CANADIAN MEDICAL PHYSICS

NEWSLETTER Le BULLETIN

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COMP OCPM

CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE

LE COLLÈGE CANADIEN DES PHYSICIENS EN MEDECINE

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In Memoriam: Harold E. Johns

Feature Articles:

In Memoriam: Harold E. Johns 115

Image-Guided Minimally Invasive Therapy
M. Bronskill, G. Sela and N. Konyer 122

HE Johns Travel Award
Katharina Sixel....................................112

Third International Symposium on 3-D Radiation Treatment Planning and Conformal Radiation Therapy
Patrick Cadman...................................126

Inside this issue:

From the Editor	148
Message From the COMP Chair - Michael Patterson	98
Message From the CCPM President: Peter Dunscombe	99
1998 CCPM Exam Results - Gino Fallone	100
Minutes of the COMP Annual General Meeting David Spencer	101
Treasurer's Report: 1997-1999 Budgets Michael Evans	104
Research Funding Survey for 1996 – Paul Johns	106
1997 Professional Survey - Rick Hooper	109
Report from the AAPM - Sherry Connors	114
Errata: Membership Directory	127
Who Can Perform Medical Physics Surveys on Mammography Systems in the USA? - Walter Huda and Charles Chamberlain	128
The American College of Medical Physics and Its Place in the U.S. Medical Physics Community Paul Feller	129
Role and Function of Medical Physicists in Diagnostic Imaging - PAC Document	130
Role and Function of Medical Physicists in Canadian Cancer Therapy Centres - PAC Document	133
PAC Report - Peter Raaphorst	136

Continued on Back Page ...

Message from the COMP Chair:

Along with many of our members I was able to attend the memorial service at which Ervin Podgorsak spoke very eloquently on behalf of Harold's students and postdoctoral fellows.

For most of us September marks the true start of the year after the relative calm of summer: a new academic year begins, our kids are back at school, and, before you know it, you are getting up for 6 am hockey practice. Sadly, this time of beginnings in 1998 also marked the end of an era in Canadian medical physics. Harold Johns died on August 23 in Kingston, Ontario after a 30 year battle with Parkinson's disease. Along with many of our members I was able to attend the memorial service at which Erv Podgorsak spoke very eloquently on behalf of Harold's students and postdoctoral fellows. Other colleagues and members of the Johns family also told of the tremendous influence that Harold had on them as people and as scientists. A floral arrangement from the members of COMP was most appreciated by the family.

Conversation after the service inevitably turned to Harold's legacy and his scientific lineage. Who was Johns' student and who was his student? As a lighthearted reminder of his impact, I am challenging our members to come up with the longest academic "family tree" which can be traced back to HEJ. For openers, I offer the following modest example, which just happens to include me:

Harold Johns------John Hunt (M.Sc., University of Saskatchewan)------Stuart Foster (Ph.D., University of Toronto)------Mike Patterson (Ph.D., University of Toronto)------Brian Pogue (Ph.D., McMaster University)------Troy McBride (currently Ph.D. student, Dartmouth College).

Entries should be sent to our newsletter editor. Paul Johns has generously authorized me to offer a first prize of a free copy of the Proceedings of the 1996 COMP Meeting in Vancouver. Second prize will be two copies.

Speaking of conferences, I received good news from our treasurer Michael Evans that the 1998 meeting in London turned a tidy profit. Complete details will be available in his next financial report. Planning for our 1999 conference in Sherbrooke is well underway. We will be meeting with APIBQ (l'Association des Physiciens et Ingénieurs Biomédicaux du Québec) and we hope that the many joint sessions will foster interaction between physicists and engineers. The CCPM/APIBQ symposium is entitled "Healing the Broken Heart: the Role of Medical Physics and Biomedical Engineering" and it promises to be a fascinating introduction to cardiac disease, monitoring and imaging. We are also planning a symposium on grantsmanship and a workshop on prostate brachytherapy. Complete details will be available early in 1999 when we mail out the call-for-papers.

Despite the hot summer, activity in Ottawa did not grind to a complete halt. The Atomic Energy Control Board has decided to act on the recommendations of its advisory groups and

establish a new working group to make recommendations on how it should proceed in the area of quality assurance in radiation treatment. The new working group (JWG-11) will be chaired by Peter O'Brien and the various professional groups involved in radiotherapy have been invited to send representatives. COMP and CCPM will send a joint nominee but the identity of that lucky individual has not yet been finalized. It is an encouraging sign that AECB recognizes our expertise and actively seeks our input.

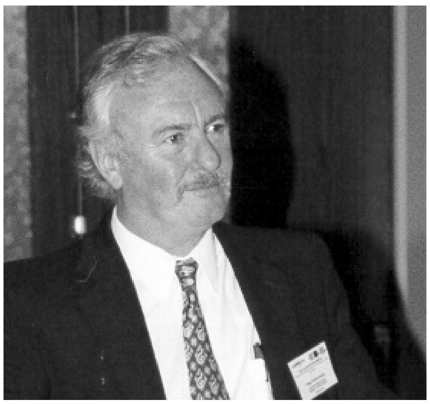
The mid-year meetings for all of COMP's committees and the executive will be held in Ottawa on November 20 and 21. This will be the first face-to-face meeting for our new Communications Committee which has been assembled by the Chair, Peter Munro. This group will be looking at many initiatives to improve the services COMP can provide to its members. Also meeting will be the Professional Affairs Committee, The Radiation Regulations Committee and the Conference Committee. The latter will face the task of finalizing all of the arrangements

(Continued on page 100)

Message from the CCPM President:

As I've mentioned in previous columns in the Newsletter it is important for the College to work with other organizations if the applications of radiation to medicine are to optimally benefit Canadian patients and the public. A major joint initiative over the last few years has been that with the CAMRT in the area of dosimetrist credentialling. Regrettably, I have to report on the demise of that initiative.

The history of the project dates back to



1993 or '94 when a dosimetrist at the PMH, who has since left, established a network of dosimetrists across Canada and identified a need for a recognized credential in dosimetry to ensure appropriate standards were being met within the Canadian context. The Board of the College set up a working party including dosimetrists to consider how the Canadian radiotherapy physics group might support their dosimetry colleagues. There was subsequently another survey carried out by the College of Medical Radiation Technologists of Ontario on this issue and this surveyed all Ontario radiation therapists and not just dosimetrists.

Following these surveys and much discussion by various parties, I met with certain senior members of the CAMRT to explore the possibility of doing something jointly. The majority of dosimetrists are CAMRT members. Another working group was set up, this time with three members nominated by the College and three by the CAMRT. Protracted discussions led to the survey of the Canadian radiation treatment community which you will have seen earlier this year.

(By the way, you should have had access to the survey results through your clinic. If you don't, please call Kathy O'Grady at the CAMRT, 1-800-463-9729 ext. 237. It's a lengthy document so one copy per department would save a few trees).

In the light of the survey results, the following recommendations with rationale were developed by the Working Group for presentation to both Boards.

Recommendations

1. *That the CAMRT and the CCPM no longer jointly pursue the initiative of a Specialty Certificate in Dosimetry.*

Rationale: The responses to the questionnaire indicated that the broader Canadian radiation treatment community is not sufficiently supportive of this initiative. Accepting this recommendation would not limit either of the organizations or some other organization from pursuing a unilateral initiative in the future.

2. *That the membership of the CAMRT and the CCPM be informed of the decision made by both Boards through a variety of appropriate means including: Notice of Motion, articles in official publications of the two organizations, etc.*

Rationale: The Joint Working Group feels that it is important for all stakeholders to be made aware of the decision, to have a period of time for discussion and reflection on the advantages and disadvantage of not jointly pursuing the initiative, and to have an opportunity to endorse or otherwise react to this decision.

3. *That a complete copy of the results of the CCPM-CAMRT questionnaire be provided to contacts in Cancer Treatment Centers for distribution to stakeholders within their respective departments. The brief statement would accompany the survey results by the Joint Working Group on the future of the initiative.*

Rationale: The participants in the survey are entitled to have feedback on stakeholders' opinions with respect to this initiative.

In view of the spread of opinions expressed, the Working Group felt it was necessary to force the issue to a conclusion with unambiguous recommendations. Note, however, particularly the rationale for the second recommendation. The Working Group felt that given time and the requirement for a clear decision the contentious issues in the survey results could be worked out. The Board of the CAMRT accepted the first recommendation but the other

(Continued on page 100)

Whether the motion passed by the CAMRT is consistent with the real enhancement of quality standards and is in accordance with opinions of the broader Canadian radiation treatment community or not I'll leave you to decide when you read the survey results.

1998 CCPM Exam Results:

Members

About 61 % of those who wrote the examination passed. The successful candidates for membership are:

Dr. Chantel Audet, Vancouver
Mr. Craig Beckett, Regina
Ms. Maria J. Corsten, John's
Dr. Cheryl R. Duzenli, Vancouver
Dr. Uwe Oelfke, Heidelberg, Germany
Dr. Orest Zenon Ostapiak, Hamilton
Mr. Xiaofang Wang, St. John's
Dr. Derek M. Wells, Calgary

Fellows:

Two out of the three candidates were successful. The successful candidates for Fellowship are:

Dr. Douglas Salhani, Ottawa
Dr. Narinder Sidhu, Saskatoon

This year's list of invigilators include:

Dr. T. Bortfeld, Germany
Dr. E. El-Khatib, Vancouver
Mr. A. Mesbah, St. John's
Mr. P. O'Brien, Toronto
Mr. V. Peters, Hamilton
Mr. M. Schmid, Regina
Dr. D. Spencer, Calgary
Mr. J. Van Dyk, London.

The **Membership examination committee** was comprised of:

Dr. B.G. Fallone, Montreal,
Dr. C. Leszczynski, Sudbury
Dr. E. Podgorsak, Montreal
Dr. R. Sloboda, Edmonton

The **Fellowship examination committee** was comprised of the CCPM Board, which included:

Dr. A. Baillie, Kelwona
Ms. K. Breitmen, Calgary
Dr. P. Dunscombe, Sudbury
Dr. B.G. Fallone, Montreal
Dr. T-Y Lee, London
Dr. G. Mawko, Halifax
Dr. J. Schreiner, Kingston
Dr. C. Thompson, Montreal

I would personally like to thank all invigilators and members of the examination committees for their efforts in making this year's examination process as efficient and professional as possible. Without the help of these individuals it would not have been possible to proceed with the certification process of the CCPM.

Gino Fallone,
Chief Examiner, CCPM

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(**"COMP Chair"** *Continued from page 98)*

for the Sherbrooke meeting down to the number of cookies-physicist^{-1}-coffee break^{-1}. (This quantity has been assigned the unit of Connors in honour of Sherry's contribution to fundamental research in conference behaviour.) The members of all of these committees are listed in our 1998 directory which you should have received recently. This is a good time for me to thank all of them once again for their hard work on behalf of COMP. If you have ideas or concerns in any of the areas mentioned, I am sure any of the committee members would be pleased to hear from you and to raise the issues at the mid-year meetings.

Enjoy the "new year",

Mike Patterson
Hamilton Regional Cancer Centre

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(**"CCPM President"** *Continued from page 99)*

two were not put forward as motions as they appeared to be operational items which the CAMRT would implement as part of their ongoing communications with members. The Board of the College, in contrast, did not accept the first recommendation. The Board felt the issue was so important that the College should continue to pursue the joint initiative.

Both Boards had access to the full survey results and the report of the Working Group with the recommendations above. Neither of these documents had been distributed to the membership of either organization at the time the CAMRT adopted the following motion ***"That the CAMRT strike an ad hoc committee to discuss a continuing education certificate in dosimetry".***

To repeat, only the boards of the two organizations had seen the survey results at the time this motion was passed. The survey is the first time, to my knowledge, that the opinions of the entire Canadian radiation treatment community had been surveyed on an issue of professional standards and qualifications. Whether the motion passed by the CAMRT is consistent with the real enhancement of quality standards and is in accordance with opinions of the broader Canadian radiation treatment community or not I'll leave you to decide when you read the survey results.

The College is also establishing links with the American College of Radiology's Commission on Medical Physics. Don Tolbert, the Commission's chairman, invited John Schreiner and myself to attend their business meeting in San Antonio. Although the funding environments in which we function are quite different there are similarities in many of the issues. We are currently exploring how we might most meaningfully interact.

The Board will be meeting on 20th and 21st November and will no doubt wish to discuss both above topics. If you have views on either of these or any other topic of relevance to the College please let myself or any member of the Board know. I imagine Peter Munro would have no objections if you chose to comment on the items mentioned in this column through the Newsletter.

Peter Dunscombe
September 17, 1998

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Minutes of the COMP Annual General Meeting
Friday, 19 June 1998, London, Ontario

Report Contents

1. **Adoption of the Agenda**
2. **Adoption of the minutes of last AGM**
3. **Votes on the Bylaw Proposals**
4. **Vote on Peter Munro as Councillor for the Newsletter**
5. **Chairperson's report**
6. **Treasurer's Report**
7. **Secretary's Report**
8. **Committee Reports**
9. **CCPM Report**
10. **Message from the ACMP**
11. **Report on Elections - Secretary, Chair-Elect**
12. **Gavel to the New Chair**
13. **Future Conferences**
14. **Other Business**

1. Adoption of the Agenda

Motion that the Agenda be adopted *Moved* (Evans, Raaphorst) *Approved*

2. Adoption of the minutes of last AGM (Charlottetown, 12 July 1997)

Motion that the minutes be adopted *Moved* (Evans, Spencer) *Approved*

3. Votes on the Bylaw Proposals - Johns

These proposals were circulated in advance in the April 1998 Newsletter

Proposed Bylaw Change # 1: Article IV.B.7 - Change of date of when the Treasurer takes office

Current wording:
The executive thus elected will take office at the conclusion of annual general meeting.

Proposed wording:
The Executive thus elected, with the exception of the Treasurer, will take office at the conclusion of the Annual General Meeting. The Treasurer will take office on the first day of the next financial year (see Article VIII.B).

Moved (Johns, Gerig) *Approved*

Proposed Bylaw Change # 2: Article IV.C Paragraph 1 and Paragraph 2 - Change of who is responsible to be conference chairperson

Current wording:
The Chairperson shall be the chief executive officer of the COMP and shall preside at the annual general meeting and at the executive meeting. (S)He shall chair the Scientific Program Committee for that year.

The chairperson-elect shall, in absence or disability of the chairperson, perform the duties and exercise the powers of the chairperson and shall perform such other duties as shall from time to time be imposed upon him (her) by the executive. (S)He is a member of the Scientific Program Committee.

Proposed wording:
The Chairperson shall be the chief executive officer of the COMP and shall preside at the Annual General Meeting and at meetings of the Executive. (S)He shall chair the Conference Organizing Committee and the Scientific Program Committee during the first year in office as Chairperson.

The Chairperson-Elect shall, in absence or disability of the Chairperson, perform the duties and exercise the powers of the Chairperson and shall perform such other duties as shall from time to time be imposed upon him (her) by the Executive. (S)He shall chair the Conference Organizing Committee and the Scientific Program Committee during the second year in office as Chairperson-Elect.

Discussion: this is intended to spread the load during the chair's term of office

Moved (Johns, Schreiner) *Approved*

Proposed Bylaw Change # 3: Article IV.B.1 - Clarification regarding re-election of a member who served as Chair-Elect, Chair, or Past-Chair

Current wording:
The officers of chairperson-elect, chairperson and past-chairperson shall be held consecutively by one member. After serving two years in each of these offices in turn, a member shall not be eligible for re-election to any of the executive positions for a period of two years.

Proposed wording:
The offices of Chairperson-elect, Chairperson and Past-Chairperson shall be held consecutively by one member. After serving two years in each of these offices in turn, a member shall not be eligible for re-election to any of these three Executive positions for a period of two years.

Moved (Johns, R. Clarke) *Approved*

Proposed Bylaw Change # 4: Article IV.B.2 - Clarification regarding re-election of Councillor for Professional Affairs

Current wording:
The secretary, treasurer, and the Councillor (for the Newsletter) shall hold office for three years. The election of these three officers shall normally be held in successive years. After a full three year term, a member shall not be eligible for re-election to the same office for two years. The Councillor (for Professional Affairs) shall hold office for four years.

Proposed wording:
The Secretary, Treasurer, and the Councillor (for the Newsletter) shall hold office for three years. The election of these three officers shall normally be held in successive years. The Councillor (for Professional Affairs) shall hold office for four years. After a full term in any of these positions, a member shall not be eligible for re-election to the same office for two years.

Moved (Johns, Gerig) *Approved*

4. Vote on Peter Munro as Councillor for the Newsletter

Gerig

Due to the departure of Albert Fung, it became necessary for the Executive to appoint an interim Councillor for the Newsletter. Peter Munro was selected. A ratification vote was held for Peter Munro for the remainder of the term, to July 2000. Approved.

5. **Chairperson's report** - Johns

Conference: There were 58 papers scheduled, 56 given
52 posters scheduled
305 to attend the banquet, 290 came
20 exhibitors, last year there were 14, they seem happy, they also gave $13,000 in support besides membership and exhibit fees.

- CRISM
CRISM was incorporated in April with S. Boutcher (CAMRT), L. Samson (CAR), and P. Johns (COMP) as the founding officers. It is expected that Canadian Association of Nuclear Medicine (CANM), Canadian Society of Diagnostic Medical Sonographers (CSDMS) and Canadian Association of Radiation Oncologists (CARO) will join. Annual dues are $0.02 per organization member. A conjoint conference will be held every 4 years, starting with Toronto in 2000, and the first full one in 2004 in Vancouver. An ad is to come out this fall. There will be an exhibit at the 1999 meeting of the Canadian College of Health Society Executives

- CSNM -SNMC (Canadian Society for Nuclear Medicine)
Re-invented itself, it is made up of physicians, technologists, radiologists and physicists. COMP is a founding society, along with Association Medical specialiste en medicine nucleaire de Quebec (AMSMNQ), the Canadian Association of Medical Radiation Technologists (CAMRT) , the Canadian Association of Nuclear Medicine (CANM), and the Canadian Association of Radiopharmaceutical Scientists (CARS) . The COMP appointee to the board of governors is Curtis Caldwell. We expect physicists to play a significant, indeed leadership, role on many of the standing committees of CSNM.

Rationalization with CCPM
Over the last year CCPM and COMP have rationalized responsibilities to work together rather than in parallel. For example, Radiation Regulations was a COMP committee, but CCPM appointed members to HARP. These are now brought under one committee as joint efforts
Finances - there is a joint finance committee which looks at total income and recommends a budget to the CCPM Board and the COMP Executive, except for certification activities which are self-funding. This rationalization does not require any by-law changes.

CAP
There is an initiative to restart the DMBP. A number of organizations have a concern about this, it is a grass roots movement, but has the support of the CAP executive. CAP has struck a committee which has a 1 year period to consult with COMP and the Canadian Biophysical Society. The chair is David Chettle, but Rachad Shoucri is the one pushing it. This could divide the community. COMP has to be comprehensive and stimulating, then DMBP will be irrelevant.

Communications Committee
A new committee has been created, to be chaired by the Councillor for the Newsletter, to oversee paper and electronic communication.

Executive Director
COMP is 9 years old, it is time to take the next step. It was a purely voluntary organization until 1994, then it hired the Secretariat. It is now time to hire a part-time Executive Director, jointly with the CCPM. This will lighten the load of conference organization, corporate liaison, and result in consistent day-to-day administrative practices.

Question from Jake van Dyk: how much does it cost for us to be a member of CRISM?
Johns: CRISM project costs are negotiable. We are one of the smallest member organizations, the cost will be about $1000 per year. This includes the fee we pay and special costs of projects. We are also members of the Canadian Coalition for Research, which has successfully lobbied for more physics research money. CRISM is an opportunity in advocacy for healthcare and healthcare research funding.

6. **Treasurer's Report** Evans

(Report Published in the Newsletter)
1997 Thanked George Mawko for auditing. The conference will appear as a line item in this and future budgets. 20% of the profit of the Annual Scientific Meeting goes to the Local Arrangements Committee, the remainder was split 60/40 COMP/CCPM last year. Motion to accept the report.

Moved (Evans, Schreiner) *Approved*
1998 (to date) Motion to waive the requirement to have an external auditor and allow a member to audit the books. *Moved* (Evans, Raaphorst) *Approved*

1999 there is a projected deficit of $11,000, including a cost for the part-time Executive Director of $15,000.
Question from Ken Shortt: The Executive Director position sounds reasonable, but $15,000/1 day/week sounds high.
Michael Evans: $15,000 is an estimate, it may include travel and costs
Lee Gerig: the Executive is drafting a job description, this is just a ballpark estimate.
Motion to accept the proposed 1999 budget. *Moved* (Evans, Rogers) *Approved*
Ken Shortt: suggests the auditor be pre-approved by the Executive.
Motion that Karen Breitman be accepted as auditor for the 1998 books. *Moved* (Evans, Raaphorst) *Approved*

7. **Secretary's Report** Spencer

Our membership has increased again.

	1997	1998
Full Members	238	286
Associate	1	1
Emeritus	14	13
Retired	1	1
Student	92	102
Corporate	18	25
TOTAL	364	428

8. **Committee Reports**

Awards: Schreiner
There 16 judges for the various competitions. Thanks to all the people who helped judge.

There were 22 Young Investigators Award applicants, 11 were approved for presentation.

There were no eligible applicants for the Travel Award. Competitors need to supply supporting documents, it is very hard for volunteers to deal with.

The posters were quite outstanding, it was difficult to decide on 2 awards. Will recommend some changes. 1) Drop it. 2) Give recognition to 5 posters.

Mike Patterson is leaving the committee, need nominees, volunteer if you can.

Judges worked hard, decisions are difficult to make. Mike Patterson: in the past, the Travel Award depended on need. It is hard to administer. Any suggestions as to what we should do? For example, all YIS get assistance?

