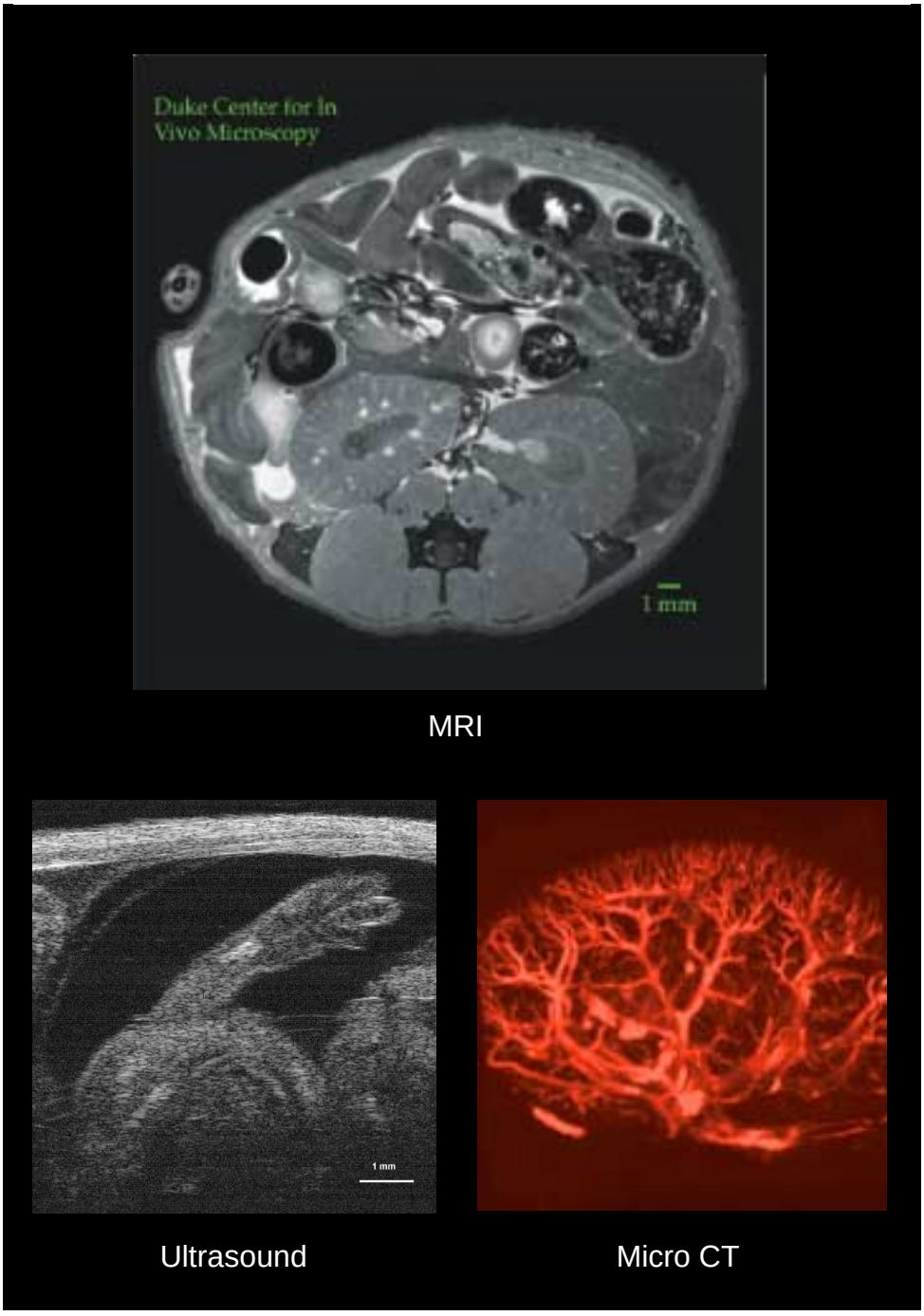
InterACTIONS

CANADIAN MEDICAL PHYSICS NEWSLETTER
Le BULLETIN CANADIEN de PHYSIQUE MÉDICALE



MRI

Ultrasound

Micro CT

Mouse Imaging

COMP OCPM

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CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE
LE COLLÈGE CANADIEN DES PHYSICIENS EN MEDECINE

47 (2) avril/April 2001

About our Cover

Mark Henkelman, PhD, of Imaging and Bioengineering Research, Sunnybrook and Women's College Health Sciences Centre, provides a picture of what imaging applied to mouse genomics looks like at the present state of development. Images of mouse anatomy are presented with MR, ultrasound and CT systems adapted to the mouse. Image 1 is a high resolution transverse anatomical image of a mouse taken at 2 Tesla with very long averaging time; exquisite soft tissue anatomy can be seen. This image is courtesy of Dr. G. Allan Johnson at Duke University (work is supported by NIH/NCRR(P41-05959)) Center for In-Vivo Microscopy. The image size is 40 mm by 40 mm. Image 2 is an ultrasound image of a mouse fetus showing a front paw. The image is provided by Dr. Stuart Foster with equipment produced by VisualSonics, Toronto. Image 3 is a micro CT image of the vasculature of mouse kidney. The angiogram is produced using micro barium particle contrast agent and a high resolution CT produced by Enhanced Visual Systems of London, Ontario. The image is 10 mm by 10 mm.

The Canadian Medical Physics Newsletter, which is a publication of the Canadian Organization of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM) is published four times per year on 1 Jan., 1 April, 1 July, and 1 Oct. The deadline for submissions is one month before the publication date. Enquiries, story ideas, article submissions can be made to:

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Please submit stories in Publisher 98, Word 6.0, Word 97, or ASCII text format. Hardcopy submissions will be scanned to generate an electronic document for inclusion in the Newsletter.

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InterACTIONS 47 (2) avril/April 2001

Inside this issue:

Sylvia Fedoruk — a woman of many firsts ……..…….. **54**

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Message from the COMP Chair:

COMP always appreciates members who volunteer to serve COMP as representatives for various inter-organizational committees.

Spring is upon us, and I hope the winter months have not been too dim. Mr. Michael Henry started his new role as Executive Director on January 1, 2001. I know he has been in contact with several people concerning his duties and is presently reviewing a survey he circulated to the COMP Executive to prioritize his various duties. Some of the items involve improving the profile of medical physics at the federal and provincial granting agencies, provincial health departments, health and university administrators and the general public. These items would aid in the political development of the profession, and hopefully monitor legislation related to medical-physics activities, as well as, and perhaps national and provincial budgets that are within the sphere of medical-physics activities.

As you all know by now, the submission to this year's Annual meeting is web-based, and I do believe that the submission process is running relatively smoothly. Our appreciation is extended to the Communication Committee and members of the Local Arrangement Committee for implementing this process. Soon the Scientific and Awards Committees would review all submissions for the proffered papers and the Young Investigators' Award. I have also been informed that the fund raising for this year's meeting is also proceeding very well. The membership has also been informed, via e-mail, of the urgency of early booking of accommodations at Kelowna. Please book early to avoid problems later on. The deadline for submission of Scientific papers to be considered for the Sylvia Fedoruk Award has past. This year, there are about seventy-two submissions for the award. This is a rather large number, but the Sylvia Fedoruk Award Committee is already diligently reviewing the submissions. They have their task "cut-out" for them. There was some discussion concerning the distribution of membership list both in print and in electronic form. A pricing-policy has been formulated and approved, and hopefully found fair by the membership who use such services.

COMP always appreciates members who volunteer to serve COMP as representatives for various inter-organizational committees. These committees are important as they may influence government policies and legislation, and definitely increase the profile of medical physicists. As already discussed in my last message, Drs. John Andrew and Peter Raaphorst are our representatives to the Radiotherapy Advisory Council for the Canadian Association of Provincial Cancer Agencies. They should have their first meeting soon after this writing in Montreal. Another group is the Canadian Society for Nuclear Medicine. Dr. Curtis Caldwell had represented us for quite some time now, and

asked to be replaced. We thank Dr. George Mawko for having graciously agreed to be our new representative to the Canadian Society for Nuclear Medicine. The Chair of our Radiation Regulations Committee, Peter O'Brien, is also the Process Leader of a working group of radiation therapy professionals established to produce standards for quality assurance in radiation therapy in Canada. The group is funded by the Advisory Committee on Radiological Protection, a national committee that gives independent advice to the CNSC. The working group has submitted a draft document to COMP for review before it would be sent to the CNSC for comments. The draft would have also been circulated to COMP membership through e-mail for comments. It is unfortunate that the Canadian Association of Radiation Onclogists (CARO) has decided to withdraw their membership in the Canadian Radiation and Imaging Societies in Medicine (CRISM). It is believed that, because of their small size, they had difficulty in assigning one of their members to the CRISM meetings. COMP will continue, through Dr. Paul Johns,

(Continued on page 65)

Message from the CCPM President:

I will direct my comments this month mainly to the twenty-five or so members and fellows who are beginning to worry about the issue of recertification; twenty or so who have 5, 10, 15 or 20 year anniversaries this year, because they will have to start getting their applications and dossiers together for submission, and about five of us because we are going to have to evaluate the submissions.

