Volume 14, Number 1 June, 1998

# MEDICAL PHYSICS WORLD

**Bulletin of the International Organization for Medical Physics**

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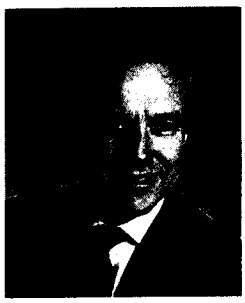
## President's Message



Dear Fellow Member of IOMP,

The major topic that I addressed in my last President's Message *(MPW 13, No. 2, 1997, p.1)* was *improved communication,* and I asked members who wanted to become more involved in IOMP affairs to communicate with me. I would like to thank those who responded, several of whom I have already put into service to help with our activities. For example, some members have asked to be allowed to contribute more to our educational endeavors and, among other things, I have recommended them to the IAEA for consideration for teaching in their workshops and courses. Since one of the major aims of the IOMP must be to help develop and nurture educational and training programs for our members, both in developing as well as developed countries, I have deciced to make this the major topic for this President's Message.

**Optimization for our Educational Endeavors**

Clearly, education and training must be *one* of the many interests of our Developing Countries Committee (DCC) and it must be *the* major function of our Education and Training Committee (ETC), and I have to commend the Chairpersons of these two committees, Drs. Andries Van Aswegen and Azam Niroomand-Rad on the "missions" they have drafted for these committees (outlined elsewhere in this issue of *MPW).* I have informed these two Chairpersons that I will fully support these missions, especially those that involve education and training. I have already asked the IOMP Officers to approve a substantial increase in the budget of the ETC in order to support the very ambitious program being proposed by Dr. Niroomand-Rad. I expect to do likewise for the DCC. Actually, the IOMP is not a wealthy organization, and we do not have the funds at present to meet these budgetary requests but, because these activities are so important, I have assured them that funding to support their programs will be one of my highest priorities.

I will not review all the educational activities proposed by these two committees here, since you can read about these in their individual Reports. What I will do, however, is outline a few of the topics that are on my own personal agenda. Following are a few of those activities that I feel could significantly enhance our educational programs:

- Provision of more courses and workshops for developing countries and regions (already being planned by the ETC).
- Continued assistance in securing funds for "training visits" to institutions in developed countries for our colleagues from developing countries and in arranging for institutions to accept such trainees (continuation of the program first announced in *MPW 10, No. 2, 1994, pp. 6, 12, 13).*
- Development of a listing of graduate educational programs in medical physics worldwide, maybe with a repository of program and course outlines. I believe that this is a project that our Secretary General Gary Fullerton, is already pursuing as part of his World Congress 2000 activities. Such a repository would help those who need to develop new graduate programs as well as those wishing to improve existing programs.
- Development and support of "distance learning" initiatives such as the "Ask Your Medical Physicists" program in Electronic Medical Physics World *(MPW 12, No. 12, 1997, p. 11).*

*(Continued on page 2)*

## Table of Contents

# Secretary-General's Report

**New Members**

The Executive Committee of IOMP voted unanimously in December 1997 to accept the application of Portugal for membership in the IOMP. This decision must be confirmed at the next full meeting of the IOMP Council. There is a small concern raised by the European Federation of Medical Physics which involves a second Society in Portugal that presently represents the specialty to EFOMP. This problem has been referred to the two societies in Portual with the request that they be prepared to report on the resolution at the time that Portugal membership is confirmed by the IOMP in Chicago, July, 2000. Initial reports indicate amicable progress. There are presently two additional applications in preparation from Bangladesh and Chile which should be completed this year.

**Electronic Communications Initiative**

As reported by President Orton in the last issue of MPW, the IOMP is focusing on developing a more effective communications systems for the Society using the Internet. Since last year we have separated the IOMP web homepage from Electronic Medical Physics World. The present version of the IOMP site includes only minimal information concerning the IOMP, Officers, a Listing of sponsored Medical Physics Libraries and miscellaneous information at the address http://www.iomp.org. By the time that you read this material we will have added the Membership Directory 1998 with a brief history of IOMP, the Statutes of IOMP and the Bylaws of IOMP. In the near future we will add application forms for the convenience of groups wishing to apply to participate in IOMP activities. It is also planned that we will soon have at least one page for each member nation on which they can provide information of use to others. This will initially contain names and addresses of officers but eventually will contain programmatic material as well.

**Chicago'2000**

The next World Congress on Medical Physics and Biomedical Engineering is scheduled for July 23-28, 2000 in Chicago. The Organizing Committee for this meeting is lead by Drs. William Hendee and Al Potvin. The meeting is focusing on development of electronic communications and information handling as applied to physical science in medicine. Must detailed information about the meeting and preparations is already available at the web address http://www.wc2000.org. The preliminary program for the week was recently completed and is available for consideration on the homepage under the category Scientific Program. The Program Committee announced recently that they plan to have the entire program and abstracts on the web site several weeks before the meeting to allow attendees to carefully plan their participation. This should be a big help as more than 6,000 attendees are expected.

The International Advisory Committee for Chicago'2000 has been designed to make sure there is one or more representatives from every member nation. Every advisor must have access to e-mail communication. Any reader wishing to make suggestions for improving Chicago'2000 can submit suggestions electronically to wc2000@aapm.org using his own access or through the Advisor from his country.

Gary D. Fullerton, Ph.D.
Secretary-General, IOMP

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*(Continued from page 1)*

Also, a project that I personally am working on, provision of an opportunity for our developing country colleagues to earn a graduate degree in medical physics, in part by "distance learning." As I envisage this program, collaborative agreements will be established between universities in developed countries whereby students could study for the "physics" component of a graduate degree in Physics Departments in their home countries, and the "medical physics" component by "distance learning" through an established medical physics grogram in a developed country using various electronic means such as the Internet, e-mail, videotapes, CD-ROMS, video-conferencing, etc., whichever is appropriate for the collaborating institutions. In addition, I envisage that students would visit the distance-learning institution for a short period (say one term) for practical training (clinical internship). I am seeking sources of funding for such a program and, if anyone has any good ideas about where such funding might be obtained or universities in either developing or developed countries that might be interested in exploring such collaborative programs, please let me know. I hope to be able to update you on progress with this and our other educational programs in my next President's Message.

