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Bulletin of the International Organization for Medical Physics

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World Congress on Medical Physics and Biomedical Engineering 21-26 August 1994

The International Union for Physical and Engineering Sciences in Medicine, in cooperation with its sister organizations, the International Federation for Medical and Biological Engineering and the International Organization for Medical Physics, welcome your participation in the 1994 World Congress on Medical Physics and Biomedical Engineering to be held in Rio de Janeiro, Brazil. This World Congress represents the seventh time that these organizations have joined in what has become the premier meeting of its type, bringing a worldwide focus on technology in health care. Included in the meeting will be a spectrum of activities, ranging all the way from basic research to the application of engineering and physics in the hospital setting.

The choice of Rio de Janeiro as the site for this 1994 World Congress is auspicious because it is the first time that this meeting will be held in a developing country. We hope it will be a major contribution to the growth of medical physics and biomedical engineering, not only worldwide, but especially in Latin America.

The three international organizations are very appreciative of the extraordinary efforts that are being made by our Brazilian colleagues and by others in Latin America in organizing this World Congress and to the leadership being provided by the organizing committee. Although our major mission will be to evaluate the state-of-the-art and look into the future in research in medical physics and biomedical engineering, at the same time we look forward to the opportunity to develop greater bonds of friendship among the worldwide community.

We hope that you will participate in this World Congress, join us in becoming acquainted with the latest developments in the various specialties, and enjoy the warm hospitality of Rio de Janeiro.

U. Madhvanath
President



IOMP

R. M. Nerem
President



IUPESM

N. Saranummi
President



IFMBE

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Secretary General's Report

RIO WORLD CONGRESS

The scientific program for our triennial World Congress next August in Rio de Janeiro is outstanding, thanks to the untiring efforts of our Co-Presidents Carlos de Almeida and Antonio Giannella - Neto, Scientific Program Co-Chairs Carlos Malamut and Jurandir Nadal, and all their committees. The amount of work entailed in running such a large conference is enormous. For most of our members this is not an easy part of the world to reach. Airfares are expensive and travel time is extensive. However, it is important for us to reward our colleagues in Brazil for the great sacrifices in time and effort they have dedicated to this endeavor by participating in their Congress. I urge all who can possibly attend to do so. There will be two Council Meetings and one General Assembly in Rio, and these are tentatively scheduled for 14:00 h on August 21, and 14:00 h and 16:00 h on August 24th. I hope that it will be possible for every one of our Member societies to be fully represented at these meetings.

For those who cannot afford the whole costs, a limited amount of support will be available in the form of Travel Grants.

TRAVEL GRANTS

For the 1991 World Congress in Kyoto we awarded about \$40K US in the form of Travel Grants, and I am working on trying to raise this much money again for Rio. Unfortunately, our financial situation is by no means as good as it was three years ago due partly to the lack of any profit from the Kyoto Congress, and partly because we have had to provide a \$12.5K US loan to the Rio Committee. Details of our present financial status appear on page 23. Consequently, it is not possible for us to provide full support for any individual member. We plan to award travel grants to our developing countries national associations rather than to individuals. These associations will then be responsible for equitably distributing their grant monies. I have sent Travel Grant application forms to the Secretaries of all our developing countries' adhering societies. They are the people to contact if you wish to apply for a travel grant.

(Continued on page 4)

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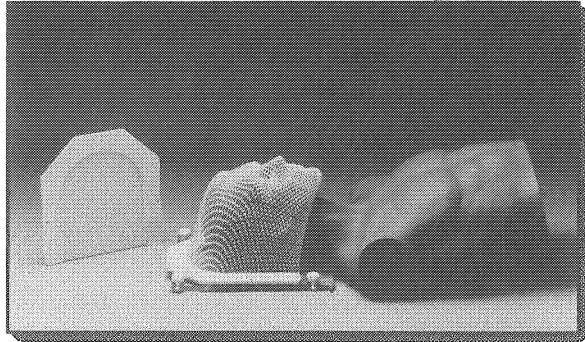
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Events Information should be addressed to Dr. Geoffrey Ibbott. IOMP correspondence should be addressed to Dr. Udipi Madhvanath and Dr. Colin Orton.

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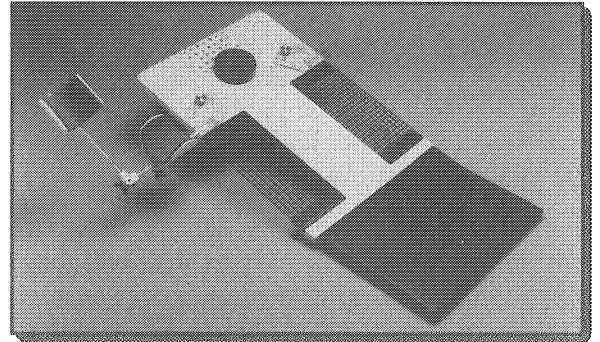
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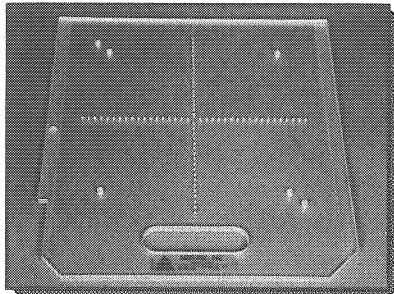
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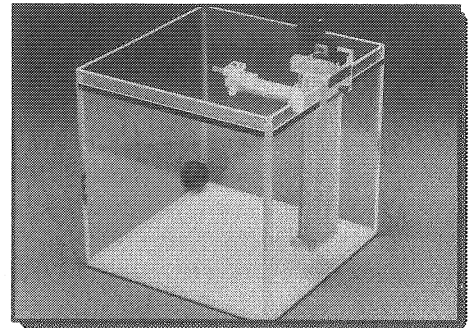
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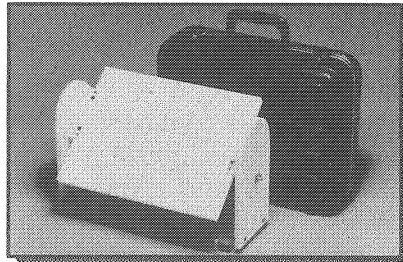
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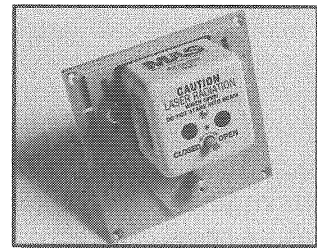
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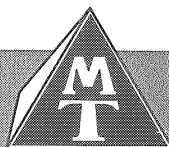
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(Continued from page 2)

NEW MEMBERS

Congratulations are extended to our three new national affiliates: Panama, Slovenia (Yugoslavia resigned), and Iran, which have been elected to membership by the Officers in 1993, subject to ratification by Council in Rio. This brings IOMP national adhering organization membership to a total of 54.