Recertification has been on the books for a few years now, but this year the process starts in full. The College Bylaws and Appendix IV in the Canadian Medical Physics Directory do provide some guidelines for recertification, but now we have to worry about the details as we start implementation. I think that this may involve some iteration, and I trust that the initial applicants (and assessors) will be patient as we roll things out. I have indicated in the past that the College would provide some forms to assist this year's initial applicants (please try not to read 'guinea pigs'). These forms are still in development (yes, I am the bottleneck on this) but I will outline our thinking at this time, and I ask that you provide some input if you feel there are points that we are missing.

The intent of the recertification form will be to assist both the applicant and the College in preparing and reviewing the dossier. The first step will be for the applicants to clearly identify themselves. This will include specifying the year of election to membership and/or fellowship in the College and stating the specialty(ies) that they are declaring with some justification (recall that for recertification one must be employed 60% full time equivalent as a medical physicist and that if two specialties are being claimed then one must have devoted 40% FTE to each during the preceding five). If the applicant is requesting an extension of the period over which recertification credits are being calculated (because of temporary absence from medical physics as per Bylaws Appendix IV Note 1) some details will have to be provided.

The applicant should then identify the board certified medical physicist (or the senior physician) acting as the referee supporting the application. A separate support letter should be sent to the registrar directly by the referee. It should not be a general reference letter, but should address specifically the requirements for recertification by addressing directly whether "… the applicant (has) been working in the field in the past five years in the specialty that they have declared and have they been active, competent and ethical in their job performance". The reference letter should state specifically that the referee has read the applicant's application and should clearly indicate that they consider, to the best of their knowledge, that the candidate's review of tenure, clinical service, supervisory roles, teaching, academic roles, etc., is correct. Perhaps the College should also prepare a form for the referees, I would appreciate some feedback on this from prospective candidates or referees.

The major part of the application will be the candidates' reviews of the credits from professional activities required to support their recertification. In the draft forms being prepared, tables are provided to enable applicants to tally credits in the four areas of clinical, educational, academic/research and professional service. The applicant must show 50 credits accrued over the five year period reviewed. There is no need to claim all possible credits in the five years (we do not need to see applications claiming 230 credits), although it may be a good strategy to show some extra credits. Each claim should be supported by specifics: perhaps cover pages of written procedures, course outlines, details of dates for

(Continued on page 65)

Recertification has been on the books for a few years … now we have to worry about the details as we start implementation.

Mark Henkelman awarded Canada Research Chair

By Michael Bronskill
Sunnybrook & Women's College Health Sciences Centre

Mark Henkelman began his scientific career at the Princess Margaret Hospital with Dr. Rick Miller working in immunology. This occurred at a time too long ago for either of them to remember. After completing a Masters degree in theoretical physics at McMaster University, he returned to the Princess Margaret Hospital and worked on electron microscopy with Dr. Peter Ottensmeyer for his Ph.D. studies. Following that, he went to Vancouver and got involved in radiation treatment, not with x-rays or even electrons, but rather with photons which had to be used quickly because they only lasted for 10^{-8} seconds.

In 1980, Mark returned to Toronto with no clear idea of what he was going to work on and was asked by Dr. Harold Johns to give a talk on magnetic resonance imaging. At that point, one could read most of the MR literature, which consisted of about 15 papers, in one evening. Many persistent attempts to get research money for MRI were unsuccessful (about 10 rejected applications), until the Ontario government gave the Princess Margaret Hospital one of the first MR clinical scanners in Canada in 1982. This provided a unique opportunity to get in at the very beginning of MR research which is probably the luckiest point in Mark's career. He did a significant body of work on image artifacts in MR and fundamental biophysics, improving the understanding of the appearance of different tissues in MR images. More recently, his work involved image-guided surgery with a particular emphasis on MR thermometry and a concentrated study on magnetization transfer and other relaxation mechanisms in tissue.

During the 1990s, Mark was persuaded to take on the job of Vice President - Research for Sunnybrook Health Science Centre, and over ten years built a Research Institute that grew to include 350 people and about $25M per annum of funding. He awoke one morning, however, with the realization that administration was not really fun and decided to return to the laboratory, thereby terminating a potentially illustrious career as Associate Dean, Assistant Dean, etc.

Mark has recently undertaken to build a Mouse Imaging Centre for functional genomics. This Centre will use most of the current medical imaging technologies redesigned appropriately for application to the mouse. The Centre is designed to produce anatomical and, to some degree, functional information about mice generated from modified genomes. This is a very exciting project which allows Mark to relearn everything he thought he already knew about medical imaging in a simultaneously scaled-down and scaled-up space. For example, the 7-tesla / 40-cm mouse imager is significantly larger than a standard clinical MR imager.

It is on the basis of Mark's leadership in imaging research and with the new Mouse Imaging Centre that Mark has been awarded a Canada Research Chair. Mark comments, "It is a pleasure to have a real chair after having done research for so many years sitting on a stool." Given that half of the chair is at Sunnybrook & Women's and the other half is at the Hospital for Sick Children, he may find that this is not a significant improvement.

Aaron Fenster awarded Canada Research Chair

By Ian Cunningham
John P. Robarts Research Institute, London, ON
Frank Prato
Lawson Research Institute, London, ON

Dr. Aaron Fenster received his PhD from the Department of Medical Biophysics at the University of Toronto in 1976 under the supervision of Dr. Harold Johns. He worked as a research scientist at the Ontario Cancer Institute and Toronto General Hospital with an appointment in Medical Biophysics until 1987 when he was attracted to London Ontario by Dr. Barry Hobbs, then Chair of Diagnostic Radiology and Nuclear Medicine at the University of Western Ontario.

Working with Dr. Hobbs, Dr. Fenster created the Imaging Research Laboratories at The John P. Robarts Research Institute in London, Ontario, where has been director since its inception in 1987. Growing under his leadership, the laboratories now has over 120 individuals pursuing multi-modality imaging research in vascular imaging, image-guided therapy, small-animal imaging, musculoskeletal imaging, brain imaging and fundamental imaging science and engineering. While most of the laboratory's research funding comes from peer-reviewed granting agencies, the laboratory also works closely with industry and has filed approximately 20 patents in the past five years.

Dr. Fenster is a Professor in the Departments of Diagnostic Radiology and Nuclear Medicine, Medical Biophysics, Physics, Electrical Engineering, and Oncology at The University of Western Ontario. He is currently pioneering the use of 3-D ultrasound for oncology and vascular imaging with over 150 peer-reviewed publications and 20 patents. He is also the founding scientist of two companies formed based on his patents. In the past two years he has initiated the creation of, and now co-chairs with Dr. Mike Bronskill, the Imaging Networks of Ontario which has laid the foundation for an Imaging Program within the Ontario Research and Development Challenge Fund estimated to be worth $50,000,000 over the next 5 years.

The Canada Research Chair was awarded to recognize Dr. Fenster's research excellence, and his impact on research in Canada. Congratulations Aaron on this outstanding achievement!

Photo courtesy of The John P. Robarts Research Institute.

Minutes of the COMP Annual General Meeting
July 2000, Chicago

Chair: Michael Patterson
Secretary: Curtis Caldwell

There were 59 Full Members of the COMP present (quorum was 58).
The meeting was called to order at 6:40 pm.

1. Adoption of Agenda: *Motion* to adopt agenda: Andrew Kerr; Second: Clement Arsenault. Carried.
2. Minutes of the 1999 AGM. *Motion* to accept as distributed: Ting Lee; Second: Andrew Kerr. Carried.
3. Business arising from the minutes: None.
4. Bylaw changes. Three proposed Bylaw changes had previously been published in the Newsletter:
    a. Change three instances of "Councilor (for the Newsletter)" to "Councilor (for Communications)". *Motion* to approve: Whelan; Second: Bogue. Carried.
    b. Change "The QUORUM of the annual general meeting is 20% of full members." To "The QUORUM of the annual general meeting is 10% of full members."; *Motion* to approve: John Andrews; second Terry Peters; carried.
    c. Add to Article V: Meeting of the Members: "J) The rules contained in the Modern Edition of *Robert's Rules of Order* shall govern the COMP in all cases where they are not inconsistent with these bylaws and any special rules of order the COMP may adopt." *Motion* to approve: Arsenault; second Schreiner; carried.