Colin G. Orton, Ph.D.
President, IOMP

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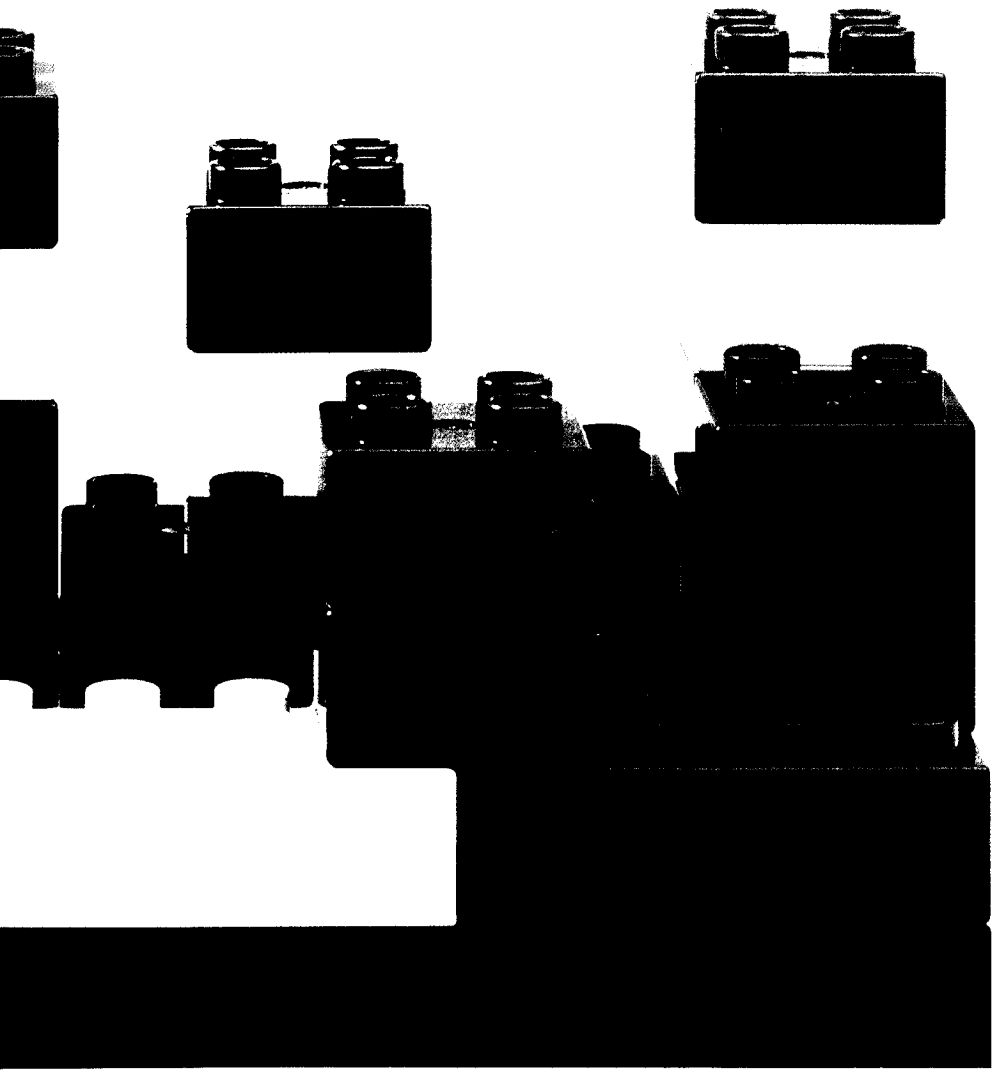

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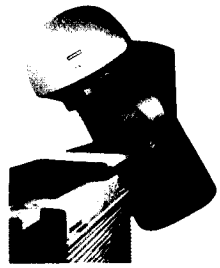

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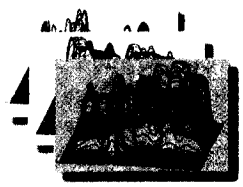

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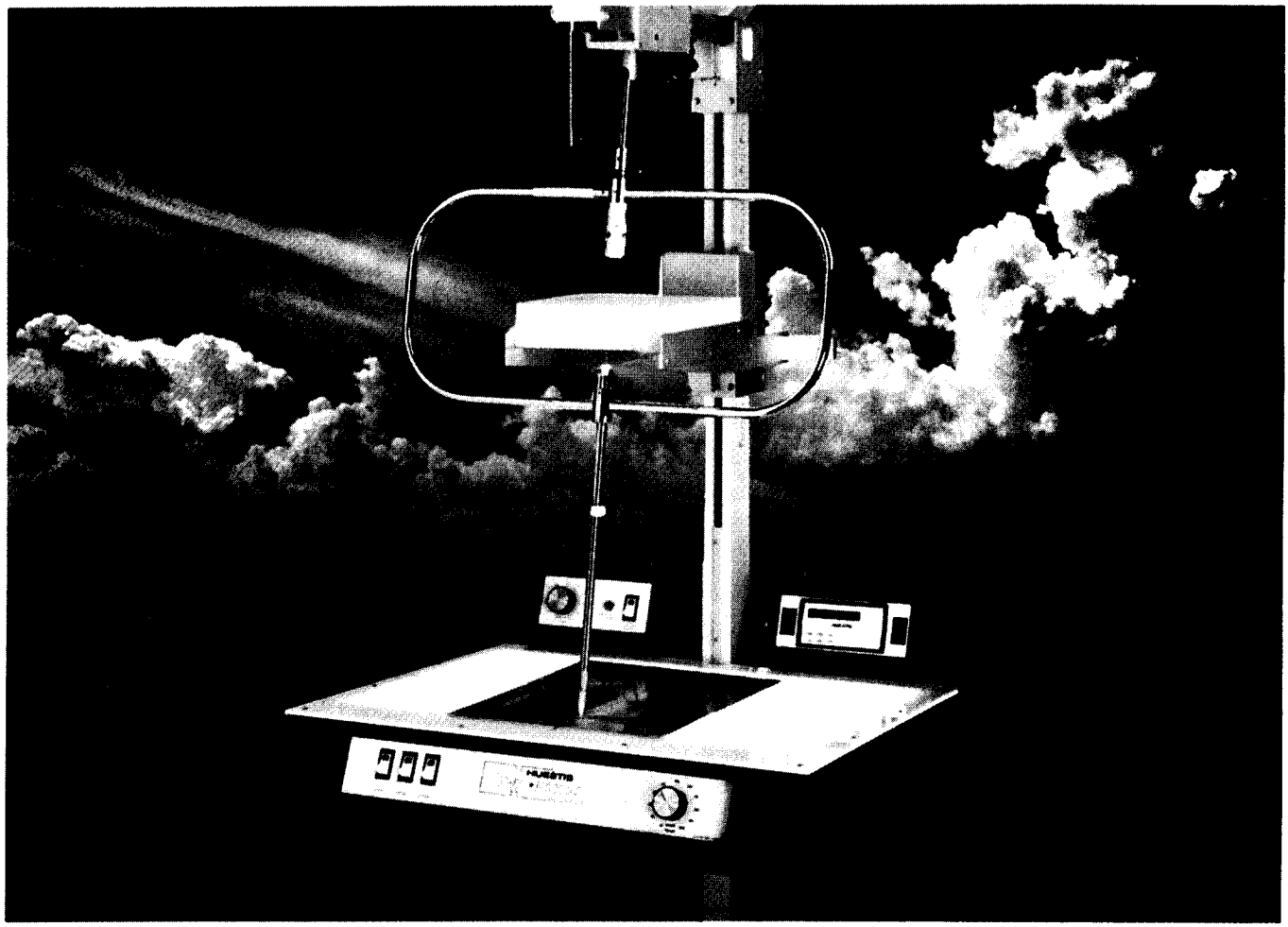

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## Chicago World Congress 2000

The next World Congress on Medical Physics and Biomedical Engineering will be held on July 23-28 in the year 2000 in Chicago. The Organizing Committee for the Congress includes several AAPM members, including Gary Fullerton, Bill Hendee (co-president), Azam Niroomand-Rad, Pei-Jan Paul Lin, Russell Ritenour, Bruce Thomadson, and Ken Vanek. With its considerable experience in managing conference, the AAPM headquarters staff has been selected as the Conference Management Organization for the Chicago World Congress.

The theme of the Congress is Information Networking for the 21st Century. The proram for the meeting is being structured around several plenary sessions and more than 20 specialty tracts. The Congress' Opening Session promises to be a significant introduction to the cultural richness of Chicago. The evening out is planned for the Lakeshore campus of the Field Museum of Natural History, the Adler Planetarium and the Shedd Aquarium. All program events will take place at the Navy Pier in downtown Chicago.