WORKSHOPS AND CONFERENCES

In the past 12 months we have co-sponsored workshops in Argentina and Poland. A report on the Argentina workshop appears on page 12. During the next six months we are committed to co-sponsor three more meetings, a symposium on Quality Assurance in Imaging on 23-24 February, 1994 in New Delhi, a workshop on Quality Control in Diagnostic Radiology on 25-26 April, 1994 in Pretoria, South Africa, and an Asian and Pacific International Conference on Medical Quality Assurance Testing Technology on 9-11 May, 1994 in Guangzhou, China. See details in this issue.

INTERNATIONAL UNION (IUPESM)

At a recent meeting of the Council of our parent organization, the International Union of Physical and Engineering Sciences in Medicine (see report by Union Secretary General Orest Roy in this issue) a decision was made to make the IUPESM and its activities more visible to the members of the two organizations it represents, the IOMP and the International Federation for Medical and Biological Engineering (IFMBE). We decided, amongst other things, to have the Secretary Generals of the IOMP, IFMBE and IUPESM write columns in each issue of each others' newsletters.

ELECTIONS

In Rio we will have a number of important elections which bear greatly upon the future viability of our organization. We will elect a new Vice-President, a new Secretary General (my maximum two 3-year terms of office will expire), and new Chairs for our Developing Countries and Education and Training Committees. Nominees for these positions will be announced in the next issue of MPW. We trust that you will let your Delegates know who you support.

MPW CHANGES EDITOR

Finally, I want to express my sincere thanks to Dr. Richard Maughan who has just handed over the reins of *Medical Physics World* Editor to Prof. Bhudatt Paliwal after five years of very productive work on our behalf. Having been Dr. Maughan's predecessor on this job, I know how much time and effort he has had to devote to keep *MPW* going as a viable and productive means of communication between Members and Officers. During this period, *MPW* has also been a financial success. When Dr. Maughan took over from me, I asked him to try to generate a profit so that we could finance *MPW* Travel Grants to enhance our ability to support our colleagues from developing countries. I am pleased to say that this has been a very successful endeavor and there will be an additional 5,000 \$US in *MPW* Travel Grants for the Rio Congress.

Congratulations Richard and thank you for a job well done.

Respectfully submitted,
Colin G. Orton, Ph.D.
Secretary General

Editorial

I am very pleased to be the Editor of *Medical Physics World* and to contribute to the growing field of medical physics at the international level. Over the decades many distinguished medical physicists from all over the world have pointed out the dire needs of our colleagues in the developing countries. I myself, having spent a significant part of my early life in such a country and having visited many such countries during my career am very aware of these needs. I hope I will be able to make some contribution through the editorship of *Medical Physics World*.

I feel very fortunate to inherit a very successful and functional bulletin initially started by Dr. Lawrence H. Lanzl and over the recent years fostered by Drs. Colin G. Orton and Richard L. Maughan. In its current format, the bulletin emphasizes the general developments in the international community. I would very much like to add an educational/technical component to it and also include information specific to opportunities for young medical physicists. I need all the help I can get from our readers. I do hope I will be flooded in the near future with comments and suggestions.

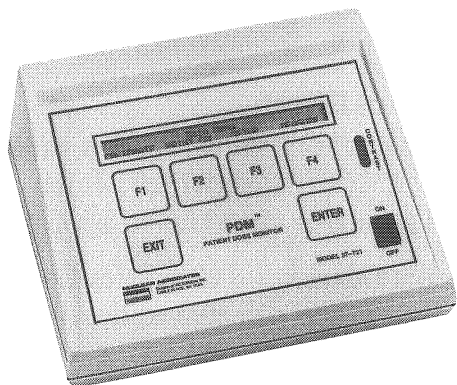
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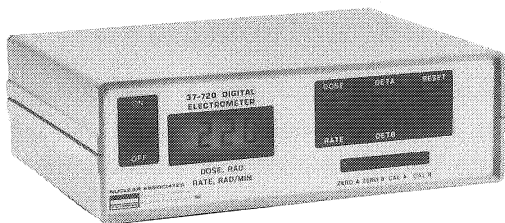


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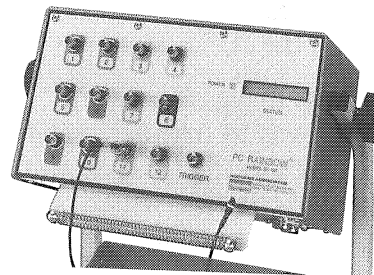
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Machine: 2 Energy: 6 MeV
Time Constant: 9 Units: Counts
Ch Sn# Corr Alarm Dose Rate
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IUPESM Secretary General's Report

Orest Z. Roy

IUPESM Secretariat
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The International Union for Physical and Engineering Sciences in Medicine (IUPESM) has placed a great deal of emphasis on achieving full membership in the International Council of Scientific Unions (ICSU). So much so that this goal and the coordination of the triennial World Congress have become its only perceived activities. With full membership in ICSU uncertain and with the difficulties associated with bringing two disparate and independent groups together, the relevance of and the need for the IUPESM has been called into question. These concerns and the future role of the IUPESM were placed front and center on the agenda of the October administrative council meeting in Toronto. Eight of the ten Council members were present, with equal representation from the two Constituent Members of the Union, IOMP and the IFMBE. It is fair to say that the discussion of this topic was open and frank, issues of relevance, value for money, and the lack of a meaningful activity were all raised and addressed. It is also fair to say that in the end the consensus was that there is a continuing need for the IUPESM.

After a great deal of discussion Council agreed that the first priority was to organize activities in the areas of importance to the Constituent Members of the Union. Activities which would be enhanced through the coordination of effort and through the full participation of both organizations.

The second priority identified was visibility. It was felt that the Union was unknown to both the outside world and to its own membership.

The following decisions were made:

Visibility

The 1997 Nice Congress will have multiple session symposia that will be organized and clearly identified as IUPESM activities. The topics for these symposia will be agreed upon jointly by a committee of the IUPESM and the Congress Organizers.

The 1997 Congress will have a joint scientific opening ceremony on the first full day of the Congress with four speakers — two biomedical engineers and two medical physicists. These individuals will describe new directions and leading edge developments in their respective disciplines.

Constituent Members will be asked to stress their membership in the Union and to indicate this by adding the Union logo to their letterheads.

The Union logo will be changed to show the acronyms of the Constituent Members, IOMP and IFMBE.

One hundred copies of each organization's newsletter will be made available and distributed to each organization's general assembly delegates. The Secretary Generals are to exchange mailing lists.

