starting to read PEO literature, I became interested in a debate within the Ontario Engineering community about the value of advocacy for the profession, and whether this was best left for PEO, whose function is primarily to regulate the profession, or to a different organisation whose primary responsibility was to advocate on behalf of the members of the profession. This debate was contentious, and took many years to resolve. The decision was finally made through a referendum (yes, in Ontario) showing overwhelming support for the creation of a separate organisation to advocate on behalf of Ontario Engineers. The Ontario Society of Professional Engineers (OSPE) was created in 2000, with generous financial support from PEO. The separation of regulatory and advocacy roles has not been straightforward, with some disagreement over who should be advocating for what. This culminated in a lawsuit between a former President of PEO and OSPE (no joke). Today, OSPE and PEO mutually co-exist with an improved relationship.

As a young professional, the distinction between regulating a profession and advocating for the profession was a concept that I had not given much thought to. But in following the debate and thinking about what the difference was in an organisation's acting in the public interest (which is PEO's mandate) vs. one that acts in the interests of its members, I have come to believe that the integrity of the advocate is the most important aspect of advocacy. It is always best to have an activity or idea promoted by someone who is impartial and independent, rather than by someone who has an interest, whether real or perceived.

Some years later I made the switch to Medical Physics, and was interested to find a similar progression of ideas regarding how Medical Physics is governed in Canada. As all of you know, COMP and the CCPM have different roles, with the CCPM being the older organisation whose original function was to identify competent medical physicists as well as promote the profession through conferences, education, and other activities. COMP was formed in 1989, roughly 10 years after the inception of the CCPM, through an agreement known as the "Trinity Accord," because it was agreed upon at a meeting at Trinity College, University of Toronto. Like PEO, the CCPM also provided generous financial support to COMP at its inception. Also like PEO and OSPE, the separation of regulation/competency and advocacy was not immediate and has at times been contentious, although thankfully no one in the Canadian Medical Physics community has sued anyone.

To me, this highlights the critical importance

Marco Carlone

of volunteers in advancing professional interests. I believe that all professionals have a desire, some more, some less, to improve their work life. We do this in different ways: by doing the best work we can, by trying to work effectively, and by seeking respect for the work that we do. The distinctions and issues between professional regulation/competency and advocacy often to go to the heart of what many professionals believe is important to their work and the satisfaction they get from it. It is natural that different people have different opinions and views, which is why volunteering is so important. We could, if we chose to, form a medical physics association and hire staff to make decisions and manage our affairs. We could ask them to apply best management practices and defer decisions to them. We may end up with less controversy, but I suspect we may not find it very useful. Only volunteers bring the convictions and experiences needed to guide our profession in the way the community wants. Sometimes we get it right on the first try and sometimes it takes longer. In my view, the keys to getting it mostly right the quickest way is to foster a culture of equity amongst volunteers, to value diverse views, but to strive towards consensus.

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Message from the CCPM President

The AGM that took place at the Banff Conference Centre in July marked the beginning of my sixth year on the board of the College. If I were to identify one single issue that has been most contentious during my time on the board, it would be the granting of Fellowship in the College. This issue has consistently generated spirited debate over the past five years. Of course, being on the board of the College ensures that you will hear much more about issues such as this, but contention surrounding the Fellowship program goes back much farther than my time on the board, and in fact, I have to say that this has been contentious for as long as I have been a member of the College.

Within the past year, however, what seemed to be a fairly steady background hum of discontent has become a noticeable noise level that seems to have passed a threshold that is difficult to ignore. Perhaps this is just because the board has been preoccupied with our new bylaws over the past couple of years, and other issues like this have been given a lower priority, but it does seem to me that there is now a fairly high level of concern amongst our members regarding this issue.

So, what is the issue? To begin with, there is a lack of understanding of the purpose and role of Fellowship in the College. There are a number of members that see no role for Fellowship and firmly believe that it should be abolished. In fact, a motion to do just that was presented to the membership at a previous AGM many years ago. This motion was defeated, but the debate that took place clearly showed that there is significant support for abolishing the Fellowship distinction. Of course, the end result also clearly showed that there is great support for keeping it.

Most of the recent discussion, however, has not been focussed on whether or not the Fellowship distinction should exist, but rather on what the criteria for granting it should be, and how best to assess the candidates.

Some of the direct feedback the board has received has been:

- An oral exam is not the best way to assess candidates – we should find a better way.
- The exam process is not achieving the desired results because there are many candidates who should pass but don't, and there are many candidates who pass the exam but their peers don't believe they are worthy of the distinction.
- There is too much emphasis on radiation safety.
- There is a lack of clarity and consistency in expectations.

As a result of the on-going concerns raised by members, the Board feels that a complete review of the Fellowship distinction is needed. This review will examine the objectives of the Fellowship program, the need for and the utility of CCPM Fellowship in the medical physics community, the means by which candidates are assessed, and if an exam is part of the process of granting Fellowship, the style and content of the exam. The review will involve members of the Board, other members of the College, and members of the outside medical physics community.

I announced that this review would take place at the AGM in Banff. I was expecting that this would generate a large response, and had even set aside time at the meeting for discussion, but when I asked for comments or questions, in fact, to my complete surprise, there were none! As a result, the AGM wrapped up early, and as far back as I can remember, that has never happened before.

Perhaps it was just that I caught everyone by surprise, because since the meeting, a number of people have expressed interest

Matthew G. Schmid

in the review, and I sense that this issue will generate a great deal of interest amongst our members. I certainly know of a few people who have very strong opinions about the issue.

The review will be led by two of our board members, Clément Arsenault and Wendy Smith. Every member of the College will have an opportunity to make their opinion known to the review panel, and I strongly encourage everyone to participate. If you have an opinion you would like to express, please send an email to FellowshipReview@ccpm.ca. We are interested in your opinions about the need for Fellowship, what the criteria for granting it should be, and how candidates should be assessed.

Details of the work of the review panel will be communicated to our members as the process unfolds. Nothing is going to happen overnight. This will be a lengthy process. I assure you that no action that would result in substantial changes to any aspect of the Fellowship program will take place without full disclosure to our members.

Finally, in closing, I want to state the obvious up front – past experience has shown that it won't be possible to please everyone on this issue.

Executive Director Report

Although the season of Fall is now upon us, it is a balmy 28 degrees in Ottawa, which makes it easier to reflect on all of the good work that has been done within COMP over the summer.

It was certainly a pleasure to work with the planning team to deliver a most successful ASM in Banff. Thank you to Derek Brown, Michael Balderson, Stephen Breen, Clair Footit, Michelle Hilts, and Clément Arsenault for you efforts to deliver an excellent scientific program. Some new processes were implemented for the 2014 meeting which worked well and will be built on for future meetings. I would also like to congratulate Wendy Smith and the Local Arrangements Committee (LAC) of Leigh Conroy, Ferenc Jacso, Brandon Koger, Joseph Madamesila, Philip McGeachy, Stefano Peca, Sarah Quirk, Parisa Sadeghi, and Elizabeth Watt. The LAC added the flavour and hospitality to the meeting and their organized and professional approach was very much appreciated by delegates and exhibitors alike – thank you all! We are very fortunate to have such beautiful destinations like Banff and the spectacular weather was an added bonus. We are looking for an LAC for the 2016 ASM – let us know if your centre is interested in showcasing your part of Canada!

Participation in our key programs in 2014 (the ASM and Winter School) was quite high as a proportion of total membership. This is something that is a challenge for many associations as professional associations with thousands of members may only have two or three hundred at their annual meeting. Organizers of COMP's upcoming programs are very aware of this and are dedicated to working to make sure that programs are relevant and provide the value that our members are looking for so that they continue to choose to spend their very precious professional allowances and grant money on travel to meetings.

Under the very capable leadership of John Kildea, plans are well underway for the 2015 Winter School that will be taking place from February 1st to 5th at the Delta Okanogan in Kelowna, BC. The planning committee is comprised of physicists, radiation oncologists, and therapists, and the program is being built on past successes but will also include new content, expanded interactive sessions, and both new and returning faculty. Mark your calendars for this excellent continuing education opportunity.

The 2015 World Congress will be taking place from June 7th – 12th in Toronto. The World Congress is an important opportunity to showcase the contribution and success of the Canadian medical physics community. If you visit the World Congress site (www.wc2015.org) you will find more information about this significant event and you will see the calibre of those directly involved in the planning of this event. Please mark your calendars and spread the word!

International Medical Physics Day will be taking place on November 7th. This day was launched by the IOMP in 2013 and COMP celebrated it by hosting a video contest. We are hopeful that the momentum around this day will continue to grow and that through our efforts to promote it, the awareness of the contribution of medical physicists will increase. Watch for more details about how you can get involved.

At this year's annual general meeting (AGM), we had the opportunity to celebrate the 2014 recipients of the Fellow of COMP Award: Joanne Cygler, David Jaffray, Ting Lee, Rock Mackie, John Rowlands, and Christopher Thompson. We also publicly thanked outgoing Board members Peter McGhee, who served on the Board for six years in the roles of President-Elect, President, and Past-President, and Jean-Pierre Bissonnette who stepped up to fill

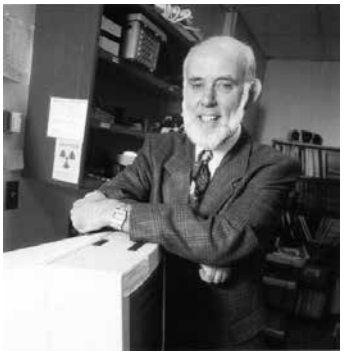
Ms Nancy Barrett

an interim Board position and serve as Chair of QARSAC. We are grateful for the contribution of both Peter and Jean-Pierre. I would also like to welcome our new Board members: Michelle Hilts, Vice-President, Kyle Malkoske, and Daniel Rickey. Both Kyle and Daniel will be on the Board as Directors-at-Large and will also be serving as Chairs of QARSAC and the Imaging Committee respectively. There will be openings on the Board for two Directors-at-Large as of the 2015 ASM. As part of their role, the new Directors-at-Large will be asked to serve as Chair of either the Professional Affairs Committee or the Communications Committee. More information on the nomination process is available in this issue.

None of what we have accomplished could be done without our volunteers, both on the Board and on the various committees, and we are very fortunate as the percentage of COMP members who engage as volunteers is quite high. I would also like to thank my colleague Gisele Kite for her support and work on behalf of COMP and CCPM. As always, please feel free to contact us at any time with your feedback and suggestions.

Christopher Thompson, DSc, FCCPM, FCOMP COMP Gold Medal Winner 2014

As delivered by Terry Peters, PhD, FCCPM, FAAPM
Scientist, Robarts Research Institute



It is both a great personal and professional pleasure to speak to you about Chris Thompson, this year's COMP Gold medal recipient.

Chris was born in 1942, in Dunedin New Zealand, which also happens to be my home town.

He studied at the University of Otago, where he received his B.Sc. (Hons) in 1964, his M.Sc. in 1965 and D.Sc. in Physics, 1987. This might look like a rather long time to study for a Doctorate, but in fact it was awarded to him over 20 years after his Masters, in recognition of the huge contributions he had made in the intervening years. Shortly after he obtained his Masters, he was off to Canada, getting a job as a Physicist with the Atomic Energy of Canada Ltd (AECL) in Ottawa, where he developed methods for aerial surveying for radioactive minerals. During this time he spent a great deal of time hanging out of a helicopter with Geiger counter in hand!

It wasn't long after he had been in Ottawa however, that he met a young lady from Montreal. He packed his bags, headed east and answered an advertisement for a Computing Engineer at the Montreal Neurological Institute. He was duly interviewed by a panel of surgeons headed by Dr. William Feindel, who later became Director of the MNI, and Chris was handed the task of using a computer to plan surgery for motor disorders.

It is interesting to note that through Dr. Feindel, Chris had a direct connection with Harold Johns and Sylvia Fedoruk, both of whom Feindel had worked with in Saskatoon developing a nuclear brain scanner. All three of these individuals are Laureates of the Canadian Medical Hall of Fame!

From 1970-1980 Chris was a Computer Engineer, from 1980-2007, Director of the Research Computing Laboratory, and from 1994-2007 also a Professor of Neurology & Neurosurgery, Biomedical Engineering, and a member of the Medical Physics Unit at McGill. Since 2007, he has been a Post-retirement Professor.

During his time at the MNI, he supervised 24 Master's and Ph.D. students, published over 140 peer-reviewed publications and was awarded 10 patents related to PET imaging.

While Chris is probably best known for his contributions to PET, one of his major early contributions was in the field of computer-assisted stereotactic surgery, with his first paper in 1972, "A computer program to aid the neurosurgeon to locate probes used during stereotaxic surgery on deep cerebral structures" with Dr. Gilles Bertrand, which was a landmark publication, describing the first use of computers to plan a neurosurgical procedure. Even more remarkable was the fact that the computing hardware consisted of a 8K PDP 12, and a storage oscilloscope monitor that could only display bright green dots!

At the same time that he was working on this project, he began also collaborating with Dr. Feindel and Dr. Lucas Yamamoto on PET, publishing his first paper in 1975, "Positron emission tomography: reconstruction of images from a multiple coincidence detector ring", in the Proceedings of the American Optical Society Meeting on Image Processing for 2D and 3D Reconstruction from Projections, held at Stanford University in California.

It was at this meeting at Stanford where I first met Chris – having gravitated to the only other individual in the room without a strange accent! Here we discovered our common roots and scientific interest, with the net result that I was offered the chance to come to Montreal for two years to work with him. Two years turned into 36 and counting!