An International Advisory Committee, co-chaired by Azam Niroomand-Rad, has more than 100 representatives from different countries to assist in publicity and to increase attendance of biomedical engineers and medical physicists from countries around the world. The World Congress for the Year 2000 promises to be one of the most significent events in the evolution of biomedical engineering and medical physics. It certainly will be something every AAPM member will want to attend.

Bill Hendee, Al Potvin
WC 2000 Co-Presidents

## IOMP Libraries Program Report

The libraries program currently has 82 active libraries in 55 countries. Since September 1, 1997, two new libraries were added, in Santiago, Chile, and Asuncion, Paraguay. Six requests for new libraries are pending, in Chanchigarh, India; Iran; Bucharest, Romania; Capetown, South Africa; Andhra (Pradesh), India; and St. Petersburg, Russia.

Since September 1, 1997, eleven individuals have requested information about making donations and three of these donations have been completed. These donations were sizable, covering several years of journals. We currently have eight donations in progress.

Letters of introduction and brief update questionnaires were sent to all active libraries in February 1998, to verify mailing addresses and improve communication between our office and the libraries. We plan to contact the libraries semi-annually to update information on staff and needs at each library. Libraries not responding will be considered temporarily inactive until communication is re-established to ensure that donations will not be returned or lost.

Anyone wishing to donate materials or establish a library is asked to contact the curator.

Marilyn Stovall, Ph.D.
Curator, IOMP/AAPM Libraries

## A Letter From the President of The International Union For Physical and Engineering Sciences In Medicine

I am honoured to have become President of IUPESM and will do everything I can to serve you and the Union. At the triennial World Congress, held in Nice during September 1997, four principal options were considered by the General Assembly for the future of IUPESM. These were:

i. Continue with IUPESM in name only.

ii. Discontinue IUPESM as soon as practicable, taking into account ramifications for future World Congresses.

iii. Continue with IUPESM and an Action Plan whose outcome will be the basis for a decision on its future at the Millennium World Congress in Chicago.

iv. Amalgamate IOMP and IFMBE as IUPESM.

The General Assembly adopted Option iii.

An Action Plan, originated by the incoming President, was also adopted. Its main features were:

**1. IMMEDIATE**

(a) As President of IUPESM, to speak to the new Executive Director of the International Council of Scientific Unions (ICEU).

(b) IUPESM is a global network of 40,000 scientists and engineers in 70 nations.

(c) IUPESM is a "GROUP OF THE FUTURE" for international health care.

(d) A preliminary meeting and the support of ICSU would be sought, bearing in mind that ICSU had already instituted its periodic review of its relationship with IUPESM.

**2. OUTLINE PROGRAMMES OF IUPESM**

(a) Global biomedical information networking and implementation for Developing Countries.

(b) Health Technology Assessment: Cost-effective Health Care — Evidence based technology.

(c) Equipment Evaluation: Safety; Quality assurance.

(d) Education, Training and Continued Professional Developments for the 21st century.

(e) Public Health Policies for the Millennium: Governmental and Public understanding of present and future applications of Science and Technology.

The Council of IUPESM at its first meeting, held at the Nice World Congress agreed that Professors Mike Smith, Gary Fullerton and the President would develop these outlines to become key programmes.

**PROGRESS TO DATE**

An introductory telephone conversation with the Executive Directors of ICSU established productive contact. It was followed by a meeting in London with him at which Professor Jean-Pierre Morucci, President of IFMBE also participated. The discussion was cordial and beneficial. As a consequence and reflecting the positive outcome of our General Assembly in Nice, a revised and constructive report on the relationship between IUPESM and ICSU was drafted by the President and endorsed by our Council. The report included the Key Programmes which then had been developed and elaborated.

The two members of ICSU commissioned to review its relationship with IUPESM have now produced a helpful report. At the invitation of ICSU, the President of IUPESM has produced comments on the Reviewers' Report. Following consultation with our Officers, these comments together with our revised report will be submitted before the end of March for formal consideration by ICSU. A major meeting with ICSU will be held on 23-24 April 1998, from which there may be important feedback concerning our future relationship and, perhaps, an indication of any potential interest or collaboration by ICSU in our Key Programmes. In the meantime, the themes of 'Education, Training and Continued Professional Development for the 21st Century' and 'Global Biomedical Information Networking and Implementation for Developing and Emerging Countries' are being pursued enthusiastically by our Secretary General Gary Fullerton. Working Groups are being established to underpin our Key Programmes. I would welcome volunteers prepared to dedicate time and effort to the Working Groups of each Key Programme and hope to publish their membership in the next issue. Clearly, the whole-hearted support and collaboration of ICSU would be highly beneficial for their successful implementation. However, if such support should fail to materialize, we intend to do everything possible within our own modest resources.

You will recognize that this has been a period of hectic activity and urgent inter-communication since the positive decisions of our General Assembly. On your behalf, as well as my own, I would like to express our gratitude to our Officers and Council Members for their contributions and support. Naturally, I shall endeavour to advise you of subsequent developments.

Keith Boddy, OBE, DSc, FRSE
President, IUPESM

# Vice-President's Report

Within the short time of 6 months that have elapsed since I was elected Vice-President at the IOMP General Assembly at Nice-97 Congress:

(1) 200 copies have been published and distributed of "Medical Physics and Biomedical Engineering (No. 10)," Bulletin of the Developing Countries Committee of the IUPESM. The Bulletin has been in circulation for 4 years and has met with good response from the Developing and Emerging Countries. It is also available through Internet at: http://minf.vub.ac.be/ ~ ifmbe/iupesm.html.

(2) A 50-page personal account entitled "M. Sklodowska-Curie's Scientific Achievements and Research Trends at the Radium Institute in Paris," by Professor C. Pawlowski (1895-1981), one of Madam Curie's co-workers in the 1930s has been translated (from the Polish) and published in the recent issue of the "Polish Journal of Medical Physics and Engineering." The copies of the article are available to those interested via e-mail address: oskar@mp.pw.edu.pl.

(3) An outline of the action programme for the Vice-Presidency has been prepared in cooperation with Professor Colin Orton.