    Action: Caldwell to submit approved Bylaw amendments to Industry Canada.
5. Report on Elections: Paul Johns reported that there had been a call for nominations for the positions of Chair-Elect and Councilor for the Newsletter (now to be Councilor for Communications) sent out via e-mail. There were no nominations from the Membership by April 2000. After consideration, two members were asked to stand for the positions. Dr. Clement Arsenault allowed his name to stand for Chair-Elect and Dr. Michael Kolios allowed his name to stand for Councilor for Communications. An election was held by mail-ballot. Arsenault received 72 votes for Chair-Elect and Kolios received 67 votes for Councilor for Communications. There was one vote for Sherry Connors for Chair-Elect. Arsenault and Kolios are elected and take office as of the end of the current AGM. Patterson thanked both Paul Johns and Peter Munro for their service to the COMP.
6. Chair's Report: Patterson summarized the results of the Saturday meeting of the COMP Executive. Patterson thanked Podgorsak and the members of his committee for their report on the TG51 Report. The committee's report will be published in *InterActions*. The Executive has decided to give recognition of past Chairs of the COMP and all exiting members of the Executive, starting in 2000. The recognition will consist of a plaque commemorating their service to the COMP. Patterson reported that Johns is now Chair of the CRISM. The CRISM will be participating in an International Congress of Radiology in Montreal in 2004. The COMP may choose to be involved in this conference independently. The DMBP of the CAP has invited the COMP to meet with them during the CAP meeting in Winnipeg, also in 2004. The Kirkby Medal, given to a physicist who has performed significant service to physics as a profession will next be presented in 2002. Members of the COMP are encouraged to think of worthy individuals. Stuart Foster was the COMP Speaker at the CAP meeting in June 2000. Patterson reported that the President of EFOMP has spoken highly of COMP's YIS and may seek to emulate that competition within the EFOMP. There was no COMP YIS in Chicago. At Kelowna, the registration fee will be waived for the speakers selected to participate in the YIS. The COMP now has to pay for publication of the COMP abstracts in Medical Physics. As a result of this and other new expenses, the COMP is investigating new ways of generating income. The COMP would like to establish a permanent archive of historic materials related to medical physics in Canada.
7. Treasurer's Report: Pistorius presented the COMP/CCPM 1999 financial statement, as audited by Randall Miller. Miller tracked and verified the transfer of funds from the former treasurer's (Evans) control to Pistorius' control. The COMP/CCPM made a profit in 1999. Assets at the end of 1999 stood at $148 142.72. There was a *motion* to accept the 1999 statement by Alan Cottrell; seconded by Baillie. *Motion* Carried. Pistorius then presented an interim statement for 1 January 2000

(Continued on page 53)

to 30 June 2000. There was some discussion of individual line items. Patterson explained that some of the budgeted funds for the Executive Director position were not used, as Brighid had to resign the position. A search committee has been struck for a new Executive Director. CAMPEP expenses were higher than budgeted. This overrun was handled through discretionary funds. Current assets are estimated to total $168 697.49. A deficit of $18 000 is expected for 2000. Podgorsak asked what the total budget was. The reply was about $60 000. Podgorsak commented that he thought we should have one year's budget in the bank, not two or three. Patterson replied that the assets will go down, as we expect to run deficits for a while. Pistorius presented a draft budget for 2001. A $14 800. deficit was projected. George Mawko moved that the draft budget be accepted, seconded by Clement Arsenault. *Motion* carried.

8. Secretary's report: Caldwell reported that the COMP currently has 288 Full Members, 49 Student Members, 11 Emeritus Members, 1 Retired Member, and 22 Corporate Members, for a total of 371. There has been a decrease in Student members since last year, probably due to the lack of an independent COMP conference this year. Munro asked whether prospective members of the COMP are migrating to the CAP's DMBP. Johns replied that this is unlikely and that the DMBP had few members.
9. Committee Reports: As time was limited for this AGM, all Committee Chairs had distributed written reports via e-mail before the meeting. Schreiner questioned Peter Munro regarding who would be the next Editor of *InterActions*. Peter Munro replied that Pat Cadman would be the new Editor and asked that all support him as much as possible. Cadman will have primary responsibility for the Newsletter, while Kolios will have overall responsibility for all the activities of the Communications Committee, including such items as the web-site.
10. Report from the CCPM. John Schreiner (CCPM President) reported that 14 new Members had been welcomed to the CCPM this year and 7 new Fellows. There are now 72 Members and 101 Fellows of the CCPM. Peter Dunscombe has finished his term on the CCPM Board and is being replaced by Dr. Narinder Sidhu. The CCPM is now one of the sponsoring bodies of the CAMPEP, the organization that accredits courses and programs.
11. Conferences
    a. *Kelowna*: 12 to 14 July 2001. Members are encouraged to bring their families for a summer holiday and excellent conference.
    b. *Montreal*: 14 to 19 July 2002. The AAPM is meeting in Montreal and the COMP will meet with the AAPM. Patterson stated that the COMP would like to approach the AAPM with a proposal that this be a joint meeting. Podgorsak was skeptical, stating that there may be too much financial risk. Patterson replied that the Executive had considered this and felt that there was sufficient desire to have a true, joint conference and sufficient funds in the coffers to accept the risk. There was some discussion of the issue. Many felt that the Chicago meeting had been disappointing, in that there was no possibility of a Canadian YIS, the poster sessions were poor (since posters were kept up for only very limited periods) and there was no discernable Canadian input. Fallone stated that he and others had been trying to meet with AAPM representatives about 2002 without success. **Action**: Fallone to continue to pursue Canadian input/ possible joint conference in Montreal.
    c. *Edmonton*: 2003 June 19th to 21st. Gino Fallone proposed that the COMP meet in Edmonton in 2003. The site would be at the University of Alberta Campus. There is a major teaching hospital on site. A 400 seat amphitheatre is available as is 1800 ft^2 of space on one level and 4300 ft^2 of space on another level (for posters, coffee, exhibits). Residence accommodation (not air conditioned) is available at a cost of $32/person/night. The auditorium and audiovisuals will be free of charge, as Fallone is a professor at the university. Fallone moved that the COMP meet in Edmonton in 2003. Second: John Schreiner. *Motion* carried.
12. Transfer of the Gavel: Patterson transferred the gavel to Gino Fallone, who now takes over as the Chair of the COMP. Fallone thanked Michael Patterson, Peter Munro and Paul Johns for their service to the COMP.
13. AOB: None
14. *Motion* to adjourn: John Andrews; Second: Katharina Sixel; Carried at 7:29 pm.

Sylvia Fedoruk — a woman of many firsts

By Patrick Cadman
Saskatoon Cancer Centre

It was my pleasure, as a representative of the Saskatchewan Cancer Agency attending the 2000 COMP general meeting, to present the Sylvia Fedoruk Award for the best paper on a subject falling within the field of medical physics with work performed in a Canadian institution. As I prepared something to say for the presentation, it struck me that I really knew very little about Sylvia Fedoruk's career and life and I assumed this to be true of most of the COMP membership. I have had the pleasure of talking with Sylvia on a number of occasions and have always been captivated by her warmth and down-to-earth style. Sylvia's accomplishments as a medical physicist, administrator, athlete and public figure have been the stuff of local legend in Saskatchewan. People like her have much to share in terms of perspective, information and humor. Her life story has been a "series of adventures" as she puts it. One can't help feel that these adventures were as much due to a keen sense of value and potential as being in the right place at the right time, as she would have you believe.

Getting Started

It was the influence of her parents, her high school teacher and Harold Johns that has guided Sylvia along the many paths she has traveled. Sylvia, an only child of immigrant parents from the Ukraine, did grades 1-8 in rural schools east of Yorkton and grade 9 by correspondence where she studied typing instead of French (who in the Ukrainian district took French?). The Fedoruks moved to Windsor Ontario during the war where her mother and father worked in a factory. Her mother felt cheated, in that she had no education beyond grade 8 and decided that Sylvia should one day go to university. When Sylvia came home from school and announced that she was put in the commercial class (10F), her mother didn't go to work the next morning; instead, she marched off to the school. Sylvia ended up taking grade 9 and 10 French and excelled through her studies. In grade 11 a Ms. MacLaren told her she was never going to be a poet or author and that she should consider a career in science. Sylvia ended up being the top female graduate of the school and winning the Dominion of Canada scholarship for $400 (getting the medal from Paul Martin Sr.).

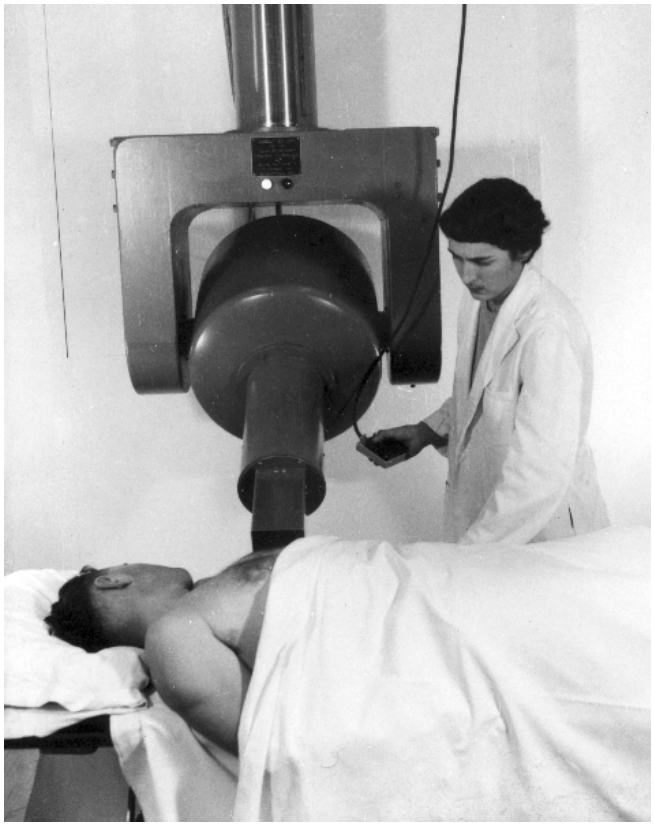
The war was over and Sylvia moved back to Saskatchewan with her parents with tears in her eyes, since she had hoped to study in Toronto. She enrolled at the University of Saskatchewan in 1946 (69 men and herself in the calculus class). Her first year physics teacher was Harold Johns; every demonstration in class was going to be some kind of an adventure - some things would go right - mostly things would go wrong. By Christmas, Harold Johns invited Sylvia to his house for lunch where he and Mrs. Johns were talking about this whole new exciting field of medical physics and how great it would be for a woman to be involved. Sylvia's whole career path was decided that first winter at school and she credits the influence of Harold Johns, her mentor, for her opportunities.