PAC: Raaphorst
- Wilkins and Gallet have joined the committee
- Role and Function statement is almost finished, Therapy part re-written. It will be published in the Newsletter and reprinted in a nice form to impress administrators.
- Salary Survey - probably in Fall Newsletter
- Plans to promote Medical Physics - we will promote ourselves more, we are not valued in restructuring. We should promote ourselves in the community, university departments, and medical schools, in collaboration with the communications committee
- Johns and Raaphorst represent us to the CAP. CAP updated us on the Engineering Act and efforts to maintain and improve exclusion clauses which are provincial.
- ACMP American College of Medical Physicists - Paul Feller is here to share information with us. There is some activity to unify the ABR and ABMP certification processes.
- information sharing with Quebec. Jean-Pierre Bissonette tells us that Medical Physicists in Quebec want to form a separate organization from the APIBQ. We support them in this difficult task.
- OAMRT Millennium document response - what should our scope of practice be? Exclusive? Broad? Can Raaphorst be given examples from other professions?
- Recommended consulting fee - was set at $125/hour. (Newsletter, March 1994). Now due for re-examination. It has been suggested that perhaps $150 - 175/hour is reasonable. Shouldn't be arbitrary, should be linked to something, further analysis needed.
- Canadian Council for Health Services Accreditation. Raaphorst sits on it. They are concerned about the lack of a technical component. How much of a technical component goes into imaging departments? Ting Lee is looking into it. Raaphorst is pushing it.
- Selection of a new chair - looking for a volunteer.

Radiation Regulations Johns

Changed chairs from John Aldrich to Peter O'Brien, but neither are here.

There is a common effect with many provinces repealing legislation requiring X-ray services. They don't have the staff, but they are liable, so they are dropping the regulations! HARP was set up as a response to the observation that doses (for diagnostic procedures) varied by a factor of 20 for some procedures. Johns and Dunscombe are writing to authorities in New Brunswick. The AECB GMA (Group of Medical Advisors) and ACRP (Advisory Committee On Radiation Protection) reports are converging toward an acceptable path for setting national standards in radiotherapy QA. Moving towards having the professional bodies draft the standards. Fact-finding down-graded.

Dave Rogers moves that:
Whereas it is widely agreed that the development of national standards for quality assurance procedures in radiotherapy is desirable;
and
whereas the Group of Medical Advisors (GMA) of the Atomic Energy Control Board has made a series of useful recommendations and proposals regarding this issue;
and
whereas a significant aspect of their recommendations is that there be some sort of peer review system put in place to ensure that the QA procedures are in place;
and
whereas COMP does not feel it appropriate that the AECB be the final "inspection" agency for such a QA program;
and
whereas there has been a formal proposal to the President of the AECB from the Chairs of the GMA and the Advisory Committee of Radiation Protection (ACRP) of the AECB that a subcommittee of the GMA-ACRP be established with a mandate to establish a set of national standards for QA in radiotherapy and to generate a proposal for how to ensure compliance with these standards;
and
recognizing that the main way this sub-committee would work is through subcontracts with the relevant professional bodies (such as COMP etc.);
Moved that COMP supports such an approach and expresses its willingness to take part in the generation of these guidelines and development of an appropriate compliance mechanism.

Discussion:
Patterson- is it appropriate for public comment?
Rogers- it has been circulated to all the committee members, we are not breaking any rules. Suggested that $1/4 million is necessary to do this
Johns- intent is to steer the AECB toward having professional groups set standards rather than internal to AECB
van Dyk- HARP is going this way, so there is a precedent, but we need to make sure the regs are compatible.
Rogers- Peter O'Brien is the obvious choice and has done this for HARP. Committees are being rearranged, will need a couple more Medical Physicists. We are not recommending that AECB be the compliance mechanism. AECB wants to hire a bunch of inspectors.
Moved (Rogers, Raaphorst) *Approved*

Communications Committee: Munro
- looking for interested people
- needs reporters from regions to tell him of interesting things, for example, who to call, not necessarily to do the story
- looking to get younger members involved

9. <u>**CCPM Report**</u> - Dunscombe
- elected 9 Members, 2 Fellows
- working on maintaining reciprocity with U.S.
- have a representative on the conjoint committee of the CMA
- dosimetry accreditation survey results should come out soon
- Karen Breitman is leaving the Board, George Mawko is becoming the Secretary-Treasurer
- pleased with new arrangements with COMP

- thanked Paul Johns for his efforts (applause)

10. **Message from the ACMP** - Paul Feller
- Ervin Podgorsak attended their meeting as COMP representative
- thinking of an electronic journal of clinical medical physics, trying to get it done by the end of the year
- editor of Medical Physics is one of the founders, so not in conflict
- check ACMP website www.acmp.org for developments

11. **Report on Elections - Secretary, Chair-Elect** - Gerig
- elections were held for Chair-Elect and Secretary. The vote counts were checked by Peter Raaphorst.
- Gino Fallone was elected as Chair-Elect and Curtis Caldwell was elected Secretary
- 73 ballots were returned and 1 E-Mail. The E-Mail was held invalid
- 70 votes for Fallone, 71 for Caldwell for their respective positions

Paul Johns thanks David Spencer for his services as Secretary, and Lee Gerig for his services, particularly for CAP relations, expanding the COMP Handbook, and corporate liaisons. Gerig will continue on the PAC.

12. **Gavel to the New Chair** Johns, Patterson

Paul Johns passes the gavel to the new chair, Mike Patterson. The gavel is inscribed "To the CAMP from the AAPM, Montreal, 1962". 1962 was a joint international conference.
Patterson: thanks Johns, will try to meet his high standard

13. **Future Conferences:** Patterson

1999 Sherbrooke (with APIBQ) LAC organized by Roger Lecomte, details of meshing with APIBQ still being worked out.

2000 Chicago with World Congress Fallone will be Chair-Elect arranging things. We will be able to identify a Canadian hotel to encourage interaction, it is a very large meeting.

2001 Proposal
Alistair Baillie: The Cancer Centre for the Southern Interior wants to invite COMP to come to Kelowna.
Patterson moves that COMP meet in Kelowna in 2001
Moved (Patterson, Schreiner) *Approved*

2002 Montreal will host AAPM, we should consider joining in.

2003 No commitment yet.

2004 CRISM should be meeting in Vancouver, we should consider it

14. **Other Business:** Patterson
- should strike a committee to study the implementation of new dosimetry protocol in Canada
- looking for a volunteer to chair, wants a clinical person

Rogers: it might be appropriate to actually wait until TG51 is out

Motion to adjourn (Evans, Chris Webster) *Approved*

REVENUES AND EXPENSES FOR 1997

REVENUES

Membership dues 1997	36,455.74
ASM revenue 1997	600.28
Interest	868.01
Total	**37,924.00**

(EXPENSES)

Awards (YIS etc)	(2,838.00)
CCPM	(5,000.00)
MidYear/Committees	(3,852.15)
Newsletter	(1,546.98)
Annual Fees/Service Charges	(1,341.70)
Publications	(2,484.46)
Secretariat Contract	(4,890.00)
Secretariat Non-Contract	(1,378.64)
Misc.	(372.89)
HEJ	(424.10)
Total	(**24,128.94**)

NET REVENUES (EXPENSES) 13,795.06

SUMMARY OF COMP ASSETS (AS OF DEC. 31 1997)

Net Revenue (Expenses)	13,795.06
Term Deposit Purchase	(25,000.00)
Savings account balance as of Jan 01 1996	30,854.78
Short Term Deposits	85,000.00

NET ASSETS (Dec. 31, 1997) 104,649.84

Submitted by M. Evans
Verified by G. Mawko

REASURER'S REPORT

ESTIMATED REVENUES AND EXPENSES FOR 1998

Revenue	To Date	Budget	Projected
Membership	31,102.72	26,000.00	31,000.00
Corporate	11,097.89	10,000.00	11,100.00
Interest	2,964.53	0.00	3,000.00
Other			
Expenditures			
COMP/CCPM	0.00	-12,000.00	-15,000.00
Committees and meetings			
ABR/CMA initiatives	0.00	-3,500.00	-3,500.00
Membership Fees (IOMP, CRISM…)	-1,084.73	-1,000.00	-1,500.00
Directory & Publications	-45.48	-3,000.00	-3,000.00
Newsletter	-1,166.73	-1,500.00	-1,500.00
Secretariat (Contract)	-2,139.00	-5,000.00	-5,000.00
Office Expenses	-589.33	-2,000.00	-2,000.00
Awards & Support	0.00	-3,000.00	-3,500.00
Member Services	-69.17	0.00	-500.00
Annual Scientific Meeting	-1,632.12	0.00	5,000.00
HEJ	0.00	0.00	0.00
Chair/President Discretionary Fund	0.00	-3,000.00	-1,000.00
Total	**38,438.58**	**2,000.00**	**13,600.00**

ESTIMATED REVENUES AND EXPENSES FOR 1999

Revenue	Budget
Membership	31,000.00
Corporate	11,000.00
Interest	3,000.00
Other	
Expenditures	
Executive Director	-15,000.00
Communication Cte	-3,000.00
COMP/CCPM Cte's and MidYear Mtgs	-15,000.00
External Certification Initiatives	-3,500.00
Membership Fees (IOMP, CRISM…)	-1,500.00
Directory & Publications	-3,000.00
Newsletter	-1,500.00
Secretariat (Contract)	-5,000.00
Office Expenses	-2,000.00
Awards & Support	-3,000.00
Member Services	-500.00
Annual Scientific Meeting	0.00
HEJ	0.00
Chair/President Discretionary Fund	-3,000.00
Total	**-11,000.00**

Research Funding Survey For 1996

In 1997 a mailing was made to all COMP Full Members in conjunction with the Professional Survey inviting participation in an anonymous survey on Research Funding in calendar year 1996. Here is a summary of the results. The questionnaire is included at the end of this report.

Of the approximately 245 questionnaires sent out, 111 were returned (45%). On one of these, it was stated that the person had retired in mid-1996, and no other information was given. This single response is not included in what follows, leaving 110. Of these, 100 were from medical physicists primarily employed in Canada in 1996, and 10 were from physicists primarily employed elsewhere. Unfortunately the number of physicists employed outside Canada who responded is too low to be statistically significant (although I can say that some of these held very respectable grants!).

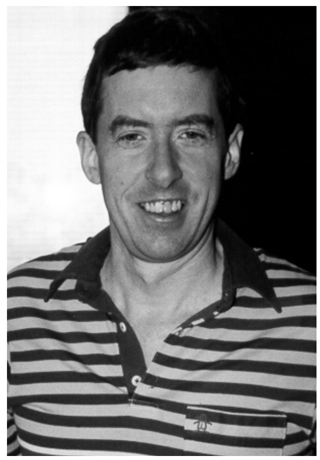
Table 1 gives the breakdown by primary employer. The vast majority of respondents worked for hospitals or cancer clinics. One individual indicated “research institute” as employer; these results have been lumped under the “university” category.

Table 2 gives the specialisation of those whose employment was primarily in Canada. Somewhat under two thirds of the respondents worked in cancer therapy.

Table 3 shows that 40% of the respondents whose primary employment was in Canada had access to research funds, totalling \$7.6M. These medical physicists may or may not have been the Principal Investigator (PI). The intent of this question was to determine the number of COMP members who had money at their disposal for medical physics research, whether they were a PI or a collaborator on a grant. The total of \$7.6M is likely somewhat low for COMP as a whole, due to those who did not participate in the survey.

These 40 respondents also indicated a net increase in the amount of funds available over 1995 by \$1.0M (not shown in the tables here). This amount is so large compared to the total (14%) that it cannot be a credible estimate of the net change of the total pool for the entire community. It suggests that the respondents were self-selected to be those who had obtained new money in 1996, whereas those who lost funds did not respond.

In 1996, 33 of the 100 medical physicists responding who were employed principally in Canada obtained funds directly themselves, i.e., were the PI. Table 4 gives details of funds made available to them, by source of funding. Note that in a few cases, the PI could have had more than one grant from the same agency, so the results on a given line are not quite identical to statistics on individual grants. However, they will be similar. These data should not necessarily have the same grand total as that of the previous table, but in fact they are close. (Table 3 includes, for example, money obtained by physicists from grants whose PI was not in COMP, or not even a physicist). A minor difficulty was that the wording of question 6 was inconsistent with that of question 7, in that 6



referred to only obtaining the funds in 1996, while 7 allowed the inclusion of the 1996 installment of a multiyear grant. It is hoped that most respondents answered question 7 with the inclusion of multiyear installments.

In general, the funding sources have multiple programs at different orders of magnitude of grant size. This causes some interesting effects in the statistics of Table 4. For example, for NSERC most of the grants are probably operating grants which are order \$20k; however the high end contains a few large grants from other programs. The average is therefore several times the median.

The final question solicited suggestions on how to promote research funding. Here are most of the ideas. In some cases they have been rephrased for clarity, or responses combined.

1. Offer seminars / workshop at COMP conference on how to write "winning grants".

2. Set up our own self-administered research fund and solicit donations from a variety of sources, e.g. patients, industry, lotteries, and only allow COMP members to access this money. Start with graduate student awards, as these are good value for the dollar spent.

The fact that the spectrum of sources is so broad is both a strength and a weakness - we are less susceptible to effects due to funding policy changes by any one agency or sector, but it is challenging to find the resources within COMP to encourage all these sources to devote more funding to medical physics projects.

3. The provincial cancer boards should allow medical physics departments to market technology developed, and have the funds go back to the physics departments to support more research.

4. Encourage more industrial funding.

5. Link major purchases from manufacturers to research support, about 5-10% of the capital cost. Much of our R & D in medical physics is "translational" to the private sector.

6. Partnerships with the private sector for equipment evaluation and development.

7. Keep lobbying both the provincial and federal governments for increased R & D spending.

8. When applying, investigate why projects "fail".

9. Encourage COMP members to publicize their results to the general population. Highlight the historical contributions of medical physicists: ^{60}Co, linacs, CT scanners, g cameras, MRI, etc. What would modern medicine be like without these ?

10. Use the citation indices to show our impact.

11. Demonstrate that research income to the institution per physicist can be significant.

12. Promote staffing levels which allow R & D.

13. Get realistic figures on research costs versus health care costs saved by successful projects.

14. When applying, identify needs - target areas of medical physics research where work is needed and likely to be funded.

15. Promote an integrated program across Canada to assure funding agencies that duplication is minimal.

16. Find a way to set up a medical physics panel on one of the national granting agencies.

17. Do not ignore requests from the granting agencies for you to be a reviewer.

18. Offer other prizes for scientific excellence in addition to the Sylvia Fedoruk Prize. Publicise the Sylvia Fedoruk Prize better.

19. Celebrate international awards to COMP members, e.g. Farrington Daniels.

20. Create additional fellowships for graduate students and postdoctoral fellows.

21. More Travel Assistance for students to attend the COMP meetings.

22. Apply often, think big.

In conclusion, to my knowledge this was the first time that a survey of this type was carried out for Canadian medical physics. The participation level was adequate but some artefacts in the results suggest that it needed to be higher. However, at least $7.6M of funding was available to COMP members in 1996 from a wide variety of sources. The fact that the spectrum of sources is so broad is both a strength and a weakness - we are less susceptible to effects due to funding policy changes by any one agency or sector,

Table 1. Distribution of Respondents by Primary Employer.

Country of Primary Employment	Primary Employer	Number of Respondents
Canada	Hospital or Cancer Clinic	86
	Industry	1
	University	7
	Government	5
	Consultant	0
	Other	1
	TOTAL	100
Other than Canada	All categories	10
TOTAL		110

Some good suggestions have been made. We should endeavour to pursue the more practical ones, including a grants-manship workshop.

Specialisation	Number of Respondents
Cancer therapy	63
Diagnostic radiology	14
Nuclear medicine	9
Magnetic resonance	4
Radiation protection	2
Other	7
Did not specify	1
TOTAL	100

Table 2. Distribution of Respondents, whose primary employment was in Canada, by Specialisation.

but it is challenging to find the resources within COMP to encourage all these sources to devote more funding to medical physics projects.

Some good suggestions have been made. We should endeavour to pursue the more practical ones, including a grantsmanship workshop.

Paul Johns

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Specialisation	Fraction having control of some funds for medical physics research in 1996	Average amount available per respondent with funds	Total over respondents in specialisation
Cancer therapy	30 % (19 / 63)	$ 73,200	$ 1,390,100
Diagnostic radiology	50 % (7 / 14)	157,200	1,100,300
Nuclear medicine	44 % (4 / 9)	246,200	985,000
Magnetic resonance	100 % (4 / 4)	594,800	2,379,000
Radiation protection	0 (0 / 2)	0	0
Other	71 % (5 / 7)	329,400	1,647,000
Did not specify	100 % (1 / 1)	144,000	144,000
TOTAL OVER ALL SPECIALISATIONS	40% (40 /100)	191,100	7,645,400

Table 3. Funding available to respondents whose primary employment was in Canada, by Specialisation. Values rounded to nearest $100.

Source	Number of P.I.	Average funding per P.I.	25th Percentile	Median	75th Percentile	Total of all funding by this source reported in survey
MRC	11	$ 118,800	$ 42,800	$ 102,000	$ 160,000	$ 1,307,100
NSERC	9	70,000	15,600	21,500	240,000	630,100
NCI Canada	6	126,700	100,000	109,600	156,000	760,200
US NIH	3	114,300	insufficient	data		343,000
Provincial agencies	11	229,100	17,000	50,000	150,000	2,520,000
Institution of employment	16	31,900	6,000	18,500	30,000	510,800
Corporate funding / contract	17	90,700	20,000	68,000	125,000	1,541,600
Consulting	2	2,600	insufficient	data		5,300
Other	3	26,100	insufficient	data		78,200
TOTAL OVER ALL SOURCES	33 *	233,200	25,500	130,000	380,000	7,696,300

Table 4. Funds obtained by Principal Investigators (P.I.) who were primarily employed in Canada, by Source. Values rounded to nearest $100.
*** The total number of P.I. is not the same as the total of column 2, because several investigators obtained funding from different sources.**

1997 Professional Survey

The format and data collection procedure for the 1997 COMP Professional Survey was almost identical to that used for the 1996 survey. Approximately 280 questionnaires were mailed out to all COMP full members, and 169 surveys were returned to the COMP Secretariat. All survey responses were handled in the strictest confidence so as to ensure the anonymity of respondents. Responses are summarized by geographic area and degree/certification in tables 1 and 2 below. Five surveys were excluded from further analysis because they were incomplete or had been answered by students or retired physicists. Another twelve responses were from individuals working outside Canada, and these surveys were also excluded from the salary and benefits analysis.

Salaries

A summary of the salary data for Medical Physicists working in Canada is provided in table 3 below. Full statistics are provided for groups with at least 11 respondents. Only average and median results are provided for groups of 5 to 10 respondents. Data for groups of fewer than 5 could jeopardize confidentiality and thus are not listed.

A comparison of average and median salaries for 1996 and 1997 is provided in table 4. Only groups with at least 11 respondents in both years are included in this table. While average salaries in all listed geographical regions decreased, average salaries for both CCPM certified and some non-certified groups increased between 1996 and 1997. This seeming discrepancy is resolved by noting that the proportion of respondents who were CCPM certified dropped from about 60% in the 1996 survey to about 50% in the 1997 survey. Since CCPM certified physicists generally earn more than non-certified physicists, the apparent decrease in income across Canada is likely due to this difference in survey population rather than to a significant drop in individual salaries.

Individuals were asked to specify by what percentage their salaries increased or decreased between 1996 and 1997. Of the respondents who were working in Canada, had at least three years experience in medical physics, and had not changed jobs in the past two years, 7% reported that their salary decreased, 36% reported that their income did not change, and 57% reported that their income increased. For all these individuals the average increase was 2.8% and the median increase 2.0%. For the 57% who reported an increase in income, the average increase was 5.5% and the median increase 3.8%.

The regular hours of work specified in employment contracts for full-time employees was, on average, 37.3 hours per week.

Benefits

The average annual vacation allotment was 22 days per year.

The data regarding travel and professional expense allowances was difficult to interpret. Some individuals reported the value of their personal annual allowance. Others, who did not have a personal allowance but were reimbursed for travel and other expenses on an ad-hoc basis, reported the specific amount reimbursed by their employer. Still others reported group or department travel allotments. 75% of respondents reported receiving an allowance or reimbursement of at least $100. 70% of respondents received an allowance or reimbursement of between $1,000 and $5,000, and for these individuals the average allocation was $2,544 and the median allocation $2,000.

Other benefits data is summarized in table 5.

Additional information regarding salaries or benefits, such as a detailed summary for a particular geographical region, is available upon request provided the data can be reported without jeopardizing confidentiality. Requests for further information or comments regarding the survey should be directed to Richard Hooper (rick.hooper@cancerboard.ab.ca).

Richard Hooper
Cross Cancer Centre

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REGION	Number of Responses
British Columbia (BC)	17
Alberta (AB)	12
Saskatchewan (SK)	8
Manitoba (MB)	10
Ontario (ON)	76
Quebec (PQ)	24
New Brunswick (NB)	3
Nova Scotia (NS) and Prince Edward Island (PE)	4
Newfoundland (NF)	2
Other	13
Total	169

Table 1: COMP 1997 Professional Survey responses by geographical region.

	Certification				
Degree	None	CCPM(M)	CCPM(F)	Other	Total
Bachelors	4	0	3	1	8
Masters	21	15	12	4	52
Doctorate	44	18	33	14	109

Table 2: COMP 1997 Professional Survey responses by degree and certification.