Oskar Chomicki, M.Sc.
Vice-President, IOMP

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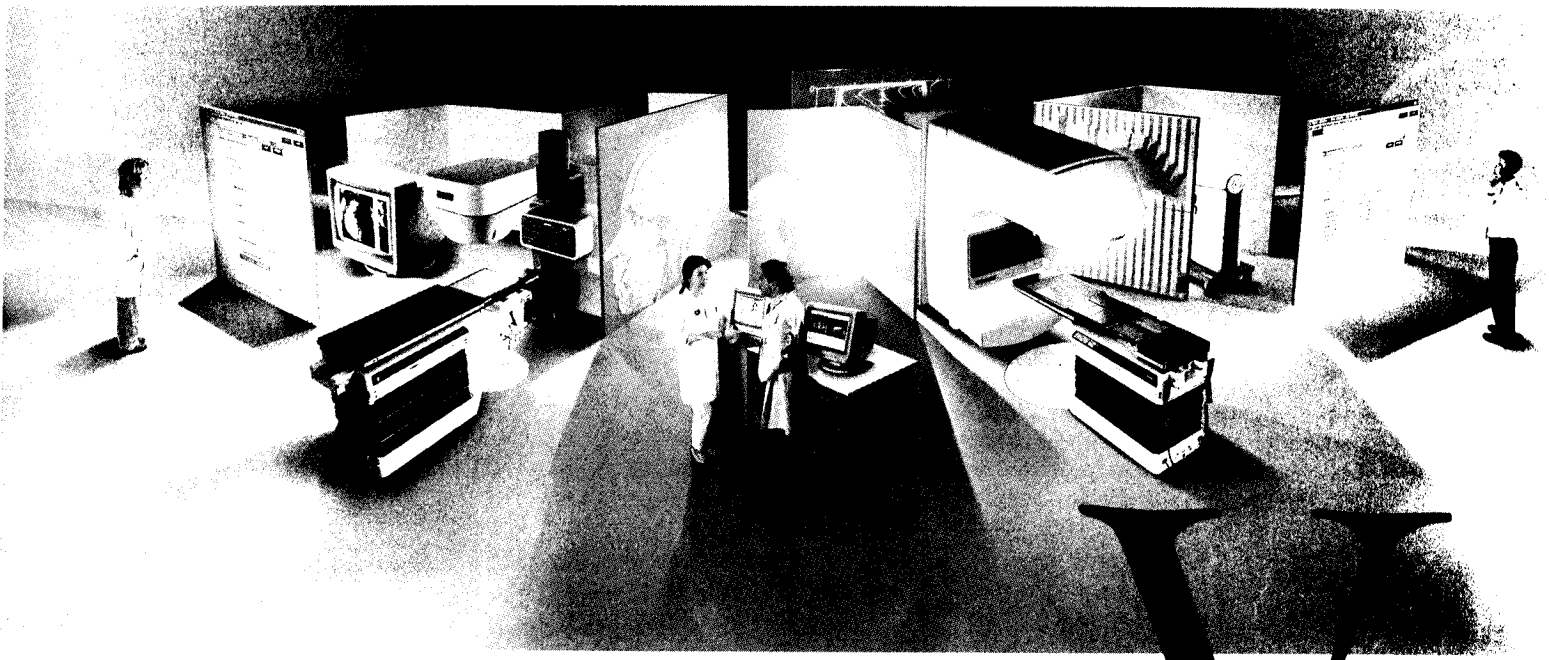

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# Education and Training Committee (ETC) Report

The Education and Training Committee (ETC) is one of the standing IOMP committees. The mission of the ETC is as follows:

***The mission of the IOMP Education and Training Committee is to advance the practice of physics in medicine by fostering the education, training, and professional development of medical physicists, and by promoting the highest quality medical services for patients worldwide.***

The goals and objectives of the ETC are:

**A. Education and Training of Medical Physicists:**

— To develop and implement task-oriented training programs;
— To organize, conduct, and sponsor courses/workshops for a given country/region of interest, accessible to the medical physicists from the country(ies) of interest;
— To organize, conduct, sponsor short refresher courses/workshops and/or seminars in connection with local, regional, inter-regional or international congresses, where accessible to the medical physicists from the country(ies) of interest;
— To encourage establishment of regional centers for education and training in collaboration with IAEA, WHO, PAHO, and other agencies;
— To actively seek support for the educational activities of ETC programs from the vendors and affiliated professional agencies;
— To promote the establishment and accreditation of graduate programs in a country/region of interest;
— To recommend standard for medical physics educational program curricula.

**B. Professional Development of Medical Physicists:**

— To help establish national association of medical physics in those countries where such national associations are not available;
— To help develop by-laws and ethical guidelines for the practice of medical physics;
— To encourage and promote relations with IOMP;
— To help develop standards of professional practice;
— To promote periodic review of clinical practice and standards;
— To help develop materials for education the public, government officials, and international agencies about the practice of medical physics;
— To promote licensor of medical physicists as a means of assuring the quality of their servies;
— To promote Continuing Medical Physics Education requirements for physicists in clinical practice;
— To address legislative and regulatory issues as they relate to the professional development of medical physicists;
— To help establish regulations governing safe use of radiation and new technology.

**C. Dissemination of Information for Promotion of High Quality Medical Services:**

— To maintain a comprehensive database of graduate programs in medical physics;
— To make available useful publications on matters which are important to daily application of ionizing radiation in a hospital;
— To publish periodically circular letters on various subjects such as quality assurance in diagnostic radiology, nuclear medicine, and radiation treatment;
— To develop and distribute through electronic media (e.g. internet, video, tapes, and compact disks) information concerned with scientific and educational medical physics endeavors;
— To disseminate materials appropriate for educating the public, government officials, and international agencies about the practice of medical physics.

The member of ETC, who are selected from various parts of the world are: Caridad Borras, Dsc (PAHO), Ye-Cho Huang, PhD (China), Amparo Marles, PhD (Latin America), Kwan Hoong Ng, PhD, (SE Asia), Madan Rehani, PhD (India), Saiyid Shah, PhD (Middle East), Ann Sweetlove, Msc (Africa), Slavk Tabakov, PhD (Europe). The ETC Application of Support, which is available at the IOMP Home Page (www.iomp.org), can be obtained from the ETC appropriate regional member and should be submitted to him/her for evaluation. An IOMP sponsored educational program (with or without financial support) can be initiated either by an ETC member or by any qualified medical physicists in collaboration with an ETC member. Please feel free to contact me or any member of ETC for questions/concerns.

Azam Niroomand-Rad, Ph.D.
Chair, ETC

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# Developing Countries Committee Report

The Developing Countries Committee (DCC) is one of the standing IOMP committees. Although this committee has been active for many years, it is important that its objectives will be in the interest of our colleagues in the developing countries.

According to the IOMP Membership Directory the following objectives are stated for the DCC:

a) To contact national organizations for medical physics in the developing countries to ascertain the need for spare part or journals.

b) To contact national organizations for medical physics in the industrialized countries to ascertain the availability of spare parts or journals according to a list prepared from answers to the above inquiries.

c) To also give the list to *"Medical Physics World" (MPW)* so that MPW can publish it and act as a clearing house.

d) To negotiate on behalf of IOMP with IAEA, WHO and other agencies for financial support, and in addition with those national organizations for medical physics that have offered spare parts or journals.

e) To contact manufacturers on behalf of IOMP to secure financial support for colleagues from developing countries to visit training centers, regional congresses, etc.

f) To organize information from developing countries for publication in MPW so that people in these countries will not feel so isolated.

In order to assure a meaningful term of office of the DCC, the following are some of the goals identified:

(i) The continued development of the Libraries Program. In this respect Marilyn Stovall, the IOMP Curator, is doing invaluable work.

(ii) To continue the project of transferring donated equipment (spare parts) to Developing Countries (DC's). The financial burden of shipping costs and customs regulations in many countries often act as a deterrent in achieving this goal.

(iii) To give support to DC's in order to establish Medical Physics as an acknowledged profession. Hopefully the DCC can tie in with the action Keith Boddy is launching with the International Labour Office in this regard.

(iv) To support the "Twinning Project" (co-ordinated by Ann Dixon-Brown) whereby Medical Physics departments in DC's are linked with more established departments for assistance.

(v) To investigate meaningful access to the Internet for DC's including the supply of computer hardware.

These are a few preliminary objectives of the DCC. Any suggestions on additional aims or the practical implementation of the objectives will be highly appreciated. Please feel free to contact me.