Coordination of Effort:

The Secretary Generals of each organization will develop a list of activities which would benefit from a joint or coordinated approach.

The Union's Developing Countries Committee will be co-chaired and directed to develop a plan with specific projects in mind, e.g. training packages for clinical engineers and medical physicists, developing the basic medical equipment requirements for developing countries. The Committee is directed to meet in Rio.

The Union will establish a working group on Medical Image Processing. IOMP and IFMBE are being asked to identify suitable persons as co-chairs and working group members.

World Congress Organizers will be urged to identify multidisciplinary themes and develop joint Congress symposia and session tracks.

The Union will study the feasibility of acting as an advisory body and a source of expertise to international organizations such as WHO, IAEA, etc.

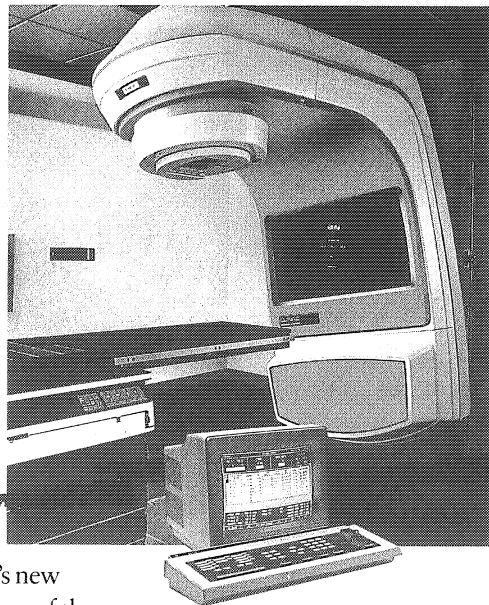
The task is not an easy one. Success will require accommodation, goodwill and commitment not just from members of one organization but from three. Council is convinced it can be done.



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Regional Medical Physics Center in Multan, Pakistan

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and

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University College of Engineering & Technology

Mir Pur, A.K. Pakistan

According to a press report, the incidence of cancer in Pakistan has tripled in a decade. This is mainly attributed to malnutrition, environmental hazards, increased consumption of tobacco and snuff, social stress, lack of clean water and basic health facilities. In fact most of the cancer victims never reach the hospitals and they do not contribute in the counting statistics. To cope with the problem of cancer control and treatment, Pakistan lacks an infrastructure for this purpose. The development of medical physics in Pakistan is limited by financial resources, bureaucratic red tape, and political bias in the world community. There are about ten medical physics centers to serve the needs of one hundred and ten million people. Almost all of these centers are under the supervision of Pakistan Atomic Energy Commission which is a controversial organization due to its nonsigning of Nuclear Non-Proliferation Treaty. Pakistan always conditioned it with India to sign NPT. India in return, conditioned with the world. Due to such political intricacies, the human resources for medical physics have always been limited. In this article we discuss a typical medical physics center at Multan, six hundred miles north of Karachi.

The medical physics center at Multan is known as Atomic Energy Medical Center affiliated with Nishtar Medical College and Hospital. This center was established in 1968. It has the following facilities:

1. Radiation Therapy Equipment

One Co-60 Unit

One Brachytherapy Unit

One Afterloading System

2. Diagnostic Equipment

One SPECT System

One Ultrasound Machine

One RIA lab

X-Rays Units

3. Nuclear Medicine Equipment

Two Gamma Cameras,

One Siemens and the other is Toshiba

Scintillation Counters

One Thyroid Uptake System

One Renography System

There are only two physicists. One physicist is responsible for the Nuclear Medicine Department and the other supervises the radiation therapy facility, the other staff consists of seventeen technicians and assistants.

Dosimetry is manually carried out and there is no independent nuclear regulatory commission in Pakistan other than Pakistan Atomic Energy Commission. The center lacks a comprehensive medical physics program and short courses are arranged for biochemistry and pharmacy students from Bahauddin Zakriya University, Multan. Occasional lectures to final year medical students are delivered. A two week short course on nuclear medicine has been started recently.

The center lacks the basic tools to provide quality health care in addition to the lack of equipment, staff and training. The calibration of radiation machines and quality control are the main concern in such situations. We are currently in a process to organize Pakistan Medical Physics Association to seek help from IOMP in this matter.

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Magnetic Resonance in Developing Countries

Nan-Zhu Xie

Professor and Chairman

Department of Medical Physics

Guangzhou Medical College

Guangzhou, 510182, People's Republic of China

Chairman, IOMP

Developing Countries Committee

In the developed countries such as Germany, Japan, the U.S.A., etc., the clinical applications of MRI, MRA and MRS have grown much in the last 10 years. There is no doubt that the use of magnetic resonance in medicine will be very important to the health of mankind.

In developing countries such as China, India, Brazil, Egypt, etc., many patients and medical doctors need MRI, MRA and MRS, but such hi-tech diagnostic equipment is very expensive. That is why I am writing about MRI in developing countries.

It is better to develop MRI first in the developed countries. The physical and biological principles of MRI are quite difficult to understand. Medical doctors need training in universities and medical centers. Medical physicists and biomedical engineers have to work together with medical doctors in clinics and research facilities. Some low, middle and high magnetic field MRI systems should be imported to the developing countries for use in big hospitals allowing radiologists to work and study in the MRI field. After enough experience, the radiologists, physicists and engineers can help local medical instrument manufacturers to produce MRI units. For example, in China there are two companies in Guangdong province already producing low field MRI systems. The product of Analogic and Scientific Inc. is the ASP-015 MRI system (1500 gauss, permanent magnet) and the product of Weida Medical Apparatus Group Corp. is ULMW-400 MRI system (400 gauss, electromagnet). There are now more than 35 MRI systems in Chinese hospitals — 15 imported systems of 1.5T and 1.0T from GE, Siemens and Dasonics, etc. and more than 20 systems made in China. A new product of Analogic and Scientific Inc. is a superconducting magnet ASM-060S system. In Guangzhou Medical College there is a new department called "Modern Medical Imaging." Here the students study X-CT, MRI, Nuclear Medicine and Ultrasound for 3-5

years. After graduation students work in hospital medical imaging centers.

The next step is to develop MRA and MRS systems. Some radiologists in developing countries are trying to work on MRA using the middle magnetic field MR system, and some radiologists, having high field 1.5T MR system, plan to study MRS, but only a few hospitals can import such expensive systems. Developing countries must proceed step by step from MRI, MRA and MRS. The local factories also have to produce MR systems step by step from low field to high field. We hope the experts in this field from the developed countries will help the developing countries to develop and popularize MRI, MRA and MRS in the future.

Announcement

International Scientific Exchange Course/Workshop in Iran

AAPM/IOMP is sponsoring a one-week course/workshop in radiation therapy in Tehran, Iran on May 21-25, 1994.