Career Developments

By the time Sylvia was ready to enter graduate school, the Cobalt-60 unit was being developed in Saskatoon under Harold Johns. Fellow graduate students of the time include: Douglas Cormack, Lloyd Bates, Dick Kornelsen and Ed Epp. Sylvia's part was to do the dosimetry and depth dose measurements. Sylvia remembers when she and Ed Epp spent almost an entire summer performing depth dose measurement for an x-ray therapy unit, often working late into the night. The students were very proud of their results and presented them to Harold Johns for review. Next morning, the two students walked into his office. Dr. Johns took the data and threw it into the trash can! "It just doesn't make sense – I can't understand why all this data is so inconsistent", he raved. This led to the development of the electronics to have a field and reference probe for measurements, redesign of the ionization chambers, etc. Commercial equipment was so bad at the time that things often had to be build in-house.

When Harold Johns moved to the Ontario Cancer Institute in 1956, Sylvia was to stay in Saskatoon and become firmly entrenched in the development of medical physics in the province. In the early 1950's, nuclear medicine was in its infancy, radioactive iodine and gold were starting to be used for therapy, and clinical scanning techniques were being developed. The physics group in Saskatoon managed to acquire a Reed-Curtis scintillation scanner from Chicago, which they were quick to modify into a sensitive photoscanning device able to produce radiographic images of radioactivity in the thyroid and liver. Sylvia

(Continued on page 55)



A young graduate student, Sylvia Fedoruk, demonstrating the Cobalt bomb. The "patient" in the photo is Harold Johns.

(Continued from page 54)

was joined by a bright young graduate student, Trevor Cradduck, and they designed and built a scintillation scanning device. The unit looked just like the Cobalt bomb (the early Co-60 therapy unit) with a crystal of 5 inches in diameter and could perform a whole body scan using a slit profile mode or could use a multi-focus collimator to scan a smaller area. The group also built a scintillation camera with the help of Rudy Hummel, (then of Nuclear Enterprises) which would become Canada's first gamma camera. The working camera resided in the basement of the University Hospital in Saskatoon. One evening, it was about – 30° C and someone left the windows open in the room; the next morning they discovered the crystal shattered. The work with the camera was recognized by a working group with the I.C.R.U. and Sylvia was on a task committee to determine how best to measure sensitivity and resolution for cameras.

As a physicist with the Saskatoon Cancer Centre from 1955 - 1975, Sylvia made many trips to Regina to help perform physics duties there. She became director of physics services for the Saskatchewan Cancer Foundation in 1975 and looked after both clinics until 1986. At the time Sylvia retired from the cancer program in Saskatchewan, after 35 years, she figured she had spent 1 year on the highway between Saskatoon and Regina.

AECB involvement

Sylvia was the first female on the Atomic Energy Control Board and remained on the board for 16 years from 1973 to 1989. In this time, the board increased from approximately 30 to over 300 members. Sylvia remembers a time of great concern about smoking, radon gas and lung cancer and a meeting with union representatives from the United Steel Workers at Elliot lake. The 16 reps gathered were complaining about a colleague who came back from the doctor with a diagnosis of cancer, which, beyond any doubt to them, was due to the Radon gas in the mines. "What are you going to do about it board members?," they asked. Here they all were, sitting around the table in a blue haze, enjoying a good smoke. Sylvia remembers another time as board member when they flew up to Cluff Lake in northern Saskatchewan. They had just removed 20 feet of dirt to reveal a bed of very rich uranium ore. She was down in the pit, all excited about her Geiger counter reading off-scale. She was standing too close to the pump that was evacuating the seeping water and her pant leg (fortrell) completely shriveled up (from the heat, thank goodness, not from the radiation).

Branching Out

Sylvia was elected the first woman Chancellor of the University of Saskatchewan in 1986, at which time she gave up her physics services directorship and professorship. Sylvia was also appointed Officer of the Order of Canada in 1986. Three years later, Brian Mulroney requested that she become Saskatchewan's lieutenant governor. Her university chancellorship was cut short and this also ended the longest served membership with the AECB. Sylvia now embarked on a road that would be perhaps her most rewarding, allowing her to encounter and touch the lives of many of the residents of Saskatchewan, especially the children.

A Sporting Chance

The story of Sylvia Fedoruk would not be complete without mention of her many sporting achievements. At university, Sylvia was active in basketball, track and field, volleyball and golf.

Sylvia performing depth dose measurements on the Cobalt-60 unit. Sylvia notes the snappy dress of the time.

(Continued from page 55)

She received 12 intervarsity championship awards and the Spirit of Youth award from the U. of S. in recognition of her contribution to sports and student activities. After university, she played on several western Canadian softball teams (winning 5 provincial softballs championships) and was on the Canadian Ladies Curling Championship rinks in 1960 and 1961. She has been inducted into the Saskatchewan Sports Hall of Fame, the University's Wall of Fame and the Canadian Curling Hall of Fame. Perhaps the most gratifying sports event for Sylvia might be fishing with her pals in the cool waters of Northern Saskatchewan. Did you ever hear the one about the time she caught a monster walleye, a fishing guide, and a moose, all in one day!

The Sylvia thing

As a women of many firsts I asked Sylvia what message she would like to relay to a young scientist, perhaps female, who might hope to follow in her footsteps. "You have to gain the respect of your peers and you have to work hard at it," she replied. She says the nicest thing about her retirement was that there were 7 or 8 male physicists she worked closely with and they were all sorry that she was leaving. She felt the same way all through university and worked her "butt off". She reveals, "the most important thing is to earn the respect of your peers – nothing comes for free".

Sylvia displays a beanie during her address to convocation.

She tells a story of a kindergarten class that she visited as Lieutenant Governor of Saskatchewan. There was a picture of her and her dog Charlie which the class had gotten a hold of. A little girl asked her, "You've got a pet, eh?" "Yes," said Sylvia. "It's a dog eh?" "Yes," replied Sylvia. "And its name's Charlie, eh?" "Yes," nodded Sylvia. Then Sylvia asked the little girl, "Have you got a pet?" "Oh, I have two pets," she replied. "What are they?" continued Sylvia. "I've got two fishes," the little girl said. "What are their names," Sylvia inquired. The little girl was stumped and looked down, frowning; obviously she had no names for her fishes yet. Finally, she looked up and replied with a grin, "Sylvia — Fedoruk".

Sylvia continues to deliver a lot of smiles.

Acknowledgements

Thanks to Douglas Cormack for his continued enthusiasm for all thing of historical significance in medical physics and review of the manuscript. The first and last images were provided by the University of Saskatchewan Archives (item numbers A-5138 and A-7990).

Licence Application Guides: CNSC's New Approach to Licence Application

By: Clément Arsenault
Dr. Georges L. Dumont Hospital
Peter O'Brien
Toronto-Sunnybrook

As you are all aware, the Canadian Nuclear Safety Commission (CNSC) was officially created on May 31, 2000 to replace the Atomic Energy Control Board (AECB). In June, the Commission published its new regulations (see Canada Gazette Part II, June 21, 2000). These regulations state what is now required by licence holders for each regulated activity and for its Radiation Safety Program. The new Licence Application Forms are essentially a method of ensuring that the licence holder meets all of these requirements. This approach to licence application is very useful since it allows the applicant to follow a guide without extracting information directly from the Regulations. If you have ever had the pleasure of reading through the Regulations, you can understand that such a step-by-step Guide is a god-send!! There is an important change that has occurred with the new regulations. The old regulations did not contain details of operational radiation safety. The AECB then interpreted the regulations and added these operational requirements as licence conditions. Many of these old licence conditions are now included in the new Regulations. The new Regulations therefore are much more extensive than the old ones. There is also a much stronger emphasis placed on the licensee's radiation safety program including the training of staff in radiation safety.

For each different type of nuclear substance and device the CNSC has created a Licence Application Form which is supplied with an extensive Licence Application Guide to help the user in the application process. The application guides provide explanations on what specific information is required in each box of the application form so that the CNSC can properly evaluate the radiation safety program of the applicant.

Each application form is divided into sections that describe the Applicant, their Radiation Safety Program and its Policies and Procedures, as well as sections directly related to the Use Type of the licence. These Use Types are defined by the CNSC and are listed in the Regulations.

The most common Guides for **medical** uses of nuclear substances or radiation devices are:

1. Licence Application Guide C-120: Radiation Therapy

To be used for cobalt-60 teletherapy units, medical linear accelerators, LDR, HDR and PDR brachytherapy machines - for construction and operating licences and amendments to those licences.

2. Licence Application Guide C-235: Manual Brachytherapy

To be used for Ir-192 wires and seeds, I-125 seeds and other sealed sources used in manual brachytherapy procedures.

3. Licence Application Guide C-234: Group II Sealed Sources

To be used for small calibration sources and research sources (<50 MBq).

4. Licence Application Guide C-237: Nuclear Medicine and Human Research.

To be used for radioisotopes commonly used in nuclear medicine departments.