Since then, there have been many milestones in Chris' scientific journey.

Between 1975 and 1978 he developed the Positomes 1 and 2 Pet Scanners, and in 1986, the Positome IIIp, which incorporated engineering improvements to enable dynamic data acquisition, and in 1987 he developed a Monte Carlo simulation with PETSIM as an aid to optimizing PET design.

In 1989, he built a system capable of simultaneous transmission and emission imaging, as a means of solving the ever present attenuation-correction problem, and in 1991 he developed depth-of-interaction capable detectors, that dramatically increased the resolution of PET detectors.

continued on page 132

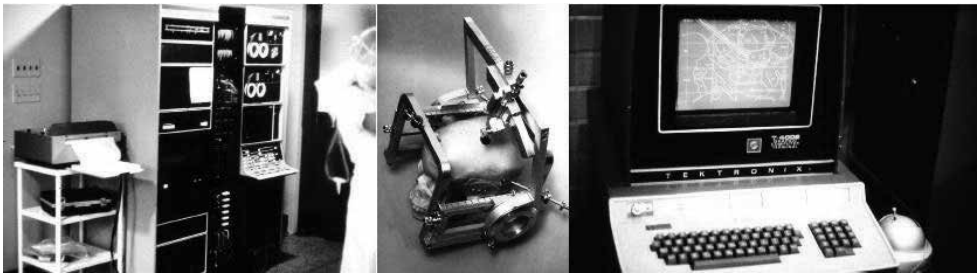
COMP Gold Medal Acceptance Speech

Chris Thompson DSc, FCCPM, FCOMP

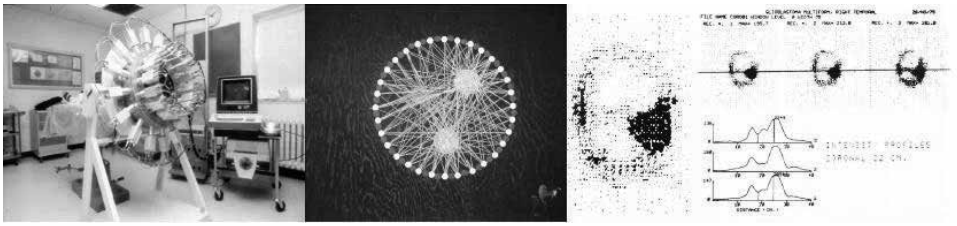
When I was told that I was to receive the COMP gold medal today, I felt that Gold medals were just reserved for people who have done something very special, or have made a major contribution to the field, and that is not how I think of myself at all! When reflecting on this I realized that over the years, I have always been more interested in making things rather than using them. In school, two of my friends had indulgent parents who bought them fancy model train sets. I wanted one too, and I saved my pocket money to buy a very basic one and then added to it by buying pieces of rail and shaping it into a complex layout with a large number remote controlled switches which could be programmed with something which looked a bit like a Fisher Price musical box.

In a way, that same situation has been repeated several times during my career. I never seemed to have as much money or grants as others, and ended up making something, or writing a more efficient program, rather than writing a grant application to buy a faster computer. My career spanned a time where you could actually take the covers off an instrument, or see parts of a computer and tinker with them to make it work better, if you understood how it worked, of course!! I recall that I once wire-wrapped a new circuit board in the computer of our first PET scanner to implement a new instruction which halved the reconstruction time. That sort of thing is no longer possible.

I worked for 37 years at the Montreal Neurological Institute ("The Neuro"). I had no previous experience of working in a health care environment or university, but got a job there when they installed their "first laboratory computer" in 1970. That makes me very very old! This old machine, a PDP-12 with 12 kbytes of RAM and a 500 kHz clock, was used for many projects since it was the "only computer" at the Neuro. It was, I believe, the first computer to be used during brain surgery to help direct the surgeon during sterotaxic surgery for Parkinson's Disease. Using a computer in an operating room in those days was indeed a great novelty! One feature which was very valuable was a Tektronix storage-screen terminal which could be used like a X-Y plotter to paint semi-permanent images on the screen. It was quite advanced for its time.



The PDP-12 computer parked outside the operating room, stereotaxic frame with thalamic recording probe on a skull as it would be positioned on a real patient, and the Tektronix storage-screen computer terminal used to show the probe tip location on a digitized brain atlas, scaled to the correct size, during surgery for Parkinson's disease. (1971)



The "Brookhaven headshrinker" PET scanner after installation on a tilting gantry in the Neuro in 1975 and renamed "Positome" to sound more patient friendly. A string diagram which I used to illustrate the reconstruction technique at my first PET conference, and Ga-68 EDTA brain tumour image made with this 32 detector PET scanner

In 1975 we acquired an early PET scanner from the Brookhaven National Labs, where it had been made but had never worked successfully. However, my colleague, Dr. Yamamoto thought that if we bought it to Montreal it would somehow miraculously work!

While trying to get it working, I realized that if you arranged the data from all the chords connecting any pair of detectors into parallel sets, each with a different orientation, you could use the same reconstruction program to form PET images as was used for CT scans. This actually worked, and the same PDP-12 computer could reconstruct an image on a 32x32 matrix in less than a minute, whereas the original algorithm took hours on an IBM 360 and did not produce satisfactory images!

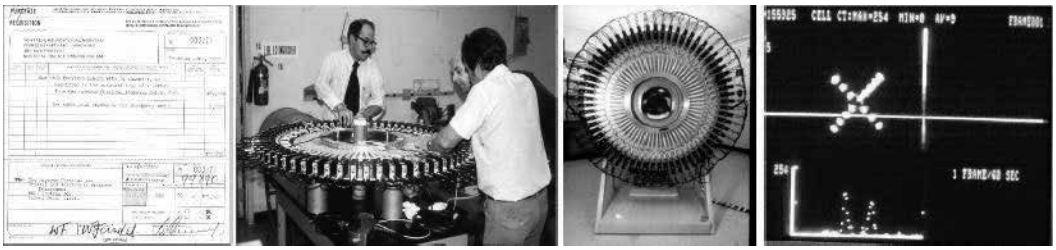
For many years, Bill Feindel was director of the Montreal Neurological Institute. Bill, who died this year at 93, was an amazing person to have as head of an institute. As a clever, practicing neurosurgeon, he saw the advantages of all the new imaging modalities which were developed during his time in the context of his surgical practice, and it was through his initiatives that the Montreal Neuro had the first CT, PET and MRI

Then he asked me for a cost estimate by the following day, and *"Oh, by the way I'd like it to be working by June next year"* when he was planning one of the first PET conferences! That was in mid December, so we had six months to design and build the scanner and write some software to acquire and reconstruct images!

One of the most interesting studies on this scanner was imaging the distribution of C-11 labelled chemotherapy agents. Here you see three images, one showing the tumour outline with Ga-68 EDTA, and two chemotherapy agents used for treating brain tumours. Clearly one is confined to the fast growing region of the tumour, and another is distributed throughout the brain.

Of course great strides have been made in PET since these early days especially when combined with CT and more recently with MRI.

Another project which was great fun, was the building of the

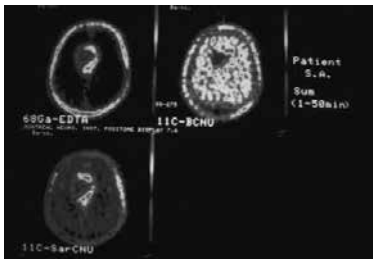


Purchase order for detectors: (December 1977), final assembly, installation and first phantom images: (May 1978)

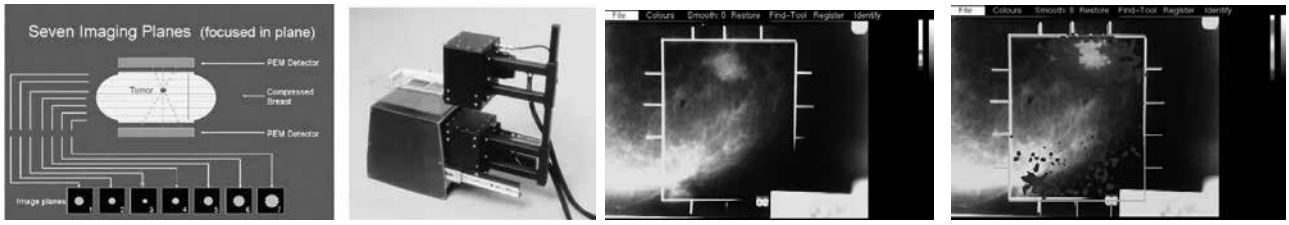
scanners in Canada. He really brought out the best in people, and sometimes forced us to think outside the box!

Most of my working career was involved in PET imaging. After doing some experiments in 1977 with the late Ernst Meyer to evaluate some potentially better detectors for PET, I showed the results to Bill. He said something like, *"well this looks pretty good why don't you build a PET scanner using these detectors"*. Well you didn't argue with Bill, especially when he has a Samurai sword in his hand. So I had to say that I thought I could, even though I'd never built a PET scanner before. But then again, not many people had, as there were probably less than ten in the world then.

first positron emission mammography (PEM) scanner, a small PET scanner which fitted in a conventional mammography unit, to detect the increased metabolism associated with breast cancer tumours. Many of my students worked very hard on this



Distribution of two chemotherapy agents shown for the first time with PET in 1988 to illustrate that one concentrates in the active tumour wall.

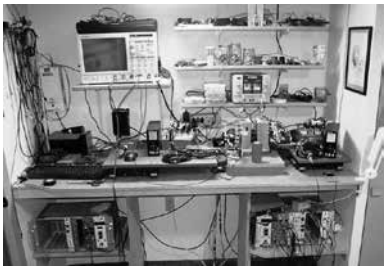


Left: Concept of focal plane reconstruction of PEM image, Centre: The two PEM detectors on mammogram magnification table in retracted to make a conventional mammogram, Right: mammogram and wire scaling and coregistration tool, and overlaid with PEM image showing FDG uptake in tumour.

project, and it was very successful in its time. Our summary of a clinical trial done at the Royal Victoria Hospital's Cedars Breast Clinic won the "best clinical paper of the year" in the Journal of Nuclear Medicine in 2000. The concept was commercialized by Naviscan Inc. and the commercial version shows much more refined image quality.

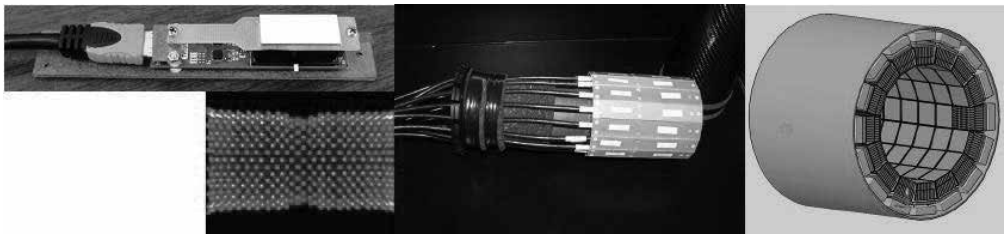
In 2006, I attended the *World Congress on Medical Physics* in Seoul. On the first day, I met Jack Cunningham, who was there to receive one of his many awards. I was fascinated by his convention badge which read *"Jack Cunningham, HOME CANADA"*. When I asked him about it he told me, "Well I'm retired so I put *'Home'* as my place of work!" That got me thinking, and I decided if it was good for him, then perhaps I should retire when I reached 65 the following year, rather than waiting until I was either too old or too ill to enjoy life after work! Nobody wanted or had the slightest idea what to do with all the equipment I had accumulated in my lab. So I took most of it home!

I now have a fully functional PET detector development lab in my basement. I'm half way through a successful five year renewal of an NSERC Discovery Grant. I even have a license from the CNSC to have small solid Na-22 sources for my experiments, and to incorporate into timing alignment devices for commercial PET scanners. So now I can go hiking or skiing with a good group of people, enjoy more time with my family, and still do some useful work on rainy days!



I have been very fortunate in having some great students working with me over the years. I was not all that successful in getting a lot of grants, but we managed to scape by with some very old equipment. I somehow always found enough money to take students to conferences where they could meet others and make precious contacts. I feel that this allowed them see how their projects fitted into the big picture, and meet the people whose work they had read and studied. I recall one incident after I introduced Kavita Murthy (now with the CNSC) to Steve Derenzo, one of the pioneers of PET. She later said to me: *"That was Steve Derenzo, but he is no taller than I am!"*

I have sat on several review panels for the awarding of grants, and when discussing what might be cut out of a budget, conference travel seemed to be the first thing to cut. To me that is a big mistake, conference travel for students is an excellent investment both as an incentive to showcase their own work, and as meeting ground. Many of my own decisions on where my research is going next have been made in the plane returning from the intellectual stimulation of a busy conference.



Components for the PET insert for a 7 T MRI. Top left: detector module. Lower left: detector response image from 409 crystals. Centre: ring of 16 PET detectors. Right: conceptual arrangement of future whole body PET insert.

Since retiring, have had a very successful collaboration with good people in Winnipeg and Vancouver which has resulted in the development of the small animal PET scanner which fits inside a 7 Tesla MRI. It will allow simultaneous PET and MRI studies on rats and mice. I did a lot of the detector design and testing in my basement lab, and with some funds which became available last year, Andrew Goertzen's team in Winnipeg assembled the first prototype in early July, and testing is now underway.

The detectors in this scanner have 409 individual crystals in two offset layers. Each detector connects to the data acquisition computer using standard HDMI cables which, by some miracle, are non-magnetic. Experiments done in my lab and simulations done at TRIUMF predict we should get about 1 mm isotropic PET image resolution in a rat brain with this device.