			PRIMARY INCOME				TOTAL INCOME			
		Ave Yrs	Average	Percentiles			Average	Percentiles		
	Number	Exper	Income	20th	Median	80th	Income	20th	Median	80th
OVERALL (Canada)	152	11.9	66.5	50.0	65.0	81.1	68.5	51.2	66.0	84.0
PROVINCE										
BC + AB + SK + MB	47	10.7	68.1	51.2	67.0	81.9	69.2	52.8	67.0	84.0
ON	74	13.0	68.4	55.0	67.5	85.0	71.4	55.6	68.5	88.4
PQ	22	9.9	57.1	44.8	58.5	63.6	57.4	44.8	59.0	63.6
NB + NS + PE + NF	9	13.8	66.1		70.0		67.8		70.0	
EMPLOYER										
General Hospital	46	11.3	63.2	45.8	60.0	80.3	66.4	46.1	63.0	84.2
Cancer Institute	83	11.5	68.4	54.8	67.9	81.8	70.0	55.1	68.0	81.8
University or Government	17	12.6	66.1	42.7	65.0	82.5	67.3	42.7	65.0	89.4
FUNCTIONS (>= 50%)										
Clinical Service	77	9.2	62.6	52.8	60.0	73.4	63.2	53.9	60.0	73.8
Teaching + R&D	44	10.5	65.0	40.6	64.2	85.0	69.4	40.6	65.0	92.7
Administration	21	20.6	82.5	69.7	82.0	95.3	83.9	69.7	85.5	95.9
SPECIALTIES (>= 50%)										
RT	98	10.8	65.9	51.6	65.0	79.9	66.7	54.1	65.0	80.9
DR + NM + MR	37	12.3	67.3	52.7	67.0	83.2	72.9	52.7	70.0	95.0
RP	8	19.2	63.1		66.6		68.1		74.6	
YEARS EXPERIENCE										
< 5	41	2.5	48.7	40.0	48.1	57.3	49.3	40.0	48.1	59.0
5 - 9.9	40	6.8	62.3	57.0	60.0	68.8	62.8	57.0	60.0	69.5
10 - 14.9	19	11.9	75.4	61.5	78.0	85.4	75.4	61.5	78.0	85.4
15 - 19.9	10	16.5	82.9		81.4		88.6		82.9	
20 - 24.9	22	21.5	82.8	69.5	84.5	95.1	88.9	69.5	90.4	106.1
25+	20	28.6	76.7	69.5	74.1	87.2	79.8	70.0	75.4	93.6
DEGREE/CERTIFICATION										
Bachelors/all	7	16.3	56.6		56.0		58.4		59.0	
Masters/all	47	12.3	61.0	46.4	60.0	73.4	62.5	46.4	63.0	74.1
Masters/no cert.	19	6.7	49.2	42.3	46.5	56.3	52.1	42.3	46.5	63.2
Masters/CCPM(M)	14	10.8	63.8	55.6	66.0	70.0	63.8	55.6	66.0	70.0
Masters/CCPM(F)	11	21.8	75.8	66.8	75.0	83.5	77.3	66.8	75.0	91.4
Masters/CCPM(M or F)	25	15.6	69.1	59.5	68.5	78.4	69.8	59.5	68.5	78.4
Masters/other cert.	3									
Doctorate/all	98	11.4	69.9	55.2	68.0	85.4	72.0	56.1	69.5	91.5
Doctorate/no cert.	38	7.4	61.2	45.6	60.0	75.7	63.2	45.6	60.0	75.8
Doctorate/CCPM(M)	18	5.9	63.3	57.0	60.0	68.8	63.6	57.0	60.0	70.4
Doctorate/CCPM(F)	32	18.8	84.1	70.0	84.4	96.4	87.4	70.0	85.0	100.2
Doctorate/CCPM(M or F)	50	14.1	76.6	60.0	77.6	91.9	78.8	60.0	77.6	94.0
Doctorate/other cert.	10	12.6	69.0		72.0		71.6		72.0	
DEGREE/YEARS EXPER.										
Masters/< 10	24	4.6	51.4	43.4	48.6	59.7	52.0	43.4	48.6	60.0
Masters/10+	23	20.4	71.0	63.2	70.0	80.5	73.5	65.2	72.0	81.8
Doctorate/< 5	28	2.6	51.1	40.0	53.9	59.0	51.4	40.0	53.9	59.9
Doctorate/5 - 9.9	26	6.8	65.1	59.0	65.0	70.0	65.9	59.0	65.0	70.2
Doctorate/10 - 19.9	18	13.4	84.2	78.1	83.4	94.8	86.5	78.1	83.4	94.8
Doctorate/20+	26	24.0	84.9	72.4	86.0	96.0	90.4	72.4	90.4	106.3

Table 3: Salary data for Medical Physicists working in Canada. Salaries are in thousands of dollars. In order to ensure confidentiality, data are not listed for subgroups of less than 5, and only average and median values are reported for groups of 5 to 10 respondents.

	Primary Income				Change	
	1996		1997		(% change from 1996)	
	Average	Median	Average	Median	Average	Median
OVERALL (Canada)	67.6	66.8	66.5	65.0	-1.6%	-2.7%
PROVINCE						
BC + AB + SK + MB	68.7	70.0	68.1	67.0	-0.9%	-4.3%
ON	70.2	69.5	68.4	67.5	-2.6%	-2.9%
PQ	58.3	59.0	57.1	58.5	-2.1%	-0.8%
EMPLOYER						
General Hospital	65.1	60.0	63.2	60.0	-2.9%	0.0%
Cancer Institute	69.2	68.0	68.4	67.9	-1.2%	-0.1%
University or Government	64.5	66.7	66.1	65.0	2.5%	-2.5%
FUNCTIONS (>= 50%)						
Clinical Service	62.1	60.5	62.6	60.0	0.8%	-0.8%
Teaching + R&D	74.1	74.0	65.0	64.2	-12.3%	-13.2%
Administration	80.4	92.3	82.5	82.0	2.6%	-11.2%
SPECIALTIES (>= 50%)						
RT	67.3	64.0	65.9	65.0	-2.1%	1.6%
DR + NM + MR	67.1	69.0	67.3	67.0	0.3%	-2.9%
YEARS EXPERIENCE						
< 5	49.2	48.0	48.7	48.1	-1.0%	0.2%
5 - 9.9	61.6	60.5	62.3	60.0	1.1%	-0.8%
10 - 14.9	74.4	72.0	75.4	78.0	1.3%	8.3%
15 - 19.9	77.7	76.2	82.9	81.4	6.7%	6.8%
20 - 24.9	79.0	79.0	82.8	84.5	4.8%	7.0%
25+	85.4	87.0	76.7	74.1	-10.2%	-14.8%
DEGREE/CERTIFICATION						
Masters/all	63.8	63.0	61.0	60.0	-4.4%	-4.8%
Masters/CCPM(M or F)	67.9	64.5	69.1	68.5	1.8%	6.2%
Doctorate/all	70.4	70.5	69.9	68.0	-0.7%	-3.5%
Doctorate/no cert.	61.0	57.0	61.2	60.0	0.3%	5.3%
Doctorate/CCPM(M or F)	75.0	73.9	76.6	77.6	2.1%	5.0%
DEGREE/YEARS EXPER.						
Masters/< 10	52.4	52.0	51.4	48.6	-1.9%	-6.5%
Masters/10+	73.2	70.0	71.0	70.0	-3.0%	0.0%
Doctorate/< 5	51.8	49.4	51.1	53.9	-1.4%	9.1%
Doctorate/5 - 9.9	63.9	63.0	65.1	65.0	1.9%	3.2%
Doctorate/10 - 19.9	81.7	77.0	84.2	83.4	3.1%	8.3%
Doctorate/20+	84.6	83.5	84.9	86.0	0.4%	3.0%

Table 4: Comparison of average and median values for primary income in 1996 and 1997. Income values are in thousands of dollars, and change in income is specified as percentage of primary income in 1996. Only groups with at least 11 respondents in both years are included in this table.

Benefit	Yes (%)	No (%)	Unknown or N/A (%)
Medical coverage	68	19	13
Supplementary health care	72	19	9
Dental coverage	81	14	5
Term life insurance	68	19	14
Disability insurance	70	17	13
Retirement pension plan (exclusive of CPP or QPP)	89	4	6
Sabbatical leave	22	51	26
Tuition benefits (self)	16	64	19
Tuition benefits (dependent)	5	79	16

Table 5: Percentage of full-time employees who received at least 50% funding from their employer for the listed benefits. Due to roundoff error, totals do not necessarily add up to 100%.

Memorial Sloan-Kettering Cancer Centre: 1997 HE Johns Travel Award

Katharina Sixel

Report on the visit to Memorial Sloan-Kettering Cancer Center in New York by Katharina Sixel from Toronto-Sunnybrook Regional Cancer Centre

In April of this year, I was able use the HE Johns Travel Award from the CCPM to visit Memorial Sloan-Kettering Cancer Center in New York City. The intent was to experience and observe their three dimensional conformal radiation therapy program which has been in development and clinical use at MSKCC for the past seven years. The visit was conducted from April 25 through April 30, 1998. Originally co-ordinated with Gerald Kutcher, the former Chief Clinical Physicist, my host was Margie Hunt, who heads the external beam treatment planning group; Howard Amols, the new Chief, had not yet arrived at MSKCC.

Memorial Sloan-Kettering is a huge centre, providing a full range of cancer services, including diagnosis, surgical, medical and radiation treatment, plus appropriate support programs. In addition, MSKCC supports a broad spectrum of research and development endeavours at a basic biological sciences level and in more applied areas such as radiation therapy and medical physics. To put the level of activity and the size of the centre in perspective, the Medical Physics Division has over 100 staff members (up to 150 depending on who you ask, and on the current complement of post doctoral fellows and research assistants) for a clinical load that includes 10 radiation treatment machines and a large brachytherapy practice. Given the number of Medical Physics staff and the range of responsibilities, it is natural that some degree of subdivision would occur. Thus they have a clinical (radiation therapy) physics section which in turn contains a quality assurance group responsible for treatment machines, a brachytherapy group, an external beam treatment planning group and a computer development group.

My questions regarding conformal treatments were both practical and fundamental, addressing the issue of how one ties equipment and procedures together cohesively to form a 3D program. To help provide answers, I was able to observe each step in the treatment planning and delivery process: immoblization and simulation, treatment planning and dose calculation, treatment setup and delivery, and treatment verification. In addition, each of these steps has associated research and development activity at MSKCC: there are ongoing and established setup error and target motion studies; MSKCC has an in-house developed inverse planning system; they are leaders in dosimetry and quality assurance of dynamic multi leaf collimators; they make full use of online portal imaging and they have an in-house picture archiving communication system (PACS) to assist with image organization, approval and access. I was able to discuss these projects with the individuals involved.

Clearly, the most established conformal protocol at MSKCC is that for prostate treatment. As with most dose escalation protocols, the priority of avoiding complications takes precedence over achieving local control. Hence the protocol of 8640 cGy in 48 fractions is designed from the perspective of limiting grade 2 rectal complications to at most 5% of the patient population. The PTV is defined as the prostate plus a non uniform margin to account for organ motion and set-up variability. Local studies indicate that a 1 cm margin is needed to ensure that the GTV always receives the full dose. This PTV margin is achievable given the patient positioning and immoblization device: the patient lies prone and is locked into place with an aquaplast body shell. At the rectal wall, the margin is reduced to 6 mm. The rectal wall is then contoured and a second PTV is defined as that volume where the rectum and the first PTV overlap. Other critical structures which are contoured include the femoral heads, the bowel and the bladder. The in-house inverse planning system is then used to calculate fluence profiles. The constraints on the calculation are as follows: the PTV1 must receive 8640 cGy to the maximum covering isodose surface; the clinically significant maximum dose cannot be more than 110% of the target dose; 30% of the rectal volume, which includes the PTV2 cannot receive more than 7600 cGy and the dose to

New York harbour

the femoral heads is limited to 6000 cGy. Five beams are used in a standard configuration: one posterior beam and four oblique lateral fields. On treatment, a sweeping field dynamic MLC is used to deliver the required intensity profiles. Thus the profiles must be converted into leaf motions and monitor unit settings, taking account all the dosimetric aspects of this dynamic device including leaf transmission and the tongue and groove effect.

Once the plan has been evaluated with distributions in all three patient orthogonal planes and with dose volume histograms, the corresponding treatment beam parameters are applied to a standard water phantom anatomy and the dose from these beams to the isocentre of the phantom is calculated. This then provides an individualized quality assurance mechanism for each patient. Prior to treatment, the calculated dose delivered by the planned dynamic fields is verified through a phantom point dose measurement.

On treatment, the patient is set-up to isocentre and immobilized with the aquaplast hipfix device. Verification images of each beam set to its extreme start or stop leaf position are taken with an electronic portal imager. These images are transferred to the PACS network, and then compared online with a previously digitized virtual simulation DRR (digital reconstructed radiograph). The PACS contains a mechanism for image approval from the physician, and any instructions regarding set-up or beam portal corrections. These are applied as required. Subsequent portal images are taken on a weekly basis, archived and approved in a similar fashion.

Besides the bells and whistles of 3D treatments at Memorial Sloan-Kettering, there was much to astound, both positive and negative, the unfamiliar observer. Every patient, even when treated for sites such as breast, has shielding (when I first heard this, I could not figure out where you could possibly shield a tangential parallel pair to the breast, but believe me, they find a snippet of normal tissue) and a custom immobilization device. On the other hand, depths and separations are never checked on the treatment units, nor do they ever compensate mantle or head and neck treatments. Also, the integration of virtual simulation into the clinic surprised me. At our centre, one of the advantages of a CT simulator is increased efficiency and flexibility. Scan the patient in minutes, tattoo a reference set-up and then send the patient home. Actual contouring and planning is done afterwards, away from the scanner. At MSKCC, contouring and isocentre localization are done with the patient on the CT couch.

Finally, those following professional practice and regulatory issues may be interested to know that New York is a state where the AAPM TG40 report on quality assurance of linear accelerators is interpreted as a state regulation. The city of New York has gone even further: city regulations specify that no patient will be treated if machine output varies by more than 3%. The regulations further require that a Medical Physicist be called for corrective measures if this is the case. And a Medical Physicist is defined as someone who is board certified.

Overall, I had a wonderful time at the clinic. I was treated so well by everyone. From one-on-one seminars with Chen-Shou Chui to explain their inverse planning system, to philosophical discussions with Wendell Lutz on target localization and treatment intent, to patients and therapists who allowed me to observe their treatments, everything about this visit was interesting. Besides that, I can think of no American city more fascinating than New York. The city of Balanchine and Warhol teems with life and living, making any visit an adventure.

On a final note, I would like to thank the CCPM membership for the opportunities that the HE Johns travel award affords. So often one's professional world is defined through our own situations and daily tasks. Once in a while, it is important to look out of a new window and see the largeness of the world around us.

Katharina Sixel
Toronto Sunnybrook Cancer Centre

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Besides the bells and whistles of 3D treatments at Memorial Sloan-Kettering, there was much to astound, both positive and negative, the unfamiliar observer.

AAPM: Rib Fest, Success at the YIS, and a Hat Trick for Corey Zankowski and Ervin Podgorsak

Once again the Canadians made news by winning two of the three Young Investigator Awards at the AAPM annual meeting, held August 10 at the Henry B. Gonzales Convention Centre in San Antonio, Texas.

Corey Zankowski and E.B. Podgorsak took first place for "Determination of Saturation charge and Collection Efficiency for Ionization Chambers in Continuous Beam". McGill University, Montreal.

Miller MacPherson, C. Ross and D. Rogers took third place for "Accurate Measurements of the Collision Stopping Powers for 5 to 30 MeV Electrons". NRC, Ottawa.

Celebrating success in the Young Investigator's Symposium, Miller MacPherson and colleagues devour some ribs.

Second place was won by **S. Armato III** et. al. for "Automated Registration of Frontal and Lateral Radionuclide Lung Scans Images with Digital Chest Radiographs". University of Chicago.

Congratulations to the two Canadian winners of the Annual AAPM Young Investigator Awards. The winners received their awards at the annual AAPM Awards ceremony on August 10 at the Hyatt Ballroom.

… more ribs being devoured ...

Corey Zankowski and E.B. Podgorsak, were also presented with the Farrington Daniels award for the best dosimetry paper in Medical Physics in 1997. Since they also won the Sylvia Fedoruk award for best paper in Medical Physics, that makes them the first winner of all three awards in one year, a notable achievement.

The Canadians celebrated with a Canadian Night Out in a local Texas restaurant where 48 Canadians came out to help Corey and Miller celebrate their wins.

Sherry Connors
Cross Cancer Centre

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In Memoriam: Harold E. Johns

Editor's Note: *On Sunday, 23 August 1998, Harold E. Johns, who has long been known as the grandfather of Canadian medical physics, died. In honour of Dr. Johns, the Newsletter is publishing the following five items: an obituary that appeared in major Toronto newspapers, and the four eulogies that were given by family members and colleagues of Dr. Johns during his funeral. I found these four eulogies a very moving and revealing tribute to Dr. Johns, who more than anyone else, shaped Canadian medical physics. The eulogies were given by:* **Gwen Greenstock**, *Dr. Johns' eldest daughter;* **Martin Johns**, *Harold's older brother;* **Ervin Podgorsak**, *Professor and Director of Medical Physics, McGill University; and* **Jim Till**, *a former colleague of Dr. Johns at the Ontario Cancer Institute and currently the President of the National Cancer Institute of Canada.*

JOHNS, Harold Elford - Officer of the Order of Canada, Ph.D., LL.D., D.Sc., Emeritus University Professor and Professor Emeritus in the Departments of Medical Biophysics and Radiology, University of Toronto. Harold was born of missionary parents, Alfred and Myrtle Johns, on July 4, 1915 in Chengtu, West China, while his father was Professor of Mathematics at the West China Union University. He died peacefully, in his sleep, on Sunday, August 23, 1998, at St. Mary's of the Lake Continuing Care Hospital, Kingston, Ontario, after a thirty year battle with Parkinson's disease, fought with the same courage and determination with which he lived his life.

Remembering him with love are his wife of 58 years Sybil (Hawkins); daughters Gwen Greenstock (Clive) of Petawawa, Ontario, Claire Shragge (Peter) of Kingston, Ontario, and Marilyn Duplacey (Harold) of Rockwood, Ontario; grandchildren Erica Charette (Glenn), Andrea Patrick (Tom), Jeffrey and Steven Shragge, Alan and Amy Duplacey; brothers Martin (Elsie), Paul (Fern), Edward (Naomi); sister Ruth Vogt (Arthur); and many nieces, nephews, friends and colleagues around the world.

During his professional career he served with distinction as Professor in the Physics Department at the University of Alberta, 1939-1945; jointly with the University of Saskatchewan and the Saskatchewan Cancer Commission, 1945-1956; and at the University of Toronto in the Departments of Medical Biophysics, Radiology, and Physics, 1956-1980. During his scientific career, he published over 200 peer-reviewed papers, trained over 100 graduate students, many of whom hold key positions in the field in Canada and around the world, won many prestigious awards, and published four editions of "The Physics of Radiology", the premier textbook in its field. His development in the late 1940's of the Cobalt Therapy Unit led to a new career in the pioneering field of Medical Biophysics. This in turn led to a national and international reputation among scientists. His many awards and accolades reflect the respect and admiration in which he was held by the academic and scientific world. His greatest public award was his appointment as an Officer of the Order of Canada in 1976 and his final professional honour will be his induction into the Canadian Medical Hall of Fame in October, 1998. He retired in 1980 but remained active in his professional field until the demands of his disease took their toll.

A Memorial Service celebrating his life will be held at the James Reid Funeral Home, Cataraqui Chapel (Counter Street and Highway # 2), Kingston, Ontario, on Thursday, August 27, 1998 at 1 p.m. The family will receive relatives and friends one hour prior to the service. A Reception will follow at the James Reid Reception Centre.

As expressions of sympathy, the family would appreciate memorial donations to the Ontario Cancer Institute, 610 University Avenue, Toronto, Ontario M5G 2M9, for the Harold E. Johns Research Prize in Medical Biophysics.

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Harold Johns demonstrates the operation of a Cobalt-60 treatment unit to Princess Margaret

In Memoriam: Harold E. Johns

RECOLLECTIONS - HAROLD E. JOHNS – Gwen Greenstock

On behalf of our family, it is a great honour for me to say a few words about my father. It has been a great source of comfort to all of us to talk about what we wanted to say today. We remember him as a great human being, husband, father, father-in-law, grandfather and scientists. Others will speak today of his scientific contribution to society; I want to speak of him as the wonderful person our family remembers.

What kind of a person was dad? Well, most of you know that he had great determination and drive – not only for himself but also for all of us! He fought Parkinson's disease for over thirty years, and up until a few years ago, walked every day, curled, played golf and bridge. In the past five years, his disease really started to take its toll as he lost more and more control over his life. It was agonizing to watch him, and the quality of his life, deteriorate, but for the most part, his spirits were still good and that special spark was still there.

What do we remember about Harold as a person? He had endless energy. None of us could keep up with him. He had a tremendous zest for living. Dad set very high standards for himself, for us, and for everyone around him, and instilled in each of us a tremendous work ethic. He always had to be doing something, and virtually never sat down, although once a year at the cottage, he would read a novel just for relaxation. In fact, Dad played harder than most people work.

> "… and never minded if the sermon was boring because that gave him a good opportunity to think about an unsolved scientific problem."

Dad was a very religious man and exemplified Christain values every day. He always looked for the best in every person and every situation. He participated actively in church life and never minded if the sermon was boring because that gave him a good opportunity to think about an unsolved scientific problem. One of my first memories is that of being pulled to Grace United Church in a sleigh every Sunday all winter. Mum and dad could have driven the car, but somehow, dad thought it better to walk to church and commune with God and nature on the way. We always sat in the very first pew at church and, much to our embarrassment, dad bellowed out all the verses of the hymns.

A couple of weeks ago I said to dad, as we had said to him many times: "Dad, why are you moaning? Are you in pain?" He replied, as he always did: "I'm not moaning; I'm singing". I said: "Well, then dad, sing me something I know. He sang Jesus Loves Me in perfect Chinese. I asked him if, when he got to Heaven, he would like to sing this hymn with his parents. Although, lately we could not often understand what he was saying, this time he replied very clearly: "Well, I'll certainly ask them if they would like to!"

Dad was very athletic – tennis, golf, curling and squash were a passion with him. Many a graduate student will remember with trepidation the famous squash ladder – some said that the only way to get a Ph.D. degree was to beat dad at squash. He was an enthusiastic water skier, but we worried that his jump starts would hurt more than his pride. Dad insisted that all graduate students and visiting scientists had to learn to water ski, whether they knew how to swim or not.

> "Many a graduate student will remember with trepidation the famous squash ladder – some said that the only way to get a Ph.D. degree was to beat dad at squash."

In his spare time, dad always had to be doing something – whether at home or at the cottage – and that meant we all had to be doing something too, even if we did not necessarily think the jobs needed to be done. We remember many such examples at the cottage on Lake Boshkung – cementing the dock, repairing the boathouse, painting the cottage, laying the tile floor, stacking firewood -–the list goes on and on.

Dad was a true extrovert and was always the life and soul of the party. In hotel lobbies, airport waiting rooms, and conference receptions, he could be found pushing a penny with one hand while doing a one arm push up with the other, or balancing a glass of water on his forehead while laying down on his back and then getting up again, or asking you to prevent him from wiping up a puddle of water while you tried to prevent him from doing so with a butcher knife. He loved bridge, charades, the Christmas carol sing, and any kind of game – the more competitive, the better.

Dad had a very positive attitude to towards life. He always looked on the bright side and assumed that everything would always work out – and it usually did. He never worried about finding a

In Memoriam: Harold E. Johns

parking spot, but drove right up to the front door of wherever he was going, and sure enough, there would be a spot waiting just for him.

Dad's scientific work took a number of different turns – he took two sabbaticals to learn new fields – the last of these was when dad was in his mid fifties – a time when these days most of us are thinking about retiring. He was a meticulous writer and spent hours perfecting his scientific papers, though he always said that mum was his best editor.