In addition to the Guides and Forms listed above there are other documents under development for Servicing of Class II Facilities and Class II Prescribed Equipment, Disposal of Unsealed Nuclear Substances and Quality Assurance Programs for Licensees.

Some major changes are present in this new approach to licence application and in the licences themselves. These reflect the new regulations and the CNSC's new motto "Documentation, Documentation, Documentation"!!! The following items are the most important.

1. The format for licence application in the past was very uneven. There were forms for radioisotope licence applications but no application guide. For linear accelerators there was an application guide but no application form. Also, the resulting licences bore no resemblance to each other. The new system standardizes the application process and the same basic information is now required for each licence type. The resulting licences will have a common format.

2. The old radioisotope licences will essentially disappear. These licences will become either "Nuclear Substance or Radiation Device Licences" or "Class II Nuclear Facilities and Prescribed Equipment Licences". The NSC Regulations have placed HDR, LDR, linear accelerators and cobalt-60 units into the new category called Class II Prescribed Equipment.

3. Each type of Class II equipment requires a separate C-120 application for a licence to construct the room, for a licence to commission and for a licence to operate the class II equipment clinically.

4. It is interesting to note that there is not an explicit statement in the licensing guide to exclude any linear accelerator from the requirement for a CNSC licence. We can await further developments on this issue.

5. There is a major emphasis on the applicant's radiation safety program. The applications must include details on virtually all aspects of the program including administrative structure, RSO

responsibilities and qualifications, explicit policies on ALARA, action levels, worker training, monitoring, security, inventory control and brachytherapy procedures.

6. Most licences now require that a physician be identified as the "Designated Supervising Physician". The DSP is simply used to confirm that the nuclear substances and radiation devices are used on humans only as directed by a qualified medical practitioner.

7. For applicants who have several different nuclear substances and devices, there is considerable overlap in the information to be submitted for each licence. It is strongly recommended that each applicant prepare a Radiation Safety Manual which summarizes all of the required information. One copy of the manual can be submitted to the CNSC and updated as necessary.

Conclusions

The Guides developed by the CNSC are presently all in **draft form.** Unfortunately, they were released earlier than anticipated because the CNSC wants to have all licences converted to the new Regulations by June 2001. Because of their early release, many errors were not removed from the final printed copies that were sent to us. Also, in some cases it is not clear which sections of the form are to be filled out for a particular licence application and Use Type. This is particularly true with C-120 which is used for several radiation therapy machine types and Use Types. That's where we come in! The CNSC is very receptive to our comments on the Guides. Comments can be made directly to Ramzi Jammal of the Materials Regulatory Division of the CNSC at (613) 996-5166. Even though these Guides did not go through the regular review process of the CNSC, they are definitely a positive step towards facilitating the licence application process.

Comment on "Report on the Forth Annual General Meeting of the Canadian Brachytherapy Group"

By Hugo Tremblay, CHUM

I would like to report a pseudo-mistake (it is not a real mistake since the word 'appears' is used) into the following article: Report on the Forth Annual General Meeting of the Canadian Brachytherapy Group. The London centre is not the only centre in Canada which uses brachytherapy as the sole treatment for early stage breast cancer. The CHUM in Montreal (Notre-Dame hospital) also offers this alternative following the RTOG protocol 9517 written by Dr. Robert Kuske. Dr. David Donath and our physics team have worked in this project since the summer of 2000. By the way, Dr. Kuske gave an excellent talk on this topic at the 10th International Brachytherapy Conference in Madrid, Spain (11-14 November, 2000).

Additional radiotherapy departments to be built in Quebec

By Jean-Pierre Bissonnette,
Hôpital Notre-Dame, Montreal, PQ

At least three new departments of radiation oncology have been announced to increase radiation therapy services in the province of Quebec. The largest one would be located on the south shore suburb of Montreal, at Hôpital Charles-Lemoyne, where eight linear accelerators would be installed in two phases. At least two smaller clinics, in Montreal's north shore suburb and in Lévis, located opposite to Quebec City on the St. Lawrence river, are also planned. The Charles-Lemoyne project is planned for clinical operation in 2005.

This is one of the several recommendations from the Freeman committee, whose mandate was to analyze the situation of radiation therapy services in the province of Quebec. As is the case in other provinces, long waiting lists have been deemed unacceptable on a medical point of view, and several patients have been sent for treatment to the United States in order to reduce waiting times. Professor Ervin Podgorsak sat on the committee, representing physicists. Besides the increase of the number of treatment units, the committee also recommended that staffing requirements for physicians, therapists, and physicists, be examined. Another recommendation was to increase the number of graduates for all three professions, but that the building of new clinics should not be made to the detriment of existing ones, especially university hospitals. Therefore, the radiation therapy departments of the McGill University Health Centre, the Centre Hospitalier Universitaire de Québec, and the Centre Hospitalier de l'Université de Montréal are currently being updated and expanded by two, two, and five new bunkers, respectively. All three expansion projects are expected to be completed by 2003.

In the mean time, planning committees have been set-up to ensure that there will be a sufficient number of physicians, therapists, and physicists to operate safely and efficiently these new departments without affecting the production of existing ones. Severe shortages of physicists and physicians have been recognized. In recent years, several physicists (from both English-speaking and French-speaking hospitals) left the province for the much higher wages paid in the private sector and, more importantly, in the other provinces (+ 115%) and in the United States (+ 200%). As a result, most graduates from medical physics programs do not pursue their careers in Quebec. To solve these problems, a scholarship program has been implemented ($17,000/year), where the recipient has to work in Quebec for two years or refund the scholarship. Another measure is the revision of the wages paid for medical physicists in Quebec, which are grossly inferior to those paid in the other Canadian provinces. Negotiations are undergoing presently between the government and l'Association Québécoise des Physicien(ne) Médicaux Cliniques, and are progressing slowly but surely.

Crisis in cancer therapy:

Quebec, Ontario have achieved only limited success in improving systems

By Ervin B. Podgorsak
McGill Univeristy

During the past two years governments of Quebec and Ontario have made genuine, yet largely unsuccessful, efforts to deal with the long waiting lists for cancer therapy in the two provinces. In response to public pressure, they vigorously attacked the problem on numerous fronts; unfortunately without ever addressing the real issues plaguing their health care systems.

Several thousand patients were sent from the two provinces for cancer treatment to the United States at 3 to 4 times the cost of treatment in Canada. New cancer therapy equipment was ordered and is to be installed in the two provinces with a fast-track approach, by-passing the standard bureaucratic rules for equipment acquisition.

SPECIAL DEALS More recently, the two governments made special deals for treatment of some patients at provincial clinics on an after-hours basis. Ontario turned to a private company "Canadian Radiation Oncology Services" to treat at night 1000 patients in the next year at a cost of $4000 per patient in a major, publicly-run Toronto cancer clinic. Quebec made a special deal with some of its radiotherapy staff to treat selected patients on an overtime basis for a fee of $4000 to $5000 per patient. And yet, despite the seemingly valiant efforts by the Quebec and Ontario governments, waiting lists for cancer therapy persist in the two provinces.

At first glance the after-hours treatment of patients at home at a cost of $4000 looks sensible and attractive. After all, it is well known that $4000 per patient will cover competitive salaries for all radiotherapy staff as well as capital and maintenance costs of equipment. A closer look at the special deals, however, reveals a clear example of the governments' haphazard and arbitrary approach to the cancer therapy crisis.

Consider the deal that Ontario struck with Canadian Radiation Oncology Services. The government provides publicly-owned multi-million dollar cancer therapy equipment free of charge to the private company, so that the $4000 fee per patient goes for salaries and company profit alone. And the scheme in Quebec? The $4000 fee is shared between technologists and physicists but nothing whatsoever is allocated for support personnel or equipment capital cost and maintenance.

The special deals undoubtedly help the selected patients to receive treatment at home, but, rather than addressing the serious morale problem and unhappiness among radiotherapy staff, the deals compound the problems. How can Ontario allow a private company to use, free of charge, publicly-owned radiotherapy machines that cost several million dollars each? How can Quebec justify paying some of its professionals an overtime rate which is 8 to 10 times their regular daytime rate and at the same time insist on a regular daytime pay-scale for its professionals that is only at 50% to 70% of Ontario pay-scales?

While both Quebec and Ontario struggle with cancer therapy waiting lists, the causes for treatment delays are distinctly different in the two provinces: Quebec has problems with access to radiotherapy equipment, Ontario with access to physicians. There is a shortage of radiation oncologists in both provinces, but the Quebec radiation oncologists responded to the crisis much more responsibly than their Ontario colleagues. The Ontario government agreed to an annual ceiling of some 250 patients per radiation oncologist, yet in Quebec, radiation oncologists treat up to 500 patients per year and the quality of radiotherapy services is essentially the same in the two provinces. As a result of workload restrictions, Ontario actually has cancer therapy equipment that is not used to full capacity because not all cancer patients can gain timely access to physicians.

A yearly workload of 200 patients per radiation oncologist is a reasonable and defensible goal under normal circumstances, allowing physicians proper concentration on patients' problems and some academic work. However, the past few years have hardly been normal for the Canadian cancer therapy. Insisting on the ideal workload that at the same time leaves hundreds of cancer patients without timely access to a physician does not reflect well either on the medical profession in Ontario or on the Ontario government which condones the practice.