I am very grateful to NSERC for continuing to support my work and travel to conferences through their Discovery Grant Program. Without that support I would no longer be able to contribute new ideas and participate in lively discussions at conferences like this one and the annual IEEE Medical Imaging Conference.

I am very lucky to have a great family, and a very caring and supporting wife, Nicole, who often helped me though times when grant deadlines were looming, and the disappointments when grant applications were not successful, and enjoyed the elation when projects were successful!

Finally, I want to thank, once again, those who nominated me, and wrote letters of support for this award, and to the members of COMP for the events of this day.

COMP OCPM
Canadian Organization of Medical Physicists
Organisation canadienne des physiciens médicaux

GOLD MEDAL AWARD
CALL FOR NOMINATIONS

The COMP Gold Medal will be awarded to a member of COMP (or retired former member) who has made an outstanding contribution to the field of medical physics in Canada. An outstanding contribution is defined as one or more of the following:

1. A body of work which has added to the knowledge base of medical physics in such a way as to fundamentally alter the practice of medical physics.
2. Leadership positions in medical physics organizations which have led to improvements in the status and public image of medical physicists in Canada.
3. Significant influence on the professional development of the careers of medical physicists in Canada through educational activities or mentorship.

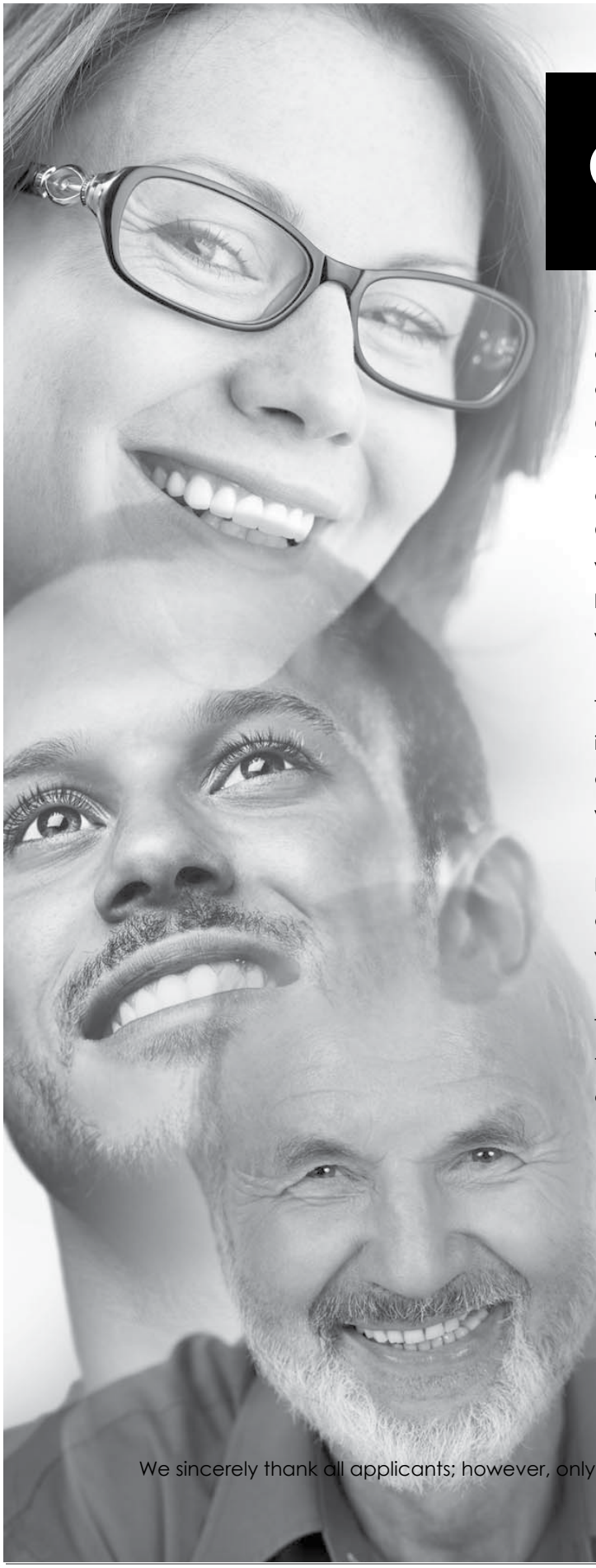
The Gold Medal is the highest award given by the Canadian Organization of Medical Physicists, and will be given to currently active or retired individuals to recognize an outstanding career as a medical physicist who has worked mainly in Canada. It will be awarded as appropriate candidates are selected, but it will not generally be given more than once per year.

Nominations for the 2015 medal are hereby solicited. Nominations are due by **January 9th, 2015** and must be made by a full member of COMP. Nominations must include:

1. The nominator's letter summarizing the contributions of the candidate in one or more of the areas listed above.
2. The candidate's CV.
3. The candidate's publication list (excluding abstracts) which highlights the candidates most significant 10 papers.
4. Additional 1 to 2 page letters supporting the nomination from three or more members of COMP.

Please forward nominations electronically to Nancy Barrett at the COMP office (preferably in pdf format, nancy@medphys.ca).

Candidates selected for the medal will be invited to attend the COMP Annual Scientific Meeting where the award will be presented by the COMP President. Travel expenses will be paid for the medal winner. The medal winner may be asked to give a 30 minute scientific presentation at the COMP meeting in addition to a short acceptance speech when the medal is presented.



Immediate Opening

Clinical Director

Thorpe Recovery Centre

The Thorpe Recovery Centre has an immediate opening for a Clinical Director to lead the organization, development/expansion and management of the Clinical Services including programming, personnel, therapy modalities, productivity and quality of client care. The Clinical Director is also responsible for Client Care Services within the organization in accordance with our strategic objectives and priorities and for leading initiatives to raise awareness of our program within the community.

The ideal candidate will have a strong background, ideally in a clinical setting that deals with addiction and mental health. Experience with a 12 Step program would be an asset.

For additional information or to review a detailed job description, please visit our website at www.thorperecoverycentre.org

This position will remain open until a suitable candidate is found. Interested applicants may send their resume and cover letter to:

Human Resources, The Thorpe Recovery Centre
P.O. Box 291, Blackfoot AB T0B 0L0
Email: hr@thorperecoverycentre.org
www.thorperecoverycentre.org

Thorpe
RECOVERY CENTRE

We sincerely thank all applicants; however, only those selected for an interview will be contacted.

Guy Charron, 1962-2014

Renée Larouche

Physicienne médicale, Service de physique radio-oncologique
Direction des services multidisciplinaires - Radio-oncologie
Hôpital Notre-Dame, Montréal, Quebec

It is with great regret that we share with you the news of the accidental passing of Guy Charron, physicist at the Centre hospitalier de l'Université de Montréal (CHUM), on July 28th 2014. Guy joined CHUM as a clinical medical physicist in 2007. Among his achievements at CHUM are the clinical implementation of a deep inspiration breath-hold treatment technique and the commissioning of CHUM's new orthovoltage unit. In the clinic, he focused on 4D planning/treatments, peer-review QA of breast cases, and the imaging aspects of simulation. Guy was an important contributor to clinical research projects involving the CHUM's dual-source CT-simulator. He helped students in the Université de Montréal medical physics program as well as visiting student from engineering and medicine.

When Guy was young, he worked as an orderly at Hôtel-Dieu hospital, a hospital that would later be part of CHUM. Guy's initial career was as a research associate in an ultrasound laboratory at École polytechnique de Montréal. He then chose to pursue medical physics. Guy was curious about many subjects and this explains his diverse skill set in the clinic. He often attended the AAPM annual scientific meeting.

Outside of medical physics, he shared with me his interests in music and art. During the AAPM's annual meeting in Philadelphia, he introduced me to jazz and we visited the Barnes Exhibit. When in Anaheim, he rented a car and brought a group of physicists to visit LACMA. He was also heavily involved in politics with the Socialist Equality Party. The rights of workers was very important to him. His sudden passing impacts us all at CHUM. We have lost an esteemed colleague, and a person with many qualities.

Good bye, Guy

Renée

C'est avec beaucoup de regret que nous vous informons du décès accidentel de Guy Charron, physicien au Centre hospitalier du l'Université de Montréal (CHUM), le 28 juillet 2014. Guy s'est joint au CHUM en tant que physicien médical clinique en 2007. Au nombre de ses réalisations au CHUM on compte l'implémentation clinique d'une technique de traitement en inspiration profonde et la mise en service d'une nouvelle unité d'orthovoltage. Il était très impliqué dans la routine clinique, et plus précisément par son soutien en planification et traitement en mode 4D, l'assurance qualité par pair des cas de sein et les aspects de l'imagerie qui touche à la simulation. Il contribuait aux projets cliniques centrés sur un CT de simulation double-source. Il aidait les étudiants du programme de physique médicale de l'Université de Montréal, des programmes de génie et de médecine.

Lorsque Guy était jeune, il travailla comme préposé à l'hôpital Hôtel-Dieu, un des hôpitaux qui formera le CHUM. La première carrière de Guy a été en tant qu'associé de recherche dans un laboratoire spécialisé en ultrason à l'École polytechnique de Montréal. Il a ensuite choisi de poursuivre une carrière en physique médicale. Guy était une personne très curieuse et ceci peut expliquer ses habiletés diverses dans la clinique. Il aimait assister au congrès annuel de l'AAPM.

À part de la physique médicale, Guy partagea avec moi ses intérêts pour la musique et l'art. Lors de la réunion annuelle de l'AAPM à Philadelphie, il m'a fait connaître le Jazz et nous avons visité l'exposition Barnes. Lors d'un voyage à Anaheim, il avait loué une auto et emmené un groupe de physiciens visiter le musée LACMA. Guy était également très impliqué en politique auprès du Parti de l'égalité socialiste. Les droits des travailleurs lui tenaient à coeur. Son décès soudain nous chagrine tous au CHUM. Nous avons perdu un bon collègue, mais aussi une personne avec plusieurs qualités.

Au revoir, Guy

COMP OCPM
Canadian Organization of Medical Physicists
Organisation canadienne des physiciens médicaux

FELLOW OF COMP AWARD

NOMINATION PROCESS

Nominations are being accepted for the Fellow of COMP Award. This honour recognizes an active member who has made a significant contribution to the field of medical physics and to COMP. This contribution is to be in *one or more* of the following:

- Service to COMP.
- A demonstrated body of work showing an outstanding contribution to research and development in the medical physics profession.
- A demonstrated body of work showing an outstanding contribution to professional practice.
- Through educational activities or mentorship, particularly regarding the education and training of medical physicists, medical residents, and allied health personnel.

OTHER CRITERIA THAT MUST BE MET:

- Nominees must have a minimum of 10 years experience in the field of Medical Physics.
- Nominees must have a minimum of five years as a member of COMP and be a full member in good standing.
- The nomination must be made by two COMP members who have previously been awarded the FCOMP distinction.

PROCESS FOR NOMINATION AND AWARDING OF THE HONOUR:

- A letter of support for the candidate by each of the nominating members must be submitted to the Awards Committee.
- Should the Awards Committee deem the candidate to be eligible, he/she will be asked to complete an application and submit a *curriculum vitae* prior to a final recommendation to the COMP Board.
- Nominations may be submitted at any time.
- Nominees who are eligible and who submit the completed application by **March 27th, 2015** will be informed prior to the AGM of the outcome of the application and successful applicants will be announced at the AGM.

CNSC Feedback Forum

Recent Sealed Source Loss Incidents – Contributing Factors and Loss Prevention

Jeff Sandeman

Senior Project Officer,
Accelerators and Class II Facilities Division, CNSC

By now, many in the Medical Physics community will have heard of two recent prominent incidents involving the loss of sealed sources at major Canadian hospitals. This article will provide a brief summary of those incidents, including the CNSC regulatory response. The key factors which contributed to these events will be identified, along with recommendations on how you can prevent this type of event from occurring at your own institutions.

Summary of Events

The first event was reported in May 2014 and actually involved three separate source loss incidents at the same hospital. In total, 25 radioactive sources were lost. The second incident was reported in April of 2014. Two sources, containing a total of approximately 3 GBq of Cs-137, were discovered in a machine shop at a cancer treatment center.

These events had a number of remarkable similarities. In particular:

- Both involved the loss of historic, unused sources.
- Normally adequate access control measures, such as locked doors and radiation warning signs, failed to prevent unauthorized removal of sources from their respective storage locations.
- Facility staff clearly did not have adequate understanding of what was contained in the source storage rooms, or of the prohibition against removing materials from these rooms.
- The losses were not detected until many months after the actual removal of the sources from their storage locations, and were only incidentally discovered as a consequence of other activities.
- Regular physical inventory checks were either not performed properly, or were not done with sufficient frequency to detect the losses in a timely manner.

Regulatory Response

When a licensee is found to be in non-compliance with the Canadian Nuclear Safety Act, the Regulations made under that Act, or a condition of a licence issued by the CNSC, there are many compliance and enforcement measures available which can be used to bring the licensee back into compliance, and to deter further non-compliances. For certain types of enforcement actions, such as Orders, all of the information related to the non-compliance and the regulatory action is published on the CNSC website. ***The details related to these two lost source incidents can be found at:*** http://www.nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-action/regulatory-action-2014.cfm.