Mum and dad had a very special relationship. He tried awfully hard to be the boss 100% of the time, but mum was just enough of a feminist not to allow that to happen. They shared 58 years together, leaving mum with a lifetime of wonderful memories. Together they made a great couple and a great parental team for my sisters and me. We have spent our own lives trying to emulate them.

I would like to focus on Harold as a father for a couple of minutes. Aside from the fact that he really wanted sons, he was a great father and he did his best to turn his three daughters into sons. He gave us a mechano set for Christmas one year, an electric train another and a pool table when we were teenagers – he wanted to make sure that our boyfriends kept their hands on the pool cues and not on his daughters. He became very fond of his sons-in-law, and treated them like the sons he never had. They loved him dearly and highly respected him, both as a person and as a scientist.

Claire, Marilyn and I each have our own memories of specific instances. It was hard to choose just a couple each for this service as we have so many.

I shall never forget dad's help with Grade 11 physics – the bathtub filled with water and using a Noxzema bottle, dad tried pretty unsuccessfully to get the theory of Archimedes Principle through my head. I used to say to him: "Dad, just give me the answer, not a thirty-minute explanation of how you got it".

Claire remembers being sent down to dad's workshop at night on many occasions to bring dad a tool that he did not really need. She was afraid of the dark and dad felt that by making her do it, she would build character. Claire finally told him she had enough character. She and dad spent many happy evenings in that same workshop building things together. Claire is dad's scientist – she inherited all his math and science genes!

Marilyn remembers going with Dad to the Olympic sized pool at Cal Tech in California. She persuaded him that they should both jump off the high diving board. Marilyn jumped and watched in amazement as dad dove off. When he finally surfaced, Marilyn asked him: "Why did you dive? He replied that it was OK for a 8 year old to jump but a 45 year old man had to dive. But - he only did it once. In the late 60's, Dad and Marilyn would play billiards after dinner and talk about their day and about life. It was a very special time for Marilyn.

Dad thoroughly enjoyed his six grandchildren and they in turn loved, admired and respected their Granddad. He taught them all how to water-ski and took every opportunity to enlist their assistance in weeding his garden. He made it very clear to them that they were to do their best at whatever they chose to do. In the past month when dad's health was deteriorating, both Jeff and Steve stayed with dad overnight at St. Mary's and Steve had the privilege of being with dad when he died.

Dad was a great humanitarian and taught us so much about life. Because he brought people home from all over the world, we grew up with a tremendous understanding of different cultures. We had the opportunity to travel with mum and dad and to live in a number of different places. We are indeed very fortunate.

Our family is very grateful to the many wonderful people, too numerous to mention, who visited dad when he was alive and who helped him through these last difficult years.

In particular, we would like to express our sincere thanks and appreciation

- To all the nurses and staff at St. Mary's of the Lake Hospital for the care, compassion, and dignity with which they treated dad for the past three years.

> "… and dad felt that by making her do it, she would build character. Claire finally told him she had enough character."

- To Esther Shaver, Kristie Silver, Sarandi Pefanis, Cyrus Santos, and Peter's mother, Cay Shragge, who visited dad at St. Mary's week in and week out and were so effective at keeping him stimulated, right to the end of his life.
- To dad's siblings, Martin, Paul, Ed and Ruth and their spouses, to Grace and Art Holloway and Gordon and Dawn Whitmore who visited him as often as they could and helped him to remember the good old days.
- To Dot Broeders and the staff of Briargate Retirement Living Centre who were so kind to dad while he was living there and who continue to give mum such wonderful support.
- To all of you whom we have not specifically named who visited dad at St. Mary's or who have given your support to us, each in your own way.

We will be forever grateful to you – we will never forget your kindness and compassion.

It is time for you to rest in peace, dad.

Although we are all sad, we are glad that your struggle and suffering have come to an end.

We will cherish your memory and we will miss you.

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In Memoriam: Harold E. Johns

HAROLD'S MEMORIAL SERVICE

Dr. Martin Johns

As the patriarch of the Johns clan, I have been asked to say a few words about the family to which we belong. Our parents went to China as missionaries in 1910 and were stationed in Chengtu, a city of a million or so about fifty miles from the mountains that form the eastern rim of Tibet. The five children arrived in two year intervals between 1913 and 1920 and we all returned to Canada in 1925. Of the five, only Harold and I were old enough to have many memories of the China years.

As most big brothers do, I bossed Harold at home and stuck up for him when any outsider tried to bully him until the day came when I could no longer push him around. From that time on we became allies and very close friends – a friendship that was to endure for his lifetime.

Our parents held the firm view that God had placed each of us in the world for a purpose and that it was our duty to discover that purpose and to so live that we would leave the world a better place than it had been when we arrived. It is not for any of us to state whether or not we found His purpose or achieved the goals He had set for us but the very fact that each of us was challenged in this way had a profound bearing on the way we grew up and on the way in which we looked on life. Three of us were led to careers related to physics, one to a career in dentistry and one to a career in home-making and social work. Harold's death marks the first break in his generation.

While in China we spent the hot summer months in the hills above Kwan Shien where we rented rooms in a Buddhist temple. The priests allowed us to hold our church and Sunday school services in one of the courtyards, under the scrutiny of a number of the idols of Gods of the Buddhist pantheon. Eight year old Harold's favorite hymn was one whose chorus went like this.

> "G double O D Good, G double O D Good,
> We must try to be like Jesus, G double O D Good."

After some time we discovered that he thought the words went "Gee That Balony's Good" and balony was his favorite meat dish!!

Harold and I both graduated from McMaster and took our doctorates in physics at the University of Toronto. One year we shared the top floor of a house on Sussex street with another West China student, and cooked our own meals. After we realized that we could serve a first class dinner for ten cents, we let it be known that we had room for three paying guests in our apartment. Since our meals were much better than those at the Campus Cat or the Green Lantern, we soon had a waiting list for meals served at 25 cents apiece. Consequently, we were able to save about $100 from our annual graduate student income of $600.

After a number of years in Western Canada Harold and I found ourselves in Ontario again with cottages near each other on Lake Boshkung. The old Peterborough canoe that we had bought in the thirties had served us well but it could not meet the needs of two water loving families. We decided that we should use the new fiber glass technology to replicate the old canoe and the two of us spent many summer evenings together building two new vessels. Of course, our efforts made the front lawn of Harold and Sibyl's Anderson Avenue home look like a disaster area. While we were working away, a teen age lad passed by and asked what we were doing. When we told him that we were building canoes, the lad asked "Why don't you just go and buy one!" Harold's reply was typical of his whole life – "Any fool can buy a canoe, it takes brains to build one!!" The lad drifted on, missing completely the point of the reply.

> 'Harold's reply was typical of his whole life – "Any fool can buy a canoe, it takes brains to build one!!" '

Harold had never sailed but thought that it would be a good idea to build a boat and then learn. He obtained a kit from England and spent all of one winter putting his boat together in the basement of their Toronto home. In due course the finished product arrived at Lake Boshkung and Harold came down the shore to recruit sailors for its maiden voyage. Brother Paul and I were asked to come to apply our knowledge of physics to sailing and my wife Margaret was persuaded to join us to act as ballast. There was a howling wind and we set forth across the lake, flying like bats out of hell, the three physicist brothers applying the principles of physics to the situation while Marg sat on the bottom petrified with fear. We finally got our physics in tune with the realities of sailing and were making a wonderful reach across the lake when Harold noticed that the stays on the lee side were slack and promptly tightened them up. When we came about, he discovered that the stays on the new lee side were also slack, so he tightened them. After a few more tacks, I suddenly noticed that the mast was leaning forward in a beautifully curved arch and that the main sail was slack. Harold had tightened the stays so much that he had shattered the mast. We sailed home on the jib to consider how we were to face Harold's sailing guests that were due to arrive in a few hours.

It was decided to apply oak splints to stiffen the mast. The three brothers worked their butts off all afternoon but, by the time the guests arrived, the mast was usable again. True, it was not a thing of beauty with a forty pound oak frame surrounding the top third of its length but it served until Harold could import a new mast from the old country.

In Memoriam: Harold E. Johns

Harold fought the disease that finally took his life bravely for many years and all of us that watched him admired his courage and the stubbornness that had always been a mark of his character. It had been the tradition of the Harold Johns' to invite the family to their Toronto home to enjoy "Grey Cup" parties and there were many memorable ones. After my first wife Margaret died in 1979, I needed to talk to Harold about my future and we chose our usual "after Grey Cup" walk to do this. When we set out, Harold's arms hung lifeless at his side and he asked me not to talk to him for five minutes while he willed them back into motion again. With that small battle won, we had our talk.

He found that l-dopa, the medication for Parkinson's in vogue in those days, would stop his shaking but it also made thinking difficult. Harold's comment was that he had decided it was better "to shake and think" than "to not shake and not think".

Even a year ago on my last visit, he was able to come alive long enough to play catch with a tennis ball in his hospital room. I of course had to throw the ball within a few inches of his hands if he was to catch it. His return throw, not well directed but delivered with great velocity and glee, sent me searching all over the room on my hands and knees.

Inside the cruel exterior imposed by his condition was the caring, fun loving competitive Harold that I shall always remember with love.

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> '… he had decided it was better "to shake and think" than "to not shake and not think".'

Eulogy For Dr. H.E. Johns

Ervin B. Podgorsak

Mrs. Johns, members of Dr. Johns' family, ladies and gentlemen, friends:

It is my privilege and honour to contribute to the memorial service celebrating the life and times of Dr. Harold E. Johns. I am standing here on behalf of his numerous graduate students and postdoctoral fellows with whom he was associated during his productive professional life. Dr. Johns' illustrious career and tremendous contributions to Medical Physics and Cancer Treatment are well known and were recognized with accolades and numerous honours and awards nationally and internationally.

His invention of the cobalt unit, his over 200 scientific publications, his textbook *"The Physics of Radiology"* which he wrote jointly with Jack Cunningham, his long and successful leadership of Medical Physics at the Princess Margaret Hospital, his leadership role in national and international medical physics organizations, his firm dealings with hospital administrators, and his tough yet fair attitude toward students are legendary and clearly qualify him for his upcoming induction into the Canadian Medical Hall of Fame. If there was a global Medical Physics Hall of Fame, Dr. Johns would be the first inductee. He will forever remain a giant among his peers in the profession of medical physics.

Dr. Johns also made an important and lasting contribution to the Canadian society through his teaching efforts. He had a direct and strong influence on the careers of over 100 graduate students and postdoctoral fellows. Students certainly learned about physics and physics research from Dr. Johns, but the physics knowledge that he passed on to his students was far less important than the values and code of behavior that he instilled in his students. His personality traits and professional ethics had a tremendous influence on his young students. One could not help but admire and learn from Dr. Johns' strong will, his honesty and ethical behavior, his no-nonsense approach to solving problems, his love of his family and respect for his colleagues, as well as his love and respect for his country and his institution. Dr. Johns' students are spread around the world; however, most of them chose to practice their profession in Canada, and a large number of them have a teaching career in their own right. It is safe to say that most contemporary medical physicists in Canada, either directly or indirectly, trace their professional roots to Dr. Johns. And this is the real legacy that Dr. Johns is leaving behind. His enormous positive influence on our profession will be felt for years to come.

> "… but the physics knowledge that he passed on to his students was far less important than the values and code of behavior that he instilled in his students."

My direct association with Dr. Johns lasted only 18 months in the early 1970s when I worked as his postdoctoral fellow at the Princess Margaret Hospital in Toronto. Following his invitation, I jumped at the opportunity to work for him and have never regretted my leaving the United States for Canada at his instigation.

In Memoriam: Harold E. Johns

During my relatively short association with Dr. Johns, I acquired from him numerous habits which served me well during my academic and professional career in Montreal. After I left Toronto, I was often in contact with Dr. Johns and he was always ready with an encouraging word or advice. When he could no longer write because of illness, he enlisted the help of his wife Sybil who would write the letters for him. He fought his battle with Parkinson's disease with dignity and courage, and with considerable help from his wife and family.

I saw Dr. Johns for the last time in December of 1997 when I visited him in Kingston with my wife Mariana. He seemed quite frail and it was obvious that the disease had taken its toll. Leading a conversation with him was difficult, yet every so often his eyes would light up and I noticed flashes of his old brilliance. Just as I was saying my good-bye, he perked up and said: "Ervin, have you ever solved the ion chamber problem?" He remembered that 15 years earlier my then-student Gino Fallone and I had some serious polemics with his good friend Jack Boag from England about ion chamber saturation curves. Despite his failing health Dr. Johns obviously till his last days did not lose his interest in physics and concern for the careers of his students.

On behalf of Dr. Johns' numerous graduate students and postdoctoral fellows, I would like to express to the members of Dr. Johns' family our sincere condolences.

Dr. Johns has had a full and extremely productive life. For those who knew him, this is a very sad farewell but we should remember that we do not owe him sorrow; rather, we owe him an enormous gratitude for who he was, for what he did with his talents, and for the way he touched and influenced our lives.

So long, Dr. Johns - our mentor, our teacher, our role model, and our friend.

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Tribute to Dr. H.E. Johns

Dr. Jim Till

I'd like to try to speak for all of those who knew Harold mainly through his work, and especially those who, because of distance away, or for other reasons beyond their control, couldn't be here with us today.

However, I can't resist a couple of reflections about play, not work. I still fondly remember the experiments that Harold did with Mike Rauth, Bill Taylor, myself and others, and especially with Alfie Phillips Jr. and his Canadian Championship curling team, in the late 1960s. Alfie helped us to do an experiment that I think involved an elegant design, to test the effect of sweeping on the distance traveled by a curling stone. This interest of Harold's in the physics of curling had a past. Dr. E.L. Harrington, who was Harold's Department Head at the University of Saskatchewan, also did some quite elegant experiments on the physics of curling stones, many years earlier. I still regret that we (unlike Dr. Harrington) never published the results of our experiment, mainly because we never had a suitable opportunity to repeat it, and we didn't want to publish the results of a single experiment. (By the way, if I recall correctly, the swept rocks travelled an average of about 3 to 4 feet farther than the unswept ones, measured from the tee line. This is a much smaller effect than the usual myths – the sweeping can add as much as 12 feet).

I also remember debating with Harold about the physics of the flight of a boomerang. I debated with Harold, even though I didn't have the slightest idea what I was talking about. I'm still grateful to him that he pretended that I did!

These anecdotes illustrate, I think, Harold's love of physics (any kind of physics!), and his eagerness to mix work with fun.

Harold also loved to attract young people into cancer research, and to foster their careers. The National Cancer Institute of Canada (of which, by coincidence, I happen now to be the volunteer President) recognized this when it established the Harold E. Johns Award. These awards are given to investigators in the early stages of their independent career in cancer research, and are supported by funds raised by the Canadian Cancer Society. These awards are especially significant, I think, because they also recognize Harold's long-lasting interest in the work of the CCS and the NCIC. Sybil will recall coming to Toronto to present the first award, because Harold was too ill at the time to come himself. (And, I might add, what a remarkable presentation it was! Sybil may recall that the crowd responded with a prolonged, enthusiastic ovation!).

> Alfie helped us to do an experiment that I think involved an elegant design, to test the effect of sweeping on the distance traveled by a curling stone.

Finally, I'd like to return to my role as a representative of those who knew Harold through his work. What I'd like to do is to read the text of two messages that I received yesterday. The first was from Peter Peters, the CEO of the Saskatchewan Cancer Agency.

He wrote:

> "Harold Johns was an important part of the history of our Cancer Agency

In Memoriam: Harold E. Johns

as he was of cancer treatment around the world. His leadership in the development of the Cobalt Treatment Unit with his “understudy” Sylvia Fedoruk (plus other noted scientists) was a great time in the history of our program. It is with significant pride that we display some of Dr. Johns’ memorabilia which he donated to the Harold Johns Library at the Saskatoon Cancer Centre. We join the rest of the cancer world in giving thanks for this Pioneer whose legacy has touched the lives of people around the world”.

Sincerely
Peter Peters

The second was from Bob Phillips, the Executive Director of the National Cancer Institute of Canada.

It was with great sadness that I learned of Harold Johns’ death on Sunday. Although I have many fond memories of Harold Johns as a colleague, boss and mentor, I will confine my comments to his enormous impact on cancer research in Canada. Everyone knows of Harold’s remarkable research accomplishments in radiation therapy, radiation chemistry and imaging. However, equally important are his contributions as a leader and teacher. It is truly amazing to look across Canada and even at other countries and to see how Harold’s students, post doctoral fellows and colleagues have assumed important leadership positions. Indeed, the high esteem with which Canada’s cancer research community is held internationally owes much of its fame to Harold Johns and the talented trainees which he seeded across the country.

Harold attracted potential leaders to his laboratory and his department because of his outstanding research reputation, his well deserved reputation as an outstanding teacher, his unfailing commitment to excellence, and his genuine interest in the well being of all those around him. Although he was a stern taskmaster, no one ever had a more loyal friend that Harold Johns.

Harold was also instrumental in the early development of the National Cancer Institute of Canada. He served in many capacities to advise the Institute during its formative years in the 1950’s and 60’s. He demanded the same standards of excellence in the research funded by the NCIC as he demanded from himself and his students. His early leadership and advice have served the Institute well.

Harold’s legacy will live for many, many years, as the third, fourth and fifth generations of students trained in the “Johns’ tradition” continue to have impacts in pushing back the frontiers of cancer research. We will miss him, but we will never forget him.

Sincerely,

Robert A. Phillips, Ph.D.
Executive Director
National Cancer Institute of Canada

I can’t improve on these eloquent summaries of the impact of Harold’s career.

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Image-Guided Minimally Invasive Therapy (IGMIT)

M. Bronskill, G. Sela and N.Konyer

Introduction

The IGMIT project at the **Sunnybrook and Women's College Health Sciences Centre** in Toronto has been a collaborative venture between multiple partners. This brief article outlines the history of the project, its goals and objectives, and the milestones achieved. We emphasize the aspects we find interesting from the viewpoint of medical physics. The clinical applications remain under investigation, although a few general conclusions can be drawn.

A Brief History

The project began as a proposal submitted in June, 1993, to Technology Ontario then part of the Ontario Ministry of Industry, Trade and Technology. The four partners submitting the application were ISG Technologies Inc., Sunnybrook Health Science Centre, The Toronto Hospital, and GE Medical Systems Canada. The basic premise rings true five years later. "Minimally invasive techniques constitute one of the most important trends in medical diagnosis and especially interventional procedures. New image-guidance capabilities allow the doctor to see and treat the disease without laying open the patient, making surgery much less invasive or traumatizing and, therefore, significantly less expensive. This advancement will be based upon new, sophisticated magnetic resonance (MR) imaging and computer workstation visualization technologies". The quotation comes from the original application which argued that the necessary expertise and technologies could come together uniquely in Ontario for commercialization and that the economic and social impacts of this development are revolutionary and are just beginning to take place.

The format of the application was one of matching funds (fairly similar to current CFI applications) and a detailed contract was negotiated between Technology Ontario and the four partners by the beginning of 1994. The total value of the project was $22.3 million, with the partners contributing $13.9 million and Technology Ontario providing $8.4 million.

The vital aspect of the project was production of a unique, open-concept prototype magnet by General Electric (GE) to permit clear access to the patient for interventive procedures. This design inevitably compromised, however, the size and uniformity of the main magnetic field. Thus, special imaging techniques were required, along with gradients and radiofrequency (rf) coils which could maintain adequate access to the patient for interventive procedures. Simultaneously, three visualization capabilities were considered necessary to:

- enable planning in advance of an interventional procedure,
- provide image-based guidance during the procedure, and
- enable interactive control of the MR imaging during the procedure.

These developments were undertaken at Sunnybrook and served as the foundation for the design and construction, in the third year of the project, of a second-generation system for neurosurgical intervention at the Toronto Hospital. Clinical trials were subsequently undertaken to test the clinical efficacy. Research also continued on the original platform to extend these new techniques to other parts of the body such as breast or knee.

The ultimate medical objectives of this project are two fold. The first is to create a combined MR imaging/intervention system by which diseased tissues can be identified, targeted, and a very small probe delivered accurately to the lesion site with minimal or no damage to surrounding tissue. The second is to image the diseased tissue and adjacent, healthy tissue *while therapy is applied*. This capability permits more complete treatment of diseased tissue while ensuring preservation of normal tissue. These objectives require continuous "real-time" visualization during the interventional procedure to monitor precisely the position of the probe and to assess the effects of the therapy because both can change during the procedure.

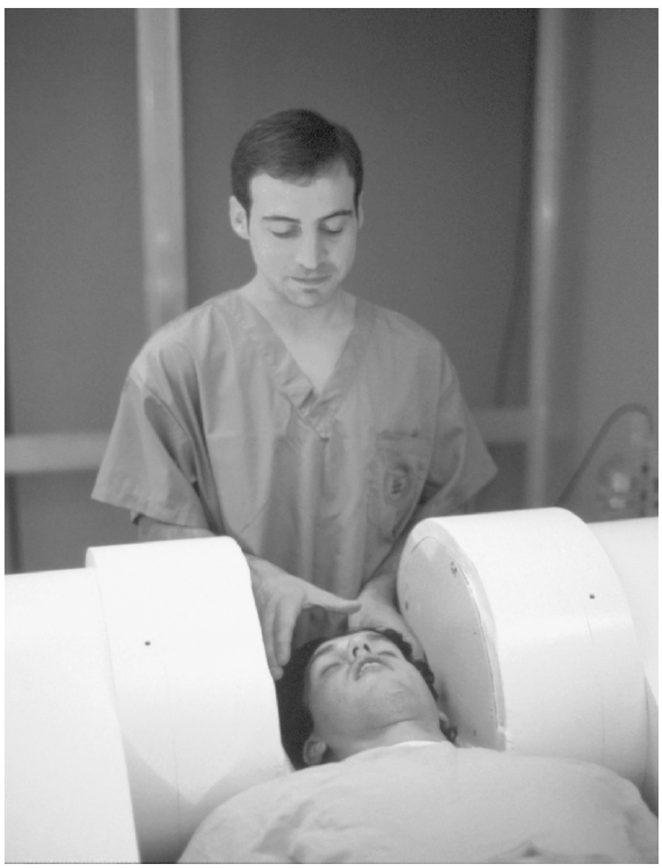

Figure 1. The unique, C-shaped 0.22T magnet installed at Sunnybrook offers excellent surgical access but provides images only over a 12-cm field-of-view.