MORE EQUIPMENT Quebec, of course, has its own problems. The government deserves much credit for drastically improving the equipment situation in the province; however, its institutions are saddled with a demoralized and disgruntled workforce, mainly because of the inequitable salary scales in comparison with Ontario and the rest of Canada. Historically, Quebec professionals accept lower pay scales than those in Ontario. However, to be stuck at only 50% to 70% of Ontario levels causes great consternation, especially when, in contrast, the pay-scales for the provincial assemblies and police forces are matched quite nicely between the two provinces. This situation obviously makes staff retention and recruitment of new staff into vacant positions very difficult for Quebec institutions, resulting in severe shortages of health care professionals.

The Quebec government maintains that it cannot improve the salaries of nurses and technologists without having to deal with similar demands from all public service unions. There is a way around this quandary. The standard workday in the Quebec public service is 7 hours, and the government could decree for professionals in short supply a standard workday of 8 hours until the situation improves. To make this more palatable it would be reasonable to pay the daily extra hour as overtime at a rate of 2 regular hours. Radiotherapy clinics would then run a normal 8 hour day, Quebec would get a 14% increase in professional services without having to hire additional, difficult-to-find, trained personnel, and the professionals would receive a 28.5% increase in income over their current income, bringing them close to Ontario levels.

It is obvious that during the past two years the governments of Quebec and Ontario made serious and honest efforts to solve the cancer therapy crisis in the two provinces. It is also obvious that they achieved only mixed success so far as they could not find their way through the quagmire of misinformation, conflicting interests, and union mentality that permeates their health care systems.

Our cancer patients need and deserve better, not only from politicians but also from health care professionals.

Is it physics or is it funnies?
By Brennan MacDonald

COMP 47th Annual Scientific Meeting

This year's meeting will be held at the Okanagan University College Campus in Kelowna, BC on July 12 to 14, 2001. July is the height of the tourist season for Kelowna and the campus accommodations are limited so please make arrangements as soon as possible. Registration and local information is posted on the COMP website (www.medphys.ca).

The meeting will start off with a Welcoming Reception on Wednesday evening, July 11. The CCPM Symposium scheduled for Thursday, July 12, is titled "The Convergence of Biology and Medical Physics" and will include a number presentations from invited speakers who will highlight areas where biology and medical physics are impacting each other. The scientific paper presentations will be Friday and Saturday, July 13 and 14. An Exhibition & Poster Reception will be featured Thursday evening. An outdoor-lakeside Reception and Dinner are planned for Friday evening at the Hotel Eldorado.

We look forward to seeing in the sunning Okanagan.

Local Arrangements Committee
Cancer Centre for the Southern Interior
Kelowna, BC

Announcement

Recent developments in accurate radiation dosimetry, International Workshop

October 11-13-2001
McGill University Health Centre
Medical Physics Department
Montréal, Québec
Canada

We are organizing an international workshop around accurate dosimetry and the role of cavity theory. The workshop will discuss recent developments in cavity theory, Monte Carlo calculations and accurate experiments.

The general topics are:

1. Recent developments in cavity chamber theory
2. Monte Carlo calculations of ion chamber response and absolute dose
3. Interaction data and their accuracy
4. Status of standards for absorbed dose and air-kerma and their accuracy
5. Ion chamber conversion and correction factors in photon and electron beams
6. Alternative detectors for accurate dosimetry and their characterization
7. Proton beam dosimetry

Invited speakers include:

P. Andreo (Karolinska Institute, Sweden)
A.F. Bielajew (University of Michigan)
D. Burns (BIPM, France)
I. Kawrakow (NRC)
C.M. Ma (Stanford University)
A.E. Nahum (Royal Marsden Hospital, UK)
D.W.O. Rogers (NRC)
H. Palmans (University of Gent, Belgium)
C. Ross (NRC)
S.M. Seltzer (NIST)
D. Thwaites (University of Edinburgh, UK)
F. Verhaegen (Royal Marsden Hospital, UK)

Publication of the proceedings of this international workshop will be in *Radiat. Phys. Chem*. For more information regarding abstract submission, instructions to authors, etc, see http://www.medphys.mcgill.ca/rad_dose or contact: J. P. Seuntjens (McGill University, jseuntjens@medphys.mcgill.ca) or P. N. Mobit (University of Calgary and Tom Baker Cancer Centre, pmobit@cancerboard.ab.ca)

Report on the 10th International Brachytherapy Conference

Madrid, Spain, November 11-14, 2000

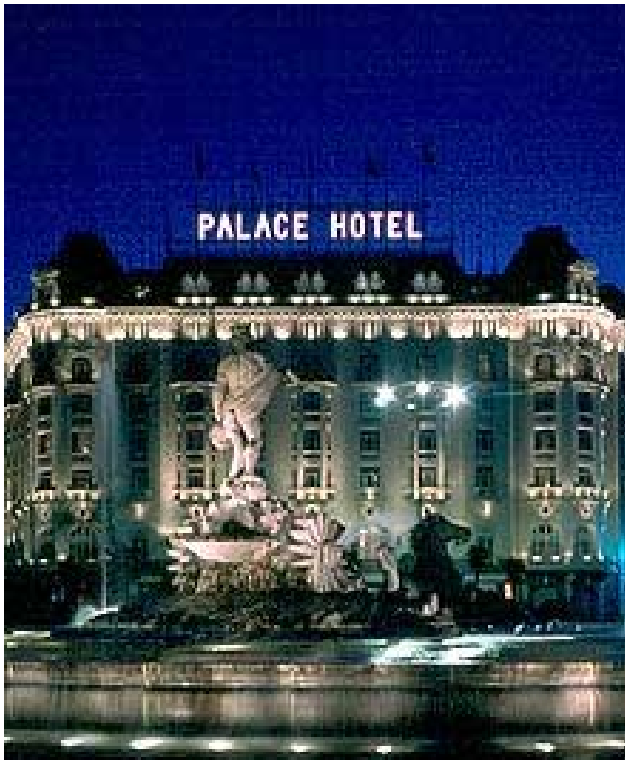
By Raxa Sankreacha
Toronto-Sunnybrook Regional Cancer Centre

Once every two years Nucletron Inc. holds a brachytherapy conference either in Europe or the United States. I had the opportunity of going to the conference which was held in Madrid, Spain from 11 - 14 November, 2000. The conference took place at the prestigious Palace Hotel, Madrid. Madrid is truly a beautiful and vibrant city with lots of history but very expensive!

There were about 390 attendees from all over the world but majority from Europe and North America. There was a total of 55 proffered papers, 37 posters and 33 talks from invited speakers.

The conference was broken down into six topics, namely: Prostate Brachytherapy, Image guided Brachytherapy, Various body Sites, Radiobiology and Physics, Gynecology, Vascular Brachytherapy and Breast.

The first evening keynote speaker for the opening of the conference was Dr. Peter Ekman (Professor of Radiology) from the Karolinska Hospital. He talked about "Lifestyle and prostate cancer" which described the genetic and environmental factors that contribute to prostate cancer as well as identifying the high risk groups.



The following day was totally dedicated to LDR and HDR prostate brachytherapy. A total of nine invited speakers gave talks on experiences and results from their institutes. New treatment techniques such as intraoperative real-time prostate brachytherapy was described by Dr. Subir Nag from Columbus, Ohio. They had used this method on 125 patients and he had described their experience as well. This technique was indicated to overcome the limitations of pre-planning as required in LDR prostate implants. It allows real-time planning in the OR….. unfortunately increases OR time. With the growing use of HDR as a boost for high risk prostate patients, one group carried out a national survey which was aimed to ascertain the number of centres in the USA currently offering prostate HDR and to establish the number of patients treated. It was interesting to learn that prescribed doses used for boosts vary widely among centres compared to external beam doses which are within a narrow margin. Also, the use of hormones did not seem to be universal. A total of 349 of the 439 centres with a HDR afterloader participated in the survey. An additional 26 were planning to offer this treatment within one year. An estimated 3433 patients have been treated with HDR nationwide.

Results and experiences from France, Italy and United Kingdom were presented for gynecology brachytherapy using PDR, LDR and HDR for carcinoma of the cervix.

Dr. Jean –Jacques Mazeron from Paris, France, presented their experience, accumulated over three decades, in conservative management of T1-3 adenocarcinoma of the breast. The presentation focused on the role of Iridium-192 boost in conservative management of breast cancer with or without breast conserving surgery. Another very interesting talk was given by Dr. Alvaro Martinez from William Beaumont Hospital, USA, that described a 3D-virtual brachytherapy technique used for interstitial implants for breast patients. Unfortunately it's too detailed to describe here!

There was a wide selection of presentations and talks from a wide spectrum of users primarily of Nucletron products. Users of PLATO will be pleased to know that there have been quite a few bug fixes and the ability to do inverse optimization for brachytherapy in the next version to be released summer 2001.

There was also a conference dinner towards the end which was hosted by Nucletron. It was a wonderful evening of food, sangria and flamenco! In summary, the conference focused mostly on clinical experiences although there was a certain percentage of physics. It was a really interesting and informative conference worth going to. Next conference is expected to be in June 2002 in Sante Fe, New Mexico.

What is the optimum distance from an a-bomb for good health?