In each of these cases, the licensee was required to take extensive corrective actions to prevent recurrence of such an event. These included:

- Conducting a physical inventory verification of all sealed sources.
- Contacting all persons involved to determine if they have any information regarding the event.
- Submitting written procedures relating to access control for source storage areas, including provisions requiring that the RSO authorize any access to those areas.
- Conducting a physical search of the entire site to ensure that all nuclear substances are properly stored.
- Identifying any nuclear substances that are no longer required and ensuring that these are stored and/or disposed of appropriately.
- Retraining ALL staff to ensure that every person has a level of awareness and knowledge of CNSC regulatory requirements commensurate with their duties at the facility.

Each licensee was required to report on these actions to the CSNC. Furthermore, these types of events are reported to the Commission during public Meetings. Both licensees appeared before the Commission to address these incidents during the Meeting of August 21, 2014, and both incidents have been addressed satisfactorily. These proceedings are webcast live, and archived webcasts are available for a limited time at:

http://www.nuclearsafety.gc.ca/eng/the-commission/webcasts/archived/index.cfm. Complete transcripts of the proceedings of these meetings are also available on-line at http://www.nuclearsafety.gc.ca/eng/the-commission/meetings/index.cfm.

Lessons Learned

Unused Sources

Many institutions have a bit of a pack rat mentality when it comes to old sources. After all, they might be of use at some point, right? And it costs to have them disposed of too, so why not store them?

CNSC staff frequently see facilities with hundreds or even thousands of old sources tucked away in lead pots within cupboards in source storage rooms. Often, they may have decayed to less than an exemption quantity of activity, and could be disposed of as normal, non-radioactive waste, but the licensee simply doesn't get around to it. But the bottom line is, *if it's on your inventory your accountable for it.* In fact, if it's not on your inventory but you still have it (which appears to have been the case in the second incident) *then you're still accountable for it.* The more things you have tucked away, the more likely it is that something will go astray at some point, or get dropped off an inventory, or end up somewhere you really do not want it to be. So *get rid of sources you aren't using.*

If you think that is too expensive, consider what it cost these two facilities in time and effort to investigate the loss of their sources, report and respond to the CNSC, overhaul their procedures, and retrain EVERY staff member in basic radiation safety awareness. Inventory verification is also a lot faster and easier if there are fewer sources to manage, which can save time and reduce staff doses.

Physical Control Measures

The normal control measures for low risk sources are the ones that were already in place at these two institutions. Locked rooms, with a limited number of keys issued to authorized personnel and warning signs and labels on the doors, storage cabinets and source containers. So what went wrong?

Well, if you have a room that is essentially "dead storage" for unused sources, then chances are it's not visited very regularly, which increases the possibility that an unauthorized access will go un-noticed. So *check your storage rooms regularly.* One way to ensure this happens is perform regular physical inventory checks, which is discussed in more detail a bit later on.

If the storage room has been around for decades, chances are there are a lot more keys or magnetic access cards around than you might think. Find out who has access and *consider taking back keys/ magnetic cards or otherwise revoking access rights from anyone that no longer needs it.* Also, your security and possibly maintenance departments will inevitably have a master key, and if they don't really understand the importance of the radiation warning signs you've posted, then there is a good chance they'll ignore it or assume that someone else has already authorized someone to have access. So *make sure they understand the rules as part of your radiation safety training, and make sure they hear that message regularly.*

There are also simple, inexpensive ways to enhance security, which can make it a lot easier to monitor access to your sealed sources. For example, use tamper proof stickers on safes and at entrances of rooms which are not frequently visited. If access is controlled by magnetic card, your security department will have an access log that you can periodically review. In short, *don't get complacent about your security measures.* Recently, the CNSC published REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources (http://www.nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/published/html/regdoc2-12-3/index.cfm). Security requirements for category 4 and 5 sources, such as those involved in the recent incidents, are detailed in that document and these will eventually be mandatory for all licensees. *Every licensee should review this document to ensure that their security provisions meet expectations.*

Training

As mentioned in the previous section, all the security measures and access control procedures in the world won't help you if your staff don't know about them or understand them. Most diagnostic x-ray rooms have a trefoil posted, but does that mean cleaning staff, or maintenance, or security should not go in after hours? Does it mean there are potentially hazardous substances in those rooms? No, like an accelerator vault, it's just an indicator of potentially high radiation dose rates during operation of the equipment. That's very different from warning someone that there are actual radioactive sources stored in a room, but does everyone at your facility understand this? If they can move a storage cabinet out of an x-ray room without consequence, why can they not do the same thing for your sealed source storage room?

Every person working in your facility should at least understand what a radiation warning sign means. If security and maintenance have master keys to your source storage area, *they absolutely MUST know not to enter without authorization from the RSO.* Staff in these types of departments may change regularly, and *this type of information has to be part of the initial training for every new person.*

For those having routine access, they need to know what's there now. Training given years ago to someone who needs access once or twice a year does not necessarily ensure that they are aware of what's in storage now, or any special rules they should follow when accessing the storage area. *Your training program should include consideration of any special information you need to provide them, and ensure that any changes are relayed and understood in a timely manner.*

Inventory Records and Verifications

Every licensee is required to maintain an inventory of all sealed sources in their possession. In accordance with section 36 of the Nuclear Substance and Radiation Device Regulations, this inventory must include the name, quantity form and location of the nuclear substance and the model and serial number (or other identifier) of the sealed source.

continued on page 121

ASM Photo Highlights

Breaking some ice!

Some learning going on at the poster sessions.

Student night out.

Fun Run! And they are off!

More learning at the poster sessions.

Making sure the "fun" stays in the Fun Run.

Chris Thompson receiving his COMP Gold Medal from former COMP president Luc Beaulieu.

COMP Gold Medal winners past and present.

Local arrangements committee. Thanks for all your hard work!

Beautiful Banff.

That's some good beef!

The requisite "dancing physicist" photo.

COMP Conference Performance July 2014 – Final Words with attributions

Musical performances as performed by esteemed Physicists at the ASM 2014:

I'M A PHYSICIST

Melody - Monty Python's "Lumberjack Song"

I'm a Physicist and I'm All right
I sleep all day and I work all Night
I'm a Physicist and I'm All right
I sleep all day and I work all night

I check mA and kVp, and blow up circuitry
I like to write equations… with X and Y and… Zee
Oh, I'm a Physicist and I'm All right
I sleep all day and I work all night

I measure Dose in centiGray, with SI units - right?
I've lectured all about x-rays, it makes a lot of fright
Oh, I'm a Physicist and I'm All right
I sleep all day and I work all night X2

I check the dose in CT, and angiography
I wear my labcoat smartly, in my laboratory
Oh, I'm a Physicist and I'm All right
I sleep all day and I work all night X2

With LDR and HDR, now add S..P…IO
I love abbreviations ..that no-one ever knows
Oh, I'm a Physicist and I'm All right
I sleep all day and I work all night X2

FINALE
We are Physicists and We're All right
We sleep all day and We work all night

Aldrich/Battista/Barnett 2014

THOSE WERE THE DAYS

Melody - "Hallelujah" - Leonard Cohen

1. We used to have a Theratron
   With a cobalt source from Nordion
   All you had to do was switch it on
   I hardly gave it a second look
   Never opened the service book
   And it kept performing - Hallejulah
   Hallelujah, hallelujah, hallelujah

2. We never used to calibrate
   We could look up the decay rate
   In the standard physics tables
   But then the LINACS were on the rise
   There would be a big surprise
   We would not be singing – Hallejulah x5

3. Then those LINACS came to the fore
   Complexity like never before
   With Gating and TrueBeam and IMRT
   It's when they started to break our backs
   Lifting those trays of computer racks
   It's all a bit overwhelming – Hallejulah x5

4. No one loves me when the LINACs down
   They look as me as if I'm a clown
   Leaving me all on my own
   The RTs and Radoncs have all gone home
   My wife is calling on the phone
   I'm completely alone Hallejulah x5..

5. The tough thing about it is
   When they go down you're all by yourself
   With no-one around to help you.
   You get the company on the line
   They say you are doing fine -
   Just try that one more time... Hallejulah x5

6. Soon all machine QA
   Will be done in a whole new way
   Online from California
   Then I can put up my feet
   Everything will be complete
   And I can repeat... Hallejulah x5

7. We used to have a Theratron
   It never did go wrong
   We changed its source off and on
   I still remember those simple days
   O those sweet gamma rays
   All I could do was shout Hooray... Hallejulah x 5

Aldrich/Barnett/Kron 2014

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Radiation treatments may cause side effects that can vary depending on the part of the body being treated. The most frequent ones are typically temporary and may include, but are not limited to, irritation to the respiratory, digestive, urinary or reproductive systems, fatigue, nausea, skin irritation, and hair loss. In some patients, they can be severe. Radiation treatment is not appropriate for all cancers.

CURRENT CORPORATE MEMBERS
2014

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john@ptwny.com

Standard Imaging Inc

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ed@standardimaging.com

Sun Nuclear

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Varian Medical Systems

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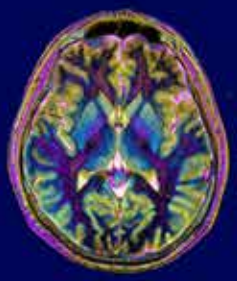
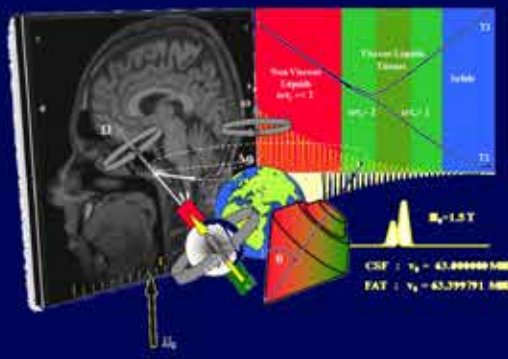
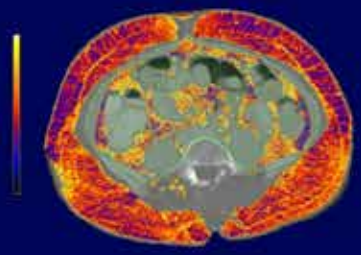
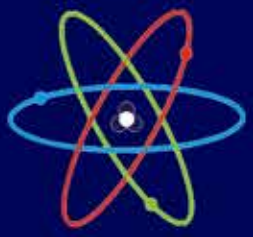
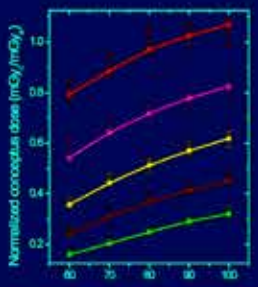
Contact: Shari Huffine
shari.huffine@varian.com











International Day of Medical Physics
November 7, 2014

Looking Into the Body - Advancement in Imaging through Medical Physics

IOMP

International Organization for Medical Physics

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OCPM Organisation canadienne des physiciens médicaux

CANADIAN WINTER SCHOOL

February 1 – 5, 2015
Kelowna, BC

CANADIAN WINTER SCHOOL
ÉCOLE D'HIVER CANADIENNE

QUALITY AND SAFETY IN RADIATION ONCOLOGY

QUALITY MATTERS
TRAVAILLONS ENSEMBLE

For all professionals in radiation oncology

6TH CANADIAN WINTER SCHOOL ON QUALITY & SAFETY IN RADIATION ONCOLOGY

A four day continuing education course at the Delta Grand Okanagan Resort and Conference Centre, Kelowna, BC.

Highlights

- Patient participation
- CPQR incident reporting software demo
- Proffered presentations
  (abstracts due 17 Nov 2014)
- Radiation therapist scholarship competition
- Workshops on in-vivo dosimetry, change management, incident reporting/learning
- New and returning faculty

One hour from BC's second largest ski resort!

Learning Objectives in brief

- Learn strategies to improve quality and safety at your centre
- Learn change management techniques to help put the strategies into practice

Curriculum

- Patient centered care
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- Human and team performance
- Event reporting
- In-vivo dosimetry
- Change management
- Maintaining standards

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medphys.ca /COMPWinterSchool

International Workshop on Monte Carlo Techniques in Medical Physics

Philippe Després
Centre hospitalier de l'Université de Montréal

Le Colloque international sur les techniques Monte-Carlo en physique médicale (International Workshop on Monte Carlo Techniques in Medical Physics) a eu lieu du 17 au 20 juin 2014 sur le campus de l'Université Laval. L'événement a attiré 94 participants provenant de 13 pays différents. Douze présentateurs reconnus comme des leaders dans leur domaine y ont été invités pour présenter leurs plus récents travaux, notamment sur le rôle des techniques Monte-Carlo en radio-oncologie, en radiologie et en médecine nucléaire.

Au total, 58 exposés oraux et 6 affiches ont été présentés. Certains travaux présentés durant le colloque feront l'objet d'une édition spéciale de Physics in Medicine and Biology. Le programme détaillé peut être consulté à http://www.mcw2014.phy.ulaval.ca/detailed-program/

CNSC Feedback Forum

continued from page 113

This information has to be up-to-date. If a source is removed from storage so that it can be used, the inventory must be updated to reflect where it is being used and then updated again once the source has been returned to storage. Detailed records must be maintained for any transfer, receipt or disposal of a source. *An inventory does you no good if you don't update it every time there is a change.*

However, even if you do have the most complete and detailed inventory imaginable, *it won't help you if you never check it.* Checking it once a year so you can fill out your Annual Compliance Report to the CNSC isn't enough. In the first incident, the licensee didn't realize the sources were lost until almost a year after they were removed. In the second event, it took months. In either case, a simple regular physical verification check could easily have detected the sources were missing much earlier had this been done on any kind of regular basis.