Sunnybrook System

The prototype IGMIT system was developed at Sunnybrook Health Science Centre, where it remains a fully functional low-field MR imager (**Figure 1**). The magnet employs a unique, high-temperature (~10 degrees Kelvin, no cryogens) superconducting coil design surrounding a C-shaped iron yoke which directs

Figure 2. Close-up view of a pole piece and shimming tool for the 0.22T magnet. Optimizing the uniformity of the magnetic field requires manual adjustment of several hundred small shim elements to achieve uniformity (eventually) of about 40 ppm over a 10-cm-diameter spherical volume.

the magnetic field to specially designed pole pieces. The 45cm diameter pole pieces, which are separated by a 26cm gap, have a complicated shape and require elaborate mechanical shimming (**Figure 2**) to produce a homogeneous imaging volume of approximately 12cm diameter. While this volume is not large enough to image the entire head, it provides image guidance from the surgical entry point to the targetted area. The small pole pieces also enable ready access for the surgeon. The compromises of magnet design, field strength and interventional access are discussed in [1].

In order to maintain the 26-cm gap, very thin gradient coils were required which precluded active shielding. This configuration, however, generated unreasonably large eddy currents in the iron pole pieces. Thus, the pole pieces were redesigned from a special laminated material to prevent any continuous current pathways. Design and fabrication of these laminated pole pieces and mechanical reshimming of the magnet were major activities. Eventually, the separation between the pole pieces was maintained and the three orthogonal gradient coil pairs were designed as a set of laminated, flat coils that fitted snugly inside the pole pieces. The laminated pole pieces were magnetically less efficient, however, and the field strength of the magnet dropped from 0.27 to 0.22T.

The IGMIT magnet and gradient coils are connected to a fully featured GE Signa hardware set, which is shared with a dedicated research whole-body 1.5T magnet. The Signa electronics are switched to control either the IGMIT system or the 1.5T system. Originally this required a robust switch on the outputs of the gradient amplifiers to direct the high currents (100+ amps at several hundred volts) to the appropriate gradient set. When the Signa electronics were upgraded to the "Echoplus" very high power gradient configuration, this arrangement was no longer practical or safe. The configuration was redesigned to include separate gradient amplifiers for the IGMIT and 1.5T configurations and the optical signal inputs to the gradient amplifiers are switched to change operating configurations.

The two magnet strengths (0.22 and 1.5T) also dictate different radiofrequency requirements. An up/down frequency shifter allows the IGMIT magnet, which operates at 9.5MHz, to utilize the same transmit and receive hardware, normally operated at 64MHz for the 1.5T magnet. By utilizing standard Signa hardware, we are able to simplify maintenance issues and lower overall costs, while maintaining the full development features of the Signa programming environment.

Toronto Hospital System

Figure 3 shows the IGMIT surgical suite at the Toronto Hospital. The patient table slides through the centre of the magnet. During imaging, the patient's head is centred between the two poles. The surgeon has access to the patient from the head of the magnet, allowing the insertion of biopsy needles and other surgical instruments while scans are being acquired. A modified LCD video monitor enables the surgeon to see the images while performing the procedure. The patient table can also extend one meter past the end of the table, giving the surgeon more access to the patient when simultaneous imaging is not required. The patient can be moved quickly during the procedure, switching between maximum accessibility and interactive scanning as needed. The suite is fully equipped with MR-compatible anaesthetic,

After 14 cases, it is clear that there are many areas in which we can improve the hardware, software, and our operating techniques. Each procedure seems to require a surface coil configuration which we have not yet built!

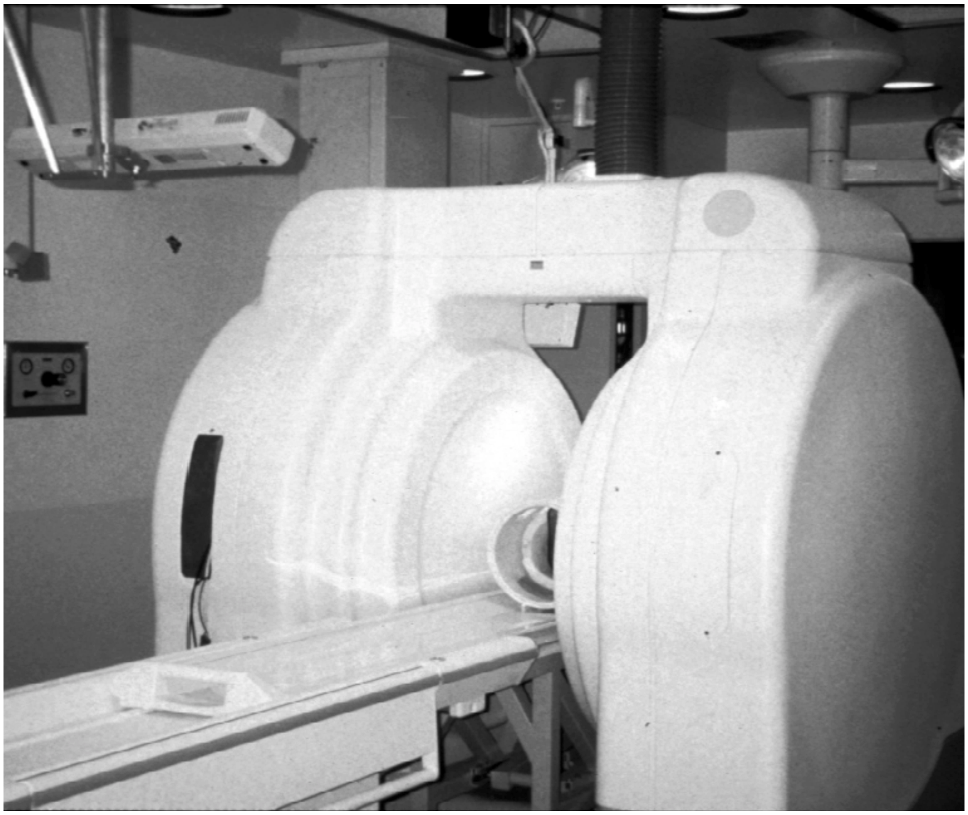

Figure 3. The IGMIT system at the Toronto Hospital has large vertical pole pieces with sufficient gap to allow the patient table to pass through the magnet. The overhead optical tracking camera and surgical lights can be seen.

monitoring, and surgical instrumentation.

The heart of the IGMIT system is a GE 0.2T Profile permanent magnet, substantially modified from the standard GE product. In the IGMIT configuration, the magnet is rotated 90 degrees from its normal position such that the two poles lie on either side of the patient (**Figure 3**), with a separation of 46cm. The pole-piece diameter of 120cm produces an imaging volume of 40cm which is larger and more homogenous than that generated by the Sunnybrook prototype, at some cost in patient accessibility. The Toronto Hospital IGMIT system includes standard Profile gradients and makes use of the frequency shifter design of the Sunnybrook prototype, enabling it to use standard Signa electronics.

Vital to any MR imaging system are the coils which deliver the radiofrequency (RF) energy to the object being imaged and receive the RF signal generated by this object. In whole-body clinical systems, a large RF body coil can be used to generate a very homogeneous RF excitation field across the entire imaging volume. Smaller, receive-only coils placed close to the area of interest detect the required sig-

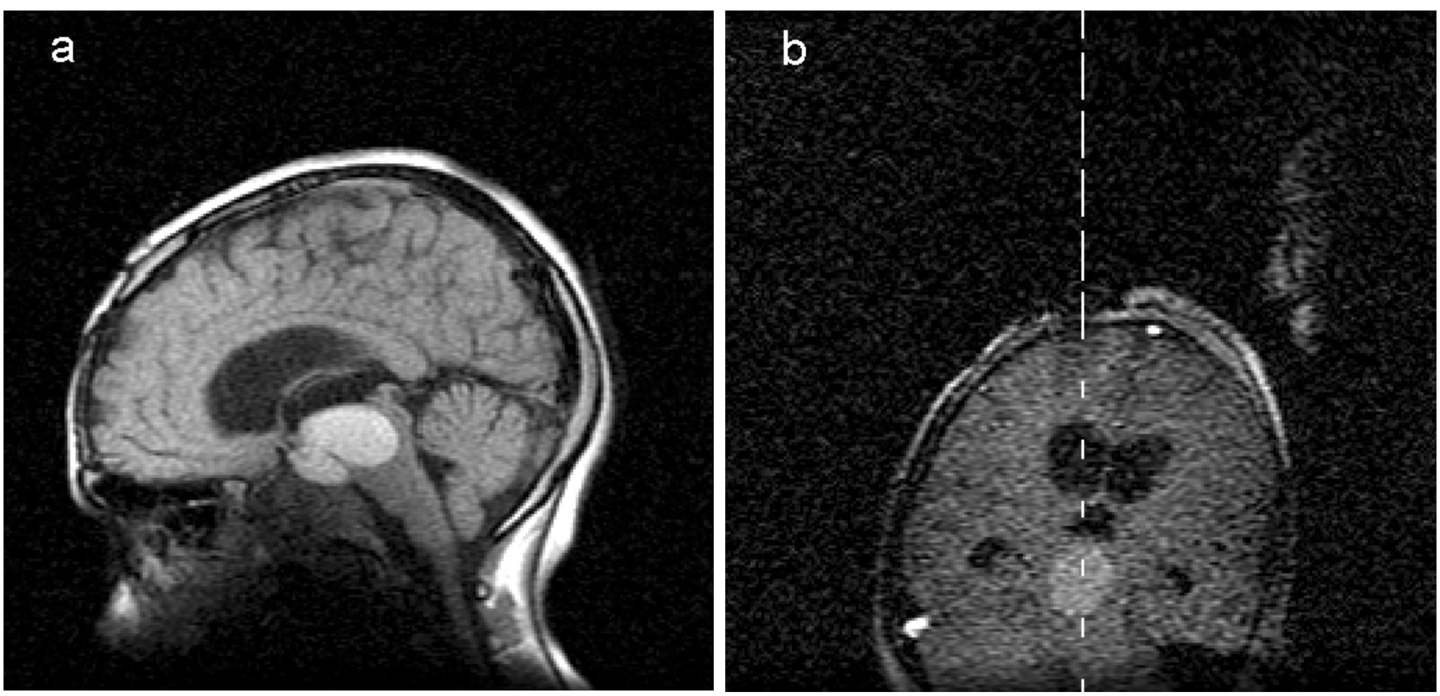

Figure 4. (a) A typical high-quality, sagittal, pre-surgery planning image obtained in the IGMIT system. (b) "Real-time" oblique image obtained from a tracked surgical handpiece. The target is the hyperintense region at the base of the brain in (a). The dashed lines show the actual position of the surgical probe. The point where the long dashes end is the position of the tool tip; the short dashes are the projection of the tool past the tip. Scans are continuously acquired and the scan plane is adjusted automatically to match the position and orientation of the tool as it is moved by the surgeon.

nal. The body RF coil for the Profile system, normally located on the inside of the pole pieces, has been removed in the IGMIT configuration to maximize the distance between the poles for patient clearance and surgical access. This exacerbates the difficult compromise which must be made between image quality and surgical access. A series of flexible, watertight transmit/receive surface coils has been developed to provide choice in coil placement for the surgeon. Coil improvement remains a priority, however, and it is very clear that in this situation, one size does not fit all.

The system supports both real-time and diagnostic scanning. In real-time mode an optical system tracks the position of surgical instruments as they are moved. A Northern Digital (Waterloo, Ontario) Polaris tracker is mounted from the ceiling above the magnet (see **Figure 3**). Surgical instruments are attached to specially designed MR-compatible tracking handpieces from Traxtal Technologies (Bellaire, Texas). Finally, custom interface software developed at Sunnybrook Hospital communicates the Polaris position data to the GE real-time control software. A number of visualization options are available which allow the surgeon to see the position of the surgical instrument overlaid on a particular scan, or even control the scan plane to follow the orientation and position of the instrument. **Figure 4(a)** shows a planning image while **Figure 4 (b)** is an example of a scan controlled by a tracked surgical handpiece. The software capabilities are currently being expanded to provide more visualization options such as the ability to display instrument position with respect to previously acquired images, including diagnostic images from a higher field strength, non-interventional MR. It may also be possible to improve SNR and reduce scanning times by concentrating data acquisition around the tool position.

Clinical Activities

By August, 1998, fourteen brain surgery procedures have been completed using the Toronto Hospital system, varying from simple biopsies to complete craniotomies. The system tends to be utilized in two different manners. For some surgeries, such as tumor resections, imaging is performed prior to incision in order to plan the surgical approach, and then repeated after surgery to evaluate the effectiveness of the procedure. In the second type of procedure, for example a biopsy, the real-time tracking capability is used to follow the path of the tool to the area of interest in the brain. Both types of procedures have been completed successfully on several patients.

General Conclusions

Learning how to use the interventional MR system effectively requires a significant training period for a large team involving surgeons, radiologists, anaesthetists, MR technologists, nurses (of various specialties), medical physicists, engineers, etc. It is not uncommon for us to have nearly a dozen individuals present for a procedure. After 14 cases, it is clear that there are many areas in which we can improve the hardware, software, and our operating techniques. Each procedure seems to require a surface coil configuration which we have not yet built! The need for a wide range of MR-compatible surgical tools is not yet satisfied and the MR-compatible tools often differ from standard surgical tools in subtle, but important ways. Once we feel fully competent with this design, we will try to establish in which procedures it is making a significant clinical contribution. It will also be interesting to compare it to other systems with different magnet designs and hence, different compromises between patient access and image quality. The IGMIT systems are very economical in both capital and operating costs and it will be important in the long run to compare the cost-effectiveness of various designs.

Acknowledgements

The IGMIT project has involved collaborative teamwork between several organizations and many individuals. The authors offer the following partial list: Technology Ontario (David Tyrer), Sunnybrook Health Science Centre (Scott Hinks, Atila Ersahin, Andy Derbyshire, Mark Henkelman), Toronto Hospital (Walter Kucharczyk, Mark Bernstein), GE Medical Systems (Morry Blumenfeld, Skip Kerwin, Bruce Collick, Deb Keep, Joe Sardi), Northern Digital (Steve Leis), Traxtal Technologies (Neil Glossup), ISG Technologies (Michael Greenberg).

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The 3rd International Symposium on 3-D Radiation Treatment Planning and Conformal Therapy

Patrick Cadman

I recently attended the 3rd International Symposium on 3-D Radiation Treatment Planning and Conformal Therapy held at the University of North Carolina at Chapel Hill from September 1-3, 1998.

Pilot strikes and hurricanes couldn't keep me away.

The main body of the symposium was divided into three distinct sessions: (i) clinical applications (prostate, breast, brain, head and neck, and lung treatments; normal tissue tolerances, and prostate immobilization), (ii) technical considerations (intensity modulation, quality assurance, and image processing information systems), and (iii) treatment planning systems. This arrangement provided a good mix of clinical and technical perspectives. Each session was followed by 30 minutes of question and answer and I found it very enlightening to hear the physician's comments.

James Purdy began the sessions with a talk entitled "3-D from a Physicist's Point of View". He emphasized the importance of participating in 3D protocol studies so that real data may be linked to clinical outcome. He charted the evolution from 2D planning approaches using a simulator radiograph for portal design based on standardized techniques applied to whole classes of comparable patients to 3DCRT treatment planning using image-based target design for the individual patient. Dr. Purdy made the distinction between "conventional" 3DCRT and intensity modulated radiation therapy (IMRT) requiring the inverse method of treatment design and physician specified optimization criteria. One point Dr. Purdy made is that 3D planning does not necessarily lead to smaller fields as has been the experience of some centres for their prostate treatments.

The clinical applications session got off to a roaring start with Dr. Gerald Hanks, MD, of the Fox Chase Cancer Center declaring that clinics in the U.S.A. that could not deliver 75 Gy safely for prostate treatments would soon be out of business. His claim is based on recently published results (see Int. J. Radiation Oncology Biol. Phys., Vol. 41, No. 3, pp. 501-598, 1998) demonstrating a striking benefit to increased dose in the 70-80 cGy range. Encouraging results from the Memorial Sloan-Kettering Cancer Centre were also referenced, establishing dose escalation with 3DCRT as a reality and the prostate results as a template for other treatment sites. It became clear early in the symposium that the use of the ICRU 50 terminolgy for dose specification is essential - even this group of expert users got caught being ambiguous about specifying doses and margins.

Jeff Michalski, MD, of the Mallinckrodt Institute of Radiology described the RTOG 3D Quality Assurance centre at Washington University and an interactive database that has been developed to allow for sophisticated queries of clinical or dosimetric issues related to the clinical protocols. It is hoped that this facility will facilitate modeling of tumor control and normal tissue complication probabilities. The requirements for 3D quality assurance are continually challenged in light of the variety of IMRT techniques and the NCI has committed funding to support future quality assurance efforts.

Lynn Verhey of the U. of C., San Francisco and Radhe Mohan of the Medical College of Virginia described the more technical aspects of IMRT. After a discussion of the essential features of IMRT methods (step and shoot, dynamic sliding window, and dynamic arcs) and optimization, Verhey described his group's experience using the Peacock and Corvus planning systems. Mohan's group has implemented IMRT with standard multi-leaf collimators. Their IMRT system is coupled to the ADAC Pinnacle 3DRTP system and uses a Varian supplied dynamic MLC software driver with optimization based on dose or dose volume criteria with future criteria based on TCP, NTCP, Equivalent uniform dose (EUD), etc.

It was very gratifying to see the physicians embracing the 3D planning process and contributing to the data-bank of 3D dose volume and organ toxicity data. Dr. Clifton Ling of the MSKCC projected on the future application of biological imaging including FDG metabolic studies, IURD studies of mitotic activities, and F-misonidazole identification of hypoxia. A particular focus of Dr. Larry Marks from

The clinical applications session got off to a roaring start with Dr. Gerald Hanks, MD, of the Fox Chase Cancer Center declaring that clinics in the U.S.A. that could not deliver 75 Gy safely for prostate treatments would soon be out of business

Duke University is treatment planning from a functioning lung standpoint. The group uses lung perfusion scans to delineate functioning regions of the lung and plan beams to minimize irradiation of these functioning areas. They also use PET to delineate the target volume, leading to changes in treatment plans in approximate 30% of their patients compared to initial CT planning. Presenters from the University of Michigan, the MSKCC, and the Carolina Consortium explained their approach to 3DCRT for lung cancer treatment. Each group is conducting dose escalation studies and is providing valuable data on normal lung tolerances.

It was made clear that simple dose volume planning is inadequate and spatial information becomes important. Findings seem to indicate that the risk of esophageal may be related to the length of continual esophagus where the entire circumference dose exceeded 60 Gy (Maguire, et al., ASTRO 1998) and similar findings were referenced for patients with prostate cancer in predicting rectal injury (Jamieson, et al., ASTRO 1998).

Michael Goitein talked on the current status of TCP and NTCP calculations. His response to the use of biological modeling in treatment was simply, "don't do it," adding that these methods are not ripe for implementation. However, Goitein discoursed on the pitfalls of planning without biological information, emphasizing that the type of structure (critical element or critical volume) and the dose coverage within the volume must be considered. He cautioned that IMRT plans are currently done without proper understanding of the biological effects of the dose distributions.

Another interesting application of 3D treatment planning was presented by Avraham Eisbruch, MD, of the University of Michigan, Ann Arbor. He presented an IMRT technique for irradiation of head and neck cancer patients while sparing major salivary glands. His talk underscored the role of the physician in the 3D planning process with the physician painstakingly outlining the head and neck nodes and salivary glands with the aid of a cross-sectional atlas of the human lymphatic system.

Planning system vendors were present just outside the symposium hall and were eager to demonstrate their wares. To my knowledge, every commercially available 3D planning system available in North America was represented. Twenty minute slots were given to each of the vendors and they responded with an interesting mix of technical information from company representatives or designated expert users, clinical applications, and quality assurance considerations. I felt that this was a valuable way to become familiar with at least a few features of each of the systems. Of all the vendors present, only Helax TMS (V5.0) and Nomos Corvus were able to demonstrate IMRT and optimization at this time.

Other interesting presentations were numerous and included: EPIDs in the clinical setting, image registration and segmentation, 3D treatment planning of breast and brain cancers, MLC applications of enhanced dynamic wedge, respiratory effects during lung treatments, and novel approaches to 3D treatment of the head and neck.

The closing remarks were by a physicist (James Purdy) and a clinician (Joel Tepper). A few of Dr. Tepper's comments that I found myself jotting down were that the clinician cannot be separated from the process, inverse planning does not usually give the optimal dose distribution - it must be an interactive process with the physician, and we shouldn't be using biological models but we have to work very hard to develop them. He also emphasized that we need to prove the benefits of IMRT and undertake formal quality-of-life testing. Dr. Purdy commented that 3D treatment planning is a major paradigm shift for the radiation oncologist and treatment planner. Multimodality imaging is now being recognized as essential and cross-sectional image training will become an essential training element of the radiation oncologist of the future. He challenged treatment planning vendors to make their systems faster, more accurate, and easier to use, and felt that Monte Carlo calculations for 3DRTTP will likely become the method of choice early in the next century. QA is lacking and is currently based on measurements. The technical challenge is to make near automated planning, delivery, and verification systems a reality over the next decade.

We were given abstracts from most, but not all of the presenters. Some of these were either too short or didn't contain any references. Dr. Rosenman, our host, said that he thought a published proceedings would be very useful and he would try and make this happen.

As we left the final session on Thursday afternoon, the winds rose and the rain fell as another hurricane was moving in behind the wake of Bonnie. Time to return to Saskatoon where I'll only have to worry about tripping over gopher holes and the upcoming threat of minus 40 - it might be a welcome break.

Patrick Cadman
Saskatoon Cancer Centre

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Membership Directory – Errata

The 1998 edition of the Canadian medical physics Membership Directory, which has just been issued, has some omissions in the list of committee members. As editor of this material, I apologise for these errors. The following four medical physicists should be included in the list on pages vii - viii :

COMP/CCPM Radiation Regulations Committee:
John E. Aldrich

COMP/CCPM Communications Committee:
Shidong Tong

COMP Awards Committee:
Clement J. Arsenault,
Ken R. Shortt

If there are other errors please bring these to my attention.

Paul Johns
Past-Chair, COMP

Editor's note: *Brighid McGarry has informed me that her area code will change from (403) to (780) on the 25th January 1999. The description of this change was omitted from the new Membership Directory.*

Who can perform medical physics surveys on mammography systems in the USA?