By John R. Cameron
Visiting Prof. University of Florida, Depts. of Radiation Oncology & Physics

A low dose of radiation appears to stimulate the immune system. Feinendegen et al (1998) suggest that a short-term (acute) dose of 0.1 Gy to animals -about 100 years of background dose, excluding radon progeny — is about optimum. I was surprised to find support for this idea in a recent article.

The longevity of a-bomb survivors 2.8-km from the hypocenter of the a-bombs, who received a low dose, had a greater longevity than survivors closer or further away. (Cologne and Preston 2000) This is consistent with the hypothesis of Feinendegen et al. There may better news from the a-bomb studies. Unfortunately, the authors combine over 40,000 survivors within a very large dose range of 50:1- from 0.005 to 0.249 Gy. This large group shows no significant statistical change in longevity from the controls. If this group was broken down into 8 groups of 5,000 each, I suspect that survivors with low doses might show greater longevity than those with higher doses. Both authors have so far ignored my request for a breakdown of the data.

References:

Cologne JB, Preston DL Longevity of atomic-bomb survivors Lancet 356; pp 303-307 (2000).

L. E. Feinendegen, Victor P. Bond, Charles A. Sondhaus Can Low Level Radiation Protect Against Cancer? Physics and Society 27; pp 4 - 6 (1998).

Caution on the Use of Licenced Radioactive Materials

By Peter O'Brien
Chair, Radiation Regulations Committee

There has been a recent dramatic increase in the use of radioactive seeds in implants to treat cancer of the prostate. This development follows a general renaissance in brachytherapy and in the use of radioactive materials in medicine. The use of radioactive materials in Canada is of course licenced by the Canadian Nuclear Safety Commission. The manufacturer of the radioactive material must also obtain a licence to sell that material in Canada and this licence is issued by Health Canada. A medical physicist is often responsible for obtaining and verifying the dosimetric properties of these radioactive materials. These dosimetric properties are used to calculate doses received by patients and are discussed in the AAPM report of Task Group 43[1]. This note is a reminder to medical physicists that there are pitfalls in this process.

1. The Radiation Therapy Committee of the AAPM recommends[2] that radioactive seeds should NOT be used clinically until there has been independent verification of the dosimetric properties of the seeds.

2. Although each manufacturer of radioactive seeds must be licenced by Health Canada, that does **not** guarantee that the dosimetric properties of the seeds have been reviewed independently.

3. The AAPM also recommends in Task Group Report 56[3] that each centre should verify the calibration of 10% of the seeds before they are used clinically.

References:

1. TG-43 Report: Dosimetry of interstitial brachytherapy sources. Med. Phys. 22, 209-234 (1995).
2. Dosimetric prerequisites for routine clinical use of new low energy photon interstitial brachytherapy sources. Med. Phys. 25, 2269-2270 (1998).
3. TG-56 Report: Code of practice for brachytherapy physics. Med. Phys. 24, 1557-1598 (1997).

NetWorthy by Darcy Mason

Graduate programs

Last issue I asked for readers to send their links to graduate programs and/or research institutes. Here are a few that I received. I know there are many more out there - many are listed on www.medphys.ca, but that list is almost certainly not complete. Please send yours in! These will also be added to the graduate programs web page, and to the NetWorthy page on the COMP/CCPM web site.

www.irus.rri.on.ca	The Imaging Research Laboratories at the Robarts Research Institute in London Ontario
www.uwo.ca/biophysics	The Department of Medical Biophysics at the University of Western Ontario
www.biomedengwestern.org	The Graduate Program in Biomedical Engineering at U.W.O.
www.physics.ubc.ca/~medrt/medphys.html	Medical Physics / Radiotherapy Physics at UBC and the BC Cancer Agency
www.medphys.ca/info/grad/gradprograms.cfm	The list from the medphys web site - large collection of links to various universities

On-line Medical Dictionary

http://www.graylab.ac.uk/omd/index.html

The title is pretty much self-explanatory. This site is part of a larger effort called CancerWeb (http://www.graylab.ac.uk/cancerweb.html) that you might also want to check out.

Google's Medical Physics Directory

http://directory.google.com/Top/Science/Physics/Medical_Physics/

I don't think many of the internet directories have a specific entry under Medical Physics, but Google does! The related categories at the top of the page are definitely also of interest. Note also the ability to submit links, near the bottom of the page. We should all make use of this. However it did not work for me when I tried it, perhaps that is local to me, or a temporary problem).

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Book Review:

Radiation Safety & ALARA Considerations (21st Cent)

(ISBN: 1-930524-02-1; USD $35.95)

Review by: Christopher S. Davey
Provincial RSO
Alberta Cancer Board Radiation Safety Office

This volume is divided into several sections: ALARA, Personnel Surveillance Applications, Automated Applications, Orphan Source, Changes in Medical Application, Regulatory Considerations, RSO Section, Decommissioning, Other/Power Reactor Innovations, and Posters. The presentation of each paper is professional and printing is of high quality. A great deal of information is made available on a wide range of subjects, although these are mostly related to the power reactor or industrial uses of radioactivity.

The approach in most of these papers involves a traditional attitude to radiation (for example the paper on Very High Background Areas of Ramsar, where the conclusion states: "In spite of the lack of any data on harmful effects of natural radiation in HBRAs or Ramsar… the unnecessary irradiation of the inhabitants should be decreased."

One paper ALARA: Great Philosophy but too Subjective for Regulation, addresses the inconsistency of the approach to radiation risk, by comparing with other risks in society. It concludes that "ALARA is overly subjective and should not be a regulation." The inclusion of this paper gives hope that in time, the radiation protection community will move to a more balanced approach to radiation, with a resultant decrease in unnecessary and very often very significant expenditures to reduce inconsequential doses, and the resultant improvement in efficiency and economy.

I would recommend this volume to radiation safety specialists in nuclear power and research facilities, as a snapshot of current approaches and techniques. However, the medical RSOs would find that there is little of direct relevance to their field.

COMP Chair *(Continued from page 48)*

to support CRISM. A meeting of CRISM is scheduled within a few weeks of this writing, and it is hoped that the withdrawl of a major player will not hamper the activities of CRISM.

We hope to be able to obtain CAMPEP accreditation for this year's meeting in Kelowna, and thus enhance the profile of the Annual meeting. COMP is also in the process of studying the draft document of the Medical Physics Professional Affairs Committee that reviews the different certification available for medical physicists. We hope to draft a statement of a definition of a qualified medical physicist that would be acceptable to the COMP membership.

I would like to conclude this report by congratulating two members of COMP, Drs. A. Fenster and M. Henkelman, who have each been appointed as a Canada Chair Tier 1. This is an extremely prestigious award, and COMP is honored to have two of its members receive this award, especially in the first round of awards. Congratulations to Aaron and Mark.

As always, I would appreciate any comments, recommendations or critiques you may have in our operations and in what our goals should be.

Regards,
B. Gino Fallone, March, 2001.

CCPM President *(Continued from page 49)*

meetings attended, titles of publications, etc. As the process continues and our relationship with CAMPEP strengthens, CAMPEP credits may become a standard aid to support the applications. The applicants should itemize each claim and calculate the totals in each activity. Note that our present intent is not to require extensive documentation in the dossier. However, it is our plan to randomly audit a fixed percentage of applications each year (10 to 15 %, perhaps) and two or three applicants will receive requests for more complete documentation. Therefore, as you prepare you application you should be critical in selecting your credit claims with the view that you may be requested to support a particular claim.

I hope this sketch of the application is helpful to those that have been looking at the calendar and thinking about what they have to do for this June. Again, we will continue to develop the process over the next few years: there will likely be some rethinking of the procedures as specific problems are encountered as recertification is 'commissioned'. This is inevitable.

While on the topic of documents, I would like to remind everyone that application forms, bylaws explanations of the examinations, and such are now readily available on the Canadian Medical Physics Website at http://www.medphys.ca/index.cfm. As suggested at our last general meeting, we will be setting up a member registry on the website soon.

Finally, I would like to welcome Michael Henry the new Executive Director of COMP and the CCPM. I have had a good chat with Michael, and I think he will be able to help the Board as we try to move the College forward. One of our first tasks for him will be to review and comment on the Policy and Procedure manual the Board has been developing the past two years. This will certainly be a very important aid to future members of the various committees that have been formed to help the College in its work and it will be good to have some fresh eyes review the document. We look forward to Michael joining us at our Board meeting in Kelowna this summer.