If you have a lot of sources on your inventory, consider putting barcodes on sources where practical and use a barcode scanner to do physical inventory verifications. These systems are now remarkably inexpensive and can even be used as a quick and effective means of logging sources into and out of storage when someone needs to use them. It's also an effective way of reducing staff exposure time and keeping doses ALARA.

Conclusions

In 2014 there have been two significant incidents involving the loss of control of sealed radioactive sources at major Canadian hospitals. While the radiological consequences of these events were minimal, both indicate serious lapses in sealed source security. The factors which contributed two these two events were remarkably similar, and readily preventable. Disposal of unused sources, maintenance of an up-to-date inventory, regular inventory verification checks, awareness training for all staff, and periodic review of physical security measures, are all key elements of any radiation safety program that will help to prevent this type of incident.

If you would like more information, please contact Jeff Sandeman (jeff.sandeman@cnsc-ccsn.gc.ca) or Yani Picard (yani.picard@cnsc-ccsn).

Summary of Student Council Events at the 2014 Annual Scientific Meeting in Banff

by the COMP Student Council

Student Luncheon

This year we chose to have a less formal presentation style at the annual student luncheon. Following a complimentary lunch in a room with floor to ceiling glass windows overlooking the mountains, students settled in for a brief summary of student council activities and an open discussion about social media in medical physics with Dr. Parminder Basran. (Any students who wish to be involved in COMP's social media efforts please contact the student council or Dr. Basran.) We then held a roundtable meet-and-greet with representatives from CAMPEP accredited medical physics graduate and residency programs from across Canada. There was a large student attendance (~60) and the room was full of non-stop chatter as students and program representatives exchanged knowledge and career experiences. We would like to formally thank the following people for their participation:

Residency Programs	**Medical Physics Graduate Programs**
Dr. Jean-Pierre Bissonnette, University of Toronto	Dr. Luc Beaulieu, Universite Laval
Dr. Lesley Buckley, Ottawa Cancer Centre	Dr. Boyd McCurdy, CancerCare Manitoba & University of Manitoba
Dr. Cheryl Duzenli, BC Cancer Agency	Dr. David W.O. Rogers, Carleton University
Dr. Michelle Hilts, BC Cancer Agency	Dr. Wendy Smith, University of Calgary & Tom Baker Cancer Centre
Dr. Jake Van Dyk, London Regional Cancer Centre	

Student Night Out

Following the poster session on Thursday evening, students took a stroll through the scenic streets of Banff to the Rose and Crown Restaurant & Pub. Over a complimentary meal and beverage, new friends were made and old friendships refreshed.

Student Council Membership Recruitment and Elections

Leading up to the annual scientific meeting, our student council was composed of five members. During the meeting, Olga Maria Dona Lemus and Sarah Cuddy-Walsh were elected (un-opposed) to the positions of Co-Chairs of the student council. Michael Balderson and Jason Crawford stepped down as Co-Chairs to join Emilie Gaudin and three new recruits (Hali Morrison, Parisa Sadeghi, and Elizabeth Watt) as active student council members. This brings the student council membership to eight, however by next year this will be six if students like yourself do not volunteer. Additionally, we have under-represented regions in the country: Saskatchewan, Manitoba, the maritimes, and the territories remain unrepresented by student council members. If you are interested in joining the student council or would like more information, please send an obligation free email to Sarah at swalsh@ottawaheart.ca.

Interested in Hosting the 2016 COMP Annual Scientific Meeting?

The COMP Science and Education Committee is looking for a location and Local Arrangements Committee (LAC) for the 2016 Annual Scientific Meeting.

The LAC works with the Science and Education Committee and the COMP office and provides the local "flavour" and hospitality for the meeting. This involves organizing the social events, the fun run and any other special activities, providing volunteer support for registration, audiovisual, exhibitor set-up, photography etc.

Hosting the ASM is a great opportunity to showcase your centre and its geographic location, team building within your centre, and provide experience and networking opportunities for both staff and students. In exchange for the time and energy required, LAC's are provided with 10 free registrations to the meeting as well as a cheque for $2000 for the hosting centre,

If you are interested or would like more information about this opportunity, please contact Nancy Barrett at nancy@medphys.ca or 613-599-1948.

Six weeks in the Life of a Clinical Medical Physicist

Jen Moroz

The University of British Columbia

This summer, as a participant of the COMP Student Exchange Program, I had the opportunity to shadow medical physicists through their clinical duties at the Montreal General Hospital. The Exchange Program provides funding to allow medical physics graduate students in Canada to gain experience working at another cancer centre or institution. Having focused on pre-clinical MRI research in both my Master's (University of Alberta) and PhD (University of British Columbia), my knowledge of the responsibilities of clinical physicists was limited. I knew that clinical physicists perform acceptance tests and quality assurance (having done some during my Master's degree), but the big picture was hazy.

I spent the first week with Emily Poon, who was planning stereotactic radiosurgery (SRS) treatments. Emily was a good pairing for the first week, as she described every step in the planning process in great detail! For those of you who are not familiar with SRS, it's a technique for treating small brain lesions with a high dose and multiple beams. SRS plans allow shots from almost any angle, thus providing excellent tumor coverage and better sparing the surrounding healthy tissue. Typical plans use 8-10 beams and four couch angles. Because of the complexity of the plan, a medical physicist must be present during treatment.

I spent another week in tomotherapy with Monica Serban and Stephen Davis. Tomotherapy plans are interesting since they treat the tumor in slices; therefore, you can achieve good sparing of a critical structure located near the PTV without compromising tumor coverage. It was interesting seeing how they set up a plan, and then optimize it with dose constraints. Though most plans follow a similar technique, tomotherapy plans are unique since there are two or three prescription doses: one for the tumor, and the other(s) for nearby lymph nodes.

I was fortunate to spend some time with the imaging physicists, Claire Cohalan and Gyorgy Heygi. Their job requires them to perform acceptance tests on all imaging devices in the MUHC. Generally, they check the beam quality, reproducibility, conformity of the light and x-ray fields, and determine the systems resolution and contrast limits. Imaging physicists also measure the dose received by the patient (max skin dose for x-ray and fluroscopy units, and the CTDI for CT) for each clinical procedure. In some centres, the images are viewed on special medical diagnostic monitors. The imaging physicist checks the performance of these monitors, ensuring that the pixel output across the screen, spatial resolution, and contrast limits all agree with specifications.

Some of the more moving experiences were spending time with the therapists and the CT-sim staff. Following diagnosis, the patient will get a planning CT. The CT-sim staff help make the patient feel comfortable, decide what immobilization devices are needed (vacloc, breast board, or masks), and define the patient isocenter with tattoos. Since these images are used for treatment planning, a doctor must approve the setup and images.

Once the plan has been created, double checked, and approved, the patient is ready for treatment. Radiation therapists have a vital job, ensuring that the patient is informed about their treatment, properly positioned, and that all settings are correct before delivering the radiation. Most of their time is spent matching the patient position to that of the planning CT. They heavily use imaging to set up the patient for their first treatment, and then outline the treatment fields on the patient to help speed up the process for the remaining fractions.

I would like to send a huge shout out to William Parker and Ives Levesque for welcoming me into the clinic and supporting me throughout the exchange. Both of them genuinely wanted this experience to be fun and informative, but I got so much more! Thank you to all the clinical Medical Physicists (Emily Poon, Russell Ruo, Monica Serban, Maritza Hobson, Stephen Davis, Naomi Shin, Tara Monajemi and Marija Popovic) and dosimitrists (Irene Bélanger and Cenzi Procaccini) for taking me under their wing and sharing more information than my brain could handle! A huge thank you to Claire Cohalan and Gyorgy Heygi for sharing their passion for imaging physics with me. And finally, thank you to COMP and the Student Council (Jason Crawford and Michael Balderson) for their support during the initial planning stages of the exchange.

This was one experience that I will never forget!

Call for Membership in Exam Content Review Committee

At this year's annual scientific meeting, it was decided that a new committee would be created. The Exam Content Review (ECR) committee will have the task of modernizing the questions of the written CCPM membership exam for all specialties. I am requesting that CCPM certified physicists join this committee. Ideally, committee members will represent a broad knowledge base with varying experience ranging from recent to more senior members. Small sub-committees will be formed to evaluate questions about a given subject.

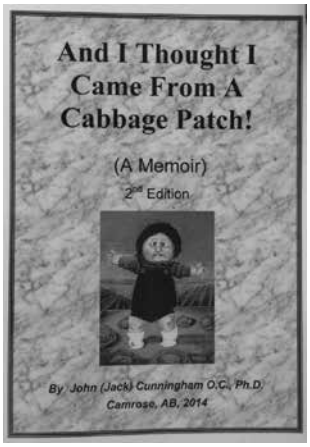
Please email me if you are interested (deputyexaminer@ccpm.ca).

BOOK REVIEW:

And I thought I Came From A Cabbage Patch! (A Memoir)

By John (Jack) Cunningham O.C., Ph.D. 2nd Edition, Camrose, AB, 2014

Reviewed by: Crystal Plume Angers
The Ottawa Hospital Cancer Centre



There are perhaps only a few people in our field who could amass a collection of stories, both scientific and personal, which could fill a book. Jack Cunningham is one such member of our community. I have known for some time that Jack was working on an autobiography. With the support of his wife Sheila, an amateur genealogist with a passion for family history, Jack has created an interesting and entertaining memoir. "And I thought I Came from A Cabbage Patch!" was completed a couple years ago but was initially intended for the benefit of family only. However, with encouragement, a number of edits and a bit more polishing, the second edition was published this spring and made available to a larger reading audience. I was very happy to acquire my own signed copy following a chance meeting with Jack and Sheila in June.

I am sure that many of you know Jack and many of you know that he is a great story teller. However, you may not know that he has many wonderful stories to tell. In the spring of 1988, one year before Jack retired from the Ontario Cancer Institute (OCI), he suffered a mild heart attack. Although relatively minor, this medical event was a sober reminder that Jack's family medical history was unknown. Jack had no knowledge of his genetic heritage because he was adopted at birth and as the saying goes, "he thought he came from a cabbage patch!" Clearly the time had come to begin a search; a considerable but welcome challenge for a talented genealogist (Sheila) and the outcome is a truly remarkable story.

The stories from Jack's years in graduate school are among my favourites. Jack and Sheila enjoyed living in a 16 foot trailer in Etobicoke while Jack pursued his PhD at the University of Toronto. While living in a trailer may not be remarkable, consider the fact that they accomplished this with no running water and two very young children. Also, they were living in the trailer in 1952 when Hurricane Hazel battered the city of Toronto. Fortunately no one was harmed, and the trailer, although flooded, remained their home after it was hosed down and allowed to dry out! Jack maintains that he and Sheila love trailer living and they happily returned to an RV park for the summer of 1998, just prior to retiring to Camrose, Alberta.

Jack's book is filled with thoughtful quotes and reflections. An example of one such quote is in regard to the handling of foreign aid. Jack and his family spent a year in Ceylon (now Sir Lanka) from 1964 to 1965. While living there Jack realized that, although well intentioned, donations of foreign aid items typically reflected the donors' perception of the receivers' need. These gifts were often made in ignorance of the local situation or culture. "The receivers didn't always know that they needed the items being given, and the answer to a question that has not been asked is rarely useful!"

On the technical side, Jack's memoir recalls the development of Cobalt-60 teletherapy and computerized dose calculation algorithms. Some of our younger colleagues may be surprised to learn that the first cobalt unit installed at OCI (in 1959) was isocentrically mounted and featured an x-ray tube positioned inside the head, such that its beam would be outlined by the collimating system that also defined the treatment beam. There was also a radiation detector mounted on the beam stopper (opposite the head) and it was used to measure the fraction of the beam exiting the patient. All of these concepts are still employed today, some 50 years later!

I thoroughly enjoyed reading Jack's book, not only for its historical and technical content, but also for its wonderful stories and reflections. This memoir is a great read for anyone interested in the origins of our field and those who pioneered it. Enjoy!

Book Order details: Jack's book is self published and therefore it is not widely available. However, books may be purchased directly from COMP for the cost of $35 each (taxes and shipping included). To place an order please visit the COMP website at http://www.medphys.ca/ and look for the link to the order form under Announcements (on the right hand side of the home page). Alternatively, you can email the COMP office directly (admin@medphys.ca) to request an order form. Payment may be made by cheque or MasterCard or Visa.

Rock Mackie, PhD, MCCPM, FAAPM Coolidge Award Winner 2014

As delivered by Dave Rogers, PhD, FCOMP,
Canada Research Chair in Medical Physics
Carleton University

Dave Rogers, Austin, July 2014

It is my great pleasure and honor to introduce Rock Mackie, my long-time friend and a collaborator in the 80s and 90s, and the winner of this year's William D Coolidge Award, the highest honor of the AAPM. In the 4 minutes I have been allotted it is almost impossible to do justice to Rock's outstanding accomplishments.

Rock was born in the Canadian province of Saskatchewan (that's just north of Montana and North Dakota – if you didn't know where Saskatchewan was, don't feel bad, I had to check a map to find which states were south of it!). Canadians are proud that Rock and his wife Pam are still Canadian citizens and the Canadian Organization of Medical Physicists made him a Fellow of COMP this year.

Among Rock's many significant accomplishments is raising, with a lot of help from his wife Pam, 4 wonderful children (Jack, Peter, Tom and Jessica) who are here with us tonight, a little older than in this 1997 photo.