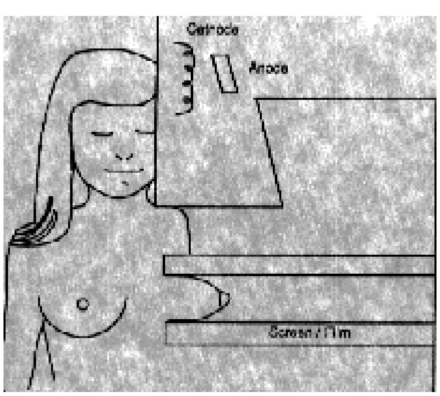
Walter Huda and Charles C Chamberlain

Introduction

The Canadian College of Physicists in Medicine has a committee charged with the task of accrediting physicists who are deemed to be competent to perform physics surveys on mammography units, as well as provide oversight of the facility QA program. At the 1998 AGM of the Canadian College of Physicists in Medicine, there was a lengthy discussion about whether a medical physicist should *also* be a Member or Fellow of the CCPM before (s)he is deemed to be qualified to perform surveys of mammography facilities. This article describes who can perform medical physics surveys in the USA, which may help to clarify the issues involved in this ongoing debate.

Preamble

All medical physicists conducting surveys of mammography facilities, and providing oversight of the facility quality assurance program, are required to meet minimum *initial qualifications* and comply with *continuing qualifications*. Medical physicists who fail to meet the initial qualifications are provided with a set of *alternative initial qualifications*, and there is also a mechanism for *reestablishing qualifications*. This report summarizes the requirements as currently laid out in the Federal Register: Part IV 21 CFR Parts 16 and 900 Quality Mammography Standards; Correction; Final Rule Volume 623 (217) 10 November 1997 pp 60614-60632.



Initial qualifications

The medical physicist should be state licensed (or approved) or have certification in an appropriate specialty by one of the bodies determined by the Food and Drug Administration to have procedures and requirements to ensure that medical physicists certified by the body are competent to perform physics surveys;

AND Have a Masters degree or higher in a physical science from an accredited institution (+20 semester hours of physics)

AND Have 20 contact hours of documented specialized training in conducting surveys of mammography facilities

AND Have the experience of conducting surveys of at least 1 mammography facility and a total of at least 10 mammography units (After 22 April 1999, experience conducting surveys must be acquired under the direct supervision of a qualified medical physicist).

Alternative initial qualifications

Have qualified as a medical physicist under the FDA's interim regulations and retained that qualification by maintenance of the active status of any licensure, approval or certification

AND Prior to 22 April 1999 have: (1) A bachelors degree or higher in a physical science from an accredited institution (+10 semester hours of physics); (2) Forty contact hours of documented specialized training in conducting surveys of mammography facilities; (3) Have the experience of conducting surveys of at least 1 mammography facility and a total of at least 20 mammography units.

Continuing qualifications

(A) Continuing education. 15 continuing education units (CEU) in mammography during the 36 months immediately preceding date of the facility's annual inspection.

The Canadian College of Physicists in Medicine has a committee charged with the task of accrediting physicists who are deemed to be competent to perform physics surveys on mammography units, as well as provide oversight of the facility QA program. On this basis, there would appear to be no additional need to also require that physicists to be Members or Fellows of the CCPM, or to be otherwise Board Certified Diagnostic Medical Physicists.

(B) Continuing experience. Survey at least two mammography facilities and at least six mammography units during the 24 months immediately preceding the date of the facility's annual MQSA inspection.

(C) New mammographic modality. Before a medical physicist may begin independently performing mammographic surveys of a new mammographic modality, the physicist must receive at least 8 hours of training in surveying units of the new mammographic modality.

Reestablishing qualifications

(A) Medical physicists who fail to meet the continuing education requirements shall bring up their total CEU's to 15 in the previous 3 years.

(B) Medical physicists who fail to meet the continuing experience requirements shall complete a sufficient number of surveys under the direct supervision of qualified medical physicist to bring their total surveys up to the required two facilities and six units in the previous 24 months.

Conclusions

In the US, one key requirement for deeming a medical physicist to be qualified to perform surveys of mammography equipment is that the individual be state licensed, approved or certified in the appropriate specialty. The Canadian College of Physicists in Medicine has a committee charged with the task of accrediting physicists who are deemed to be competent to perform physics surveys on mammography units, as well as provide oversight of the facility QA program. On this basis, there would appear to be *no additional need to also require that physicists to be Members or Fellows of the CCPM*, or to be otherwise Board Certified Diagnostic Medical Physicists.

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The American College of Medical Physics and Its Place in the U.S. Medical Physics Community

Paul A. Feller

The mission of the American College of Medical Physics is to:

a) enhance the quality of the practice of medical physics,

b) engage in professional activities for the benefit of the medical physics community and

c) promote the continuing competence of the practitioners of medical physics.

For many years, the American Association of Physicists in Medicine was THE organization for U.S. medical physicists. The AAPM was the scientific, educational and professional society for the profession. In 1982, in response to the concerns that a large organization like the AAPM could not respond rapidly to legislative or other professional challenges, the AAPM Board voted to support the formation of an organization which would be devoted to the professional concerns of clinical medical physicists. Thus the ACMP was born. Shortly after, the American College of Radiology (ACR), the professional society of the U.S. radiologists, decided to recognize its members in physics by forming the Commission on Physics.

Unlike the Canadian College of Medical Physicists, the ACMP is NOT a certifying body. Neither are the AAPM nor the ACR. In the U.S., certification in the various branches of medical physics is granted by two independent certifying boards, the American Board of Radiology (ABR) and the American Board of Medical Physics (ABMP). The AAPM is a sponsoring society of the ABR along with the ACR and six other primarily physician organizations. The AAPM is represented on the ABR by three trustees, as are each of the physician organizations. This was not always the case. For many years, the ABR was reluctant to grant sponsor status to the physicists, and, even though the exams were written and administered by physicists, no physicists were given board positions. This was a primary reason that members of the ACMP formed a constituting panel for a new, peer-controlled board. The ACMP has been the sole sponsoring organization of the ABMP. (Very recently, the ABMP has added the American Academy of Health Physics as a co-sponsor for the Medical Health Physics portion its examination. The AAHP also sponsors the American Board of Health Physics which administers an exam in comprehensive health physics.) The existence of two independent certification boards for medical physics in the U.S. has resulted in some confusion and hard feelings within the U.S. medical physics community. For the last couple years, much has been written, discussed and argued about the two boards, in an attempt to find some common ground for forming a single board from the two. To date, a workable solution has not been found, and the two boards continue to function independently and successfully. For more details on the history of the two-board issue, I refer you to past Newsletters of the ACMP and AAPM, and to the Frequently Asked Questions (FAQ) website for the MEDPHYS listserver at: http://www.mindspring.com/~sherouse/MPFAQ/.

The ACMP continues to devote its efforts to the professional needs of the clinical medical physicist in the U.S. Our annual meetings offer opportunities to discuss professional topics that affect our profession with other physicists and representatives from regulatory and accrediting bodies as well as vendors. A scientific symposium of a practical nature is usually presented prior to the annual meeting. In 1999, the ACMP Annual Meeting will be held in Aspen, CO, May 17-23. In 2000, we will return to Canada for our annual meeting at Whistler, BC, May 15-21. We are seeking ways to involve Canadian physicists in that meeting.

The ACMP hopes to continue the liaison relationship with COMP, particularly with the Professional Affairs Committee, so that we might mutually benefit from the other's experience on matters of mutual professional concern.

Paul Feller, Ph.D., FACMP
(Former Chair of the ACMP Board of Chancellors and present ACMP Liaison to COMP)

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ROLE AND FUNCTION OF MEDICAL PHYSICISTS IN DIAGNOSTIC IMAGING

Editor's Note: *The following is a document created by the Professional Affairs Committee of COMP and CCPM. It was developed in draft form by I.A. Cunningham and T.Y. Lee in December, 1996 and updated by G.P. Raaphorst and D. Wilkins in June, 1998. It represents a concise description of the role of medical physicists in diagnostic imaging.*

INTRODUCTION

This report describes the role and function of medical imaging physicists in diagnostic imaging departments. It is being prepared in consultation with the Professional Affairs Committee of the Canadian Organization of Medical Physicists (COMP). The authors have drawn from a number of sources including those listed in the bibliography.

Medical Physicists in imaging (also called medical-imaging physicists or imaging physicists) are scientists trained in physics with graduate training (M.Sc. or Ph.D., and membership in the CCPM) in radiological imaging sciences. They provide essential scientific and technical support to medical imaging departments, which use modern medical imaging equipment. This equipment has become increasingly more sophisticated over the past several decades, and will likely continue to do so. As a result, the level of scientific expertise required to select, purchase, manage and maintain these systems in a safe and effective manner has also increased. The role of the physicist varies according to the medical services provided by the department, which may include nuclear medicine, general radiography, angiography, ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI). The imaging physicist plays an essential role in ensuring adherence to appropriate provincial and federal regulations, and has a professional responsibility to ensure that the use of both ionizing and non-ionizing radiation is according to accepted standards of good practice. The physicist acts as an advisor on radiation-safety matters and is responsible to senior management or senior medical staff. The physicist provides training to medical colleagues and other staff members regarding the safe and efficacious use of radiation, and generally has a university appointment. The physicist may teach both undergraduate and graduate university courses and may have responsibility for the training of graduate students at the M.Sc. or Ph.D. level. The physicist may also provide clinical colleagues with physics or imaging support in their research programs, or may lead an independent research program as a primary investigator. Smaller, non-teaching centres generally require the part-time services of an imaging physicist. This report describes the role and function of a Medical Imaging Physicist in a large academic centre.

ROLES OF THE IMAGING PHYSICIST

The technology and scientific basis of modern medical imaging equipment are changing at a phenomenal rate. The role of the imaging physicist is therefore also evolving on a continual basis. It is essential that the physicist commit a significant and ongoing effort to remain current with the accepted standards of good professional practice. This description of the roles of the physicist must therefore also be continuously updated. In addition, different facilities employ different numbers of medical physicists and other technical support staff. Therefore, not all physicists will be active with responsibilities in all the areas described here.

Major Areas of Involvement

1. Clinical Support
   - i) Support of patient procedures
   - ii) Quality Assurance
   - iii) Radiation Safety
   - iv) Development and Implementation of New Clinical Devices and Techniques
   - v) Equipment Evaluation, Selection and Commissioning
2. Education
3. Research
4. Management and Administration

DETAILED DESCRIPTION OF MEDICAL PHYSICIST JOB FUNCTION

1. Clinical Support

***i*) Support for patient procedures**

The Medical Physicist must ensure that imaging equipment operates and functions in accordance with current standards of good practice. Specialized procedures involving unusual or non-standard techniques may require additional services of an imaging physicist. This is particularly true when new clinical techniques or equipment are being used.

a) Determine and ensure use of appropriate radiographic exposure conditions for standard radiographic procedures.

b) Assist with specialized procedures such as stereotaxy using CT, MRI or DSA as required to ensure images will be acceptable for computer analysis.

c) Act as systems manager for computer systems (information systems, image analysis systems, or image storage, transfer, display and archive systems).

***ii*) Quality Assurance**

The Medical Physicist is responsible for programs to ensure the best possible image quality is achieved for an acceptable radiation dose to the patient when ionizing radiation is used (the ALARA principle), and the best possible image quality is achieved when non-ionizing radiation is used.

a) Develop and supervise QA programs for the specific imaging equipment in the facility as appropriate, including fluoroscopic, radiographic, CT, ultrasound, film processing, MRI, PET, gamma camera, and associated equipment.

b) Ensure compliance with all provincial and federal regulations with respect to testing and verification programs, and that mandated minimum standards of operation are achieved.

c) Ensure that equipment with deficiencies is removed from service as appropriate while corrective action is taken.

d) Maintain records of test results and corrective actions for each room and each imaging system in the facility in accordance with regulations.

e) Interact with service personnel to arrange for corrective actions, and ensure that all corrective actions are completed properly. Verification testing may be required.

f) Develop and implement specialized QA programs for specialized equipment and procedures such as stereotactic CT, MRI or DSA, or quantitative CT.

g) Help service personnel trouble-shoot difficult or unusual system problems.

h) Help identify system problems by using imaging science expertise to interpret image artifacts or compromised image quality.

iii) Radiation Safety

The Medical Physicist must provide the necessary expertise to ensure the radiation safety of staff, patients and the public.

a) Application and control of licensing of radionuclides used in nuclear medicine facilities.

b) Supervision of the personnel dosimetry service.

c) Monitoring of radiation levels of both radioisotopes and radiographic equipment; i.e. surveys, wipe tests.

d) Radiation protection design of facility to ensure the protection of patients, staff and the public according to accepted professional standards, and to register the design with appropriate regulatory bodies.

e) Teach radiation safety to all appropriate staff.

f) Control radioisotope source inventory including source acquisition and disposal.

g) Assessment of radiation incidents and communications with appropriate provincial and federal authorities.

h) Assurance that all aspects of license compliance are met and organization of, and participation in, compliance inspections.

i) Administration of Radiation Safety Program.

j) Interact with provincial and federal regulatory agencies, such as AECB, Ontario HARP regulations, Health Canada, regarding regulation and safe practice.

k) Perform patient dosimetry as required, such as to determine fetal dose from a procedure and make recommendations.

l) Handle inquiries from patients, staff and public regarding radiation safety.

iv) Development and Implementation of New Clinical Devices and Techniques

The Medical Physicist must ensure that techniques used are valid and "state-of-the-art". This may require the establishment of research programs to develop new instruments and techniques, or the implementation of new techniques and ideas reported in the published literature.

a) The transfer of new or improved techniques into the diagnostic program as appropriate. This includes the development of devices, measurement and QA, and training of staff. For example, specialized radiographic filters for paediatric radiography or long-film angiography.

b) Development of new techniques in diagnostic imaging, such as stereotactic CT, MRI or DSA for stereotactic radiosurgery of arteriovenous malformations, or functional CT or MRI.

c) Introduction of new technologies, such as region-of-interest fluoroscopy, new MRI pulse sequences or RF receiver and gradient coils, or multi-modality image registration and review computer workstations.

d) Training of staff in the use of new technologies.

e) Computer programming for specific requirements.

f) Designing and establishing communications between imaging computer systems or equipment and other computer systems such as radiotherapy computers (for example, DICOM links).

g) Development of new or improved methods of assessing image quality of imaging systems.

v) Equipment Evaluation, Selection and Commissioning

The Medical Physicist must ensure that the imaging equipment used meets the needs of the department, and that the equipment meets specifications agreed upon with the manufacturer.

a) Remain current on all imaging equipment and technologies.

b) Performance specification and comparative assessment of available equipment at the time of acquisition or upgrade. Recommendations for appropriate capabilities of equipment to ensure satisfaction of department expectations. Technical negotiations with manufacturers.

c) Supervise installation and/or upgrade of equipment

d) Perform acceptance testing of equipment.

e) Keep current on the latest computer technology, computer systems for appropriate selection of equipment.

f) Perform or assist in hardware and software installations.

g) Critical analysis of new or improved imaging technologies regarding what new acquisitions might be warranted.

h) Participate in bringing in new or improved imaging technologies.

i) Assist in the initial design and implementation of new computer digital image manipulations ("PACS").

2. Education

The Medical Physicist is required to teach medical physics and related material to students, residents and staff.

a) Teach imaging physics, radiobiology, and radiation safety to medical residents. This is primarily for the radiology and nuclear medicine residents, but also includes residents in cardiology, orthopaedic surgery, and urology and other specialties using imaging equipment.

b) Teach university' courses (graduate and undergraduate) on medical imaging.

c) Supervision of graduate students.

d) Supervision of summer students and undergraduate thesis projects.

e) Participate in graduate student advisory committees, comprehensive exams, and thesis defences.

f) Participate in peer review of submitted publications and grant applications.

g) Prepare and deliver Continuing Education programs such as seminars, courses to other staff and medical physicists.

h) Responsibility for a program of personal continuing education to ensure an up-to-date level of expertise and to recognize the evolving nature of the profession.

i) Administrative duties associated with educational programs.

j) Hosting medical, scientific and technical visitors from Canada and abroad.

k) Provide imaging physics or radiation safety expertise for other departments, such as cardiology, urology, and dentistry.

3. Research

Research plays an essential role in the search for improved medical imaging capabilities. The Medical Physicist has the required training in both research and the scientific basis of medical imaging to perform this research. Research opportunities are important for the development of the field, for the professional development of the Medical Physicist, and to attract the highest-caliber physicists possible into the field.

a) Supervise and perform applied and basic research related to medical imaging and consistent with the mission statement of the facility.

b) Apply and compete for peer-reviewed research funding.

c) Apply and compete for industrial research funding.

d) Publish research results in research journals.

e) Participate in review of grant applications and manuscripts submitted for publication.

f) Present research results at scientific meetings.

g) Participate in research seminars series and workshops.

h) Administration of local research programs.

4. Management and Administration

Medical Physicists work with medical staff and administrators to ensure that diagnostic images of the highest possible quality are made available for the diagnostic process, consistent with an acceptable radiation dose to the patient. Good departmental administration ensures optimum integration and utilization of these resources. Activities at the provincial, national and international levels assures the local facility remains current with evolving standards of practice, and allows the greater common good to be addressed.

a) Department policies and procedures.

b) Corporate policies and procedures.

c) Departmental administration.

d) Corporate administration.

e) University administration.

f) Scientific or medical organizations

g) Professional associations.

h) Regulatory bodies.

i) Community organizations.

SUMMARY

The medical physicists bring imaging physics and radiation safety expertise to the diagnostic imaging department. Their expertise insures that the maximum image quality is achieved consistent with a reasonable and low risk to the patient. Medical Physicists also play a central role in teaching radiation-safety issues to other staff. Medical Physicists are responsible for many of the technical advances in diagnostic imaging.

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ROLE AND FUNCTION OF MEDICAL PHYSICISTS IN CANADIAN CANCER THERAPY CENTERS

Editor's Note: *The following is a document created by the Professional Affairs Committee of COMP and CCPM. It was developed in draft form by G.P. Raaphorst and K.E. Breitman in 1994 and updated by G.P. Raaphorst and D. Wilkins in June, 1998. It represents a concise description of the role of medical physicists in radiation therapy.*

INTRODUCTION

Medical Physicists are scientists trained in physics with further studies in radiation physics, radiological sciences, radiobiology, and medical/clinical applications. They are an essential component of the staffing requirements in a Radiation Treatment Program. Acting behind the scenes in many activities, medical physicists are instrumental in ensuring that radiation doses are delivered in an accurate, effective, and safe manner. The role of Medical Physicists includes all aspects of radiation dose specification and calibration, treatment planning and preparation, equipment Quality Assurance and radiation safety. The high technology basis of radiation therapy requires that Medical Physicists play a central role in equipment evaluation and selection, as well as new technology/technique introduction into a radiation treatment program. In addition Medical Physicists play a key role in the education process, such as teaching physics and oncology residents, radiation therapy students and graduate students. This document will define the role and function of a Medical Physicist in an academic multimodality cancer therapy program.

PRINCIPAL AREAS OF INVOLVEMENT

A. Major

1. Direct support of Patient Treatment
2. Quality Assurance
3. Radiation Safety
4. Development and Implementation of New Clinical Devices and Techniques
5. Equipment Evaluation, Selection and Commissioning
6. Education
7. Research
8. Administration

B. Minor

1. Computer Technology and Communications
2. Imaging Technologies/Techniques related to radiotherapy.
3. Liaison with other institutions
4. Facility design (other than radiation protection)
5. Representation on Professional and Regulatory Committees
6. Public Relations

DETAILED DESCRIPTION OF MEDICAL PHYSICIST JOB FUNCTION

Because of the rapidly changing nature of modern technology the role of a Medical Physicist is constantly changing to keep pace with the requirements of the job. The functional description will continue to change to meet the challenge of tomorrow. This description only reflects the requirements of today and must be continuously updated.

A. Areas of Major Involvement

1. Direct Support of Patient treatment

The Medical Physicist plays a central role in the precise assessment and definition of radiotherapy dose and dose mapping and in technical problem solving in all applications of radiotherapy.

a) Treatment Planning: Supervision of routine treatment planning; Procedures and policies for dose calculations; specialized treatment planning (eg. Complex fields, junctions, new techniques.)

b) Consultation with physicians and dosimetrists regarding treatment strategies.

c) Computer generated dose calculations: responsible for understanding the limitations of the dose modeling and to predict situations where inaccuracies may occur; Responsible for verification of computer generated dose calculations.

d) Treatment measurement: Dosimetric measurement of specialized treatments eg. Complex fields, new energies, new treatments, cutouts, boluses, inhomogeneities.

e) Design and development of specialized treatment devices, eg. Patient immobilization, beam modifying devices and shielding, jigs for shielding.

f) Brachytherapy: Development of new methods, jigs, and devices to facilitate treatment, dosimetric measurements and calculations; Radiation source processing and calibration.

2. Quality Assurance

The Medical Physicist is responsible for ensuring that the prescribed radiotherapy doses are accurately determined and delivered to the prescribed anatomical volumes.

a) Development, administration and evaluation of the technical aspects of the radiation oncology quality assurance program.

b) Absolute dosimetry on all radiotherapy equipment.

c) Measurement and verification of beam characteristics on all radiotherapy equipment.

d) Measurement and verification of all mechanical, laser, and light field alignments.

e) Verification of treatment planning systems on an ongoing basis.

f) Optimization of the quality of imaging systems (simulators, other x-ray units, CT units, used in support of radiotherapy, etc.)

g) Periodic evaluation of all physics equipment used in support of radiotherapy, eg. Absolute dosimetry systems, beam-scanning dosimetry systems, survey meters, TLD systems, etc.

h) Verification of the accuracy of all elements comprising the chain of transfer of geometrical information from imaging systems to treatment planning systems to treatment machine setup to patient anatomy.

i) Checking of jigs and devices used in radiotherapy, ie. Beam modifying devices, patient positioning and immobilization.

j) Interact with service personnel to arrange for corrective actions, and ensure that all corrective actions are completed properly. Verification testing may be required.

k) Help service personnel trouble-shoot difficult or unusual system problems.

3. Radiation Safety

The Medical Physicist is responsible for ensuring the radiation safety of staff and patients.

a) Application for and control of all licensing for radiotherapy facilities.

b) Supervision of the personnel dosimetry service.

c) Monitoring of radiation levels eg. Surveys, wipe tests.

d) Radiation therapy (radiation protection) facility design, eg. Design of bunkers, isotope storage rooms, shielded patient rooms, specialized shields for patients and staff.

e) Teaching radiation safety to all appropriate staff.

f) Control of radioactive source inventory including source acquisition and disposal.

g) Assessment of any radiation incidents and communications regarding these incidents with the appropriate authorities such as the AECB.

h) Assurance that all aspects of license compliance are met. Organization of and participation in compliance inspections.