Andries van Aswegen, Ph.D.
Chair, DCC

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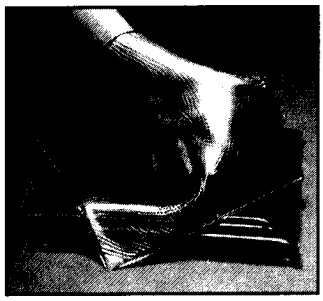

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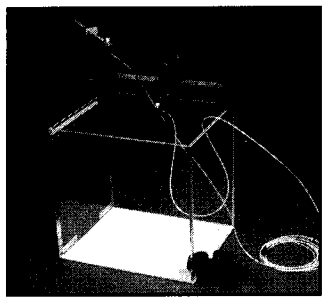

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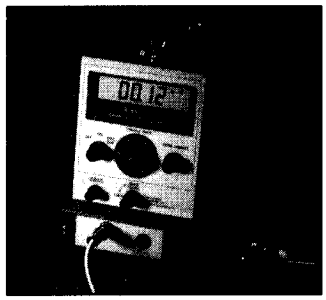

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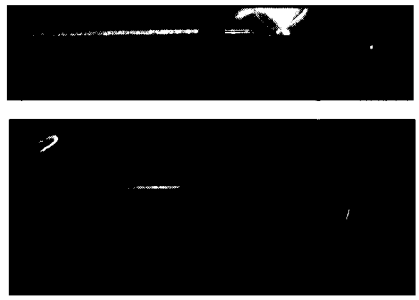

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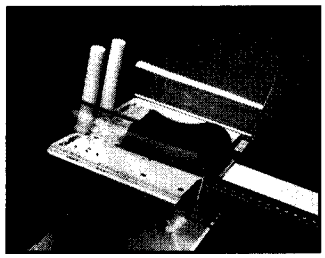

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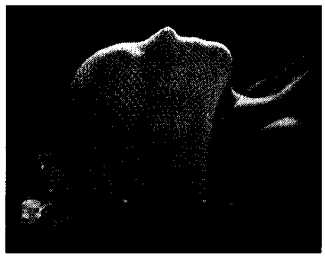

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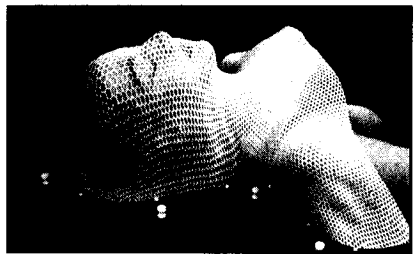

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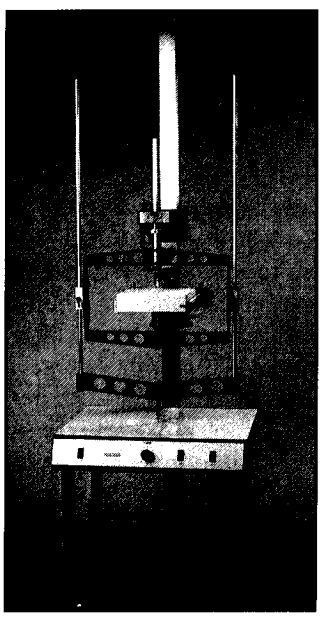

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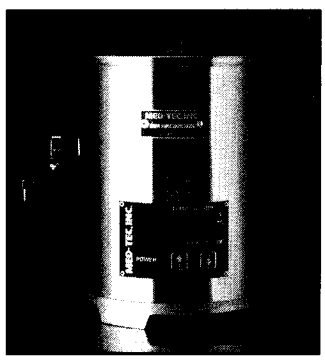

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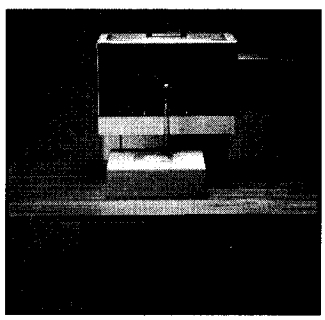

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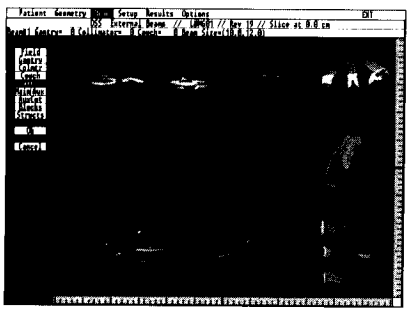
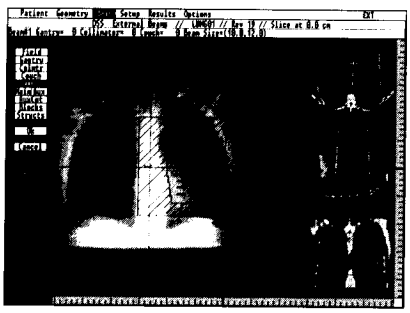
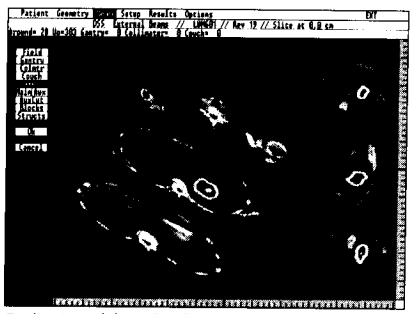


*3-D visualization of internal structures using translucent surface rendering and orthogonal wireframe views*



*Verification of a MLC port using DRR and field projections onto orthogonal CT reconstructions*



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# Editor's Corner
# Maria Sklodowska-Curie's Achievements - Part I

The work of Maria Sklodowska-Curie is generally acknowledged to be that of a genius. Her whole life, from the very beginning of her scientific career, exemplifies profound and ceaseless research effort. She has always regarded arduous research work as a pleasant form of duty. Her greatest aim and ambition was to gain extensive knowledge and mastery of the methods of investigating the laws of nature. Her research efforts gradually became more intensified and led her not only to the discovery of new elements and their properties, but also to the creation of a new brach of science, i.e. radioactivity.

After the loss of her husband, who was her inseparable companion in research, despite her momentous discoveries and great merits in science, Maria Curie had to cope with serious difficulties which often frustrated her investigations. These difficulties, however, did not break her strong will or weaken her passion for science. The great mind of a highly talented woman gradually mastered the far-reaching mysteries of nature in a well-planned and methodical way. Maria Curie aroused all the greater admiration as a person who made her unique discoveries in a country which was, to some extent, foreign to her and which did not, generally speaking, appreciate women's talents in research.

In France, women were then, in many respects, limited in their social rights. Would it not seem odd to us now to learn that Maria Curie, being as she was a great researcher, had to obtain a special permission to attend the meeting of the Academy of Sciences where her paper was to be presented, whereas any passerby, being only a man, was allowed to enter the same meeting hall looking, for example for shelter against . . . rain. No wonder that the self-respect that the great woman felt did not make it possible for her to attend that meeting.

Although weak and sickly by nature, she showed such strength of will-power that even when she felt unwell, she never stopped her scientific work. Until the last minute of her life full of hard work she showed vivid interest in the investigations that were being carried out at the Institute and it was only the death that put an end to her efforts. Her vigour and the firmness of character, combined with a surprising peacefulness and gentle bearing and manner in relations with the subordinates helped her to gain profound respect and attachment of all those who had the privilege to work under her supervision.

Maria Sklodowska-Curie had a logical and practical mind, and her opinions, which she used to express freely and unhesitatingly on most things, were unbiased and well grounded. One can say that she was endowed with a noble, strong and uncompromising character. She could never assent to social injustice and stood up for the oppressed. Many a time, thanks to the prestige gained from scientific work, she was able to help alleviate the plight of the oppressed. When, with other radical professors of the University of Paris, Paul Langevin, and Jean-Baptist Perrin, she manifested her support of the rights of Sacco and Vanzetti sentenced to death in the USA in 1927 she got into serious trouble with the French Ministry of Foreign Affairs.