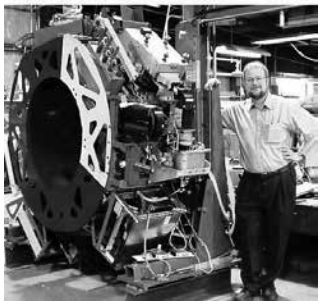
Given how much Dad travels, the children get to travel a lot and the picture shows them a few years later at the 2003 World Congress in Sydney Australia.

Rock got his BSc at the University of Saskatchewan in 1980 and his PhD from the University of Alberta in 1984. His doctoral work used Monte Carlo techniques and developed the convolution technique which is still widely used in radiotherapy treatment planning. Rock's talent was recognized early. He won the AAPM's Young Investigator Symposium in 1983 in New York City and the resulting paper on convolution, co-authored with Jerry Battista and Rock's supervisor John Scrimger, won the AAPM's 1986 Farrington Daniels Award for the best dosimetry paper of the year (Med. Phys.**12** (1985) 188). His ensuing 1988 paper on energy deposition kernels, which are needed for convolution/superposition algorithms, won the Sylvia Fedoruk Prize for the best Canadian medical physics paper of the year (PMB 33 (1988) 1).

After a brief period at the Saskatchewan Cancer Foundation's clinic, Rock joined the faculty at the University of Wisconsin in 1987 where he has been for the last 27 years, becoming a full professor in 1999 and emeritus recently. Since 2010 he has been the Director of Medical Devices at the Morgridge Institute.

In the early 90s, a group consisting of Rock, Paul Reckwerdt (in photo), Mark Gehring and Cam Sanders developed the convolution/superposition algorithm and in 1992 spun off a company called Geometrics which produced the Pinnacle radiotherapy treatment planning system. In 1996 the company was sold to ADAC and was later sold to Philips.

At the same time Rock's group at the university was involved in the Ottawa Madison Electron Gamma Algorithm (OMEGA) project for doing Monte Carlo dose calculations. Rock is a co-author of the 1995 BEAM paper (Med Phys **22** (1995) 503) which is the most cited research article ever published in the journal Medical Physics.



In the late 90s, Rock and Paul took the profits from the sale of Geometrics and set up a company to develop the Tomotherapy concept

of helical radiotherapy. This concept has revolutionized radiotherapy delivery and approaches like VMAT and Rapid Arc are in many ways a response to the brilliant idea in Tomo (Med. Phys. 20(1993) 1709). Tomo treated its first patient in 2002 at UW and the first 2 non-UW machines, A and α (named to avoid priority arguments) went to 2 Canadian clinics – A and α, a neat Canadian idea, eh?

Tomo was sold to Accuray in 2011 at which point there were more than 700 employees and 350 units around the world.

Not satisfied with these accomplishments Rock continues to innovate. How many other medical physicists have had their work covered in the Economist? – in this case, for his work with open-source for medical devices which is a Morgridge project (`When code can kill or cure', June 2, 2012 edition, www.economist.com/node/21556098). In addition he is PI on a major project to create a US-based supply of Mo-99 in conjunction with Shine Medical Isotopes. At this point Rock has 32 patents and either had or currently has 10 corporate affiliations.

Although many of us know about Rock's research and commercial endeavours, he is also a well respected teacher, having taught over 500 medical physics graduate students and having supervised more than 30 PhD students and many post-docs. In addition, he has co-directed 3 of the AAPM's most popular Summer Schools (1996, 2003, 2011) and lectured at 2 others.

In addition, Rock has played a major role in the AAPM. He has been on a multitude of committees, many of them very senior ones like the Science Council, Research Committee, Board of Directors etc. Rock's current AAPM involvements span a wide range, from Chairing the Ad hoc committee on Corporate Relations to being on the task group on Model QA Programs. He has many contributions in the AAPM's on-line virtual library which indicates the high quality of his teaching. In addition to these AAPM activities he has been the co-chair of an ICRU committee and a lead author on its report 83 on `Prescribing, Recording, and Reporting Intensity-Modulated Photon-Beam Therapy (IMRT)'.

In short, Rock Mackie is a most deserving recipient of the AAPM's highest honor, the William D Coolidge Award and I am proud to call him my friend.

(Reprinted with permission from the AAPM Newsletter, SEPTEMBER/OCTOBER 2014 Volume 39 No. 5)

CALL FOR NOMINATIONS

The COMP Awards and Nominations Committee is responsible for presenting a slate of nominations for the COMP Board of Directors to ensure that the organization is governed with excellence and vision. There will be two openings on the Board of Directors for Directors-at-Large as of the 2015 Annual General Meeting.

Directors-at-Large serve for a term of three years and have the following responsibilities:

1. To work in conjunction with other Board members in the best interest of the organization.
2. To prepare for, attend, and actively participate in all Board meetings and relevant committee meetings. In-person meetings take place in November and at the Annual Scientific Meeting and there may be up to four teleconferences.
3. To be prepared and willing to Chair a committee or lead special projects as required.

On the last point, at present Chairs are being sought for the Professional Affairs Committee (PAC) and the Communications Committee.

The nomination must be accompanied by a duly signed Expression of Interest and Nomination Form endorsed by no fewer than two (2) voting members of COMP. To access the nomination form, please visit www.medphys.ca or contact the COMP office at admin@medphys.ca.

William D. Coolidge Award Acceptance Speech

Thomas Rockwell Mackie, PhD, MCCPM, FAAPM

Coolidge Award speeches are traditionally on three themes; thanking your trainees and colleagues, giving advice to your peers, and giving a vision about where the field of medical physics is going. I will do all three with the help of about 58 slides. I should be finished in about 90 minutes so please get comfortable. Actually, I will try to finish on schedule in about 7 minutes.

I have a long list of people to thank but I want to first thank my good friend and mentor, Dr. Dave Rogers. He helped me from my graduate career, through my early clinical days when I was trying to make a name for myself in research and up to the present. We shared grants together but more importantly we shared friendship, family time and lots of laughs. A theme of this speech is that work is also about having fun along the way. Other formative mentors were John Scrimger, an excellent clinical medical physicist who always preached that the patient comes first and Jerry Battista a great researcher but an unbelievably good educator. Peter Dickof, who I worked with in Regina Saskatchewan, along with Bhudatt Paliwal and Bruce Thomadsen at Wisconsin also contributed to my appreciation for the importance for excellence in clinical medical physics. Being at the University of Wisconsin with the presence of John Cameron, Herb Attix and Paul DeLuca was definitely an inspiration but they and all of my mentors did not take life too seriously and knew how to enjoy themselves. An example was the virtuosity of John Cameron playing familiar tunes using his teeth as a plucked instrument.

A swim in a natural pool in the Atlantic Forest near Rio de Janeiro following the World Congress of Medical Physics and Biomedical Engineering in 1994. (foreground l to r) myself, Joanna Cygler, Dave Rogers, and Lech Papiez. Our tour guide is in the background.

Research trainees are the engines of academic research. I have been very fortunate to have access to the University of Wisconsin's pool of young graduate and post-doctoral talent. Always hire people smarter than yourself and I was almost universally blessed in doing so. I have mentored more than 40 graduate students and nearly 10 post-docs and while the median of this group finished only in 2003 and so their impact has not yet been fully felt, a very many have gone onto research or clinical leadership positions in the best institutions. This includes Joe Deasy at Memorial Sloan Kettering, Robert Jeraj, Jeni Smilowitz and Michael Kissick into professorships at the UW, Harry Keller at the University of Toronto, Cindy Thomason and Doug Simpkin in Milwaukee, Sam Beddar and James Yang at MD Anderson, Jason Sohn in Cleveland, Nikos Papanikolaou and Alonso Gutierrez at UT San Antonio, Todd McNutt at Johns Hopkins, Ke Sheng at UCLA, and Ryan Flynn at the University of Iowa. Many of my trainees have spent time in or have devoted their careers to industry where they have likely been even more impactful. These include Tim Holmes, Mark Holmes, Ben Nelms, Michelle Svatos, John Balog, Ken Ruchala, Jeff Kapatoes, Weiguo Lu, Sarah Boswell, and Evan Sengbusch. My philosophy for training students and post-docs is to bombard them with crazy ideas, listen carefully to their crazy ideas, and work with them on what seems most promising. Why crazy ideas? If an idea does not seem crazy to the majority of listeners it is usually not worthy of innovation. Imagine how crazy a smart phone would seem in 1990. Let trainees work at their own pace and encourage them to have fun along the way. For most PhDs their graduate years are the best years of their life. Pushing, prodding and poking them spoils the fun and robs them of independence and creativity. Ironically, most of my students have finished their PhDs faster than most because they were allowed the freedom to work hard or play hard when they wished.

Bhudatt Paliwal and Peggy Lescrenier (CEO of Gammex-RMI) at Carnival following a medical physics symposium in Rio de Janeiro.

I very much appreciate that the AAPM rewarded me in part because of my career working with industry and entrepreneurship. William Coolidge worked for GE for almost 40 years and was the first recipient of this award so there was obviously precedence. I believe that it is becoming more critical for an academic researcher to have ties with industry. More than 80% of the R&D in medical physics is done at companies. Working with and for companies is a

great way to have your ideas actualized. Most importantly working with companies will give you friendship with a greater variety of people in your life and I guarantee you that will have more fun. However if you start companies you should at least, if only cautionary, have your head examined!

Stuart Swerdloff (in suit) and Paul Reckwerdt. Stewart was a co-inventor of the binary collimator and Paul was the co-founder of both Geometrics (which developed Pinnacle) and TomoTherapy. Shown at a wedding reception in Madison.

The most valuable service the AAPM gave me was the opportunity to get involved in committee work. Like all volunteer work committee service is two-way. You help the mission of the society but you in turn get to meet people who are amazing. Many of my closest friends and those I most respect (not mutually exclusive) were met at AAPM committee meetings. Serving on committees is a powerful form of peer review. You are asked to serve because your peers think that you can help share the burdens but are also prepared to share the benefits of membership. My advice for the young is to avoid the long-standing committees until you have lots of experience and patience. Get on the task groups and ad hoc committees that can be a lot more innovative and are less set in stone. Hang around at the end of committee meetings and ask someone to have coffee or a beer. As inherent in its name a meeting is mostly about meeting people and getting to know people better. Science is sometimes best learned over a pint of pale ale.

The overt benefits of getting involved in service to the AAPM, doing innovative research, or being an excellent teacher can be substantial. I have been invited to many European and Asian meetings that are a direct result of leadership roles in the AAPM. Being a jet setter on other people's money is definitely the way to go. It does take a lot of time but remember that the plane rides are for finishing your talks and polishing your arguments. Try to take at least one day off so that you can have fun wherever you are. You will regret not taking that day off to ride the elephants in Thailand. Stay the weekend and visit the Tower of London. Work hard and have fun. To alter a cliché, use the journey and enjoy the destination.

Like many recent Coolidge Award recipients I must rise to the bully pulpit – but I will try to preach for only a minute. We need to include significant clinical research training for medical physics residencies. This is because a substantial fraction of the work of an outstanding clinical medical physicist involves solving clinical research questions. A way to achieve this is for CAMPEP accreditation to include assessment of research productivity both for the trainers and the trainees. If there is no research going at the institution, accreditation should not be granted. If there are no grants to do research the institution should provide research resources and funding or risk losing their accreditation. Medical physics has to expand beyond radiation oncology and radiology into biophysics and other forms of biomedicine (e.g., pathology, surgery, microscopy, etc.). To reflect this perhaps the AAPM should rename itself the "Worldwide Association of Physical Scientists and Engineers in Medicine and Biology" (WAPSEMB – pronounced "wap-sembee"). Perhaps not but the AAPM is becoming a worldwide association and it needs to expand into other biomedical fields where physical scientists and engineers can provide clinical and research leadership. As my 7 minutes are nearly up I propose that in the future we need to allot more time for Coolidge Award speeches at the Awards Ceremony.

A road trip through Provence during the World Congress of Medical Physics and Biomedical Engineering in Nice, 1997. (l to r) Paul Keall, myself, Lois Holloway, Robert Jeraj, Marietta Jeraj, Chantel Audet, and Peter Hoban.

I could not have achieved success in my career without the support of my wife Pamela and my four children; Tom, Peter, Jack and Jessica. My wife stayed at home to raise our kids and has sacrificed a career for us. I will be retiring as an academic at the end of the year but I will continue to work with some medical physics startup companies. I will reserve much more time for Pam and I to pursue the arts and to travel.

My family stopping off in Banff Alberta on a road trip to the Vancouver AAPM Summer School on Teletherapy in 1996. (l to r) Tom, myself, Peter, Jack, my wife Pamela and Jessica.

Finally, I sincerely thank all of you; my colleagues, former trainees, current students, family and friends alike. I would not be on this podium without your help and support.

(Reprinted with permission from the AAPM Newsletter, SEPTEMBER/OCTOBER 2014 Volume 39 No. 5)

2015 COMP Student Summer Exchange Program

Call for Applications

The Student Council (SC) of the Canadian Organization of Medical Physics (COMP) is pleased to call for applications to the 2015 Medical Physics Summer Exchange Program. This program will provide an ideal environment for the exchange of new ideas, confirmation of strengths, and recognition of work opportunities among Cancer Centres in Canada. It will also allow medical physics departments nationwide to meet medical physics students in Canada for future references in residency or working positions.

Students and institutions that would like to receive students may apply separately or together.

APPLICATION AND DEADLINES

- Applications must be submitted by email to admin@medphys.ca
- Institution Application Deadline: **December 1, 2014.**
- Student Application Deadline (includes student + institution applications): **January 31st, 2015.**

CALENDAR OF ACTIONS

- Notification of Decisions: March 15th, 2015.
- Beginning of the Exchange Program: Spring/Summer 2015.
- Report Submission: September 31st, 2015.