AAPM/IOMP International Scientific Exchange Course/Workshop, Tehran, Iran. (Dr. Azim Arbabi, Iran Association of Medical Physics, P.O. Box 17115-137, Tehran, Iran; Dr. Azam Niroomand-Rad, Department of Radiation Medicine, Georgetown University Medical Center, 3800 Reservoir Road, NW, LL Bles Building, CB18, Washington, D.C. U.S.A.).

AAPM International Scientific Exchange Committee is soliciting funds from vendors/associations for organizing this course/workshop. Contributions should be made payable to AAPM International Scientific Exchange and sent to:

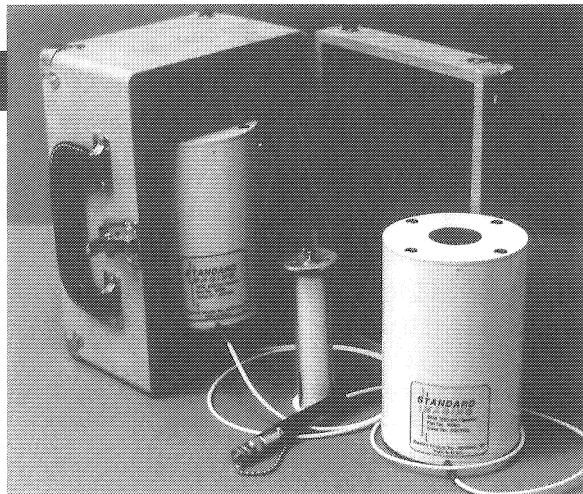
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Attn: Mr. Sal Trofi, Executive Director

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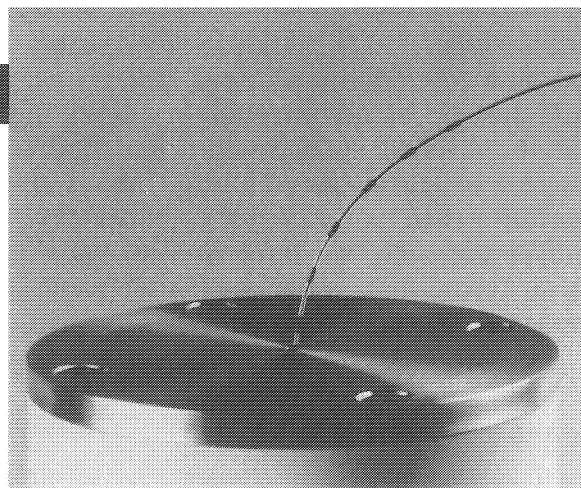
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Workshop In Argentina

The meeting in Argentina took place September 29-October 3, 1992, in Oro Verde, Argentina, under the sponsorship of several local and international scientific societies such as the National Atomic Energy Commission, IOMP, IEEE, CLAF (Latin American Center for Physics), Regional Council of Biomedical Engineering for Latin America (CORAL), Argentine Medical Physics Society (SAFIM), and others. It was hosted by the Universidad Nacional de Entre Rios' College for Bioengineering and coincided with the graduation of its first class.

The first day of the Congress was dedicated to our course. It was named "Previous Day in Radiotherapy." Fifty-six students pre-registered for it. Ninety-six attended. The room was packed with very enthusiastic and bright young medical physicists and bio-engineers. Classes were taught by Colin Orton, Yakov Pipman, and myself.

We were impressed with the level and enthusiasm of the students, and our observation is that the need is prominent for economic help. Professionally it was rewarding to see that they have a very good level, and as such, are able to absorb very much of the more modern and sophisticated approaches which we can introduce to them. They are by no means "beginners." They are at the level of professionalism that can absorb improvements and updates very easily.

If we plan to organize another course there, it should not be at an introductory level, but more at the level of specialization and update. The interest for that was certainly there. However, because their country works under severe economical pressure, we have to find ways to introduce techniques in a way that can be absorbed under their environment.

Doracy P. Fontenla, Ph.D.

Announcement

World Congress on Medical Physics and Biomedical Engineering

Rio de Janeiro, Brazil
21-26 August 1994

The RIO '94 World Congress on Medical Physics and Biomedical Engineering will be held in Rio de Janeiro, Brazil from 21-26 August 1994

and is planned to cover virtually all areas of Medical Physics and Biomedical Engineering. It is the first World Congress to take place in a developing country and will certainly bring a major contribution to the growth of these fields in the whole world, and especially in Latin America. We invite you to come and share your scientific work with colleagues from the four corners of the world. We are sure you will enjoy becoming acquainted with the latest developments in the two specialties and basking in the warm hospitality of Rio. For additional information contact:

General Secretariat:

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Fax: + 55-21-231-1492

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Announcement

The 1994 Asian and Pacific International Conference on Medical Quality Assurance Testing Technology

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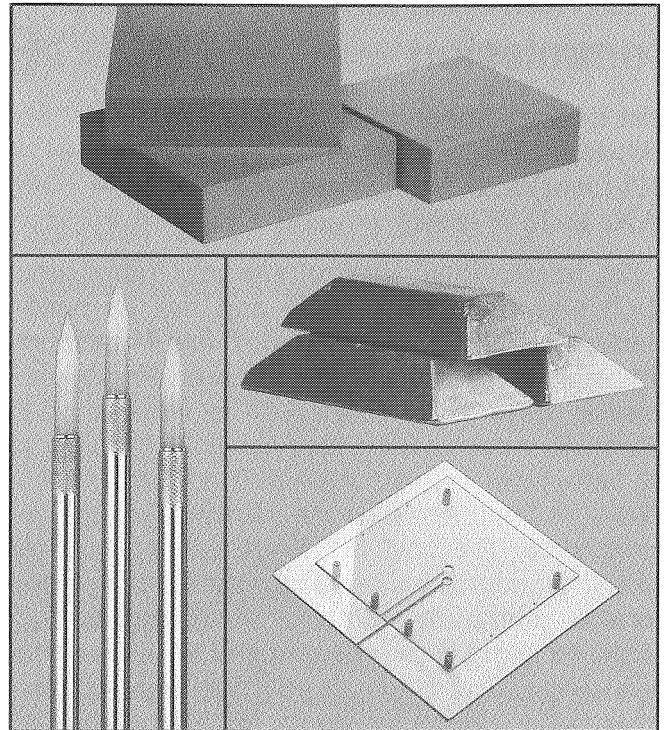
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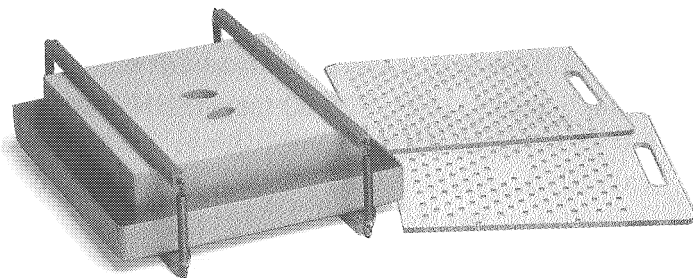
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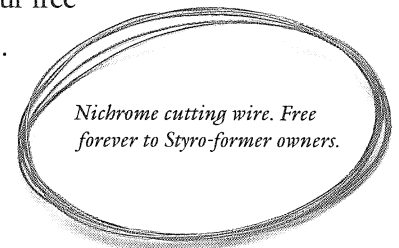