4. Development and Implementation of New Clinical Devices and Techniques.

The Medical Physicist is responsible for ensuring that techniques used are both valid and state-of-the-art, and for research and development of new concepts in medical physics as applied to radiotherapy.

a) Research and development of new techniques and concepts ie. Stereotactic radiosurgery, online imaging and verification, new brachytherapy sources.

b) The transfer of new or improved treatment techniques into the radiotherapy program eg, techniques in total body irradiation. This includes development of devices, measurement and QA.

c) Introduction of new technologies into the program, including development of policies and procedures, eg. High dose rate brachytherapy, new treatment planning systems, patient treatment verification systems, dynamic therapy.

d) Training of staff in the use of new techniques and technologies.

5. Equipment Evaluation, Selection and Commissioning

The Medical Physicist is responsible for ensuring that equipment used in the radiation oncology program meets the needs of the program and that complete and accurate data are measured on the treatment units to enable the prescribed doses to be delivered.

a) Remaining up-to-date on all radiotherapy equipment and new technologies.

b) Performance specification and comparative assessment of equipment at the time of acquisition or upgrade. Recommendations for the equipment. Technical negotiation with the manufacturers.

c) Decommissioning old equipment.

d) Supervision of installation and/or upgrade of equipment

e) Carrying out all acceptance testing of new equipment

f) Commissioning equipment for clinical use: This includes the measurement of all relevant parameters and the preparation of tables and other documents required for clinical implementation. It includes searching for unusual or unexpected behaviors. For treatment equipment it includes the setup of the database in the treatment planning computer and testing algorithms to ensure that computer modeling agrees with the measured values.

g) Participation in training of staff to use equipment.

6. Education

Medical Physicists are responsible for teaching Medical Physics and related subjects to students and staff in the health care system.

a) Teaching Radiation Physics and Radiobiology to Medical Residents

b) Teaching and training Medical Physics Residents

c) Teaching of Radiation Therapy Students.

d) Teaching university courses

e) Supervision of graduate students

f) Supervision of summer students and undergraduate research courses/projects.

g) Participation in graduate student committees, comprehensive exams and thesis defences.

h) Participation in peer review.

i) Delivering a Continuing Education program such as seminars and courses to other members of the health care team as well as to other medical physicists.

j) Responsibility for a program of personal continuing education to ensure an up-to-date level of expertise and to recognize the evolving nature of the profession.

7. Research

Research plays an important role in the improvement of cancer care. Medical physicists have the appropriate education and training to perform research and are extensively involved with research related to cancer care.

a) The supervision and performance of applied and basic research consistent with the mission of the cancer care program.

b) Application and competition for peer reviewed research funding.

c) Acquisition of industrial research funding.

d) Preparation and publication of research results.

e) Participation in review of grant proposals and manuscripts presented for publication.

f) Presentation of results at scientific meetings.

g) Participating in research seminar series and workshops.

8. Administration

The Medical Physics Department consists of a multidisciplinary group of professionals who participate in the cancer care program. Good Medical Physics Department administration and participation in Centre administration assures optimum integration and utilization of these resources. Activities at the provincial, national and international levels assure the local facility remains current with evolving standards of practice, and allows the greater common good to be addressed.

a) Department policies and procedures.

b) Corporate policies and procedures.

c) Departmental administration.

d) Corporate administration.

e) University administration.

f) Scientific or medical organizations

g) Professional associations.

h) Regulatory bodies.

i) Community organizations.

B. Areas of Minor Involvement

It should be noted that programs within Cancer Centres can vary extensively and that some of the following may be major activities in some cancer centres.

1. Computer Technology and Communication

Computer technology is progressively playing a more central role in cancer care. Medical Physicists have a strong background in computers and play important roles in the application of computers to medicine.

a) Keeping up-to-date on latest computer technology and developments in software; assisting in selection of systems.

b) Performing or assisting in hardware and software installation.

c) Developing and modifying algorithms for treatment planning dose calculations.

d) Programming for specific requirements.

e) Setting up communications between computer systems and/or radiotherapy /physics equipment.

f) Acting as systems manager for computer systems.

g) Training users.

2. Imaging Technologies/Techniques Related to Radiotherapy

Medical imaging is a key element of the cancer therapy process. Medical Physicists are involved in many aspects of imaging.

a) Assuring that image quality meets standards required. This may be through liaison with host hospitals or directly, depending on the local arrangements.

b) Participating in the introduction of new or improved imaging technologies.

c) Assuring that data communication between imaging technologies and radiotherapy devices is possible and meets program requirements.

d) Maintaining an up-to-date awareness of development and change in imaging technologies.

3. Liaison with Other Institutions

The application of physics in medicine requires extensive communication on a multidisciplinary level, which can also involve a wide range of institutions.

a) Liaise with host hospitals regarding imaging technologies used and applied to radiotherapy.

b) Liaise with host hospital regarding therapy with unencapsulated radioisotopes.

c) Liaise with host hospital regarding shared treatment facilities and their licensing.

d) Liaise with universities regarding educational programs.

e) Interact with regulatory agencies, such as AECB, HARP, Health Canada regarding regulation and safe practice.

f) Interact with dosimetry standards organizations such as National Research Council and Radiological Physics Center to ensure accuracy of dosimetry measurements.

4. Facility Design (other than radiation protection)

New facility design requires many considerations such as equipment siting and physical layout, and many other factors that require the participation of a Medical Physicist.

a) Designing Medical Physics Facilities in a Cancer Centre.

b) Assisting with design and layout of radiation therapy areas.

5. Representation on professional and Regulatory Committees

There are committees at the provincial and federal levels which set policy and procedures for the use and safety of radiative technologies in therapy and there are also international committees which make recommendations in this area. Medical Physicists play an important role in serving on these organizations and committees such as COMP, CCPM, AAPM, AECB, HARP, NCRP, ICRP, and ICRU.

6. Public Relations

Medical Physicists' involvement in the high technology components of cancer therapy provides opportunities to engage in effective public education and public relations. Medical Physicists make presentations to local service clubs, to high schools and do interviews with the news media.

SUMMARY

Medical Physicists participate in a wide range of areas within a comprehensive cancer care program. Their expertise assures the quality and safe practice of radiotherapy and allows the continual development and importation of up-to-date technologies consistent with a continuous quality improvement program. In addition, Medical Physicists play a central role in teaching the medical physics and safety aspects of radiotherapy and imaging.

Medical Physicists have been responsible for most of the technical advances that have taken place in radiation oncology.

PAC Report

Salary, Manpower Survey: R. Hooper is performing the professional salary survey. Somewhere between 275 and 280 had been sent out six to eight weeks before the COMP Annual Meeting. By the meeting 158 returns had been received. Final report will be ready for publication in the October issue of the Newsletter. R. Hooper stated that the manpower survey is much more difficult. For such a survey to be complete and extensive, more than just the mailing lists of medical physicists in medical institutions need to be addressed. This would also have to include medical physicists in universities and industry and would require considerable effort. This will be delayed to a future date.

New Sub-Committee: Subcommittee for promotion of Medical Physics was formed and two new members joined the PAC: D. Wilkins and J. Gallet. Both are enthusiastic about promoting medical physics and have some good ideas. There are plans for developing documentation to target hospital administrators as well as the public. In addition, there was also discussion for targeting universities in order to attract high quality students in the medical physics programs. In addition, it was indicated that perhaps medical physicists should be involved in communicating with medical schools in order to get the up and coming graduates to recognize the importance of the multidisciplinary approach to medicine, and the role that medical physicists play in the medical physics and technology side of medical procedure implementation.

ACMP: P. Feller attended the PAC meeting and gave an update on the activities of the ACMP. He stated that at the May meeting, E.Podgorsak was the COMP rep at the ACMP meeting. Paul summarized some of the activities as follows:

a) There is some activity regarding rewriting of shielding requirements for diagnostic installation.
b) There was a mammography symposium.
c) He summarized the mammography accreditation program for physicists.
d) He indicated that many of their activities had official continuing education credit and that the COMP meeting should also consider doing this.
e) The ACMP board approved and sponsored an electronic journal of clinical physics, which will be devoted primarily to clinical physics and technical advances. This will be available on the web site.
f) ACMP has put together a manpower needs and requirement report, which is primarily directed at special procedures. This will be useful for determining and planning manpower requirements for hospitals and medical institutions that want to adopt specialized procedures.

There is also some increased activity in the ABMP and ABR certification boards to try to get together and move towards forming one board and one recognized certification.

Consulting rates: There was discussion that five years ago the PAC had assessed consulting rates for medical physics and had set it at a minimum of $125.00/hour, and that now it was necessary to update these consulting rates. Two factors should be taken into consideration; First of all were they set too low and secondly, the change in costs inflation, etc. would require elevated consulting rates. After some discussion it was suggested that

(Continued on page 141)

Canadian Radiation and Imaging Societies in Medicine (CRISM)

New Society Focuses on Medical Imaging and Cancer Therapy

Few areas of medicine have changed as broadly or as swiftly in recent years as those using radiation and other technologies for medical imaging, image-guided treatment and cancer therapy.

Against this backdrop of rapid technological advances and other changes in Canadian health care, six national health care societies have joined forces to create the Canadian Radiation and Imaging Societies in Medicine (CRISM). The new society aims to contribute to the effective and efficient application of technology in the interests of the health of Canadians.

> "Imaging capabilities and cancer treatments that were once the stuff of science fiction have become science fact," said CRISM Chairperson Sheila Boutcher, RTNM, Ph.D. "We work in an exciting field, with many areas of amazing potential yet to be discovered. But the rapid rate at which our field is advancing also presents many unique challenges and demands for practitioners, health care administrators, policymakers and industry alike."
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> "From the dynamic progress that has occurred in this area of medicine has grown an impetus for our organizations to come together and deal with key issues," she said. "The formation of CRISM shows a meaningful commitment to improving patient care that surpasses the individual needs and interests of any one member society."

The new Society brings together representatives from the Canadian Association of Medical Radiation Technologists, Canadian Association of Nuclear Medicine, Canadian Association of Radiation Oncologists, Canadian Association of Radiologists, Canadian Organization of Medical Physicists, and the Canadian Society of Diagnostic Medical Sonographers.

Collectively, members of the Society have established the following goals and objectives:

- to serve as a forum for exchange of information between the member societies;
- to recommend imaging and therapy priorities likely to enhance the health of the public to business, industry, and government;
- to coordinate existing and future standards and guidelines among the member societies;
- to foster the development of scientific and technical knowledge in medical imaging, image-guided treatment, and cancer therapy;
- to promote excellence in the education of professionals working in medical imaging, image-guided treatment, and cancer therapy;
- to educate the public about the efficacious use of imaging and radiation therapy technology in medicine; and
- to coordinate conjoint conferences of the constituent societies on a periodic basis.

CRISM received formal approval of its Bylaws and obtained its letters patent in April 1998. The Society is an umbrella organization open to all national Canadian health care societies whose members are involved in medical imaging, image-guided treatment and cancer therapy, and whose objectives are consistent with those identified by CRISM.

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AN OVERVIEW OF MEMBERS

The following list of founding member societies is presented in alphabetical order:

Canadian Association of Medical Radiation Technologists

The Canadian Association of Medical Radiation Technologists (CAMRT) is Canada's national certifying body for radiological technologists, radiation therapists, nuclear medicine technologists and magnetic resonance technologists. Founded in 1942 by a coalition of provincial associations, the Association today represents some 10,000 members.

The CAMRT plays an active role in the training, certification and professional development of its members. The Association shares in the accreditation of training programs with the Canadian Medical Association and other health groups. It also offers distance education courses through which members can upgrade their skills and pursue advanced level certification in their field.

The CAMRT is not a regulatory body, but does set standards for those entering the profession and promotes their Code of Ethics. Medical radiation technologists entering the Canadian work force must successfully complete the CAMRT certification examination.

Regulations governing the field vary at the provincial level. The CAMRT therefore works closely with its 10 Provincial Member Associations in representing the medical radiation technology community across Canada. In addition, the CAMRT engages proactively in professional and public affairs activities, and provides numerous other benefits and services to its members, including professional liability insurance, numerous publications, and an annual conference and other special events.

Canadian Association of Nuclear Medicine

The Canadian Association of Nuclear Medicine (CANM) is a professional organization representing Canada's nuclear medicine specialist physicians. The CANM strives for excellence in the practice of diagnostic and therapeutic nuclear medicine in Canada by promoting the continued professional competence of nuclear medicine specialists, establishing guidelines of clinical practice and encouraging biomedical research. The CANM is committed to working with all professionals in nuclear medicine to ensure that Canadians have access to the highest quality nuclear medicine services.

Canadian Association of Radiologists

The Canadian Association of Radiologists (CAR) is a voluntary organization of imaging specialists in the Canadian medical community. The purpose of the Association is to promote the clinical, educational, research and organizational goals of its members, working with professional associations, industry and governments for the benefit of the public.

The CAR was incorporated in 1948 under the provisions of Part II of the Companies Act. As the national specialty society for diagnostic radiology, the CAR is recognized both within and beyond the medical profession as the official voice of Canadian radiology.

Each year, the Association holds an annual meeting with scientific, business and social sessions. These meetings enable members to avail themselves of the latest in scientific thinking, current trends in medical education and economics. In 1995, the CAR held its annual meeting in conjunction with the CAMRT. Another conjoint meeting of these two organizations is planned for the year 2000 in Toronto.

Since 1996, through its representative Dr. Louise Samson, the CAR has encouraged the incorporation of CRISM as, among other things, a forum for exchange of information between its member societies. The CAR is committing its efforts to achieve a united voice for the radiological sciences in Canada.

Canadian Association of Radiation Oncologists

Founded in 1986, the Canadian Association of Radiation Oncologists (CARO) exists to support and represent physicians practicing radiation oncology in Canada. The CARO aims to further their commitment to develop and maintain the excellence of care expected by patients; to maintain the physician's right to determine and accept responsibility for patient care; and to define and promote the optimal application of radiation oncology in decreasing the morbidity and mortality from cancer.

Canadian Organization of Medical Physicists

The Canadian Organization of Medical Physicists (COMP) is a scientific and professional organization composed of medical physicists and graduate students working in the areas of medical imaging physics, cancer therapy physics, radiation protection, and medical biophysics, plus Corporate Members who are involved in these areas.

Medical physics is the application of physics to problems involving human health. Medical physicists have been responsible for many advances in the science and technology of diagnosis and treatment. Examples include the employment of high-energy photon and electron beams for cancer therapy, the development of the computed tomographic (CT) scanner, and the magnetic resonance (MR) imager.

The COMP comprises about 400 physicists and students working in hospitals, cancer centres, universities, government agencies, and industry. The COMP promotes the application of physics to medicine through scientific meetings and professional standards, and is a member society of the International Organization for Medical Physics. The COMP also has a close relationship with the Canadian College of Physicists in Medicine (CCPM), which is the national certification body for clinical competence in physics applied to medicine.

Canadian Society of Diagnostic Medical Sonographers

The Canadian Society of Diagnostic Medical Sonographers (CSDMS) is the professional non-profit organization representing ultrasound professionals in Canada. Incorporated in 1981, the CSDMS currently has more than 1,500 members. The society is dedicated to the enhancement of patient care by promoting the science of diagnostic medical ultrasound.

The CSDMS has established standards of education and training and promotes continuing education for its members. The Society provides various services to its membership to assist in the continuing education process. It has adopted the American Registry of Diagnostic Medical Sonographers (ARDMS) examinations as its certifying examinations. The CSDMS has been working closely with the ARDMS to ensure that Canadian core competencies are included in the registry examinations and to facilitate improved service to Canadians.

Membership consists primarily of sonographers from all major speciality areas of diagnostic ultrasound, as well as technical representatives, educators, physicians and students. The CSDMS holds one annual meeting and educational session each year, which is well attended by members from across Canada. The Society is in constant communication with various other imaging and sonography societies and is proud of the active role it has in groups such as CRISM, the sonography coalition, the Canadian Medical Association's Conjoint Accreditation process, and other

Les sociétés canadiennes en radiation et imagerie médicale (SCRIM)

Une nouvelle société s'intéresse à l'imagerie médicale et à la thérapie anticancéreuse

Peu de domaines médicaux ont évolué aussi rapidement et pris autant d'ampleur au cours des dernières années que ceux qui utilisent le rayonnement et d'autres technologies dans l'imagerie médicale, les traitements assistés par l'imagerie et la thérapie anticancéreuse.

Dans ce contexte de progrès technologiques rapides et des autres changements dans le secteur des soins de la santé au Canada, six sociétés nationales de soins de la santé ont joint leurs efforts pour créer une société appelée Sociétés canadiennes en radiation et imagerie médicale (SCRIM). La nouvelle société a pour but de contribuer à l'application efficace et efficiente de la technologie dans l'intérêt de la santé des Canadiens.

« Les méthodes d'imagerie et les traitements anticancéreux qui tenaient jadis de la science fiction sont désormais des faits scientifiques, a déclaré la Présidente de SCRIM, M^{me} Sheila Boutcher, Ph.D., t.e.m.n. Nous travaillons dans un domaine stimulant dont plusieurs facettes restent encore à découvrir. Mais ce rythme rapide qui caractérise notre domaine présente également des demandes et des défis particuliers pour les praticiens, les administrateurs des soins de santé, les décideurs et pour l'industrie. »

« Constatant les progrès dynamiques réalisés dans ce domaine de la médecine, nos organisations ont été motivées à se regrouper pour traiter les questions importantes, ajoute M^{me} Boutcher. La création de SCRIM fait preuve d'un engagement à améliorer les soins aux patients qui dépasse les besoins et les intérêts individuels de chaque société. »

La nouvelle société rassemble des représentants de l'Association canadienne des technologues en radiation médicale, de l'Association canadienne en médecine nucléaire, de l'Association canadienne des radio-oncologues, de l'Association canadienne des radiologistes, de l'Organisation canadienne des physiciens médicaux et de la Société canadienne des technologues en ultrasonographie diagnostique.

Collectivement, les membres de SCRIM ont établi les buts et les objectifs suivants :

- servir de tribune d'échange de renseignements entre les sociétés-membres;
- recommander aux entreprises, à l'industrie et au gouvernement des priorités en thérapie et en imagerie qui permettraient d'améliorer la santé du public;
- coordonner les normes et les directives actuelles et futures entre les sociétés-membres;
- encourager le développement de connaissances scientifiques et techniques en imagerie médicale, en traitement assisté par l'imagerie et en thérapie anticancéreuse;
- favoriser l'excellence dans la formation des professionnels en imagerie médicale, en traitement assistée par l'imagerie et en thérapie anticancéreuse;
- éduquer le public quant à l'utilisation efficace de l'imagerie et de la radiothérapie en médecine;
- coordonner des conférences conjointes entre les sociétés constituantes à intervalles réguliers.

SCRIM a reçu l'approbation officielle de ses Règlements et a obtenu ses lettres patentes en avril 1998. La société est ouverte à toutes les sociétés canadiennes de soins de la santé dont les membres oeuvrent dans les domaines de l'imagerie médicale et de la thérapie anticancéreuse, et dont les objectifs sont en accord avec ceux de SCRIM.

Pour obtenir plus de renseignements, veuillez communiquer avec :

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APERÇU DES MEMBRES

La liste suivante des sociétés-membres fondatrices est présentée en ordre alphabétique :

Association canadienne de médecine nucléaire

L'association canadienne de médecine nucléaire (ACMN) est une organisation professionnelle qui représente les médecins spécialistes en médecine nucléaire. L'ACMN vise l'excellence dans la pratique de la médecine nucléaire au Canada, tant sur le plan du diagnostic que sur celui du traitement, par la promotion du maintien de la compétence professionnelle des spécialistes en médecine nucléaire, par l'élaboration de lignes directrices en pratique clinique et par le soutien de la recherche biomédicale. Nous collaborons avec tous les professionnels de la médecine nucléaire pour faire en sorte que les Canadiens aient accès a des service de médecine nucléaire a plus haute qualité.

Association canadienne des radiologistes

L'Association canadienne des radiologistes (ACR) est une organisation bénévole formée de spécialistes de l'imagerie dans le milieu médical canadien. L'Association a pour but de promouvoir la recherche clinique, pédagogique et les objectifs organisationnels des ses membres, de collaborer avec les associations professionnelles, l'industrie et les gouvernements pour le bénéfice du public.

L'ACR a été constituée en société en 1948 en vertu des dispositions de la Partie II de la Loi sur les compagnies. En tant qu'association professionnelle nationale de la radiologie diagnostique, l'ACR est reconnue à l'intérieur comme à l'extérieur de la profession médicale en tant que porte-parole officiel du milieu de la radiologie au Canada.

Chaque année, l'Association organise une réunion annuelle où sont présentés des ateliers à caractère scientifique, commercial et social. Ces réunions permettent aux membres d'être au fait des dernières théories scientifiques et des tendances actuelles en enseignement médical et en économie. En 1995, l'ACR a organisé sa réunion annuelle conjointement avec l'ACTRM. Une autre réunion conjointe de ces deux organisations est prévue en l'an 2000, à Toronto.

Depuis 1996, par l'intermédiaire de sa représentante, Louise Samson, l'ACR a encouragé la constitution en société de SCRIM, notamment à titre de tribune d'échange de renseignements entre les sociétés-membres. L'ACR consacre ses efforts à constituer une voix unifiée pour les sciences radiologiques au Canada.

Association canadienne des radio-oncologues

Fondée en 1986, l'Association canadienne des radio-oncologues (ACRO) a pour but de soutenir et de représenter les médecins qui pratiquent l'oncoradiologie au Canada. L'ACRO entend poursuivre son engagement visant à assurer et à maintenir l'excellence des soins attendue par les patients; à maintenir le droit des médecins de déterminer et d'accepter la responsabilité des soins aux patients; à définir et à promouvoir l'application optimale de l'oncoradiologie afin de réduire le taux de morbidité et de mortalité attribuable au cancer.

Association canadienne des technologues en radiation médicale

L'Association canadienne des technologues en radiation médicale (ACTRM) est l'organisme de certification nationale des technologues en radiologie, des radiothérapeutes, des technologues en médecine nucléaire et des technologues en résonance magnétique. Fondée en 1942 par un groupe d'associations provinciales, l'Association représente actuellement quelque 10 000 membres.