Further details regarding the content of the application, eligibility criteria, and selection procedure can be found at **www.medphys.ca** or find us on **Facebook-COMP Student Council.**

2015 SYLVIA FEDORUK PRIZE IN MEDICAL PHYSICS

The Saskatchewan Cancer Agency is pleased to sponsor a competition for the 2015 Sylvia Fedoruk Prize in Medical Physics. This award is offered annually to honour the distinguished career of Sylvia Fedoruk, former Lieutenant-Governor of Saskatchewan and previously physicist at the Saskatoon Cancer Centre.

The prize will comprise a cash award of five hundred dollars ($500), an engraved plaque, and travel expenses to enable the winner to attend the annual meeting of the Canadian Organization of Medical Physicists (COMP), which will be held from June 7th to 12th, 2015, in Toronto, Ontario.

The 2015 Prize will be awarded for the best paper (i) on a subject falling within the field of medical physics,(ii) relating to work carried out wholly or mainly within a Canadian institution and (iii) published during the 2014 calendar year. The selection of the award-winning paper will be made by a panel of judges appointed by COMP.

Papers published in Physics in Medicine and Biology and Medical Physics, which conform to the conditions of the preceding paragraph, will automatically be entered in the competition and no further action by the author(s) is required. All other papers should be submitted electronically to:

Nancy Barrett
Executive Director
Canadian Organization of Medical Physicists
E-mail: nancy@medphys.ca

Each paper must be clearly marked: "Entry for 2015 Sylvia Fedoruk Prize" and must reach the above address no later than **FRIDAY, FEBRUARY 6TH, 2015**.

The award winners from the last five years were:

Renaud J, Marchington D, Seuntjens J, and Sarfehnia A, "Development of a graphite probe calorimeter for absolute clinical dosimetry", *Medical Physics, **40**, Vol. 2, February 2013;* 020701

Goulet M, Archambault L, Beaulieu L and Gingras L, ""High resolution 2D dose measurement device based on a few long scintillating fibers and tomographic reconstruction:, *Medical Physics, **39**, Vol. 8, August 2012; 4840-4849*

Andreyev A. and Celler A., "Dual-isotope PET using positron-gamma emitters", *Physics in Medicine and Biology, 56, Vol. 14, 4539-4556 (2011).*

Frédéric Tessier and Iwan Kawrakow, "Effective point of measurement of thimble ion chambers in megavoltage photon beams", *Medical Physics, **37**(1), 96-107* (2010).

B. Gino Fallone, "First MR images obtained during megavoltage photon irradiation from a prototype integrated linac-MR system", *Medical Physics **36** (6), 2084-2088* (2009).

A Course on Radiobiology and Radiobiological Modeling in Radiotherapy: A Harold E. Johns Travel Award report

Daniel J. La Russa

The Ottawa Hospital Cancer Centre

Back in February, I attended a course on "radiobiology & radiobiological modeling in radiotherapy" hosted by the Clatterbridge Cancer Centre in the UK. The trip was generously funded by the CCPM via the Harold Elford Johns Travel Award combined with funds from the Ottawa Hospital Cancer Centre. It's customary to follow up on HEJ award-funded trips with a report in InterACTIONS.

I first heard about this course from colleagues when I was resident. My interest accrued following the implementation of the Monaco treatment planning system at our centre, which, as many of you are aware, features (radio)biologically-based IMRT plan optimization. More recently, my colleagues and I are putting the finishing touches on treatment plan QA software that uses DVH data to streamline the comparison of coverage and sparing details with planning goals, and I got the idea to incorporate TCP and NTCP calculations. This functionality would be similar to other software tools, such as BioPlan/BioSuite, but with the added benefit of building in a well-organized database of DVH data.

Eventually, my interest in the course aligned with both good timing and good fortune, so off I went to the UK. The course took place over four days in the picturesque town of Port Sunlight. As an aside, for those of you who didn't know, Port Sunlight is a model village on the Wirral Peninsula in northwest England. It was built by the Lever brothers to accommodate the employees of their soap factory, where the world's first brand of household laundry soap was produced. It turns out that soap is the well-known brand *Sunlight,* and it's that soap product that inspired the name of the town (rather than the actual amount of sunlight the port sees. Like a lot of the UK, it was actually quite cloudy most days).

Lectures were held at the historic Leverhulme Hotel. It was an appropriate setting since the building originally served as the town hospital. Day one of the course began with various overviews and reviews of the basics of radiobiology. Catherine West (Christie Hospital and Manchester University) started with an outstanding presentation of the history and various contemporary issues. From there, Don Chapman (formerly from Fox-Chase CC, Philadelphia), Jack Fowler (formerly from University of Wisconsin), and others spoke about tumour cell kinetics, ionizing radiation-induced DNA damage and repair, and quantitative radiobiology. Discussion of these topics continued the next day, followed by lectures on the radiobiological considerations specific to the treatment of breast, prostate, and non-small-cell lung cancers. On the third day, Alan Nahum and Colin Baker (Clatterbridge CC) introduced methods for calculating TCP and NTCP, while applications of these concepts were presented by John Fenwick (Oxford University), Marco Schwarz (Proton Therapy Centre, Trento, Italy), and Indrin Chetty (Henry Ford Health System, Detroit). The final day of the course focused on contemporary issues, including radiobiological considerations for heavy ion radiotherapy, recent escalated dose studies for NSCLC, and genomics. Lectures were supplemented by a small poster gallery consisting mainly of contributions from the Clatterbridge group.

In the evenings following lectures, attendees were given time on computer stations to work with a collection of software programs used for TCP and NTCP calculations (BioSuite) and for predicting cell survival (LQ Survivor). These programs were developed by the Clatterbridge physics group, led by Alan Nahum. The principle developer of this software, Julien Uzan, was on-hand to give demonstrations and answer questions. Also present was a representative from RaySearch, there to demonstrate the latest version of their treatment planning software that features various radiobiological optimization and plan evaluation options. Two RaySearch TPS workstations were available for testing in the evenings after lectures as well. If you didn't have the interest to tinker with software, Charlie Deehan (Clatterbridge CC) offered additional presentations on iso-effect calculations to supplement prior lectures on the topic.

Throughout the course, there were several engaging discussions among attendees and faculty about the rationale and clinical acceptance of radiobiologically-optimized treatment plans. Many questions were

raised about how best to broach the transition away from plans optimized using dose-volume constraints. While compelling arguments were made for making the switch, there was a general hesitation among attendees and faculty to actual commit to doing so. Philip Mayles (Clatterbridge CC) summarized the reasons for this hesitation quite nicely. Quoting directly from his presentation, our reluctance to adopt biologically optimized plans comes down to:

1. A reluctance to step out of the comfort zone,
2. Economic factors (e.g. models of reimbursement that are based on number of fractions act as disincentive for hypofractionation),
3. Ethical issues (e.g. require strong evidence that new protocols will not have worse outcomes), and
4. A genuine lack of confidence in radiobiological models.

Although opinions were voiced about all of these issues, the fourth point dominated the discussions. Expectedly, most people are concerned about the reliability of the models. If, indeed, a particular set of models are reliable, how do we persuade fellow clinicians to put their trust in them? Attempts to answer these concerns spurred even more discussions about commissioning biological models and properly validating associated input parameters, such as values of α/β and degree of organ seriality. Other discussions revolved around the notion of proceeding with *intentional* dose heterogeneities in target volumes that arise in EUD/TCP-optimized plans, when the data majority of clinical experience is derived from targets treated with relative homogeneous dose distributions. Others pressed on the relative lack of NTCP-based optimization tools. And so on.

I didn't leave the course with any *definitive* answers to these questions. But I did leave with some useful takeaways. For instance, Mayles pointed out the value of reporting TCP and NTCP calculations for all radical treatments as means of accumulating experience and testing the model predictions against observed clinical outcomes. So my idea for including TCP and NTCP calculations in the software that our group is developing wasn't off the mark. Secondly, although it is known that the absolute uncertainty on TCP and NTCP calculations are large, the relative uncertainty may be small enough such that they can be used to rank a series of treatment plan options, provided the models are "properly commissioned". Additional guidance was provided on how to use models to evaluate target dose homogeneity, use biologically-based objectives in IMRT planning, and use dose escalation based on NTCP limits. By the end of the course, I felt I had a good grasp on what we can start doing and, more importantly, what we shouldn't be doing.

This was the eighth time the course was offered, yet there are no signs of waning interest. Forty-five physicists, physicians, and students were in attendance from all over Europe and North America. I would expect interest in this topic, and in this course in particular, to maintain or even increase as vendors further develop radiobiological models in their treatment planning systems. Perhaps one day there will be enough interest to host a multi-disciplinary radiobiology course in Canada, similar in format to the winter school, but targeted to clinicians in both radiation therapy and medical imaging.

So that summarizes my experiences in cloudy Port Sunlight. I am very grateful for opportunity and support from the CCPM, and I thank everyone who contributed to the HEJ award.

Christopher Thompson...

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Although Chris was working at the MNI, he also saw the potential of PET beyond the brain, and I suspect that a few eyebrows of MNI brass were raised in 1994 when he began working on PET for diagnosing Breast Cancer. His publication in this field won the award for the best paper in the Journal of Nuclear Medicine in 2000.

Nevertheless, his work on improving fundamental characteristics of PET continued, and continues, unabated, with key contributions in motion correction, scatter reduction, calibration and optimizing MRI-PET inserts.

In his retirement, Chris maintains his research with a fully equipped lab in his basement, as well as his company "Scanwell" for the manufacture of PET shield devices and calibration systems. He has just recently renewed his NSERC support to characterizing detectors for small animal PET inside a 7T MRI, where he continues to collaborate with colleagues in Winnipeg and London, ON.

Chris' Other Achievements include being the Founding Chairman of COMP 1989-1990, CCPM Board Member 1996-2003, CCPM Registrar 2000-2003, IEEE Ed Hoffman Medical Imaging Scientist award in 2008, and the Lifetime Achievement Award from the MNI in 2009.

Behind all these achievements remains a dedicated family man and although he has embraced Quebec culture for over 40 years, speaking French with a killer "joual" accent, he remains a true Kiwi, enjoys Pavlova, and spreading his toast with Marmite!

Chris, Congratulations again on your well-deserved achievement.

Congratulations to the 2014 Fellow of COMP Award Recipients

Dr. Joanna Cygler was born and educated in Poland. Currently she is employed as a Senior Medical Physicist at The Ottawa Hospital Cancer Centre, specializing in radiation therapy. Dr. Cygler also holds academic appointments as a Professor at the Department of Radiology, University of Ottawa and as an Adjunct Research Professor, Department of Physics, Carleton University. She has supervised and mentored many undergraduate and medical physics graduate students, as well as residents in medical physics and radiation oncology.

Dr Cygler is a Fellow of the Canadian College of Physicists in Medicine and a Fellow of the American Association of Physicists in Medicine. She has been a member of several Task Groups on subjects such as Luminescence Dosimetry, Quality Assurance of Treatment Planning Systems and Clinical Implementation of Monte Carlo Treatment Planning.

Dr. Cygler has authored over 55 peer reviewed scientific papers and 155 abstracts, seven book chapters, as well as co-edited an 1100 page book on Clinical Dosimetry Measurements in Radiotherapy related to the AAPM Summer School she co-directed in 2009. Dr. Cygler is also a co-inventor on two US patents and a consultant to the International Atomic Energy Agency on in-vivo dosimetry.

Dr. David Jaffray completed his PhD in Medical Biophysics at the University of Western Ontario in 1994. Following graduation, he became a Staff Physicist at William Beaumont Hospital in Michigan and became a Board Certified Medical Physicist (ABMP) in 1999. In 2002, Dr. Jaffray joined the Princess Margaret Hospital as Head of Radiation Physics and a Senior Scientist within the Ontario Cancer Institute. David holds the Fidani Chair in Radiation Physics and is a principal in the STTARR Innovation Centre and Guided Therapeutics (GTx) Group of the University Health Network. He is the Director of the Institute of Health Technology Development at the University Health Network (TECHNA).

He is a Professor in the Departments of Radiation Oncology, Medical Biophysics, and Institute for Biomaterials and Biomedical Engineering at the University of Toronto. His primary area of research over the past ten years has been in the development and application of image-guided radiation therapy. He has over five patents issued and several licensed.

Dr. Jaffray has over 120 peer-reviewed publications, is a member-at-large of the Science Council of the AAPM, and has an active teaching role for the American Society of Therapeutic Radiation Oncology (ASTRO). He has supervised numerous graduate students and fellows. Dr. Jaffray has won each of the major prizes in the field of the medical physics, including, the Sylvia Sorkin-Greenfield Award, The Farrington Daniels Award, and the Sylvia Fedoruk Award. In 2004, Dr. Jaffray was identified as one of Canada's Top 40 Under 40 and was recognized by The University of Western Ontario with their Young Alumni Award in 2004.

Dr. Ting-Yim Lee is a scientist at Lawson Health Research Institute (LHRI) and Robarts Research Institute (RRI), and a professor of Medical Imaging, Medical Biophysics, and Oncology at Western University, London (Ontario). He graduated from Hong Kong University in 1974 and obtained his PhD in 1980 from London University, England.

Ting worked as a Medical Physicist in the Manitoba Cancer Foundation (Winnipeg) from 1983 to 1988 and obtained his CCPM Fellowship in 1986. In 1988, he moved from Winnipeg to London, Ontario. He was a CCPM Board member from 1989 to 1994 and the Chief Examiner of the College from 1990 to 1992.