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Recent Activities of the International Electrotechnical Commission

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FAX: 41 22 733 3843

The International Electrotechnical Commission (IEC) was founded in 1906 and has its headquarters in Geneva, Switzerland. It has 44 member nations, representing 88% of the world's population. It is the counterpart to the International Standards Organization for electrical equipment, and maintains liaisons with ISO, IAEA, ICRU, ICRP, and numerous other standard-setting organizations. The role of the IEC is to ensure, through standards and reports, that all equipment meets a minimum standard of excellence and safety; to avoid the confusion and added cost of each geopolitical entity developing its own standards, and the expense to manufacturers in attempting to meet every published standard; to develop uniform terminology and descriptions to convey information regarding equipment conditions and performance; to eliminate ambiguity in communication and confirmation of equipment characteristics; and to do this without limiting or restricting innovation or the development of equipment.

The IEC has no regulatory powers. It publishes standards which may be incorporated by government organizations such as the CRCPD in the U.S.; and by individual users and manufacturers. The European Community, through its European Committee for Electrotechnical Standardization (CENELEC) will rely heavily on IEC standards. This means that manufacturers of radiological equipment who wish to sell equipment in Europe will have to comply with these standards. Because multiple designs are impractical, the design, performance, and safety of equipment for U.S. users will be strongly influenced by the European standards. The IEC consists of 197 Technical Committees and Sub-Committees and numerous Working Groups. When a new standard is needed, a Working Group generally prepares a draft which is circulated to the National Committees for comment. National Committees circulate such documents to appointed Technical Advisers who distribute them to a panel of experts for review.

IEC Documents

Documents produced by the IEC fall into three broad categories:

1. Safety Standards
2. Functional Performance Standards
3. Guidelines

Some documents of particular interest to medical physicists are listed below.

IEC 601-2-1 Particular Requirements for the Safety of Medical Electron Accelerators

IEC 601-2-29 Particular Requirements for the Safety of Radiotherapy Simulators

IEC 1168 Functional Performance Characteristics of Radiotherapy Simulators

IEC 1170 Performance Guideline for Radiotherapy Simulators

IEC 62C (C.O.) 73 Coordinates, Movements, and Scales for Equipment in Radiation Therapy

IEC 62C (Secretariat) 59 Electronic Data Exchange Format for Radiation Therapy Equipment

Due to space limitations it is difficult to provide details. Readers are encouraged to contact the representatives in their country or the international headquarters of IEC.

Submitted by Geoffrey S. Ibbott, Ph.D.

Recommended Reading

The Good News About Radiation

John Lenihan, 1993, \$9.00 (sc), ISBN 0-944838-34-0, Medical Physics Publishing, 732 N. Midvale Blvd., Madison, WI 53705, telephone (608) 262-4021 or fax (608) 265-2121.

Health Effects of Low-Level Radiation

Sohei Kondo, 1993, \$25.00 (sc), ISBN 0-944838-43-X, Medical Physics Publishing, 732 N. Midvale Blvd., Madison, WI 53705, telephone (608) 262-4021 or fax (608) 265-2121.

Physics and Dosimetry of Therapy Electron Beams

Stanley Klevenhagen, 1993, \$55.00 (hc), ISBN 0-944838-36-7, \$45.00 (sc), ISBN 0-944838-35-9, Medical Physics Publishing, 732 N. Midvale Blvd., Madison, WI 53705, telephone (608) 262-4021 or fax (608) 265-2121.

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Test Tools For Developing Countries

Melita Panescu and John Cameron

Department of Medical Physics

University of Wisconsin

Madison, WI 53707, U.S.A.

This is the first in a series of articles describing simple devices useful to medical physicists in developing countries. Readers are encouraged to submit short articles describing their home-made devices which might be useful for medical physicists in developing countries.

Part 1. The Wisconsin Multi-Purpose Radiographic Phantom

This article describes a simple, easy to construct and to use radiographic phantom — the Multi-Purpose Phantom (MPP). This phantom is part of a kit of inexpensive QA test tools developed at the University of Wisconsin-Madison and elsewhere over the last decade. Some of the test tools have been used by medical physicists in Latin America. The design of the MPP has evolved through contributions from many physicists who worked with the second author during the last decade. Individual contributions are lost in memory. Much of the work was performed in the Department of Medical Physics at the University of Wisconsin-Madison. The testing was done in this Department and at the University of Wisconsin Hospital and Clinics.

Many of the components needed for the MPP are available in most countries. Components which are not available locally can be purchased at a reasonable cost through the second author at the Department of Medical Physics, University of Wisconsin, 1300 University Ave., Madison, WI 53706, U.S.A., Fax: (608) 262-2413. The price of these components will generally be under \$25. Since even this amount may be beyond the budget of some medical physicists, they should not hesitate to request that the components be donated. We will seek financial support from the IOMP, interested industries or private donations to pay for the components. We cannot guarantee that we will deliver the parts, but we will try.

The MPP can semi-quantitatively evaluate the following radiographic imaging tasks: mammography (microcalcifications, fibrils and low contrast simulated fat); general radiography (angiography, trabecular bone, "lung" step-wedge, "bone" step-wedge, calcifications); fluoroscopy

(high contrast resolution, low contrast detectability); linear tomography (position of cut, thickness of cut, angle of swing, high contrast resolution at the center of the cut).

In addition, the MPP includes a graduated test pattern to estimate the size of the focal spot without having to know its exact location. The test pattern includes two small holes 20.0 mm apart which permit one to use the table which corresponds to the actual magnification.

The MPP uses ordinary water as the issue simulating material. The rectangular plastic container (approximately 20 cm x 20 cm x 23 cm in height) has a metric rule along one side to determine the thickness of water. The MPP is useful for routine QA measurements of the imaging performance of mammographic, fluoroscopic, general radiographic and linear tomography x-ray units. It is also useful for comparing the performance of different x-ray units and for teaching radiographers.

The MPP has several components: the plastic container that holds the plastic plate on which the test objects are mounted, and a variable amount of water as a tissue equivalent scattering and absorbing material. For example, 3 cm of water simulates a typical compressed breast, 10 cm simulates a child and 20 cm simulates an adult.