L'ACTRM joue un rôle actif dans la formation, l'agrément et le perfectionnement professionnel de ses membres. L'Association partage l'accréditation des programmes de formation avec l'Association médicale canadienne et d'autres organisations de santé. Elle offre également des cours d'éducation à distance qui permettent aux membres de mettre leurs compétences à jour et d'obtenir l'agrément avancé dans leur domaine.

L'ACTRM n'est pas un organisme de réglementation mais elle établit des normes pour les personnes qui commencent à pratiquer la profession et assure la promotion de son Code de déontologie. Les technologues en radiation médicale qui intègrent la main-d'oeuvre canadienne doivent réussir l'examen d'agrément de l'ACTRM.

La réglementation régissant le domaine varie d'une province à l'autre. En conséquence, l'ACTRM collabore étroitement avec les dix associations-membres provinciales afin de représenter le milieu de la technologie des radiations médicales au Canada. En outre, l'ACTRM participe proactivement aux activités publiques et professionnelles et offre de nombreux autres services et avantages à ses membres, notamment une assurance responsabilité, diverses publications, une conférence annuelle et d'autres événements spéciaux.

Organisation canadienne des physiciens médicaux

L'Organisation canadienne des physiciens médicaux (OCPM) est une organisation scientifique et professionnelle formée de physiciens médicaux et d'étudiants diplômés dans les domaines de la physique de l'imagerie médicale, de la physique de la thérapie anticancéreuse, de la radioprotection et de la biophysique médicale, en plus des membres de sociétés qui oeuvrent dans ces secteurs.

La physique médicale consiste en l'application de la physique aux problèmes liés à la santé humaine. Les physiciens médicaux sont à l'origine de nombreux progrès de la science et de la technologie liées au diagnostique et au traitement, notamment l'emploi de faisceaux de photons et d'électrons à haute énergie dans la thérapie anticancéreuse, la mise au point de tomodensitomètres et les imageurs à résonance magnétique. L'OCPM compte environ 400 physiciens et étudiants qui travaillent dans des hôpitaux, des centres de traitement anticancéreux, des universités, des organismes gouvernementaux et dans l'industrie. Elle assure la promotion de l'application de la physique à la médecine grâce à l'organisation de rencontres scientifiques et à l'application de normes professionnelles; elle est également membre de l'Organisation internationale de physique médicale. L'OCPM collabore étroitement avec le Collège canadien des physiciens en médecine (CCPM), qui est l'organisme d'agrément national de la compétence clinique en physique appliquée à la médecine.

La Société canadienne des technologues en ultrasonographie diagnostique

La Société canadienne des technologues en ultrasonographie diagnostique(SCTUD) est l'organisme professionnel sans but lucratif qui représente les professionnels en ultrasonographie au Canada. Constituée en société en 1981, la SCTUD compte actuellement plus de 1 500 membres. La société vise à améliorer les soins aux patients grâce à la promotion de l'ultrasonographie.

La SCTUD a établi des normes d'éducation et de formation et assure la promotion de l'éducation permanente auprès de ses membres. Elle offre différents services à ses membres afin de les aider à participer au processus d'éducation permanente. Elle a adopté les examens de l'American Registry of Diagnostic Medical Sonographers (ARDMS) comme examens d'agrément. La SCTUD travaille étroitement avec l'ARDMS pour que les compétences de base canadiennes soient incluses dans les examens et pour offrir de meilleurs services aux Canadiens.

Les membres sont principalement des sonographes provenant de tous les secteurs de spécialisation importants de l'ultrasonographie diagnostique, auxquels s'ajoutent des représentants techniques, des enseignants, des médecins et des étudiants. La SCTUD organise chaque année une réunion annuelle et un atelier de formation auxquels participent en grand nombre les membres partout au Canada. La Société est en communication constante avec diverses autres sociétés d'imagerie et de sonographie et est fière de jouer un rôle actif au sein des groupes comme SCRIM, la coalition de la sonographie, dans le processus d'agrément conjoint de l'Association médicale canadienne et d'autres groupes de dis-

THE CANADIAN SOCIETY OF NUCLEAR MEDICINE

I'd like to tell you about a new national organisation representing all professionals working in nuclear medicine. It's called the Canadian Society of Nuclear Medicine (CSNM) and it was formally launched during the recent international nuclear medicine meeting in Toronto.

There are a number of groups which represent individual professions - the Canadian Association of Nuclear Medicine (CANM, the physicians' group), the Association medical specialiste en medecine nucleaire de Quebec (AMSMNQ), the Canadian Association of Medical Radiation Technologists (CAMRT), the Canadian Association of Radiopharmaceutical Scientists (CARS), and the Canadian Organisation of Medical Physicists (COMP). These five groups have come together to form CSNM. Three of these five groups are composed entirely of nuclear medicine people, while for both CAMRT and COMP only a fraction of the members are involved in nuclear medicine. All of these organisations will continue to exist, but their nuclear medicine activities will be co-ordinated through the new society. This will eliminate duplication of effort, improve communication, and present a unified view to government and industry.

The board of the CSNM is composed of the presidents (or designates) of the five founding organisations, the chairs of the six standing committees (Publications, Scientific Affairs, Medical Affairs, Radiopharmacy, Radioprotection, and Technical Standards), and two members at large to allow a balance of regional and professional representation. The current executive is: President, **Jim Ballinger**, a radiopharmacist from Toronto; President-Elect, **Juan Friede**, a physician from Quebec City; and Secretary/ Treasurer, **Mary MacCulloch**, a technologist from Halifax. COMP has two members on the board: **Curtis Caldwell** of Toronto is COMP representative and **John Aldrich** of Vancouver is chair of the Technical Standards committee.

The objectives of CSNM are to be a multidisciplinary Canadian professional organisation, to maintain the highest possible standards of practice, education, and research, to hold an annual scientific and educational meeting, to ensure communication among the disciplines, and to represent the opinions of nuclear medicine to government and industry.

CSNM will be most visible through its newsletter, its annual meeting which will offer continuing education, and its web site (which is, as they say, under construction). All COMP members practising in nuclear medicine have been granted interim membership in CSNM until January when membership dues for 1999 will be required. Full membership includes the right to vote at meetings and to serve on the board and committees. There will also be a trainee membership category for students.

So keep your eye out for the CSNM newsletter. Our next national meeting will be held in Banff on March 27-31, 1999. There will be free time for skiing, which should still be excellent at that time. The deadline for submission of abstracts is December 15, 1998. For information about CSNM or the Banff meeting, please contact: Canadian Society of Nuclear Medicine, 774 Echo Drive, Ottawa, K1S 5N8, phone (613)730-6278, fax (613)730-1116, e-mail csnm@rcpsc.edu. We look forward to hearing from you and seeing you in Banff.

Jim Ballinger, President, CSNM (jim. ballinger@utoronto.ca)

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(**"PAC Report"** *Continued from page 136)*
$150.00 to $175.00/hour would be reasonable.

CAP Update – Engineering Scope of Practice, Lobbying, DMBP
D. McDermid and F. Ford of the CAP attended the meeting to give updates on the developments within the CAP. In brief, D. McDermid gave an extensive update on the development of engineering scope of practice documents and the exclusion clauses that were being either developed or updated in the various provinces. Of note, in Ontario a new exclusion clause has been written, but still needs to be accepted. In British Columbia there is resistance to an exclusion clause.

F. Ford summarized some of the activities in regards to lobbying with the granting council and the success from the previous year. There was indication that perhaps a half a billion dollars of new money would be going into MRC to support health research. There was also a brief discussion on the development of the division of medical biophysics within CAP. This issue is being discussed by the Chair of COMP with the executive of the CAP and with the newly appointed Chair of the Interim one-year trial Division of Medical Biophysics (DMBP) within the CAP. The Chair for the DMBP is Dr. D. Chettle.

Accreditation: There was discussion regarding the Canadian Council on Health Service Accreditation. P. Raaphorst sits in on this council as a representative for the Professional Affairs Committee of COMP and the CCPM. This council is also active in evaluating the accreditation processes within the various health service organizations. In some of the documentation it was indicated that there is a need for setting standards regarding the technical component of accreditation especially in diagnostic programs including those using imaging technology. P. Raaphorst will keep abreast of this development and report to the PAC as required.

P. Raaphorst
Chair of the PAC

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In Brief

Duncan Galbraith, Hamideh Alasti, and Howard Michaels of the Princess Margaret Hospital have all been promoted to the role of “senior physicist”. No word on whether this means a raise in pay or just more responsibility.

The International Society of Magnetic Resonance in Medicine (ISMRM) will be holding their seventh Scientific Meeting and Exhibition 22-28 May 1999 at the Philadelphia Convention Center in Philadelphia, Pennsylvania, USA. For further information contact the ISMRM at 2118 Milvia Street, Suite 201, Berkeley, CA 94704, USA (510) 841-1899; e-mail: info@ismrm.org; Web: http://www.ismrm.org

For those of you who receive Maclean’s magazine you might want to examine page 58 of the September 28, 1998 issue (Volume 111 No. 39). Mark Henkelman is interviewed as part of an article about corporate interference in scientific studies. This article should be of interest to those COMP members who receive funding from corporate sources.

For those of you who have access to The Montreal Gazette please take a look at the Letters to the Editor section for Saturday, October 3, 1998. Ervin B. Podgorsak - Professor and Director of Medical Physics, McGill University - has submitted a letter entitled: "Quebecers deserve better: Health-care budgets cuts have led to heavy staff workloads at radiation-therapy centres".

NEW MEMBERS

FULL or ASSOCIATE Membership

Dr. Wayne A. Beckham (Ph.D. - 1997 - Radiotherapy Physics)
Professional Practice Leader for Medical Physics
Vancouver Island Cancer Centre
Victoria, BC

Dr. John M. Sabol (Ph.D. - 1996 - Medical Biophysics)
Staff Research Physicist
Sterling Diagnostic Imaging
Brevard, NC, USA

David Jaffray (Ph.D. - 1994 - Radiotherapy)
Physicist
Radiation Oncology
William Beaumont Hospital
Royal Oak, Michigan, USA

Nabil Adnani (Ph.D. 1991 - Physics)
Medical Physicist
Montreal General Hospital
Montreal, PQ

STUDENT MEMBERS

Mr. Roustem Baissalov (M.Sc. - 1996 - Cryotherapy)
Ph.D. Student / Cryosurgery Assistant
Calgary, AB

Mario Chretien
Degre Universitaire: (2) - he doesn't say what degrees (1998 - Physique)
Physicien Medical
CHUQ - Pavillon Hotel Dieu de Quebec
Quebec, QC

Medical Physics E-mail and WWW Services

The canada-l mailing list is now being managed by Majordomo. Send messages to:

canada-l@irus.rri.uwo.ca

If you want to subscribe or unsubscribe, you can send mail to <Majordomo@irus.rri.uwo.ca> with the following command in the BODY of your e-mail message:

subscribe canada-l you@your.email.address
unbscribe canada-l you@your.email.address

For more information, you can send mail to <Majordomo@irus.rri.uwo.ca> with the following command in the body of your e-mail message:

help
end

This will give you a list of all the commands you have access to. If you have any other questions or concerns please send e-mail to canada-l-owner@irus.rri.uwo.ca , and someone will get back to you.

Shidong Tong
tong@clinphys.pmh.toronto.on.ca

COMP/CCPM Web Site

In addition to the Canada-l burster, CCPM and COMP now maintain a www site that can be accessed via

http://www.bic.mni.mcgill.ca/ccpm

It contains descriptive pages on CCPM and COMP, and plans are to expand the range of information available on this Web site.

Suggestions for improvement of the Web site are welcomed and should be forwarded to Peter Munro in London (pmunro@lrcc.on.ca).

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Cumulative Table

Vol 44 (1) janvier/January 1998

From the Editor	1
COMP Executive / CCPM Board	2
COMP Chair's Report – Paul Johns	3
Message from the CCPM President - Peter Dunscombe	4
Summary of the ASTRO meeting (Orlando) - Peter Munro	5
Summary of the ICRO meeting (Beijing) Peter O'Brien	7
Summary of the World Congress (Nice) - Peter Dunscombe	8
9th International and 3rd National Brachytherapy Conferences (Palm Springs) - Frank Chisela	8
Royal Society of Canada Award to Stuart Foster – Mike Bronskill	9
Endowed Research Chair for Brian Rutt - Peter Munro	10
Sylvia Sorkin Greenfield Award to Robarts Research Team – Peter Munro	10
Jack Cunningham Receives Award of Merit from IUPESM - Peter Munro	11
AECB and Quality Assurance Standards in Radiation Therapy: Communications between Bob Irwin and COMP/CCPM	11
Canadian Medical Physics Theses 1996 John Schreiner	13
CCPM Examination Schedule	34
COMP Proceedings for Sale	34
Call for Nominations for COMP Chair and COMP Secretary	34
H.E. Johns Travel Award	35
CCPM/CAMRT Dosimetry Initiative	36
Sylvia Fedoruk Prize in Medical Physics	37
New Members	38
On the Move	38
Corporate Members	39
Information Exchange	39
Calendar for 1998	39
Instructions on Newsletter Contributions	40
Medical Physics E-mail List-Server	40
CAP Annual Meeting Announcement	41
Advertising (Jobs, Jobs, Jobs)	42

Volume 44 (2) avril/April 1998

From the Editor	44
COMP Chair's Report – Paul Johns	45
Message from the CCPM President - Peter Dunscombe	46
Proposed Bylaws Changes Paul Johns	47
NCIC Harold E. Johns Award Peter Munro	48
Commissioning the Cancer Centre for the Southern Interior - Darcy Mason	49
Honouring Harold Elford Johns Jack Cunningham	51
Litchenberg Figures at the LRCC Peter Munro	54
Expansion of Radiation Therapy Services at the LRCC Kevin Jordan and Peter Munro	55
TSRCC Starts Prostate Brachytherapy Program - William Que	58
CAP Congress Anouncement	59
2002 AAPM Meeting In Montreal	59
New Members	60
Corporate Members	61
Calendar 1998	61
Instructions for Newsletter Submissions	62
Medical Physics E-mail List-Server	62
Advertising (Jobs, Jobs, Jobs)	63
Index and COMP/CCPM Executive	67

Volume 44 (3) juillet/July 1998

From the Editor	96
Message From the Outgoing Chair of COMP Paul Johns	70
Restart of the Division of Medical and Biological Physics of the CAP – Paul Johns	71
Message From the Incoming Chair of COMP Michael Patterson	72
Message From the CCPM President Peter Dunscombe	73
Quiz for the Quiz-Masters – I. Larchie	73
Report of the Awards Committee John Schreiner	74
COMP Competition Winners – London 1998	75
Sylvia Fedoruk Award – 1997	76
Allan M Cormack, Nobel Laureate – Obituary Peter Munro	77
Allan W. Blair, E. L. Harrington and the Development of Medical Physics in Sas-katchewan Doug Cormack	78
Are X-rays Safe? John Cameron	81
Uncoming COMP Annual Meetings – Pe-ter Munro	83
ORDCF Funding Success for Brian Rutt Peter Munro and Brian Rutt	83
The Physics of Radiotherapy X-Rays from Linear Accelerators – Book Review by Dimitris N. Mihailidis	83
Extreme Sport and Radiotherapy – I. Lar-chie	84
COMP/CCPM E-mail and WWW Serv-ices	84
Gold Medal for Mark Henkelman – Peter Munro	85
Scientific Program: COMP/OCPM Lon-don 1998 CCPM	86
Jobs, Jobs, Jobs	90
New Members	94
Corporate Members	95

Volume 44 (4) octobre/October 1998

From the Editor	148
Message From the COMP Chair - Mi-chael Patterson	98
Message From the CCPM President: Peter Dunscombe	99
1998 CCPM Exam Results Gino Fallone	100
Minutes of the COMP Annual General Meeting - David Spencer	101
Treasurer's Report: 1997-1999 Budgets Michael Evans	104
Research Funding Survey for 1996 – Paul Johns	106
1997 Professional Survey - Rick Hooper	109
Report from the AAPM - Sherry Connors	114
Who Can Perform Medical Physics Sur-veys on Mammography Systems in the USA? - Walter Huda and Charles Chamberlain	128
The American College of Medical Physics and Its Place in the U.S. Medical Physics Community - Paul Feller	129
Role and Function of Medical Physicists in Diagnostic Imaging - PAC Document	130
Role and Function of Medical Physicists in Canadian Cancer Therapy Centres - PAC Document	133
PAC Report - Peter Raaphorst	136
CRISM – Canadian Radiation and Imag-ing Societies in Medicine	137
The Canadian Society of Nuclear Medi-cine - Jim Ballinger	141
In Brief	142
New Members	142
COMP/CCPM E-mail and WWW Services	142
Corporate Members	143
Cumulative Table of Contents for 1998	144
Errata: Membership Directory	146
Letters to the Editor	146
Jobs, Jobs, Jobs	147

Letters to the Editor

I very much enjoyed your new Newsletter - all aspects of it – particularly the pictures, a new feature. I liked your timely article on Allan Cormack. I would like to comment that he had personal contact with one more Canadian physicist. It was my pleasure to be seated beside him at a banquet for a meeting (7th ICCR and MEDINFO) in Shinjuko, a part of Tokyo, in 1980, just a year after he received the Nobel Prize. I found him to be a pleasant dinner companion. He was of course lamenting the fact of the inevitable perception that he was an expert on all of the technical and industrial details of current CT-scanners. I heard him field a number of such questions and he handled them very well indeed.

Keep up the good work Peter.

Jack Cunningham

I was delighted by the appearance of the Blair-Harrington article. I'm amazed that the photographs, particularly the groups, reproduced so well. My initial qualms about the redundancy of the Johns-Blair exchange have proved completely groundless. My only regret is that I didn't add a few more words to fill that last corner!

I am most honored to rub shoulders with "Uncle" Allan and thoroughly enjoyed the obituary including the well-taken "moral". I cannot resist, however, pointing out that, in addition to Edmonton and Toronto, AMC also made a presentation in Calgary just after his Edmonton appearance. The prime mover for his Alberta trip was Frank (?) Jackson an old pal of AMC's from Capetown days who was then a radiologist at the CCI. In addition to the Calgary talk I had a chance to meet AMC and his wife at a dinner and had a most enjoyable chat. Unfortunately, I was **not** able to establish that we were long-lost cousins but it did turn out that his ancestors, like mine, came from the northern tip of Scotland about five generations back.

Doug Cormack

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(“**From the Editor:**” *Continued from page 148)*

learned. I hope that readers find these changes an improvement.

One of the things that I have been considering is a change in the name of the Newsletter. While the current name leaves no doubt about the audience for the Newsletter, I find it difficult to come up with design ideas for the name plate (i.e., the front page banner). I would like to have a front page that is graphically appealing and immediately identifiable, while still allowing readers to recognise that the intended audience is Canadian medical physicists. I have been thinking along the lines of a one word name that has strong medical physics connotations – such as “positron”. I talked this over with some of the physicists in London and Jake Van Dyk suggested “interaction” as a play on both medical physics terminology as well as the goal of the Newsletter. To give you an idea of what could be done with such a new name I have created a new front page for the Newsletter using this name. Please let me know what you think. [Also, does this name satisfy the requirements of bilingualism?] I know that the executive will let me know. Some will like the idea, some will complain that the Table of Contents has been removed from the front cover, and some will be indifferent. But it is you, the members, that I would like to hear from. So I have three requests. Let me know if you like new design for the front page, if you like the name “Interaction”, and if you have any suggestions for a name that you think is even more appropriate.

I had long been aware of the Minimally Invasive Therapy program at the Sunnybrook Health Science Centre (now the Sunnybrook and Women’s Health Sciences Centre), but I had never encountered any descriptions of these activities in the conferences that I attended or the journals that I read. So at the 1998 COMP meeting I asked Mark Henkelman if he or his colleagues would be willing to submit an article to the Newsletter describing the program. I was interested in the program and I assumed that other COMP members would be as well. The end result was that Dr. Michael Bronskill and his colleagues provided me with the article that is published in this issue. I hope that readers find the article as interesting as I did.

I believe that there is a lot going on in the COMP community that we often do not get to hear about. These include activities at government laboratories and universities, as well as the medical institutes that we are more familiar with. I hope that the Newsletter can fill in the void in communication between all COMP members. If you know of interesting projects/programs that might be of interest to COMP readers, let me know. I will try to encourage the investigators/developers to submit an article on their efforts.

It was only four months after I had agreed to become Councillor for the Newsletter that I learned that I was also responsible for the COMP/CCPM Web site. Who ever would have thought that the position of Councillor for the Newsletter could be used as a “lost leader“. While I had a lot of ideas for the Web site, I did not have the time or the talent to develop these ideas on my own. I am happy to report that I have assembled a very talented group who are putting the COMP Web site together. In future, I hope that COMP will have a much more significant on-line presence. I do not want to outline any of the details yet, but I am very excited by our plans and by the progress that we have made so far. If all goes well, I believe that COMP members will be very impressed by what the communications committee has accomplished.

Finally, I would like to thank all of the contributors to this issue of the Newsletter. Without you, the Newsletter could not be a success.

Peter Munro
London Regional Cancer Centre

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From the Editor:

As always, a great deal has happened in the three months since the last issue of the Newsletter was published. The world of medical physics lost a giant when Dr. Harold Johns died on 23 August 1998, at the age of 83. I was able to attend the funeral and was very moved by the eulogies given by the family and colleagues of Dr. Johns. Those eulogies, along with Dr. Johns' obituary, are reproduced in this issue of the Newsletter. I would like to thank all of the colleagues and family of Dr. Johns who were so gracious when giving me permission to reproduce their comments. [I even learned that Harold Johns has a "London" connection. After returning from China, the Johns family spend a year in Exeter, Ont., the home of Harold's parents. Exeter is only 40 kilometres north of London.] And I would especially like to thank Dr. Peter Shragge, Dr. Johns' son-in law, who was so helpful in sending me the photographs of Dr. Johns and transcripts of the eulogies.

As with every issue of the Newsletter there have been changes (improvements?). On July 15th I took a very useful course on how to design Newsletters. I learned much that could be used to improve the appearance, content, and readability of the Newsletter, some of which I have introduced in this issue of the Newsletter. Over time I intend on introducing more of the ideas that I

(Continued on page 146)

Inside this issue: (con't)

CRISM – Canadian Radiation and Imaging Societies in Medicine	137
The Canadian Society of Nuclear Medicine Jim Ballinger	141
In Brief	142
New Members	142
COMP/CCPM E-mail and WWW Services	142
Corporate Members	143
Cumulative Table of Contents for 1998	144
Letters to the Editor	146
Jobs, Jobs, Jobs	147

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Additional pages	$75	$100	$125	$200

See below for submission instructions.

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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.