He has supervised numerous graduate students and fellows and has over 160 peer-reviewed publications as well as numerous patents and licensing agreements. Dr. Lee is the recipient of several awards including: The British Council Career Scientist Award 1992 – 1994, the Sterling-Winthrop Imaging Research Institute, and the Dean's Award of Excellence UWO.

Dr. Lee pioneered an operationally very simple dynamic CT scanning method to measure brain blood flow, first in animals for validation and then in stroke patients, to identify who would benefit from treatment with a clot dissolving drug (tPA) rather than suffer a bleeding complication. The software to generate brain blood flow map was licensed to GE Healthcare in 1999 as 'CT Perfusion' and has been used in acute stroke imaging throughout the world. The successful clinical translation of CT Perfusion was used as a case study to demonstrate the socioeconomic impact of public funding in medical imaging research in a recent report commissioned by CFI and CIHR.

Dr. Thomas "Rock" Mackie grew up in Saskatoon and received his undergraduate degree in Physics from the University of Saskatchewan in 1980. He went on to earn his doctorate in Physics at the University of Alberta in 1984. His expertise is in radiation therapy treatment planning and intensity modulated radiation therapy. He is a primary inventor and algorithm designer of the helical tomotherapy concept.

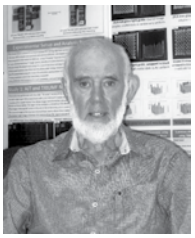
Dr. Mackie is a professor in the departments of Medical Physics, Human Oncology, Biomedical Engineering, and Engineering Physics at the University of Wisconsin–Madison. He has over 150 peer-reviewed publications, over 15 patents, and has been the supervisor for dozens of PhD students. Dr. Mackie is a Fellow of the American Association of Physicists in Medicine and a member-at-large of that organization's Science Council. He is also the Vice-Chair of the University of Wisconsin–Madison Calibration Laboratory. Dr. Mackie serves as President of the John R. Cameron Medical Physics Foundation, a non-profit organization that supports the UW Medical Physics Department, medical physics in the developing world, and high school science scholarships. Dr. Mackie is a member of the Board of the Wisconsin Biomedical and Medical Device Association. Dr. Mackie was a founder of Geometrics Corporation (now owned by Philips Medical Systems), which developed the Pinnacle treatment planning system and which still operates its R&D facility in Madison, WI. He is also a founder and Chair of the Board of TomoTherapy Incorporated, an international company employing over 700 people.

Dr. John Rowlands completed his PhD in Experimental Solid State Physics from the University of Leeds, UK in 1971. Following graduation, he held Visiting Professorships in the Department of Physics at the Universities of Alberta and Michigan State before moving to Ontario in 1978. Following more than a decade in the Radiological Research Laboratories founded by HE Johns at the University of Toronto, he joined the Sunnybrook Health Sciences Centre as a Senior Scientist in 1989. He remains affiliated with Sunnybrook as a Senior Scientist Emeritus. He has held numerous positions including: Head of Medical Physics Research at the Odette Cancer Centre and Professor, in Radiation Oncology, Medical Biophysics, and Medical Imaging, University of Toronto and adjunct Professor in Electrical and Computer Engineering at the University of Waterloo. Dr. Rowlands obtained his FCCPM in 1987 and has served on the CCPM Board.

More recently he took on additional responsibilities as the Founding Scientific Director of the Thunder Bay Regional Research Institute and is an Adjunct Professor in the Department of Physics at Lakehead University. He is the Chair of the Scientific Advisory Board of XLV Diagnostics Inc., a spinoff company based on his scientific research, and located in Thunder Bay.

Dr. Rowlands has authored and co-authored in excess of 180 peer-reviewed publications. He has mentored many MSc, PhD and PDFs and scientists who all count him as a friend and colleague. He has received peer-reviewed funding from the National Institutes of Health (US), the US Army, the Medical Research Council of Canada and its successor CHIR, the Natural Sciences and Engineering Research Council of Canada, the National Cancer Institute of Canada, the Terry Fox Foundation, the Canada Foundation for Innovation, and the Ontario Innovation Trust.

He is often invited to speak at international conferences and universities, to present refresher courses, and serve as an advisor to the medical imaging industry. Dr. Rowlands has been recognized by the University Industry Synergy Award, NSERC and the Conference Board of Canada for his work. He is also a recipient of the Sylvia Sorkin Greenfield Award (AAPM) and the Sylvia Fedoruk Award (COMP).



Dr. Chris Thompson came to Canada after obtaining his MSc in Physics from Otago University in Dunedin, New Zealand in 1966. He worked for four years at Atomic Energy of Canada Ltd., Commercial Products in Ottawa which developed instrumentation for gamma ray spectroscopy, both for use with neutron activation analysis and for aerial surveys for uranium prospecting. In 1970, Chris moved to Montreal where he worked for 37 years at the Montreal Neurological Institute (MNI) of McGill University.

Initially he developed programs for the MNI's first research computer to provide customized brain maps during stereotaxic surgery for the treatment of Parkinson's Disease. Chris's introduction to medical imaging came with the installation of the first CT scanner, the "EMI-scanner", in Canada. In 1978, he designed the first PET scanner to use bismuth germanate detectors and this instrument was added to and improved over many years. Chris's work on PET instrumentation was submitted as a DSc thesis to Otago University in 1987. Most of his work at the MNI was related to advances in PET instrumentation and support of PET operations in the McConnell Brain Imaging Centre.

After retiring in 2007, Dr. Thompson set up a small PET instrumentation lab in his basement, where he has a license from the CNSC and has successfully renewed a discovery grant from NSERC which he has been using to characterize the detectors of a small animal PET insert for a 7T MRI, the prototype of which is currently under construction. Dr. Thompson was the first Chair of COMP in 1989-90 and was a Board member of the CCPM from 1996-2003, serving as CCPM Registrar from 2000-2003.

PROSTATE CANCER FORUM

SUR LE CANCER DE LA PROSTATE

Curietherapies et le **GROUQ** vous invitent à un symposium international, à ne pas manquer, sur le traitement du cancer de la prostate en général et de la curiethérapie en particulier.

Curietherapies and **GROUQ** would like to invite you to an exciting international symposium. The meeting will cover several aspect of prostate cancer treatment with emphasis on prostate brachytherapy.

Audience cible

Cette activité s'adresse à tous les professionels impliqués dans le traitement du cancer de la prostate: radio-oncologues, curiethérapeutes, urologues, oncologues médicaux, physiciens, technologues, résidents, infirmières et autres.

Target audience

This activity will meet the educational needs of brachytherapists, radiation oncologists, physicists, residents, urologists, medical oncologist, nurses, technologists and all others involved in the care of patients with prostate cancer.

Accréditation / Accreditation

Activité accréditée par / This activity is accredited by:
The Commission on the Accreditation of Medical Physics Education Programs (CAMPEP) and Centre de Formation Continue de la Faculté de Médecine de l'Université Sherbrooke.

Each hour of participation gives one credit / Chaque heure de participation donne 1 crédit.

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New COMP Members

Please welcome the following new members who have joined COMP since our last issue:

Last Name	First Name	Institute/Employer	Membership Type
Babcock	Kerry	Government of Saskatchewan	Full
Gariépy	Jean-Philippe	Centre Hospitalier de l'Université de Montréal	Full
Haver	Lauren	Brainlab	Corporate
Lassalle	Stéphanie	Centre Hospitalier de l'Université de Montréal	Full
Benhacene Boudam	Mustafa Karim	Centre Hospitalier de l'Université de Montréal	Full
Morcos	Marc	Vantage Oncology	Full
Yu	Huan		Associate

Message from the COMP President

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I feel very fortunate that COMP has many committed volunteers who contribute much time, often their own personal time, towards improving the Medical Physics community in Canada. We are served by a board of 11 volunteers, as well as numerous subcommittees, and sub-subcommittees. The work these people do is critically important to the success of COMP, whether it be planning meetings, producing publications and guidance documents, working on position statements, helping at conferences, or many of the other things COMP does. Unfortunately, it is often hard to see this work and sometimes even harder for someone who wants to help to know how to get involved. This is something I would like to improve.

At present, COMP is involved in many different areas. We run two conferences every year, one scientific (our ASM) and the other professional (the Winter School), we are a core component in a Canadian Radiation Oncology quality improvement initiative (CPQR), we produce guidance documents, we conduct professional surveys to provide useful information to members about their work conditions or environment, we maintain good relationships with our regulators, and we are involved in many other activities. For the past five years or so, the COMP board has seen a significant and large number of issues regarding imaging. These come as requests for information/opinions or invitations to join imaging-related activities. We have often struggled with these issues; the reasons for this are complicated. The imaging community in Canada is much smaller than the therapy community. As well, many of our imaging members are academics as opposed to professional, and have access to other associations to promote their scientific work. This is a challenge for COMP. I believe we must meet it in order to be an effective advocate for all Canadian Medical Physicists. We formed an imaging committee about one year ago, and this has been our most busy committee of late. This committee is working very hard to make sure medical physicists are involved in the many important decisions surrounding imaging that the Canadian Health Care Community faces today.

Before finishing, I would like to highlight just one imaging issue that COMP has been very active in, but may not be very well known to members, especially those outside Ontario. The HARP act is an Ontario law that legislates how x-ray based imaging equipment is governed in Ontario. Medical Physicists are not recognised in this act. This means that there are many activities that Medical Physicists are not permitted to do, including functioning as a radiation protection officer. COMP believes that this is not the best situation for either Medical Physicists, or for the general public in Ontario. Many people in the HARP community in Ontario feel that their government may soon make important changes to either HARP regulations or even the legislation itself. COMP has been following this closely, thanks to the significant efforts by Ting Lee. I believe it is very important to all Canadian Medical Physicists that COMP do a good job with this. Being recognised in legislation would be a significant win for our members since there would be precedent relevant to all provinces. Achieving this, however, is not simple. That our community has the knowledge and abilities to perform this work is simply not enough. That our community has a stellar reputation and an effective method of identifying competent individuals helps, but is also not enough. What is required is to be actively engaged in the political process, and this requires both resources (money) and individuals with the drive to achieve an outcome best for Medical Physicists as well as the public of Ontario. This is yet another reason why volunteering is so important.

I am very excited about serving you for the next two years. I do this with a sense of excitement, but also of humility. I have met many Medical Physicists in Canada; I hope to meet even more in the next two years. If you have any ideas that you think are important for COMP and would like to share, please let me know.

COMP Canadian Organization of Medical Physicists
OCPM Organisation canadienne des physiciens médicaux

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IFMBE COMP OCPM

Message from the Editor

Christopher Thomas
Nova Scotia Cancer Centre

Hello all! Autumn is essentially upon us by the time you read this. Summer was not so great weather wise, but great for conferences. I didn't make the ASM in Banff this year, but I've heard lots of good things about it (I wish I had made it simply for that banquet dinner!). I did go to the ASM for AAPM in sunny and hot Austin, TX where Rock Mackie received the very prestigious William D. Coolidge Award for someone who has "exhibited a distinguished career in medical physics, and who has exerted a significant impact on the practice of medical physics." Previous Canadians to receive this, the AAPM's highest award, include Jack Cunningham, Ervin Podgorsak, and Dave Rogers. This year, Dave Rogers gave Rock's introduction speech to pay back Rock for giving Dave's introduction speech for his award of the COMP Gold Medal in 2012. Included in this issue are Dave's introduction speech and Rock's speech as reprinted with permission from the AAPM Newsletter. And of course Chris Thompson is on the cover of this issue for his COMP Gold Medal! Congratulations to both Rock and Chris for all their pioneering work and contributions to our field!

Considering the large size and diversity of the crowd at the AAPM ASM, all the presentations by Canadian researchers and students that I saw at AAPM were great and it reminded of the excellent quality of research coming out of Canada in medical physics. Keep up the great work! And Austin was a great location, except for the overwhelming heat (honestly it was +40°C with the humidity …). The great food (BBQ, Tex-Mex), the great live music (rock, country), and the friendliness of the people all lead to a great experience. My favourite part was seeing the band Grady led by canuck Gordy Johnson (of Big Sugar) rocking it out at the legendary Continential Club. I've never been to a place with so many live music venues! I can't wait to go back.

And speaking of great locations! If you think your city is outta sight, you should consider hosting the 2016 COMP ASM as it's looking for a home!

So we have a big issue for you this time around. We have the overview of the ASM, including Chris and Terry's speeches, the photo highlights, and the FCOMP winners. Plus a book review of Jack Cunningham's memoirs! THAT is something I'm looking forward to reading!

Once again, we rely on contributions from YOU the readers and members of the medical physics community to put together InterACTIONS and make it worth reading, so please contribute! Thank you!

Dates to Remember

International Day for Medical Physics
November 7, 2014

interACTIONS Winter issue deadline
December 1, 2014

COMP Student Summer Exchange Program – Application due December 2014

Gold Medal Nominations
January 9, 2015

6th Annual Canadian Winter School
February 1- 5, 2015

Sylvia Fedoruk Prize in Medical Physics submissions due
February 6, 2015

FCOMP nominations due
March 27, 2015

World Congress
June 7-12, 2015

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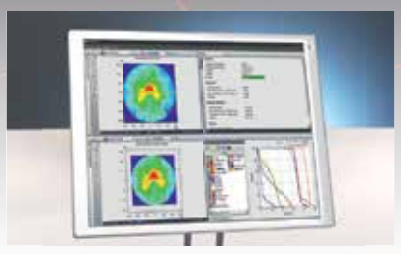

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