In spite of its simplicity, low cost, and ease of construction the MPP serves to evaluate the overall system performance. It can be used both by physicists or radiographers for QC tests. In many developing countries there are few physicists working in diagnostic radiology. A radiographer can use the MPP to do imaging tests and then discuss the results with a physicist when one is available.

The MPP test plate with the embedded test objects is 16 cm x 16 cm x 0.2 cm thick. Test objects are embedded in a 0.1 cm hardened layer of 4:1 Araldite resin and Jeffamine hardener. Four 10 mm wide by 155 mm long brass or copper wire mesh serve to evaluate high contrast resolution for radiography, fluoroscopy and linear tomography. The wire mesh patterns are 0.8, 1.2, 2.4, and 4.7 wires/mm (mesh sizes of 20, 30, 60 and 120 wires/inch).

A "lead" ruler is made using a mechanical typewriter to indent the thin lead strip (150 x 5 x 0.05 mm thick) with numbers to make a scale. The force of the strike should be as great as possible to thin the lead by stretching and thus increase its transmission of x-rays. A typewriter with 12

(Continued on page 20)

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Report on the Developing Countries Libraries Program

The number of libraries in the program is now 55, and continues to grow at a fantastic pace. The full listing of the library locations is shown below.

A special thanks to the following organizations for their generous donations:

AAPM — 40 full sets of publications

IPSM — 36 full sets of publications

IOPP — 5 books from the Medical Physics Handbook or the Medical Science Series to each new library established, as well as a copy of each new book released in its Medical Science Series, and 10 subscriptions each of *Physiologic Measurements* and *Physics in Medicine and Biology*

Association of Medical Physicists in India — copies of their quarterly Newsletter to all libraries in our program

Thanks to the generosity of individual AAPM donors and to the AAPM for its coordination efforts, most of our libraries will be receiving regular subscriptions to *Medical Physics* beginning sometime in 1994.

We desperately need copies of journals such as *Physics in Medicine and Biology*, *Medical Physics*, *International Journal of Therapeutic Radiology, Biology, Physics, Medical Dosimetry, Journal of Nuclear Medicine, Health Physics*, and *Radiology*. Anyone wishing to donate books or journals to this program can contact Cathy Warmelink, MS, Gershenson ROC, Harper Hospital, 3990 John R, Detroit, MI 48201, or call (313) 745-2522. The Fax number is (313) 745-2314.

IOMP LIBRARIES

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New Delhi, India		

Cathy Warmelink, MS, Curator
IOMP Libraries

Report on the Second International Summer School on Physics in Radiotherapy, Warsaw

August 26 to September 3, 1993

John W. Boag

Emeritus Professor of Physics
as Applied to Medicine

Institute of Cancer Research, London SM2 5PT

The first Polish summer school on Physics in Radiotherapy, organized by the medical physics department of the Warsaw Cancer Centre had been held in 1977, attended by some 70 medical physicists from Central and East Europe with five Western participants. This second summer school cast its net wider and drew in 90 participants from 25 countries, two each from most of the newly independent republics of East Europe, together with 43 from Poland and 16 from Western Europe, the U.S.A. and India.

The lectures covered the "state of the art" in all branches of radiotherapy physics, ranging from the basic interaction of radiation matter to the principles of radiotherapy with beams of heavy charged particles. We were reminded on the first day of the distinguished history of the Warsaw Cancer Centre. We then plunged into the basic physics of radiation interaction with matter and were taken through the principles and methods of radiation dosimetry. Biomedical accelerators in all their variety, the physics and technology produced were dealt with in several lectures. Practical procedures for acceptance tests and commissionings of megavoltage equipment and the need for quality control of radiotherapy procedures were other topics treated. Several algorithms for the computation of electron beam dose distributions were described and discussed.

The network of Secondary Standard Dosimetry Laboratories (SSDL) set up by IAEA and WHO and the services they can provide were described by Dr. Svensson from IAEA. The Warsaw Cancer Centre itself is one of the accredited SSDL's. The role of brachytherapy and the appropriate specification for reporting this form of treatment and for quality assurance were presented and discussed. There were sessions on treatment planning, on radiological protection and on the impact of radiobiology on radiotherapy. Altogether, the subject of Physics in Radiotherapy was covered very fully in the programme and lectures.

It is to be hoped that the interval between the 2nd and 3rd schools will be shorter than between the 1st and 2nd.



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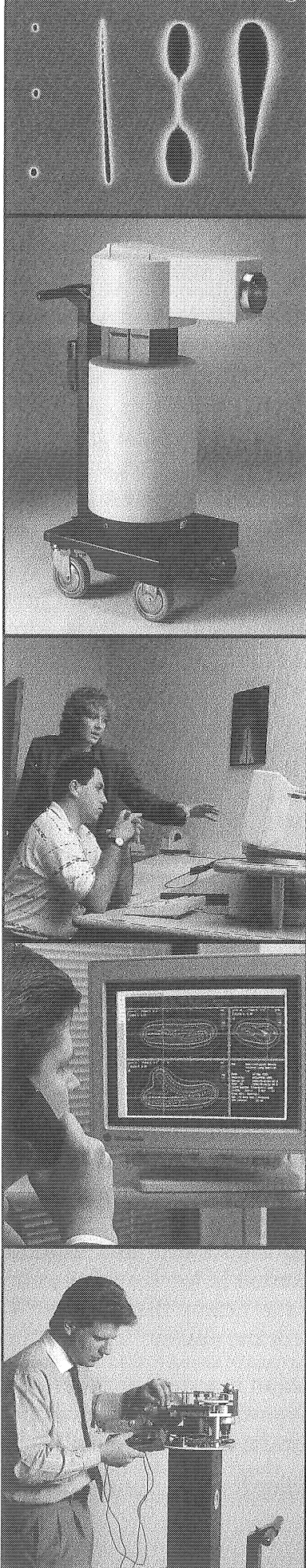
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(Continued from page 16)

characters/inch produces a convenient spacing (150 mm permits 70 numbers). The "mm" numbers are placed one above the other — that is the first row will show groups of digits from zero to 7, the row beneath it will have repeating series from 0 to 9 so that the ruler will cover a scale to measure the height as well as the thickness of the tomographic cut. The lead ruler is attached to the plate with thin double sided sticky tape. This takes patience — the thin lead is not easy to locate or to work with.

The fat mimicking objects for the mammography test are made of three cylinders whose lengths are equal to their diameters of about 3, 6 and 12 mm. Three nylon "fishing line Fibrils" 15 mm long for the mammography test are embedded in a 2 mm thick piece of dental wax to give appropriate contrast to simulate breast fibrils. The diameters of the "fibrils" are about 0.5, 1 and 2 mm. Simulated microcalcifications for the mammography test are three groups of about five aluminum oxide grains. The sizes of the grains in each group are about 0.5, 0.7 and 1.0 mm. Four simulated arteries containing "contrast" for angiographic tests are made of 15 mm long silicone threads 0.5 mm diameter containing 5%, 10%, 20% and 40% barium contrast.