Maria Curie's social work and the socialist approach to all life problems and also her politically radical opinions were rooted in her family life in Poland. Marie's sisters, especially Dr. Bronistawa Dluska who was also well known in this country to be engaged in social work, were characterized by a similar social attitude.

Maria Curie, an extremely modest person, even after she had become world famous and had won the world's greatest scientific triumph known in history, in relations with her co-workers remained always simple and forthright. She took care of their material needs and made sure that the conditions for doing research were good and comfortable.

Her sense of self-respect put her in the first ranks of women's struggle for suffrage. The same trait, as well as many others, can later be found inherited in Irene Joliot-Curie, Marie's daughter, who, in her address delivered at the reception given in 1936 by French scientists to honour Irene and Frederic Joiot's Nobel Prize, proudly declared: "Son feminism intransigent, sa revolte devant l'etat social actuel, son desir passione de voir se realiser une entende pacifique entre les peuples ont eu sur moi une influence profonde."

Maria Curie's scientific research and scientific work can be divided in three periods in respect to the nature and conditions of her work:

1986-1909, the research was carried out under severe and difficult conditions in the laboratory in rue Lhomond in Paris, poorly equipped and staffed.

1909-1915, the working conditions improved since the work was done in the laboratory in rue Cuvier, which was much better furnished with measuring apparatus.

1915-1934, headed the Radium Institute in Paris, being in charge of physics and chemistry reserach. The Curie laboratory became a world centre of large-scale scientific work attracting international researchers who wanted to devote themselves to research in the field of radioactivity.

Maria Curie's scientific research work will be reported in the next issue of *MPW*.

Adopted from:
Polish Journal of Medical Physics and Engineering, Vol. 3, No. 4(10), 1997.
Article by: Cezary Anatol Pawlowski

# Calendar of Events

**6-9 November 1998: International Conference on Medical Physics and Annual Conference on Medical Physics of the Association of Medical Physicists of India;** New Delhi, India. (Dr. M. M. Rehani, Medical Physics Unit, I. R. Cancer Hospital, AIIMS, New Delhi - 110 029, India. [Tel: 91-11-6594448; Fax: 91-11-6862663; E-mail: mmrehani@de12.vsnl.net,in; URL: http://www.medphysics.wisc.edu/ empw/news.html]). ~

**22-25 November 1998: First Iberian Latin American and Caribbean Congress on Medical Physics;** Mexico City, Mexico. (Enrique Gaona, E-mail: gaen1310@cueyatl.uam.mx; URL: http://cueyatl.uam.mx/alfim).

**18-24 July 1999: 11th International Congress of Radiation Research;** Dublin, Ireland. (Contact: Dr. C. Mothersill, Radiation Science Centre, Dublin Institute of Technology, 40/41 Lr. Kevin St., Dublin 8, Ireland. [Tel: 353 1 4024665/4024666; Fax: 353 1 4756793/4024999; E-mail: cmothersill@rsc.iol.ie; World-Wide Web: http://www.cjp.com/rades/HT ML/ICRR.htm]).

**25-30 July 2000: World Congress on Medical Physics and Biomedical Engineering and the AAPM Annual Meeting;** Chicago, IL, USA. (American Association of Physicists in Medicine, One Physics Ellipse, College Park, MD 20740-3846, USA. [Tel: (301) 209-3350; Fax: (301) 209-0862; E-mail: aapm@aapm.org; URL: http://www.wc2000.org.]).

# Medical Physics Award at Nice

The IUPESM established two awards to be given at the World Congress — one for an outstanding medical physicist and the other for an outstanding biomedical engineer. Previous recipients of medical physics award are Prof. John Mallard of the UK and Prof. Rune Walstam of Sweden. In 1996 Dr. Madhvanath, former President of IOMP was made chair of the IUPESM committee to choose the recipents of the awards. He established two subcommittees — one for each field — to select the recipients. John Cameron, former Secretary General of IOMP was chair of the subcommittee to choose the medical physicist awardee. He choose Dr. Phillip Dendy of the UK and Dr. Gudrun Alm-Carlsson of Sweden as the other two members of the subcommittee. The choice of these two distinguished medical physicists was influenced by the fact that the previous recipients of the Medical Physics Award were from the UK and Sweden. A condition of the award was that the awardee must have made significent contributions in medical physics in their own country and internationally. The subcommittee solicited nominations from all IOMP affiliated organizations. About ten candidates were nominated by various national organizations affiliated with the IOMP.

The subcommittee decided that each member would choose their top three candidates among the nominees. The results of this process were used to select the top three over all. These were (in alphabetical order): John R. (Jack) Cunningham, nominated by COMP of Canada, Andree Dutreix nominated by SFPH of France and John S. Laughlin nominated by the AAPM of the US.

The subcommittee agreed that each of these candidates were well qualified to be the awardee. In their final voting they chose Laughlin a first, Cunningham a second and Dutreix as third. The subcommittee submitted their recommendations to Dr. Madhvanath at the end of 1996. Professor Laughlin was informed of his selection and agreed to accept the award and give a talk at the opening ceremonies in Nice. A couple of months before the Congress, Professor Laughlin developed a medical problem involving his eyes and was advised not to travel. He was told he could have someone else read his talk at the opening ceremonies. He learned that Jack Cunningham, the second choice of the selection committee planned to attend the Congress. He felt that it would be more appropriate to have the awardee present at the opening ceremony and suggested that Professor Cunningham be given the award. This seemed to be a good solution and was approved by the IUPESM.

Professor Cunningham had previously agreed to give an invited talk at the Historical session (#54) on the contributions of Professor Harold Johns. I suggested that he give that talk at the opening ceremonies, which he did. He also chaired the Historical session that was dedicated to Professor Johns. Professor Johns who is retired and lives in Toronto, Canada was appreciative of the recognition.

John Cameron, Ph.D.
University of Wisconsin
Madison, Wisconsin, USA

# Honouring Harold Elford Johns

*Excerpted from acceptance of the IUPESM Award of Merit, World Congress on Medical Physics and Biomedical Engineering, Nice, France, September 13, 1997.*

Mr. President, Members of the Organizing Committees and Ladies and Gentlemen: I was notified about two weeks ago that I had been chosen as the recipient of the IUPESM Award. I consider that it does not in the least diminish the award to be told that John Laughlin had been chosen first. The rule stipulate that the Awardee should be present and give a speech. Unhappily, John, for medical reasons, was not able to attend, and he requested that the next in line should be chosen. It is not easy, on short notice, to talk in an interesting way about oneself, so I am going to talk about someone else: my mentor, my colleague and my friend, Harold Johns. Without him I would not be standing here accepting this award.

Harold Elford Johns was born of Canadian Missionary parents in 1915 in Chengdu, West China. His father was a mathematics teacher at a medical college. Harold was 10 years old when they left to return to Canada. He remembers the journey down the Yangtse River, through the gorges, some of the most spectacular scenery in the world—the boat being steadied in the water by men pulling ropes and walking along paths on the river bank.