With Best Regards,

L. John Schreiner, FCCPM
Kingston, March 19, 2001

In Brief

National Institute of Biomedical Imaging and Bioengineering created

COMP members might be interested in this note I copied form the NIH website.... *National Institute of Biomedical Imaging and Bioengineering Establishment Act (P. L. 106-580) President Clinton signed the National Institute of Biomedical Imaging and Bioengineering Establishment Act into law on December 29. P.L. 106-580 amends the Public Health Service Act to create a National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the NIH. The new Institute will conduct and support research, training, and health information dissemination relevant to biomedical imaging, biomedical engineering, and associated technologies with biomedical applications. The Director, NIBIB, is to prepare "a plan to initiate, expand, intensify, and coordinate activities of the Institute with respect to biomedical imaging and bioengineering." The plan will also address, where appropriate, the consolidation of NIH biomedical imaging and bioengineering research, as well as coordination of NIBIB activities with related activities of other NIH entities and of other federal agencies. Funding for the NIBIB will equal the amount currently spent by NIH institutes for imaging and engineering research programs. In establishing the NIBIB, the Director, NIH, is authorized to transfer personnel and to obtain administrative support from other NIH entities.*

Mike Patterson

ASTRO 2001 3D CRT Practicum

By Boyd McCurdy
CancerCare Manitoba

On March 1, 2, and 3, 2001, ASTRO offered a one day practical workshop providing an overview of three dimensional conformal radiation therapy. The atmosphere was relatively cosy, with attendance at approximately 140 per day. Three separate disease sites were discussed including head and neck, lung, and prostate. The program consisted of morning lectures delivered by a distinguished faculty of medical physicists (Dr.'s J. Purdy, R. Ten Haken, and J. Palta) and radiation oncologists (Dr.'s B. Emami, M. Roach III, and J. Rosenman). The lectures were of excellent quality and dealt with topics including the methodology of ICRU Reports 50 and 62, plan evaluation tools, and quality assurance. The afternoon comprised of hands-on sessions focusing on each disease site, with several vendors providing treatment planning workstations. Throughout the day, emphasis was placed on the importance of the team approach. Consistent with this, participating cancer treatment centres sent teams composed of two or three radiation oncologists, a medical physicist, and a senior treatment planner. From a medical physicist' perspective, the workshop nicely bridged our technical expertise and the practical medical knowledge of the radiation oncologists. The team from CancerCare Manitoba found the workshop a very educational and enjoyable experience.

Summer Course on Physics of Mammography

The Canadian Association of Radiologists operates a mammography accreditation program for mammography facilities in Canada, and the CCPM accredits individuals to perform the physics component of this program. The mammography committee is offering a two-day physics course to be held in Kelowna on July 10 and 11, preceeding the COMP annual meeting. Further information on both the accrediation program and the summer course can be obtained through the COMP web page (www.medphys.ca), directly at www.irus.rri.on.ca/~icunning/map, or by contacting Rasika Rajapakshe at rrajapak@bccancer.bc.ca. Registration is limited, so indicate your interest soon.

Ian Cunningham
The John P Robarts Research Institute

Dosgel'2000

The second international conference on the subject of gel dosimetry will be held from November 18-21, 2001 in Brisbane, Australia. This workshop follows the successful first meeting held in 1999 in Lexington, Kentucky, and is intended to bring together individuals with an interest in gel based three-dimensional radiation dosimetry techniques. Dosgel'2001 will again have strong Canadian representation, reflecting Canada's leading role in this field.

Gel dosimetry has the potential to become a standard technique in conformal therapy and brachytherapy, because it is a three dimensional volumetric dosimetry. The workshop aims to provide those interested in establishing gel dosimetry in their own institutes with the expertise gained by workers already undertaking gel dosimetry development. The sessions will cover both the fundamental scientific basis for gel techniques and the practical issues required for clinical implementation. Proceedings of DOSGEL'2001 will be published in the journal Australasian Physical & Engineering Sciences in Medicine (attendees are encourages to submit their work for publication). Further information can be obtained on the Dosgel'01 website: http://www.dosgel.qut.edu.au/ or by contacting COMP members Chantal Audet, Kevin Jordan, John Schreiner, or Ken Shortt.

L. John Schreiner

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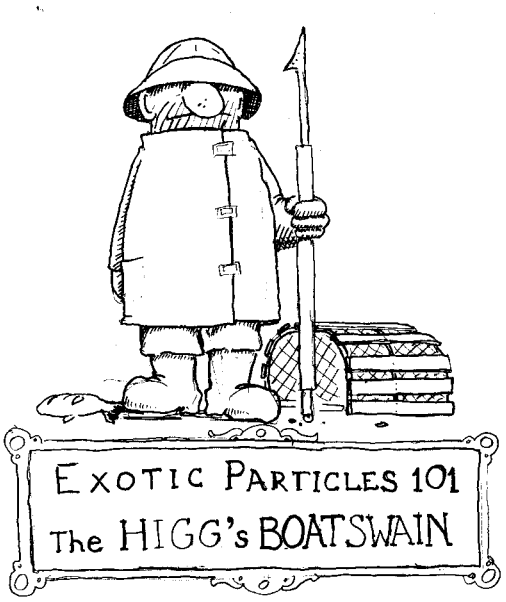
Is it physics or is it funnies?
By Brennan MacDonald



THERAPEUTIC RADIOLOGICAL PHYSICIST

University of Iowa Hospital, Iowa City, Iowa

The University of Iowa is seeking an open rank (tenure or non-tenure clinical track) medical physicist in Radiation Oncology for a newly created position to help meet our growing patient care and research goals. Responsibilities may include clinical service, research, and teaching based on the candidate's interests and qualifications. The qualified individual will have a Ph.D. in Physics or an equivalent field with at least one-year of clinical experience in radiation oncology. Experience with conformal therapy, intensity modulation, stereotactic techniques and/or brachytherapy are desirable.

The Division of Radiation Oncology currently has three medical physicists, three dosimetrists, and a staff of radiation oncologists, therapists and nurses. The equipment currently includes three linear accelerators (Varian 21EX with micro-multileaf collimation and optic guidance), ADAC 3D treatment planning system, Corvus IMRT with MiMIC, MMS prostate seed planning and spiral CT virtual simulator. Total body irradiation, stereotactic radiosurgery, prostate and gynecologic implants, as well as endovascular brachytherapy are performed. Physics support is provided for an active free radical and radiation biology research program with opportunity for collaboration. HDR brachytherapy, Varian MLC-based IMRT (Corvus, CadPlan/Helios) and 3D ultrasound are planned within the year. The University of Iowa will be one of the first sites to receive the Nomos Peregrine Monte Carlo treatment planning system for both clinical and research application.

Iowa City is home to the University of Iowa (student population 30,000) which is part of the Big Ten athletic conference (Iowa Hawkeyes). Iowa City is an idyllic multi-cultural University community with amenities in excess of population and with a public school system ranked among the top in the nation. The University of Iowa Hospitals and Clinics is the largest university owned teaching institute in the US.

Interested applicants should submit curriculum vitae to:

Sanford Meeks, Ph.D.
University of Iowa Hospitals and Clinics
Division of Radiation Oncology
200 Hawkins Dr. W189Z-GH
Iowa City, IA 52242

sanford-meeks@uiowa.edu
(319)356-0881
(319)384-9749 (fax)

Women and minorities are strongly encouraged to apply. The University of Iowa is an Affirmative Action/ Equal Opportunity Employer.

The University of Alberta Department of Oncology

and

The Cross Cancer Institute

Invite Applications for

MEDICAL PHYSICISTS

for Image-Guided Adaptive Radiotherapy

A comprehensive imaging and radiotherapy facility is being built as an extension to the Cross Cancer Institute (CCI). A helical Tomotherapy system, and cyclotron and PET facility for oncological applications has been fully funded for installation Fall 2001.

A number of medical physicists positions are presently available for research in a Image-guided Adaptive Radiotherapy Program which involves the Tomotherapy system and the associated imaging facilities available at the CCI (PET, SPECT, CT, MRI, etc).

One of the positions is for an academic medical physicist (Assistant or Associate Professor) available through the University of Alberta (Department of Oncology, Division of Medical Physics) at the Department of Medical Physics, CCI. The applicant should have a Ph.D. in medical physics or a closely related discipline, and a minimum of two years experience in Radiation Therapy Physics. Preference will be given to applicants with CCPM certification or the equivalent (ABR, ABMP).

The other positions are at a more junior level with possibilities for development into an academic position. Requirements to these positions are a PhD in Medical Physics with the understanding that the candidate seek certification.

The CCI is a free-standing comprehensive cancer centre that serves Edmonton (population 900,000) and northern Alberta, providing tertiary level diagnostic and treatment services and conducting cancer research and participating in professional education.

The facilities of the CCI include seven Varian linear accelerators, a cobalt unit, an orthovoltage x-ray machine, a CT-simulator, three conventional simulators, in-house developed and Helax treatment planning systems with IMRT; a comprehensive brachytherapy program and a comprehensive diagnostic, CT, MRI and SPECT imaging systems. There exists extensive computer, electronic, and mechanical facilities in the department.

Scientific research in Medical Physics includes: intensity modulation planning, delivery and verification (The CCI was the first Canadian institution to implement clinical inverse planning IMRT in April, 2000). Clinical research includes radiotherapy clinical trials of the RTOG, POG and NCIC. Teaching and/or thesis-supervisory responsibilities are within the University of Alberta MSc/PhD medical physics graduate program, the radiation oncology residency training program, and the in-house radiation therapist training school.

The present salary scale is from $75,630 - $112,000 (but the scale would increase as a new contract is being negotiated) in a city without provincial sales tax, the lowest provincial income tax in Canada and what can be considered, the lowest cost-of-living of any major Canadian city. Edmonton is in the heart of the Alberta parklands, offering a wide variety of outdoor recreational opportunities such as fishing, boating, hiking, camping and skiing. The city has the highest parkland per capita in the world, with many cultural opportunities including the symphony, opera and many festivals throughout the year. The Rocky Mountain Parks of Jasper and Banff are a three hour drive offering some of the best downhill, cross-country skiing and hiking in the world. In 2001, Edmonton will be the host city for the World Track and Field Championship and the World Triathlon Competition.

Please submit a resume with the names of three referees to
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