A half human vertebra allows qualitative estimations of the trabecular bone imaging possibilities. Next to the vertebra, there is a 20 x 30 x 5 mm thick lead weight to compensate for the low density of the "lung step wedge" which would cause the test plate to float. The bone mimicking step wedge is made of PVC which has x-ray attenuation similar to compact bone. It consists of 5 steps of 9.5 mm (3/8") thick PVC. The steps are 35 mm wide and 15 mm deep (i.e., the step wedge is made of five pieces of PVC 9.5 mm thick and 15, 30, 45, 60 and 75 mm long. Glued on each step is a 3 mm (1/8") thick piece of PVC with four holes of 1.7 to 6 mm diameter for simulating bone erosion. These holes are also convenient for evaluating low contrast detectability in the fluoroscope test.

The Styrofoam "lung mimicking" step wedge is similar in size to the "bone step wedge." It has 5 steps each of 3/8" thick. In every step there are two holes (one round and one flat bottom) about 10 mm depth. When this step wedge is covered with water the "edge" contrast of the two holes should be slightly different.

Because of space limitations it is not possible to give complete details in this article. A more detailed description of the MPP is available from the authors.

Book Review

Advanced Medical Radiation Dosimetry

K. N. Govinda Rajan, Prentice-Hall of India, Pvt. Ltd., New Delhi, also available from Medical Physics Publishing, 732 N. Midvale Blvd., Madison, WI 53705, U.S.A. Tel: (608) 262-4021, Fax: (608) 265-2121. Price: \$20.00.

In this book on advanced dosimetry the author has covered a broad range of medical applications and physical principles of ionizing radiation. In contrast to other books available in the field which emphasize either the medical applications or basic dosimetric principles, this simple compact volume of 523 pages provides a reasonably in-depth coverage of both fields.

This text is not for a novice in the field. It is a logical sequence to an introductory text on fundamentals of radiation dosimetry. It is ideally suited for an academic course in radiation dosimetry, or self-study to enhance knowledge in the field.

Each of the eight chapters in the book contains a detailed table of contents and a list of references. In all there are about 300 references. The author has made extensive use of tables, graphs and schematics to provide data on a range of physical parameters and devices used in the field. Where applicable and useful, different dosimetry protocols are discussed. There are no problem sets as found in a typical textbook however, numerical examples are incorporated to illustrate concepts and procedures as well as dosimetric calculations.

The book provides useful information to every student or teacher of medical physics, practicing dosimetrist, or research worker in the field. It will also be of great interest to radiation therapy physicists, radiation oncologists and especially radiotherapists interested in learning more about the physics behind the beams they deliver. The book is a good buy for the money.

K. N. Govinda Rajan is a staff member of the Division of Radiological Protection at Bhabha Atomic Research Centre, Bombay, India.

Reviewed by Bhudatt Paliwal, Editor.

Calendar of Events

Geoffrey S. Ibbott, Editor

9-11 March 94, International Congress on Advanced Diagnostic Modalities and New Irradiation Techniques in Radiotherapy, University of Perugia, Perugia, Italy. [Dr. R. Calandrino, Fisica Sanitaria, Istituto San Raffaele, 20132 Milano, Italy.] (Tel: 00392 2643 2397, Fax: 0039 2 2643 2773).

16-18 March 94, International Course on Advances in Radiotherapy, Joint Department of Physics, Royal Marsden Hospital and Institute of Cancer Research, Surrey, UK. [Dr. Philip Mayles, Joint Department of Physics, Royal Marsden Hospital, Downs Rd., Sutton SM2 5PT, UK. (Tel: 081-642-6011, Fax: 081-643-3812).

20-24 March 94, 11th International Conference on the Use of Computers in Radiotherapy, Manchester, UK. [J. M. Wilkinson, Secretary to Local Organizing Committee, North Western Medical Physics Department, Christie Hospital and Holt Radium Institute, Withington, Manchester, M20 9BX, UK].

27-31 March 94, 4th International Congress on Medical Ultrasound, Marrakech, Morocco. [Prof. H. A. Gharbi, President, MASU, Hospital d'Enfants, Place Bab Saadoun, 1007 Tunis Jabbari, Tunisia]. (Tel: 216-1-790276, Fax: 216-1-792842).

20-24 April 94, 11th Annual Congress, European Society for Magnetic Resonance in Medicine and Biology, Hofburg Congress Centre, Vienna, Austria. [Mrs. S. Altermann, Vienna Medical Academy, Alserstrasse 4, A-1090 Vienna, Austria]. (Tel: 43-1-421-38313, Fax: 43-1-42138323).

25-29 April 94, Annual Congress, South African Association of Physicists in Medicine and Biology, including a workshop on "Quality Control of X-Ray Machines," Pretoria, South Africa. [Prof. W. J. Strydom, Department of Medical Physics, P.O. Medunsa 0204, South Africa].

9-11 May 94, Annual Brachytherapy Meeting, GEC/ESTRO, Linz, Austria. [ESTRO Secretariat, U.Z. St. Rafael, Department of Radiotherapy, Capucijnenvoer 35, 3000, Leuven, Belgium].

11-14 May 94, "Brachytherapy — Today and the Future," Hyatt at Gainey Ranch, Scottsdale, Arizona. [Linda LeBaron, Nucletron Corporation, 7080 Columbia Gateway Drive, Columbia, Maryland 21046-2133, U.S.A.]. (Tel: 410-312-4100).

5-8 June 94, 41st Annual Meeting, Society of Nuclear Medicine, Orlando, FL. [The Society of Nuclear Medicine, Department of Marketing Services, 136 Madison Avenue, New York, NY 10016-6760, U.S.A.]. (Tel: 212-889-0717).

15-18 June 94, 11th Annual Meeting, American College of Medical Physics, Jackson Hole, Wyoming, U.S.A. [ACMP, 1891 Preston White Drive, Reston, VA 22091, U.S.A.].

19-24 June 94, Summer School Health Physics Society, University of California, Davis, CA, U.S.A. [Victor Anderson, CHP, Administrative Dean]. (Tel: 916-734-7322).

18-22 July 94, Symposium, International Radiation Physics Society, Rebat, Morocco. [D. B. Isabelle, CERI-CNRS, 3A Rue dela Ferrollerie, 45071 Orleans Cedex 2, France].