Harold finished his Ph.D. at the University of Toronto in 1939. A fellow student was Harold Batho, an early Canadian medical physicist who also contributed much to this profession. Dr. Johns had won a scholarship to study at Cambridge University but the war intervened and his first university appointment was at the University of Alberta in Edmonton, teaching the physics of electromagnetic radiation for RADAR, to airmen. His Medical Physics career began in 1945 when he became physicist to the Saskatchewan Cancer Commission and the University of Saskatchewan at Saskatoon. This was a rather new kind of physics appointment, and when Dr. Johns asked what his duties would be, the Director of Cancer Services for the Province of Saskatchewan, replied with honesty, "I don't know Johns, you must tell me." As part of the process of finding out, in May 1946 he visited leading centers of radiation physics in North America. At least three distinctly different and truly important projects resulted from this; his textbook, cobalt teletherapy and the use of high energy accelerators for radiation therapy.

W. V. Mayneord, from the Royal Marsden Hospital near London, was in Canada as part of a program involving Great Britain, the United States and Canada to investigate and develop nuclear weapons. Dr. Johns attended a series of Mayneord's lectures and the notes he took provided much of the material and impetus for his textbook, first called *The Physical Basis of Radiotherapy,* later to be named *The Physics of Radiology.* Numerous discussions, with Mayneord and others, about the possibility of using high energy radiation for the treatment of cancer gave rise to the development of a cobalt unit in Saskatoon and the use of a 24 MeV Allis-Chalmers betatron for physics research and treatment of cancer.

The betatron was purchased in the summer of 1948 from Allis-Chalmers of Milwaukee, Wisconsin, USA. Patient therapy with it started in the spring of 1949. The associated physician was Dr. T. A. (Sandy) Watson, a New Zealander, who has also been in China. My own first association with Harold Johns was on this project. It was my Masters task to extract the electron beam from the betatron and perform range-energy determinations for electrons. Interestingly, this was also my first interaction with John Laughlin, as I used techniques and equipment developed by him, although I did not meet him until much later.

It is not clear who actually originated the idea of using cobalt for teletherapy, but in 1950 the Physics team of the Eldorado Mining and Refining Company, which operated the nuclear reactor called NRX at Chalk River, Ontario, and which had the highest neutron flux available in the world, received three requests for irradiation of cobalt to produce sources. One of these came from Harold Johns. Another came from the company itself and the third from a project proposed jointly by The Oak Ridge Institute for Nuclear Studies, the M. D. Anderson Hospital in Houston and the General Electric Company. The Saskatoon source was removed from the reactor and delivered on July 30, 1951 and the next was delivered to London, Ontario on the 16th of October of that same year. The third source was delayed by the sudden death of the designer, Dr. L. G. Grimmett, of the machine for the Hospital in Houston and was not delivered until July of the next year.

| Event | Saskatoon Saskatchewan | London Ontario | Houston Texas |
|---|---|---|---|
| Source delivered | 30 July 1951 | 16 October 1951 | July 1952 |
| Source installed | 17 August 1951 | 23 October 1951 | September 1953 |
| First patient treated | 8 November 1951 | 27 October 1951 | 22 February 1954 |

It is typical of Johns methods that the Saskatoon cobalt unit was used for almost three months for measurement of its radiation characteristics, before either he or T. A. Watson, the clinician in charge, would consent to its use on patients. The first patient was treated on November 8, 1951 and was still alive and well in 1985, 34 years later. Moreover, much of the data produced from the measurements, made by Johns and his group in 1951 are still in use. In 1957 Johns moved to Toronto to head the physics department of the Ontario Cancer Institute. Later he also became head of the Department of Medical Biophysics of the University of Toronto. He remained there until his retirement in 1980. He trained many eminent medical physicists both at Saskatoon and at Toronto and made important contributions to the improvement of treatment units, radiation measuring equipment, radiobiology, and radiological imaging physics.

It was a pleasure and an honour to be associated with him. I fully recognize and acknowledge the part he played for the award that has been presented to me today.

J. R. Cunningham, Ph.D.
Ontario, Canada

# Medical Physics in Zimbabwe

There are two radiotherapy centers in Zimbabwe. One with a 2100C Clinac, a 6MV ABB, a theratron 780 and some superficial x-ray machines, a simulator, etc. The other hospital has a 2100C, two Cobalt machines and superficial x-ray machines. The first one has four physicists and the second has two. Normally training is carried out with the help from the IAEA. Since travel funds are limited, some of the staff have to rely on external funding to travel. In summary: there are three Cobalt-60 teltherapy machines, three Linacs, and six medical physicists for radiation treatment in Zimbabwe. Estimated population 11.5 million (1996).

Reported by
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Bowman Gray School of Medicine
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# Response To Dr. Dendy: Effective Dose and Equivalent Dose Are Unnecessary

I am delighted my good friend Philip Dendy was provoked by my article on radiation protection quantities in the last issue of *MPW*. It has been very difficult to stimulate serious discussion on the subject. I think Philip and I agree on many points. If we had enough time to discuss the subject, I wouldn't be surprised if we agree on all major points. If he can provide reliable data in order to ". . . to use these (radiation protection) concepts correctly." I will accept them.

Until that time we should not use poor data to frighten and confuse the public. In science the critical test is reproducibility. I have seen no data that demonstrate reproducibility. I believe that biological variability will prevent radiobiologists from ever seeing good reproducibility. For examples of this variability see NCRP Report No. 104 "The Relative Biological Effectiveness of Radiations of Different Quality" (1990) which concludes: "Because of the large range of RBE values for all endpoints reviewed, it must be a matter of judgment as to which values are to be used for selecting Q values for use in radiation protection." Despite this clear refutation Q (now WR) is still accepted by the ICRP and NCRP as a fundamental constant to determine radiation risk. It is poor science for the ICRP and NCRP to ignore the conclusions of NCRP Report No. 104. I believe that if an unbiased group of radiation scientists studied the scientific validity of effective dose they would conclude that WT values also represent poor science.

I disagree with Philip that "There is no such thing as poor science. . ." I believe that "poor scientists" are the main producers of poor science. We see poor science in our news media daily. Poor science in the field of radiation protection will continue until radiation safety policy is subjected to open scientific debate before recommendations are made. The ICRP adopted the linear no threshold (LNT) model of radiation risk with no debate by the larger scientific community. The debate we are beginning to see in 1997 should have been held 25 years ago before the ICRP adopted the LNT approach. The LNT concept led many thousands of pregnant women in Western Europe to have therapeutic abortions in the year following the Chernobyl accident in 1986. Fear is the greatest health effect found among the Chernobyl survivors, thanks to the LNT dogma.

Studies of the health effects of radiation should include beneficial effects a well as toxic effects. The public should be told that the Japanese A-bomb survivors are living longer than the controls despite a few hundred radiation induced cancers. It is a disservice to the radiation community and the public to suggest that present radiation protection quantities are valid acientific estimates of risk at the low doses and low dose rates presently being regulated.

I am happy that Philip feels "Collective imparted energy" deserves consideration as a indicator of collective risk. It has the advantage that it doesn't involve indeterminable biological constants. As far as I know neither the ICRP or NCRP has given it serious consideration. To consider it would imply that the present approach of effective dose may not be correct — a thought too replusive to entertain! There are no data to support collective imparted energy as a measure of radiation risk below about 0.5 Gy — a level we may never again see for a large group of exposed people.

John Cameron, Ph.D.
University of Wisconsin
Madison, Wisconsin, USA

# IUPESM Developing Countries Committee Report, 1994-1997

The Committee has been in correspondence with several Developing Countries including East European countries and in order to become acquainted with the situation in some of the latter countries an updated Questionnaire has been prepared and sent to *Moldova, Romania, Bulgaria, Estonia, Slovenia and Russia* and to Dr. Murthy of the DCC IOMP. Answers have been received from **Estonia** and **Moldova.**

Information on *Columbia, Cyprus, Hong-Kong, The Philippines, Sri Lanka, Thailand and Turkey* should be updated, and therefore, the Committee has informed Dr. Murthy of this necessity and he has come up with a Questionnaire published in No. 2, Vol. 11, p. 15 of the *Medical Physics World.*

Partially, thanks to the Committee's encouragement *two* new organizations have been founded, i.e. the Estonian Society for Biomedical Engineering and Medical Physics. It has been admitted to IFMBE and IOMP (Jan. 1994), and the Lithuanian Socirty for Radiation Therapy (late 1995). There is little chance that a similar society will be founded in LATVIA due to s small number of specialists and/or psychological reasons. So far, **three** persons from Latvia would like to cooperate with IUPESM.

Five issues (Nos. 5-9) have been published of the *"Medical Physics and Biomedical Engineering"* in 250 copies and redistributed world-wide free of charge. The response has been very good. Fifty copies have been sent to Mrs. Warmelink to have them redistributed to IOMP Libraries.

The Committee has been in constant correspondence with Dr. Murthy of the IOMP DCC, who has always and regularly sent information about the activities of his Committee. Dr. Murthy has resigned from his post as the Editor of *Journal of Medical Physics (India)* and has taken over as Head of the Radiological Physics Division, Bhabha Atomic Research Centre, India. Before that on the Committee's suggestion and cooperation Dr. Murthy visited Poland (Poznan and Warsaw in November 1996). Also Dr. Malicki, Head of the Poznan Oncology Centre visited India in May 1997.

A suggestion was made by the Committee to use the Bulletin as a tool of IFMBE efforts and activities for DC by raising the number of copies to **500,** provided some financial support from IFMBE has been obtained to the amount of $500.00 per issue (printing and postage). This suggestion has not, as yet, been answered.

Three countries have applied for assistance: Turkey, Nepal and Cuba. Their requests have been forwarded to Dr. Murthy.

The Committee has cooperated within the framework of the "European Network of Medical Physics & Engineering-Polish Subnetwork."

The Committee in close cooperation with the French organizers (Professors Morucci and Rigaud) and with Dr. S. Tabakov (UK) has prepared a programme for the Developing Countries composed of two Oral Sessions and two Round Table Sessions.

The first inquiry (1995) among the IFMBE affiliated national societies has revealed neither remarkable activity in the DC nor a concerted action supported or initiated by IFMBE. Some activity has been found on the national level organized by member societies, mainly implemented by so-called emerging countries (ex-Soviet block). They were mostly concerned with educational aspects. As a consequence of this negative result a diploma thesis was initiated in Graz (Austria) to compare the health-care technology situation in various developing countries, such as Nepal, Ghana, Costa Rica and Yemen. The result of this study wre presented at the Nice '97 Congress.

In a meeting with Prof. N. Richter possibilities were discussed of intensifying the cooperation between IFMBE and specialized organizations in developing countries. The first contact has been established with the "Deutsche Gesellschaft fuer Technische Zusammearbeit."

Oskar A. Chomicki
Helmut Hutten
Co-Chairmen of DCC of the
IUPESM

# Medical Physics in Kenya

In Kenya, where the population is around 28 million, the national resources for radiation treatment include three Cobalt-60 teletherapy machines, one simulator, two manual Low Dose Rate (LDR) remote afterloaders, one automated LDR (Nucletron Selectron), and one HDR remote afterloader (Nucletron microSelectron). All three of the teletherpy machines are in Nairobi, two at Kenyatta Hospital and one at a private hospital. The automated LDR unit is also at Kenyatta Hospital and the HDR unit is in a public hospital in the city of Kisumo, in the public western part of Kenya. Diagnostic radiology resources for Kenya include four CTs (1 public, 3 private), two MRs (both private), one gama camera (public), and a second gamma camera under installation (private).

When all equipment is operational, Kenyatta Hospital treats 140 patients per day, split evenly at about 70 patients per teletherapy machine. A twelve-hour clinic operation is normal. Simulations are performed three days a week. The private clinic treats approximately 30 patients per day on its teletherapy machine, giving a total treatment census of 170 patients per day. In mid-March, 1997, the teletherapy machines at Kenyatta Hospital were not operational, each for a different reason. Many patients such as palliatives, were not being treated and others were being treated at the nearby private facility, which was over-loaded due to the unusual patient numbers. Kenyatta Hospital is hoping for a linear accelerator to expand its capabilities and perform better treatment for its large patient population.

At Kenyatta the brachtherapy load is active. The manual and automated LDRs treat one patient per week. The HDR unit in Kisumo, which is maintained by the Kenyatta physicists, treats between 10 and 20 patients per week. There are ten radiographers at Kenyatta to run the simulator and treatment machines. Treatment planning is performed by the physicists using the Nucletron Plato system. There are no dosimetrists.

There are six physicists with medical physics training in Kenya, five of whom are in medical physics practice. At University of Nairobi/Kenyatta Hospital, Mr. Ngaruiya and two others are in radiotherapy and Dr. Tole is in Diagnostic Radiology. Moi University has one physicist Moi University has one physicist in Diagnostic Radiology, and a sixth physicist is located at the Nuclear Science Center at Nairobi University. The University of Nairobi/ Kenyatta Hospital has a diagnostic radiology residency program. Radiation oncology training is on-the-job. Teaching responsibilities for the physicists include residents and medical students from the two medical schools. At Kenyatta Hospital there are four radiation oncologists.

Summary: In Kenya there are three Cobalt-60 teletherapy machines, three LDR units, one HDR unit, four CTs, two MRs, two gamma cameras, five medical physicists, and two medical schools, all for 28 million people. The ratio of population-to-resources is quite high compared to US and European practice.

Reported by
Daniel Bourland, Ph.D.
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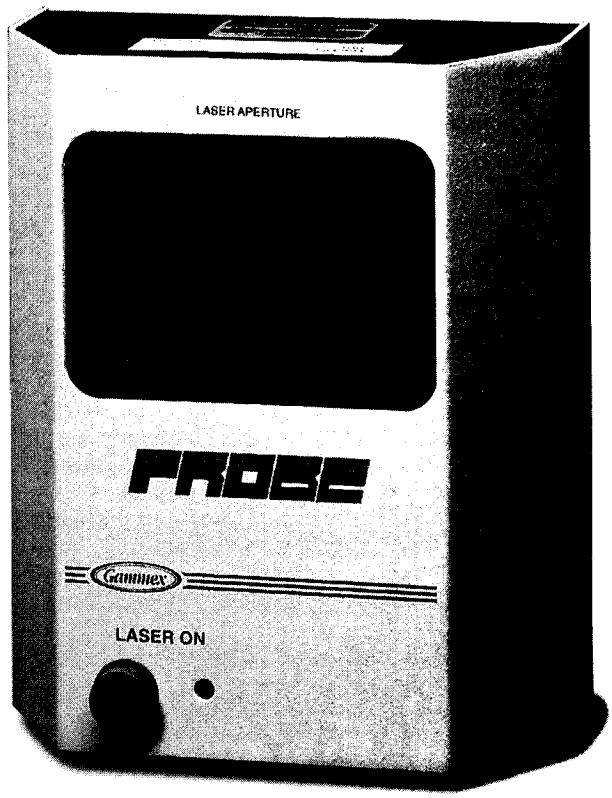


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