18-22 July 94, Summer School, Radiation Therapy, American Association of Physicists in Medicine, University of California, San Diego, CA, U.S.A. [AAPM, One Physics Ellipse, College Park, MD 20740-3846, U.S.A.]. (Tel: 301-209-3350, Fax: 301-209-3399).

24-28 July 94, 36th Annual Meeting, American Association of Physicists in Medicine, Anaheim, CA, U.S.A. [AAPM, One Physics Ellipse, College Park, MD 20740-3846, U.S.A.]. (Tel: 301-209-3350, Fax: 301-209-3399).

21-26 August 94, World Congress on Medical Physics and Biomedical Engineering, 10th International Congress of Medical Physics and 17th International Conference on Medical and Biomedical Engineering, Rio de Janeiro, Brazil. [Congrex do Brasil, Rua do Ouvidor, 60/414 20040 - Rio de Janeiro - RJ, Brazil]. (Tel: 55 21 224 6080, Fax: 55 21 231 1492, Telex: 21 32891 CGRX BR).

24-29 September 94, 13th Annual Meeting, European Society for Therapeutic Radiology and Oncology, Granada, Spain. [ESTRO Secretariat, U.Z. St. Rafael, Department of Radiotherapy, Capucijnenvoer 35, 3000 Leuven, Belgium].

3-7 October 94, American Society for Therapeutic Radiology and Oncology, San Francisco, CA, U.S.A. [American Society for Therapeutic Radiology and Oncology, 1101 Market Street - 14th Floor, Philadelphia, PA 19107-2990, U.S.A.]. (Tel: 215-574-3180).

27 November-2 December 94, American Association of Physicists in Medicine, Joint Meeting with the Radiological Society of North America, Chicago, IL, U.S.A. [AAPM, One Physics Ellipse, College Park, MD 20740-3846, U.S.A.]. (Tel: 301-209-3350, Fax: 301-209-3399).

7-10 December 94, 8th International Conference on Biomedical Engineering, Singapore. [The Secretary, 8th ICBME, 1994, Department of Orthopaedic Surgery, National University Hospital, 5 Lower Kent Ridge Road, Singapore 0511, Republic of Singapore]. (Tel: 7724424, Fax: 7780720).

1995

12-16 June 95, Roentgen Centenary: 100 Years of X-Rays, International Convention Centre, Birmingham, UK. [Vanessa Whitehead, British Institute of Radiology, 36 Portland Place, London, UK]. (Tel: 44 71 436 7807).

Readers are invited to send to the Calendar of Events Editor, Geoffrey S. Ibbott, M.S. (address on page 2), information on any events not listed in this issue of MPW and also additions or corrections to the items that are listed. Officers of national societies are especially encouraged to submit information on their future national meetings.

IOMP, IFMBE and the Future

Medical Physics and Bioengineering have a large professional boundary in common but also do overlap. A clear example of overlap is image processing which is of utmost importance for clinical diagnosis as well as for Biomedical research. Both professions look for an optimal recognition within the health care community. Our common interests will probably intensify in the future.

Together IOMP and IFMBE (International Federation for Medical and Biological Engineering) formed the IUPESM (International Union for Physical and Engineering Sciences in Medicine), a union which organizes the Triennial conference on Medical Physics and Biomedical Engineering. This successful joint venture provides the possibility for many to participate in a world conference with a broad scope. In this era of too many conferences, it forms a significant contribution to coordination at the global level.

Both our organizations operate on a world scale thereby stimulating national and regional activities. In August 1993 the IFMBE had its Far Eastern Conference on Biomedical Engineering. This was a successful, rather large scale conference in Beijing. This conference made clear to me that the role of a world organization in stimulating regional activities was well appreciated.

IUPESM has a combined committee for developing countries which to the IFMBE is very useful. IOMP and many societies from developing countries can become crystallization points for bioengineering. Initiatives for a combined working group on Medical Image Processing have been taken. Apart from the Union's task to represent the common interests of our professions at the world level I hope that the number of combined activities will increase to benefit us all.

I'm grateful for the collegial invitation of your Secretary General to our growing collaboration.

Jos AE Spaan
Secretary General of IFMBE
P.O. Dept. of Medical Physics & Informatics
AMC, University of Amsterdam
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IOMP Statement of Accounts 1987 - 1993

INCOME (U.S. \$):	July 1987-					1993
	Dec. 1988	1989	1990	1991	1992	(Estimated)
Member Dues	8,401	4,862	7,475	10,202	10,343	11,060
Corporate Member Dues	6,577	4,437	7,000	15,875	8,000*	4,500
Proceeds from ICMP's	12,132	15,367	5,002	—	12,500+	—
MPW Loan Payment	—	1,600	—	—	—	—
Interest	2,533	2,103	4,955	6,865	3,262	3,050
Donations	1,000	—	—	—	1,000	—
Proceeds from Meetings and Courses .	1,679	—	1,825	—	—	—
Gain on Exchange	1,256	—	3,221	—	—	—
Rounding Out Corrections	—	—	5	—	—	—
TOTAL INCOME	\$33,578	\$28,369	\$29,483	\$32,942	\$35,107	\$18,610
EXPENSES (U.S. \$):						
IUPESM Dues	2,250	2,200	—*	4,008	4,291+	4,207+
U.S. Internal Revenue Service	—	150	—	—	—	—
Printing, Postage, Phone	4,015	150	392	510	903	500
Secretarial	1,194	981	800	850	1,000	1,100
MPW Loan	—	1,600	—	—	—	—
Officers Travel, etc.	920	283	1,371	865	—	2,000
Meetings and Courses	4,790	—	—	8,018	5,998	5,520
Bank Charges	445	73	57	23	151	80
Loss on Exchange	—	1,950	—	1,154	3,612	—
ICMP Expenses	7,529	—	—	—	2,723+	7,500
Travel Grants	—**	—	1,707	39,913	966	—
Libraries Program	—	—	1,288	2,634	2,871	3,400
Committees	—	—	2,012	—	—	—
TOTAL EXPENSES	\$21,143	\$ 7,187	\$ 7,627	\$57,975	\$22,515	\$24,307
NET INCOME	\$12,435	\$21,182	\$21,856	(\$25,033)	\$12,592	(\$ 5,697)
TOTAL ASSETS	\$35,294	\$56,476	\$78,332	\$53,299	\$65,891	\$60,194

*Not including \$1,000 paid in prior year

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Colin G. Orton, Treasurer

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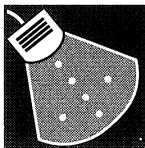
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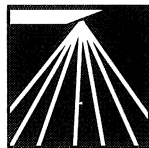
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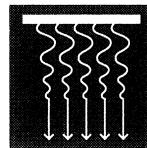
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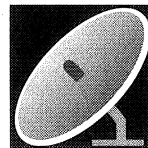
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